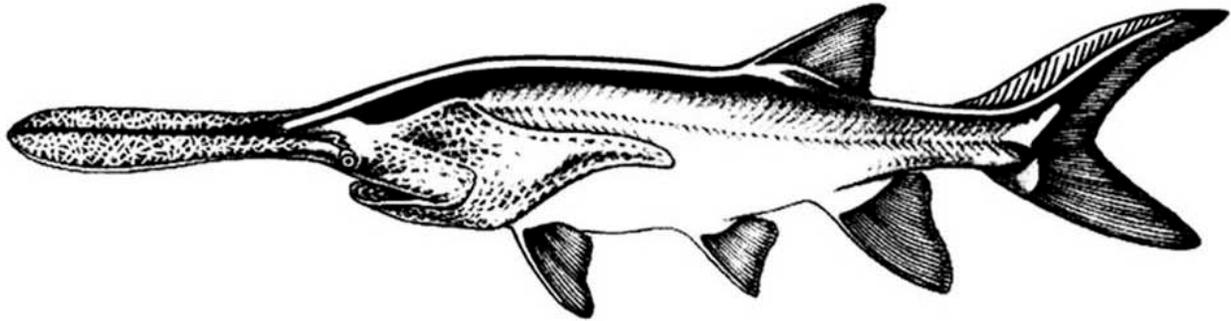


# **A Comprehensive Plan for the Management of Paddlefish in Oklahoma**



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## Executive Summary

A comprehensive management plan is presented for Oklahoma's paddlefish fisheries, emphasizing harvest management for the long-term sustainability of the species. Beginning in 2008, the Oklahoma Department of Wildlife Conservation (ODWC) greatly increased its research effort and commitment to effective sustainable management of paddlefish. That year, ODWC established a Paddlefish Research Center (PRC<sup>3</sup>) on Grand Lake near Twin Bridges State Park, Ottawa County. The roe donation program and PRC were modeled after similar programs in Montana and North Dakota. As in those programs, the intent of the ODWC program is for the caviar obtained from the roe donation programs to be a by-product of a sustainably-managed recreational fishery.

A comprehensive plan is a critical need for all of Oklahoma's paddlefish because of several factors potentially leading to stock depletion. These factors include direct threats to population such as overharvest, habitat issues, and invasive species. Additionally, socio-economic factors directly influence Oklahoma paddlefish, such as the rise in popularity and accessibility of paddlefish snagging (i.e. free fish cleaning services provided by the PRC and the comparatively liberal fishing regulations in Oklahoma which create resident and nonresident demand) plus the increasing value of caviar and potential attraction of illegal fishing.

An effective management plan must contain several important components including the following:

- 1) a detailed plan for harvest management and fish stock assessment
- 2) a comprehensive habitat management plan addressing possible impacts of the following on Oklahoma's paddlefish
  - a. potential changes in the reservoir and riverine habitats
  - b. invasive species such as Asian carps (e.g. *Hypophthalmichthys nobilis*; Schrank et al. 2003) and zebra mussels *Dreissena polymorpha*
  - c. long-term effects of contaminants from the Picher/Tar Creek lead/zinc mine Superfund site and other point and non-point sources

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<sup>3</sup> Originally known as the Paddlefish Research and Processing Center (RPC), the facility's name was changed to Paddlefish Research Center (PRC) in 2012 and is referred as such throughout this document.

- 3) a law enforcement plan for the recreational fisheries, including both enforcement of legal fisheries and an approach to prevent illegal harvest and illegal caviar trade
- 4) public education, information and outreach on paddlefish and the fisheries

Oklahoma's paddlefish cross other jurisdictions and are impacted by the actions of other entities, therefore, an effective management plan must also be coordinated with appropriate federal, state and tribal agencies. The plan outlines an overall guiding philosophy, goals, objectives, research needs, and coordination while evaluating conservation options over the period 2012-2017. The plan design provides a sustainable recreational harvest while emphasizing natural reproduction wherever possible. Consistent with this intent, ODWC prepared a detailed sampling protocol for the development of a high-quality PRC database for fish stock assessment. Guidelines are also provided for ongoing and potential hatchery supplementation in areas lacking adequate natural reproduction. Habitat management issues are not emphasized but will be detailed in a follow-up document.

From analyses of data collected in 2004 and in 2008-2011, the 1999 year class has dominated the Grand Lake/Neosho River fishery in each of the four years (2008-2011) when harvest was monitored at the PRC. In the 2011 fishery, these fish were 12 years old. Although the causes of this strong year class are not thoroughly understood, available evidence suggests that high flows in the Neosho River prior to and during the spring spawning period and high reservoir levels in Grand Lake the same year favored successful reproduction, growth and recruitment. This evidence is consistent with paddlefish studies in other localities. Females of the 1999 year class recently (2011) entered their period of prime reproduction, where their egg weight and caviar yield were maximized. Males entered their prime reproduction period about 2-3 years earlier. Unlike more northerly paddlefish populations, in which individual fish may live 50 or more years, the higher metabolic demand for more southerly populations such as in Grand Lake lead to an expected lifespan of about 20 years. Based on a detailed study of Grand Lake fish over the period 2008-2010, the prime period of reproduction for females is expected to extend from ages 12 to 16, or until 2015. It is predicted that over the period from 2011-2015 the strong 1999 year class will rapidly decline in numbers from harvest and mortality. After 2015 the year class will experience very high natural mortality as most fish that are not harvested will have lived out their natural lifespans. Future monitoring of the strong 1999 year class in the next decade will clarify if this prediction is supported. Given the short lifespan (typically <20 years) of these fish at this latitude and to sustain current harvest rates, significant recruitment of new year-classes must occur within the next 3-4 years. Annual harvest of

the strong 1999 year class must be apportioned out until subsequent recruitment events can be shown to support sustainable harvest.

The harvest management component of the plan involves the development of a harvest model to estimate total allowable catch (TAC) for the stock(s). Implementation of the plan includes sampling for detailed life history information at check stations, population estimation using mark-recapture techniques, and a creel survey designed to estimate total harvest.

Several key research activities are proposed with direct applicability to management of the fishery. In particular, more information is needed on the early life stages of paddlefish and the factors affecting reproductive success and recruitment of harvestable-sized fish to the fishery.

Proposed information and education activities are designed to facilitate communication with the public, to upgrade the social status of the paddlefish, and maintain the quality of the recreational fishing experience. Detailed data are currently being collected to address these objectives.

An *ad hoc* paddlefish advisory committee composed of relevant representatives of ODWC and selected cooperator agencies will be established. Its role, strictly advisory, will be to provide guidance and direction to implementing the Paddlefish Management Plan, including planning and recommending research and evaluations of effects of regulations. Effective coordination of research, stock assessment and management activities statewide is considered important to the success of the Management Plan; the committee will provide decision makers with specific recommendations regarding these activities.

## Section 1. Introduction

The North American paddlefish *Polyodon spathula* provides important recreational fisheries for the state of Oklahoma and numerous other states in the Mississippi and Missouri river basins. This large, ancient (Grande and Bemis 1991), highly migratory fish (Firehammer and Scarnecchia 2006) of large rivers and reservoirs has fossil ancestors from the age of the dinosaurs and has a unique biology and life history among the world's fishes. The species is a source of high-quality food and expensive caviar (Dillard et al. 1986; Waldman and Secor 1998; Jennings and Zigler 2000).

Beginning in 2008, the Oklahoma Department of Wildlife Conservation (ODWC) greatly increased its research and management effort on paddlefish. That year, ODWC established a Paddlefish Research Center (PRC<sup>4</sup>) on Grand Lake near Twin Bridges State Park, Ottawa County. Under the program, paddlefish snag anglers are encouraged to bring their legally-caught fish from fishing areas of Grand Lake and the Neosho River to the PRC. For a voluntary donation of roe, if present, the PRC provides snag anglers with free cleaning of live fish of both sexes and packaging of the fillets. Since the inception of the PRC, a large fraction of the total harvest has been voluntarily brought there to be cleaned (58% in 2008, 49% in 2009, 53% in 2010, and 68% in 2011; ODWC, Unpublished Data). Roe is processed into caviar and sold, with proceeds going toward departmental fisheries and wildlife research, management, and enforcement activities. The roe donation program and PRC were modeled after similar programs in Montana and North Dakota (Scarnecchia et al. 2008). As in those programs, the intent of the ODWC program is for the caviar obtained from the roe donation programs to be a by-product of a sustainably-managed recreational fishery.

At the PRC, ODWC developed a detailed sampling protocol leading to a high-quality database for fish stock assessment. This protocol was modeled with modifications after programs in both Montana and North Dakota that have provided for an orderly, equitable, and sustainable harvest (Scarnecchia et al. 2007, 2008). Additional studies and fish sampling in the reservoir complement data collected at the PRC. The success of the roe donation program and the data collection protocol at the PRC has enabled ODWC to obtain for the first time (and at

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<sup>4</sup> Originally known as the Paddlefish Research and Processing Center (RPC), the facility's name was changed to Paddlefish Research Center (PRC) in 2012 and is referred as such throughout this document.

comparatively low cost) detailed biological information needed for development of a sustainable fishery. Similar roe donation programs may eventually be developed in other Oklahoma localities where sustainable fisheries permit.

A comprehensive plan is a critical need for all of Oklahoma's paddlefish because of several factors potentially leading to stock depletion. These factors include direct threats to population such as overharvest, habitat issues, and invasive species. Additionally, socio-economic factors directly influence Oklahoma paddlefish, such as the rise in popularity and accessibility of paddlefish snagging (i.e. free fish cleaning services provided by the PRC and the comparatively liberal fishing regulations in Oklahoma which create resident and nonresident demand) plus the increasing value of caviar and potential attraction of illegal fishing. Paddlefish occupy a range of riverine and reservoir habitats that are undergoing continual changes and introductions of exotic species, some of them nuisances and detrimental to native fishes. The business plan for the PRC (Oklahoma Department of Wildlife Conservation 2007), no matter how well implemented, will only be as successful as the health of the paddlefish stock and its ability to sustain a harvest.

An effective management plan must contain several important components including the following:

- 1) a detailed plan for harvest management and fish stock assessment
- 2) a comprehensive habitat management plan addressing possible impacts of the following on Oklahoma's paddlefish
  - a. potential changes in the reservoir and riverine habitats
  - b. invasive species such as Asian carps (e.g. *Hypophthalmichthys nobilis*; Schrank et al. 2003) and zebra mussels *Dreissena polymorpha* (Pegg et al. 2009)
  - c. long-term effects of contaminants from the Picher/Tar Creek lead/zinc mine Superfund site (Weidman 1932; US EPA 2000) and other point and non-point sources
- 3) a law enforcement plan for the recreational fisheries, including both enforcement of legal fisheries and an approach to prevent illegal harvest and illegal caviar trade
- 4) public education, information and outreach on paddlefish and the fisheries

Oklahoma's paddlefish cross other jurisdictions and are impacted by the actions of other

entities. An effective management plan must therefore be coordinated with appropriate federal, state and tribal agencies.

This document provides details of ODWC's statewide paddlefish management plan. As of 2013, most available data and planning emphasis are on the Grand Lake paddlefish. However, the framework of the plan is designed to be applied to all paddlefish waters and harvest management units as more information becomes available. This introduction (1) is followed by (2) an overview of paddlefish from national and international perspectives, (3) an updated review of life history and status of Oklahoma paddlefish stocks, (4) a framework for the Oklahoma paddlefish management plan providing a philosophical rationale for ongoing and potential management actions, followed by goals, objectives, and tasks, and (5) pros and cons of possible conservation regulatory options over the period 2013-2017. The immediate need is for a multifaceted plan for data collection monitoring, stock assessment, and research leading to sustainable harvest management. A separate document will be developed addressing current and future habitat concerns for the species in Oklahoma.

## **Section 2. Overview of Paddlefish**

The North American paddlefish (Acipenseriformes: Family Polyodontidae) is one of two living species of its family surviving from prehistoric times. The other species, *Psephurus gladius*, native to China, is on the brink of extinction (Wei et al. 1997). The North American species is native to the Mississippi and Missouri river basins and several Gulf Coast drainages (Carlson and Bonislowsky 1981; Gengerke 1986). Numerous fossil species exist (MacAlpin 1947; Grande and Bemis 1991), and ancestral paddlefish were typically bottom feeders much like the sturgeons (Family Acipenseridae), their closest relatives. Modern paddlefish, in contrast, have evolved a highly specialized life history where, beyond their first few months (Michaletz et al. 1982), they filter feed in the water column, mainly on zooplankton (Eddy and Simer 1929; Rosen and Hales 1981).

Although paddlefish populations persist in portions of 26 states, their peripheral range contracted in the 20th century (Gengerke 1986; Graham 1997). Mere remnant populations remain in several states where they were once abundant (Bettoli et al. 2009). Some of the largest naturally-spawning populations in historical times have declined greatly in abundance, such as in the Osage River in Missouri (Graham 1992) and the Missouri River in South Dakota (Unkenholz

1986). Lack of suitable spawning habitat in regulated rivers has been a major cause of the declines (Sparrowe 1986). Before the twentieth century, paddlefish had free access throughout the entire Mississippi and Missouri River basins; migrations of hundreds of kilometers have been documented in the lower basin (Russell 1986). Impoundments and channel alterations throughout the paddlefish's range have controlled flood waters, blocked fish migrations, permanently inundated gravel bars suitable for spawning, and resulted in severe reduction or extirpation of populations (Unkenholz 1986; Jennings and Zigler 2000). Although paddlefish feed and grow well in many new reservoir habitats (Houser and Bross 1959; Graham 1992; Scarnecchia et al. 2009), their requirement of natural or quasi-natural hydrographs for spawning limits their natural production in many areas.

Overfishing has also contributed to the decline of paddlefish in many localities (Hoxmeier and DeVries 1996; Jennings and Ziegler 2000). In the late nineteenth century, paddlefish were perceived as low-valued and of questionable merit as a food fish (Jordan and Evermann 1896). Interest in the fish and their valuable caviar increased greatly, however, in the early 20th century (Hussakof 1910; Alexander 1914; Coker 1930). Commercial harvest of paddlefish has occurred for about a century and the paddlefish remains a commercial species in seven states (McDougall 2005; Scholten 2009). Recreational fisheries based on snagging the fish below migration barriers or hindrances have become popular since the 1950s, and exist in 14 states, although with progressively more restrictive regulations in most places (Graham 1997; Hansen and Paukert 2009).

Paddlefish fisheries do not have a history of successful management. Several factors make effective paddlefish management a greater challenge than for many other species. First, fundamental information on the biology and ecology of the species has been either scarce or lacking. Much of this information shortage is attributable to the difficulty of sampling adequately in the species' turbid habitats in large rivers. It was not until the early twentieth century that young paddlefish were collected (Allen 1911; Danforth 1911). It was not until Adams' (1931, 1942) research on dentaries that a reliable aging method was developed. Validation of this method has occurred only recently (Scarnecchia et al. 2006), and the ease of interpretation of dentaries for age determination varies among localities. Other advances such as locating spawning sites (Purkett 1961), sampling eggs and larval fishes (Wallus 1986), quantifying age-0 abundance of fish in reservoirs (Scarnecchia et al. 1997), understanding feeding habits of wild juvenile fish (Fredericks 1994), understanding energy storage and utilization (Scarnecchia et al.

2007, 2009), and understanding the electrosensory system (Wilkins 2001; Wilkins et al. 2002) have not yet been widely applied in paddlefish conservation.

Second, development of useful stock assessment methods has been slow because of the paddlefish's complex life history, which can include a long life span, late age-at-maturity, distinct sexual dimorphism in many traits (Scarnecchia et al. 2007; 2011), non-annual spawning, and highly migratory behavior. Paddlefish can live to 50-60 years or more in some northern localities (Scarnecchia et al. 2007) and 20 or more years in more southerly localities (Scarnecchia et al. 2011). They mature late in life (Montana: 9-11 for males, 17-20 for females Rehwinkel 1978; Scarnecchia et al. 1996b; Oklahoma: 6-7 for males, 8-9 for females; Scarnecchia et al. 2011), typically do not spawn annually, especially in northern areas (Meyer 1960; Scarnecchia et al. 2007), and are particularly subject to overharvest (Boreman 1997), especially as the most sought-after fish are larger, mature females rather than the smaller male fish (Scarnecchia et al. 1989). The highly migratory behavior of the species (Russell 1986; Pitman and Parks 1994; Firehammer and Scarnecchia 2006) makes it difficult to delineate appropriate geographical boundaries for sampling plans. Data necessary for meaningful stock assessment and management have seldom been collected systematically or for sufficiently long periods to determine stock status. The partial, short-term studies on paddlefish which dominate the fairly modest literature on the species have not proven adequate for successful management.

Third, paddlefish have also had a lower priority for many managers than other more common and popular sport species. The limited, specialized fisheries, the paddlefish's movements across jurisdictional boundaries (Henley 2001), and the historical independence of state management have often resulted in inadequate management within states and uncoordinated management among states. As a result, few efforts have been made to formulate sustainable harvest management strategies based on scientifically defensible stock assessments.

Management regulations for both commercial and recreational harvests are relatively recent. Combs (1986) and Graham (1997) reviewed paddlefish regulations, which include size limits, seasons, area closures, and, in one case, an incidental quota. Current recreational regulations (Hansen and Paukert 2009) also vary by state, but typically involve creel limits, season closures, and prohibitions against high-grading. Historically, the main rationales for the regulations were to regulate harvest, prevent over-harvest and excessive mortality, and to protect brood stock (Combs 1986). In recent years, harvest caps have been applied to limit recreational

harvest (Stone and Sorensen 2002; Scarnecchia et al. 2008). Controlled catch and release fishing has also been successfully implemented (Scarnecchia and Stewart 1997a). Efforts have also been made to match recreational fishing regulations to values and attitudes of snag anglers (Scarnecchia et al. 1996a; Scarnecchia and Stewart 1997b; Stone and Sorensen 2002).

Illegal fishing (poaching) of paddlefish for caviar has become a serious problem in several states. Market demand for paddlefish roe has existed for over a century (reviewed in Williamson 2003). Demand has increased greatly in the past two decades as supplies of sturgeon caviar from the Caspian Sea have dwindled (De Meulenaer and Raymakers 1996; Speer et al. 2000) and political issues have impeded international trade in caviar (Waldman and Secor 1998; Williamson 2003). Retail prices of paddlefish caviar can reach several hundred dollars per kilogram. The sex of a paddlefish cannot be absolutely determined by external inspection (Russell 1986); both males and females may thus be killed by poachers seeking roe.

Management of paddlefish has been planned and conducted at international, national, regional, inter-state, and state levels. Graham (1997) summarized activities regarding international and national planning. Internationally, paddlefish were listed in 1992 on Appendix II of the Convention on International Trade in Endangered Species (CITES). Appendix II includes species that, although not necessarily threatened with extinction, may become so unless trade is strictly regulated to avoid uses incompatible with species survival. The listing was based mainly on concerns about illegal poaching and the caviar trade (De Meulemaens and Raymaker 1996; Williamson 2003).

Nationally, the U. S. Fish and Wildlife Service was petitioned in 1989 to include the paddlefish on the list of threatened and endangered species under the Endangered Species Act of 1973. The petition was not granted but it was concluded that insufficient empirical data existed for the species throughout much of its range. Considerable interest developed in coordinating paddlefish management either nationally (Paddlefish Workshop, Atlanta, GA, 1992, Unpublished; National Paddlefish and Sturgeon Steering Committee 1993) or regionally (Dillard et al. 1986; Henley 2001) for discrete management units that cross jurisdictional boundaries. The increased emphasis on national or regional inter-jurisdictional management and stock assessment has expanded even further in the early 21<sup>st</sup> century through the activities of the Mississippi Interstate Cooperative Resource Association (MICRA: Grady et al. 2005; Mestl et al. 2005). According to MICRA's strategic plan, "the paddlefish management mission of the ... paddlefish/sturgeon sub-

committee is to provide MICRA with information and recommendations to conserve and manage paddlefish populations through inter-jurisdictional coordination, communication and assessment.” (<http://micrarivers.org/>). The paddlefish's highly migratory life history in large river systems makes inter-jurisdictional management necessary for most stocks. MICRA provides a useful forum for developing management guidelines as well as limited research and stock assessment collaboration among states (Grady et al. 2005). Its role is primarily advisory, however (McDougall 2005), and its activities have not yet resulted in a strongly unified management structure or approach.

Interstate plans for management of stocks of common interest have been successfully implemented. Montana and North Dakota implemented a Cooperative Management Plan for stocks inhabiting those states (Scarnecchia et al. 1995; 2008). South Dakota and Nebraska cooperate closely on paddlefish management below Gavins Point Dam (Stone and Sorensen 2002). Six states in the Ohio River basin (Illinois, Indiana, Ohio, Kentucky, West Virginia, and Pennsylvania) have made efforts at cooperative management (Henley et al. 2001).

In addition, several individual states have developed plans for paddlefish restoration and management in the past 20 years (e.g., Missouri: Graham 1988, 1992; Texas: Pitman 1991, 1992). During the period 1983-1991 in response to dwindling stocks and deteriorating habitat, 19 of 22 states where paddlefish remained found it necessary to make changes in the classification, stock status, or regulatory status of the species (U. S. Fish and Wildlife Service, Unpublished). State management of paddlefish has since trended toward becoming more intensive and more restrictive of both commercial and recreational harvest (Graham 1997).

Interest in artificial propagation of paddlefish has increased coincident with declines in wild populations (Semmens and Shelton 1986; Grady and Elkington 2009; Mims et al. 2009). A major use of paddlefish culture at present is supplementation of or mitigation for wild populations depleted or extirpated by loss of spawning habitat (Graham 1992). At least 10 states are actively stocking paddlefish to enhance depleted populations or restore extirpated ones (Graham 1997; Jennings and Zigler 2000). Paddlefish are also increasingly being farmed and ranched in lakes, ponds and reservoirs for flesh and caviar production in the United States (Mims et al. 1999; Mims 2001; Onders et al. 2001). The species is also being reared in hatchery ponds in several European countries for meat and caviar (Lobchenko et al. 2002; Simonović et al. 2006; Hubenova et al. 2007) and has been reported to have escaped into the lower Danube River (Simonović et al. 2006).

Chinese aquaculture efforts on *Polyodon* have increased since its introduction there in 1988 (He 1999; Tian and Wang 2001) and their aquacultural yield can be expected to influence world markets in the future.

### **Section 3. Oklahoma Paddlefish Stocks and Fisheries**

#### **3.1 Stocks**

The number of Oklahoma paddlefish stocks, i.e., groups of fish with spatial and temporal spawning integrity (*sensu* Ricker 1972) has not been determined. Prior to Oklahoma's extensive dam construction, paddlefish had access to long, unimpounded stretches of several rivers. With dam completion came either partial or total isolation of paddlefish into discrete or semi-discrete units, typically reservoir and inflowing river combinations, that often also serve as harvest management units (e.g., Grand Lake paddlefish, Keystone paddlefish, Ft. Gibson paddlefish).

Until genetic analyses are conducted, the fish can tentatively be divided into two putative stocks based on past biogeography and river corridors: the Arkansas River stock and the Red River stock. The historical distribution and abundance of paddlefish of these putative stocks are not precisely documented in the scientific literature (Riggs and Moore 1949; Branson 1967; Miller and Robison 2004). Today, however, the Arkansas River stock contains several potential harvest management units because the distribution of the stock extends down the Neosho and Grand rivers through a series of dams (the Neosho River nomenclature ends at Twin Bridges State Park; from the Park downriver it is called the Grand River; Figure 1). The current distribution in the Neosho and Grand rivers includes the areas upriver and downriver of John Redmond Reservoir in Kansas (3,271 Ha; completed 1964) to the confluence with an arm of the Robert S. Kerr Reservoir (17,400 Ha; completed 1970), an impoundment on the Arkansas River. In between, the Neosho and Grand rivers are impounded with a series of dams, creating three reservoirs: Grand Lake (21,000 Ha; completed 1940), Hudson Reservoir (4,900 Ha; completed 1964) and Fort Gibson Reservoir (8,900 Ha; completed 1953). In the Arkansas River, the Kansas records are recent; Cross (1967) reported that "Records from the Arkansas River...are unsupported by specimens, but several reports by anglers indicate occasional occurrence of paddlefish there" (p. 38). In the Oklahoma portion of the Arkansas River above the Grand River confluence, paddlefish are present or have been reported in and below Great Salt Plains Reservoir

(4,214 Ha; completed 1941), Kaw Reservoir (8,058 Ha; completed 1976), Keystone Reservoir (10,522 Ha; completed 1965) and down river into Arkansas. Paddlefish have also been reported in and below Lake Oologah (11,922 Ha; completed 1974) on the Verdigris River, in Lake Eufaula on the Canadian River (41,296 Ha; completed 1964) and in the Poteau River below Wister Dam.

The Red River stock includes fish in the Red River and tributaries to and below Lake Texoma including the Wichita, Washita, Clear Boggy, Muddy Boggy, Kiamichi and Little Rivers (Riggs and Moore 1949; Miller and Robison 1973, 2004).

### **3.2 Fisheries**

Oklahoma's past commercial paddlefish fisheries and past and present recreational (snag) fisheries are reviewed by Gordon (2009). Combs (1982) noted that "Historically, the Neosho River is the only river where paddlefish have been regularly observed and harvested by sport and commercial fisheries in Oklahoma." (p. 335). This assertion would include the Grand River. In more recent years, fisheries elsewhere within the state have become more highly developed and better documented.

#### **Past commercial fisheries, 1975-1992**

Regulation of the Oklahoma commercial paddlefish fisheries in Grand Lake began in 1975 when two licenses were issued to commercial fishermen to gillnet for paddlefish in the Neosho River. The commercial fishing licenses on Grand Lake were issued annually for a calendar year. Licensed commercial harvesters were to report their catch to ODWC by December 31<sup>st</sup> of the fishing year. In 1981 commercial fishing was temporally closed in response to an increase in sport and commercial fishing pressure; the closure enabled ODWC to evaluate the adequacy of its commercial harvest regulations. Commercial fishing was reopened in 1982 with no regulation changes. By 1983 there had been a substantial increase in commercial paddlefish harvest on Grand Lake with the number of harvested paddlefish and weight of flesh sold doubling from past years (Table 1; Gordon 2009). However, commercial harvest of paddlefish began declining in 1987 after a five year period of harvest that was stimulated by the demand for caviar. From 1983 to 1986, an average of 3,257 pounds (1,480 kg) of caviar was sold annually (Table 1). Harvest from 1987 to 1989 was relatively low compared to the period 1982 to 1986, and only 645

pounds (293 kg) of caviar were reported sold from the Neosho River from 1987 to 1989. The low amount of caviar reported sold was more a reflection of supply rather than demand. In 1990, commercial harvest began to increase as the paddlefish population matured and by 1990, the highest commercial harvest of paddlefish in 15 years was reported, more than twice the reported harvest in any year since 1975 (Table 1; Ambler 1992).

This increase in harvest in Oklahoma during the early 1990s by the commercial fishermen resulted in additional restrictions on commercial paddlefish harvest, and eventual commercial fishery closure (Graham 1997). From January 22, 1991 to March 21, 1991 commercial fisherman were required to release three paddlefish for every fish kept. However, it was not mandatory that fisherman keep a fish unless it was assessed by them to be dead or stressed beyond recovery. In addition, they were required to report their monthly commercial harvest and sales by the 10<sup>th</sup> of the following month (Ambler 1992). These regulations were associated with a 75% reduction in reported paddlefish harvested by commercial fisherman; the actual reduction is unknown.

Even with increased restrictions on commercial paddlefish harvest in 1991 (i.e., requiring the release of three paddlefish for every fish kept), 2,412 paddlefish were reported harvested that year. Although harvest was reduced about 1,500 pounds (682 kg) from 1990, the 1991 commercial harvests were the second highest reported from 1975 to 1991 (Table 1). In addition, increased caviar sales from 1989 to 1991 suggested that many females in the population were maturing (Table 1, Ambler 1992).

Strong public support for closing commercial fishing on Grand Lake was expressed at ODWC public hearings in February 1991. Following a review of the public hearings, the restrictions imposed on the commercial fishery from January 1, 1991 through March 21, 1991 (i.e., three fish released per fish kept) were extended to run from September 1 through December 31, 1991. The commercial fishing on Grand Lake was closed indefinitely on January 1, 1992.

### **Recreational fisheries**

The Grand Lake/Neosho River recreational snag fishery is open year-round, but is most active in spring (March –April) in the upper portions of the reservoir from the Gray’s Ranch area below the reservoir headwaters up into the Neosho River. Most of the harvest on the stock occurs in Oklahoma although fish are also taken up the Spring River into Missouri and up the Neosho

River at three main sites in Kansas (Chetopa, Iola and Burlington). Estimated angler harvests in Oklahoma in the past two decades have ranged from more than an estimated 15,000 fish in 2009 (Schooley and Crews *in review*) to just under 3,000 fish in 2002 (Gordon 2006). In years since Combs' (1982) study, other popular fishing spots have developed in the Arkansas River and its tributaries as well as on Grand River reservoirs downriver of Pensacola Dam (which impounds Grand Lake), including sites in and above Hudson Reservoir and Fort Gibson Reservoir. Keystone Reservoir, Lake Oologah, and Kaw Reservoir also contain paddlefish. Fish have been stocked by ODWC and U. S. Fish and Wildlife Service into several reservoirs and some natural reproduction is occurring. Paddlefish are also caught at sites on the Red River and its tributaries below Lake Texoma.

### **Recreational fishery regulation changes, 1979-2007**

Snag fisheries for paddlefish on the Neosho River above Grand Lake to Miami, Oklahoma have occurred for many decades and have been actively managed for more than 30 years (e.g., Combs 1982; Gordon 2006). Fisheries also exist on the Grand River above Ft. Gibson Reservoir (primarily at Chouteau Bend for bank anglers and throughout the river for boat anglers). The fisheries continue to be important for residents of Oklahoma, Kansas, and Missouri and several other states.

Over the period 1979-2007, ODWC initiated several changes in paddlefish angling regulations to ensure a sustainable fishery while maintaining angling opportunities. Paddlefish angling has continued to grow in popularity and anglers have continued to become more efficient at catching paddlefish. In 1979, when ODWC conducted the first paddlefish angler creel survey, there was a daily bag limit of five fish and catch and release was allowed. In 1982 that limit was lowered to three fish with catch and release allowed. On January 1, 1992 regulations were changed to prohibit catch and release of paddlefish while fishing with rod and reel and the daily possession limit remained at three fish. Effective on January 1, 1995 regulations were enacted that allowed for a paddlefish season. The season was split: 1) March 15 through May 15<sup>th</sup>, a daily bag limit of three paddlefish, with no catch and release by any means other than by trotlines and throw lines, and 2) from May 16 through March 15 of the following year, a daily limit of one paddlefish (Table 2). Anglers were required to stop fishing for paddlefish that day once they kept a fish.

Agency concerns about overharvest of paddlefish arose again in 2002 as state game wardens reported increased fishing pressure and possible overharvest in the Neosho River. Emergency regulation changes for paddlefish approved by the ODWC Commission and effective January 1, 2003 allowed for catch and release of paddlefish by use of rod and reel, trotlines and throw lines year-round. Anglers fishing with trotlines or throw lines were required to release all paddlefish before leaving their lines unless keeping one for a daily bag limit. Also, for the first time, a barbless hook regulation was imposed on the snagging of paddlefish in Oklahoma; this regulation remains in effect as of 2013.

### **Recreational fishery regulation changes, 2008-2013**

In 2010, several changes were implemented to help prevent excessive recreational harvest. Mandatory catch and release days were assigned to Monday and Fridays. For harvest days, the daily bag limit remained at 1 fish per angler. The Spring River was closed to paddlefish harvest year-round.

Paddlefish Regulations as of 2013 are:

1) Paddlefish angling by all methods is closed on the Spring River from the Highway 60 Bridge upstream to the Kansas State line. Snagging of paddlefish or any fish is closed from 10 p.m. to 6 a.m. year round on the Grand River from the Highway. 412 Bridge upstream to the Markham Ferry (Lake Hudson) dam.

2) Residents and nonresidents must obtain a free paddlefish permit in addition to a fishing license from ODWC or an authorized vendor before fishing for paddlefish.

3) Residents and nonresidents may have only one paddlefish in their possession in the field. Nonresidents may not have more than four paddlefish in possession at any other time.

4) Catch and release of paddlefish by use of rod and reel, trotlines and throwlines is allowed, year-round. Paddlefish must be released immediately after being caught, unless kept for the daily limit. Anglers fishing trotlines or throwlines must release all paddlefish before leaving their lines (unless kept for a daily limit).

5) Paddlefish taken by bowfishing, gigs, spears and spear guns cannot be released. These methods cannot be used on Mondays and Fridays.

6) Paddlefish not immediately released are considered kept, and must be tagged immediately with the angler's paddlefish permit number. Additionally, the date and time of harvest must be recorded on the paddlefish permit. Under no circumstances can any paddlefish be caught, kept, and then released (i.e., no culling is permitted).

7) Each cleaned paddlefish and its parts (carcass, meat, or eggs) must also be tagged and kept separate from all other cleaned paddlefish or paddlefish parts. Each person must keep their own paddlefish distinctly separate from paddlefish taken by others.

8) Paddlefish and paddlefish parts must remain tagged until the person in possession of the paddlefish and/or parts reaches their residence.

9) When snagging for paddlefish, anglers are allowed only one hook (one single hook or one treble hook) and all hooks must have the barbs removed or completely closed. Anglers must stop snagging when a daily limit of one fish is kept.

10) When landing a paddlefish, it is illegal to use "Gaff hooks" or any other techniques or devices that injure the fish, unless the angler is bowfishing.

11) No person can possess the eggs of more than one paddlefish that are still attached to the egg membrane. In addition, no person can possess more than three (3) pounds of either processed paddlefish eggs or fresh paddlefish eggs removed from the membrane. "Processed eggs" are any eggs taken from a paddlefish that have gone through a process which makes the eggs into the product caviar or into a caviar-like product.

12) No person can ship into or out of , transport into or out of, have in possession with the intent to so transport, or cause to be removed from this state raw unprocessed, processed, or frozen paddlefish eggs.

13) All paddlefish must have all viscera (internal organs) removed before leaving the state.

New for implementation in 2014 is the re-defining of snagging to include only one rod and reel per person. Prior to 2014, up to seven rods and reels could be legally used simultaneously per person while snagging (e.g., as in trolling).

### 3.3 Creel surveys and monitoring, 1979-2005

ODWC conducted studies periodically over the period 1979-2005 to monitor the fishery, harvest, and stock status emphasizing creel surveys in the Grand Lake/Neosho River system (Combs 1982; Ambler 1992; Gordon 2006). Studies of paddlefish sport angling in the Neosho River began in the mid--1970's amid unconfirmed angler reports of increased pressure, decreased harvest and decreased paddlefish size on the Neosho River, which created concern over the stock status (Combs 1982). During 1979, 1980, 1986, 1992, 1993, 2003, and 2004 paddlefish spawning runs, abbreviated creel surveys were conducted on Grand Lake and the Neosho River. An abbreviated stationary creel survey was conducted at the low water dam area in Oklahoma's Miami Riverview Park in all seven study years following a consistent protocol and began when the instantaneous pressure counts exceeded 20 anglers (Table 3). The creel was restricted to the east and west banks of the Neosho River below the dam to the park's boat ramp approximately 300 m downstream. The creel randomly sampled 15 of 45 paddlefish harvest days each year. In 1992 fisheries personnel observed a large increase in paddlefish snagging from boats in the Neosho River in addition to the traditional bank fishing, presumably because of the advances in electronic fish locator technology. Therefore, a roving creel survey on the Neosho River above Twin Bridges State Park to Miami Riverview Park (24 km) was added in 1992, 1993, 2003 and 2004 (Gordon 2009).

By 1999, when game wardens reported increased fishing pressure in the upper reaches of Ft. Gibson Reservoir, stock status there had become a concern. Prior to 1999, paddlefish recreational fishing pressure in Ft. Gibson had been very low and considered insignificant in relation to the overall paddlefish exploitation in the Grand Lake/ Neosho River system. Therefore, in 2005 a creel survey was also conducted in Hudson and Ft. Gibson Reservoirs (Gordon 2005).

Data obtained from creel surveys included number and size of paddlefish harvested, fish body length (front of eye to fork of caudal fin; Ruelle and Hudson 1977), presence or absence of jaw bands, pressure (angler-hours), catch rates and angler residences, and exploitation rates ( $u$ ) based on band returns, expressed as  $u = R/M$ , where  $u$  = exploitation rate,  $R$  = band returns, and  $M$  = number of marked fish available in the system (Gordon 2006).

The angling pressure estimated in the Miami Park area varied widely, from 34,675 hours in 1979 to 965 in 2004 (Table 3). The years of lower angling pressure in 2003 (5,882 h) and 2004 (965 h) at Miami Park were attributed to very low flows in those years; paddlefish tended to remain farther downriver during those years and typically contributed less to Miami and upriver Kansas fisheries than in higher flow years.

Angling pressure at Miami was typically less in the 1990's than over the period 1979-86. In 1990, the Miami Parks and Recreation Department initiated a seasonal fee (US \$10.00 Miami residents, US \$25.00 others). The percentage of resident paddlefish anglers at Miami River Park increased from 48.6% in 1979 to 68.9% in 2003 and 75% in 2004 (Gordon 2009). Evidently non-resident anglers avoided the Park and its user fees. In addition, increased sophistication of electronic fish locaters and better access to the Neosho River (i.e. boat ramps) above Grand Lake made boat angling more appealing to anglers. In 1992, for the first time, angling pressure estimates on the Neosho River included both bank and boat anglers. Boat anglers were included in 2003-2004 in estimates from the upper portion of Grand Lake (Table 4). In 1992, 1993, 2003, and 2004 surveys, combined angler pressure ranged from 23,576 hours to 37,986 hours (Table 4). The Neosho River accounted for 73% and 65% of the total angling pressure in 1992 and 1993. In 2004, with the Grand Lake boat anglers included, that percentage climbed to 98%. The total pressure in 2004 (31,065.5 h) approached that of the highest pressures recorded in 1980 (34,674) and 1993 (37,986) (Table 4). The lower harvest estimates in the two most recent creel surveys (2003, 2004) may have been in part the result of the regulations put into effect in 2003 which reduced the daily paddlefish bag limit from three fish to one. (Gordon 2006).

Exploitation rates from 1986 to 2005 were never greater than 2.5%, and were substantially less than rates of 15-18% reported in 1979 and 1980 (Combs 1982). The latter rates were based on band returns from anglers when 208 to 1,553 fish were banded annually (Table 5). New regulations after 1980, increased enforcement activity, and an apparently increasing paddlefish population have likely all contributed to the low exploitation rates. The low rates were similar to those found in Keystone Reservoir (less than 2%; Paukert and Fisher 2001)

Angler pressure remained relatively constant between weekends and weekdays from 1979-2005. In general, pressure was evenly distributed between these periods before 1993 for the Miami stationary creel surveys. However, weekend pressure was substantially lower beginning in 1993 (Table 3). In contrast, the Neosho River creel surveys indicated substantially higher

pressure during weekends until 2004 and 2005 when pressure was similar between weekdays and weekends.

For the upper portion of Ft. Gibson Reservoir and the Grand River above it, overall angling pressure was 5,646 hours, which was very similar to pressure estimates at Miami Park in 2003 but lower than that seen in 2004 (Table 3, Table 4). An estimated harvest for the combined 2003-04 creels on Ft. Gibson Reservoir was 315 paddlefish with a catch rate of 0.253/hr, which was higher than many previous estimates from the presumably more popular Neosho River/Miami Park area. Paddlefish exploitation rates in the Grand River and Ft. Gibson Reservoir in 2005 was 2.5%, which was similar to estimates for other river reaches in 2003 and 2004 (Table 5).

Ft. Gibson angler pressure in 2005 was evenly distributed between weekends and weekdays, in contrast to creel surveys conducted in the Neosho River in 1992, 1993, and 2003 where weekends dominated the angler pressure. With the increased popularity of snagging, the Low Water Dam area on Ft. Gibson has become crowded with resident anglers. Unlike the results from the recent Neosho River creel surveys, the 2005 creel survey for the Grand River (i.e., below Pensacola Dam) showed that 84% of the anglers were Oklahoma residents. This percentage was the highest reported residency rate of paddlefish anglers in all the surveys conducted since 1979.

### **3.4 Post-season surveys of paddlefish permit holders, 2008-2012**

With the establishment of the PRC, ODWC implemented an end-of-season survey of paddlefish permit holders designed to “determine expectations of the fishery, paddlefish participation, use of the... PRC, satisfaction with the experience, and impact of the ...PRC on paddlefish harvest” (Crews 2009). This survey was conducted annually 2008 – 2012<sup>5</sup> (Crews 2009, 2010, 2011; Appendices 2, 3). A range of 5,600 – 13,430 permit holders were surveyed annually between 2008 and 2012, with a range of 1,595 – 4,512 responses. Information gained from these surveys is being used to formulate long-term plans for the paddlefish fisheries in the state. Only selected key results from 2008-2011 are reported here.

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<sup>5</sup> Though a complete survey was performed in 2012, ODWC personnel changes precluded the preparation of an evaluation report prior to the date of this management plan.

1. In all surveyed years, the top states for permit holders in order were 1. Oklahoma, 2. Missouri, 3. Kansas, 4. Arkansas, 5. Nebraska, 6. Texas, and 7. Iowa.
2. Higher percentages of non-resident permit holders used their (free) permit privileges.
3. The most active fishing months were 1. April, 2. March, 3. May; most paddlefish anglers fished within a one or two-month period.
4. Fishing from shore was the most common method overall, followed by fishing from boats. Non-residents were more likely to fish from boats than were residents.
5. The most common fishing locations were 1. near Twin Bridges State Park, 2. Miami Park, 3. Below the low-water dam downstream of Roberts S. Kerr Dam (the latter impounding Lake Hudson, north of 412, and 4. Immediately below Robert S. Kerr (Hudson) Dam. Numerous other river and reservoir locations were also fished.
6. As in pre-2008 creel surveys, non-residents favored Neosho River/Grand Lake fishing; relatively few non-residents fished Ft. Gibson Reservoir and its headwaters.
7. A three-day trip was the most common trip duration for non-residents. For residents, trip duration predictably was most commonly one day, followed by two days and three days.
8. Mean number of fish kept per angler was reported as 1.5 fish in 2010 – 2011, though elevated levels were reported in 2008 (2.4) and 2009 (2.5). A few anglers kept several times this mean catch. Non-residents were more likely than residents to keep two, three or four fish as opposed to zero or one fish.
9. The most important aspects of the paddlefishing experience were the fun, excitement, and sport of paddlefishing and the chance of catching a very big fish. Also considered somewhat important were taking paddlefish meat home to eat and catching and releasing many paddlefish each day.
10. Non-residents were more likely than residents to use the fish cleaning services of the PRC. (e.g., in 2009, 73% of non-residents versus 49% of residents).
11. Overall response to the PRC and the staff were highly positive.

12. Harvest was an important aspect of the fishing experience, but overall there was not strong need for anglers to take a paddlefish home with them after every fishing day. Both the opportunity to keep fish and to catch and release fish were considered important.

In addition to the responses to the questions, individual comments from anglers were assembled and provide an important source of information about angler attitudes, values, and perceptions that will be useful in formulating regulations. Additional details of the surveys are provided in Appendix B.

### **3.5 Paddlefish stock assessment investigations**

#### ***Oklahoma studies, 1950-2007***

Prior to the filling of Fort Gibson Reservoir in 1949, historical information on paddlefish is limited to scattered records of occurrence (Riggs and Moore 1949; Branson 1967) and commercial statistics (Elkin 1958). Paddlefish research and stock assessment investigations have been conducted since at least as early as the 1950s by ODWC (Houser and Bross 1959). Over the period 1950-2007, paddlefish were sampled in Oklahoma in some years with netting and creel survey. The data obtained were mostly limited to sampling location and fish length. In very few instances were data collected on fish weight, sex or age (Ambler 1987), rendering the length information of limited value for effective stock assessment. Other early data were collected in the Neosho River by the (then) Kansas Fish and Game Commission from creel surveys at fishing sites from below John Redmond Reservoir to the Oklahoma border.

Early life history and stock assessment investigations in Oklahoma were conducted by Houser and Bross (1959) and Houser (1965) associated with the filling of Fort Gibson Reservoir. According to Houser and Bross (1959), "...unauthenticated reports from residents in the area indicate that paddlefish were present in Grand River...long before it was impounded to create Fort Gibson Reservoir in 1949" (p. 50). The earliest collections from the reservoir (1954-1956) revealed that paddlefish were present in low numbers. They stated that "As the reservoir filled, these fish spawned to produce what appears to be a fairly large population" (p. 50). This large

population supported a commercial fishery in the next several years, but was concluded by the authors to have been depleted by commercial harvest.

Houser and Bross' (1959) study centered on the rapid growth rates of paddlefish in Fort Gibson Reservoir in 1957 (mean total length (TL) increase of 0.43 cm/day for a 165-day period from May 4 through October 15). By October 15, fish had reached 72 cm TL, nearly the same length that it had taken 3 years to reach in 1950. They attributed the faster growth to greatly increased reservoir productivity associated with higher water levels. In contrast, they found that fish grew little from October 1957 to February 1958, but resumed rapid growth the next spring. According to their age estimates, a dominant portion of the 1957 catch was produced in 1950.

Linton (1961) estimated growth rates of paddlefish from the Arkansas River and Cimarron River (prior to the construction of Keystone Reservoir) and compared them with growth rates of fish from Fort Gibson Reservoir. Growth rates were based on size at age, with ages determined by sections of pectoral rays, a seldom-used but recently resurrected structure for age determination in paddlefish (O'Keefe and Jackson 2009). No fish were found to exceed age-7, and growth rates of a sample of Fort Gibson Reservoir fish caught from 1950 to 1958 (mean TL, 1331 mm) greatly exceeded that of fish from the Arkansas and Cimarron rivers (mean TL, 795 mm). He attributed the faster growth rates in Fort Gibson Reservoir than in the rivers to the higher productivity associated with the reservoir habitat.

Over the period 1979-1984, Combs (1981, 1982, 1984) conducted investigations on the Grand Lake and Neosho River to estimate not only the fishing pressure and angler harvest rates (see section 3.1 above), but population size and fish size structure of the harvest. The investigations were begun in response to "...unconfirmed angler reports of increasing pressure depleting harvests, and dwindling catch sizes during the mid-1970s on the Neosho River" (p. 334; Combs 1982). In March, 1979, prior to the harvest season at the Riverview City Park in Miami, putative pre-migrant paddlefish (N=412) were gillnetted (initially in the upper portion of Grand Lake and later in the lower Neosho River above the reservoir) and jaw banded. In 1980, 208 fish were banded. Creel surveys at the park (section 3.1) were used to estimate angler catches and recover banded fish; a single mark-recapture population estimator was used. The active harvest season at the park extended for 31 days (March 22-April 21) in 1979 and 26 days (March 29-April 26) in 1980. Mean weight of paddlefish harvested was 19 kg each year. Estimated harvests were 3,874 fish in 1979 and 2,141 in 1980. Fishing conditions in 1980 were less

favorable and influenced by flooding in the park. Although data on sex of the fish was not reported, the length frequencies showed a clear bi-modal distribution in each year. This bi-modal pattern is often characteristic of samples of mature paddlefish, with males predominating in the lower mode and females in the upper mode. The largest fish sampled was 33.2 kg (73 lbs); few fish exceeded 30 kg (66 lbs). Ages of fish based on dentaries ranged from 6 to 13, with the dominant ages 8 and 9. The estimated exploitation rate was 15.2% in 1979. In 1980, exploitation rates were 18.8% for fish banded in 1979 and 18.7% for fish banded in 1980. Band recoveries suggested that at least some, and perhaps most, paddlefish migrated to spawn every year. One hundred netted larvae (Mean, 11 mm TL) collected in 2.2 hours 2.5 km downstream of the Miami Dam indicated successful spawning (Combs 1981). Commercial exploitation was estimated at less than 1%. Despite the high sport harvest rate compared to many other paddlefish stocks, Combs saw little evidence that the harvest was excessive or detrimental to the population. He suggested, however, that there was a need to monitor the fishery.

Smith and Namminga (1983) reported that four commercial fishermen had harvested paddlefish from Ft. Gibson Reservoir in 1982, almost exclusively for roe. Paddlefish was the species most sought after by commercial fishermen. In response to ODWC's expressed concerns that excessive harvest was directed at a species with unknown recruitment, commercial paddlefish harvest was not permitted in Fort Gibson reservoir in 1983. One commercial contractor was allowed to continue fishing but was excluded from specified important public use areas in January through March and October through December. He reported no paddlefish harvest and abandoned his contract in mid-season. He was later implicated in illegal harvest of fish (Smith and Namminga 1983).

### ***Kansas studies***

Annual catches in Chetopa over the period 1976-2009 have ranged from less than 100 fish to 2,000 fish (Figure 2; Kansas Department of Wildlife and Parks, Unpublished Data). Analyses prepared for this plan indicate that annual catches are highly dependent on Neosho River discharge; in years with higher flows more paddlefish move farther upriver and are more vulnerable to harvest (Figure 3).

### ***Oklahoma Studies, 2008-2013***

Stock assessments and studies by Houser and Bross (1959) and Houser (1965), Linton (1961) Combs (1982), Ambler (1987, 1994), and Paukert and Fisher (1999, 2000, 2001) have resulted in improved understanding of general aspects of the species' life history, movements and habitat requirements. For effective stock assessments of this sexually-size dimorphic species, information on length, weight, sex, and age are necessary (Scarnecchia et al. 2007). Data collected since 2008 have greatly expanded our knowledge of stock status. In addition, some data collected in 2004 from Grand Lake on length; weight and sex of paddlefish were later analyzed in relation to the larger data sets of 2008-2011 (Scarnecchia et al. 2011).

*Age structure* – Because knowledge of age structure is viewed as key to understanding year class strengths, life history stages, and for developing effective paddlefish stock assessments (Scarnecchia et al. 2007, 2008), ODWC has focused considerable effort on understanding age structure of the Grand Lake population. Ages have been estimated by counting annual rings on thin-cross sections of dentaries (lower jaw bones) as originally described by Adams (1931, 1942) and modified by Scarnecchia et al. (2006). In all, the agency has estimated the ages for 19,076 fish consisting of 147 fish collected from Grand Lake in 2004 via nets plus 18,929 angler-harvested fish donated to the PRC in 2008-2012 (Table 6, 7). Though ages are not yet verified (i.e. validated; Campana 2001) for the Grand Lake fish via other independent means, such as known-age recaptures of banded fish, paddlefish dentaries have been validated as a reliable structure for age determination elsewhere (Scarnecchia et al. 2006). Using two independent readers, age agreement between readers has been high in each year (e.g., 71% in 2008, 63% in 2009, and 84% in 2010 for first readings; 69% in 2008, 80% in 2008, and 88% in 2010 for second readings). Estimates that differed between readers typically did so by one year.

In all six years (2004, 2008-2012), the 1999 cohort was dominant among harvested fish: 36% in 2004 and 72 – 82% in 2008-2012. These fish appeared as age-5 fish in 2004 (Plate 1), age-9 fish in 2008 (Plate 2), age-10 fish in 2009 (Plate 3), and age-11 fish in 2010 (Plate 4) Maximum ages were 24 years for males and 27 years for females, though only a few fish exceeded age 15 (Figure 4; Plate 5). Younger fish in the angler creels were consistently dominated by males, as evidenced by average age by sex per year.

*Length-at age, weight-at age, and growth* -- Grand Lake paddlefish showed distinct sexual size dimorphism. Both length and weight at age were higher for females than males for

fish age-8 and older (Figures 5 a, b). Two-parameter equations suggested that growth of males and females was similar up to age 5, when males began maturing and growing more slowly than females (Figure 5b).

*Maturation and gonadal energy storage* – The importance of gonadal storage and its pattern of usage has been identified (Scarnecchia et al. 2007) based on data collected over the period 2008-2013; published data from 2008-2010 (Scarnecchia et al. 2011) summarize the pattern. In all years, nearly all of the males and females brought to the PRC for processing have been sexually mature; only a few of the youngest males and females have been immature. For aggregate catches in 2008-2010, gonadosomatic index (GSI: gonad weight/fish weight) for males increased from 0.6 to 1.3% of body weight from ages 4 to 8, remained at about 1.3% of body weight for ages 8-10, and then decreased (Figure 6). Fish had attached to their gonads discrete clumps of fat called gonadal fat bodies (GFBs). For GFB weight as a percentage of fish weight, mean and median values for males fluctuated mostly from 2.5 to 3.5% of fish weight for fish aged 5-16, peaking at ages 8-10 (Figure 7). The ratio of GFB weight/testes weight was highest for the youngest recruited fish (ages 4 and 5, most of which were immature), but in the range of 2.5:1 to 3.5:1 for ages 6-14 (Figure 8). A few of the oldest fish with undeveloped testes had larger GFBs (Figure 8).

For females, GSI was about 15% or less of body weight before age-10 and increased to a peak of nearly 24% at ages 12 to 16 (Figure 6). Results from 2011-2012 indicate that age-12 and age-13 females have high GSIs and almost no GFBs, consistent with them being prime-spawning females. The maturity of females was clearly seen from the presence of black eggs, pre-ovulated in nearly all fish but ovulated and spawned out in a few fish later in the fishing season. For females, average GFB weight/fish weight ratios peaked at the youngest ages (i.e., for immature fish before age-8) and declined steadily following maturation (Figure 7). The ratio of GFB weight/egg weight for females also peaked at age 9 and declined as the fish aged (Figure 8).

*The strong 1999 year class* - The strength of the 1999 year class was evident from its early contribution to the net catches in 2004 and fishery contributions in 2008-2013. The year class was strong in 2004 (as age-5 fish netted in the reservoir in 2004, but not yet in recruits to the river fisheries of 2004) and dominant through its continuing contributions in 2008 (age-9 fish), 2009 (age-10 fish) and 2010 (age-11 fish; Figure 4). The cause of this strong year class is not known. However, the 1999 year class was produced in a year of high river flows in spring

(Figure 9) and high reservoir levels (Figure 10).

*Life history stages* -- Results from 2004 and 2008-2010 (published in Scarnecchia et al. 2011) provide insight into the life history of the Grand Lake stock in terms of the five stages of the Acipenseriform life history framework outlined in Scarnecchia et al. (2007).

- *Stage 1 (Immature)* -- After fish spawn in riverine habitat in spring (exact locations unknown), young fish hatch and move down into Grand Lake for a rearing period of several years (the immature period).
- *Stage 2 (maturing)* – Growth of males and females appears to remain similar until about age 5, when most males initiate the sexual maturation process (Figure 5b). Most males are mature at age 6 or 7. Most females initiate maturation at ages 6-7 and complete maturation at ages 8 or 9 (Figure 5b). By ages 6 and 7, male growth has slowed substantially, whereas growth of females continues at a higher rate until 2-3 year later, when their maturation process also results in a slower growth rate. By this time, females are larger in length and weight than males of the same cohort (Figure 5b).

Samples collected near Gray's Ranch in the upper reservoir in 2004 were a mixture of immature and mature fish as indicated by their age structure (Figure 4). Numerous age-5 males (1999 year class) and a lower proportion of age-5 females were found in this sample. In contrast, the sample of fish of unknown sex in 2004 from the creel survey in the river consisted primarily of mature fish. Age-5 fish were not dominant in this sample because most of that year class was immature and fish were mostly still in the reservoir and not migrating upriver to spawn.

- *Stage 3 (somatic growth and reproduction)* – During this period, somatic growth continues (Figure 6 a, b) but an increasing proportion of energy is routed into reproduction. GSI is increasing (males; ages 5-8; Figure 6); females ages 8-12; Figure 6). GFBs for males are stable but in females begin to decrease between age-10 and age-11 (Figures 7, 8). Upon sexual maturation, they migrate upriver to spawn. The periodicity of migrations is currently being studied by ODWC with telemetry and analyses of band returns.
- *Stage 4 (prime reproduction)* - As of 2012, male fish of the 1999 year class of the Grand

Lake stock were in the period of prime reproduction as described in Scarnecchia et al. (2007). By age-12, age structure, GSI (maximized) and GFB (minimized) values indicate that the period of prime reproduction for females had been reached. (Figure 11a,b). This period of prime reproduction of paddlefish exists for only about five years (ages 12-16; Scarnecchia et al. 2011).

- *Stage 5 (senescence to death)* - Survival of fish after age 15 is low. Of fish assessed for age in 2008-2012, only 507 (2.7%) were found to be older than age 15 and only 26 fish (<1%) older than age 20. For the few female fish exceeding age-15, energy reserves are depleted (Figure 8). After age 16, GSI decreases slightly (Figure 6), GFBs are nearly depleted (Figure 7) and the number of living fish declines greatly (Figure 4). The near absence of older fish may be a result of a combination of fishing mortality and natural mortality. These results along with GFB depletion are consistent with the lifespan of the Grand Lake fish typically not exceeding 20 years.

*Life history summary* -- Overall, the life history pattern (including trends in growth rate, GSI and GFBs as individual fish age) for the Grand Lake stock (Scarnecchia et al. 2011) is consistent with that outlined by Scarnecchia et al. (2007) for the Yellowstone-Sakakawea stock of eastern Montana and western North Dakota. The duration of the life history stages and total lifespans differs greatly, however. In the Grand Lake stock, the period of prime reproduction occurs at about ages 7-13 for males and 12-16 for females; in the Yellowstone-Sakakawea stock, prime reproduction occurs at an older age and over a longer period, at ages 15-25 for males and ages 25-40 for females (Scarnecchia et al. 2007). GSI values for Grand Lake stock males and females rise and fall over a period of no more than twenty years, whereas the same pattern for the Yellowstone-Sakakawea stock occurs over 40-50 years (Figure 12). For GFBs, Grand Lake stock males show a decline from ages 10-15 (the range where sample sizes were adequate to assess; Figure 7) that is similar to declines shown for the Yellowstone-Sakakawea stock from ages 13 to 40 (Figure 13). GFBs for Grand Lake stock females show the same pattern of depletion from ages 6-11 as in the Yellowstone-Sakakawea stock from about ages 18-45 (Figure 13). In the Yellowstone-Sakakawea stock, the five paddlefish life history stages outlined in Scarnecchia et al. (2007) are protracted over a period of 40-50 years (and occasionally longer) whereas in the Grand Lake stock the same five stages of the lifespan are compressed into a period of 15-20 years.

The more compressed individual life stages and shorter overall lifespan of the Grand

Lake stock is also consistent with the pattern hypothesized in Scarnecchia et al. (2007) as well as with observations of later age at maturity and longer paddlefish lifespans in northern latitudes than in more southerly latitudes (Russell 1986; Paukert and Fisher 2001). In Grand Lake, metabolic demands of the fish are high as the fish spend much of the year at warmer water temperatures than more northerly stocks (Figure 14, 15). The result is a shortened lifespan compared to more northerly stocks (Scarnecchia et al. 2011).

*Management implications* – Several key results from Scarnecchia et al. (2011) provided previously unknown insight into the Grand Lake paddlefish. First, the fisheries that occur during the time of the operation of the PRC harvest nearly all sexually mature fish. This result is similar to what is found for the Yellowstone-Sakakawea paddlefish stock during their May-June seasons (Scarnecchia et al. 2008). This makes the focus of harvest management almost strictly on mature fish, which differs from many other fisheries on resident fish where harvest of immature fish is a continuing problem.

Second, harvest management for the Grand Lake stock must be designed to deal with highly variable or episodic recruitment. In 2004, the strong 1999 year class could be easily seen in the gillnet sampling as large numbers of age-5, mostly male fish (Figure 4). As early as 2010, there was some indication that age-6 males were beginning to recruit to the fishery (Figure 4; Plate 6), but as of 2013 no high peak in numbers of young fish has matched that of the 1999 year class, suggesting that recruitment from years 2000-2008 did not compare with that from 1999 (ODWC, Unpublished Data). Data from ODWC netting through 2013 corroborates that the 1999 year class is much stronger than year classes of several succeeding years. Given the short lifespan (typically <20 years) of these fish at this latitude, to sustain current harvest rates significant recruitment of new year-classes must occur within the next 3-4 years. Annual harvest of the strong 1999 year class must be apportioned out until another strong year class is produced.

These recruitment concerns for the Grand Lake stock would be less immediate if the stock had a much longer prime reproductive lifespan as in the Yellowstone-Sakakawea stock. In that stock, recruited fish can be counted on for harvest and spawning stock for two or more decades as long as harvest rates are kept low (Scarnecchia et al. 2007). A longer natural lifespan allows for more deliberation in setting harvest regulations. Fish not caught in a given year will generally be available within the next two or three years and often for many years thereafter. In the Grand Lake stock, higher natural mortality of fish after age-15 suggests that less benefit will

result from delaying harvest. Optimal harvest management strategies will thus be different for paddlefish stocks in the northern and southern latitudes, and even for harvest management units within Oklahoma depending on their patterns of recruitment.

The much less extreme differences in age at recruitment between the sexes for the Grand Lake stock (2-3 years; Figure 4) compared to the Yellowstone-Sakakawea stock of the northern Plains (7-10 years; Scarnecchia et al. 2007) has major significance for run-size forecasting. For run-size forecasting of females of a brood year to a river fishery based on male recruits (Scarnecchia et al. 2008), the Yellowstone-Sakakawea stock gives managers a 7-10 year lead time; for the Grand Lake stock, managers have only a 2-3 year lead time. This difference requires a more rapidly responsive harvest management of the Grand Lake stock. The ability to identify year class strength before the harvest age is thus especially important in Oklahoma.

As of 2010, the comparatively small fish in the Grand Lake stock relative to the Yellowstone-Sakakawea stock results in less sexual size dimorphism (Figure 17), and provides less incentive to high-grade to larger (typically female) fish (for flesh or angler status). Whereas high-grading to larger females is prohibited by regulation for Yellowstone-Sakakawea stock fish, such a regulation may be less critical for the Grand Lake stock.

From analysis of the data, it is predicted that over the period from 2011-2015 the strong 1999 year class (Figure 4) will rapidly decline in numbers and by 2015 will experience very high natural mortality as most fish that are not harvested will have lived out their natural lifespans. Future monitoring of the strong 1999 year class in the next decade will clarify if this conclusion is accurate and how much the near absence of older fish (>15 years) is a result of harvest. Several studies at mid-latitudes of the paddlefish's range have reported what they believed to be truncated age distributions associated with high harvest rates (Watts Bar Reservoir, Tennessee: Alexander et al. 1985; Kentucky Lake: Huffnagle and Timmons 1989, Timmons and Hughbanks 2000). Such harvest may exacerbate the natural life history compression of southern stocks.

Results of Scarnecchia et al. (2011) confirm the small size and slow growth of fish in the Grand Lake stock, compared to historical sizes documented by Ambler (1987) and for other Oklahoma paddlefish (Houser and Bross 1959). As of 2010, few fish of either sex exceeded 25 kg. An assessment of the very limited historical records from Grand Lake indicates that fish in past years have often reached weights twice that of the typical fish caught in 2008-2010. It is not yet known whether the fish caught in 2008-2010 are small because of changes in specific

environmental factors or some density dependent growth, perhaps associated with the very strong year class in 1999 (Figure 4). The role of density in affecting size and maturation period of Grand Lake stock paddlefish will be clarified in future years as more data on growth rates and stock size become available. The abundance of non-native Asian carps, which have entered Grand Lake (3-6 individuals are snagged each spring and reported to ODWC), also deserves monitoring because of potential competitive effects on paddlefish food supply (Schrank et al. 2003).

Overall, results of paddlefish sampling conducted at the PRC in 2008-2012 strongly show the values of intensive data collection for stock assessment. The results also emphasize the need for comparable sampling protocols to be developed in Oklahoma's other paddlefish fisheries for comparisons among harvest management units statewide, regionally, and nationally.

## **Section 4. Paddlefish Management Plan**

This Management Plan for Oklahoma's paddlefish embodies a philosophy, expressed as fundamental hypotheses, as well as goals, objectives and tasks. The management plan also describes how goals and objectives will be achieved through actions involving habitat management, fish sampling and monitoring, fish stock assessments, a harvest model, and implementation.

### **4.1 Philosophy and fundamental hypotheses**

Ten fundamental hypotheses guide the development and direction of this plan. These fundamental hypotheses are philosophical statements and rationales motivated by human values and strongly supported by scientific evidence from studies on paddlefish and other species, both within Oklahoma and elsewhere. The fundamental hypotheses are useful in setting specific goals, objectives, and actions.

***1. The paddlefish is an irreplaceable species of historical, recreational, commercial, and aesthetic significance in Oklahoma and throughout the Mississippi and Missouri river drainages.***

The North American paddlefish, a remnant of an ancient lineage, is one of only two living paddlefish species (Grande and Bemis 1991) and one of North America's oldest vertebrate animals. The distinctiveness of paddlefish and its use as a food fish was recognized by several early North American explorers and travelers (Rostlund 1951; Tenney and Power 1992), including Fernando de Soto (Bond 1937), Jacques Marquette, Pierre Esprit Radisson (Adams 1961), Father Louis Hennepin, Zebulon Pike (Coues 1895) and James Atkinson (Atkinson 1864), as well as by early scientists (Alexander 1914; McKinley 1984).

Paddlefish demonstrate highly distinctive anatomical features (Miller 2004) such as their long, blade-like rostrum (Thompson 1934) and gill rakers (Imms 1904). The species possesses distinctive physiological features such as their electrosensory system (Kistler 1906; Nachtrieb 1906; Russell et al. 1999; Wilkins 2001; Wilkins et al. 2002). Behavioral traits such as ram ventilation (Burggren and Bemis 1992; Sanderson et al. 1994), extensive migrations (Russell 1986; Firehammer and Scarnecchia 2006), and foraging methods (Fredericks 1994; Kozfkay and Scarnecchia 2002) are adaptive to their complex large river environments.

The species is also a good indicator of habitat quality in large river systems. Their requirements for preferences for successful spawning include a natural or quasi-natural hydrograph, turbidity, and thermal regimes characteristic of un-impounded or lightly to moderately altered large rivers (Jennings and Zigler 2000). Modifications of large river habitats are responsible for the decline of the species in most locations (Sparrowe 1986), and the presence of a healthy, wild-spawning paddlefish population capable of supporting a fishery is typically associated with high-quality large-river habitat.

Paddlefish stocks have declined in many locations throughout their range, and reproduction of paddlefish is poor in most locations. Habitat in nearly all other portions of the paddlefish's range is in poorer condition than in Oklahoma. Maintenance of the health of Oklahoma stocks may be critical to the long-term survival of the species. The primary emphasis should thus be on sustaining these stocks, allowing a sustainable harvest when possible.

***2. Maintaining natural habitat conditions and numbers of wild fish adequate to sustain natural reproduction, growth and survival are critical to the long-term survival of the species.***

Emphasis should be on managing the harvest and maintaining and improving habitat of wild fish. Hatchery production should be used selectively in Oklahoma, most properly in areas where natural spawning is clearly no longer a viable option. Nationally, an emphasis on artificial production occurs in locations where most habitat has been badly degraded or lost (e.g., Missouri: Graham 1988, 1992; South Dakota: Unkenholz 1977; Texas: Pitman 1992). Because inadequate spawning success is a serious problem for paddlefish populations throughout their range, long-term species survival depends on natural hydrographs, turbidity, and other aspects of water and habitat quality. Habitat conditions in the relatively free-flowing, relatively unmodified Neosho River and Spring Rivers are especially important. Effectiveness of natural spawning in other locations (e.g., above Kaw Reservoir) is poorly known. River flows of adequate quantity, of natural timing and duration, with natural levels of turbidity, and without major contaminants are the best insurance for paddlefish perpetuation. Production of hatchery-reared paddlefish should be used only as a last resort, either to provide a fishery where suitable spawning habitat no longer exists, or to supplement wild fish production during extended periods of poor reproduction and sustained recruitment failure (Scarnecchia et al. 2008). Hatchery production should complement or supplement natural reproduction and recruitment, not replace or supplant them. Any stocking of hatchery fish should follow MICRA stocking and genetics guidelines, be coordinated among the agencies and adequately justified and thoroughly evaluated. With effective habitat management and harvest management, hatchery production may be unnecessary.

***3. Benefits from the paddlefish resource should accrue to the entire public, rather than to just a few individuals or groups.***

This philosophy is rooted in concepts of managing for the public trust (Nielsen 1999). The more people that benefit directly and indirectly from the public resource, the more broad-based will be the support for sustainable management. Recreational harvest opportunities as well as benefits of the caviar program should accrue to a broad spectrum of the public rather than to a few individuals. It also avoids a problem commonly arising when a few people become critically

dependent economically on a species or a fishery. This philosophy is consistent with Oklahoma's emphasis on a recreational fishery (Gordon 2009).

Similarly, agencies charged with providing sustainable management for the public trust must obtain sufficient funds for management. Those funds should come from the public at large and the users of the resource. In this case, funds generated from the sale of caviar roe and licenses should be allocated to management agencies in amounts sufficient to allow the agencies to fulfill obligations to the public trust.

***4. Sustainable recreational harvest and non-harvest fishing opportunities are desirable at the level appropriate within the productive capacity of the stocks.***

Paddlefish recreational harvest is a popular sport in several states (Combs 1986; Graham 1997; Hansen and Paukert 2009). A sustainable paddlefish recreational fishery can be useful in sustaining or increasing interest in the species by anglers and the public-at-large. Studies of paddlefish snag anglers indicate that although the harvesting of fish is not the primary motivation for participating in paddlefishing, the ability to harvest at least one fish is an important part of the experience for most anglers (Scarnecchia et al. 1996a; 2000). The sustainable harvest itself becomes a measure of success. As a partial compensation for limiting harvest, opportunities for catch-and-release fishing should be provided in situations where its implementation is not detrimental to the stock (Scarnecchia and Stewart 1997a). This philosophy is consistent with ODWC's mandatory catch and release fishing on Mondays and Fridays that was implemented in 2010.

***5. The management plan for harvest and habitat should lead to sustainability of the resource and be matched to the life history of the species.***

The cornerstone of the management plan is long-term sustainability. The fish has evolved a life history strategy characterized by a lifespan of 15-20 years, late age-at-maturity, and in some cases non-annual spawning (Scarnecchia et al. 2007). When natural mortality allows it, the harvest strategy should be designed to allow the persistence of fish of multiple spawning ages (Francis et al. 2007).

***6. High-quality data is critical to stock assessment and sustainable management; fish harvest should be a key source of necessary data.***

Because paddlefish sampling is expensive and time-consuming, it is far preferable that the fisheries themselves provide most of the data necessary for management (Williams 1977). The data collected should meet the short term and long-term management needs. The PRC concept functions well to meet many (although not all) of the data needs and should be the cornerstone of data acquisition for stock assessments.

***7. Goals, objectives, and actions, including management regulations and monitoring, should be as uniform as practicable among the stocks but remain sensitive to stock-specific and location-specific fisheries constraints and conditions.***

Harvest regulations that are similar and equitable among adjacent areas and states will result in less social conflict. Similarly, if harvest management data collected are uniform and consistent within and among stocks, comparative analyses within and between data sets may provide valuable information for management. Special circumstances may make it necessary, however, to set special regulations or obtain specialized information for optimal management of a particular stock or harvest management unit.

***8. A thorough knowledge of the stock-recruitment relationship and factors affecting year class strength should be high priorities for stock assessment.***

The uniqueness, high value, and irreplaceability of the paddlefish resource calls for cautiously regulating the harvest to sustain stocks until the ecology, stock-recruitment relations, and productive capacity of the stocks are thoroughly understood. Inadequate natural recruitment is a pervasive problem in declining paddlefish populations. Although factors such as higher river discharge and reservoir levels have been associated with greater recruitment of year classes in Oklahoma (Scarnecchia 2008; ODWC unpublished data) and elsewhere (Montana-North Dakota; Scarnecchia et al. 2009), the factors affecting year class strength and resulting in then observed

very strong year classes remain poorly understood. Spawning of paddlefish in their turbid spawning habitats, which has seldom been observed (Purkett 1961) may proceed much more effectively with large numbers of spawners. Young paddlefish, which are known to be highly vulnerable to predation (Parke and Scarnecchia 2002), may survive at a much higher rate in larger numbers than in smaller numbers, depending on the nature of the predation. Although paddlefish ecology is much better understood than a decade ago (Fredericks 1994, Kozfkay and Scarnecchia 2002; Scarnecchia et al. 2007), critical information, such as the stock recruitment relationship, is lacking. Until knowledge improves, it is unwise to implement a harvest strategy that will deplete stock sizes. An adequate understanding of the stock-recruitment relationship necessitates an ecosystem-based understanding of the paddlefish, i.e., an understanding of not only the internal dynamics of the stock itself but an understanding of the relationship of paddlefish to physico-chemical aspects of habitat, predators, prey, competitors, and a wide range of potential influences on the species (Francis et al. 2007).

***9. The plan for Oklahoma paddlefish stocks and harvest management units need not be consistent with, but should not be detrimental to, broader (regional or national) paddlefish conservation and management goals and activities. The plan should strive for consistency with other in-state and tri-state regional fisheries management plans, including those for paddlefish.***

Although paddlefish management is not yet adequately coordinated among all states, actions of MICRA have considerably improved coordination and communication among agencies. The Oklahoma Management plan should be consistent with, and wherever possible reconciled with, other management efforts of the adjacent states of Kansas, Missouri, Arkansas and Texas.

***10. Evaluation, regulation, enforcement, information, and education are keys to the success of the plan and should be assessed annually for effectiveness.***

Central to the success of fisheries management plans are adequate evaluation of implemented actions, adequate translation of recommendations into regulations, and adequate enforcement of regulations. Actions implemented to improve a fish stock or its habitat must be evaluated afterward for the success or failure of the action. Similarly, recommendations

designed to maintain or improve stock status must be translated into regulations, and the implemented regulations must be actively enforced.

Public education and information exchange are also central to the success of this plan. Public acceptance and compliance with regulations are a result of effective communication by managers of the rationals for those regulations. Similarly, public receptiveness to conservation efforts will be more positive if they are provided clearly presented, accurate information on the value and significance of the paddlefish and the management efforts undertaken on its behalf. Close, day-to-day communication and interaction with the public regarding the paddlefish and the management plan are critical to the success of the plan and the long-term survival of the species. This effort requires on-site presence by management and monitoring personnel during major fishing activities.

## **4.2 Goals, objectives, and actions**

The eight goals (GOAL) of the management plan indicate statements of desirable directions or progress consistent with the 10 fundamental hypotheses. The outcome of a goal is not necessarily a specific endpoint, but is often improved knowledge or management capabilities. Setting specific endpoints for long-term goals for continually changing ecological and social systems such as the paddlefish fisheries may result in too rigid of a management structure.

The objectives (OBJ) of the plan are statements of planned results to be achieved over a specified period, in this case from 2013 to 2017. These objectives are more precise than goals, have endpoints, and are specifically measurable for success or failure. The objectives are associated with specific actions (tasks) to be implemented.

**GOAL 1. Provide a basis for cooperative, coordinated management of Oklahoma paddlefish in consultation with the appropriate federal agencies and Native American Tribes.**

*OBJ 1.1 Coordinate among relevant interested parties before, during, and after the season.*

The list of relevant parties will change over time and will be reviewed annually. Technical coordination meetings should be held before the fishing season and after the fishing season to review management and monitoring issues and present stock assessment and research results. An agenda will be prepared and distributed before the meeting. Meeting minutes will be prepared. Other *ad hoc* meetings and impromptu sessions will occur as needed, and as opportunities arise at various other meetings within the region.

A standard mailing list and e-mail list will be established for working group management personnel on paddlefish and caviar-related matters. In addition to ODWC, invitees may include representatives of federal, other Oklahoma state, other state, and non-governmental organization representatives.

*OBJ 1.2 Provide in-season harvest estimates to managers for use in evaluating season status.*

During fishing seasons, ODWC managers will receive updated information from the PRC on total number of fish cleaned, trends in effort, flow projections, harvest projections and any other information needed for assessing the progress of the fishery. Updates will be forwarded to central and regional offices.

*OBJ 1.3 Consult with federal and tribal biologists for information exchange and data acquisition.*

Contacts with federal and tribal biologists will be established and information will be exchanged on the fisheries where involvement by agencies occurs.

*OBJ. 1.4 Prepare a report on the past year's fishing seasons and current stock status, with recommended actions.*

A summary of stock status will be prepared and distributed annually describing stock size, stock age structure, recent recruitment, and recent harvest, so that adjustments in the acceptable harvest can be made when necessary. This report will be completed and distributed after completion of dentary and other data analysis from the previous year, and will include results of those activities.

*OBJ 1.5 Periodically attend MICRA, CITES, and downriver Missouri River fisheries and paddlefish and sturgeon workgroups for management and enforcement information exchange.*

Periodic attendance at selected meetings by workgroup personnel will be useful for information exchange and cooperation both within the group and between the group and other management entities. Annual participation in these entities is recommended.

**GOAL 2. Provide for an orderly, equitable, and sustainable recreational fishery for paddlefish and a harvest consistent with the productive capacity of the stocks. This goal should include similar regulations between in-state harvest areas and between states, to the extent possible.**

*OBJ 2.1. Develop age-structured harvest model for estimating stock status and allowable annual harvest.*

A key aspect of the Oklahoma Paddlefish plan is obtaining high quality fisheries data for stock assessment. Information on length, weight, and sex will be collected from a high fraction of the harvested fish at the PRC (Plate 7). In areas without a roe donation program, check stations or creel surveys will be a preferred method to collect data for stock assessment. Data collected from harvested fish needs to include catch date, catch location, paddlefish permit number, body length (front of eye to fork of caudal fin), weight, age (from removal of dentary-- both sides), sex, maturation stage, and adult tag recoveries (jaw bands, coded-wire tags, or PIT

tags). Gonadal weight (Plate 8) and gonadal fat bodies (GFBs) will also be weighed if possible and related to condition, age, and number of spawns. Information on year class strength, mortality rates, harvest rates, and other statistics should be estimated separately by sex and with sexes combined. Additional creel data such as fishing success rate and other more extensive human dimensions survey data can be collected at the PRC and other creel sites. The PRC and creel surveys also serve as public contact points for information and education activities.

Jaws will be aged using established methods (Scarnecchia et al. 2006) to obtain a reliable estimate of stock composition by age and sex (Plate 9). The result of this sampling will be a minimally biased indication of the size and age structure of the mature, harvestable-sized segment of the population. Because males may typically mature before females, it will also allow the use of young males as an early warning system for recruitment of females of those brood years. If used properly, the use of early-recruited males to forecast subsequent recruitment of females (based on an initial 50-50 sex ratio) of the corresponding year classes is a valuable tool for setting harvest limits. In combination with total harvest information and population estimates, estimated recruitment can be used to set a total allowable catch (TAC) to maintain, increase, or decrease the population size. Age structured population modeling, including virtual population analysis will be used to estimate stock size and recruitment trends; harvest will be set for sustainability.

Use of the age structure model requires a comprehensive and accurate age data collection program. Age determination and adult banding programs will be continued. Paddlefish are difficult to age based strictly on length or weight (Scarnecchia et al. 2007). Recruitment will be estimated annually based on catches (and younger ages if possible) and used to provide a recommended harvest cap to maintain population size.

*OBJ 2.2. Develop methods of forecasting reproductive and recruitment success.*

In-reservoir sampling should be conducted to obtain information on annual reproductive success in the form of an annual index. The key methods in northern populations are the use of standard surface visual counts and standard trawl catches. In Lake Sakakawea, North Dakota, age-0 paddlefish can be assessed for relative abundance by visual counts of fish at the surface in August (Scarnecchia et al. 1997, 2009; Kozfkay and Scarnecchia 2002). This approach has been investigated in the upper portions of Oklahoma reservoirs and slackwater areas of rivers such as

the Neosho R. below Miami (Plate 10). The same approach may have some application to age-1 fish as well. If young paddlefish can be counted, they will also be able to be caught and implanted with coded-wire tags for later recovery in harvest fisheries. The recoveries can be used for assessing hatchery versus wild contributions to fisheries as well as for age validation for dentaries.

This visual count approach has been unsuccessful as of 2011, but no strong year classes have been identified as resulting from these brood years. It is not clear if this lack of success indicates that the method is not feasible (e.g., the fish are not near the surface to be counted) or that actual recruitment is very low. The young fish may be deep in the water column; future efforts will center on evaluating likely seasonal depths of age-0 fish

A second method that has shown promise in indexing year class strengths of age-0 paddlefish outside of Oklahoma has been the use of trawls (Fredericks and Scarnecchia 1997; Wrasse 2009). This method is more injurious to age-0 fish, but may provide an estimate of relative abundance in areas where surface counts are ineffective. This method was investigated in Oklahoma in May 2012. Though more than 200 trawls were deployed in the Spring and Neosho rivers, Grand Lake, and Pensacola Dam tailwaters, no paddlefish were encountered.

A third method of capture for age-0 paddlefish (larvae) via ichthyoplankton tows was implemented in Spring 2012. Replicated samples from subsurface conical ichthyoplankton nets (64µm mesh) deployed via rope from bridges on the Neosho and Spring rivers yielded a total >80 larval paddlefish. This method was originally performed with brief success by Combs (1982), and procedures were modeled after those efforts. As the methods were successfully verified in 2012, a permanent collection protocol was developed for the Neosho and Spring rivers.

A fourth method of capture for age-0 paddlefish has been demonstrated by US FWS personnel in Columbia, MO. Paupier nets were developed and implemented for capture of invasive carp species in the Missouri River. Incidental catch included age-0 paddlefish in Desoto Lake. Interagency cooperation in deploying Paupier nets in Grand Lake was utilized in October 2012 with limited success. Only one fish was captured (462 mm, 1.36 kg) and the sampling depth for the gear was likely inadequate to encounter juvenile paddlefish.

In the indexing of year class strength, it has proven most worthwhile to sample for age-0 fish when they are between 125 and 300 mm FL because reproductive success appears to be more

reliably assessed at that size than from larval fish. Sampling of older, larger immature (pre-recruited) fish has proven difficult and labor-intensive, except in rare instances where age-1 fish can be sampled effectively (Scarnecchia et al. 2008).

Forecasting and characterizing success or failure of reproduction and recruitment are critically important for effective management. Data will be analyzed to assess the role of river discharge, upper reservoir turbidity, and reservoir water levels on reproductive success and recruitment. Collection sites for age-0 fish will depend on reservoir levels but will target the type of habitat typically used by age-0 fish, which may include deeper strata in the water column. In addition to counts, data collected will include water depth, Secchi depth, turbidity, and surface zooplankton abundance and taxonomic composition.

All fish captured will be measured and a sub-sample weighed. All immature fish will be implanted with coded-wire tags before being released. Stomach samples will be taken as needed to evaluate food habits. A comprehensive database for all juvenile fish catches will be maintained and updated annually.

Paddlefish caught at angling sites will be sampled yearly for estimates of catch, effort, size, age, and sex so that the age structure of the population can be characterized. Estimates of catch and effort will be obtained from the PRC, on-site creel surveys, and phone surveys. The Young Male Recruit Index will be a function of the age-specific catch of young males at various sites, the fishing effort, and the flow, season length, and other factors known to affect the catch

Fish at the PRC will also be sampled for the presence of coded-wire tags. Recoveries of coded-wire tagged fish will permit the validation of the dentaries for age determination of progressively older paddlefish (Scarnecchia et al. 2006). Mortality rates will also be estimated.

In addition to the development of the early warning indices, other possible signs of over-harvest (such as changes in sex ratios) will also be monitored.

### *OBJ 2.3. Develop and refine population estimates.*

Population estimates will be obtained via reservoir sampling and banding of adult fish in winter, typically before the active fishing season. Nets will be standardized (tandem sets

summing 600' in length x 30' [tied down to 24'] x 6" bar mesh monofilament) and set for short duration (typically less than 8 hours) to avoid excessive stress and mortality of fish. A target of 800 newly banded fish per year is planned because the precision of population estimates increases with a higher proportion of marked individuals in the population. Captured fish will be tallied, measured, weighed, and banded with metal (monel) individually-numbered jaw bands. Previously banded fish will be recorded. Effort will be estimated as net-hours. A comprehensive data set will be developed of fish banded and recaptured.

Statewide standardized netting methods will be coordinated by PRC personnel and consist of the following: minimum of 16 net-efforts per reservoir in late fall / winter when water temperatures are ideally  $\leq 10$  °C. Sampling at this time is preferred to contact fish pre-staging when they are presumably distributed throughout the reservoir. Netting sites are chosen at random among all possible waypoints at 0.5 mi intervals along the inundated channel (plus major tributaries) where waters exceed 30' in depth. Nets are suspended 6' below the surface by a minimum of seven buoys to allow for boat traffic over the net. Nets are deployed in pairs perpendicular to the inundated channel at 0700 hrs and retrieved at 1500 hrs. Throughout the soak time, nets are checked periodically and fish removed. All captured fish are measured for body length in mm, weighted in kg, noted for injuries or deformities, and jaw banded. Sex is assigned by external examination. Fish < 800 mm for which sex cannot be determined are noted as Juvenile while fish  $\geq 800$  mm are noted as Unknown.

Population estimates for all stocks will be based on both single and multiple mark recapture methods. Various assumptions of both methods are either violated or only partially met. Important sources of potential bias for the single mark-recapture method in use are 1) the banded fish are not a representative sample of the actual recruited population, 2) the creel fish are not a representative sample of the actual recruited population, 3) the rate of jaw band loss (or removal) is unknown<sup>6</sup>. Existing data on size and sex ratios of banded and creel fish will be analyzed in an effort to determine the extent of banding and recapture bias, and how to adjust for it in population estimates. Effort will be put into estimating the total adult stock size based on two approaches: 1) the use of the single season estimates and estimates of reproductive periodicity

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<sup>6</sup> New for 2012-13 paddlefish netting season, locking bands were utilized (National Band and Tag model #1242FL7B) and engraved with "DO NOT REMOVE" and "REPORT HARVEST". These protocol modifications were in attempt to reduce band removal from released fish and to increase the reporting rate.

and 2) multiple mark-recapture estimates over more than one season. Results from these two approaches and their confidence intervals will be compared.

In addition to more traditional mark-recapture population estimates, if funds are available, the use of side scan sonar and acoustic methods (Hale et al. 2003) will be reviewed and evaluated for assessing the number of paddlefish in the river and reservoir, respectively. Lowrance® side-scanning equipment has been acquired in 2012 and these methods will be evaluated.

*OBJ 2.4 Develop estimates of harvest and harvest rates in all areas.*

Harvest rates on adult fish will be based on recapture rates of jaw banded fish. Coded-wire tagging (CWT) of all hatchery-reared young-of-the-year fish and all wild young-of-the-year fish caught (if the methodology can be adequately developed) will in time result in a significant number of tagged fish being recovered at cleaning stations. By having hand-held (CWT) tag detectors at primary angling sites, a high percentage of tagged fish will be detected, which will provide estimates of survival rates as well as relative survival of hatchery-reared and wild fish.

*OBJ 2.5 Estimate natural mortality rates for each stock*

Estimation of natural mortality rates (here defined to include all non-harvest mortality) is important for the harvest model. A higher than expected natural mortality would necessitate a compensatory drop in allowable harvest for a given recruitment. Natural mortality includes deaths from physiological failure, losses from ghost fishing mortality (e.g. fish killed in lost gill nets or fish not landed but entangled or ensnared with fishing line around brush and thereby killed), and mortality from being hit by boat propellers (Rosen and Hales 1980). Although evidence from the northern plains suggests that snagging mortality is low if fish are handled properly (Scarnecchia and Stewart 1997a), observations indicate that mishandling of fish near their gills when boating them, especially larger female fish, can result in injury to the fish.

Two basic approaches will be used to estimate this mortality. The first approach will involve use of the existing database on age structure and adult band recoveries to estimate non-

harvest losses. Catch curves will be developed and compared with harvest estimates from band recoveries to separate out harvest from non-harvest mortality.

The second approach involves monitoring of losses of paddlefish from information collected from the PRC on boat propeller scars and other damage to paddlefish attributed to human activities (Rosen and Hales 1980).

*OBJ 2.6 Provide controlled snag-and-release opportunities for paddlefish.*

The implementation of the snag-and-release fishery for paddlefish was based on evidence that cautious implementation of a monitored fishery would result in more fishing opportunity with minimal additional mortality (Scarnecchia and Stewart 1997a). More effort will be expended to evaluate and monitor the catch-and release fishery, including delineation of fishing areas and times, the extent of usage, optimal hook sizes for catchability and fish survival (and possible regulation changes), and jaw banding and band recovery activities.

A research project was performed in spring 2013 to investigate mortality rates and movements of fish snagged and released by anglers. Twenty adult paddlefish were snagged by anglers in the Neosho River and upper Grand Lake before external attachment of an ultrasonic transmitter. Angler handling times and details were observed and recorded and movements were tracked post-release. Results of this project will be reported in 2014. Education on the proper way to handle and release fish will also be expanded via word of mouth, department print publication, audio visual (television and website), and social media.

*OBJ 2.7 Formulate uniform regulations among fishing areas and adjacent states wherever possible.*

Each year at coordination meetings, current and proposed regulations will be discussed and their effectiveness assessed. Efforts will be made to develop uniform in-state and out-of-state regulations that will not only facilitate compliance from snag anglers but will also make it possible to use the data collected as one large, consistent database. Efforts at uniformity will be balanced against distinct, state-specific aspects of each fishery. Emphasis will be placed on inter-

jurisdictional fisheries with Kansas, Arkansas and Texas. Primary coordination will involve participation in MICRA.

**GOAL 3. Develop and maintain a standardized database for stock assessment and yield forecasting.**

*OBJ 3.1 Improve the data collection system by emulating the existing paddlefish data collection, databases and banding systems at Grand Lake and in Montana and North Dakota.*

All sampling of catches will be conducted to insure uniformity and compatibility of data collection.

*OBJ. 3.2 Obtain reliable harvest data from all fisheries for Oklahoma stocks, including those also harvested in Kansas, Arkansas, and Texas*

Efforts will be made to encourage neighboring jurisdictions to collaborate in data collection where the need exists. Management and data collection should be coordinated and compatible among all fisheries in the state (e.g. Red River with Texas, Arkansas River with Arkansas, and Neosho River with Kansas) with the appropriate fisheries agencies and for stocks crossing jurisdictional (state and tribal) boundaries.

*OBJ 3.3 Establish and maintain a centralized database.*

A centralized database will be developed incorporating all past and current data, including any data from other states on Oklahoma stocks. This database will be updated annually and error-checked continuously during the year as analyses proceed.

**GOAL 4. Maintain and enhance existing paddlefish habitat and obtain additional information to better define and provide for paddlefish habitat requirements.**

*OBJ 4.1. Review annually the existing federal and state laws and rules for relevance to maintaining or enhancing paddlefish habitat for all life stages, including river flows, water quality, physical habitat, and reservoir levels.*

Habitat protection, a cornerstone of this plan, will involve consultation and coordination with agencies such as the U. S. Army Corps of Engineers, Grand River Dam Authority and other water authorities, and other agencies and groups affecting water quantity and quality for paddlefish. Important aspects of paddlefish habitat in need of protection are adequate spawning flows and turbidity, free river passage for migratory fish, spawning gravel, water quality, and reservoir levels (Sparrowe 1986). Any new and existing habitat information will be used to protect all aspects of paddlefish habitat. Because of the importance and complexity of habitat issues, a second document will be prepared with more details of habitat issues outlined in Appendix 1.

*OBJ. 4.2 -- Use existing data to identify and define critical habitat needs and requirements for paddlefish at all life stages.*

Existing indices of stock reproductive success and year class strength will be compared with river discharge, river turbidities, and reservoir levels to assess the relations among these variables.

**GOAL 5. Conduct research necessary for successful long-term management.**

*OBJ 5. 1 Assess the historical pattern and status of hydrographs for Neosho River, Spring River, Arkansas River, Red River in relation to paddlefish spawning and year class strength.*

The relation of river flows to spawning success and subsequent year class strength is not adequately understood. A need exists to assess the historical hydrograph of the Neosho River, Spring River, and other rivers with special reference to paddlefish reproductive success.

Discharge from U. S. Geological Survey stations will be analyzed, along with discharges and other water quality data from state agencies.

*OBJ 5.2. Assess the impacts of adult and juvenile downstream passage at dams.*

Little is known about movements of juvenile and adult paddlefish past dams under different water conditions. Catches of banded fish will be monitored through creel surveys and agency collections for recovery of banded fish moving downriver past projects. Results will be entered into the adult banding database. Furthermore, injuries potentially attributed to dam passage (e.g. rostrum amputation) will be recorded whenever encountered and interpreted in context.

*OBJ 5.3. Assess the impacts of John Redmond spring releases on migration timing and spawning success of adult paddlefish and year class strength of juvenile paddlefish.*

Releases of water from John Redmond Dam in Kansas have the potential to draw migrating paddlefish up the Neosho River during the spring spawning period. The historic releases from John Redmond will be analyzed in relation to historic catches at Chetopa as well the timing and absolute and relative catches (beginning in 2008) in the Neosho and Spring Rivers.

*OBJ. 5.4 Assess the potential effects of Tar Creek water and contaminants on paddlefish in Grand Lake.*

ODWC will meet with agencies and tribes conducting work on the Tar Creek site and discuss research and monitoring needs and cooperative efforts.

*OBJ. 5.5 Assess the effects of projected climate change, reservoir aging, draw-downs, and refilling and exotic species on paddlefish reproductive success, growth, and survival.*

A thorough understanding is needed of the effects of water level fluctuations and accompanying habitat changes on paddlefish growth, survival, and year-class strength (Scarnecchia et al. 2007). It is necessary to continue monitoring the ecology of age-0 fish in the reservoir so that factors influencing survival, growth, and year class strength are clarified. Factors include turbidity on the reservoir by area and zooplankton abundance and distribution. Exotic species such as bighead carp and the introduction of Zebra mussels may also affect future abundance of paddlefish and are probable topics for future research.

*OBJ. 5.6 Investigate factors affecting paddlefish reproductive success.*

*Rivers-* It is important to identify and characterize spawning areas, and to determine if such areas are used for spawning year-to-year or if spawning sites change yearly. Habitat requirements for paddlefish eggs and larvae are also poorly understood. Sampling of spawners' eggs, and larval fish at key locations are needed to improve understanding of paddlefish spawning and early life history.

Paddlefish tend to spawn during periods of high river turbidity as well as high flows (Scarnecchia et al. 2009). The importance of turbidity is unknown, but it may facilitate spawning or decrease predation on larval paddlefish drifting in the rivers before reaching the reservoirs. If so, turbidity may be an important component of paddlefish habitat for spawning and early life history. Maintenance of adequate flows in sediment-laden tributaries (e. g., the Neosho River) may be important for maintenance of paddlefish spawning and early rearing habitat.

Paddlefish require a minimum temperature of 12.7-15.5 °C (55-60 °F) for spawning (Russell 1986), but actual spawning temperatures in Oklahoma are not thoroughly evaluated. Year class strengths will be related to annual thermal regimes as well as discharges. Continuous recording thermographs will continue to be placed at key river locations during the migration and spawning periods.

*Reservoirs-* Little is known about movements of yearling and older fish in the reservoir. Investigations will be designed to assess movements of acoustic tagged yearling and older fish. It

will also be possible to relate the habitat use of older paddlefish in the reservoir to habitat factors. The use of archival tags will be investigated to provide insight into preferred habitat conditions in the reservoir. Information gained will be related to turbidity, zooplankton abundance, distribution and abundance of predators, habitat variability, and reservoir aging. In particular, little is known about the relationships among paddlefish and fish predators.

*OBJ 5.7 Periodically review and discuss new literature on paddlefish and sturgeon with working group for relevance to management.*

Selective relevant papers will be routed among members of the group for incorporation into the management and stock assessment framework.

*OBJ 5.8 Assess contaminant concentrations in paddlefish flesh and roe.*

An analysis of the concentrations of a wide range of contaminants in paddlefish flesh and roe will be conducted and compared with acceptable levels. This work will be coordinated with the Oklahoma Department of Environmental Quality and evaluated in relation to potential Tar Creek impacts. Samples will be collected for analysis during creel surveys at fishing sites and cleaning stations.

*OBJ. 5.9 Periodically attend MICRA, other Mississippi-Missouri River fisheries and paddlefish and sturgeon workgroups, and international meetings for research information exchange.*

Research progress at other localities should be monitored for application to the stocks in Oklahoma. This work will be monitored through MICRA, International Union for the Conservation of Nature, Sturgeon Specialist Group, the Sturgeon Society (which includes the paddlefish) , and other key meetings.

**GOAL 6. Integrate and define the role of artificial propagation and stocking in the successful long-term management.**

*OBJ 6.1 Articulate specific rationales for stocking*

The ecological rationale for any proposed stocking will be clearly articulated. If possible, the method of significant larval fish capture, which has showed promise and recent success for Lake Roosevelt white sturgeon *Acipenser transmontanus* culture should be investigated yearly for feasibility in any stocking programs. Although such sampling may not prove feasible for paddlefish, success with that approach (i.e. rearing wild-caught larvae to stocking size) would eliminate the need for handling adult broodstock and reduce problems of lack of genetic diversity.

*OBJ 6.2 Evaluate the success of experimental hatchery releases into Oklahoma reservoirs and John Redmond Reservoir.*

Oklahoma waters have been stocked with paddlefish from Tishomingo hatchery since 1991 (Table 8). Harvested fish will be screened for the presence of coded-wire tags, and all tags will be extracted and interpreted for brood year information. In addition, tagging of all young paddlefish sampled in the wild as well as all hatchery paddlefish released will provide fish of known age for age validation. Dentaries will be removed from harvested, tagged fish and the age determined. Survival rates of hatchery-reared fish will be compared with those of wild fish.

For hatchery fish, comparisons will also be made where possible of the importance of the size and time of release. A valid question is: how well will hatchery-reared recruits spawn? The reproductive state of hatchery-reared fish will be documented, especially the presence of sexually mature and spawned-out females, which might be present. An important concern regarding hatchery fish is the need for adequate genetic diversity.

It may be desirable for the genetics of hatchery-reared recruits to be compared with that of wild fish as an indicator of comparative genetic diversity. Future rearing may be planned to utilize both wild and hatchery-reared parents as treatment groups to evaluate relative reproductive success to adulthood of fish from hatchery-reared parents versus those of wild parents.

A cooperative genetic diversity research project on paddlefish in Grand Lake is currently underway with the assistance of Oklahoma State University. Year-class level investigations pertaining to effective parental contributions are investigated in context to year class strength (particularly that of 1999). Utilization of genetic markers for delineation of independent management units should be developed to aid in harvest management and before considering stock augmentation with hatchery releases.

*OBJ 6.3 Review status of paddlefish aquaculture from production and stock enhancement perspectives.*

Although the emphasis of paddlefish management in this plan is not on hatchery fish, the status and progress of in-state and out-of-state hatchery programs and their results will be monitored. The current in-state hatchery program is modest. If declines in wild stocks make it necessary, ODWC and partners will evaluate the benefits and costs of a larger hatchery program.

Additional experimental releases may be conducted in the next five years to test specific hypotheses regarding hatchery-reared fish, such as movements, survival, and age validation of dentaries

A period of low recruitment may suggest the need for supplemental stocking. Specific policies, along with rationales and criteria will be developed for stocking jointly by ODWC and cooperators.

In addition, the relation between any paddlefish stocking program and other stocking programs for other species will be evaluated. Because young paddlefish are highly vulnerable to predation from piscivorous species (Parken and Scarnecchia 2002) and may suffer from competition from other species, the effects of expanding stocking programs for other game species in other adjacent states (especially upriver in Kansas) needs to be considered with regard to potential effects on young hatchery-reared and wild paddlefish.

**GOAL 7. Increase public awareness of the paddlefish and its habitat requirements.**

*OBJ 7.1 Increase public information activities on paddlefish through an organized information program of information displays, brochures, popular articles, and presentations.*

Information and education are important components of the Management Plan.

The PRC and post-season phone and mail surveys will serve as important components of public information and education. Paddlefish snag anglers can also be contacted by phone, mail, and at cleaning sites. These actions are also intended to improve public perception of the paddlefish. Information and education activities will include information displays, brochures, media presentations, scientific presentations, and social media participation.

Paddlefish information brochures, free to the public, will be updated periodically describing not only basic ecological information on paddlefish, but also new research findings and rationales for current harvest regulations. Also, a combination paddlefish cookbook/information brochure, free to the public and popular with anglers, may be developed.

Articles on paddlefish management and research will be prepared and published in popular outlets. Short television information segments will be produced and presented periodically as needed.

Oral presentations on paddlefish management and research findings will be presented at meetings of regional organizations whose members are interested in paddlefish conservation. Social media (e.g. Facebook, YouTube) may also be used strategically.

*OBJ 7.2 Publish peer-reviewed scientific publications of research and management efforts for the scientific community.*

Scientific peer review of published research results and management efforts is considered an important part of the plan. Scientific findings will be presented at professional meetings and, most importantly, published in peer-reviewed scientific journals to assist in the verification of the reliability of results and approaches. Results may be synthesized into one or more peer-reviewed books.

**GOAL 8. Incorporate public acceptance and compliance with the regulatory framework established for long-term management.**

*OBJ. 8.1 Assess values, attitudes, and preferences of paddlefish snag anglers through the use of angler surveys.*

Information is needed on the values, attitudes, and preferences of snag anglers and the public at large toward paddlefish. Mail surveys of paddlefish anglers were conducted in 2008-2012 (Crews 2009, 2010, 2011). Additional needs will be addressed through mail surveys developed with input from ODWC fisheries staff and human dimensions specialists. Results of those surveys will be used to assist in formulating management policies and regulations.

*OBJ. 8.2 Use creel, phone, and mail surveys to obtain input on catch, effort, and specific management actions.*

Phone creel and/or mail creel surveys will be used to assess angler catch, effort, and fishing site usage. Surveys will be as uniform and consistent as possible between states and among years, which will permit comparisons to be made and trends identified.

*OBJ 8.3 Obtain reviews of regulation recommendations from enforcement and enforceability standpoints.*

Current regulations as well as proposed regulation changes will be evaluated by enforcement personnel for feasibility and enforceability. Enforcement issues and concerns will be incorporated into the management framework.

*OBJ 8.4 Maintain open dialog and cooperation with the roe donation programs in other states within the broader goal of sustainable paddlefish management.*

Contacts will be established with other state agencies involved with roe donation programs for information exchange. Joint meetings should also be planned at regular intervals, perhaps in conjunction with (although not necessarily linked to) MICRA meetings.

## **Section 5. Specific Management Options and Alternatives**

Overall, the establishment of appropriate regulations for sustainable fisheries for paddlefish and other Acipenseriform species (sturgeons) has been largely unsuccessful. History has shown that as challenging as it can sometimes be to harvest fish and produce caviar, it is even more complex and challenging to manage the stocks sustainably. There are some positive exceptions, however (paddlefish: South Dakota and Nebraska; Mestl and Sorensen 2009; Montana and North Dakota (Scarnecchia et al. 2008); lake sturgeon *Acipenser fulvescens*, Bruch 1999).

The setting of appropriate regulations must consider a range of biological, social economic and political factors, a complex process made even more difficult for highly valued species such as the paddlefish. Any regulations must be formulated with the understanding that they must evolve in response to changing conditions and that anglers in turn will respond to regulations in ways that must be anticipated by the manager.

Although recreational paddlefish regulations in Oklahoma have necessarily become increasingly restrictive in recent years, they remain more liberal than in nearly all other states. In addition, the PRC can induce additional harvest as anglers are freed from the necessity of cleaning their own paddlefish. If the fisheries expand and number of anglers increases, it is highly likely that additional regulatory actions will be needed to insure sustainability of Oklahoma's paddlefish.

Formulation of optimal regulations for a sustainable fishery is an important part of the overall Paddlefish Management Plan (Goal 8). Several questions should be addressed, such as where to allow fishing (specific locations, area closures, etc.), when to allow fishing (season duration, day or night), sizes of fish to harvest, how many fish to harvest (total catch cap), and how the catch is allocated among anglers (bag limits). Any well-crafted fishing regulations will, as a minimum, have considered these factors from biological, economic, social, and political perspectives using biological data (Scarnecchia et al. 2011) and socioeconomic data (Crews 2009,

2010).

***Question 1: Where to fish?***

***a. How many fisheries?***

Paddlefish are caught in numerous localities in Oklahoma from many recently isolated populations of fish (Crews 2009, 2010). Some of them may rely mostly on hatchery stocking (e.g., Eufaula Lake), some have been reestablished from earlier stockings (e.g., Kaw, Oologah), although definitive studies of fish origins have not been completed.

***Recommendation: Consider how many fisheries should be developed and actively managed and the ecological and social criteria for those decisions. Identify the areas that should be open to fishing.***

***b. Should the fishery be open in all areas (river and reservoir) or be restricted to rivers?***

Data from 2008 through 2011 indicate that nearly all of the fish brought to the PRC over the March through May harvest period are sexually mature. Most immature fish are caught early in the season (March or before) and in the reservoir. Although the capture of mature fish may be interpreted by some as undesirable, if managed properly, such a fishery can benefit the stock by avoiding harvesting young immature fish before they have had a chance to spawn.

After high mortality as age-0 fish, and perhaps on smaller age-1 fish, mortality of paddlefish is generally low until they recruit to the fishery. Studies in several localities nationwide have shown that once fish begin sexual maturation, growth slows and remains slow throughout the remainder of their life (Scarnecchia et al. 2007; 2011). In Oklahoma, mortality of paddlefish once they mature is higher than for more northerly paddlefish stocks because of the higher metabolic demand (Scarnecchia et al. 2011).

The main rationale for considering harvesting immature fish would be if immature fish were suffering high natural mortality. This has not been shown to occur. Secondly, if evidence of serious density-dependent growth was present, reducing the stock may improve

growth rates. Density-dependent growth in the 1999 Grand Lake year class may be suggested, but it has not yet been proven. Other productivity issues in Grand Lake may limit paddlefish population growth rates.

An in-river harvest strategy targeting mature fish would allow some fish to reach the older ages that are an evolved life history strategy of the species. This approach does not mean that all mature fish should be harvested. Harvest rates need to be set so that despite some harvest of mature fish, successful reproduction and recruitment occur annually under suitable habitat conditions.

An important advantage of this in-river harvest approach is that the immature fish serve as a buffer against any sudden stock collapse. The manager can detect reproductive and recruitment failure, if it occurs, by age-0 and age-1 indices of abundance, as well as by the presence or absence of young, mature male recruits to the fishery. With the immature fish in the reservoir as a buffer and the source of near-term recruitment, management has time to respond, and can concentrate on maintaining the age structure of the mature component of the stock for a sustainable fishery.

In contrast, an overharvest of both mature and immature fishes is much more likely to result in sudden stock collapse. Such overharvest must be avoided. Not all areas of the migratory corridors need to be open to harvest. A well-known staging area may be closed to prevent excessive harvest (e.g., Graham 1988), protect spawners or prevent excessive boat traffic and resulting mortalities as a result of fish being hit by propellers (as observed in North Dakota, Unpublished Data). Others have also recommended that harvest in reservoirs and sub-impoundments not be allowed to provide a refuge for the recruitment of spawning fish (Boone and Timmons 1995)

***Recommendation: Consider targeting mature fish and carefully regulating their harvest to provide adequate spawning escapement.***

***Alternative conservation harvest location 1.:*** Legal harvest in the Neosho and Spring Rivers; no fishing in reservoir (below Twin Bridges State Park).

***Alternative conservation harvest location 2.:*** Legal harvest in the Neosho River and only

the upper two miles of reservoir (i.e. two miles below Twin Bridges State Park).

***Question 2. When to fish?***

***a. Should the fishery for paddlefish be open all year, or should it be restricted seasonally?***

The most important fishing months at Grand Lake are April, March and May, respectively, which account for the majority of total annual harvest (Crews 2009, 2010). There are several benefits to not allowing an open fishery all year. First, a season limitation greatly facilitates enforcement, allowing it to be more focused at peak harvest times. It also becomes easier to detect illegal activity in other months. The limited season also provides an advantage to the harvest manager, who can focus creel and sampling efforts during the season, obtain data from a higher proportion of fish, and obtain much stronger data necessary for stock assessment. Little or no data are available for fish harvest in the off season. During summer, paddlefish caught by anglers can also be greatly stressed by handling that would cause few if any problems if they were caught in the cooler weather months (e.g. March and April).

The most effective approach in most localities has been to restrict the fishery to the peak migration periods, which for the Grand Lake/Neosho River harvest management unit would be approximately mid-March through mid-May (Figure 16). This approach would also allow ODWC biologists to net, band and release pre-spawners in the lakes and rivers prior to the harvest season, providing much better estimates of population size (fewer violations of assumptions of the method) as bands are recovered soon afterward in the fishery.

***Recommendation: Consider moving from an open fishery to a seasonally-closed fishery.***

***Alternative conservation season 1: March 15 through May 15***

***Alternative conservation season 2: March 1 through May 20.***

***Alternative conservation season 3: March 1 through April 30.***

***Due to the differential timing of spawning activities in different management units, seasons for individual reservoirs may be considered.***

***b. Should night fishing be restricted?***

Based on experience in Montana and North Dakota, most illegal releasing and high-grading occurs at night and in isolated locations, so neither Montana or North Dakota allow paddlefish snagging at night. Some areas such as the Park at Miami may have active night fisheries but are also amenable to effective enforcement.

***Recommendation: Night fishing may be acceptable where social factors argue for it or where effective enforcement is feasible. Recommend to the appropriate authorities to restrict in other areas.***

***Question 3: How many fish should anglers be allowed to catch? Should the harvest be managed on a permit/daily catch system or a paddlefish tag system?***

As of 2012, Grand Lake/Neosho River paddlefish harvest is based on a permit system and a daily catch limit. Individual anglers can potentially catch large numbers of fish if fishing remains good for long periods. Although mean harvest of fish was 1.5 – 2.5 fish per angler per year (2008 – 2011), some anglers harvested several times this number. It is not clear whether high numbers of a large fish such as a paddlefish can be effectively utilized by individual anglers.

If the need to regulate the harvest increases, a per-angler tag system should be considered. There are many advantages of an efficient tag system. With a tag system, in addition to a valid license, each angler would have to obtain or purchase a paddlefish tag for each fish harvested, much like a big game tag. Each tag has a unique number (bar code) on one side traceable to the angler, and the agency and/or fishing area, as well as the year, on the other side. Tags are permanently locking and typically applied at the fleshy base of the dorsal fin immediately after the fish is retained. Each person catching and tagging his/her fish is required to hook and land his/her own fish, and tag switching among anglers is not permitted.

Each harvested fish is associated with a unique barcode that identifies that fish, including all data available for it, into the harvest database and correlated to the angler's fishing license. The tag allows enforcement to ascertain, in most cases, if the fish is legally caught through digital

reference to licensing and harvest databases. The tags also work well after fish are cleaned. It can be required that cleaned fish have the fin with tag attached to the meat on a legally-caught fish. For enforcement and information exchange, the tag can also be conveniently matched with the angler via data collected by the license vendors.

The allowable harvest per angler can be closely monitored by issuing a fixed number of tags per person per year through license vendors. The number of tags issued per angler can be one, two, three, five or more per region or water body, or statewide, depending on the paddlefish stock status. Different colored tags can apply to different harvest management units. Crews (2009, 2010) identified several such harvest management units in the surveys.

Costs of tags can be low or high, and can differ between residents and non-residents. In addition to the number of tags issued, the cost of tags deserves consideration. High costs can discourage harvest, whereas, little or no cost will have the opposite effect. Free tags will induce people to get a tag even if their chances of fishing are low, as seen in the 2008-2009 surveys (Crews 2009).

***Recommendation: Review the tag systems of various states for effectiveness and consider its implementation or appropriate adaptation for use in Oklahoma.***

***Question 4. Which fish should be harvested? Should there be mandatory retention or no mandatory retention (immediate high grading)?*** High grading will generally result in the largest fish being retained; most of the largest fish will be females (Scarnecchia et al. 2007; 2011). High-grading will often result in popular fishing spots being dominated for long periods by those fishermen high-grading, to the exclusion of fishing by others. High-grading must be immediate to be justifiable; observations suggest that delayed release can result in significant mortality, especially in warmer weather, even if the fish is not tied up through the gills. Observations of catch-and-release fishing in North Dakota and Montana suggest that injury to fish can result if fish are hauled onto shore or into a boat by the gills, as is often done for the largest fish. Mandatory retention in a snag fishery, if enforced, results in the fishery itself providing highly useful information on size and age structure of the stock, whereas high-grading results in a biased sample of fish harvested.

As long as differences between the size of males and females are small, high grading may be acceptable and mandatory retention may not be necessary. Differences between males and females for Grand Lake paddlefish are less than for more northerly stocks, so high grading would be expected to be less of a problem there than in other areas (Figure 17; Scarnecchia et al. 2011). In waters where typical recruited females are about three times larger than males, it may be necessary to have either mandatory retention (keep everything), or mandatory catch-and-release (C-R). In no cases should “delayed” high-grading of moribund fish be permitted. Releasing any fish in warmer weather constitutes a higher risk than in colder weather months.

Some evidence of high-grading has been demonstrated in Grand Lake. Based on noted external condition at capture in nets 2010-2011, males were more likely to be encountered with hook scars than females (Yates-corrected Chi-square homogeneity test,  $X^2_{Yates} = 24.105$  df=1 p<0.0001). Therefore, a paddlefish angler in Oklahoma is more likely to release a male fish than a female fish, a result expected in a sexually size-dimorphic species.

It is also possible to have mandatory retention during specific times or days and mandatory catch-and-release at other times. Oklahoma currently has mandatory catch-and-release on Monday and Friday. Montana has C-R in Sunday, Monday and Thursday during their six week season. North Dakota has C-R in Sunday, Monday and Tuesday during their one month season.

If Oklahoma adopts any mandatory retention regulations for other harvest management units, effective enforcement of the mandatory retention restriction is critical. Fines for violators should be significant. If necessary, fisheries should be avoided in areas where enforcement is difficult or impossible in favor of the numerous areas where enforcement is feasible.

***Recommendation: Review rationale for high grading for Grand Lake stock, and implement only if biological and social factors suggest it as the optimal action. At this time, the rationale for Grand Lake seems weak (Scarnecchia et al. 2011), especially for fish caught in mid-march through mid-May. Other stocks should be assessed on a case-by-case basis.***

***Question 5. Are there any additional restrictions necessary related to boat fishing versus shore fishing?***

From the harvest management perspective, a sexually-mature, legally caught paddlefish can be taken by boat or from shore, and both are generally acceptable unless other concerns exist. Some of these concerns might be a) excessive mortality of paddlefish from being hit by boat propellers (Rosen and Hales 1980), b) a need to provide sanctuaries for pre-spawn fish from being harassed by boats, c) a scattering of fishermen that makes enforcement difficult or impossible, d) shore/boat angler conflicts, and e) the ability of boats with sonar to target females in deep holding areas (where females often stage) to an excessive degree. If one or more of these concerns are valid, shore angling may be a preferable alternative. Data from the Grand Lake fishery suggests that many out-of-state anglers prefer boat fishing while a majority of resident anglers fish from shore.

As of 2013 Oklahoma Fishing Regulations, snag angling with seven rods simultaneously (each with a single hook) is legal. Logically, a bank angler cannot effectively utilize more than one rod at a time but a trolling snag angler can utilize multiple rods. Multiple rods per angler on boats can potentially result in numerous violations of related regulations pertaining to culling, bag limits, and multiple hooks in one fish, among others. Furthermore, trolling with multiple rods allows for extreme targeting of pre-spawn fish staging in known locations. A regulation change limiting snag fishing to one rod (with one hook) per angler (for both bank and boat anglers) has been approved for 2014.

***Recommendations: Review locations for boat/ shore angler conflicts and recommend conflict-avoiding regulations if and where needed.***

***Question 6. Should there be a harvest cap on annual paddlefish harvest?***

Harvest caps for paddlefish are not targets but are designed to prevent excessive harvest of paddlefish in any one year. This may occur if water conditions concentrate fish where they can be easily harvested for extended periods. The outcome of stock assessment should be the ability to establish a biologically-based harvest cap needed for sustainability. Once the acceptable harvest is known, a direct harvest cap can be set, or other combinations of fishing regulations can indirectly be used to adjust harvest efficiency, thereby avoiding instituting a harvest cap. Although harvest caps give great control over stock status to managers, one negative outcome is often a rush by anglers to catch their allowed fish before season closure.

***Recommendation: Review harvest cap concept and collect data necessary for possible implementation.***

***Question 7. How should this Management Plan and its activities be coordinated?***

Effective coordination of research, stock assessment and management activities statewide is considered important to the success of the Management Plan. A committee is needed to provide decision makers with specific recommendations regarding these activities. The Committee should meet twice a year (once in late winter/early spring<sup>7</sup> and again in fall<sup>8</sup>). The Committee should consist of, but not be necessarily limited to, the ODWC paddlefish research/program coordinator, the ODWC paddlefish biologist(s), the head of ODWC's research Lab, the ODWC Assistant Chief and/or Chief of Fisheries, an ODWC enforcement representative, a U.S. Fish and Wildlife Service representative from Tishomingo Hatchery, and a university representative. Additional participation by adjacent states or tribes may be invited to the committee as needs arise with inter-jurisdictional implications.

***Recommendation: An ad hoc paddlefish advisory committee composed of relevant representatives of ODWC and selected cooperative agencies will be established to review and advise pertinent paddlefish issues and research endeavors in Oklahoma.***

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<sup>7</sup> Prior to opening of the PRC.

<sup>8</sup> After all harvest data and survey results are accumulated and analyzed.

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## Tables

Table 1. Commercial paddlefish harvest reported from Grand Lake, 1975-92

| Year | No. harvested | Flesh sold (lbs) | Caviar sold (lbs) |
|------|---------------|------------------|-------------------|
| 1975 | 287           | 3,443            |                   |
| 1976 | 242           | 5,375            |                   |
| 1977 | 857           | 18,956           |                   |
| 1978 | 1,238         | 13,189           |                   |
| 1979 | 431           | 10,682           |                   |
| 1980 | 191           | 5,613            |                   |
| 1981 | Closed        |                  |                   |
| 1982 | 713           | 17,106           | 701               |
| 1983 | 1,936         | 43,617           | 2,233             |
| 1984 | 1,730         | 47,594           | 4,188             |
| 1985 | 1,566         | 42,957           | 3,638             |
| 1986 | 1,628         | 32,693           | 2,969             |
| 1987 |               | 17,507           | 625               |
| 1988 | 308           | 5,429            |                   |
| 1989 | 596           | 10,609           | 20                |
| 1990 | 3,946         | 72,561           | 109               |
| 1991 | 2,412         | 47,892           | 250               |
| 1992 | Closed        |                  |                   |

Table 2. Historical paddlefish recreational fishery regulations for the state of Oklahoma to 2011. Details of current (2013) regulations are listed in Section 3.2.

| Year        | Regulations   |
|-------------|---|
| Before 1981 | Daily bag limit of five, catch and release allowed.   |
| 1982        | Daily bag limit of three, catch and release allowed   |
| 1992        | Daily bag limit of three, catch and release not allowed*  |
| 1995        | March 15 - May 15 daily bag limit of three, catch and release not allowed*<br>May 16 - March 15 Daily limit of one  |
| 2003        | Daily bag limit of one, catch and release allowed, barbless hooks only  |
| 2010        | Mandatory catch and release days Monday and Fridays. For harvest days, daily bag limit 1 fish per angler. Spring River was closed to paddlefish harvest all year. |

\*Catch and release allowed for anglers fishing with trot lines and throw lines

Table 3. Paddlefish angling pressure (hours), number harvested, and mean catch per hour (CPUE) on the Neosho River at Miami River Park and the Neosho River, 1979-2005. Modified from Gordon (2009).

|          | Miami Park - bank angling only<br>Pressure (No. Harvested) [CPUE] | Neosho River – bank and boat<br>Pressure (No. Harvested) [CPUE] |
|----------|---|---|
| 1979     |   |   |
| Weekdays | 20,670 (2,495) [0.121]  |   |
| Weekends | 13,985 (1,379) [0.099]  |   |
| Total    | 34,675 (3,874) [0.112]  |   |
| 1980     |   |   |
| Weekdays | 13,611 (1,663) [0.122]  |   |
| Weekends | 7,556 (478) [0.063]   |   |
| Total    | 21,167 (2,141) [0.101]  |   |
| 1986     |   |   |
| Weekdays | 1,632 (95) [0.058]  |   |
| Weekends | 3,906 (262) [0.067]   |   |
| Total    | 5,538 (357) [0.064]   |   |
| 1992     |   |   |
| Weekdays | 3,449 (1,723) [0.500]   | 7,351 (1,732) [0.236]   |
| Weekends | 2,843 (1,912) [0.673]   | 9,932 (2,349) [0.237]   |
| Total    | 6,292 (3,635) [0.578]   | 17,284 (4,080) [0.236]  |
| 1993     |   |   |
| Weekdays | 10,842 (2,968) [0.274]  | 5,187 (553) [0.107]   |
| Weekends | 2,880 (240) [0.083]   | 16,077 (964) [0.060]  |
| Total    | 13,722 (3,208) [0.234]  | 21,264 (1,517) [0.071]  |
| 2003     |   |   |
| Weekdays | 5,882 (33) [0.006]  | 479 (11) [0.023]  |
| Weekends | 0   | 4,620 (68) [0.015]  |
| Total    | 5,882 (33) [0.006]  | 5,099 (79) [0.015]  |
| 2004     |   |   |
| Weekdays | 709 (6) [0.008]   | 11,723 (4) [<0.001]   |
| Weekends | 256 (19) [0.074]  | 8,320 (145) [0.017]   |
| Total    | 965 (25) [0.026]  | 20,043 (149) [0.007]  |
| 2005     |   |   |
| Weekdays |   | 2,816 (173) [0.061]   |
| Weekends |   | 2,830 (143) [0.051]   |
| Total    |   | 5,646 (316) [0.054]   |

Table 4. Paddlefish angling pressure, harvest, and catch rate totals, 1979-2005.

| Year and location             | Pressure<br>(hours) | Number<br>harvested | Catch per<br>hour |
|-------------------------------|---------------------|---------------------|-------------------|
| 1979 Miami                    | 34,674              | 3,874               | 0.112             |
| 1980 Miami                    | 21,167              | 2,141               | 0.101             |
| 1986 Miami                    | 5,538               | 357                 | 0.064             |
| 1992 Miami/Neosho             | 23,576              | 7,715               | 0.327             |
| 1993 Miami/Neosho             | 37,986              | 4,725               | 0.064             |
| 2003 Miami/Neosho/Grand       | 26,410              | 2,932               | 0.273             |
| 2004 Miami/Neosho/Grand       | 31,066              | 2,696               | 0.110             |
| 2005 Upper/Lower Grand/Neosho | 5,646               | 316                 | 0.252             |

Table 5. Sport angling paddlefish rates of exploitation by year in the Neosho River and Grand Lake, Oklahoma 1979-2004. Data from 2005 are from the Grand River/Ft. Gibson Reservoir

| Year Marked | Year Harvested | No. Marked Fish Available for Harvest | No. Recaptures | Exploitation Rate (%) |
|-------------|----------------|---------------------------------------|----------------|-----------------------|
| 1979        | 1979           | 362                                   | 55             | 15.2                  |
| 1980        | 1980           | 208                                   | 39             | 18.8                  |
| 1985 & 1986 | 1986           | 1,324                                 | 46             | 0.2                   |
| 1991        | 1991           | 1,254                                 | 15             | 1.2                   |
| 1992        | 1992           | 506                                   | 2              | 0.4                   |
| 1993        | 1993           | 543                                   | 0              | 0.0                   |
| 2003        | 2003           | 1,553                                 | 37             | 2.4                   |
| 2004        | 2004           | 1,535                                 | 31             | 2.0                   |
| 2005        | 2005           | 1,011                                 | 25             | 2.5                   |

Table 6. Numbers of paddlefish aged annually by Oklahoma Department of Wildlife Conservation demonstrating the prevalence of one year class (1999) within the wild adult population and percent of aged specimens in parentheses.

| Year              | # Aged | > 1999<br>"Younger" | 1999          | <1999<br>"Older" |
|-------------------|--------|---------------------|---------------|------------------|
| 2004              | 147    | 7 (0.05)            | 53 (0.36)     | 87 (0.59)        |
| 2008              | 4,073  | 205 (0.05)          | 2,928 (0.72)  | 940 (0.23)       |
| 2009 <sup>9</sup> | 2,428  | 410 (0.17)          | 1,741 (0.72)  | 277 (0.11)       |
| 2010              | 3,945  | 256 (0.06)          | 3,195 (0.81)  | 474 (0.12)       |
| 2011              | 4,561  | 423 (0.09)          | 3,756 (0.82)  | 382 (0.08)       |
| 2012              | 3,922  | 335 (0.09)          | 3,158 (0.80)  | 429 (0.11)       |
| Total             | 19,076 | 1,636 (0.09)        | 14,831 (0.78) | 2,589 (0.13)     |

<sup>9</sup> An inflated number of fish aged in 2009 were from the 2000 cohort, possibly indicating inaccuracies in aging this year.

Table 7. Average ages of paddlefish by sex as determined by Oklahoma Department of Wildlife Conservation demonstrating the prevalence of one year class (1999) within the wild adult population.

| Year               | Males               |             | Females             |             |
|--------------------|---------------------|-------------|---------------------|-------------|
|                    | Average age (range) | 1999 Cohort | Average age (range) | 1999 Cohort |
| 2004 <sup>10</sup> | 6.4 (4-18)          | 0.620       | 7.9 (4-19)          | 0.380       |
| 2008               | 9.1 (3-15)          | 0.806       | 10.1 (8-27)         | 0.597       |
| 2009               | 9.8 (5-21)          | 0.680       | 10.2 (5-18)         | 0.780       |
| 2010               | 10.9 (5-21)         | 0.835       | 11.5 (5-21)         | 0.770       |
| 2011               | 11.6 (3-24)         | 0.797       | 12.2 (4-25)         | 0.851       |
| 2012               | 12.6 (4-24)         | 0.809       | 13.3 (5-25)         | 0.800       |

<sup>10</sup> Table excludes age data from 55 fish of unknown sex.

Table 8. Oklahoma paddlefish stocking, 1991-2012, from U.S. Fish and Wildlife Service Tishomingo National Fish Hatchery.

| Stocking Year | Cohort | No. released | Mean Body Length | Stocking Location |
|---------------|--------|--------------|------------------|-------------------|
| 1991          | 1991   | 2,440        | 10"              | Kaw Lake          |
| 1992          | 1992   | 6,850        | 10"              | Kaw Lake          |
| 1993          | 1993   | 13,145       | 10"              | Kaw Lake          |
| 1994          | 1994   | 5,840        | 11"              | Kaw Lake          |
| 1995          | 1995   | 5,675        | 12.6"            | Oologah Lake      |
| 1996          | 1996   | 0            |                  |                   |
| 1997          | 1997   | 3,833        | 12"              | Oologah Lake      |
| 1998          | 1998   | 3,173        | 14 – 18"         | Oologah Lake      |
| 1999          | 1999   | 3,247        | 11"              | Oologah Lake      |
|               | 1999   | 3,227        | 12"              | Lake Texoma       |
| 2000          | 2000   | 290          | 12"              | Oologah Lake      |
|               | 2000   | 7,148        | 12"              | Lake Texoma       |
| 2001          | 2001   | 770          | 12"              | Lake Texoma       |
| 2002          | 2002   | 22,500       | 12"              | Lake Texoma       |
| 2003          | 2003   | 4,500        | 12"              | Lake Texoma       |
| 2004          | 2004   | 24,464       | 12"              | Lake Texoma       |
|               | 2004   | 1,867        | 10"              | John Redmond      |
| 2005          | 2005   | 30,478       | 12"              | Lake Texoma       |
|               | 2005   | 5,970        | 10"              | John Redmond      |
| 2006          | 2006   | 20,631       | 12"              | Lake Texoma       |
|               | 2006   | NA           | NA               | John Redmond      |
| 2007          | 2007   | 1,028        | 17"              | Eufaula Lake      |
|               | 2007   | 2,028        | 17"              | Lake Texoma       |
| 2008          | 2008   | 4,296        | 12"              | Eufaula Lake      |
|               | 2008   | 3,000        | 11"              | John Redmond      |
|               | 2008   | 2,000        | 12"              | Grand Lake        |
| 2009          | 2009   | 36,056       | 12"              | Lake Eufaula      |
|               | 2009   | 5,007        | 10"              | John Redmond      |

|      |      |        |     |              |
|------|------|--------|-----|--------------|
|      | 2009 | 2,025  | 12" | Grand Lake   |
| 2010 | 2010 | 15,548 | 12" | Lake Eufaula |
|      | 2010 | 1,493  | 18" | Lake Eufaula |
|      | 2010 | 4,130  | 10" | John Redmond |
|      | 2010 | 2,000  | 12" | Grand Lake   |
| 2011 | 2010 | 47     | 24" | Lake Eufaula |
|      | 2011 | 8,669  | 13" | Lake Eufaula |
|      | 2011 | 490    | 19" | Lake Eufaula |
|      | 2011 | 2,000  | 10" | John Redmond |
|      | 2011 | 505    | 15" | Grand Lake   |
| 2012 | 2012 | 42,012 | 12" | Lake Eufaula |
|      | 2012 | 900    | 15" | Grand Lake   |
| 2013 | 2013 | TBD    |     | Lake Eufaula |
|      | 2013 | TBD    |     | John Redmond |
|      | 2013 | TBD    |     | Grand Lake   |

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## Figures

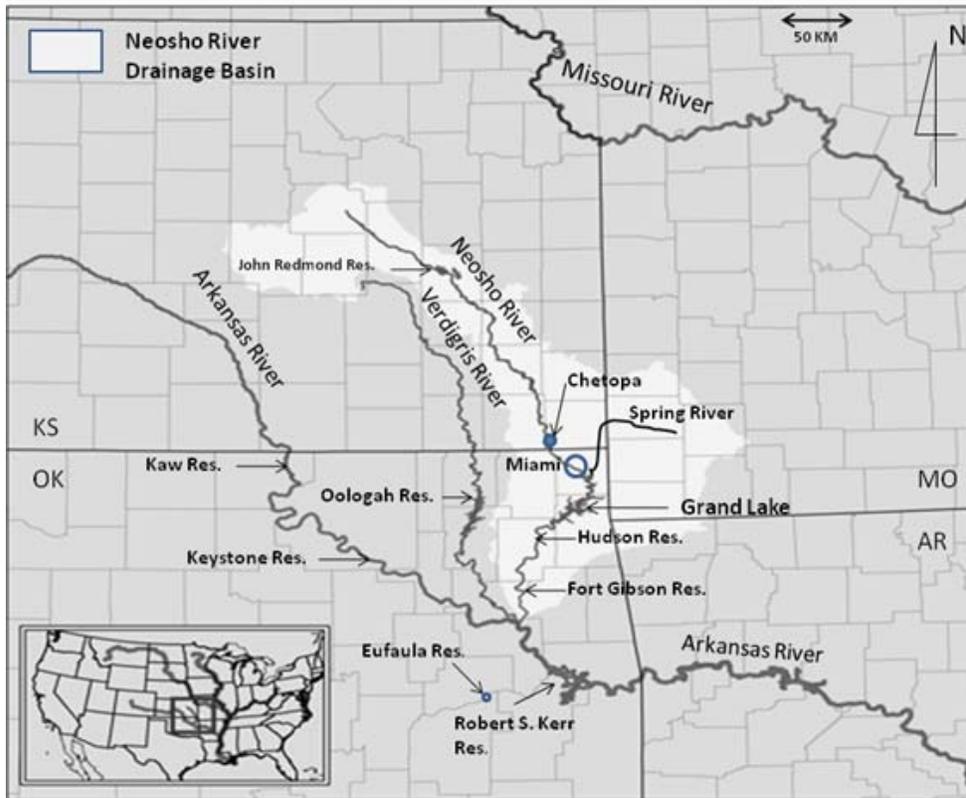


Figure 1. Distribution of paddlefish in Oklahoma and closeup of the Arkansas River stock, including Neosho River basin, Spring River, and Grand Lake, Oklahoma, Kansas, and Missouri, USA.

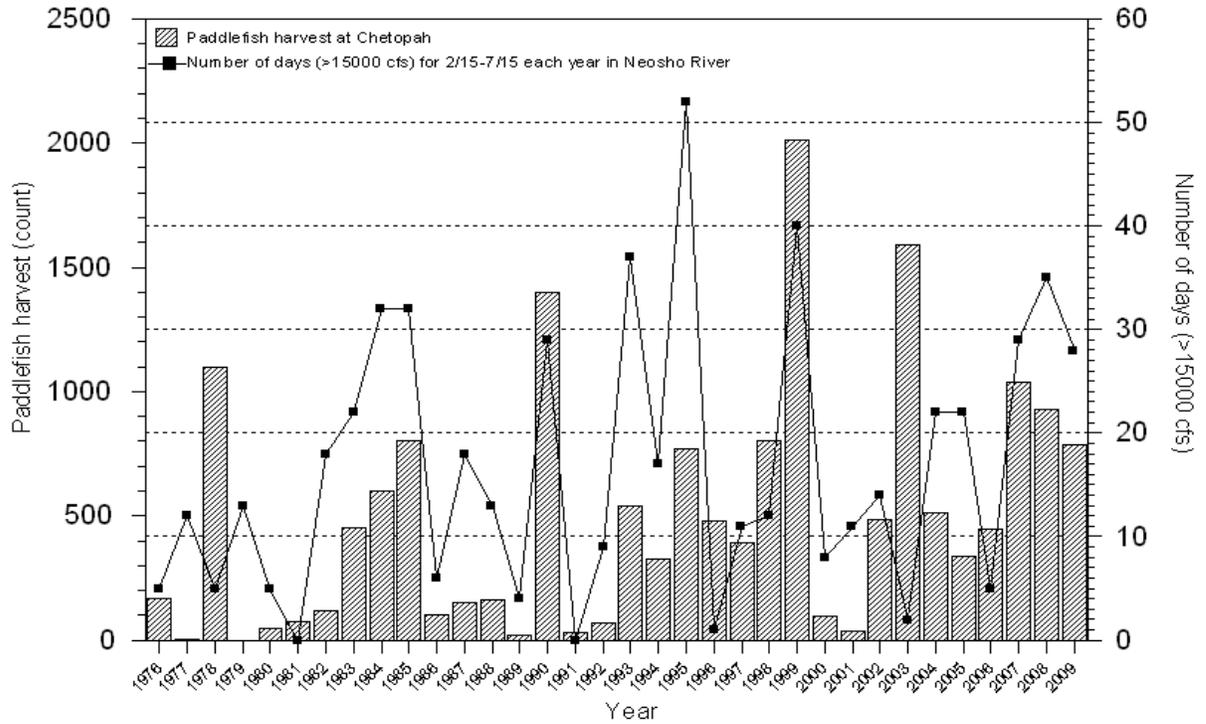


Figure 2. Paddlefish harvest at Chetopa and number of days having >15,000 cfs for 2/15-7/15 in Neosho River each year, 1976-2009.

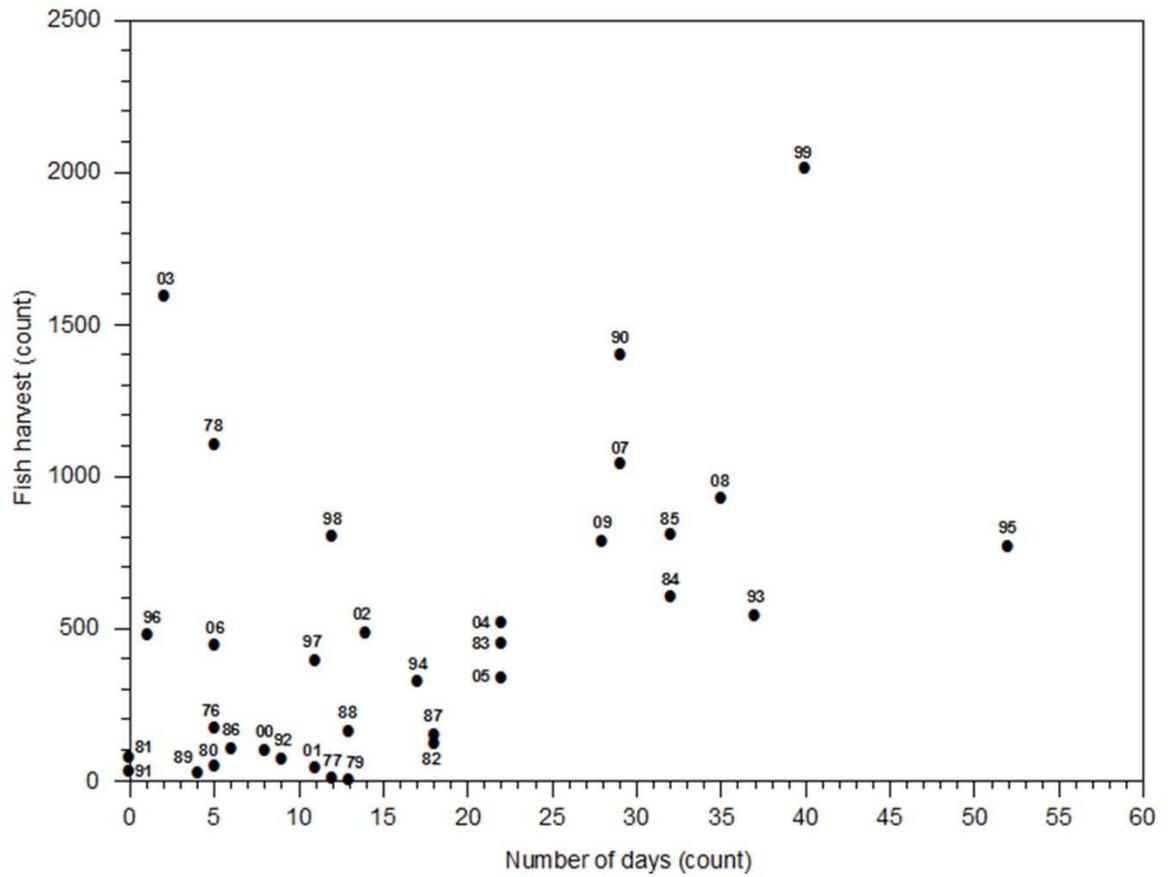
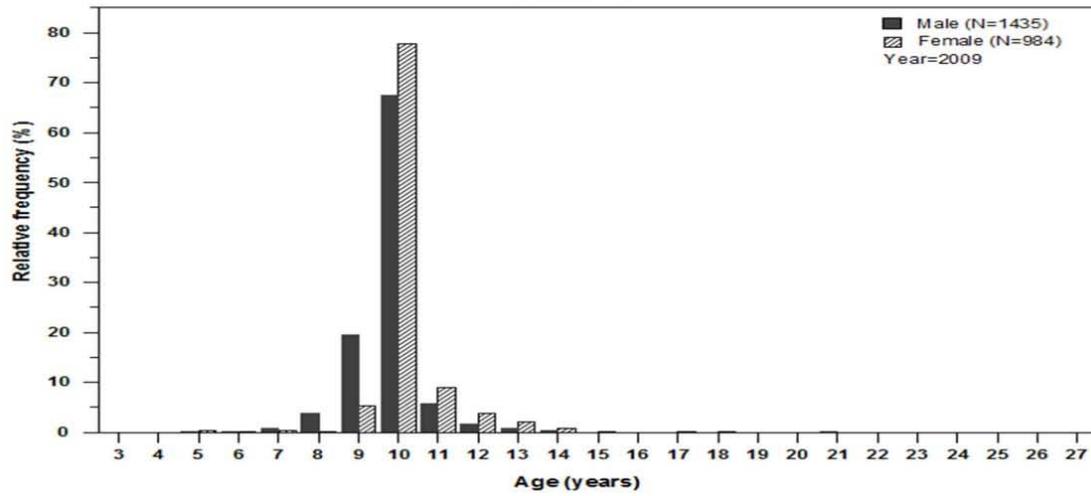
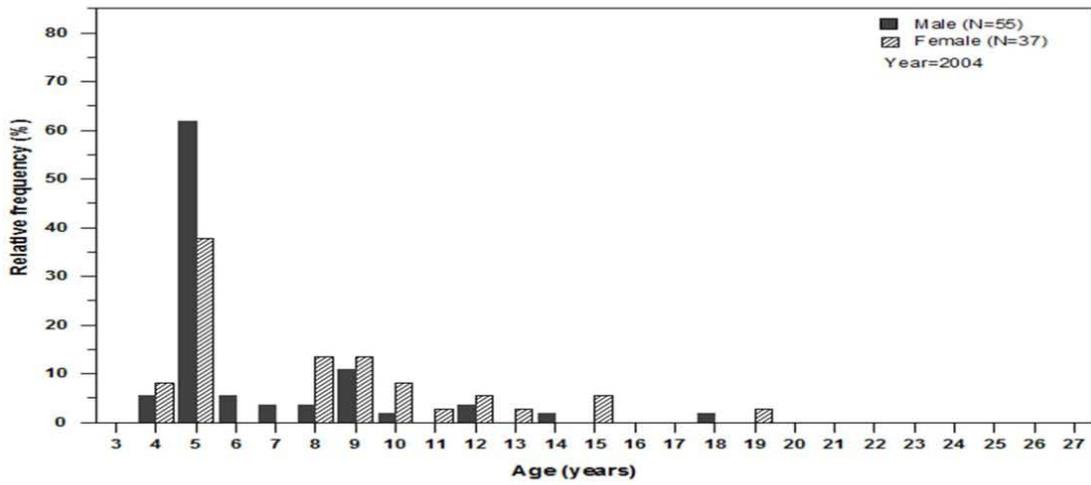
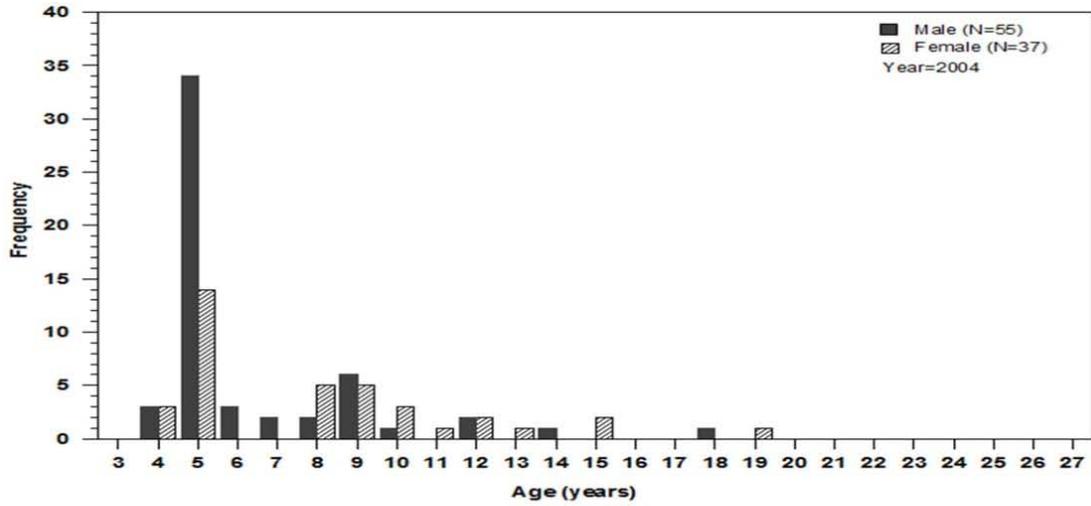


Figure 3. Paddlefish harvest at Chetopa and number of days having >15,000 cfs for 2/15-7/15 in Neosho River each year, 1976-2009.



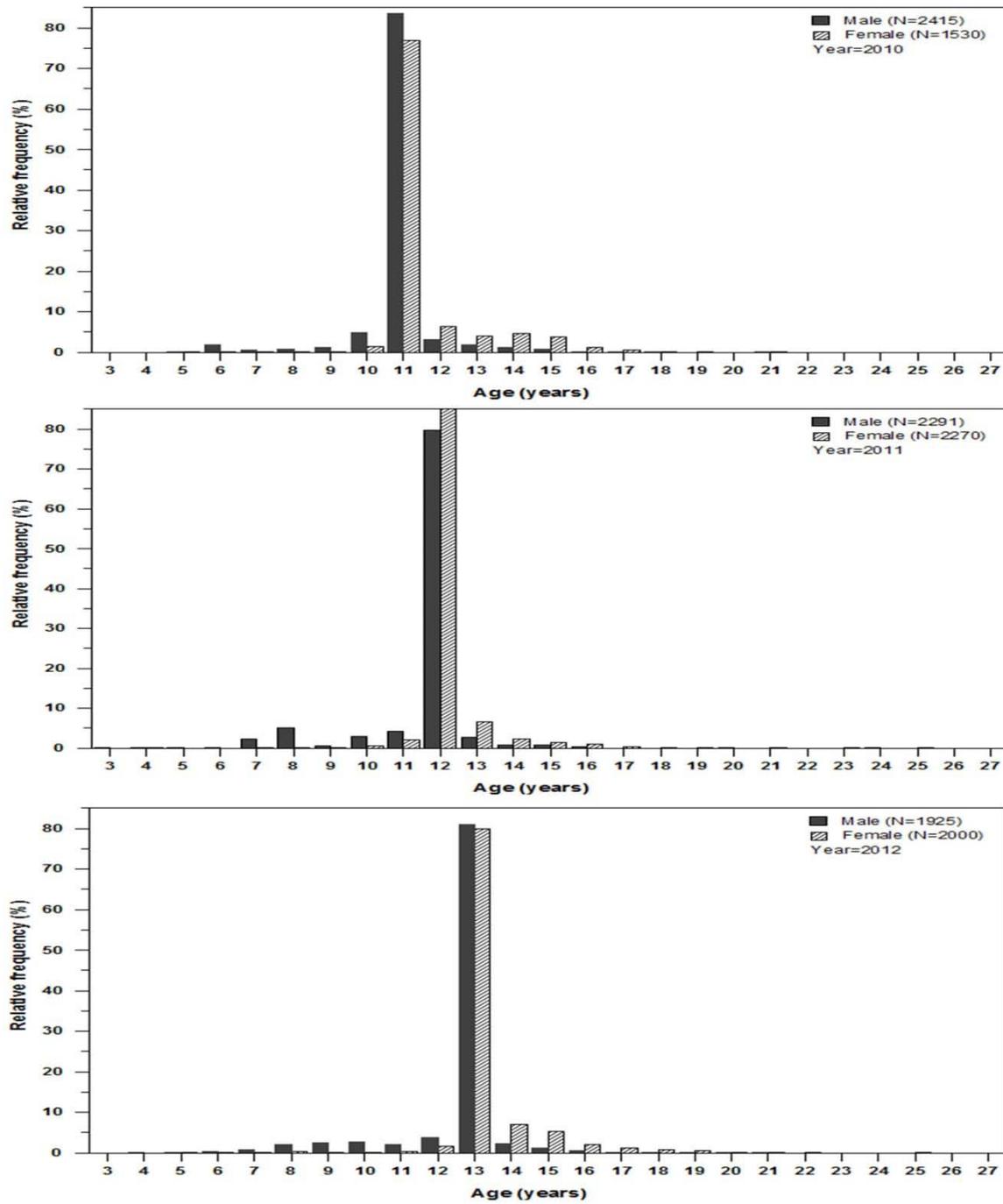


Figure 4. Age-frequency histograms for the Neosho River, Grand Lake paddlefish, 2004, 2008, 2009, 2010, 2011, and 2012, showing the strong 1999 year class.

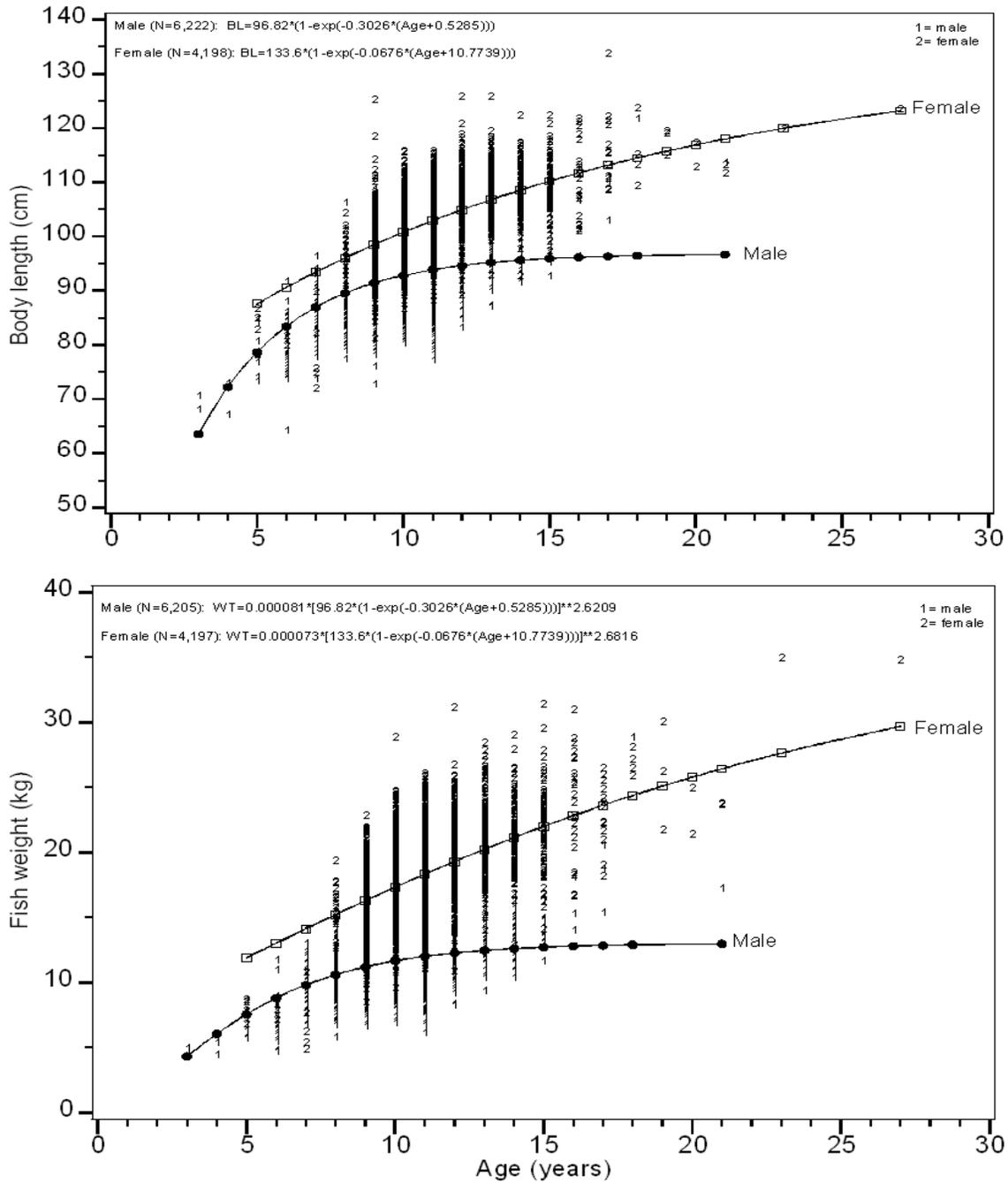


Figure 5a. Von Bertalanffy growth curves for Grand Lake paddlefish three parameter male and female paddlefish lengths (top) and three parameter male and female weights (bottom) based on data from 2008-2010.

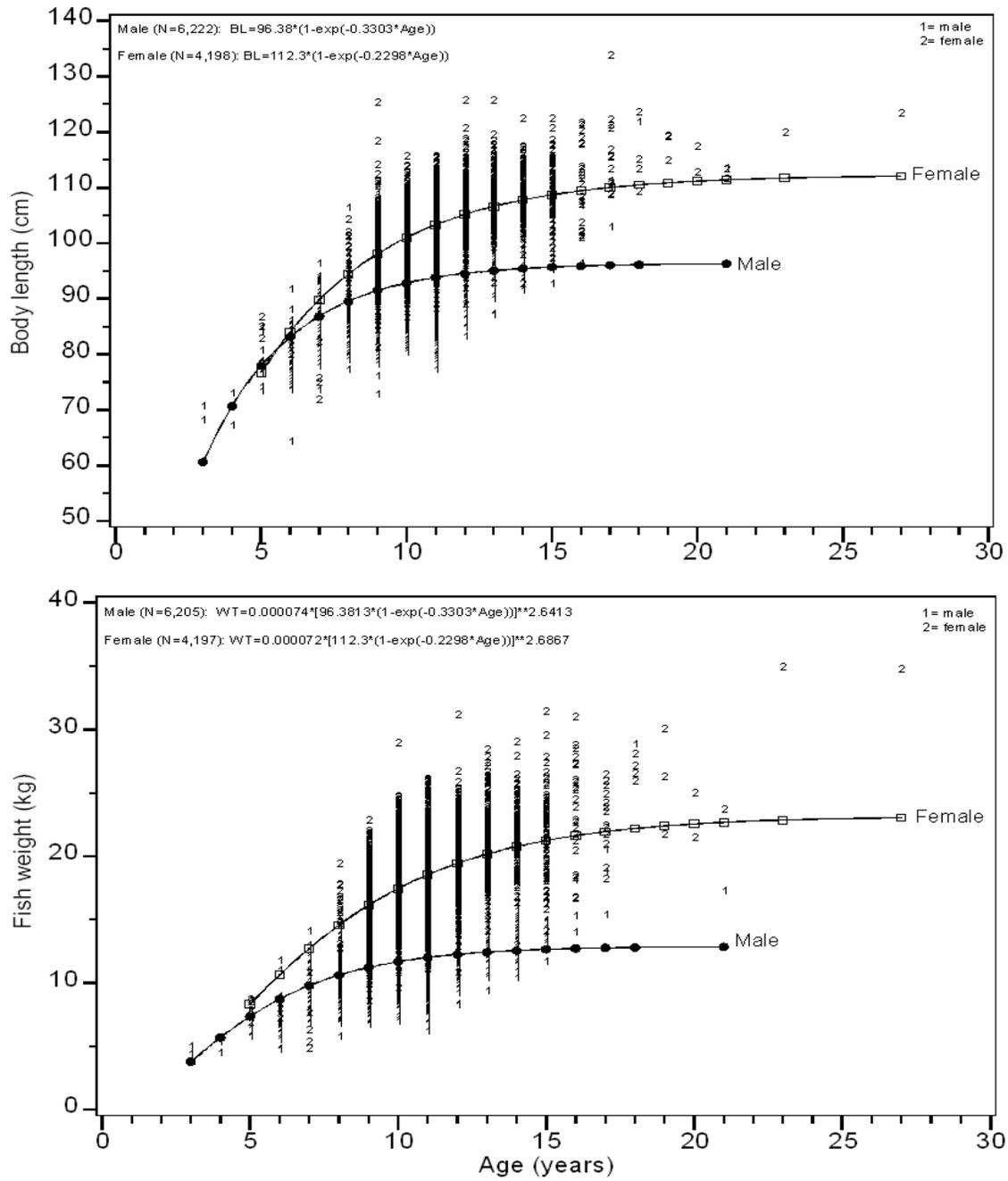


Figure 5b. Von Bertalanffy growth curves for Grand Lake paddlefish two parameter male and female lengths (top) and two-parameter male and female weights (bottom), based on data from 2008-2010.

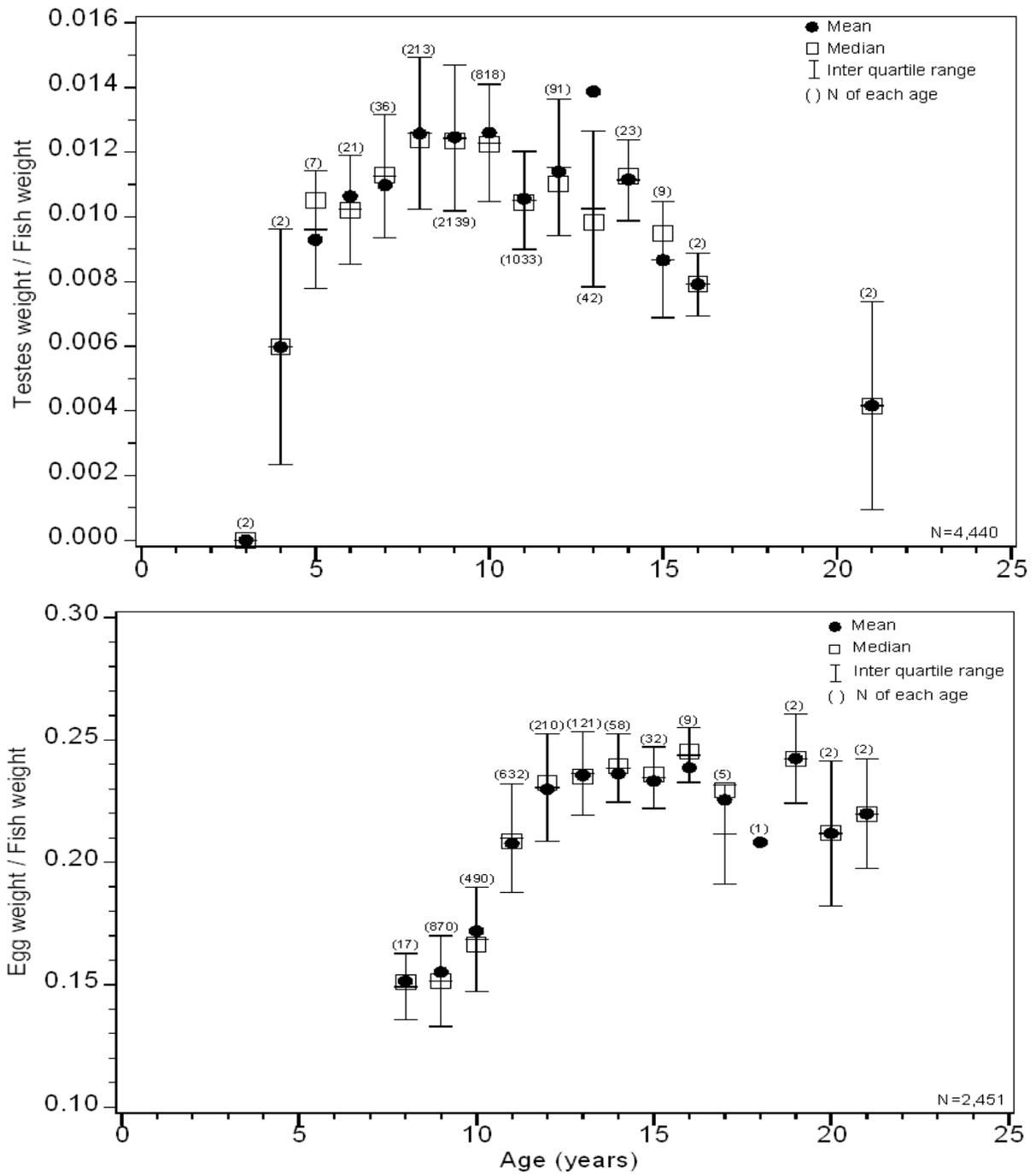


Figure 6. Paddlefish age in relation to Gonadosomatic Index (GSI) for males (top) and females (bottom).

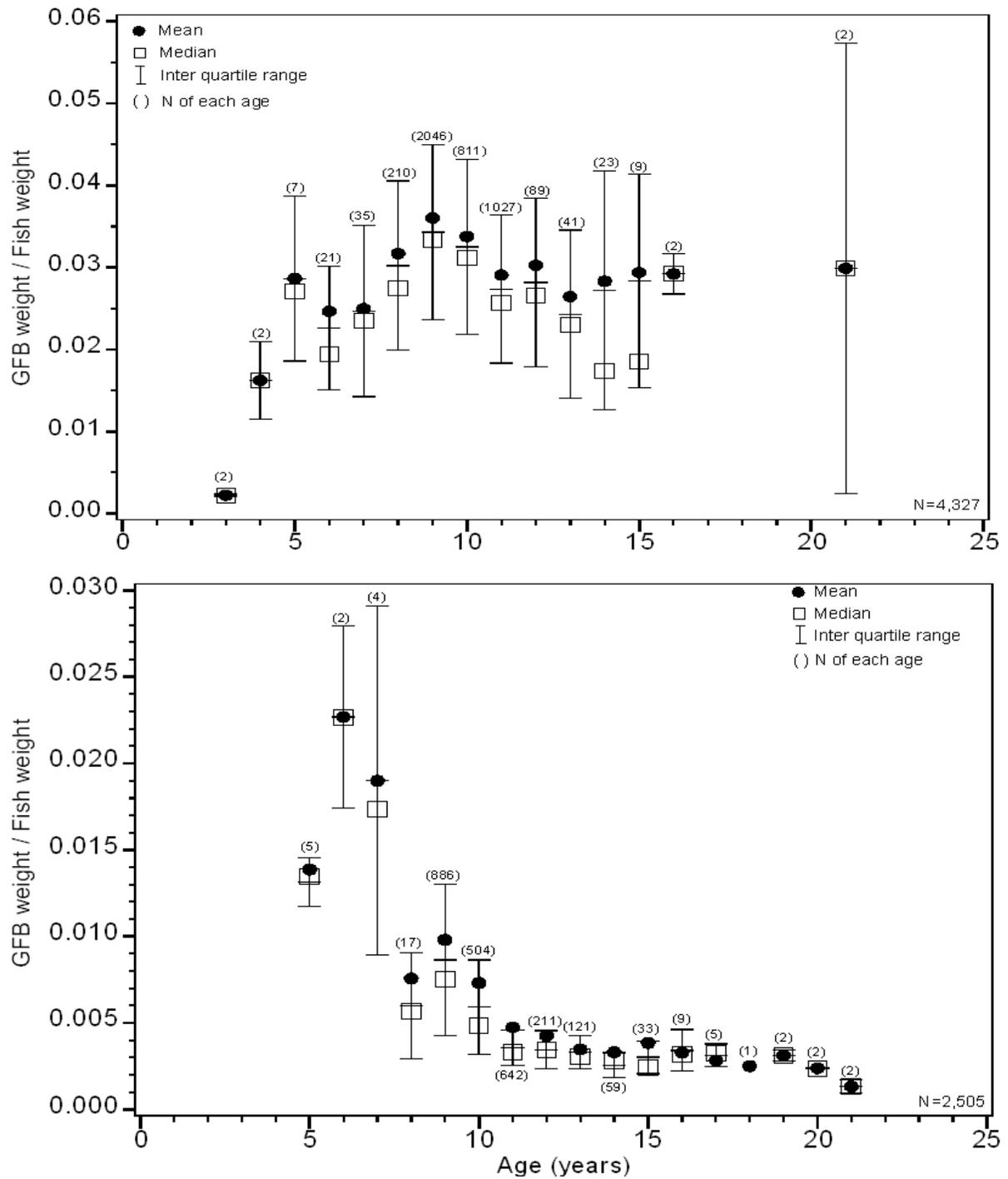


Figure 7. Paddlefish age in relation to GFB weight/fish weight for males (top) and females (bottom).

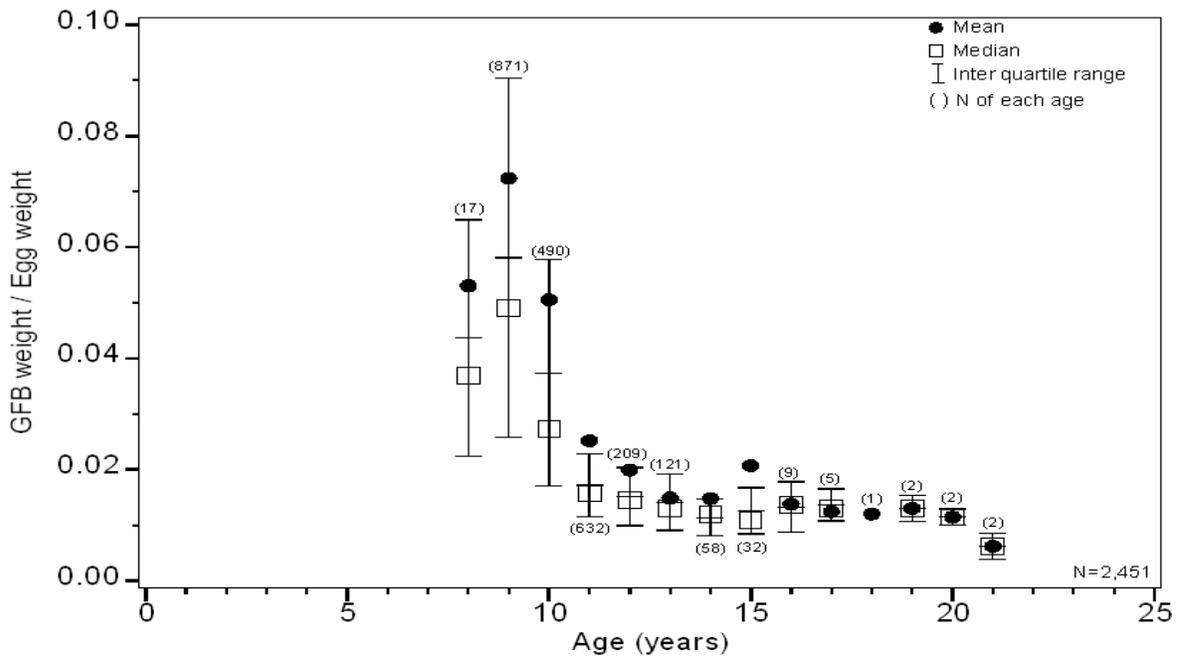
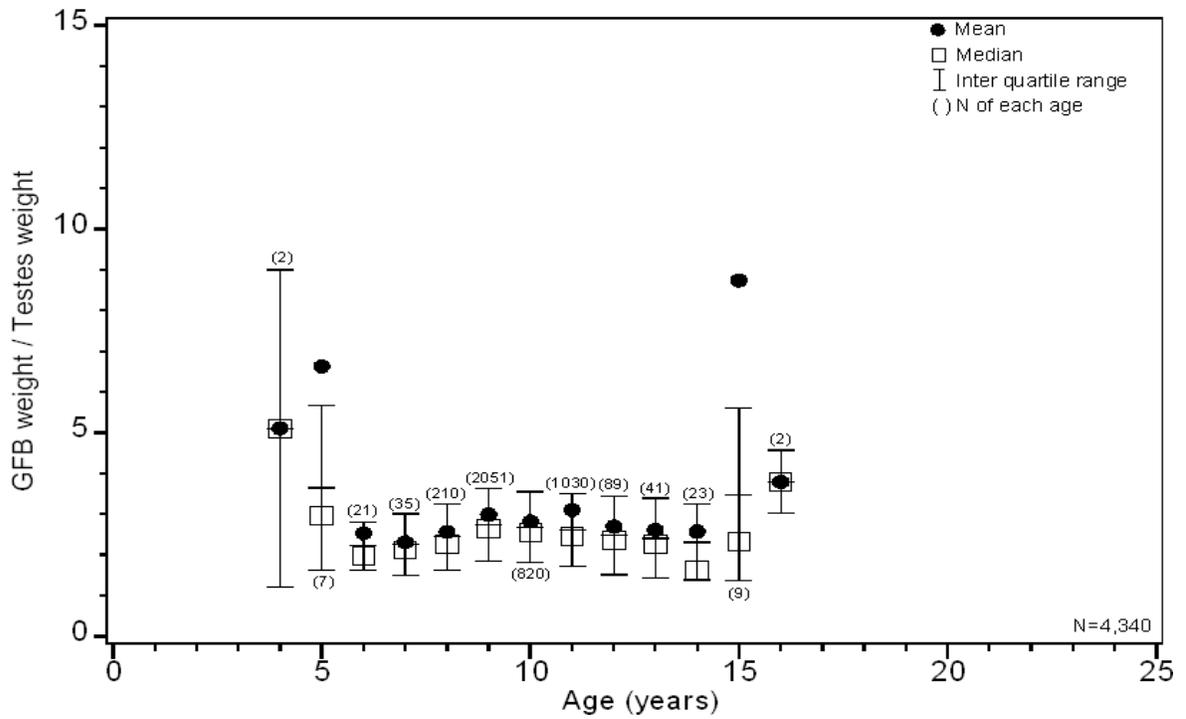


Figure 8. Paddlefish age in relation to GFB weight/testes weight for males (top) and GFB weight/egg weight for females (bottom).

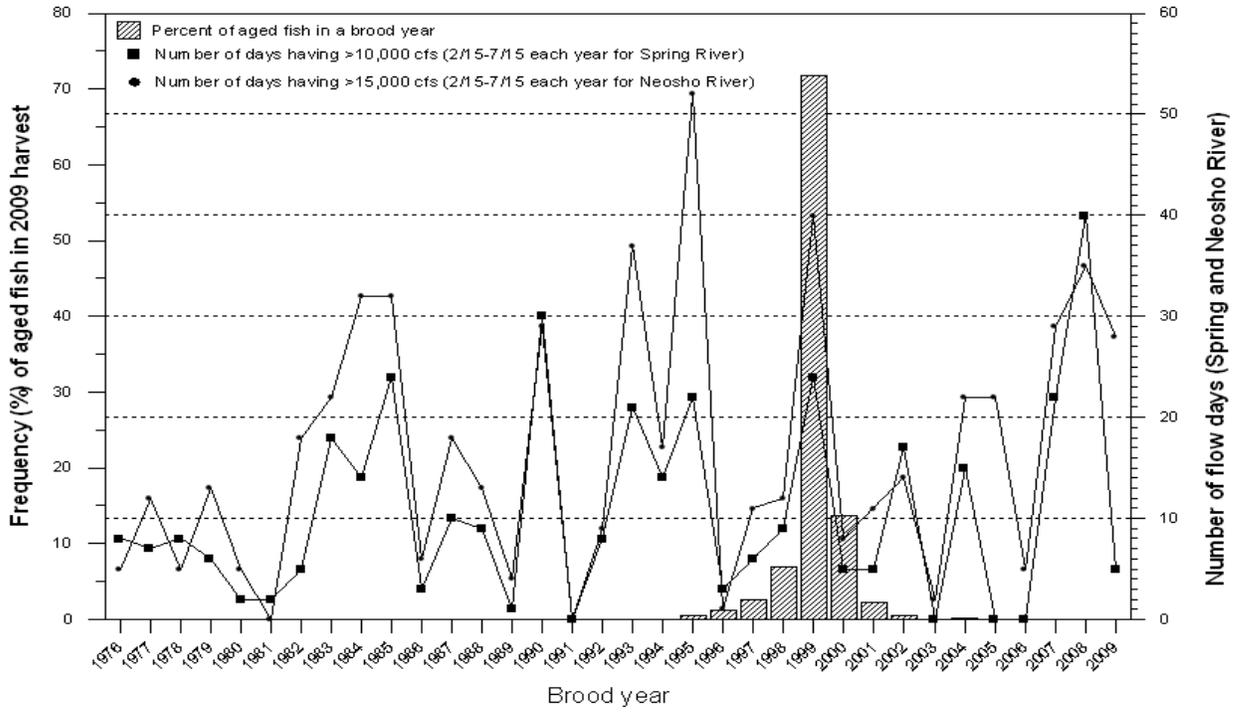


Figure 9. Percent of aged paddlefish (N=2,429) in 2009 harvest and number of flow days (Spring and Neosho rivers) each brood year, 1976-2009.

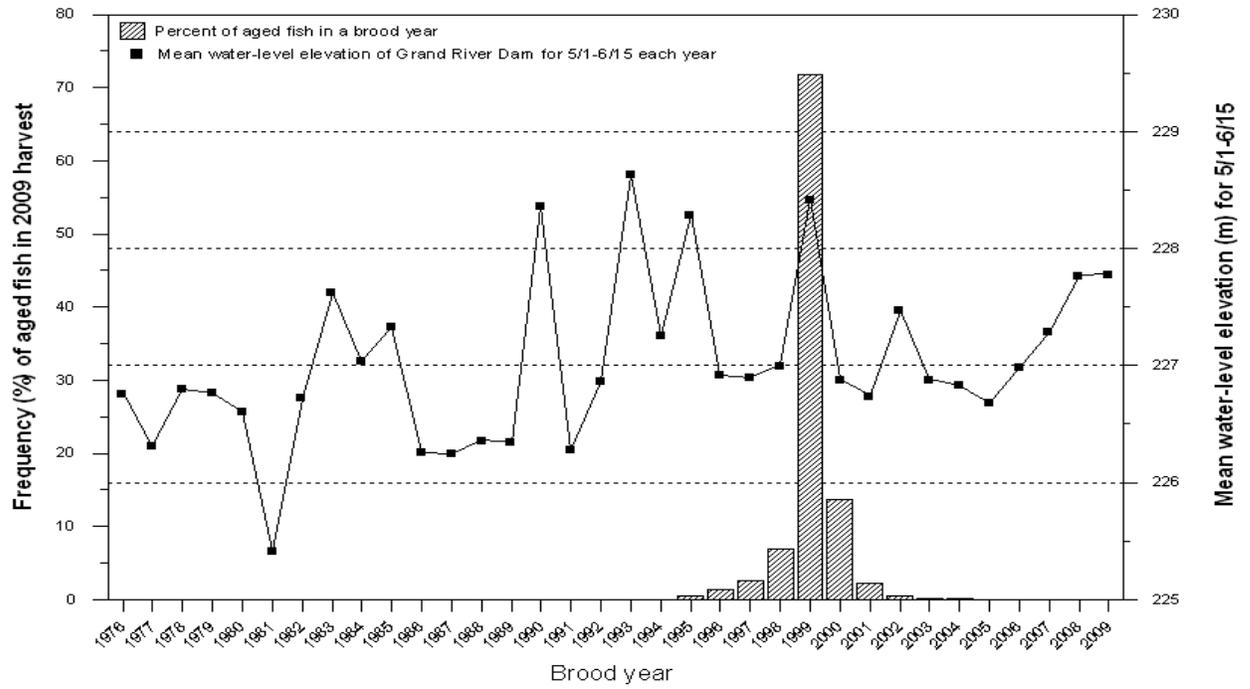


Figure 10. Percent of aged paddlefish (N=2,429) in 2009 harvest and mean water-level elevations of Grand River Dam each brood year, 1976-2009.

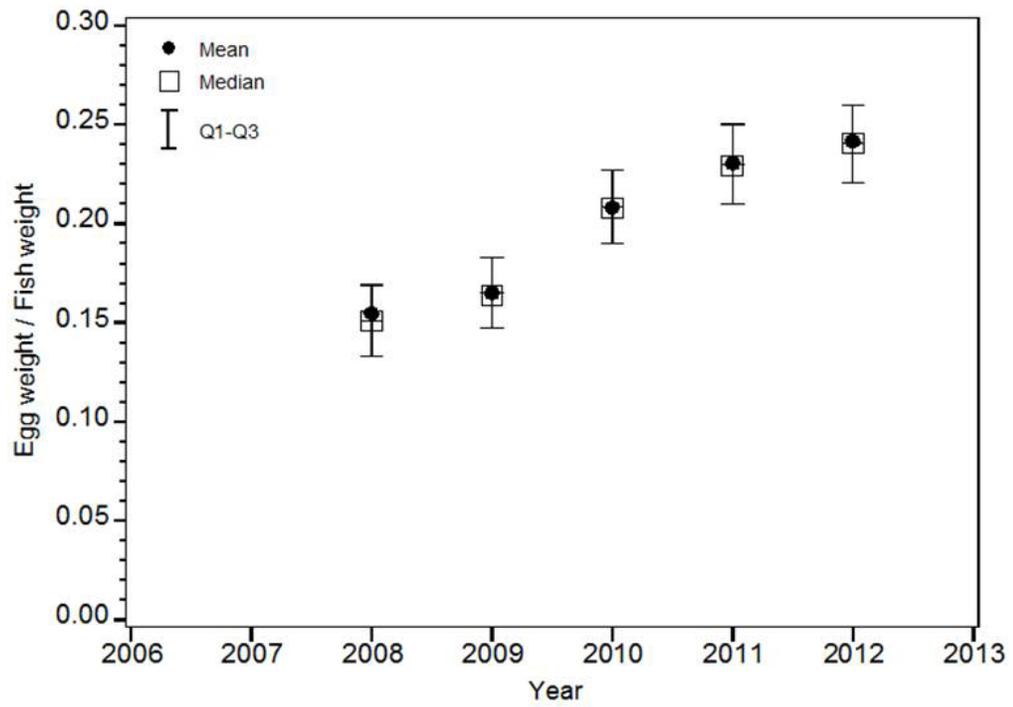


Figure 11a. Gonadosomatic index for female Grand Lake paddlefish of the 1999 cohort for fish harvested 2008 through 2012.

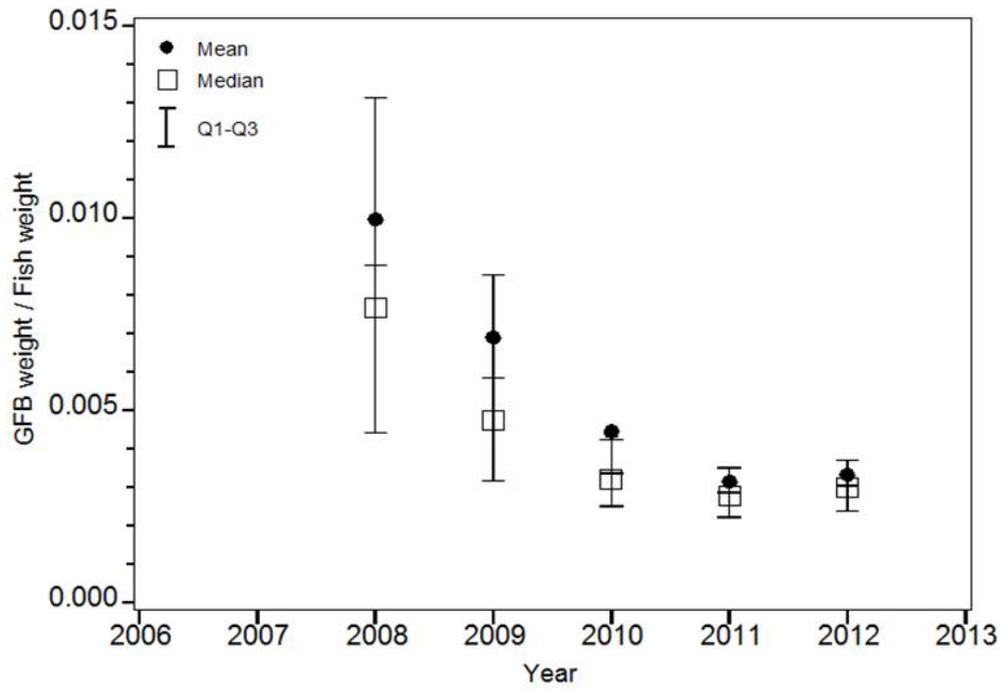


Figure 11b. Female gonadal fat body (GFB) weight/fish weight for Grand Lake paddlefish of the 1999 cohort for fish harvested 2008 through 2012.

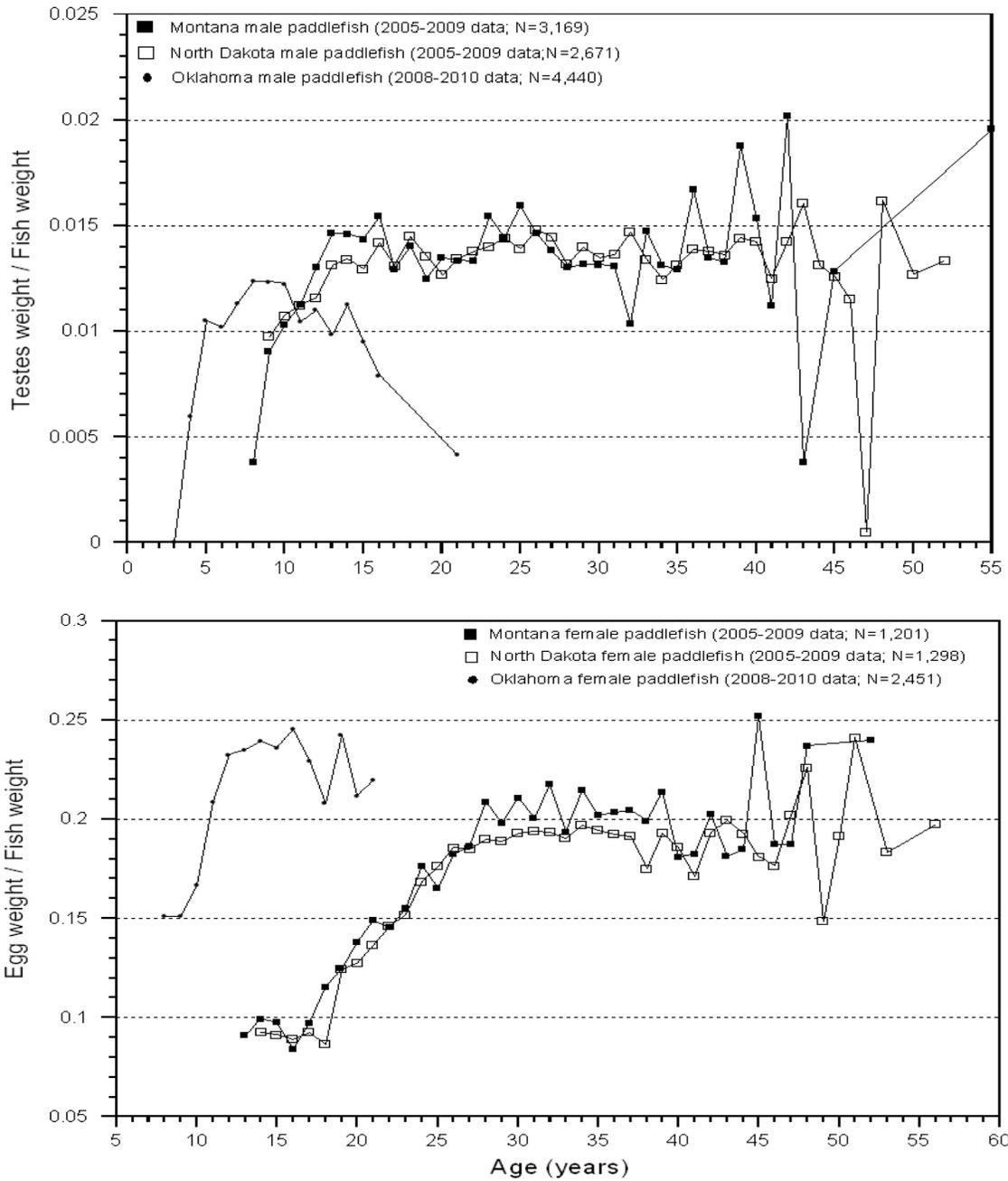


Figure 12. Median GSI values (gonad weight/fish weight) by age for male (top) and female (bottom) paddlefish from Grand Lake stock (2008-2010) and the Yellowstone-Sakakawea stock, Montana and North Dakota harvest components separately (2005-2009).

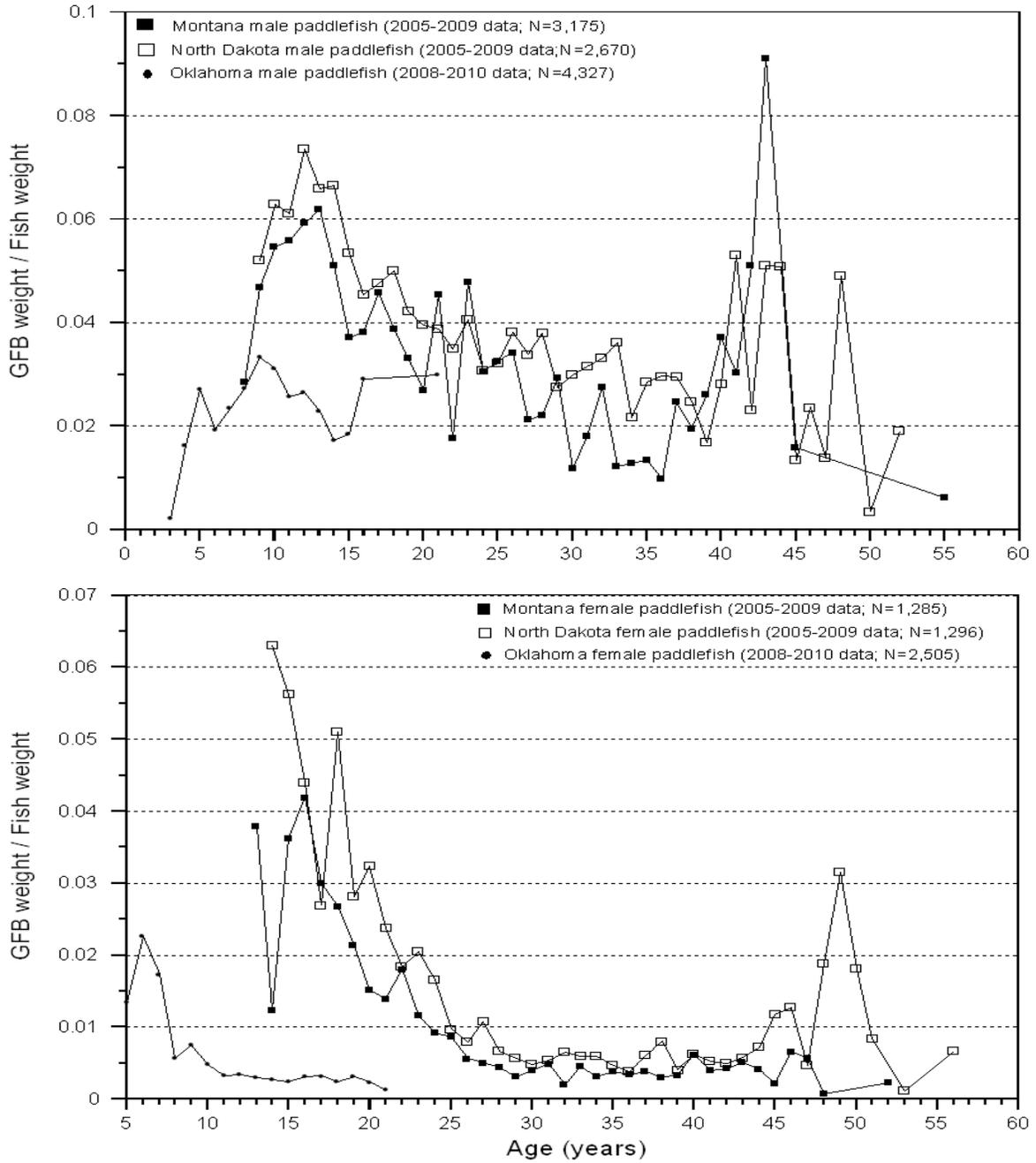


Figure 13. Median GFB weight/fish weight values by age for male (top) and female (bottom) paddlefish from Grand Lake stock (2008-2010) and the Yellowstone-Sakakawea stock, Montana and North Dakota harvest components separately (2005-2009).

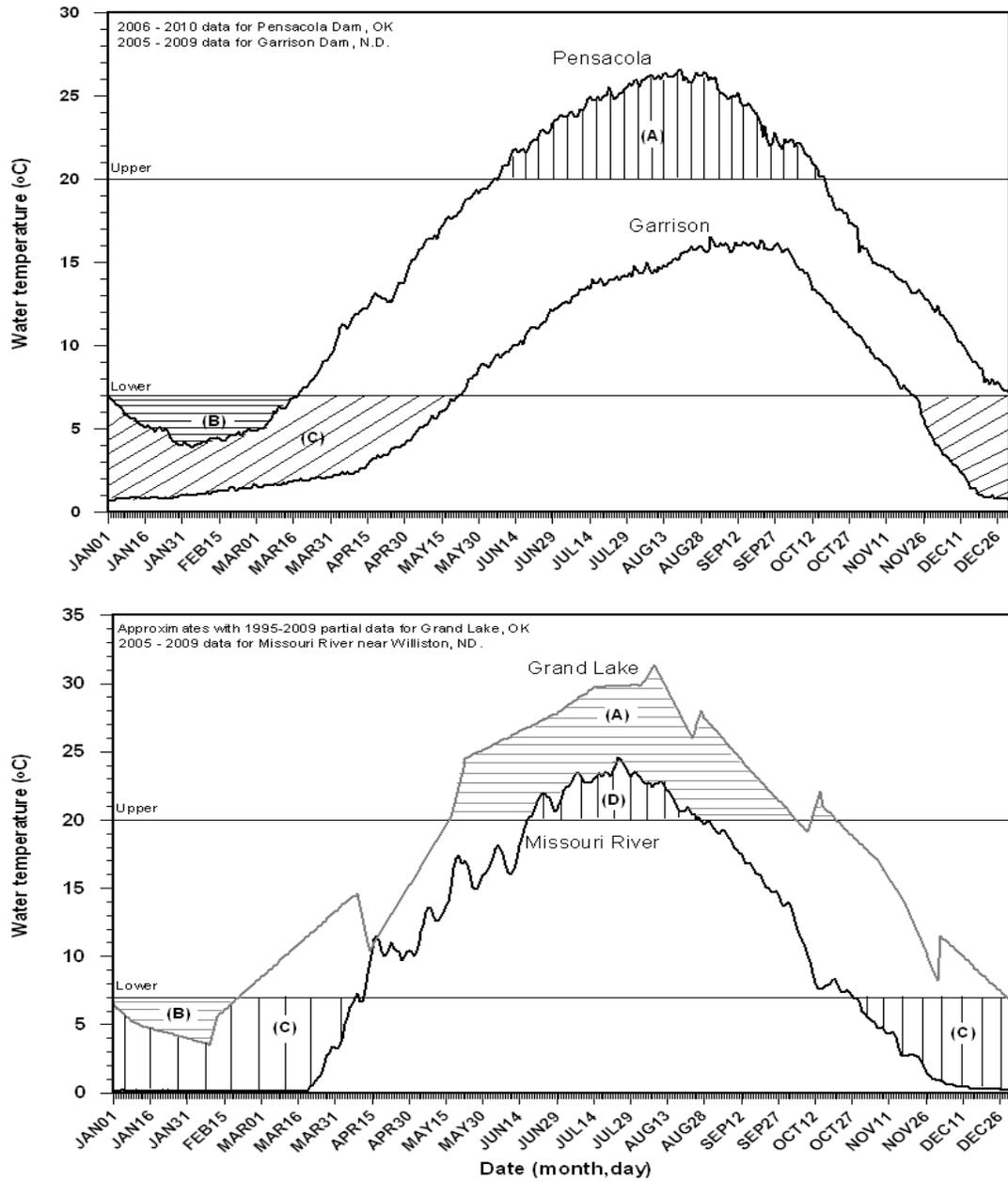


Figure 14. Mean daily water temperatures a) releases from Pensacola Dam (Grand Lake) and Garrison Dam (Lake Sakakawea) and b) Grand Lake at surface and Missouri River near Williston, ND. Hatching and capital letters indicate temperatures above (A) or below (B) the 7°-20 °C optimal range of Rosen and Hales (1981) for Grand Lake and below (C) or above (D) the optimal range for Lake Sakakawea.

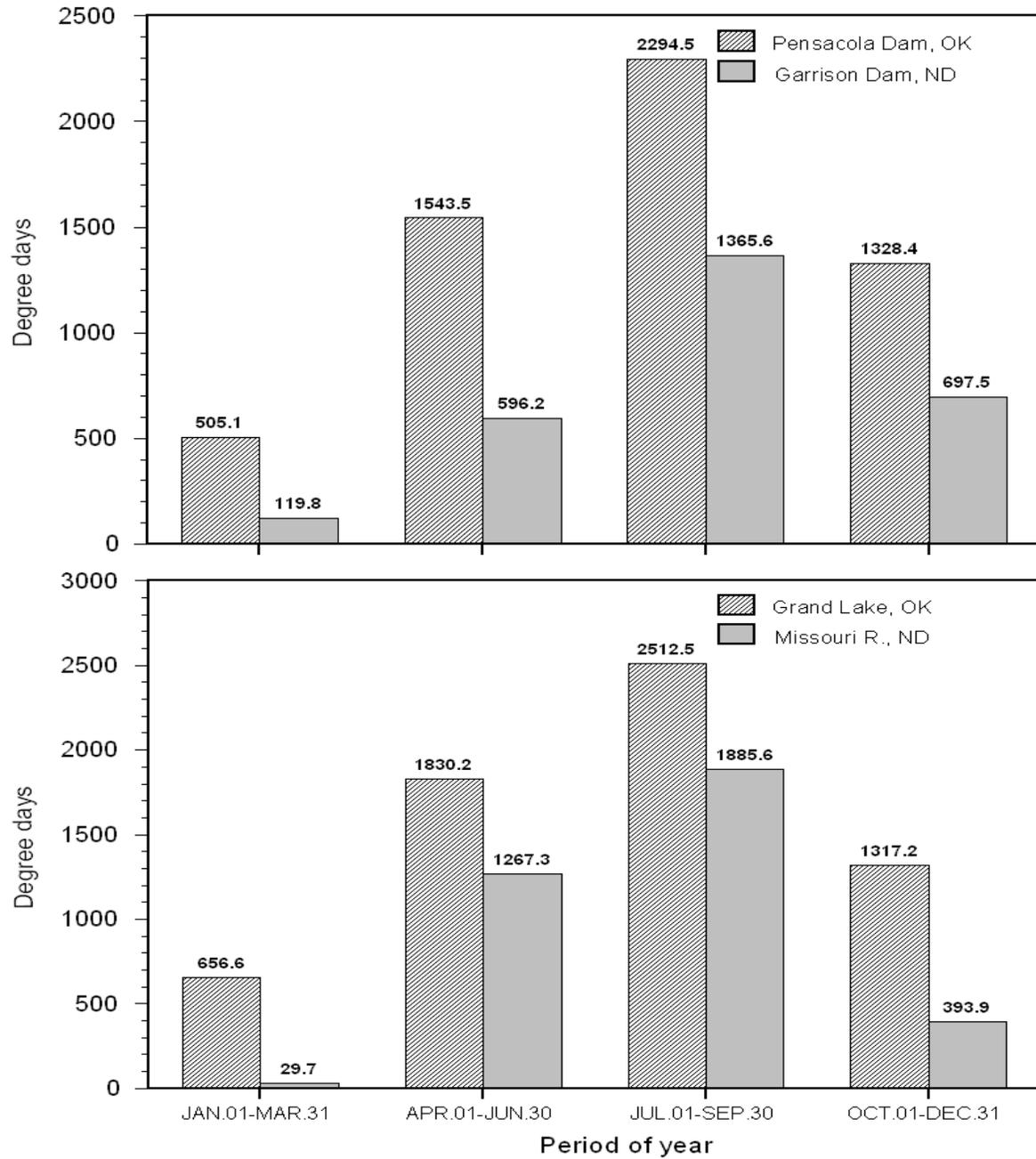


Figure 15. Sum of degree days in three month intervals for (top) Pensacola Dam (Grand Lake) discharges and Garrison Dam (Lake Sakakawea) discharges and (bottom) Grand Lake and Missouri River near Williston.

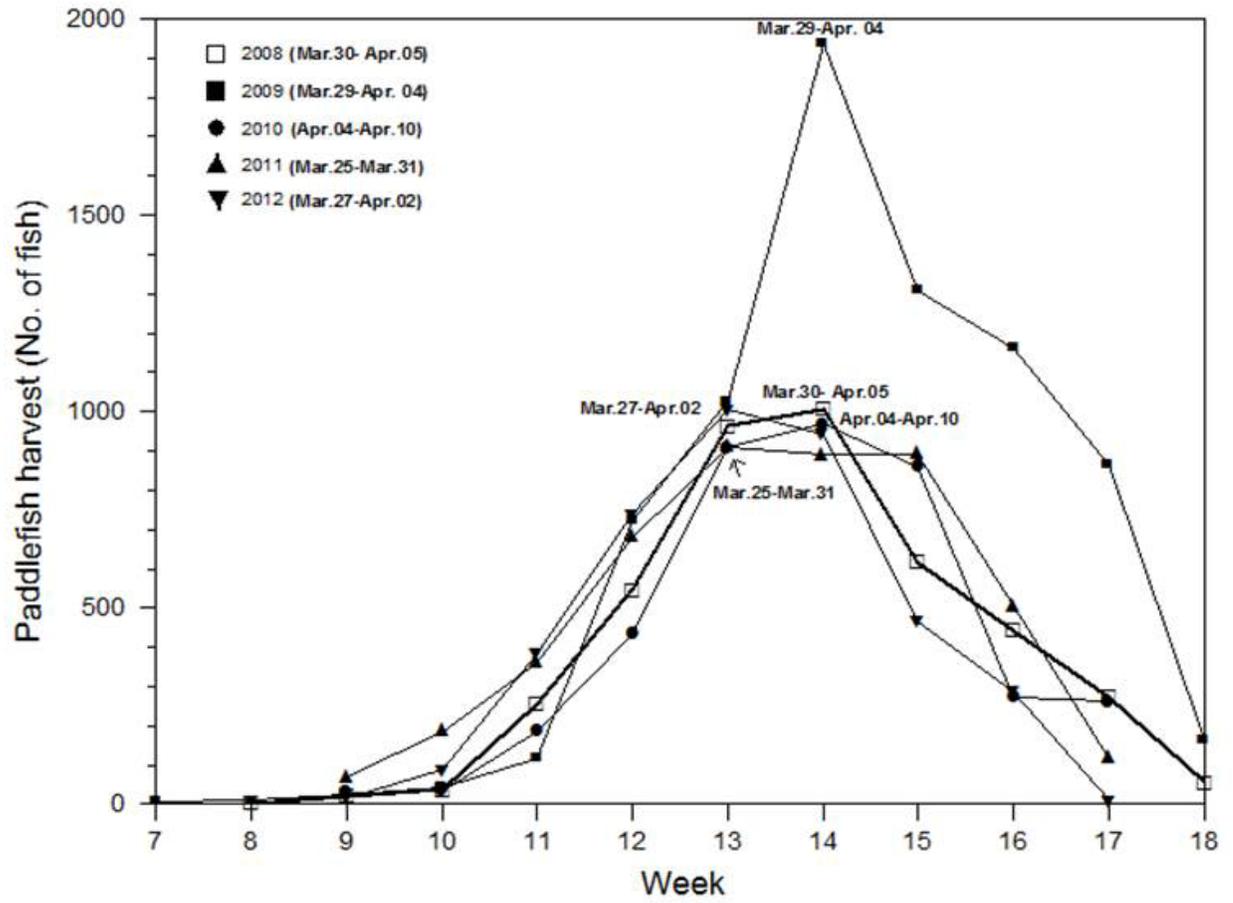


Figure 16. Paddlefish harvest by week in Oklahoma each year, 2008-2012.

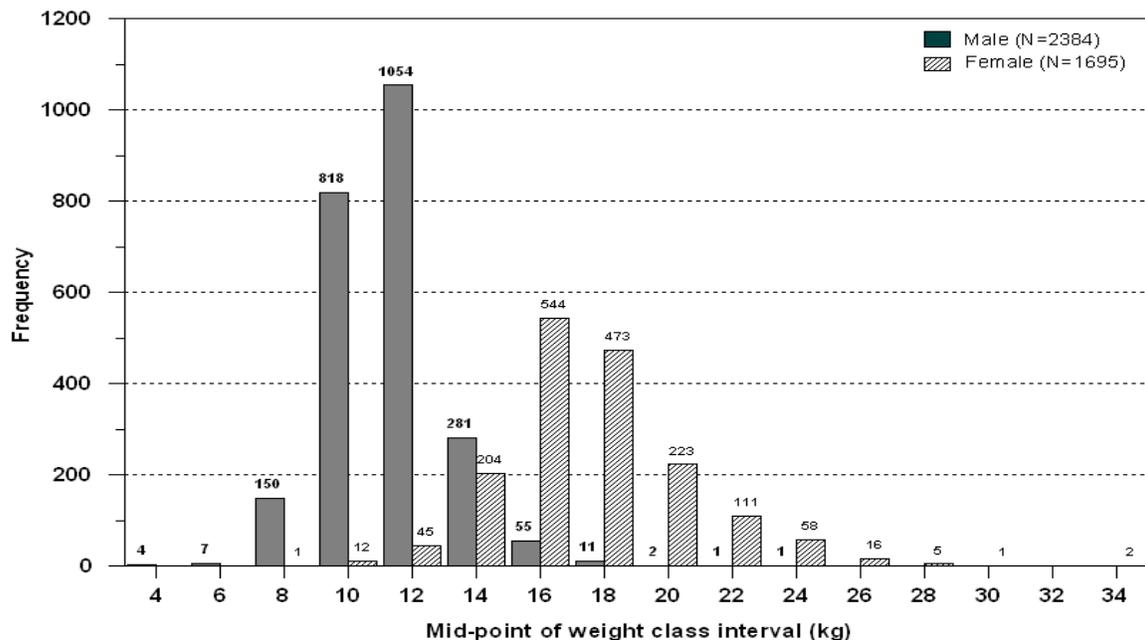
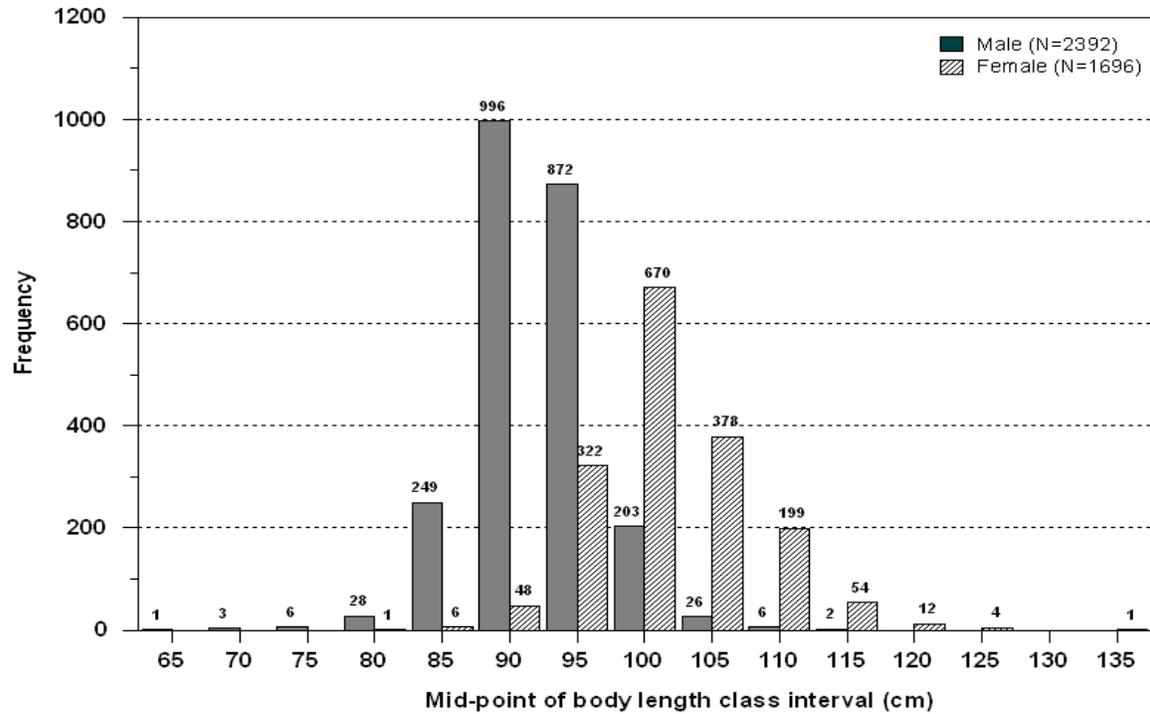


Figure 17. Frequency histograms for male and female body length (top) and male and female weight (bottom), Grand Lake paddlefish, 2008.

## Plates

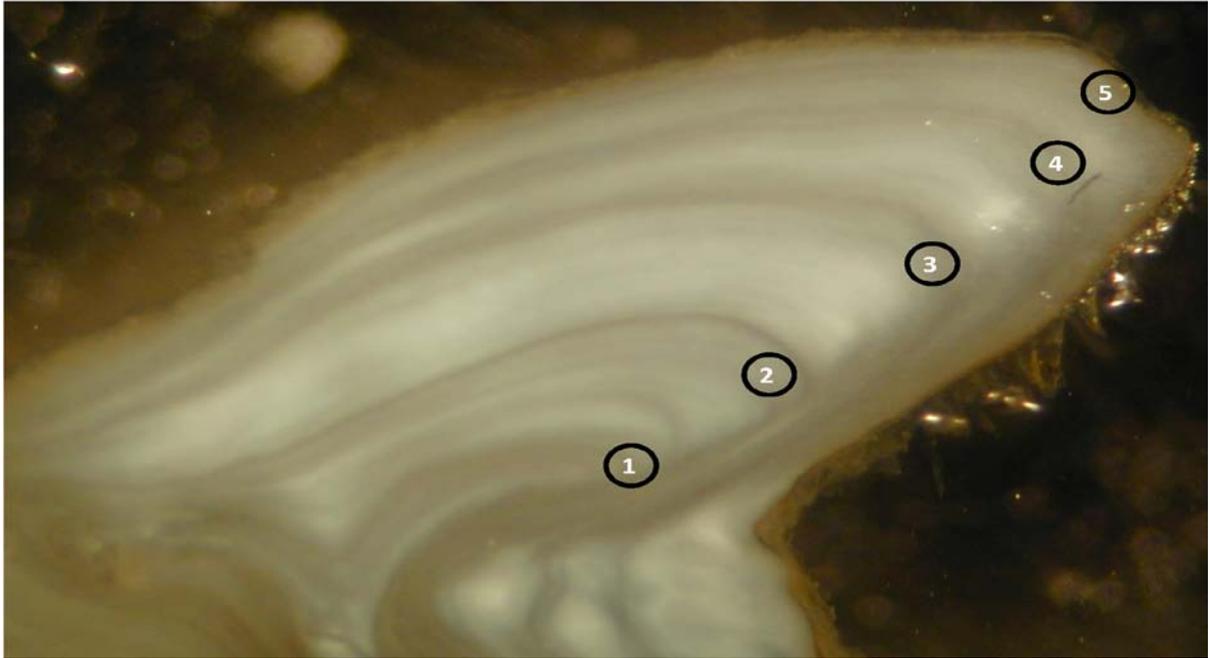


Plate 1. Putative age-5 fish sampled from Grand Lake in 2004. Female, BL = 818 mm, Weight = 7.35 kg.



Plate 2. Putative age-9 fish sampled at the PRC in 2008. Male, BL = 975 mm, Weight = 13.7 kg.

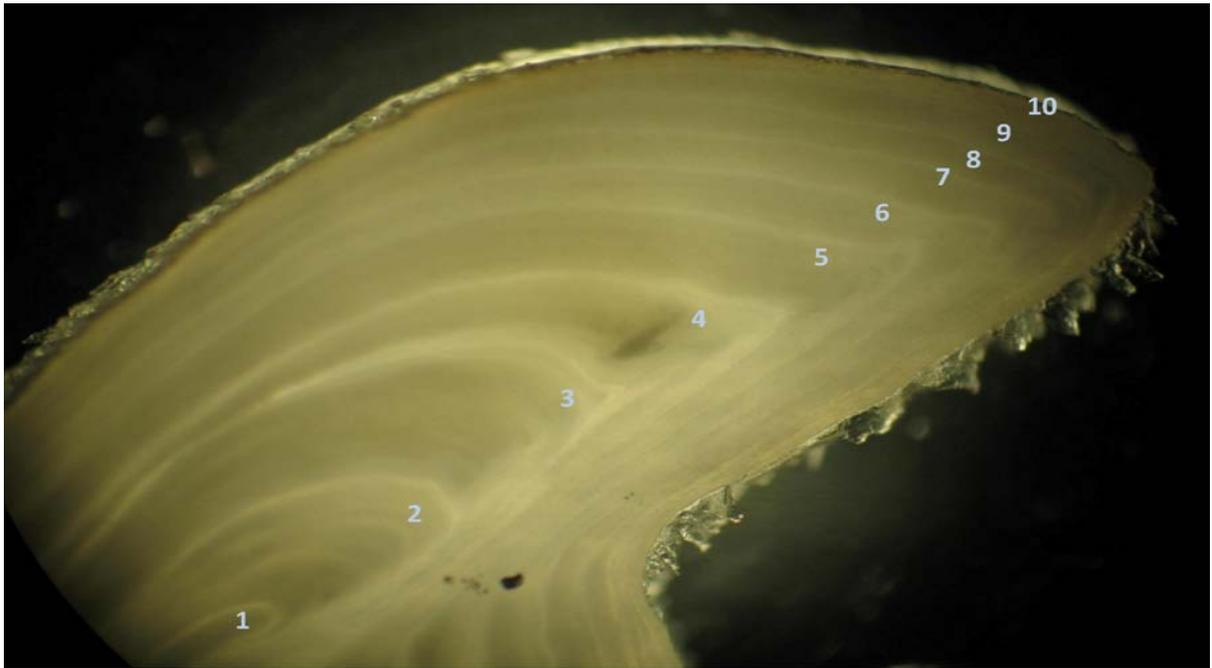


Plate 3. Putative age-10 fish sampled at the PRC in 2009. Female, BL = 991 mm, Weight = 18.55 kg.

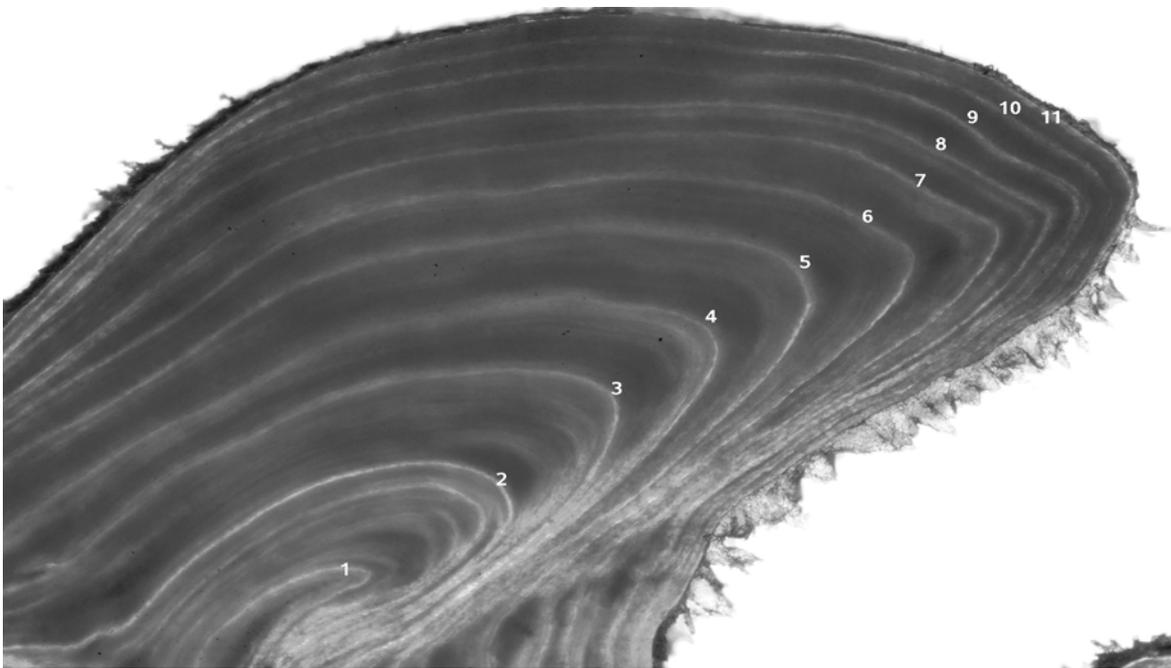


Plate 4. Putative age-11 fish sampled at the PRC in 2010. Female, BL = 1046 mm, Weight = 18.1 kg.

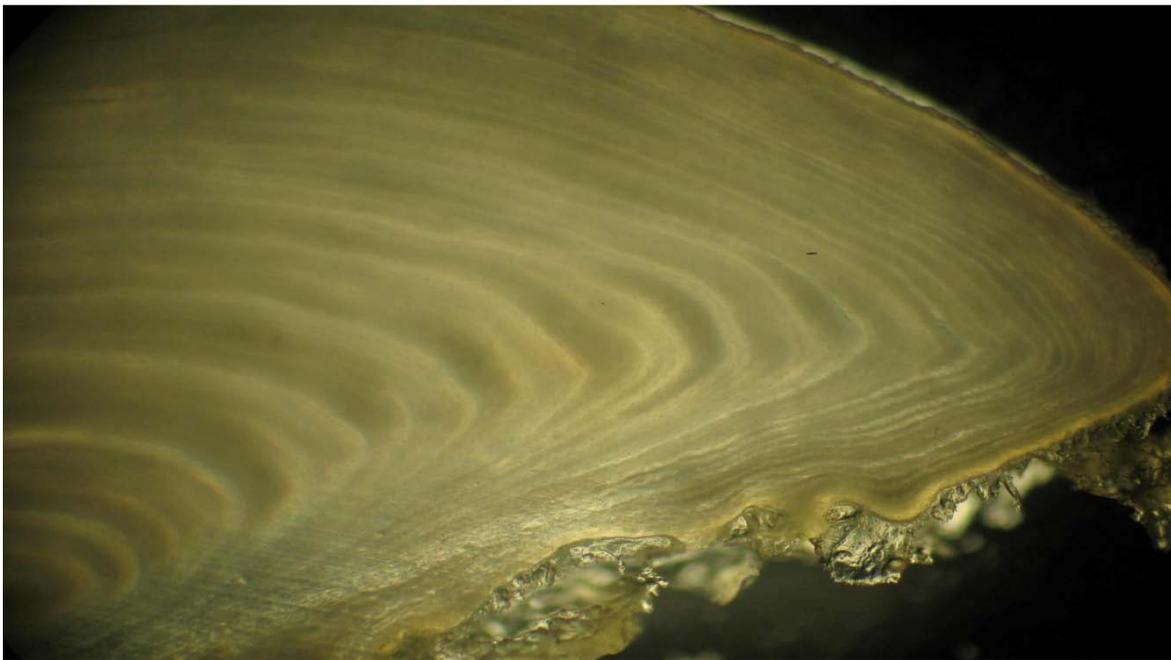


Plate 5. Putative older (age-21) paddlefish of the Grand Lake Stock. Male, BL = 1131 mm, Weight = 23.05 kg.

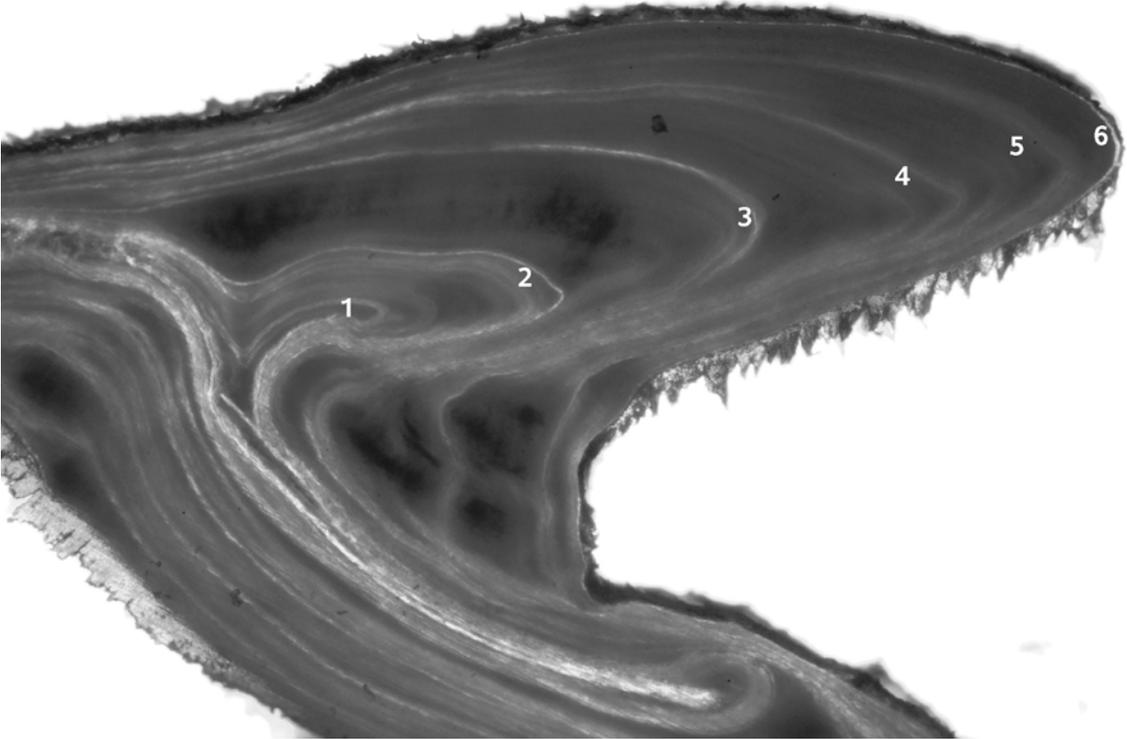


Plate 6. Putative age-6 male paddlefish sampled at the PRC in 2010. Male, BL = 790 mm, Weight = 6.8 kg.



Plate 7. Collecting fisheries data and interaction with snag anglers at the PRC.



Plate 8. Gonad weights for females are the raw weight of eggs from each fish.



Plate 9. Removing dentaries (lower jaws bones) from paddlefish at the PRC.



Plate 10. Age-0 paddlefish from Grand Lake/Neosho River.

## Appendices

### Appendix A. Outline of paddlefish habitat issues to be addressed in a follow-up document.

#### Paddlefish Habitat Requirements and Protection

##### River water quantity

- Overview

- Water withdrawals

- Protecting flows for paddlefish

##### River water quality

- Overview

- Pesticides and other contaminants

  - Tar Creek

  - Others

- Legislation and regulations

##### River habitat features

- Overview of paddlefish riverine habitat

- Characterization of paddlefish riverine habitat

- Habitat of the Grand Lake stock

- Protected areas

##### River function

- Bank stabilization and shoreline management

- Downriver and upriver impacts

- Some specific characteristics of adequate river function

- Maintaining river function

- Legislation and regulations

##### Fish passage

- Reservoir water quantity

- Reservoir water quality

##### Potential future issues

- Increased non-harvest mortality of adult paddlefish from boat traffic

- Aquatic nuisance species

- Lead sinkers

- Global climate change

**Appendix B. Post-season surveys of paddlefish permit holders: 2008 - 2011.**

# Post-Season Surveys of Paddlefish Permit Holders: 2008 and 2009

Oklahoma Department of Wildlife Conservation

Prepared by Andrea Crews, November 19, 2009

## Introduction

During 2008, the Oklahoma Department of Wildlife Conservation (ODWC) opened a Paddlefish Research and Processing Center (PRPC). Data were collected from paddlefish caught by anglers, roe removed to make caviar (later sold by ODWC), and meat processed and packaged for anglers to take home. An end-of-season survey of paddlefish permit holders was implemented in both 2008 and 2009 to determine expectations of the fishery, paddlefishing participation, use of the PRPC, satisfaction with the experience, and the impact of the PRPC on paddlefish harvest. These results will assist with long-range planning of paddlefish management.

## Methods

Paddlefish permit holders provided the sampling frame for the post-season surveys. Free permits available through license vendors were required of all paddlefish anglers. A mail survey methodology was used (Appendix A). Sampled permit holders were sent a pre-survey postcard, followed a few days later by a survey and cover letter with a postage-paid reply envelope, and a second mailing to non-respondents a few weeks later.

In 2008, a random sample of 5,600 permit holders was pulled in late spring, after the rush of fishing activity associated with the spawning run. At the time of sampling (June 12, 2008) ODWC had issued 29,387 paddlefish permits for 2008. The pre-survey notification postcard was mailed June 20. The survey was mailed June 25, with a follow-up sent to non-respondents on July 11. Pre-sorted first class mail rates were used. Undeliverable surveys reduced the original sample size to 4,494. Completed surveys were received from 1,595 paddlefish permit holders through October 6, for an adjusted response rate of 35 percent.

On May 18, 2009, a random sample of 13,430 permit holders was selected for surveying from the 33,488 paddlefish permits issued for 2009. The pre-survey notification postcard was mailed June 1. The survey was mailed June 25, with a follow-up sent to non-respondents on June 29. Bulk-rate third class mail rates were used; undeliverables were not returned. Mail house preparation with address verification software reduced the original sample size to 11,969. Completed surveys were received from 4,073 paddlefish permit holders through October 13, for an adjusted response rate of 34 percent.

Differences between categorical variables were detected using chi-square. Normality was tested using the Shapiro-Wilk. In cases of nonparametric data, medians were compared using the Mann-Whitney U test. All tests were considered significant at  $P \leq 0.05$ .

## Results

In both survey years, Oklahoma residents (as determined by the address used when acquiring the permit) comprised nearly three-fourths of paddlefish permit holders and two-thirds of survey respondents (Table 1). Oklahomans were slightly under-represented in the final survey response but the data were not weighted. Instead, data were examined overall and by residency status (Oklahoma resident or nonresident) where the data allowed. A few survey respondents could not be linked to their address information to determine residency, either because the respondent removed the ID number from the survey or because of data entry errors.

### *Use of the Paddlefish Permit*

ODWC suspected the number of paddlefish anglers as measured by permits issued was exaggerated. Some anglers requested the permit along with their fishing license simply because it was free and they might have a chance to use it. In other cases, vendors automatically issued the free permit along with every fishing license sale. The initial question on the survey sought to assess the suspected inflation of paddlefish permit holders.

Overall, 46 percent of respondents in both 2008 and 2009 fished for paddlefish (Figures 1-2). Respondents who did not mark a choice but indicated “no” in writing ( $n = 104$ ) were counted among those who did not intend to get a permit. Nonresidents were significantly more likely to use their paddlefish fishing permit privileges than residents. An estimated number of active paddlefish anglers was calculated for each year:

13,098 in 2008  
(38.8% of 21,615 resident permit holders = 8,387  
61.0% of 7,723 nonresident permit holders = 4,711)

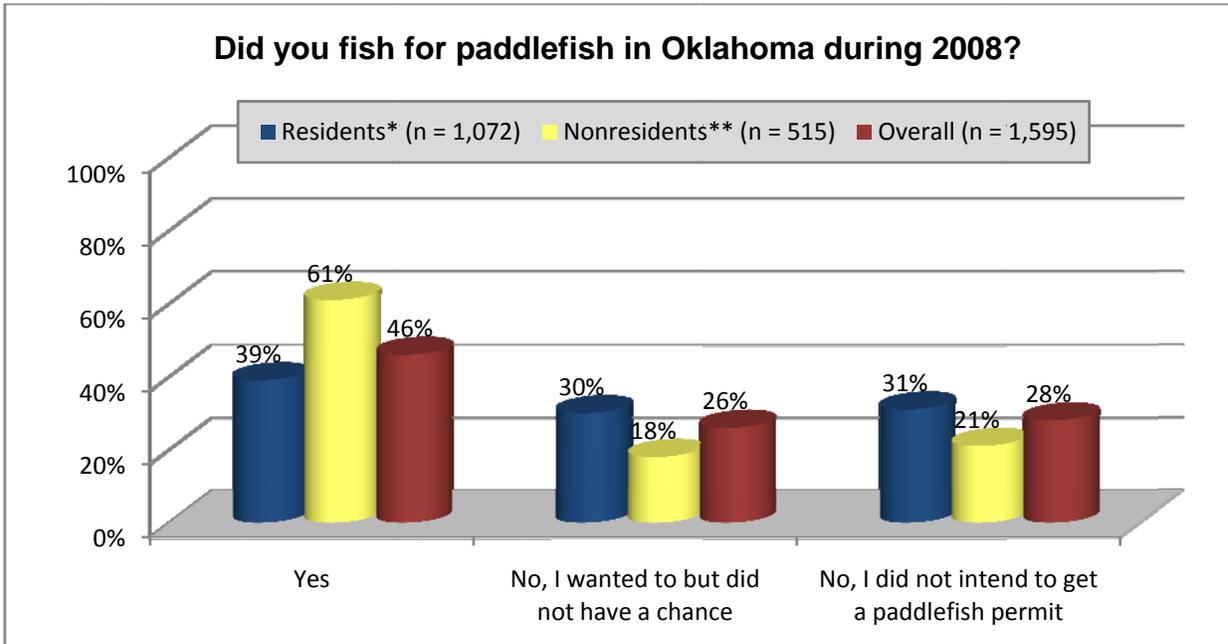
15,162 in 2009  
(39.1% of 24,201 resident permit holders = 9,462  
61.8% of 9,224 nonresident permit holders = 5,700)

No further survey questions were asked of permit holders who did not fish for paddlefish. The remainder of this report presents results from respondents who fished for paddlefish (2008:  $n = 734$ ; 2009:  $n = 1,884$ ). Within this group of active paddlefish anglers, 57% and 58% were Oklahoma residents in the 2008 and 2009 surveys, respectively. This is a considerable deviation from the residency composition seen in the overall population of paddlefish permit holders (Table 1), where 74% were issued to residents in 2008 and 72% in 2009. The problem of unnecessary issuance of paddlefish permits appears greater among residents than nonresidents.

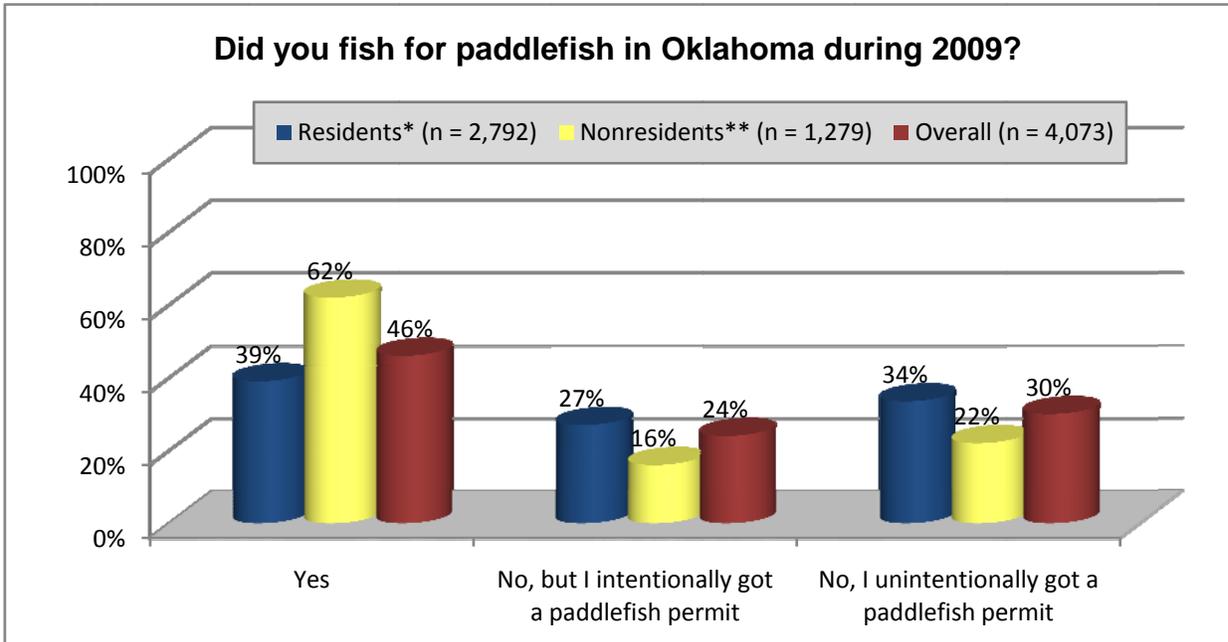
**Table 1.** Distribution of permit holders by state/province, within the population, the sample and survey respondents. Highlighted states comprised the majority (>80% in 2009) of nonresident permit holders.

| State        | Population    |               |               |               | Sample       |               |               |               | Respondent   |               |              |               |
|--------------|---------------|---------------|---------------|---------------|--------------|---------------|---------------|---------------|--------------|---------------|--------------|---------------|
|              | 2008          |               | 2009          |               | 2008         |               | 2009          |               | 2008         |               | 2009         |               |
|              | N             | %             | N             | %             | n            | %             | n             | %             | n            | %             | n            | %             |
| AB           | -             | -             | 2             | 0.01          | -            | -             | 0             | 0.00          | -            | -             | 0            | 0.00          |
| AK           | 5             | 0.02          | 4             | 0.01          | 1            | 0.02          | 1             | 0.01          | 1            | 0.06          | 0            | 0.00          |
| AL           | 7             | 0.02          | 9             | 0.03          | 1            | 0.02          | 4             | 0.03          | 0            | 0.00          | 0            | 0.00          |
| AR           | 816           | 2.79          | 1,109         | 3.31          | 152          | 2.71          | 443           | 3.30          | 33           | 2.07          | 116          | 2.85          |
| AZ           | 26            | 0.09          | 32            | 0.10          | 4            | 0.07          | 15            | 0.11          | 0            | 0.00          | 0            | 0.00          |
| CA           | 84            | 0.29          | 80            | 0.24          | 18           | 0.32          | 19            | 0.14          | 1            | 0.06          | 3            | 0.07          |
| CO           | 176           | 0.60          | 169           | 0.50          | 36           | 0.64          | 60            | 0.45          | 7            | 0.44          | 13           | 0.32          |
| CT           | 1             | 0.00          | -             | -             | 0            | 0.00          | -             | -             | 0            | 0.00          | -            | -             |
| DC           | -             | -             | 1             | 0.00          | -            | -             | 1             | 0.01          | -            | -             | 0            | 0.00          |
| DE           | -             | -             | 1             | 0.00          | -            | -             | 0             | 0.00          | -            | -             | 0            | 0.00          |
| FL           | 34            | 0.12          | 28            | 0.08          | 3            | 0.05          | 14            | 0.10          | 1            | 0.06          | 2            | 0.05          |
| GA           | 14            | 0.05          | 10            | 0.03          | 4            | 0.07          | 6             | 0.04          | 0            | 0.00          | 1            | 0.02          |
| HI           | 4             | 0.01          | 3             | 0.01          | 1            | 0.02          | 1             | 0.01          | 0            | 0.00          | 0            | 0.00          |
| IA           | 216           | 0.74          | 194           | 0.58          | 43           | 0.77          | 84            | 0.63          | 23           | 1.44          | 47           | 1.15          |
| ID           | 10            | 0.03          | 19            | 0.06          | 0            | 0.00          | 13            | 0.10          | 0            | 0.00          | 4            | 0.10          |
| IL           | 47            | 0.16          | 58            | 0.17          | 9            | 0.16          | 28            | 0.21          | 2            | 0.13          | 9            | 0.22          |
| IN           | 24            | 0.08          | 34            | 0.10          | 1            | 0.02          | 12            | 0.09          | 0            | 0.00          | 3            | 0.07          |
| KS           | 2,092         | 7.14          | 2,409         | 7.19          | 408          | 7.29          | 941           | 7.01          | 166          | 10.41         | 403          | 9.89          |
| KY           | 9             | 0.03          | 21            | 0.06          | 2            | 0.04          | 6             | 0.04          | 0            | 0.00          | 2            | 0.05          |
| LA           | 20            | 0.07          | 28            | 0.08          | 7            | 0.13          | 12            | 0.09          | 3            | 0.19          | 3            | 0.07          |
| MA           | 2             | 0.01          | 4             | 0.01          | 0            | 0.00          | 3             | 0.02          | 0            | 0.00          | 0            | 0.00          |
| MD           | 5             | 0.02          | 3             | 0.01          | 0            | 0.00          | 2             | 0.01          | 0            | 0.00          | 0            | 0.00          |
| ME           | -             | -             | 1             | 0.00          | -            | -             | 1             | 0.01          | -            | -             | 0            | 0.00          |
| MI           | 20            | 0.07          | 29            | 0.09          | 3            | 0.05          | 14            | 0.10          | 1            | 0.06          | 5            | 0.12          |
| MN           | 109           | 0.37          | 80            | 0.24          | 17           | 0.30          | 33            | 0.25          | 2            | 0.13          | 8            | 0.02          |
| MO           | 2,593         | 8.85          | 3,368         | 10.06         | 492          | 8.79          | 1,331         | 9.91          | 176          | 11.03         | 443          | 10.88         |
| MS           | 10            | 0.03          | 10            | 0.03          | 2            | 0.04          | 4             | 0.03          | 1            | 0.06          | 0            | 0.00          |
| MT           | 4             | 0.01          | 13            | 0.04          | 0            | 0.00          | 8             | 0.06          | 0            | 0.00          | 1            | 0.02          |
| NB           | -             | -             | 1             | 0.00          | -            | -             | 0             | 0.00          | -            | -             | 0            | 0.00          |
| NC           | 3             | 0.01          | 24            | 0.07          | 0            | 0.00          | 6             | 0.04          | 0            | 0.00          | 1            | 0.02          |
| ND           | -             | -             | 3             | 0.01          | -            | -             | 1             | 0.01          | -            | -             | 1            | 0.02          |
| NE           | 665           | 2.27          | 687           | 2.05          | 123          | 2.20          | 271           | 2.02          | 60           | 3.80          | 141          | 3.46          |
| NH           | 1             | 0.00          | 2             | 0.01          | 0            | 0.00          | 1             | 0.01          | 0            | 0.00          | 0            | 0.00          |
| NJ           | 2             | 0.01          | 2             | 0.01          | 0            | 0.00          | 1             | 0.01          | 0            | 0.00          | 0            | 0.00          |
| NM           | 18            | 0.06          | 35            | 0.10          | 4            | 0.07          | 10            | 0.07          | 2            | 0.13          | 1            | 0.02          |
| NV           | 20            | 0.07          | 16            | 0.05          | 7            | 0.13          | 5             | 0.04          | 1            | 0.06          | 2            | 0.05          |
| NY           | 5             | 0.02          | 12            | 0.04          | 2            | 0.04          | 2             | 0.01          | 1            | 0.06          | 0            | 0.00          |
| OH           | 16            | 0.05          | 20            | 0.06          | 6            | 0.11          | 7             | 0.05          | 3            | 0.19          | 1            | 0.02          |
| OK           | 21,615        | 73.80         | 24,201        | 72.27         | 4,141        | 73.95         | 9,793         | 72.92         | 1,072        | 67.21         | 2,792        | 68.55         |
| OR           | 20            | 0.07          | 16            | 0.05          | 2            | 0.04          | 7             | 0.05          | 1            | 0.06          | 1            | 0.02          |
| PA           | 6             | 0.02          | 20            | 0.06          | 1            | 0.02          | 13            | 0.10          | 1            | 0.06          | 1            | 0.02          |
| PR           | 1             | 0.00          | -             | -             | 0            | 0.00          | -             | -             | 0            | 0.00          | -            | -             |
| RI           | 4             | 0.01          | -             | -             | 0            | 0.00          | -             | -             | 0            | 0.00          | -            | -             |
| SC           | 10            | 0.03          | 14            | 0.04          | 2            | 0.04          | 9             | 0.07          | 0            | 0.00          | 4            | 0.10          |
| SD           | 71            | 0.24          | 76            | 0.23          | 13           | 0.23          | 29            | 0.22          | 9            | 0.56          | 12           | 0.29          |
| TN           | 24            | 0.08          | 19            | 0.06          | 6            | 0.11          | 8             | 0.06          | 0            | 0.00          | 0            | 0.00          |
| TX           | 394           | 1.35          | 447           | 1.33          | 73           | 1.30          | 172           | 1.28          | 17           | 1.07          | 36           | 0.88          |
| UT           | 12            | 0.04          | 7             | 0.02          | 2            | 0.04          | 4             | 0.03          | 0            | 0.00          | 3            | 0.07          |
| VA           | 11            | 0.04          | 8             | 0.02          | 1            | 0.02          | 3             | 0.02          | 0            | 0.00          | 0            | 0.00          |
| WA           | 17            | 0.06          | 41            | 0.12          | 3            | 0.05          | 15            | 0.11          | 1            | 0.06          | 4            | 0.10          |
| WI           | 29            | 0.10          | 30            | 0.09          | 5            | 0.09          | 9             | 0.07          | 1            | 0.06          | 4            | 0.10          |
| WV           | 4             | 0.01          | 4             | 0.01          | 1            | 0.02          | 1             | 0.01          | 0            | 0.00          | 0            | 0.00          |
| WY           | 13            | 0.04          | 21            | 0.06          | 4            | 0.07          | 7             | 0.05          | 1            | 0.06          | 4            | 0.10          |
| <b>Total</b> | <b>29,338</b> | <b>100.00</b> | <b>33,425</b> | <b>100.00</b> | <b>5,600</b> | <b>100.00</b> | <b>13,430</b> | <b>100.00</b> | <b>1,587</b> | <b>100.00</b> | <b>4,071</b> | <b>100.00</b> |
| Missing      | 49            | -             | 63            | -             | 0            | -             | 0             | -             | 8            | -             | 2            | -             |

**Figure 1.** Use of paddlefish permit privileges in 2008, by residency. Residency could not be determined for eight respondents. Asterisks indicate differences between distribution of responses from residents and nonresidents.



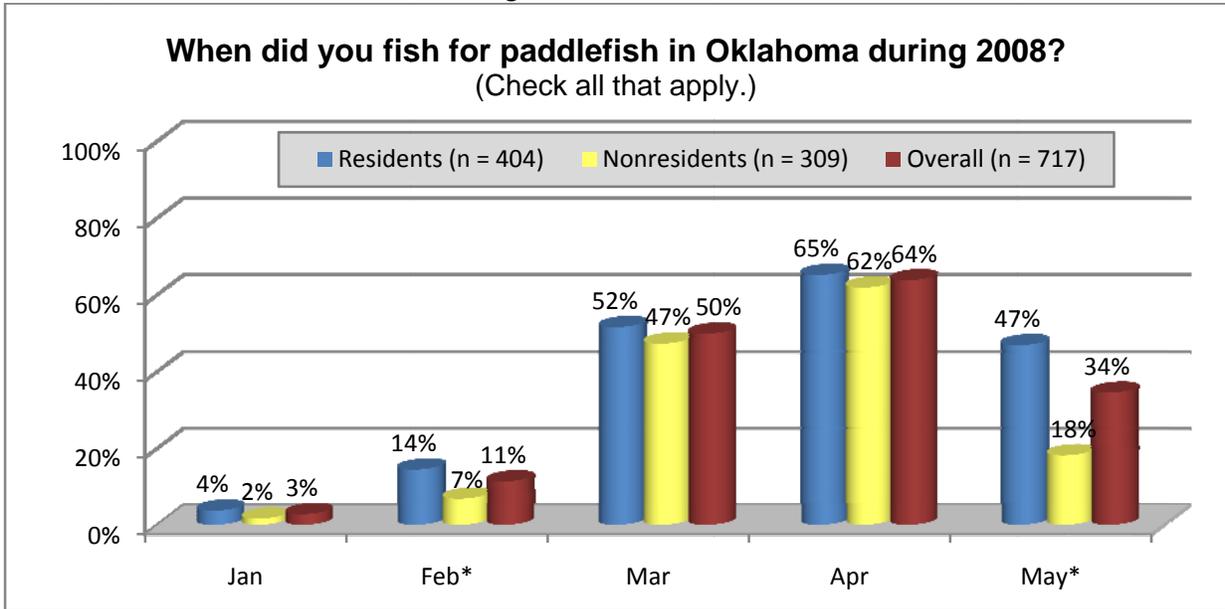
**Figure 2.** Use of paddlefish permit privileges in 2009, by residency. Residency could not be determined for two respondents. Asterisks indicate differences between distribution of responses from residents and nonresidents.



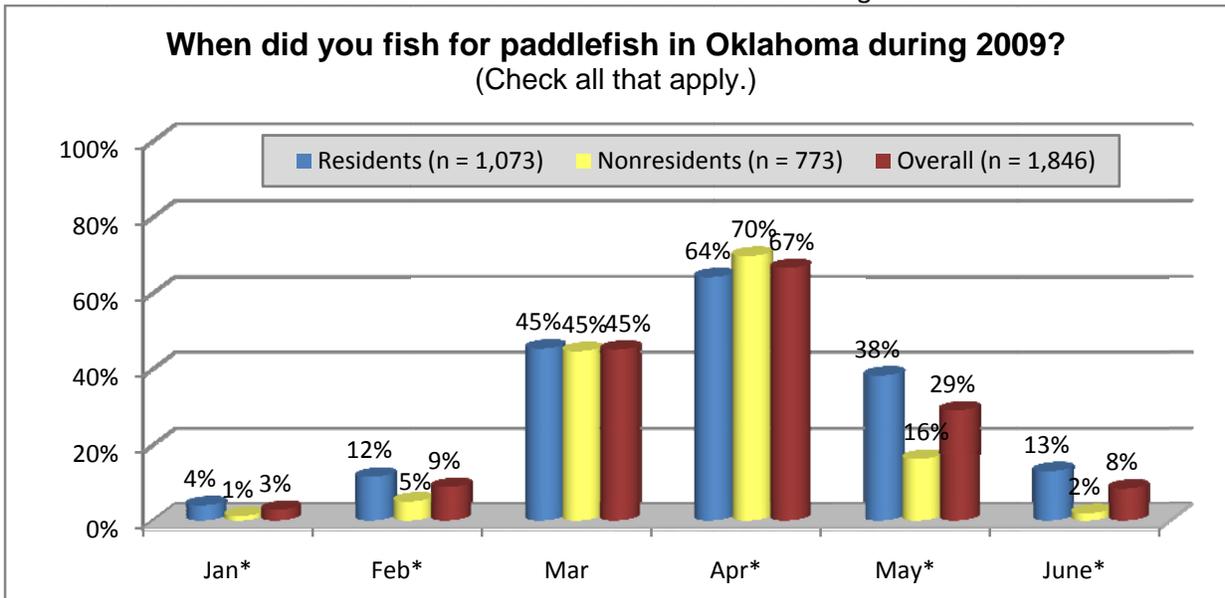
### Month of Paddlefish Fishing

In both years, April was the most popular month for paddlefishing (Figure 3-4). Nonresident participation declined considerably after April. There were statistical differences between residents and nonresidents during February and May of 2008, and all months of 2009 except March.

**Figure 3.** Month(s) of paddlefishing activities among active permit holders in 2008, by residency. Residency could not be determined for four active permit holders. Asterisks indicate differences between residents and nonresident fishing within a month.

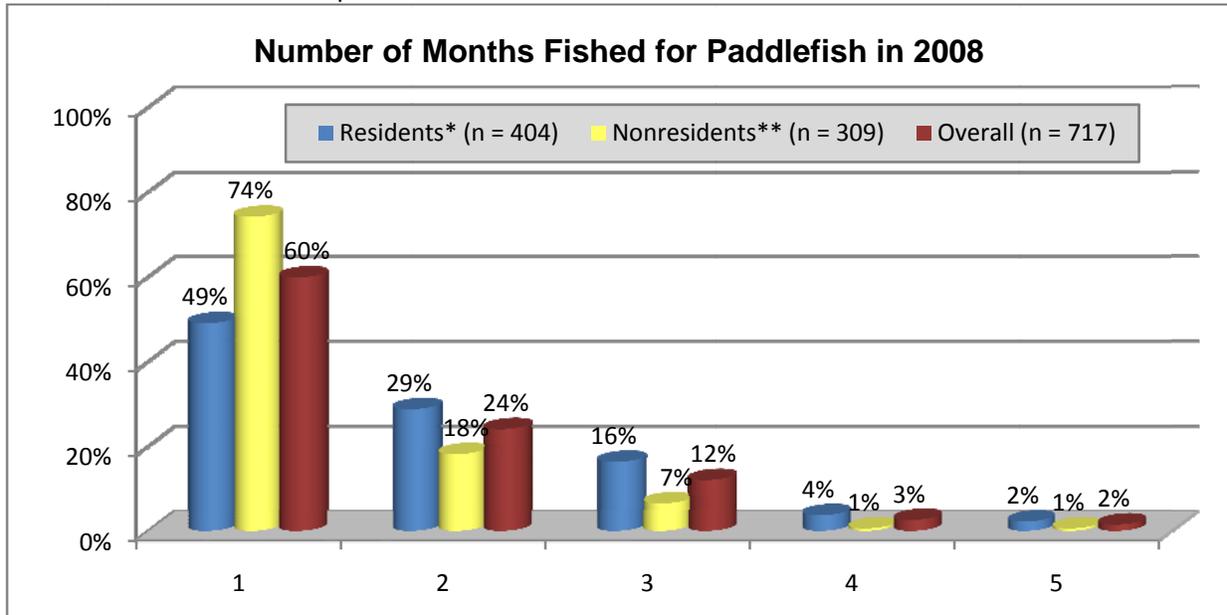


**Figure 4.** Month(s) of paddlefishing activities among active permit holders in 2009, by residency. Asterisks indicate differences between residents and nonresident fishing within a month.

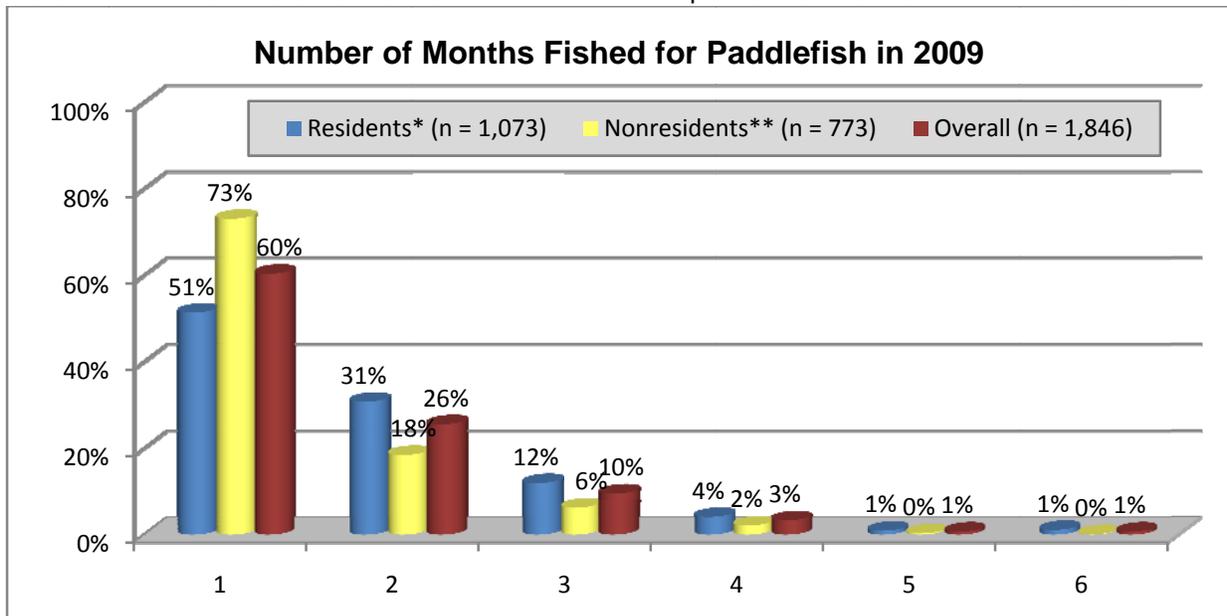


Overall, most respondents who fished for paddlefish did so during only one month (Figures 5-6). Residents were statistically more likely than nonresidents to fish for paddlefish during multiple months.

**Figure 5.** Number of months fished for paddlefish by active permit holders in 2008, by residency. Residency could not be determined for four active permit holders. Asterisks indicate differences between distribution of responses from residents and nonresidents.



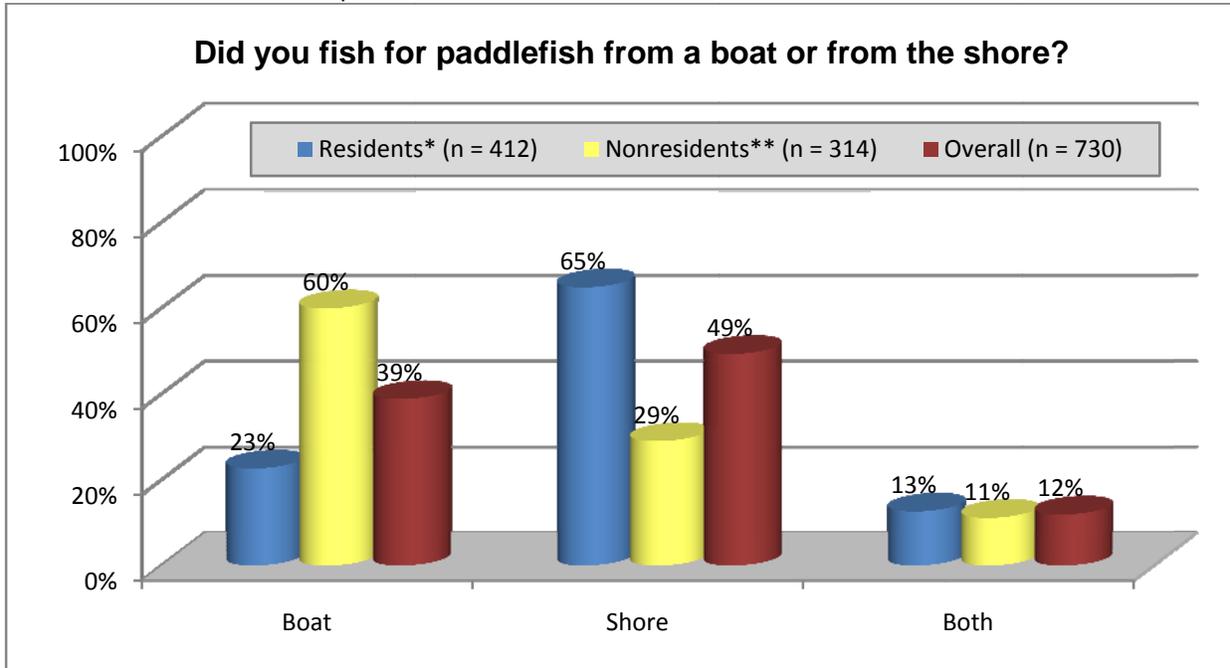
**Figure 6.** Number of months fished for paddlefish by active permit holders in 2009, by residency. Asterisks indicate differences between distribution of responses from residents and nonresidents.



### Location of Paddlefish Fishing – Shore or Boat

Overall, half of respondents who fished for paddlefish in 2008 did so only from the shore (Figure 7). A little more than ten percent of active permit holders fished for paddlefish both from the shore and a boat. Nonresidents were significantly more likely than residents to have fished from a boat. This question was not asked on the 2009 survey.

**Figure 7.** Location of paddlefish fishing activities among active permit holders in 2008, by residency. Residency could not be determined for four active permit holders. Asterisks indicate differences between distribution of responses from residents and nonresidents.

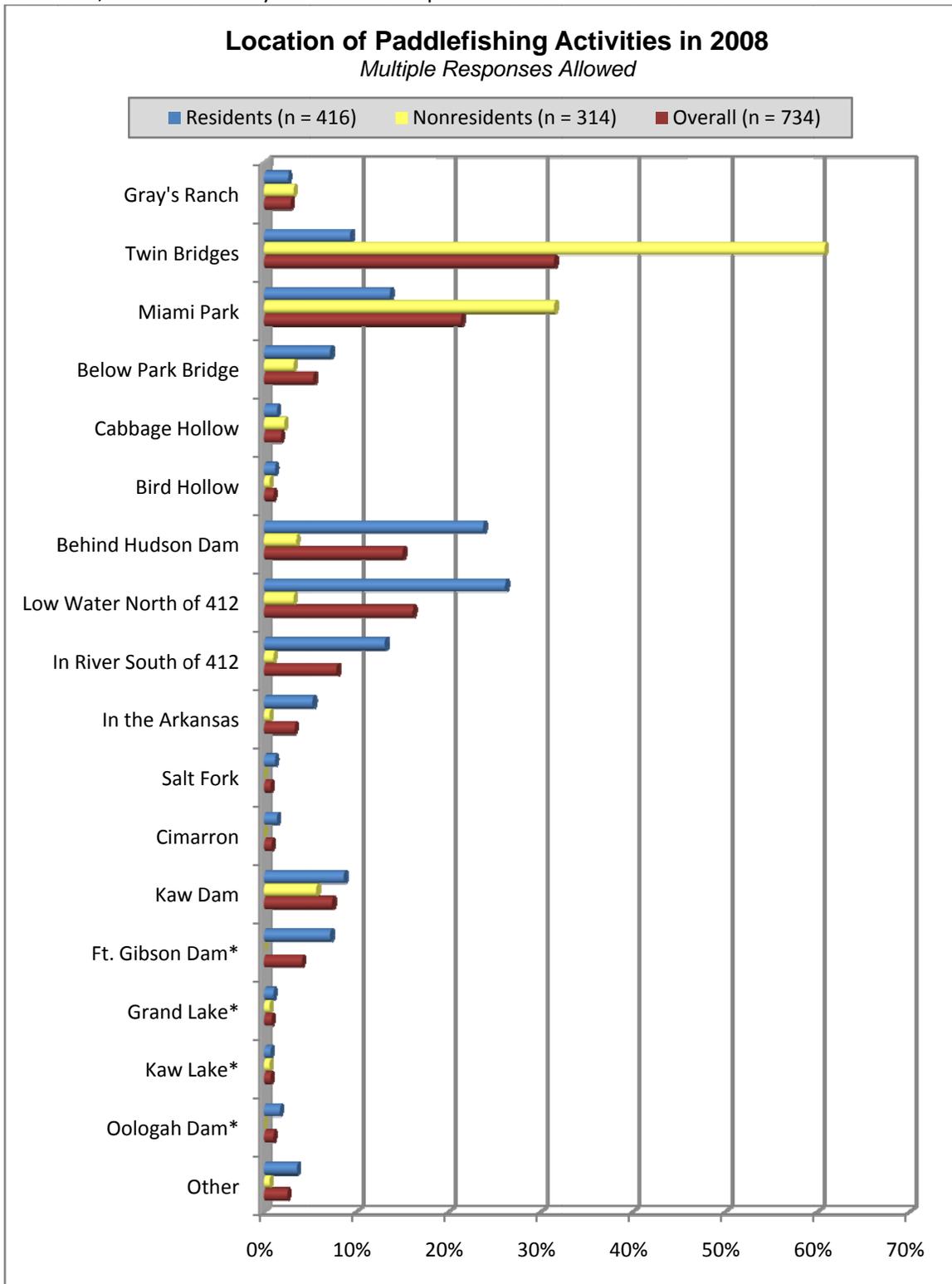


### Location of Paddlefish Fishing Across the Fishery

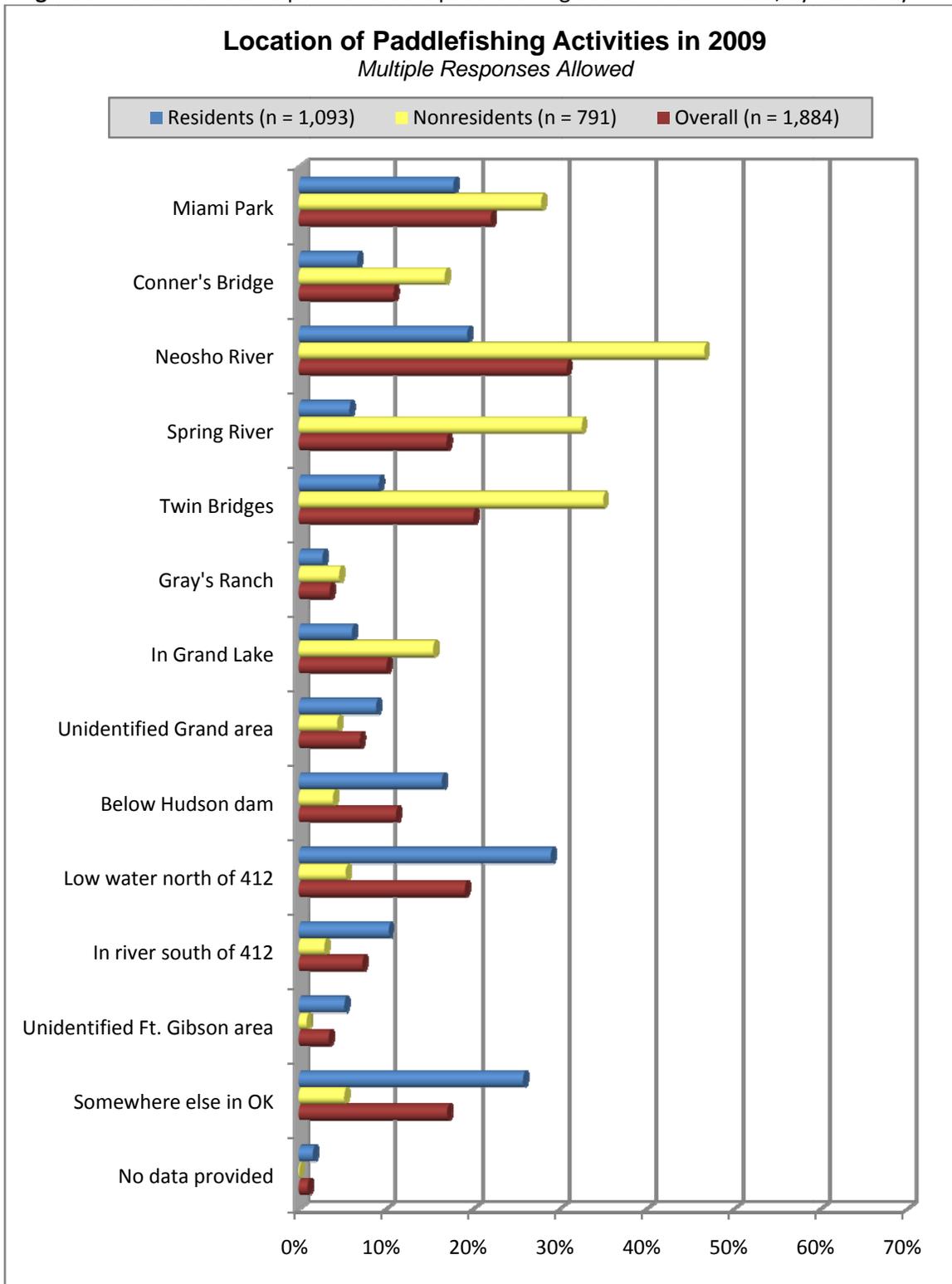
On the 2008 survey, active paddlefish anglers were provided a list of popular areas grouped into four categories: Grand Lake, Hudson Lake, Ft. Gibson, and Upper Keystone. The majority of nonresidents fished for paddlefish at Twin Bridges and/or Miami Park, both in the Grand Lake category (Figure 8). Residents utilized these areas as well, but also fished near Ft. Gibson. “Other” areas identified by at least five respondents were added to the graph. Paddlefish activity at these areas may be under-represented, as the areas were not specifically prompted.

In 2009, the survey instrument grouped fishing areas into three categories: around Grand Lake, north of Ft. Gibson, and anywhere else in Oklahoma. Within the Grand Lake category, four fishing areas were prompted that were not in 2008 (Figure 9). The changes to the survey instrument may have altered response patterns. For example, 61% of nonresidents indicated they fished Twin Bridges in 2008 but only 35% indicated so in 2009. Neosho River was not prompted in 2008 but was in 2009, where 47% of nonresidents selected it. Results for specific fishing spots are not directly comparable.

**Figure 8.** Percent of active permit holders paddlefishing at each area in 2008, by residency. Residency could not be determined for four respondents. \*These locations were not prompted by the survey instrument, but identified by at least five respondents as an “other” location.



**Figure 9.** Percent of active permit holders paddlefishing at each area in 2009, by residency.



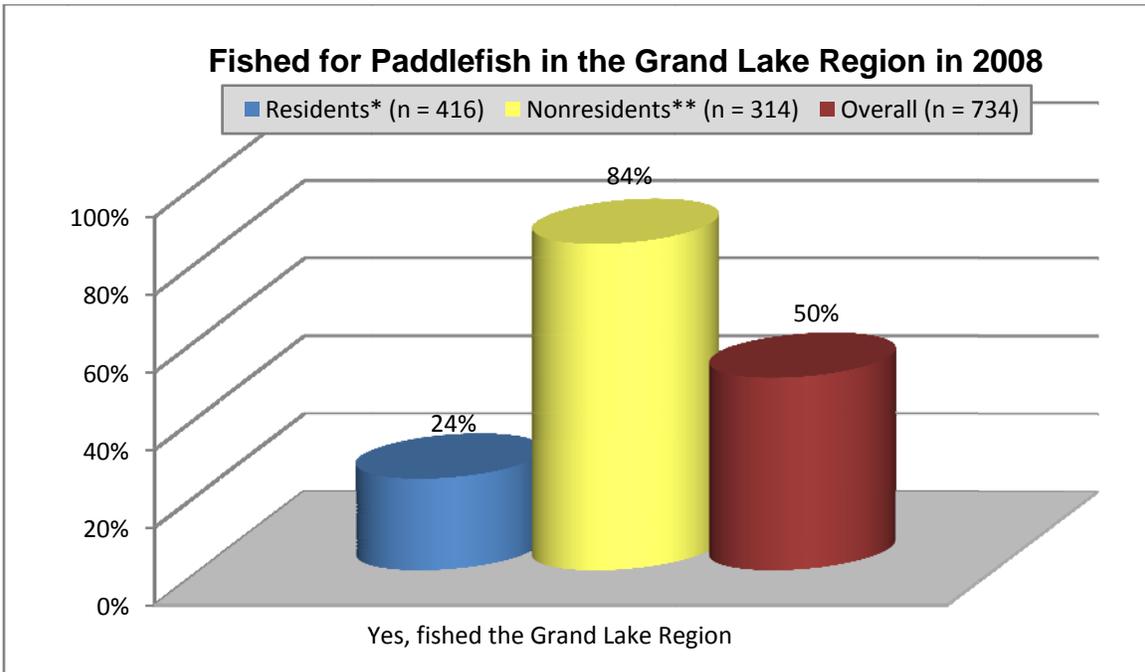
Although changes to the survey instrument made comparison of results for specific fishing spots difficult, higher level regional comparisons may be appropriate.

The “Grand Lake Region” of the paddlefish fishery was of particular interest in these surveys because of its proximity to the Paddlefish Research and Processing Center. In 2008, nearly half of all respondents fished the Grand Lake Region (defined as Gray's Ranch, Twin Bridges, Miami Park and/or Grand Lake; Figure 10). In 2009, 65% of active paddlefish anglers fished the Grand Lake Region (defined as Gray's Ranch, Twin Bridges, Miami Park, Grand Lake, Conner's Bridge, Spring River, Neosho River and/or another unidentified Grand Lake area; Figure 11). In both years, nonresidents were significantly more likely than residents to have fished for paddlefish in the Grand Lake Region.

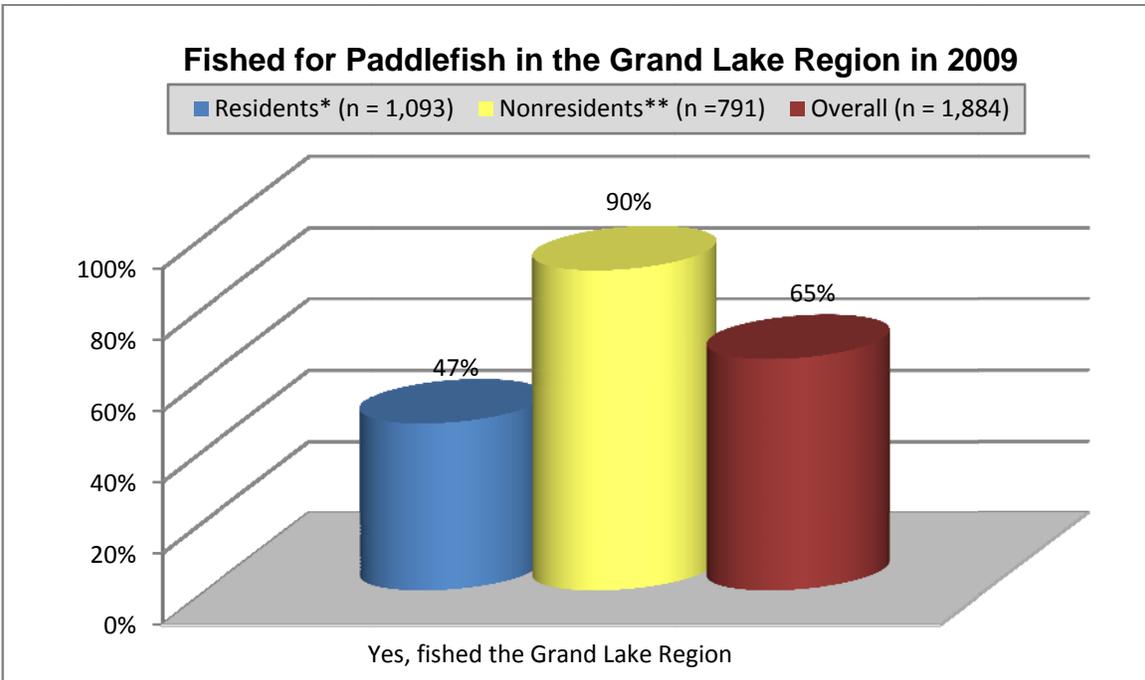
The proportion of resident paddlefish anglers who fished the Grand Lake Region appeared to increase appreciably between 2008 and 2009 (24% and 47%, respectively; Figures 10-11). Changes to the way Grand Lake Region Anglers were identified (i.e., more specific fishing spots around Grand Lake prompted in 2009) may have contributed to the increase, although if so, it would imply a differential impact of the survey instrument modification on residents. The proportion of nonresidents who fished the Grand Lake Region only increased six percent from 2008 to 2009. In addition, if prompting only three Grand Lake fishing spots on the 2008 survey had caused confusion, one would have expected a greater proportion of respondents to indicate they fished an “other” area or provide no data at all. It is possible the survey data reflect a true increase in paddlefishing activity around Grand Lake by Oklahomans.

The “Ft. Gibson Region” was also of interest, as the Department is considering a second Paddlefish Research and Processing Center in the area. The region was defined similarly on both survey instruments (below Hudson dam, low water north of 412, in the river south of 412, and “other” areas north of Ft. Gibson in 2009). Overall, 30% of active paddlefish anglers fished the Ft. Gibson area in 2008 (Figure 12) and 29% fished the area in 2009 (Figure 13). In both years, residents were significantly more likely than nonresidents to have fished for paddlefish in the Ft. Gibson Region.

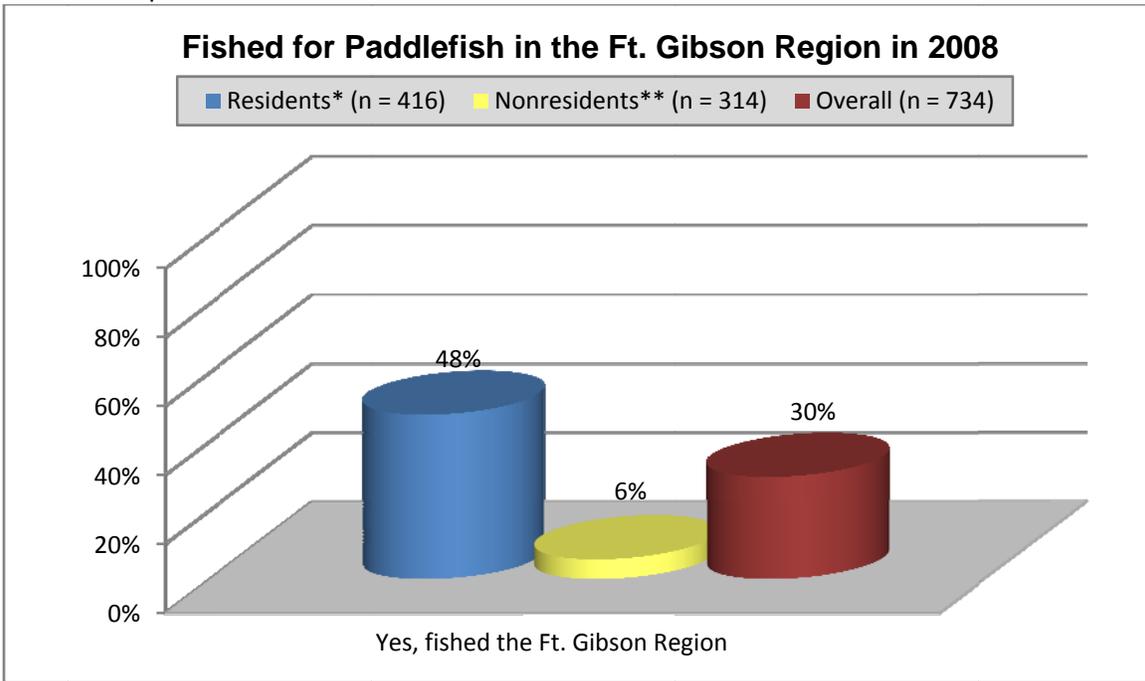
**Figure 10.** Proportion of respondents who paddlefished in one or more areas of the Grand Lake Region (Gray's Ranch, Twin Bridges, Miami Park and/or Grand Lake) in 2008, by residency. Residency could not be determined for four respondents. Asterisks indicate differences between distribution of responses from residents and nonresidents.



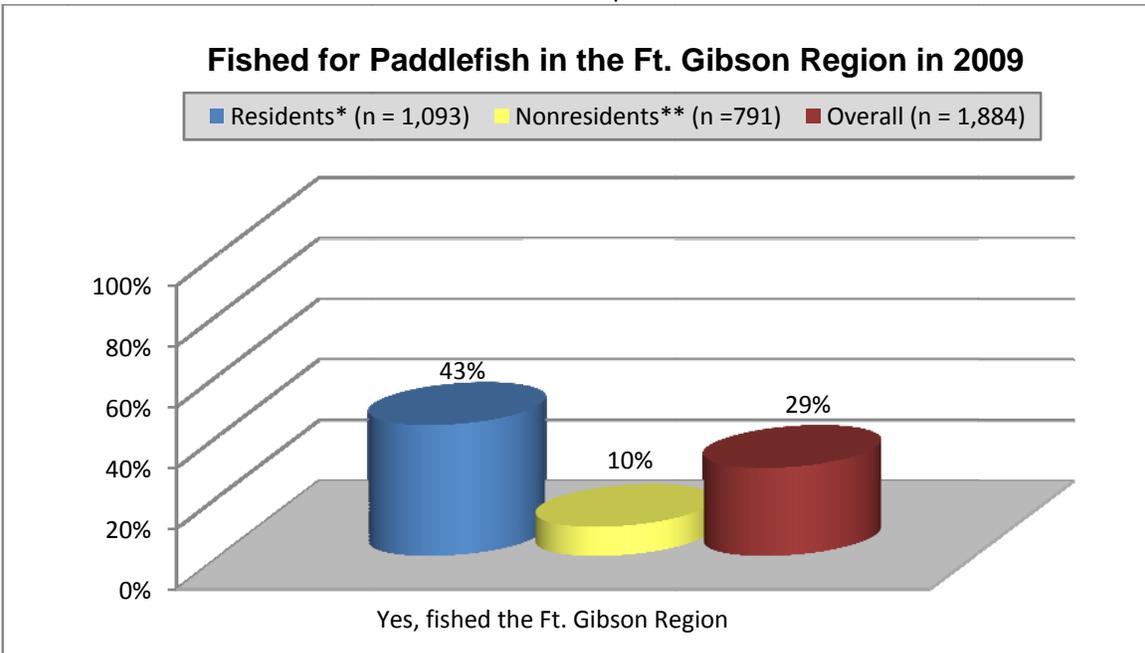
**Figure 11.** Proportion of respondents who fished for paddlefish in one or more areas in the Grand Lake Region (Gray's Ranch, Twin Bridges, Miami Park, Grand Lake, Conner's Bridge, Spring River, Neosho River, other) in 2009, by residency. Asterisks indicate differences between distribution of responses from residents and nonresidents.



**Figure 12.** Proportion of respondents who fished for paddlefish in one or more areas in the Ft. Gibson Region (Below Hudson dam, Low water north of 412, In river south of 412, other) in 2008, by residency. Residency could not be determined for four respondents. Asterisks indicate differences between distribution of responses from residents and nonresidents.



**Figure 13.** Proportion of respondents who fished for paddlefish in one or more areas in the Ft. Gibson Region (Below Hudson dam, Low water north of 412, In river south of 412, other) in 2009, by residency. Asterisks indicate differences between distribution of responses from residents and nonresidents.



## Days Fished

The number of days fished by active paddlefish anglers in 2008 and 2009 are shown in Tables 2 and 3, respectively. Data were not normally distributed in all three categories (All Areas, Grand Lake Region and Ft. Gibson Region) in either year. The distribution of days of fishing in the Grand Lake Region in 2008 and 2009 can be seen in Figures 14 and 15.

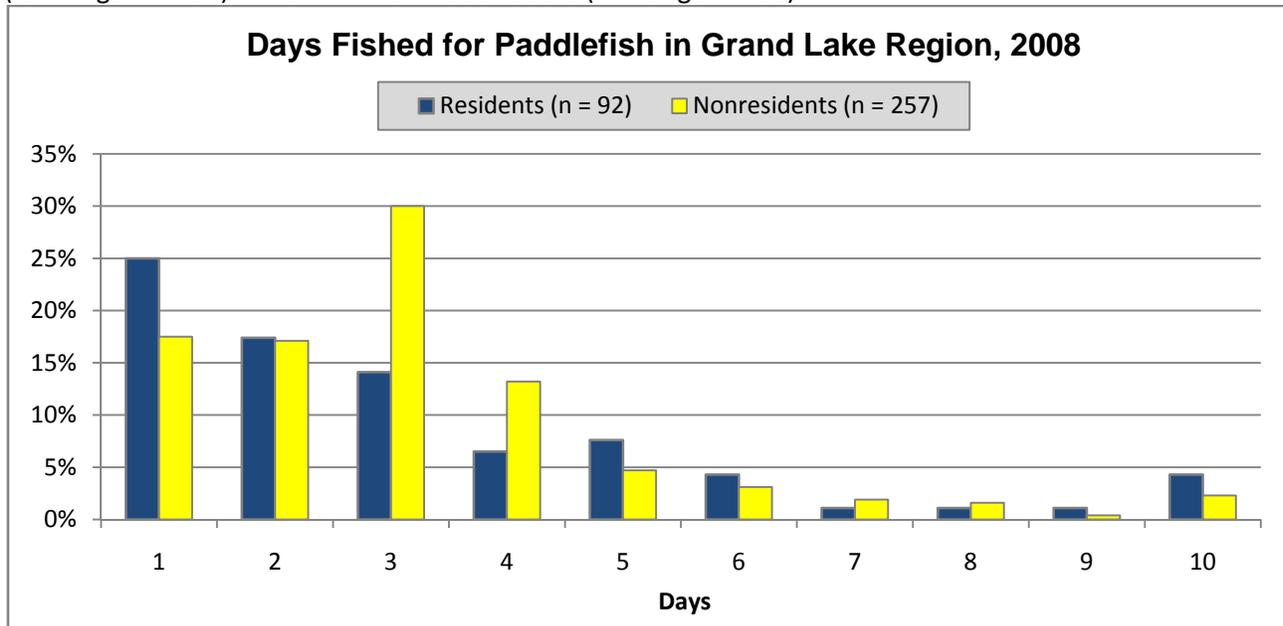
**Table 2.** Days of fishing for paddlefish among active permit holders in 2008, by residency. Superscripts denote significant differences within columns.

| 2008 Active Paddlefish Anglers | All Areas<br>(Overall n = 707) |                |       | Grand Lake Region<br>(Overall n = 350) |                |       | Ft. Gibson Region<br>(Overall n = 210) |                |       |
|--------------------------------|--------------------------------|----------------|-------|--|----------------|-------|--|----------------|-------|
|                                | Mean                           | Median         | Range | Mean                                   | Median         | Range | Mean                                   | Median         | Range |
| <b>Overall</b>                 | 6.6                            | 3              | 1-150 | 5.7                                    | 3              | 1-102 | 6.8                                    | 3              | 1-60  |
| <b>Residents</b>               | 8.1                            | 4 <sup>a</sup> | 1-150 | 8.2                                    | 3 <sup>a</sup> | 1-102 | 7.1                                    | 3 <sup>a</sup> | 1-60  |
| <b>Nonresidents</b>            | 4.5                            | 3 <sup>b</sup> | 1-60  | 4.6                                    | 3 <sup>a</sup> | 1-60  | 3.4                                    | 2 <sup>a</sup> | 1-9   |

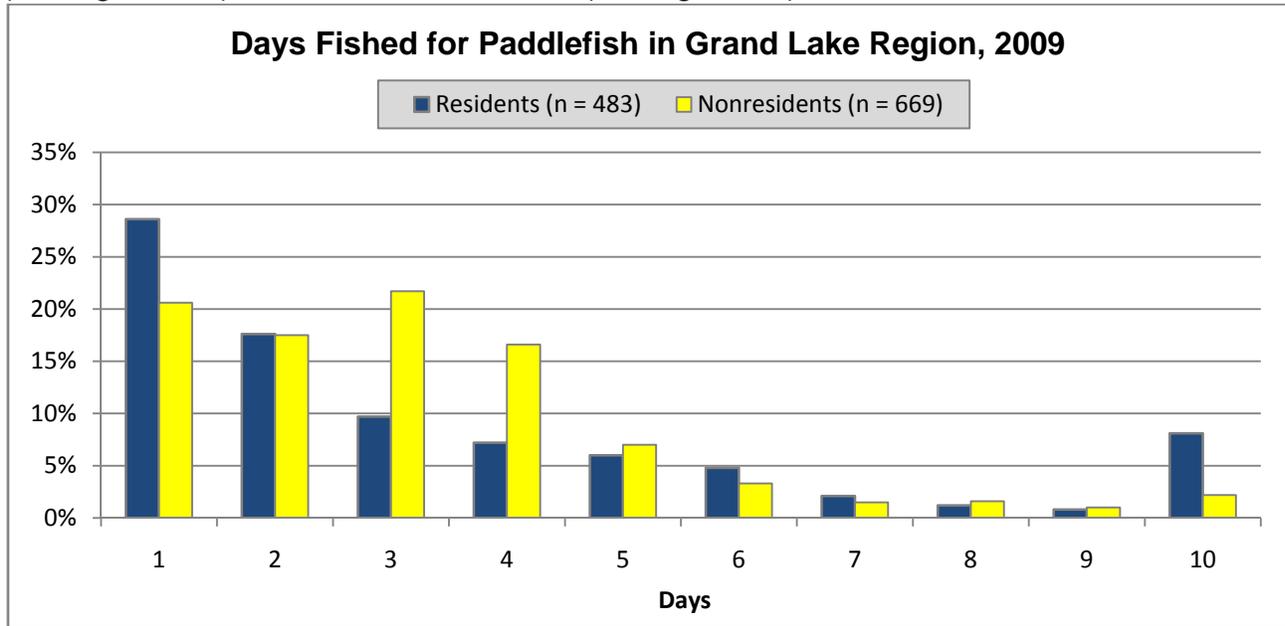
**Table 3.** Days of fishing for paddlefish among active permit holders in 2009, by residency. Superscripts denote significant differences within columns.

| 2009 Active Paddlefish Anglers | All Areas<br>(Overall n = 1,790) |                |       | Grand Lake Region<br>(Overall n = 1,152) |                |       | Ft. Gibson Region<br>(Overall n = 519) |                |       |
|--------------------------------|----------------------------------|----------------|-------|--|----------------|-------|--|----------------|-------|
|                                | Mean                             | Median         | Range | Mean                                     | Median         | Range | Mean                                   | Median         | Range |
| <b>Overall</b>                 | 5.9                              | 3              | 1-130 | 5.5                                      | 3              | 1-110 | 4.7                                    | 3              | 1-90  |
| <b>Residents</b>               | 7.0                              | 3 <sup>a</sup> | 1-130 | 7.0                                      | 3 <sup>a</sup> | 1-110 | 5.0                                    | 3 <sup>a</sup> | 1-90  |
| <b>Nonresidents</b>            | 4.5                              | 3 <sup>b</sup> | 1-72  | 4.5                                      | 3 <sup>a</sup> | 1-72  | 2.9                                    | 2 <sup>a</sup> | 1-15  |

**Figure 14.** Days fished in the Grand Lake Region in 2008, by residency. Graph displays 83% of resident data (full range = 1-102) and 92% of nonresident data (full range = 1-60).



**Figure 15.** Days fished in the Grand Lake Region in 2009, by residency. Graph displays 86% of resident data (full range = 1-110) and 93% of nonresident data (full range = 1-72).



### Fish Kept

The number of fish kept by active paddlefish anglers in 2008 and 2009 are shown in Tables 4 and 5, respectively. Data were not normally distributed in all three categories (All Areas, Grand Lake Region and Ft. Gibson Region) in either year. The distribution of fish kept in the Grand Lake Region in 2008 and 2009 can be seen in Figures 16 and 17.

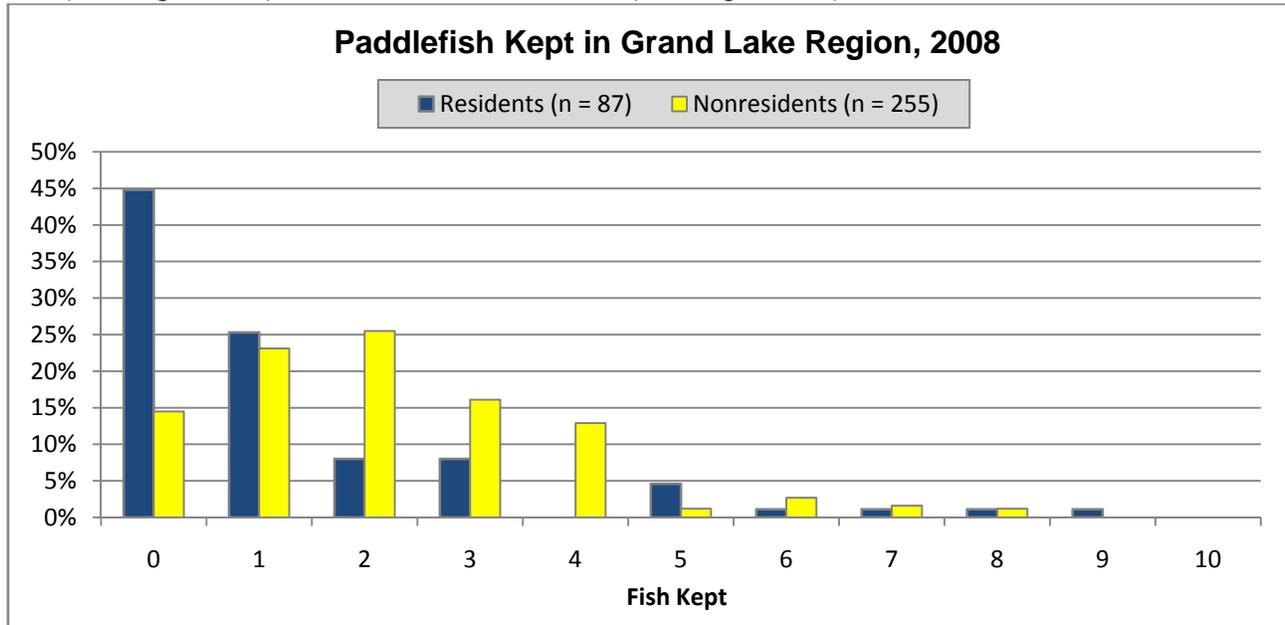
**Table 4.** Number of paddlefish kept by active permit holders in 2008, by residency. Superscripts denote significant differences within columns.

| 2008 Active Paddlefish Anglers | All Areas<br>(Overall n = 688) |                |       | Grand Lake Region<br>(Overall n = 343) |                |       | Ft. Gibson Region<br>(Overall n = 199) |                |       |
|--------------------------------|--------------------------------|----------------|-------|--|----------------|-------|--|----------------|-------|
|                                | Mean                           | Median         | Range | Mean                                   | Median         | Range | Mean                                   | Median         | Range |
| <b>Overall</b>                 | 2.4                            | 1              | 0-80  | 2.5                                    | 2              | 0-80  | 2.5                                    | 1              | 0-30  |
| <b>Residents</b>               | 2.5                            | 1 <sup>a</sup> | 0-80  | 2.9                                    | 1 <sup>a</sup> | 0-80  | 2.6                                    | 1 <sup>a</sup> | 0-30  |
| <b>Nonresidents</b>            | 2.2                            | 2 <sup>b</sup> | 0-18  | 2.3                                    | 2 <sup>b</sup> | 0-18  | 2.3                                    | 2 <sup>a</sup> | 0-6   |

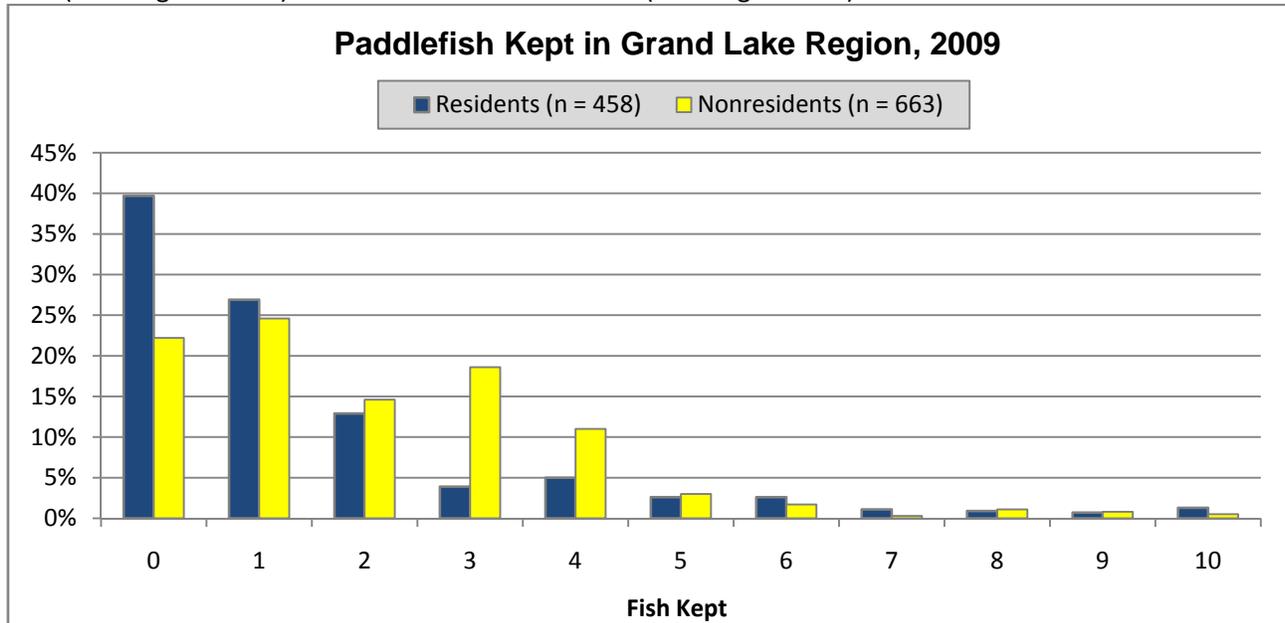
**Table 5.** Number of paddlefish kept by active permit holders in 2009, by residency. Superscripts denote significant differences within columns.

| 2009 Active Paddlefish Anglers | All Areas<br>(Overall n = 1,745) |                |       | Grand Lake Region<br>(Overall n = 1,121) |                |       | Ft. Gibson Region<br>(Overall n = 510) |                |       |
|--------------------------------|----------------------------------|----------------|-------|--|----------------|-------|--|----------------|-------|
|                                | Mean                             | Median         | Range | Mean                                     | Median         | Range | Mean                                   | Median         | Range |
| <b>Overall</b>                 | 2.3                              | 1              | 0-110 | 2.3                                      | 1              | 0-110 | 2.0                                    | 1              | 0-30  |
| <b>Residents</b>               | 2.3                              | 1 <sup>a</sup> | 0-110 | 2.1                                      | 1 <sup>a</sup> | 0-110 | 2.1                                    | 1 <sup>a</sup> | 0-30  |
| <b>Nonresidents</b>            | 2.4                              | 2 <sup>b</sup> | 0-64  | 2.4                                      | 2 <sup>b</sup> | 0-64  | 1.7                                    | 1 <sup>b</sup> | 0-6   |

**Figure 16.** Paddlefish kept in the Grand Lake Region in 2008, by residency. Graph displays 95% of resident data (full range = 0-80) and 99% of nonresident data (full range = 0-18).



**Figure 17.** Paddlefish kept in the Grand Lake Region in 2009, by residency. Graph displays 98% of resident data (full range = 0-110) and 98% of nonresident data (full range = 0-64).



## Fish Released

The number of fish released by active paddlefish anglers in 2008 and 2009 are shown in Tables 6 and 7, respectively. Data were not normally distributed in all three categories (All Areas, Grand Lake Region and Ft. Gibson Region) in either year. The distribution of fish released in the Grand Lake Region in 2008 and 2009 can be seen in Figures 18 and 19.

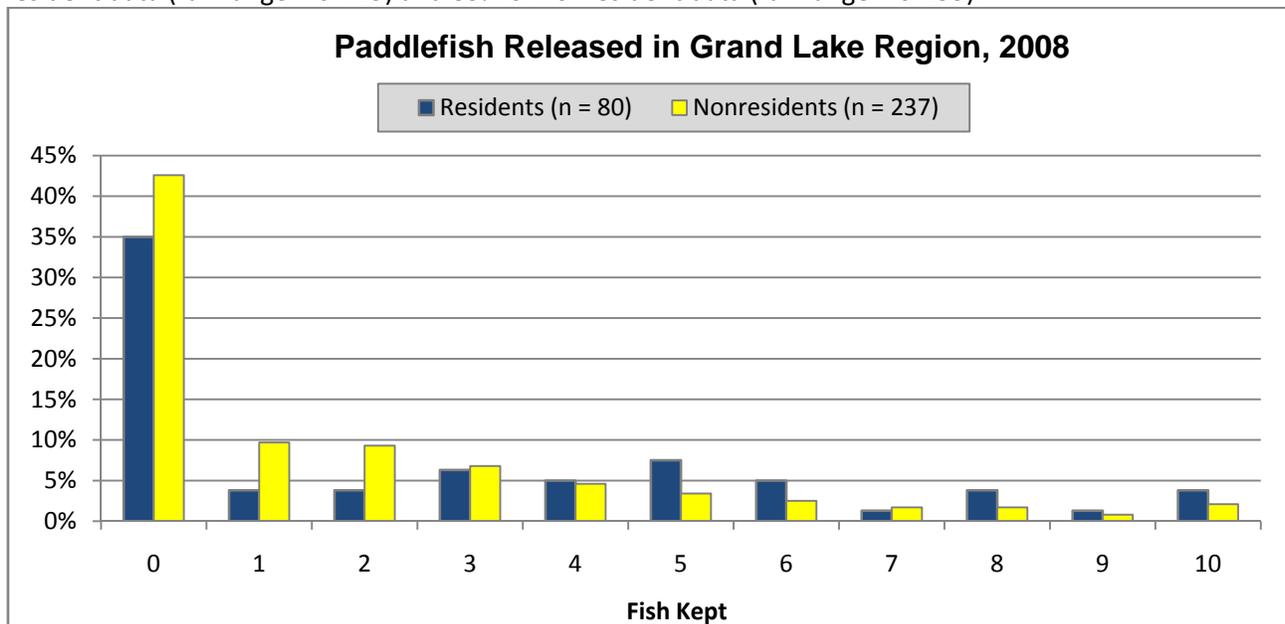
**Table 6.** Number of paddlefish released by active permit holders in 2008, by residency. Superscripts denote significant differences within columns.

| 2008 Active Paddlefish Anglers | All Areas<br>(Overall $n = 659$ ) |                |       | Grand Lake Region<br>(Overall $n = 318$ ) |                |       | Ft. Gibson Region<br>(Overall $n = 200$ ) |                |       |
|--------------------------------|-----------------------------------|----------------|-------|---|----------------|-------|---|----------------|-------|
|                                | Mean                              | Median         | Range | Mean                                      | Median         | Range | Mean                                      | Median         | Range |
| Overall                        | 11.6                              | 2              | 0-440 | 11.0                                      | 2              | 0-415 | 9.2                                       | 3              | 0-138 |
| Residents                      | 15.1                              | 3 <sup>a</sup> | 0-440 | 21.4                                      | 4 <sup>a</sup> | 0-415 | 9.5                                       | 3 <sup>a</sup> | 0-138 |
| Nonresidents                   | 6.9                               | 1 <sup>b</sup> | 0-155 | 7.2                                       | 1 <sup>b</sup> | 0-155 | 6.3                                       | 1 <sup>a</sup> | 0-49  |

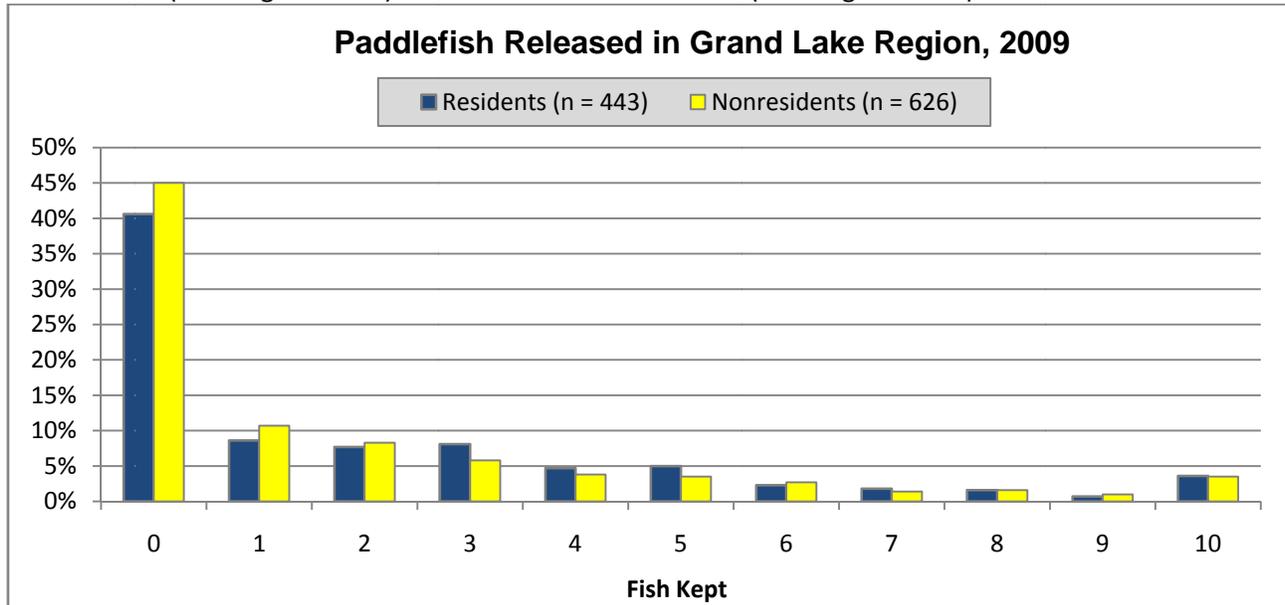
**Table 7.** Number of paddlefish released by active permit holders in 2009, by residency. Superscripts denote significant differences within columns.

| 2009 Active Paddlefish Anglers | All Areas<br>(Overall $n = 1,675$ ) |                |       | Grand Lake Region<br>(Overall $n = 1,069$ ) |                |       | Ft. Gibson Region<br>(Overall $n = 490$ ) |                |       |
|--------------------------------|-------------------------------------|----------------|-------|---|----------------|-------|---|----------------|-------|
|                                | Mean                                | Median         | Range | Mean  | Median         | Range | Mean                                      | Median         | Range |
| Overall                        | 8.4                                 | 2              | 0-345 | 7.2   | 1              | 0-272 | 7.6                                       | 2              | 0-100 |
| Residents                      | 8.9                                 | 2 <sup>a</sup> | 0-300 | 8.0   | 2 <sup>a</sup> | 0-272 | 7.0                                       | 2 <sup>a</sup> | 0-100 |
| Nonresidents                   | 7.7                                 | 1 <sup>b</sup> | 0-345 | 6.7   | 1 <sup>a</sup> | 0-250 | 11.1                                      | 4 <sup>b</sup> | 0-65  |

**Figure 18.** Paddlefish released in the Grand Lake Region in 2008, by residency. Graph displays 76% of resident data (full range = 0-415) and 85% of nonresident data (full range = 0-155).



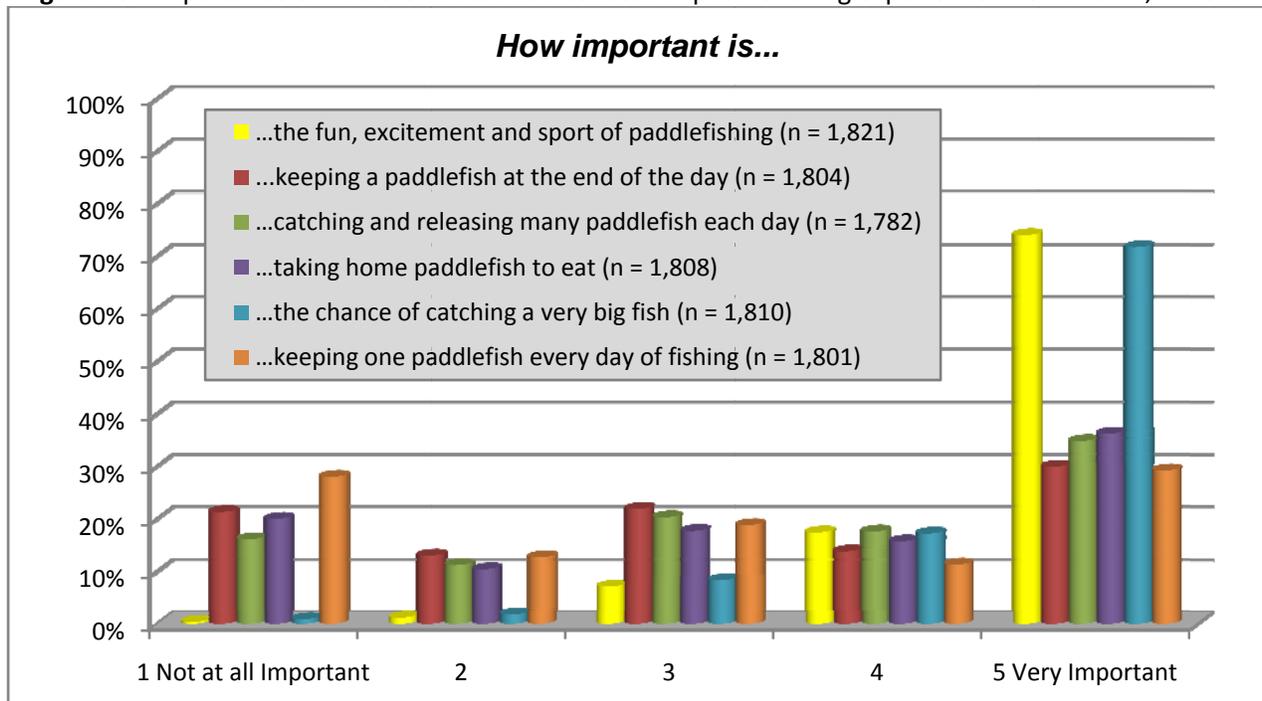
**Figure 19.** Paddlefish released in the Grand Lake Region in 2009, by residency. Graph displays 85% of resident data (full range = 0-272) and 87% of nonresident data (full range = 0-250).



*Factors Related to a Successful Paddlefishing Experience*

On the 2009 survey instrument, active paddlefish anglers were asked to rate the importance of six items for a successful paddlefishing experience in Oklahoma (Figure 20). Factors rated highest by paddlefish anglers on average were “the fun, excitement and sport of paddlefishing” and “the chance of catching a very big fish.”

**Figure 20.** Importance of factors related to a successful paddlefishing experience in Oklahoma, in 2009.



### *Use of the Paddlefish Research and Processing Center (PRPC)*

Currently, the location of the PRPC at Twin Bridges State Park limits its practical use to anglers who fish the Grand Lake Region. The PRPC was used by 55% and 46% of Grand Lake Region anglers in 2008 and 2009, respectively. However, not all Grand Lake Region anglers could use the PRPC, because not all caught and kept paddlefish.

Of those Grand Lake Regions anglers who kept at least one paddlefish, the PRPC was used for processing by 72% and 65% in 2008 and 2009, respectively (Figures 21-22). Use of the PRPC by Grand Lake Region anglers who kept fish did not differ by residency in 2008. In 2009, nonresident Grand Lake Region anglers who kept fish were more likely to use the PRPC than residents. Some anglers used the PRPC for processing of every paddlefish they caught, some used it for a portion of their harvested fish, and some did not use it at all (Figure 23).

When comparing 2008 and 2009 survey results, it appeared the proportion of successful paddlefish anglers using the PRPC declined slightly overall (72% to 65%) but more notably among residents (64% to 49%). However, in 2008 the number of resident anglers who kept at least one paddlefish in the Grand Lake Region was quite small ( $n = 47$ ).

Proportions calculated from this small sample were possibly unreliable. Expanded mailings in 2009 yielded a more substantial number of resident anglers who kept at least one fish from the Grand Lake Region ( $n = 276$ ). A third year of data collection may help verify the proportion of regional paddlefish anglers who use the PRPC.

Grand Lake Region anglers who used the PRPC in 2008 reported taking an average of 2.6 paddlefish for processing (Table 8). In 2009, PRPC users reported processing an average of 2.3 fish. One case was excluded from the 2009 dataset because the number of fish reportedly processed was 110, although the known maximum number of fish processed from one individual was 22.

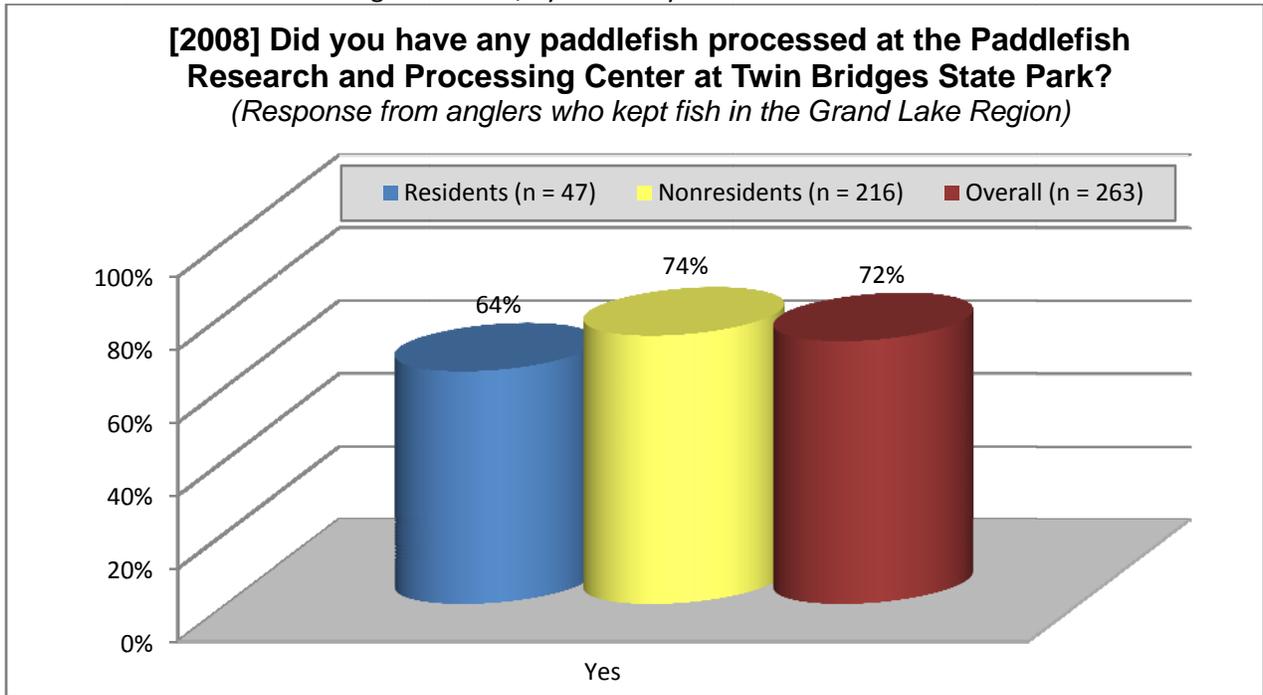
**Table 8.** Number of paddlefish processed at the Paddlefish Research and Processing Center by Grand Lake Region anglers who used the center.

| Year                                 | Fish Processed at PRPC |        |      |       |
|--------------------------------------|------------------------|--------|------|-------|
|                                      | Mean                   | Median | Mode | Range |
| <b>2008</b> ( $n = 186$ ; 3 missing) | 2.6                    | 2      | 2    | 1-24  |
| <b>2009</b> ( $n = 504$ ; 8 missing) | 2.3                    | 2      | 1    | 1-17  |

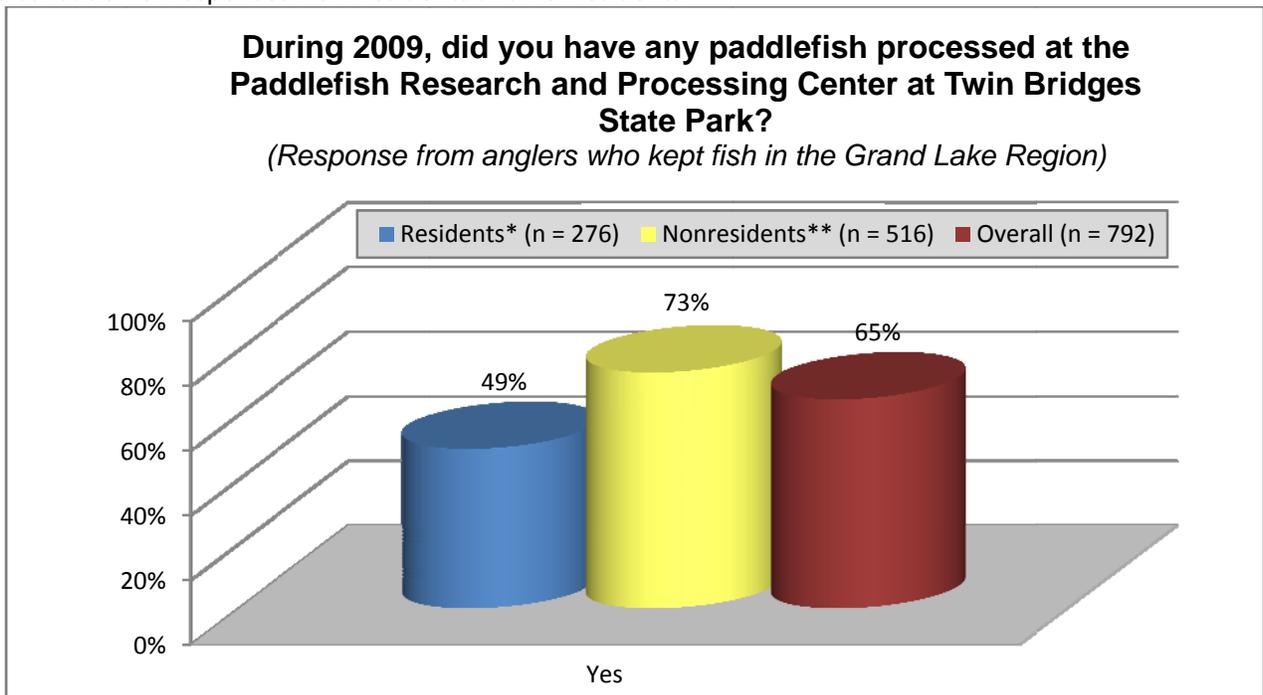
In 2008 only, Grand Lake Region anglers who kept at least one paddlefish but did not use the PRPC were asked to identify the reason. The majority of respondents preferred to process their own fish (Figure 24). Sample size did not allow comparison of responses by residency for the remainder of analyses. "Other" reasons included:

- 7:15 am Sunday, called but had to leave
- Can process cheaper than driving to the center
- Fish died before we got there
- He just wasn't there on the few I kept
- Mainly because I didn't know where it was
- No time to wait for processing/personnel never offered pickup on water
- Small male
- Stayed on water
- Was in a hurry/will use in future
- Was not in the direction we were headed home

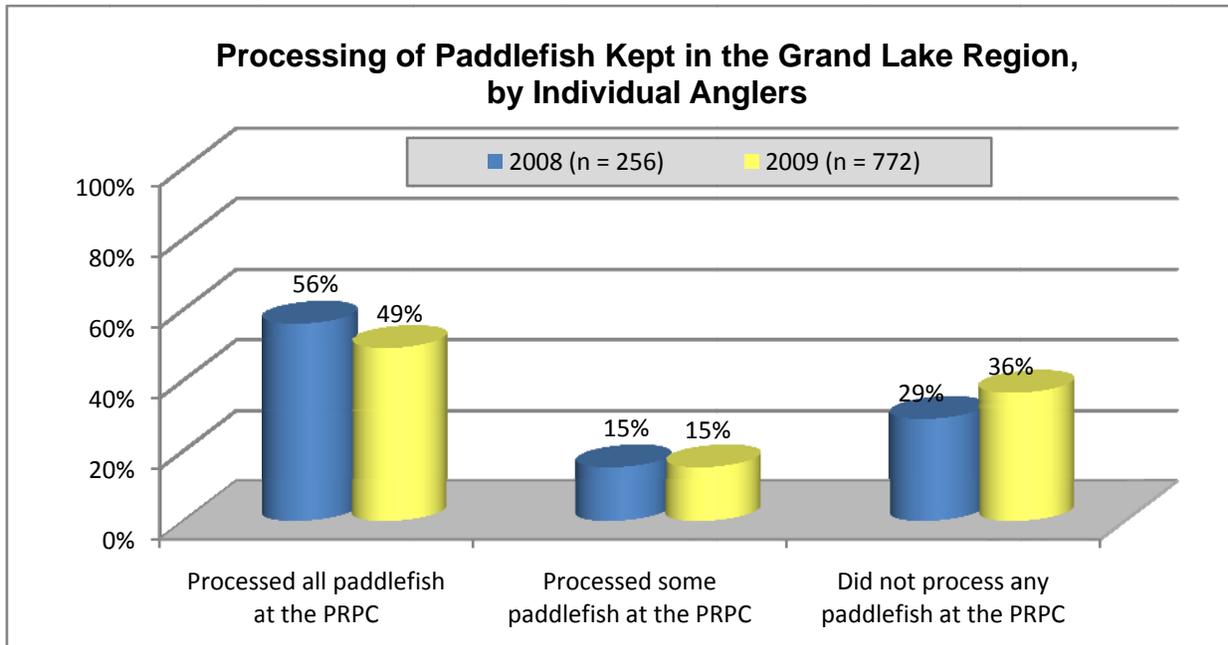
**Figure 21.** Use of the Paddlefish Research and Processing Center (PRPC) by anglers who caught and kept paddlefish in the Grand Lake Region in 2008, by residency.



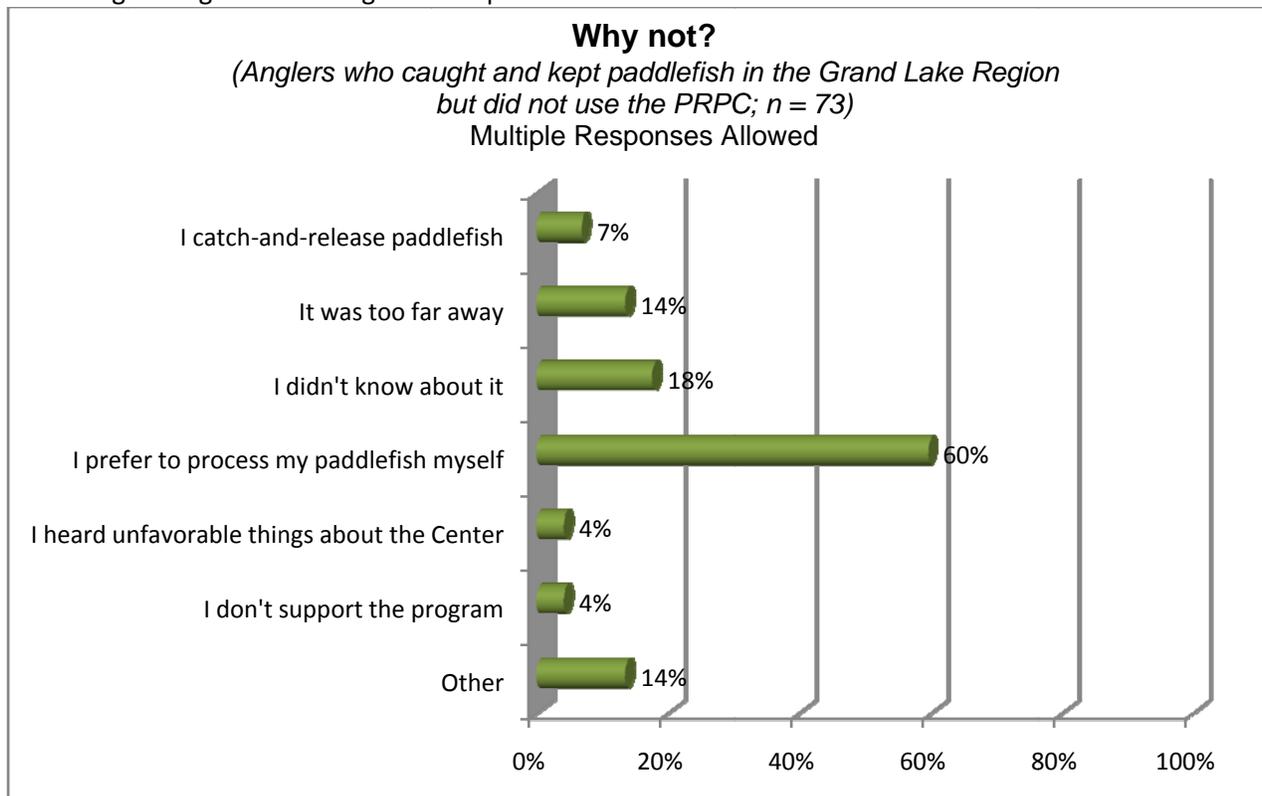
**Figure 22.** Use of the Paddlefish Research and Processing Center (PRPC) by anglers who caught and kept paddlefish in the Grand Lake Region in 2009, by residency. Asterisks indicate differences between distribution of responses from residents and nonresidents.



**Figure 23.** Disposition of fish kept in the Grand Lake Region, 2008 and 2009.



**Figure 24.** Reasons given for not using the Paddlefish Research and Processing Center (PRPC), by Grand Lake Region anglers who caught and kept fish in the area in 2008.



### Unreported Harvest

Paddlefish anglers who fished the Grand Lake Region reported keeping a number of fish but not processing them at the PRPC. The rate of “unreported harvest” was 43% in 2008 and 54% in 2009 (Table 9).

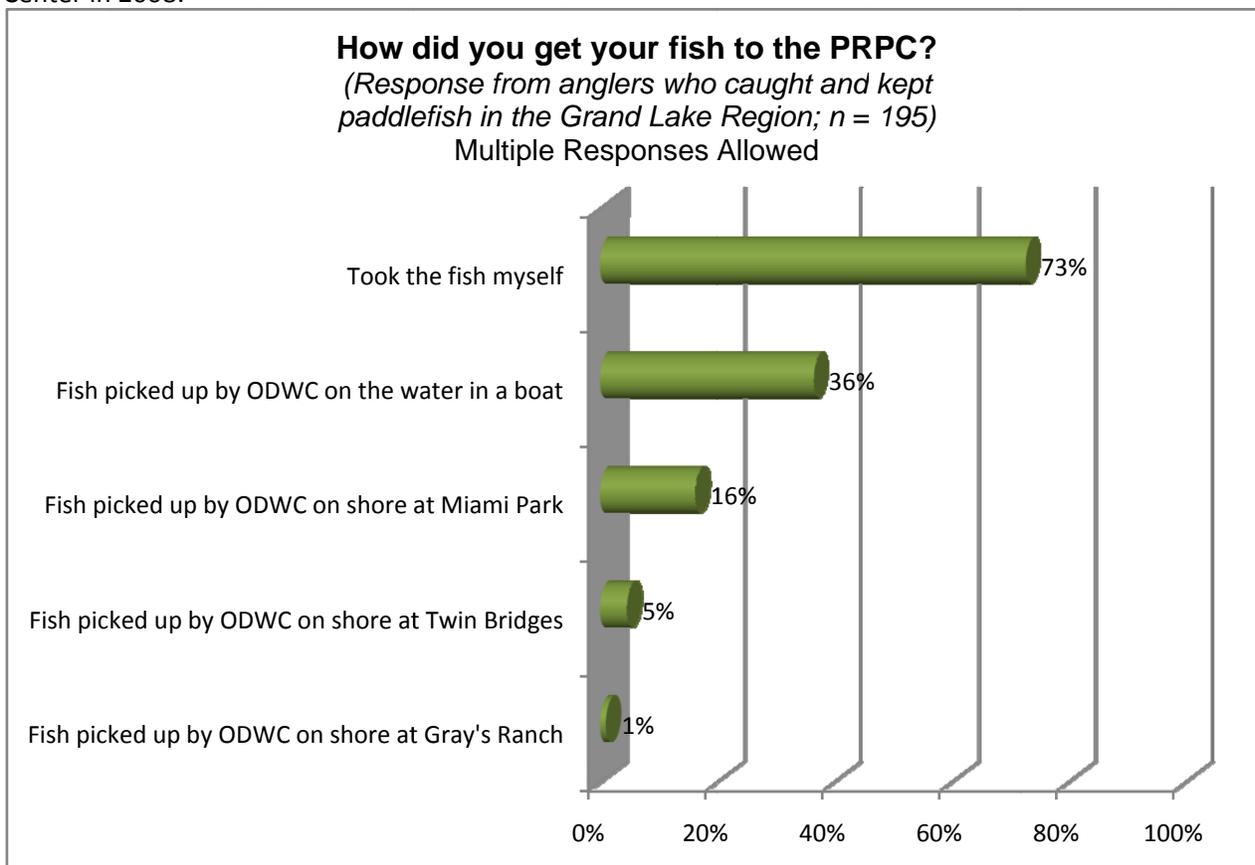
**Table 9.** Proportion of harvested paddlefish that were processed at the Paddlefish Research and Processing Center, by 2008 and 2009 survey respondents.

| Year | Total Kept | Total Processed at PRPC | Reported Harvest | Unreported Harvest |
|------|------------|-------------------------|------------------|--------------------|
| 2008 | 850        | 483                     | 56.8%            | 43.2%              |
| 2009 | 2,552      | 1,178                   | 46.2%            | 53.8%              |

### Transportation of Paddlefish to the PRPC

Paddlefish anglers who used the PRPC could deliver their fish to the PRPC by several mechanisms. In 2008, the majority (73 percent) reported transporting their own fish to the PRPC for processing (Figure 25). Few were picked up on the shore by ODWC personnel. Sample size did not allow comparison of responses by residency. This question was not asked on the 2009 survey.

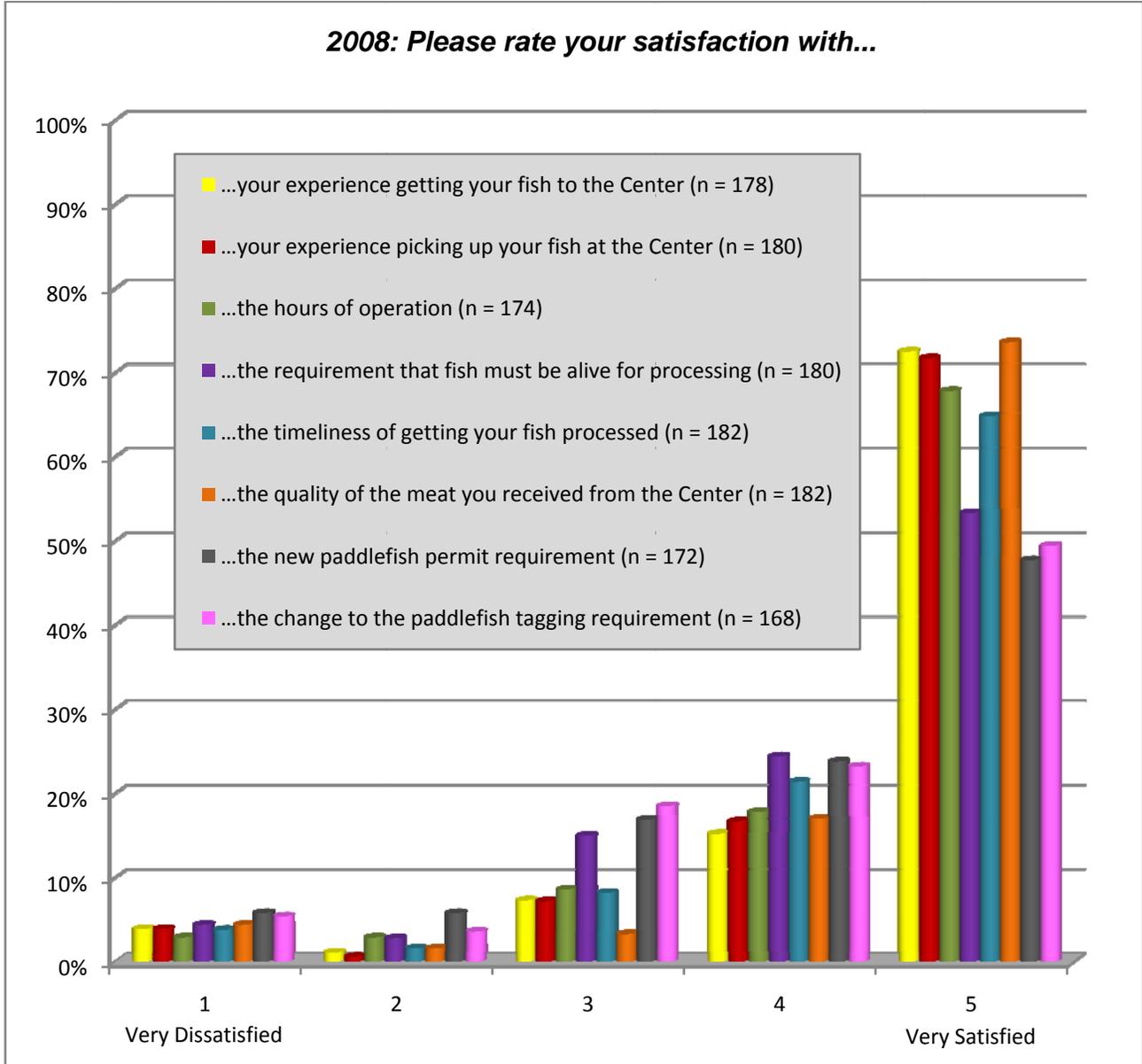
**Figure 25.** Method by which anglers had their fish delivered to the Paddlefish Research and Processing Center in 2008.



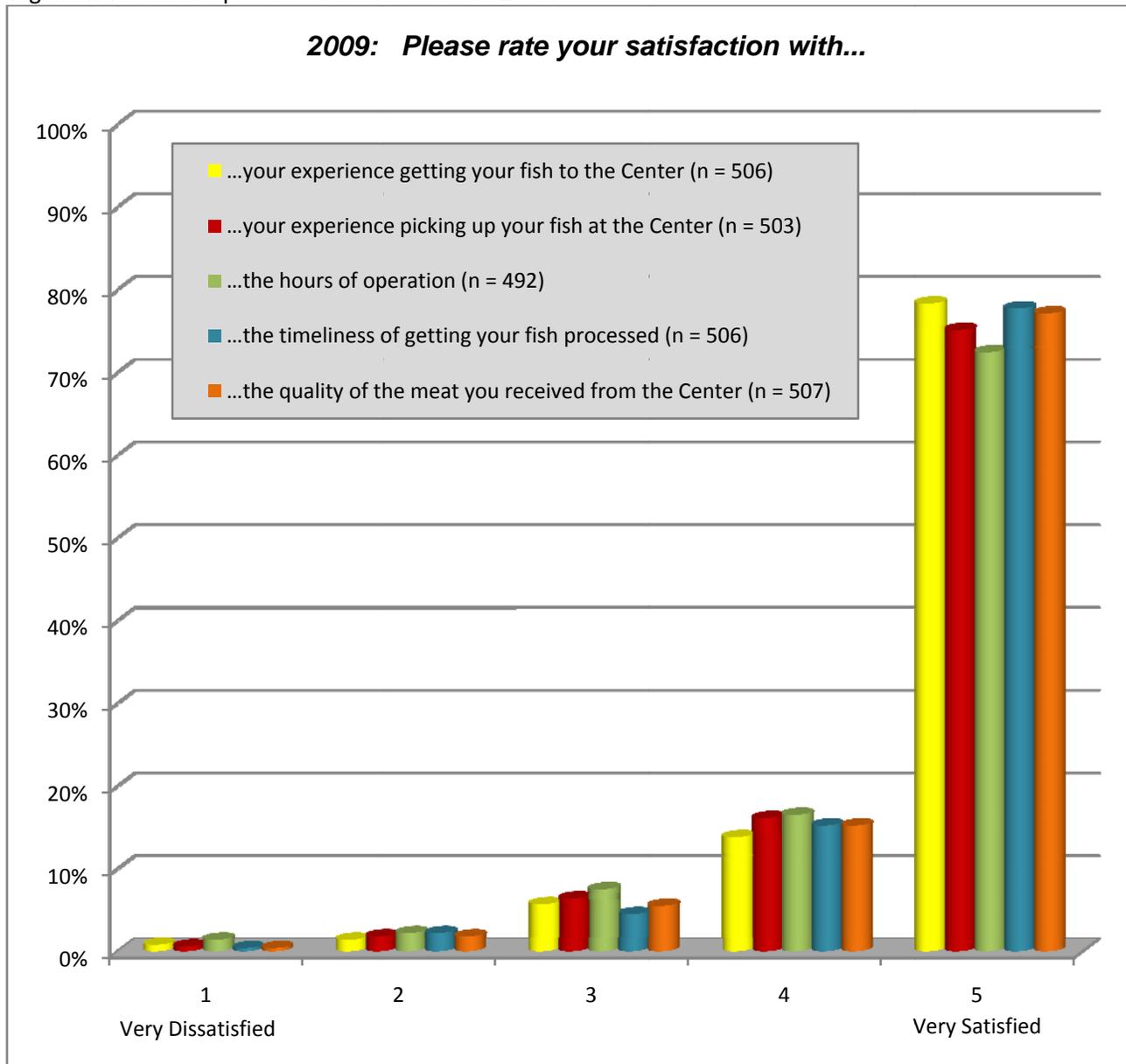
### Satisfactions with Aspects of the Paddlefish Program

Paddlefish anglers who used the PRPC were asked to rate their satisfaction with several aspects of the PRPC operation and recent changes to the paddlefish program overall. Three items were not included on the 2009 survey instrument. In all cases, more than half of respondents were very satisfied (Figures 26-27).

**Figure 26.** Satisfaction with aspects of the Paddlefish Research and Processing Center and the changes to the paddlefish program, by paddlefish anglers who had fish processed at the center in 2008.



**Figure 27.** Satisfaction with aspects of the Paddlefish Research and Processing Center, by paddlefish anglers who had fish processed at the center in 2009.



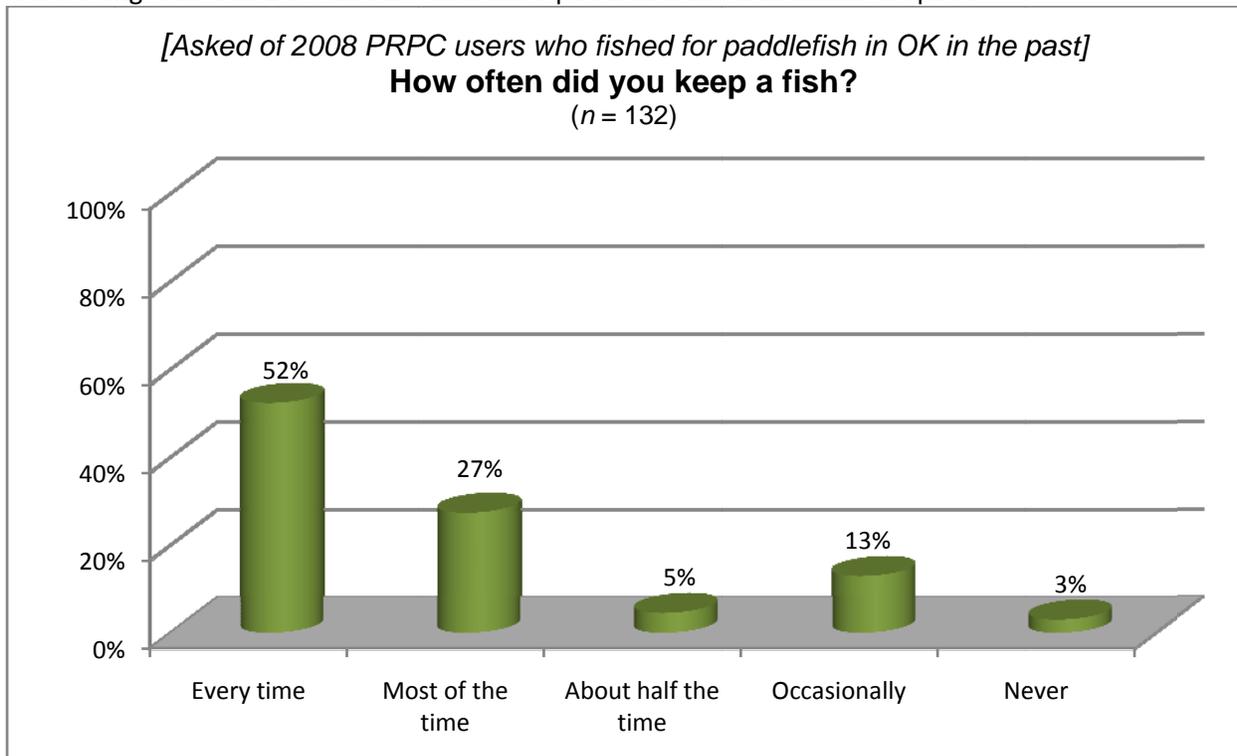
*Impact of PRPC on Paddlefish Harvest*

Fisheries managers are carefully monitoring the paddlefish population to ensure the free meat processing service offered by the PRPC does not contribute to an overharvest of paddlefish. These surveys were used to examine past behavior of paddlefish anglers who used the PRPC, as well as what these anglers might have done with the fish they caught if the PRPC had not been available.

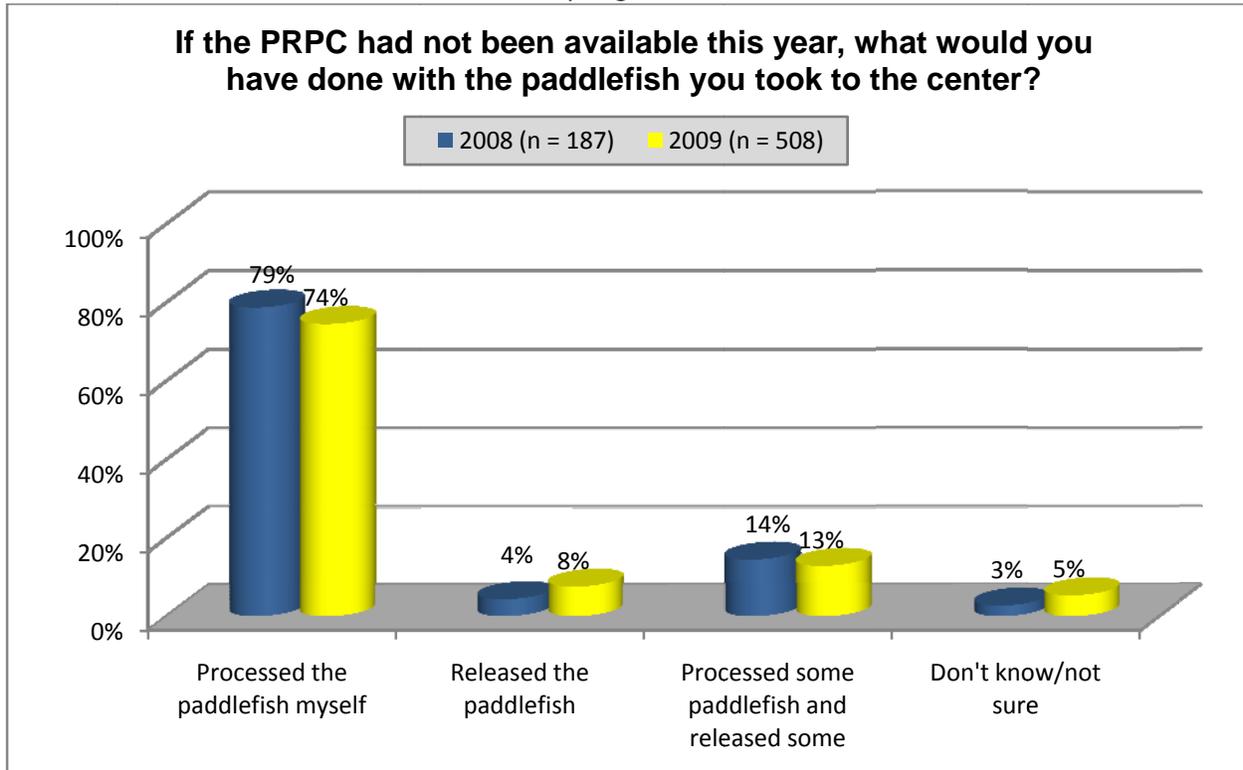
In 2008, 70% of anglers who used the PRPC reported fishing for paddlefish in Oklahoma prior to 2008. Those who had fished for paddlefish in the past were asked how often they kept a fish. Half responded that they kept every paddlefish caught, and three percent released all fish in the past (Figure 28).

As an additional measure, respondents who used the PRPC were asked what they would have done with the paddlefish processed at the PRPC if the service had not been available. In both 2008 and 2009, most anglers indicated they would have processed the paddlefish themselves (Figure 29). Together, these measures do not seem to indicate a significant increase in paddlefish harvest as a direct result of the PRPC and the free meat processing service provided.

**Figure 28.** Disposition of paddlefish caught in the past, by anglers who used the Paddlefish Research and Processing Center in 2008 and also fished for paddlefish in Oklahoma in the past.



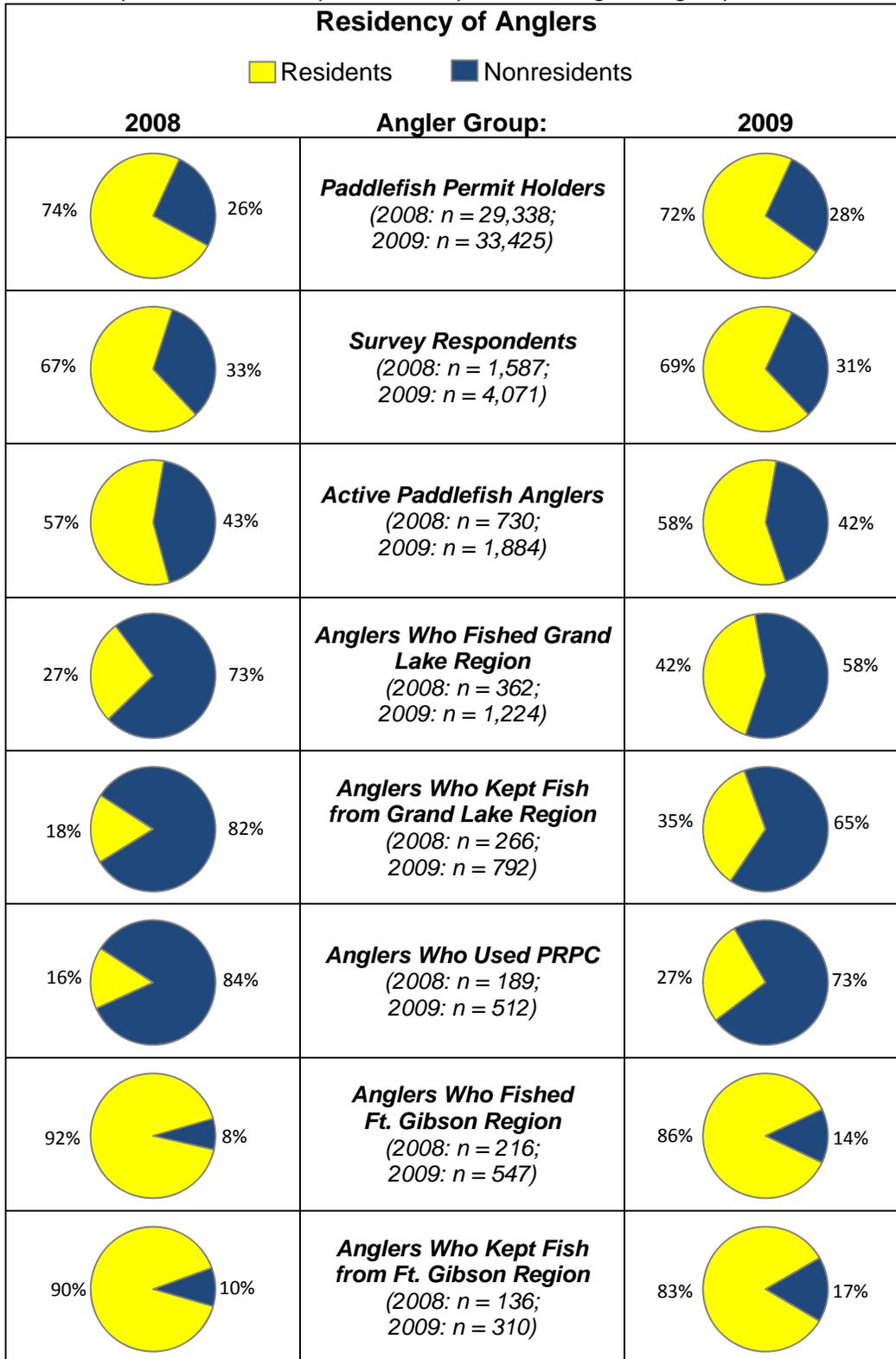
**Figure 29.** Hypothetical disposition of paddlefish processed at the Paddlefish Research and Processing Center if the center had not been available, by anglers who used the service.



*Paddlefish Angler Residency*

Most fisheries and wildlife management programs in Oklahoma are utilized primarily by Oklahomans. Not surprising, nearly three-fourths of paddlefish permits were issued to residents of the state. However, a closer examination revealed subgroups of paddlefish permit holders with a different residency composition (Figure 30). Grand Lake Region paddlefish anglers were predominantly nonresident, while Ft. Gibson Region paddlefish anglers were predominantly residents. The needs and expectations of residents and nonresidents may differ, having potential implications for the proposed second PRPC location. Also, although two years of data is hardly a trend, it did appear that resident interest in the Grand Lake paddlefish fishery grew from 2008 to 2009. This two could have implications for the paddlefish program, as results presented earlier indicated that residents were less likely to use the PRPC than nonresidents.

**Figure 30.** Comparison of residency of different paddlefish angler subgroups, in 2008 and 2009.



## Appendix A: Survey Instruments

Dear Oklahoma Angler,

2008 pre-survey notification postcard.

In about a week, you will receive in the mail a brief survey for an important study by the Oklahoma Department of Wildlife Conservation.

The study is about changes to the Oklahoma paddlefish program that were introduced this year. We hope you will take a minute to complete this short survey even if you did not fish for paddlefish.

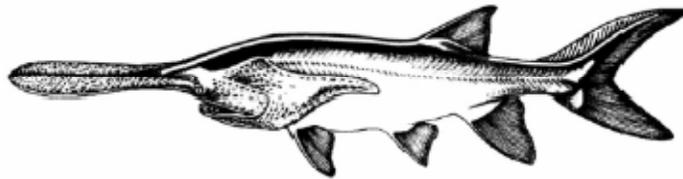
We are sending this notice in advance because we have found many people like to know ahead of time that they will be contacted. Your help with this study will allow us to improve Oklahoma's paddlefish program in the future.

Thank you for your time and consideration.

Sincerely,



Keith Green, Paddlefish Program Coordinator



Dear Oklahoma Angler,

2009 pre-survey notification postcard.

In about a week, you will receive in the mail a brief survey for an important study by the Oklahoma Department of Wildlife Conservation.

The study is about the Oklahoma paddlefish program. We hope you will take a minute to complete this short survey even if you did not fish for paddlefish.

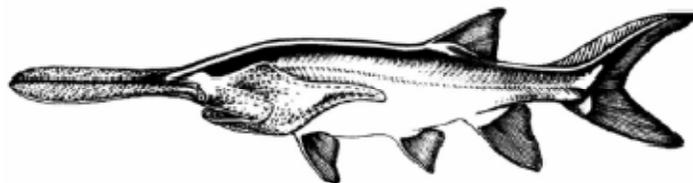
We are sending this notice in advance because we have found many people like to know ahead of time that they will be contacted. Your help with this study will allow us to improve Oklahoma's paddlefish program in the future.

Thank you for your time and consideration.

Sincerely,



Keith Green, Paddlefish Program Coordinator





2008 fist mailing cover letter.

## Oklahoma Department of Wildlife Conservation Paddlefish Angler Survey

June 25, 2008

Dear Oklahoma Paddlefish Permit holder,

Our records show that you had an Oklahoma Paddlefish Permit for 2008. Some anglers may not have realized they received this free permit when purchasing a fishing license. Even if you did not fish for paddlefish in Oklahoma during 2008, please respond to the first question of the survey and return it today in the pre-paid envelope provided.

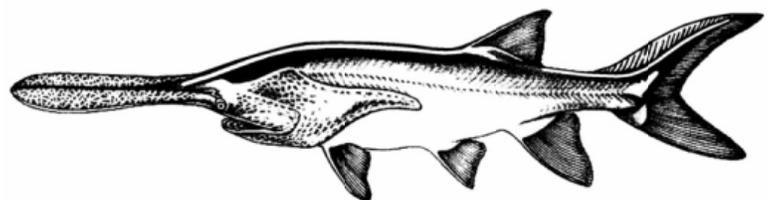
We want to know about your experiences and satisfaction with recent changes to the Oklahoma paddlefish program, including the new Paddlefish Research and Processing Center. Your input is critical and will help us improve Oklahoma's paddlefish program in the future. Please complete and return the enclosed survey today. Your answers will be kept confidential.

If you have questions or would like a copy of the final report for this study, please contact Andrea Crews at (405) 522-0769 or [acrews@odwc.state.ok.us](mailto:acrews@odwc.state.ok.us). Your help in this project is greatly appreciated and we look forward to hearing from you.

Sincerely,

A handwritten signature in cursive script that reads "Keith Green".

Keith Green  
Paddlefish Program Coordinator





2008 second mailing cover letter.

## Oklahoma Department of Wildlife Conservation Paddlefish Angler Survey

July 9, 2008

Dear Oklahoma Paddlefish Permit holder,

We recently sent you a survey regarding Oklahoma's paddlefish program. If you have already completed the survey and mailed it back, let me thank you for your assistance.

If you have not yet completed the survey, please take a few minutes to do so today. We would like to hear from you even if you did not fish for paddlefish during 2008. For your convenience, a postage-paid envelope is provided.

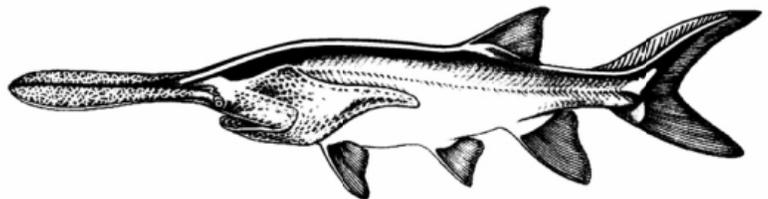
We want to know about your experiences and satisfaction with recent changes to the Oklahoma paddlefish program, including the new Paddlefish Research and Processing Center. Your input is critical and will help us improve Oklahoma's paddlefish program in the future. Your answers will be kept confidential.

If you have questions or would like a copy of the final report for this study, please contact Andrea Crews at (405) 522-0769 or [acrews@odwc.state.ok.us](mailto:acrews@odwc.state.ok.us). Your help in this project would be greatly appreciated and we look forward to hearing from you.

Sincerely,

A handwritten signature in cursive script that reads "Keith Green".

Keith Green  
Paddlefish Program Coordinator





## Oklahoma Department of Wildlife Conservation Paddlefish Angler Survey

June 8, 2009

Dear Oklahoma Paddlefish Permit holder,

Our records show that you had an Oklahoma Paddlefish Permit for 2009. Some anglers may not have realized they received this free permit when purchasing a fishing license. **Even if you did not fish for paddlefish** in Oklahoma during 2009, please respond to the first question of the survey and return it today in the pre-paid envelope provided.

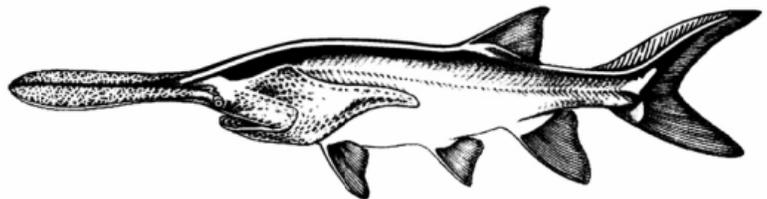
We want to know about your experiences and satisfaction with recent changes to the Oklahoma paddlefish program, including the Paddlefish Research and Processing Center. Your input is critical and will help us improve Oklahoma's paddlefish program in the future.

Please complete and return the enclosed survey today. Your answers will be kept confidential. When you return your questionnaire, we will remove your name from our paddlefish survey list for subsequent mailings.

If you have questions or would like a copy of the final report for this study, please contact Andrea Crews at (405) 522-0769 or [acrews@odwc.state.ok.us](mailto:acrews@odwc.state.ok.us). Your help in this project is greatly appreciated and we look forward to hearing from you.

Sincerely,

Keith Green  
Paddlefish Program Coordinator





2009 second mailing cover letter.

## Oklahoma Department of Wildlife Conservation Paddlefish Angler Survey

June 29, 2009

Dear Oklahoma Paddlefish Permit holder,

We recently sent you a survey regarding Oklahoma’s paddlefish program. If you have already completed the survey and mailed it back, let me thank you for your assistance.

If you have not yet completed the survey, please take a few minutes to do so today. If you did not fish for paddlefish during 2009, please let us know by answering the first question on the survey. For your convenience, a postage-paid envelope is provided.

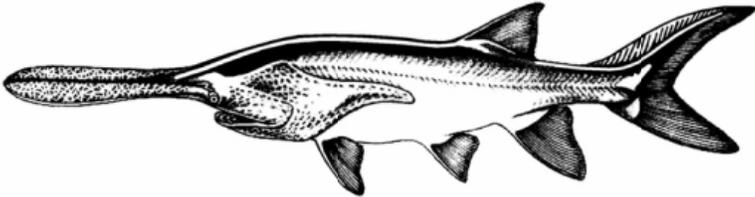
We want to know about your experiences and satisfaction with recent changes to the Oklahoma paddlefish program, including the Paddlefish Research and Processing Center. Your input is critical and will help us improve Oklahoma’s paddlefish program in the future. Your answers will be kept confidential. When you return your questionnaire, we will remove your name from our paddlefish survey list for subsequent mailings.

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Sincerely,

A handwritten signature in black ink that reads "Keith Green".

Keith Green  
Paddlefish Program Coordinator



## 2008 PADDLEFISH ANGLER SURVEY

1. Did you fish for paddlefish in Oklahoma during 2008?

- Yes  
 No, I wanted to but did not have a chance  
 No, I did not intend to get a paddlefish permit

If you did not fish for paddlefish in Oklahoma during 2008, your survey is now complete. Please mail it today. Thank you!

2. Did you fish for paddlefish from a boat or from the shore in Oklahoma during 2008?

- Boat  
 Shore  
 Both

3. When did you fish for paddlefish in Oklahoma during 2008? (Check all that apply.)

- January  
 February  
 March  
 April  
 May

4. Please mark each area where you fished for paddlefish and estimate a) the number of days fishing at that location, b) the number of paddlefish kept, and c) the number of paddlefish released.

|   | a.<br>How many days? | b.<br>Number of fish kept? | c.<br>Number of fish released? |
|---|----------------------|----------------------------|--------------------------------|
| <b><i>Grand Lake:</i></b>                       |                      |                            |                                |
| <input type="checkbox"/> Gray's Ranch           | a. ____ days         | b. ____ kept               | c. ____ released               |
| <input type="checkbox"/> Twin Bridges           | a. ____ days         | b. ____ kept               | c. ____ released               |
| <input type="checkbox"/> Miami Park             | a. ____ days         | b. ____ kept               | c. ____ released               |
| <b><i>Hudson Lake:</i></b>                      |                      |                            |                                |
| <input type="checkbox"/> Below Park Bridge      | a. ____ days         | b. ____ kept               | c. ____ released               |
| <input type="checkbox"/> Cabbage Hollow         | a. ____ days         | b. ____ kept               | c. ____ released               |
| <input type="checkbox"/> Bird Hollow            | a. ____ days         | b. ____ kept               | c. ____ released               |
| <b><i>Fort Gibson:</i></b>                      |                      |                            |                                |
| <input type="checkbox"/> Behind Hudson dam      | a. ____ days         | b. ____ kept               | c. ____ released               |
| <input type="checkbox"/> Low water north of 412 | a. ____ days         | b. ____ kept               | c. ____ released               |
| <input type="checkbox"/> In river south of 412  | a. ____ days         | b. ____ kept               | c. ____ released               |
| <b><i>Upper Keystone:</i></b>                   |                      |                            |                                |
| <input type="checkbox"/> In the Arkansas        | a. ____ days         | b. ____ kept               | c. ____ released               |
| <input type="checkbox"/> Salt Fork              | a. ____ days         | b. ____ kept               | c. ____ released               |
| <input type="checkbox"/> Cimarron               | a. ____ days         | b. ____ kept               | c. ____ released               |
| <input type="checkbox"/> Kaw dam                | a. ____ days         | b. ____ kept               | c. ____ released               |
| <b><i>Other (please specify):</i></b>           |                      |                            |                                |
|   | a. ____ days         | b. ____ kept               | c. ____ released               |

5. Did you have any paddlefish processed at the Paddlefish Research and Processing Center, at Twin Bridges State Park?

Yes → 5a. How many? \_\_\_\_\_

No → 5b. Why not?

- I catch-and-release paddlefish
- It was too far away
- I didn't know about it
- I prefer to process my paddlefish myself
- I heard unfavorable things about the Center
- I don't support the program
- Other: \_\_\_\_\_

If you did not use the Paddlefish Research and Processing Center, your survey is now complete. Please mail it today. Thank you!

6. How did you get your fish to the Paddlefish Research and Processing Center?

- Took the fish myself
- Fish picked up by Department of Wildlife personnel on the water, in a boat
- Fish picked up by Department of Wildlife personnel on the shore at:
  - Miami Park
  - Twin Bridges
  - Gray's Ranch

7. Please rate your satisfaction with the following aspects of Oklahoma's paddlefish program and the Paddlefish Research and Processing Center:

|  | Very<br>Dissatisfied |   | Very<br>Satisfied |   |   |     |
|--|----------------------|---|-------------------|---|---|-----|
| Your experience getting your fish to the Center        | 1                    | 2 | 3                 | 4 | 5 | n/a |
| Your experience picking up your fish at the Center     | 1                    | 2 | 3                 | 4 | 5 | n/a |
| Hours of operation at the Center                       | 1                    | 2 | 3                 | 4 | 5 | n/a |
| The requirement that fish must be alive for processing | 1                    | 2 | 3                 | 4 | 5 | n/a |
| The timeliness of getting your fish processed          | 1                    | 2 | 3                 | 4 | 5 | n/a |
| The quality of the meat you received from the Center   | 1                    | 2 | 3                 | 4 | 5 | n/a |
| The new paddlefish permit requirement                  | 1                    | 2 | 3                 | 4 | 5 | n/a |
| The change to the paddlefish tagging requirement       | 1                    | 2 | 3                 | 4 | 5 | n/a |

8. Have you fished for paddlefish in Oklahoma prior to 2008?

- Yes → 8a. If yes, how often did you keep a fish?
  - Every time
  - Most of the time
  - About half the time
  - Occasionally
  - Never
- No

9. If the Paddlefish Research and Processing Center had not been available this year, what would you have done with the paddlefish you took to the Center?

- Processed the paddlefish myself
- Released the paddlefish
- Processed some paddlefish and released some
- Don't know/not sure

**Thank you! Please mail your completed survey today!**

# 2009 PADDLEFISH ANGLER SURVEY

1. Did you fish for paddlefish in Oklahoma during 2009?

- Yes
- No, but I intentionally got a paddlefish permit →
- No, I unintentionally got a paddlefish permit →

If you did not fish for paddlefish in Oklahoma during 2009, your survey is now complete. Please mail it today. Thank you!

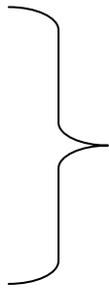
2. When did you fish for paddlefish in Oklahoma during 2009? Check all that apply.

- January
- February
- March
- April
- May
- June

3. Did you fish for paddlefish in any of the following areas **around Grand Lake**?

Check all that apply.

- Miami Park
- Conner's Bridge
- Neosho River
- Spring River
- Twin Bridges
- Gray's Ranch
- In Grand Lake
- Other

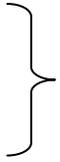


| If you fished for paddlefish in the <b>Grand Lake area...</b> |                          |                     |
|---|--------------------------|---------------------|
| a.  | Number of days fished:   | _____ days          |
| b.  | Number of fish kept:     | _____ fish kept     |
| c.  | Number of fish released: | _____ fish released |

4. Did you fish for paddlefish in any of the following areas **north of Fort Gibson**?

Check all that apply.

- Below Hudson dam
- Low water north of 412
- In river south of 412
- Other



| If you fished for paddlefish <b>north of Ft. Gibson...</b> |                          |                     |
|--|--------------------------|---------------------|
| a.   | Number of days fished:   | _____ days          |
| b.   | Number of fish kept:     | _____ fish kept     |
| c.   | Number of fish released: | _____ fish released |

5. Did you fish for paddlefish **anywhere else in Oklahoma**?

- Yes
- No



| If you fished for paddlefish <b>somewhere else in OK...</b> |                          |                     |
|---|--------------------------|---------------------|
| a.  | Number of days fished:   | _____ days          |
| b.  | Number of fish kept:     | _____ fish kept     |
| c.  | Number of fish released: | _____ fish released |

6. Please indicate how important each of the following is to you, for a successful paddlefishing experience in Oklahoma. Circle a number on the scale for each statement.

| <b>How important is...</b>                         | <b>Not at all Important</b> |   |   | <b>Very Important</b> |   |
|--|-----------------------------|---|---|-----------------------|---|
| ...the fun, excitement and sport of paddlefishing  | 1                           | 2 | 3 | 4                     | 5 |
| ...keeping a paddlefish at the end of the day      | 1                           | 2 | 3 | 4                     | 5 |
| ...catching and releasing many paddlefish each day | 1                           | 2 | 3 | 4                     | 5 |
| ...taking home paddlefish to eat                   | 1                           | 2 | 3 | 4                     | 5 |
| ...the chance of catching a very big fish          | 1                           | 2 | 3 | 4                     | 5 |
| ...keeping one paddlefish every day of fishing     | 1                           | 2 | 3 | 4                     | 5 |

7. During 2009, did you have any paddlefish processed at the Paddlefish Research and Processing Center, at Twin Bridges State Park?

- Yes → 7a. How many? \_\_\_\_\_  
 No

If you did not use the Paddlefish Research and Processing Center, your survey is now complete. Please mail it today. Thank you!

8. Please rate your satisfaction with the following aspects of Oklahoma’s paddlefish program and the Paddlefish Research and Processing Center during 2009:

|  | <b>Very Dissatisfied</b> |   |   | <b>Very Satisfied</b> |   |     |
|--|--------------------------|---|---|-----------------------|---|-----|
| Your experience getting your fish to the Center      | 1                        | 2 | 3 | 4                     | 5 | n/a |
| Your experience picking up your fish at the Center   | 1                        | 2 | 3 | 4                     | 5 | n/a |
| Hours of operation at the Center                     | 1                        | 2 | 3 | 4                     | 5 | n/a |
| The timeliness of getting your fish processed        | 1                        | 2 | 3 | 4                     | 5 | n/a |
| The quality of the meat you received from the Center | 1                        | 2 | 3 | 4                     | 5 | n/a |

9. If the Paddlefish Research and Processing Center had not been available this year, what would you have done with the paddlefish you took to the Center?

- Processed the paddlefish myself  
 Released the paddlefish  
 Processed some paddlefish and released some  
 Don’t know/not sure

Comments or feedback about Oklahoma’s paddlefish program: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**Thank you! Please mail your completed survey today!**

## Appendix B: Comments

- I. Positive Comments on PRPC/Paddlefish Program  
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- II. Negative Comments on the PRPC/Paddlefish Program  
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### I. Positive Comments on PRPC/Paddlefish Program

#### ***2008-Season Survey:***

- [On processing the paddlefish myself] Since it was my first time, I wanted the experience. I think the program is good. I will support it in the future.
- Didn't catch any. Think program is an excellent idea!
- Enjoyed it all. Started there three years ago and plan on it every year. Keep up the good work. All of it was great.
- Excellent program, well done.
- Fished once in 2007. This was my second trip. I hope they keep the Processing Center open so my fish eggs don't go to waste and I hope this helps the fish commission.
- Good job with cleaning station at Twin Bridges. Thanks for your good work.
- Great facility for fish processing. Thanks.
- Great program. We hope you have it next season.
- Great!
- I do think the program is an excellent idea!
- I feel the Paddlefish Research and Processing Center at Twin Bridges State Park is a great innovation and I intend to fish for paddlefish in 2009 and take advantage of the processing. Keep up the great work.
- I heartily support this program. I only keep what I and my family can eat. Love the program!
- I think all of your people do a great job and they take care of us fishermen.
- I think the Center is a great deal just not good year to spoonbill fish.
- It was nice having a place for the fish to be processed and having the option to store out fish while we were camping. We really appreciate all the good work.

- My experience and opinion of your new program is outstanding! We in the past have done nothing with the eggs. If they can be utilized to benefit programs of any kind for the ODWC I am willing to help in any way possible. All personnel that I encountered were very professional and very helpful. Thank you for the experience.
- Slow year for fish. My numbers [were] very down this year. Great program. Mr. Green was very nice to take the time to show me your facility. First class!
- Thank you, that was awesome!
- The fish I kept fed several families that were having hard times. That made my day to help someone to have food on their table and not go hungry.
- The paddlefish processing center was a great idea! Very pleased!
- The wife loves it!
- Very good program! Please keep it going!

***2009-Season Survey:***

- A great bunch of guys working and game wardens. Looking forward to 2010. Gave a lot of fish away to older people that can't go! Thank you.
- A+.
- Actually we would not have fished for paddlefish if the processing center was not there because we don't like the nasty smell they leave on you when you clean them and it takes too long. These people do a great job and we are grateful to God they are here every year. God bless all of you on your job.
- Ain't broke...don't fix it!
- All was very good.
- Although paddlefish are good, I enjoy giving the meat to non-anglers. My fishing buddies and family appreciate your program. Thank you.
- Another fine example of one of the best wildlife management programs in the world. I wish other governmental programs operated similarly.
- Beautiful area – your conservation officers were very friendly and helpful. They went out of their way to help us out. I hope to come back – the cleaning station was great. Thanks for a great outdoor experience. Excellent and friendly personnel running your program. (Keep it up.)
- Didn't use the station, but like the fact that I could if I wanted to. Heard a lot of good about it.
- Excellent program, friendly and very professional people at your processing center.
- Excellent program. Good to see we are taking steps to preserve the opportunities we have in the state
- Excellent program. I'm a first timer. Oklahoma personnel were very helpful. I will be back!
- Excellent program. The people at the processing center very helpful.
- Excellent! Your crew was great! I never fished for them before. I tournament fish. While at Grand we participated because of you being there. I am glad we did.
- Excellent, I'm glad to make use of the wasted eggs every year. That's a lot of revenue you can use, for me as a sportsman. For some time now I've been telling the wardens I speak to about the "Montana program." Thanks!
- Feel free to contact me for any future surveys. You guys are doing a great job, and I like to help out.
- First time fishing for paddlefish. Can't wait until next year. Fish is good eating. Hope center is open next year.
- First time fishing for paddlefish. Great program at Twin Bridges. Keep up the good work!!
- First time. Had a wonderful time. Liked the cleaning station. Drove from Utah just for paddlefishing.
- First year fishing in Oklahoma. You have a great program-keep it up! Thanks.
- Good deal if it pays for its self. P.S. I use the eggs to fish with once in a while.
- Good for those who use it.
- Good job guys. Glad to see you out there. Thanks.

- Good job Keith!
- Good job! All personal involved that I encountered were very professional and very courteous.
- Good job! Thanks.
- Good job. (2 respondents)
- Good program and the game agents were great..thanks.
- Good program Keith and Brent thanks for the help in our project.
- Good program. (2 respondents)
- Great fishing and great fun. The cleaning stations are fantastic too. See you next year.
- Great fun!! Keep up the good work!!
- Great idea!
- Great job guys.
- Great job on research and processing center. Another good step in advancing our already great fishery!!!
- Great job! Had a lot of fun. Keep up the good work.
- Great job. Keep up good work, these are the hardest fighting fish in Oklahoma and are fun to catch.
- Great job. Well worth the trip down from Iowa.
- Great not having to clean them.
- Great opportunity for a wonderful sport. Thank you.
- Great people-great program.
- Great program and personnel. Being a meat hunter and angler, I kept some processed fish. However, the data obtained will be important in checking exploitation and setting new rules.
- Great program! DNR folks great. Truly enjoyed experience (1st time) definitely will return next year.
- Great program! Don't stop!!
- Great program! First year to fish for paddlefish.
- Great program, I like when fish are picked up with boats. Enjoy coming down each year with my kids and grandkids. See ya in April.
- Great program, usually come down and fish one weekend every year. I brag on the research center to everyone.
- Great program. (4 respondents)
- Great program. I fished four times this year with no luck, but I have had other great years.
- Great program. Keep up the good work!
- Great program. Please keep up good work.
- Great program-hope it saves the paddlefish so my grand children can enjoy for many years to come.
- Great resource, great personnel. Paddlefished once in March '08 came back again in Mar '09. Both great.
- Great time: Oklahoma does a great job-keep it up. Maybe Nebraska will do the same someday.
- Great, keep up good work.
- Had fun. Enjoyed it. They do a fine job.
- Hope it don't stop. Thanks very much.
- Hope to next year!
- I am always in support of the wildlife/game department helping to improve and enforce the laws to protect the game and making any sport fun and safe for all that enjoy the outdoors.
- I am very impressed. Will be back next year.
- I am very satisfied with your program and hope to fish this season.
- I believe it is an excellent program and I would not have enjoyed it nearly as much without it. Thank you.
- I believe it is an excellent program.

- I believe it is very important to control the catch of paddlefish. The paddlefish laws need to be enforced. We need a program.
- I brought one home to process myself to see how easy it would be – I took all the rest to the PRPC. I'm glad there is someone who wants to do it – it's a messy job.
- I did not catch any fish but the three other people in the boat did – the processing center is very nice and make catching them fishing even better.
- I did not catch any this year but the other guys in my group did and the processing center and the service by the wildlife conservation officers was great. It is so nice at the end of the day to not have to clean fish. Thank you.
- I did not use the processing center because I gave it to a friend. But I do know several friends have used it and said it is great and hope it continues.
- I didn't have a lot of time to fish this year, but I did last year and the paddlefish station is awesome.
- I didn't know there is a research/processing center, but now that I know I will use it. That's great!!
- I don't know a lot about it but it seems like a good idea to track numbers of fish and sizes of fish. Would like to say thank you to everyone involved. Thank you.
- I enjoyed hanging around the processing center, seeing other anglers and catches of the day.
- I feel it will be good for the sport.
- I hope you keep the program going.
- I like Oklahoma paddlefish program and think the research/processing center is great!
- I like the new research/processing center as long as the revenue from it goes back to wildlife project.
- I like the program. I am older and having my fish cleaned helped a lot. Thank you.
- I like the way the boats would take the fish and have them processed for me.
- I like the way you have it set up.
- I liked the leader board - processed fish was very good.
- I live in Missouri but a bunch of us come down there every year to fish. We all can't wait to come back next year. We think the fishing is great. The research center was great, the processed fish was good.
- I live in the Ft. Gibson area. The larger paddlefish here are averaging 20-30 lbs where as the paddlefish up north around Miami are 30-50 lbs. Ft. Gibson used to be the same way. I think we need to try to get that back around here for the next generation of youngins.
- I loved the fact that they met us at the boat ramp to tag our paddlefish. I've been snagging in Grove, OK for six years. This was my first time catching a paddlefish. I was very excited.
- I paddlefish once a year. Always a great experience. Processing center is 1st class operation. Thanks.
- I really like the research/processing center. It saves a lot of time and is much appreciated. Thank you!
- I really liked the truck coming to the park and trading live for fillets. The biggest fish I landed was 50 pounds. The smallest was 30 pounds. I don't know if that information will help or not, but thought it might give an idea of how the season went for me.
- I think it is a good program.
- I think it is a good program. I'm happy to see each paddlefish harvested being used fully. Trading for fillets works best for me.
- I think it is a good program. Wish there were bigger ones but they seem to be getting smaller and smaller.
- I think it is a great program and hope to see it continue.
- I think it is a great program that Oklahoma has to keep this amazing fish in our state.
- I think it is a very good program. The guys were very helpful in the early spring in locating fish. Next year I will probably have every fish done there.
- I think it is very important to conserve our nature by all its means possible.
- I think it is very important to have such a program so we can save our paddlefish for better fishing in years to come.

- I think it's a good program. I hope money is going for making sure paddlefish will be plentiful for years
- I think it's a good program. Made fishing at the end of the day better.
- I think it's a good thing for the Oklahoma game.
- I think it's a very good program the way it is now. Thanks.
- I think it's great to offer a no-fee paddlefish permit. Oklahoma fishing is great and adds another option for out of state people.
- I think it's great! I really like it when they come to your boat and pick up your fish.
- I think it's great.
- I think it's very well organized and appreciate the services. It's an exciting experience.
- I think it's really awesome that paddlefish permits don't cost extra!
- I think Keith Green and his team do an excellent job. I have been fishing there for eight years and just have a great time. I have brought many people down there to enjoy your sport. Thanks – keep up the good work.
- I think that the paddlefish program at Twin Bridges in Miami is awesome! This project is a great asset for the State of Oklahoma and is part of the reason I will continue to fish in Oklahoma!
- I think the cleaning station at Twin Bridges is great!! Keep it up!
- I think the paddlefish program is a great idea to promote and protect an even greater resource. Great job Keith.
- I think the process is great.
- I think the processing center is an excellent idea. The people there are very friendly.
- I think the processing center made our experience awesome. We will be back next year. Hope it continues.
- I think the program is great for the fishermen as well as the Wildlife Department. I didn't catch any fish but I missed a run. I'll get 'em next season though!
- I think the program is great. The money made is used to benefit wildlife and my fish get cleaned for fee! Thank you very much, keep up the good work!
- I think the program is great...if I lived closer to the Twin Bridges area I would fish there also. In 2009 the flow of water was not kind to the harvest at Kaw.
- I think the program is well run. Keep up the good work.
- I think the program will get better now that the limit is lower. Doing a great job.
- I think the research and processing center is a boon to all paddle fisherman!
- I think this program is absolutely awesome and hope it is continued.
- I think this program is excellent. The information on the fish and the sport that you receive from the processing center is priceless. I really appreciate the program and the people. We as a group of 10-15 guys will keep coming to the area every spring. Thank you!
- I think you are doing a great job.
- I think you have a great program and really enjoy myself. I've been paddlefishing in Oklahoma for last six years and bring about 12-20 friends each year and we've always had a great time.
- I think you should of done this five years earlier.
- I think you're on the right road to a better, bigger, spoonbill experience! Keep up the good work!
- I think your paddlefish/research center is a first class operation. Keep up the good work. Thanks.
- I think your program has helped keep our lake clean because most people just leave their dead fish everywhere for others to have to smell the stuff. Good job!
- I think your program is great and I hope to see it stay for the years to come. Thank you!
- I think your program is great. Thank you.
- If processing center is a money maker for the ODWC it should continue indefinitely.
- If you weren't cleaning my fish I would not go. Great program. Keep up the good work. We love it.
- It is a very good operation and helps many people.

- It is a win-win situation for all of us. Thank you.
- It is awesome. That is why we do it every year. The research center is an added bonus and very appreciated and we hope the research is worthwhile but love having the fish cleaned for us. Oklahoma paddlefish rock and that's probably why there is a Facebook page on it. Keep up the good work!
- It is probably my favorite time of year and the people I know who have used the processing center have been impressed and satisfied.
- It seems to be working.
- It sounds like it's a good program for Oklahoma Department of Wildlife Conservation.
- It was a good experience and I will definitely come back. Thank you very much. We all had a great time. Every ODWC officer we came in contact with was very polite and professional. Next year I am putting in a request of flip-flops and shorts. Not polar fleece.
- It was terrific to have this program. Hope to see it continue in the future years.
- It's a very good idea!
- It's an excellent program...saves me a lot of mess.
- It's good for me and good for you.
- It's great and my grand children love it too. Hope they keep the legacy alive.
- It's great! Good for the economy and now to help with wildlife park- no better.
- It's great! Very professional, high standards of friendliness.
- It's a great program! I really like it!
- It's an ok idea.
- It's great, thanks.
- It's great...I wish paddlefish season was all year long. Thank you!!
- It's ok.
- It's very good. Really enjoy catching and releasing many fish. My boys really enjoy it too!!
- Job well done.
- Keep it going - good work!
- Keep it open.
- Keep it up. (2 respondents)
- Keep it up. I gave all but two away to neighbor and mom. All of them are old and can't go fishing. Thanks.
- Keep the processing center open.
- Keep up the good work y'all do.
- Keep up the good work!!! I'm glad to see paddlefish get some recognition, and some respect. They provide enjoyment for a lot of people.
- Keep up the good work, Keith.
- Keep up the good work. (6 respondents)
- Keep up the good work. Mr. Green has done a very good job. Thanks.
- Keep up the good work. Thank you.
- Keep up the good work. We love paddlefishing.
- Keep up the great job you are doing. Thanks.
- Keep up the great work and strict guidelines so our future generation can enjoy! Thank you.
- Keep up the great work you're doing with this program...
- Love to catch big fish. Your paddlefish program is great. Keep up good work. Made trip from Utah to Oklahoma.
- Loved it!
- My group had three processed there, very neat operation.
- ODWC's Oklahoma paddlefish program is excellent. Keep up the great work.

- Oklahoma's paddlefish program is very organized. The employees are very nice. Even though I turn 12 on July 19th, I hope to catch a paddlefish very soon.
- Our friend from Colorado caught a paddlefish and used the processing center. It is awesome and a great service to the fishermen. I believe it is important to track the paddlefish so they are around for a very long time. Thank you.
- Outstanding program. Encourages anglers to fish and keep a large fish without the mess of processing it.
- Outstanding world class operation. Keep up the good work.
- Over all this program is well planned and executed with emphasis on sustaining healthy population.
- Processing center absolutely wonderful. Have good people there. Keep up good wk! Don't change a thing.
- Processing center was very professional in handling and processing my fish. Saved lot of time cleaning.
- Processing station is a great idea. The state makes money and I get fish properly processed. Not sure what to throw away and what to keep.
- Really like the efficiency at the processing center.
- Section 8 [satisfactions with the RPC] would have been described as all 5 or very satisfied if we would have caught fish. But the fun is in the journey, right? The center was very informational and pleasant people made the difference.
- Seems like a great working program where the angler and the state of Oklahoma. Both benefit well.
- Seems to be a good population of paddlefish, keep up your good work.
- Seems to be very beneficial to the fishermen. Keep up the good work.
- Senior citizen. Had a lot of fun fishing. Wanted to get the "big one." Appreciated help from the processing center. Took a long time in the rain one time. First time was okay.
- So far so good!
- Super program!!
- Thank you folks for the work you all put into this program. God bless.
- Thank you for the processing center! All of the staff did a great job! Everyone was kind/courteous.
- The experience I had with the group of people up there, I will remember for a long time. Great group
- The first year in 2008 when center started it was a little crazy. But the next year in 2009 all the kinks were worked out and everything went great. Great improvement and looking forward to 2010.
- The fish and game officer that contacted us on the lake were very nice.
- The paddlefish and research and processing center is the most awesome program on processing my fish. This was the first experience and loved it. Keep up the great program.
- The paddlefish program is excellent. Every year my group gets bigger.
- The paddlefish program is great. Last year we used the processing center and some of the guys I went with used it this year. I caught mine right before we went home so I was unable to use it.
- The paddlefish program makes a family day of fishing a lot more enjoyable. It allows you to spend more time fishing and not as much time cleaning fish and cleaning up the mess.
- The paddlefish research processing center is a great thing you got going.
- The people operating the processing station were all friendly and professional. Also the game wardens from western Oklahoma and the supervisor from Norman who (on the water) assisted us transferring fish, cooking tips, and tackle info, etc., went above and beyond to make our experience memorable, fun and we look forward to doing it next year.
- The process center is a great place and very helpful. Thank you.
- The processing center has me fish in Oklahoma rather than at Chetopa. Kansas is my home state.
- The processing center is a big hit. Everyone can't say enough good things about it. The Oklahoma paddlefish is the best. Great to take our kids with us and fun for girls and boys. Keep up the good work.

- The processing center is a great idea. Over the 12 years I've been fishing, I wasted a lot of eggs. Way to go Keith. I'll be there next year to have fun and fry you guys some more fish.
- The processing center is a large factor in continuing with annual visits to the area.
- The processing center was wonderful and allowed us to keep all the fish we could legally keep. We appreciate the service very much. The fishing was great and we had a wonderful, exciting experience. We will do yearly from now on. Thank you!
- The program is a win/win situation for everyone involved. The program makes our trip a lot better because we don't have to spend so much time processing our fish and the eggs can be used to help continue improving the program.
- The program is great. Looking for to more great paddlefish in the future.
- The program is very good. I'll gladly help research and conservation knowing it will help keep this species of fish around. Great sport fish, good to eat, and I'll take every fish to the center if they want to clean it for me.
- The research processing center should stay open.
- The RPC center has dedicated, friendly and helpful people there. The RPC center is a big factor to fish in the Twin Bridges area. Great job!
- The scientific info is beneficial to the paddlefish future.
- The tags you gave out this year were very nice. Thanks.
- The wildlife people picked up our fish shortly after we caught them. That is a very important part of the program. Thanks.
- They are doing a great job! Hopefully this program will continue.
- They were very good and kind and gave good information.
- Think it's good.
- Think the program is great. If this will help the fish, I think it will help fishing for people like me.
- This is a good program keep up the good work.
- This is a good program. Hope to see it continue. Thank you.
- This is a great program. Please keep it going!
- This is a great program. Please keep it up.
- This is an experience I look forward to every spring. We have a great time in Oklahoma. The Research and Processing Center is the greatest thing I have seen in all my fishing in any state. Picking up fish on the water is great. Keep up the good work!
- This was my first year fishing for paddlefish. I like the idea of the processing center. I hope to continue trying for paddlefish in the future. I hope the processing center is kept open. I think it will help to track the number of paddlefish caught and kept.
- Thought you all did great, keep it up!
- Used the processing center in 2008 – thought it was great, 2) catching these paddlefish is the closest thing to saltwater fishing we have (size, fight, etc). Let's do what we have to to keep this sport alive in Oklahoma.
- Very convenient for the people who have to travel back across state lines. Also, the program is beneficial to keeping count of paddlefish to protect our fish at hand.
- Very enjoyable experience.
- Very fun to fish paddlefish. Research and processing center is very handy.
- Very good and polite
- Very good and the officers were very helpful.
- Very good experience.
- Very good program and we want to keep it going.
- Very good program! Wildlife Department employees worked their tails off at the processing center. Very impressed with the whole process. Keep up the good work! Thank you!!!

- Very good program. All the people are very professional and orderly. This is a very good program. Glad it was there. Without it I don't know if we would come back twice a year.
- Very good program. Great to have it cleaned and the answer to keeping paddlefish safer from poachers and continuing to flourish.
- Very good. (4 respondents)
- Very good. I love spoonbiling. My largest was 98 pounds at Kaw dam. I love the catch and to eat them.
- Very good. We have come down the last five years, see you next year. Thanks.
- Very good-I really am pleased at the processing center. They do a very, very good job. Thank you.
- Very impressed with current program.
- Very nice people. Nice location. Wish we can keep more paddlefish. Use to keep three but people (greedy) took that from us (over fishing). The Oklahoma research center is great.
- Very pleasant experience for my family. My father is sick and the boat side service and processing center ensured our return.
- Very pleased with first paddlefish trip. Hope to do again next year. Not having to clean my fish was great.
- Very professional.
- Very satisfied with the cleaning center and we will be returning next spring.
- Very satisfied. (2 respondents)
- Very well run, lake rangers very much so.
- Very well run. (2 respondents)
- Very well thought out. Will continue to come back if treated good by the processing center staff.
- Was amazed at the efficiency of the processing center. It made our trip much more enjoyable. Thank you.
- Was first time ever went paddlefishing – had a good time – was exciting to catch – everybody at processing center were the best.
- Was very satisfied with the whole process. Looking forward to next year.
- Was with some buddy that caught fish. They were real pleased with center and fish processed.
- We appreciate the great cleaning and pick up of fish. Great job.
- We drive 480 miles to do this and it is a lot of fun and good meat. I hope the processing center is profitable for you. It sure makes it great for us. Thanks.
- We love it!
- We love it! Thanks.
- Well organized processing center. Already have my trip planned for 2010. Will fish same area and utilize the processing center. It's a no-brainer.
- Well organized.
- Would be very important to have processing center. It is a win-win for both of us.
- You are doing a great job. Keep up the good work. Be back next year. Thank you.
- You guys are doing great.
- You have a great program!
- You have an extremely impressive processing system set up at Twin Bridges State Park. I plan to make at least one trip per year there. It's a "trip of a lifetime experience" to me.

## II. Negative Comments on the PRPC/Paddlefish Program

### ***2008-Season survey:***

- Our big fish will dwindle.
- XXXXX needs to be in field.

- [Did not take to PRPC because] Why am I going to make XXXXX money he doesn't deserve. I think the money spent on this program was a waste. What did we gain in this besides XXXXX filled his pockets.
- It's a waste of time!!!!
- [On paddlefish permit requirement] Waste of time and paperwork.
- Don't know how to catch a paddlefish or where they congregate either. I call them spoonbill catfish. Also, I wouldn't take any kind of fish to be processed anywhere. I consider a fish processing center to be a waste of taxpayer's money. [signed...] Disabled on SS, no money to go and don't know where to go or how to catch 'em.
- I think the program is ok but I have somewhat of a problem with a Department enterprise or company selling the eggs for a profit to support the program. Even though it's better for an individual to give the eggs to the Department than throw them away. But it's almost hypocritical for the Dept. to harvest the eggs and sell when the Dept. writes out fines to individuals for doing the same thing. It seems like a conflict of interest. I don't jack with the eggs myself but it doesn't seem right for a state run operation to control something and put laws in effect then break the law themselves. Just thoughts.
- I clean my own fish and it should be legal for me to sell my eggs that I harvest from my fish. I don't care how you look at it, it's wrong for the Wildlife Department to sell eggs and not the angler. I know you wouldn't mind if I start cleaning fish for my friends and sell the eggs. Take a survey on who thinks it's okay for ODWC to do it and not the angler. P.S. And it's not for research, it's for the money!
- I think the ODWC should be ashamed; the raping of the paddlefish resource in order to sell caviar as a fundraiser is one of our state's worst wildlife travesties in our 101 years.
- I have gone through the time and expense to give you the correct address for this intended recipient (courtesy telephone directory listing). Please be kind enough to remove MY 2<sup>nd</sup> street listing from your outgoing mail list. I don't know who keeps giving away or selling my listing but I do not appreciate the overflow of junk mail get in unlimited quantities at my overcrowded curbside mailbox. I've lived at this residence for several years (alone). I have to walk thru bad weather to empty my mail box and I do not make mail purchases or donations. I am 88 years old. I thank YOU for investing your time and consideration in doing me this favor. You will have to improve Oklahoma's paddlefish program without my assistance. Do they look like Jimmy Durante?
- I think this is the biggest waste of Wildlife Department money I have ever seen. Two stamps on envelopes to me and one back to you. The cost involved in the processing and sending of these letters I'm sure is over ten dollars each letter. I understand the importance of surveys if cost effective. The money spent on this survey would have secured the land in southeast Oklahoma. We the sportsmen of Oklahoma lost a very valuable piece of land. Not to mention the money you have lost on permits going from \$16 to \$40. I will be waiting to see if you sell 15,000 permits this year. There are 12 in our group that ride ATVs down there and we will not be back or BUY permits. That is 12 you have lost. We have been going there since 1994. By the way, we stay in motels and eat out on each trip. Money the towns lost also. Look what has happened to Honobia, a ghost town now. Thank you for your valuable support of the Oklahoma sportsman. You showed your stuff this time.

**2009-Season Survey:**

- Went to pickup my paddlefish and it was missing. Had to take a donated one. Center is great though!
- Did lose my meat, but gave me a replacement package. Really love the processing center.
- At the center when I went back to pick up our fish, couldn't find, was told didn't have. Asked another guy shortly after, who found the fish.
- Sometimes people didn't receive the fish they brought in. I wonder if I got my fish or someone else's.
- Make sure the fish you clean gets to the right owner.
- We took our fish in on some record breaking day for the center so I understand the delay. Great program.

- I brought my fish in during a busy time. The wait was greater than 1.5 hours. However, everyone was working hard and as fast as they could. The fillets were excellent.
- At times the center was very crowded, however it was a good chance to visit with other anglers.
- We tried to use the paddlefish station but one guy there said no, the other said yes, the final answer was no because we were too late. I caught a sow that had a ton of eggs in it, was just a huge waste of a lot of potentially great fish.
- Processing center would refuse to pick up fish caught more than an hour before closing time. If pick up times are different than the center's hours they should be published.
- We were told the last day the processing center was open (we called them) was open till 1:00 pm. We got up there at 12:30 and they closed early. Very dissatisfied. We had four fish from 35 to 45 lbs range, they would not clean them.
- Took fish on May 1. Center was closing and would not clean fish. The regulations showed open until May 15.
- I feel like the center should stay open like suppose to and not close down early!!!!!!
- Processing center was closed in the middle of the day and I had to process myself.
- I fish mainly at night when processing center was not open or I would have taken my fish there.
- One male ranger had a bad attitude!
- XXXX needs to go back in field. Thank you.
- I will fish for paddlefish next year, but I will clean my own fish. This is because of how I and my wife were treated by XXXXX. He was very disrespectful and rude. He told my wife she needs to handle her own fish. The fish weighed over 40 lbs and she could not carry it herself. He yelled at both of us for over one hour. Oklahoma could not have a worse representation other than XXXXX. He was a jerk with an even bigger ego. As an outdoorsman and taxpayer that my money goes to help pay for such a classless person.
- It seems that some people enjoy working there and some don't. The people that don't shouldn't come back, but please bring back the people that do. Love the program!
- Seemed like people in the trucks/boats didn't want to do their job this year like they have in the past.
- Some personnel were pleasant to be around – a couple of them were very grouchy and didn't seem to like their job very well. I did appreciate the quick cleaning of the fish – but did clean them up before cooking because of the red meat was left on. Overall, I think it is a good program.
- Left a lot of red on the meat but overall great experience, lots of fun.
- Not used to getting filets which seem to leave a lot of red meat on the filets.
- The quality and quantity of the meat from my paddlefish was unsatisfactory. I do not feel that the processors did a thorough or complete job of removing the meat from my fish. The meat I did receive was very bloody and unclean as well as poorly cut. Other than the quality of my meat, my process center experience was satisfying.
- The reason I put "three" on quality of meat I received was because they must have had new people processing my fish. Two of the three were really butchered up! But eatable.
- We were not happy with the amount of meat we received back. It's nice to have that set up just in case.
- My first time fishing for paddlefish had a good time, worked hard, seems to be a lot of waste on the fish by the time you remove the red meat and cartilage.
- Directions to paddlefish center were unclear but found it. Amount of meat received from fish seemed small.
- If I turn in a fish and I get the same fish it shouldn't make any difference if it was dead or alive. Saw some pretty lifeless fish on the table. But they wouldn't do mine. It may be just me, but women who chew should refrain while working with the public.
- PRPC will process a dead male but wont process a dead female. Why is this?

- Not able to leave fish for four days --- very inconvenient!
- Crew picking up our paddlefish ran into our boat and put a dent in it. Said no insurance. B.S.
- I don't agree that the people who take the fish to clean them make you give up your fish to them or get a fine. It happened in the year 2008. I also wish we could bring the eggs back to Kansas.
- State's only interest is in the sale of eggs for profit of the state. If the sale of eggs is banned from fishermen, it should be from the state too.
- The laws that are enforced are to make revenue, not to help the fish.
- I do not use your program. I live in Missouri. You keep complicating the rules on keeping the eggs. I realize that Oklahoma makes megabucks off the eggs, but I use the eggs to make fish bait to catch other fish. I caught the fish, surely without a doubt I can keep my eggs to make fish bait. I would like a copy of the final report.
- I don't think they should be able to sell the caviar if I can't. That's why I process my own.
- I think it is good but what gives them the right to sell the eggs when the public can't do the same. I would like a comment by email.
- I don't like. Paddlefish are old and stinky and you don't let people keep three or four at a time, you don't let me sell the eggs. Shame on you.
- Why can't I sell the roe? Also, I have heard that ODWC is selling processed roe. Is this true?
- I think that the caviar production is out of proportion and if the fishermen wants some, then give them so many ounces.
- It has been a wonderful fishery. I hope it will remain that way. I hope the selling of the eggs by fish and game doesn't cloud their goals. It is a public resource that should not be put in jeopardy by monetary gain.
- I hope because of this program paddlefish are not overharvested.
- Many female paddlefish are being harvested for their eggs. Won't this eventually decrease the number of fish?
- You have some great employees working at the paddlefish center. I hope paddlefish are managed to prevent over-harvest.
- The older big fish will start getting fewer and fewer because of the processing center.
- I'm concerned about the increase in fishing pressure and harvest.
- I am concerned about the number of fish being harvested. Is 7000+ fish sustainable? ODWC needs to put out a newsletter with a summary of the fish caught and where the money is spent from the sale of the caviar, most people don't realize it all goes back into the paddlefish program.
- I do not 100% approve of killing so many females. The catch and release is the greatest thing you have ever done. If you raise the limit please use a slot program so you cannot keep two females. I think the money made from Grand Lake fish should be spent more on Grand Lake programs.
- Research processing center is a waste of time and money. I take pride in processing my own game.
- We never had one go even close to offer to [take our fish to the RPC] in 6 days 6-10 hours a day. We got no info on how and spent 6 out of state license fees and gas, + + + plus. But did enjoy the area. We processed the ones we kept. Thanks for the cleaning station. Incidentally I'm 76 years and on limited Social Security income but enjoyed being there with my kids and grandkids. It's not a big deal to me but they love it! Thanks.
- This is a waste of time and money! Charge people for paddle fish permits and survey them.
- True concern! Does this fish and it's eggs bring enough money to the ODWC to fund all this paperwork! Or is this fish dying out! There is no other fish I have to file paperwork on, so I am just curious, are the other fish this important? Do any of our tax dollars fund this paperwork? Does the money from harvesting eggs for food to be sold overseas fund this program?
- This is the second one of these I've filled out.

- Please note this is the first survey I have received. Letter implied this wasn't the first survey. Note: more rangers at low water north of 412. Many laws being broken.

### III. Suggestions for PRPC/Paddlefish Program

#### **2008-Season Survey:**

- If there were a processing center closer to Ketchum or the Pensacola dam we would use it.
- Need one closer to Wagoner.
- Need to have more than one center.
- The meat quality was fine but it would be nice if it were packaged in smaller portions. Thanks for the great service you provide!
- I sent mine in but did not know the fish weren't kept but three days. Very inconvenient if you live out of state.
- I don't know what you are, what the state is doing with the money from the roe you collect and don't care. Please keep 15-20% to revitalize the fishery! Thank you.
- [Took 3 to the PRPC, but] first one, I didn't know about it.
- If I would have known at the time I was fishing, I would have kept a few and would have taken them to the center to get processed. I will next time.

#### **2009-Season Survey:**

- Need more paddlefish processing centers.
- Need more processing centers.
- Need them at all lakes. Too far for us to use.
- If you want people to use the processing center they need to be more accessible to everyone.
- I like the fish cleaning program that Oklahoma has established, however more locations a big help.
- It was too far away to warrant the drive. We need more processing centers in the state. I didn't know how to process it. We met very few women fishing and the men were so competitive they were rude to everyone around them – it was shoulder to shoulder. How do you have fun like that?
- The center was too far away from where we were at 1:00 a.m. All the people fishing were unfriendly and it was not a good experience. How do you process them?
- It was too far away even when I had caught one. Next year let people know where all they can fish and how to process the meat if they catch one a long way from the only processing center in the state.
- They may need to build more processing plants across the northeastern part of Oklahoma. They should have stricter laws of out of state fishers and more under cover game wardens out on every lane and river.
- Need a mobile research/processing center to go to Hudson and low water and Ft. Gibson when fish are there.
- Need a P.R.P.C. In our area (Ft. Gibson).
- Need a paddlefish center at low water on Ft. Gibson.
- Consider opening a processing center near 412 @ above Ft. Gibson.
- Keith: need processing at Hwy 412.
- It would be nice to have something around north of Ft. Gibson.
- We need a processing center at Ft. Gibson. (2 respondents)
- We go to Ft. Gibson because it's closer to home. It would be nice to have a processing center there. We go with a group and keep one a piece, or per person. We only had three people in our group this year.

- I liked the research and processing center at Twin Bridges. Would like to know if there will be one in areas north of Ft. Gibson? The processing helps me a lot.
- I would like to see a process center at Ft Gibson.
- Start center at Ft. Gibson at Chouteau bend.
- Start one at Fort Gibson Chouteau bend.
- Start a research/processing center on Ft. Gibson at Chouteau bend.
- I think this is wonderful and hope that they open one for each area that has paddlefish. For example, Lake Hudson.
- I think another processing center should be located more conveniently south of Hudson dam.
- Need to put center at Hudson dam.
- Need to have a research and processed center below Hudson dam.
- I wish there were more research and processing centers. We caught more and bigger fish north of the Mazie Landing boat dock.
- I fish below Kaw dam and would like to see something set up in that area. I think the paddlefish program is great idea. Thanks!
- I think there needs to be a processing center at the Pensacola dam.
- I would use a processing center if it were located in Tulsa area. I find it hard to drive all the way out to the other processing center.
- I'm from out of town-I couldn't drop off my fish and then come back and pick up. Also, no center at Miami Park.
- Keep up the good work, but would be nice if located in Miami.
- We have also caught paddlefish below the dam at Lake Eufaula by accident. There could be some more processing centers.
- I usually process my own at the cleaning station in Miami for years but I do like the truck that comes by and exchanges fish. Would like to see more trucks at Miami Park and more frequently.
- Need more men in trucks packing up paddlefish and taking fish back to Miami Park. Need to raise limit.
- They need to spend equal amt of time picking up fish on either side of Miami Park for processing
- Pick up spots on both sides of the river at Riverview Park. We traveled a long distance in a car to snag and could not transport out paddlefish to the other side. Very disappointed.
- Maybe a processing center located at Miami that way you have one at each end of the river area. Thanks.
- Would like to see your boats on the water sooner, but happy with this program and work everyone does.
- The processing center is the primary reason I fished this area because I did not want to have to clean the fish myself. It will keep me coming back to Oklahoma to fish. Wish they stayed open just a little longer!
- Great operation. Could use better parking in and out of center.
- The processing center needs more parking area.
- I think it's great, but needs more parking and bigger. It is always very busy.
- Need better access in and out of center.
- When the fish are being caught everyone is having them processed. This causes big lines at the processing center, but what can you expect. You guys are doing your best.
- Maybe more holding tanks so the check in of fish would go faster. I like it when you come pick fish up on the river.
- Keep more than one fish a day and processing center should be open 24 hrs a day in our family's opinion.
- Great program! Suggest maybe having a picture area at the processing center, a place to hang your fish up and stand by it, maybe flash the weight also.

- Would of been nice to have some stuffed fish so we could have some pictures of all of us with fish.
- Great this was the best year so far. Several fish in the 40 to 64 lb range. The processing center is nice but the meat tends to freezer burn in a week or two. Possible solution - simply fill pack with water.
- The processing center is great!! But need to seal bags better. Thank you so much!!!
- If we bring a female in to process we would like a credit for a free one - fishing (paddlefish) license.
- Waive the fishing license if you get to process the females. Thank you.
- Make permit out of metal or plastic to be put on fish caught.
- Out of state fisherman ought to be able to some eggs home from the fish you processed.
- Hope some of the eggs go for restocking.
- Would like more information on paddlefish program.
- Would like more info on where to fish, and the processing and research center.
- What is the paddlefish process center? What is it about? Where is it at in Oklahoma?
- How does one find the time which the research and processing is open, and offices at the Twin Bridges - is that all?
- Please provide more detailed information on where the processing center is located. Also weekend water release schedule would be helpful for snagging.
- I wouldn't know the regulations and good areas to fish for paddlefish and crappie.
- If there was a way to find out when the spillways are closing it would b great. I only catch paddlefish by hand under the spillways at Grand. For me that is the only way to do it so you do not harm the fish. Thanks.
- Where is the best place to paddlefish?
- I just want to know if you are allowed to take a paddlefish below the Eufaula Dam. PS. Send me feedback on these. Thank you.
- Would like some type of map to access areas where paddlefish areas are.
- I want to know more about the Oklahoma research and processing center. Location, general services, etc. Please send info.
- I would like more info regarding the paddlefish program.
- I like to paddlefish but I would like to get some info on where all to catch and where all to go.
- More info and tips in ODWC papers, hunting guides, fishing guides, and Oklahoma maps.
- I live on Ft. Gibson lake. In the late summer while pontoon boating we have seen paddlefish jumping out of the water like dolphins. Please send me any information regarding paddlefish spawning seasons, proper baits or lures used to catch paddlefish.
- I would like to know what this year's biggest spoonbill was and how many were tagged.
- Please let me know how it went...thank you.
- Thanks! This processing center is great!! Please keep it going! Would like to have a record of fish size (weight/length etc...) for my individual fish that was caught and had processed at the researching/processing center.
- Would like to have a break down on what egg money is used for, from total cost to expenses.
- We need more information on 1) probable toxins and toxin level in lake and fish, 2) nutritional level of fish eggs (some say there are high omega 3's in paddlefish eggs, is this accurate?) I hope that as a state tax payer agency, you can see your responsibilities include food safety (i.e. notice of toxin levels) and not just tourist promotion.
- Would like to see a snagging school daily at Twin Bridges Park, maybe morn and eve, however brief.
- You need to do a video on paddlefish and the whole program used for education and anglers.
- It would be nice to have the option of completing this survey online and I think it would be cheaper for you.
- Would like to see some of the funds go to the park. The bathrooms are probably older than me.
- What a great year! Put some money into the Twin Bridges State Park.

- Great but I would like to see more huts to stay in. Thank you.
- No cleaning tables at Twin Bridges. Miami Park is a very bad setting for people who want to clean fish!

#### **IV. Issues with Paddlefish Management, Regulations and Law Enforcement**

##### ***2008-Season Survey:***

- I think there are enough paddlefish to raise the daily limits back up!
- It would be nice if the legal limit would be more than one paddlefish per trip.
- I would like to see the possession limit increased to two instead of one. I drive a long way to snag and spend a lot of money in OK. With fuel prices going up it will not be worth the trip.
- As many fish as I saw get caught, I don't understand why possession limit was dropped to one. It should be two.
- Thank you for the opportunity to catch and release spoonbill. I don't think I need to keep and kill everything I catch.
- Will Keystone dam ever be open for snagging?
- I caught a tagged fish last year, sent in the tag and never heard anything??
- Last year '08, I snagged a 25-30 lb paddlefish with a tag in its lip. I looked closely at it and found a phone number. I tried to call the number but nobody answered. There was no machine to leave a message on. I snagged it below Kerr dam on Hudson Lake, spillway side. Can you send me info or let me know if there is any other way to let you know I snagged a tagged paddlefish? PS. I can't remember if the paddlefish was a male or female. Sorry.
- I've heard some anglers prefer smaller hooks to try and not do so much harm to the fish when released.

A new guideline for 2009, perhaps? I recommend no larger than 8 ought treble.

- [On satisfaction with the new PFP requirement...Very Satisfied] As long as there is not a charge.
- I fished one day below the Hudson dam. There were about 30 people there on a week day. About 20 of them were Russian fishermen. They were catching many fish but they would not take any out. Just a Wal-Mart bag full of something (eggs). You are doing a great job with the paddlefish but it just sickens me to see it abused that way. Can anything be done about it?
- I fish a lot below Ft. Gibson Dam. These paddlefish are corralled up and greatly abused. When snaggers move in, they rule the wall. Snaggers should be below the cable. I witnessed several young children being snagged or hit in the face by 4 oz. weights. You need to put the snaggers below the cable.
- Lock & Dam 16 1000 ft. Marcum Ferry – Night only. I've been fishing at Ft. Gibson since 1968 and have seen a lot of abuse to the spoonbill and humans. You really need to go and watch when they are generating. It's a real circus. Brady & Tony try to keep control but they can't be there 24/7. [signed] Concerned Fisherman.
- I have talked to Fish and Game about making it legal to keep a paddlefish hooked below Eufaula Dam, no one snags but once in a while you catch one running jigs for stripers and there are a lot of paddlefish at certain times of the year, since you aren't snagging you should be able to keep one fish same as below other lakes. Thank you.
- This was my first year of paddlefishing and I enjoyed it immensely. However, I feel I should relay this story to you. Some friends and family and I went fishing below the Hudson dam on Fort Gibson lake and were, I believe, unfairly treated by two park ranger/game wardens. We had no idea we had violated any rules and were actually leaving when two of us were given \$100 tickets. This is their job, I know, but my two young children as well as my 80+ year old grandfather were with us and it really upset them. As I am trying my best to install a love of the outdoors into my children things like this make it that much more difficult. I tried to explain to them but the damage had been done. I hope

you would consider posting some rules at the fishing areas (i.e., the yellow line rule) that we had no way of knowing about. P.S. The spoonbill tasted great!

- You get harassed by XXXXX and crew so much on the Neosho River that it is not any fun to paddlefish anymore. XXXXX and crew do not get the regulations in Wal-Mart and other places in a timely manner. All changes in regulations should be in newspaper or TV news.

**2009-Season Survey:**

- I wish you would increase the daily limit to more than one fish per day.
- Need to be able to keep more than one paddlefish per day.
- Keep more fish paddlefish.
- It should be more than one a day. Thanks!
- Need to be able to keep more.
- Up the number of fish per day.
- Need to be able to keep more than one paddlefish per person.
- Would like to keep more of them.
- Need to get more than one per day.
- Need to be allowed to keep more than one a day.
- I wish we could keep more than one fish per day.
- Need more than one a day.
- Would like daily limit raised.
- I'm from central Missouri. Your spoonbill fishing is way better in Oklahoma. Would like more than one fish.
- Should be able to keep more than one. Other than that, it's great. Thanks.
- Should be able to keep more than one/day. Ex: if four in household, then should be able to keep four.
- It's not worth driving four hours to Miami to keep one fish. Gas is too high for price of fish worth of meat sport or not.
- The limit needs to be raised. Some people have to drive to far to a place to fish and with gas prices.
- I live out of state and don't like the daily limit of one fish.
- One fish paddlefish isn't worth it when you drive 100 miles around trip to fish. Need to be able to keep more fish to get something out of it to me.
- Thanks for the survey. Anywhere I fish, I have to drive at least an hour, so would like more than one fish.  
Thanks.
- Please consider allowing fishermen to keep more than one fish. I drive four hours to fish and one is not enough. I did catch more fish this year than previous years, but I think that's because of the rain.
- You should be able to catch and keep more than one a day. It's not hardly worth going for one fish a day.
- Need to up the limit on paddlefish!!! One fish per day is not worth it.
- If limit is lowered will stop going to Oklahoma.
- Need to be able to keep more than one fish. It sucks driving 50 miles for one fish. At least two. Is there paddlefish in Keystone?
- It is a great program selling paddlefish eggs for funding the program is great. I think that the limit should be two fish a day. I drive four hours to fish and sometimes camp.
- I think you should let us keep two spoonbill a day. I got more male than females. All the females got released for more paddlefish. We drive 60-70 miles. We all like to fish in Oklahoma. I do a lot of fishing in Oklahoma all the time, when I have time. Thank you all.

- I think the paddlefish research and processing center is a very good idea. If I fished in that area more I would use it. The bad part is with a one-fish limit it's a long way to travel. I would prefer a two-fish limit. Thank you.
- Limit to two per day. We have to drive so far to fish.
- Would really like the daily limit to at least go back to two fish per day. It's a 45 minute drive for me and one fish doesn't feed my whole family.
- One fish is not enough to drive out of state for. If I stay in Missouri I get to keep two fish a day. When I started coming 25 years ago we got to keep three fish. I liked that.
- Raise limit to two/day for out of state permit.
- It's very fun and exciting to catch a big fish. But it is a lot of work to only keep one per day. It needs to go back to what it used to be! At least two per day. They are very good eating and some people don't have the money to go all the time.
- It is a very good idea to have them limited so that everyone gets a chance to get one. However, I do wish for big families that they could take home at least two per day.
- Might be good to up the limit to two paddlefish per day.
- I would like the limit of paddlefish to go up to at least two or three per day to keep.
- It's good. I wish I could keep two per day.
- Keeping only one paddlefish is stupid...two at least.
- I wish the limit would be two per day.
- Allow two paddlefish a day limit.
- I wish you would up the limit to two paddlefish a day!
- Should be increased to at least two fish a day.
- There are plenty of paddlefish now. I would like to keep two a day. Everything else is excellent. Thank you.
- We don't need a limit on the fish, or if a limit we need two each time you go out to fish.
- Would like to be able to catch and keep two paddlefish at a time. Open paddlefishing below Eufaula dam.
- I would like to see only two fish kept like deer hunting season. Male only.
- Should be able to keep two fish in a 24 hour period so you can keep one and still fish.
- I think it's bull you can't keep three a day. It's hardly worth the gas. People who come here from other places said "They won't come up until it's raised back up." Then you can't keep a smaller one while you fish for a bigger one or give it to a disabled person without ending your day.
- Wish we would go back to three fish/day for out of state fishermen.
- I live in Tulsa and I would like the limit of one fish/day to be changed back to three/day. Thank you.
- The limit is the only thing that bothers me. I'm from out of state and with the amount of paddlefish Oklahoma has I think it should be moved back to three/day. It would make us out-of-staters more worth our while, especially for those of us that keep fish to eat. One fish in ten minutes then back home sucks when you live 100 miles round trip away. It is just not practical in today's time.
- It was a lot more worthwhile when you could keep three fish a day.
- Please up the limit to three! The daily limit should be raised to at least three. This one a day limit is not very friendly to your snaggers.
- I would like to be able to keep two or three fish per day.
- Don't have time but enjoy it. Would like to see three per day again.
- I think the limit should be three fish like it was once.
- Why can't you catch three paddlefish instead of one?
- Need to go back to three fish a day and the use of barbed hooks. The barbs do not hurt those fish.
- Keep one fish each day you have a permit, like a five-day license to keep five fish for out of state snaggers.

- You should be able to keep fishing even after you keep one, or allow two to be kept.
- Should be able to continue fishing after catching as long as you release the rest. Should be able to keep more than one a day.
- I would still like to catch and release paddlefish after keeping one.
- Would like to be able to keep one paddlefish on boat and still be able to fish for a bigger one. If caught, then release small fish.
- I like the one a day idea, I fish south of Ft. Gibson dam and it seems like the fish are smaller/smaller.
- I like the one a day limit, the permit is no hassle.
- Paddlefish grow one pound a year. No more than one fish a day is good.
- Enjoy it greatly! Me and my dad spend time together doing it. Think it's good for the one fish a day.
- I think the rules and regulations for paddlefishing are excellent. I have fished for them at least two days each year for 30 years. I haven't missed a season yet. Thanks for allowing me to do so! I am from Kansas and have started about 30 Kansans to fish in Oklahoma.
- I like how it is. Very fun for the whole family. Catch and release very good thing...
- Love the regulations on the paddlefish.
- I like that I can catch as many as I want. It makes our trip worthwhile and lots of fun. Thanks.
- I have been paddlefishing for ten years now, and it is just as good now as it has ever been. The rules and regulations are suitable. Thank you for conserving and regulating these prehistoric fish. I love snagging, and hope you allow me to snag for a long time. Thank you Keith G.
- I have been fishing for these fish since the early 80's. I enjoy this sport very much. Have shown many other anglers the sport. Wished we could keep two fish a day but we got to keep the numbers up! Keep up the good work.
- Enjoy the sport and will probably plan a trip every April/May to catch big one. Like rules, keep one, catch many.
- I think that catching and releasing paddlefish is very important and the sport is really fun.
- I don't believe in catch and release. It hurts the fish and you can't get to the bank to fish.
- I would not be interested in catch and release program for paddlefish. This would be cruel to the fish.
- My comment is if you are not allowed to keep them, don't catch them. I've been down river where they were catching and releasing and I've watched hundreds of dead fish float by. It does kill them.
- I don't like the catch and release method. I feel you should have to take what you catch. We all would like to catch a big one, but I feel releasing fish after being snagged isn't healthy for the fish. Thanks.
- Please stop catch and release. I think that it is hard on the fish.
- I think should do away with catch/release of paddlefish. Would be nice to have a limit of three/day again.
- Releasing paddlefish has got to be hard on them. Seen some really tore up from being caught over and over.
- I wonder if the catch and release is really damaging the fish.
- I am dissatisfied with the program since the start of the one fish/day catch and release program. Been fishing for spoonbill for years and the overall fishing has really gone downhill. I do not agree that the catch and release is a good conservation tool where snagging is concerned. The fish are likely to die.
- I think there should be a number of fish that can be caught and released. I see people at Fort Gibson Dam catch 20 to 30 and release them back with big gashes, half their head torn off. That's just not right. These shouldn't have to suffer because people think it's fun to catch them.
- In my opinion there are too many injured fish going back in the water. Some people will fish all day for the fun of it with no respect to the creatures.
- Barbless hooks! I have seen numerous carcasses floating due to hook extraction. Waste of resource.
- I use straight hooks with no barb. Wish I could use two hooks at the same time. Would like the rules to be stated a little clearer.

- I like your limit of one and using barbless hooks and no gaff hooks. Convince Kansas to do this. Try using single hooks only – no treble hooks.
- Need to better enforce barbless hooks, need catch and release only or have check station and only be allowed certain amount kept per season. Not enough meat on paddlefish to harvest so many, need to leave for our grandchildren and their grandchildren. This is a prehistoric fish and needs to be preserved.
- Would like it to go back to using to barbless hooks at different depths. Plan on using center next year.
- Bring barbs back to fishing. I and many others have lost big fish. I don't see how barbs make a difference.
- I am seeing more and more deformed bills on fish at Ft. Gibson.
- I have fished for spoonbill since 1988 and even though there is more spoonbill now than ever, I have not seen any 90+ lbs like there once was. This fish is getting overpopulated. I like the idea of the research center cleaning the fish. I hope it helps biologists study the paddlefish to make sure we always have them in our waterways.
- The paddlefish are being overfished...no large fish.
- I have only been paddlefishing this year. I hear people say there used to be more large paddlefish below Gibson dam. What can be done to increase the numbers of larger fish?
- I've been snagging paddlefish the last five years and I think the size of the fish is on the small 25-35 lb range. Five years ago they ran 45-60 lb range. I hope this sport will be around for many years. Thanks.
- Why are we not getting bigger fish? Haven't caught the big ones 80-100 lbs in last for years.
- We have fished for paddlefish for many years – in the past three years we have seen the size drop considerably – I think it should only be catch and release for about five years. They are over fished!
- Thank you for your work in this area. The fish size has went down a lot in the last 20 years I've been snagging, maybe that will change. Stop poaching of fish and animals.
- Need to regulate the fishing more to reduce the catch.
- Need more paddlefish.
- Not enough paddlefish in the lakes and rivers.
- Would like to see one area each year blocked. Some bigger fish.
- I think and really wouldn't mind it all if it could be banned for about four to five years to get spoonbill bigger.
- I wish we could restock the lake with paddlefish and we would have a chance of catching big ones again. The size has gotten smaller every year. Or just have one year as a catch and release only.
- The processing center is the best thing you could have done. There should be a length limit on the fish to ensure that we will be able to fish for years to come and that we can pass it down to our children.
- We think that there should be a size limit on all paddlefish. And we also agreed about not charging for tag or permit. And Keith, I will have peanuts and bananas for you next year!!! Ha ha.
- I think you ought to come up with a length limit because I've seen too many people keep paddlefish that were too small. Too small to even fill up one skillet.
- Good place to catch fish but isn't much for size last few years. They were a lot bigger about five years ago before it went to one fish a day. I like the one fish per day rule but it might help to put a length limit on them to get bigger fish. Oklahoma is a great place to go snagging!
- There should be a limit on how many you keep in one year. I like the catch/release program. Thanks.
- If people would release the smaller fish, it would be better for the paddlefish population.
- Consider a season limit. Maybe issue a certain number of tags with each paddlefish permit. Protect the population. It's good that commercial netting is no longer allowed.
- I would be a proponent of a tag/permit system similar to deer or turkey. I think current numbers taken are hurting the population. We are definitely losing our big fish. Low water north of 412 still has huge poaching problems. Think it could use more attention.

- Need to give out four to five tags per person for that year like they do deer tags. It would keep people from filling up their freezers and letting them get freezer burnt and thrown out (wasted).
- Need to go back to a two month season and allow for more than one fish a day.
- I would like to see the daily limit increased – maybe with a size limit (no teaspoons). Hopefully in the future this can be possible with the program. Keep up the good work and efforts. Someday I can see my children, grandchildren catch a monster like I did.
- There is a foreign (Russian?) group at our fishing locations that are seriously harvesting these fish for eggs. I have seen them do “something” to these fish to test for eggs. Please stop them!
- Need to have a warden on site taking the eggs to keep the Russians from keeping females only.
- Very important for fishery. I caught a tagged spoonbill north of 412 bridge #G11120. Spend more money on catching Russian egg poachers!
- A number of people below the low water dam at Ft. Gibson were catching and discarding fish for eggs only several evenings. When confronted it was dangerous. Additional wardens need to be present. Russian-speaking people.
- I think the law should apply to every nationality. I didn't know about the center.
- Stop groups from extracting paddlefish eggs above the allowable one fish per day.
- I hope that paddlefish are not being over-harvested. I think violations involving paddlefish eggs should have much higher and severe penalties.
- Too many people at the low water that exceed the limit and fished for the eggs. Area needs to be patrolled more.
- Need more same rangers in area to monitor people taking too many spoonbills at Ft. Gibson dam.
- I have as yet to encounter a ranger below Kaw dam, and there are violations galore, esp. involving cutting up fish and continuing to fish.
- A lot of people kept more than one fish per person. The DNR did not do their job. A lot of people kept 5-8 per person. Where was the DNR? Location, downstream of Kerr Dam. Locust Grove, OK. I could not keep/catch any of the fish because of this act.
- 1) Seen numerous paddlefish out of water and some even untagged 2) People catching and keeping more than one paddlefish while using family paddlefish permits. Have any questions feel free to mail or call me at #####.
- Hello, to whom it may concern – your state parks around Little Blue need to be monitored more. There is a lot of people shooting spoonbill and leaving them on the banks. Plus a lot of people using spoonbill eggs for bait, thought that was illegal. Just thought you need to know.
- I think the rules and regulations are fine, but would like to see better enforcement by rangers.
- Need more law officers.
- Need to enforce the limit regulations.
- Great fishing. Patrol low water more for unlicensed fishermen and overfishing their daily quotas. Tickets for littering. Great job!
- More than one a day/person, bring the limit up. More law enforcement for those over limits. Lots of them.
- We love it! So glad we have this available in Oklahoma. Hope it can be managed to be keep it available. Also, more is needed to enforce the rules of amounts allowed to keep.
- Got for paddlefish/fishing for crappie. Below Hudson dam. Too many keeping too many fish.
- I want fewer game wardens at the park and on the river. Have fished river and park since 1970. This year just watched officials write tickets.
- Honestly there was too much fun watching wardens than fishing. Wasn't what I came to do.
- I don't think a man should be fined for giving a fish away.
- Having to tag a fish sucks. If you have one fish in the boat you have your limit.
- Tagging process is still not good enough yet, but thanks for all else.

- A bit more clear on the tagging of your fish would have been nice. We thought we got a tag from a warden. Then, he didn't even know what number to put on the tag we made, and we didn't either. But thankfully he was nice enough to give us all a \$200 ticket. Thanks again.
- I enjoyed catching the paddlefish. It's a challenge and I like the excitement of pulling them in. My question is should my husband have gotten a ticket from snagging one and then letting me fight it in and letting me tag it. I no longer fished after that but my husband went back to snagging and that's when he got ticketed. We only had the one spoonbill on the line at the time.
- The paddlefishing experience was great but I won't be doing it anymore due to the harassment of a park ranger at Fort Gibson. I was a completely legal fisherman not causing any trouble. The ranger was parked across the river watching with a spotting scope. I fished until I caught one and I tagged it. Meanwhile my mother bought me a new fishing pole and I was waiting for her to get back with it. When she returned I put only a weight on the pole and casted it out one time to see how well it worked. Ranger came speeding over insinuating that I was continuing to fish after I had already stringered one paddlefish. He was also accusing me of not tagging the fish I had already stringered when in fact I had. The pole was a birthday gift from my mom and the expensive trip from Norman to Fort Gibson was great "until." Harassment. Consider me done!
- Regulations need to be better outlined in rule book. Some game wardens make up their own rules - Kaw lake.
- I would like to see game wardens and Oklahoma laws regarding paddlefish make it clear what is or is not considered keeping a fish. There seems to be a difference in interpretation between game wardens and fishermen. Specifically at Kaw Lake and it's tailwaters.
- Wish snagging was open below Keystone dam. Would pay for permit to keep one extra fish per day over limit, up to two fish per day. Need to make rules more clear, define what is "in the field."
- I think permits are a good idea and looking forward to next season.
- Do not make us have to pay for a license to fish for paddlefish.
- I believe this will be like the HIP permit. Supposedly free until people accept the program and then charge a fee. I have a little faith in ODWC.
- Fisherman shouldn't have to get a HIP permit. Another way the state can write a ticket. It's not right.
- I am under 16, why need permit?
- I think the price is too high for out-of-state fishing license when I only live 20 minutes away and I probably don't take five fish a year home. (Any kind of fish, not just paddlefish.)
- Being from Missouri I like paddlefishing. I was raised in Oklahoma and am angry over one, two or three day fishing licenses! They are outrageous. Please fix their costs.
- Permit too high for one fish a day. Missouri program is two and is closer!
- More bank areas to fish from.
- Lack of access below Hudson Dam ruined catfishing and spoonbiling for me. Hope that it is reopened or I may not want an Oklahoma license in the future.
- 1) Build more boat ramps at Twin Bridges, 2) put season on paddlefish such as April and May to prevent big fish from being taken by guided parties in the winter, 3) develop spoonbill stocking program to put back fish taken out.
- Need to be more ramps and parking places somewhere around Twin Bridges area. It's getting where there's as many boats on the water and they're coming into the park and the bank fishermen can't fish. The boats should fish the rest of the river and leave the park for the bank fishing!
- Keep up the good work! It would be nice to be able to snag a little earlier – below Hudson – say 8-9 pm and till 7-8 am. In other words, let the 1000 foot regulation be relaxed.
- I know there are many places to catch paddlefish. In my area it's the Arkansas River. Many years it's too flooded to fish. Could a consideration be taken for this. Maybe drop the Keystone Lake for one week to give us a chance?
- Need try bring this sport to southeast Oklahoma.

- Low water north of 412 was filthy.
- The low water north of 412 was filthy. As much as it costs for Oklahoma hunting and fishing license, I think they could staff those areas to keep them clean.
- Wish there were more research.
- Caught one small spoonbill that was tagged in the mouth. Didn't know what to do so I released it.
- I caught a paddlefish in April '09 that was tagged. I called you all and reported it. I asked you to mail me the history of the fish. I have not received this info.

## V. Other Comments on Paddfishing

### *2008-Season Survey:*

- [Low water north of 412] Water was too high.
- [On how did you get the fish to the PRPC] My brother helped. [On what would you have done with the fish if the PRPC wasn't there] Brother.
- [On how often in the past did you keep a fish] When a customer requested.
- 2007 was the first time I fished for paddlefish. Didn't get one.
- Didn't catch any this year...no water.
- Didn't catch any. Gates opened late season.
- Didn't land the fish - line broke.
- Ended up not keeping any but would have [used PRPC] if kept them.
- High water.
- I didn't get the fish to shore.
- I live in western Oklahoma and camp out when fishing. Between five of us, we cook one a night and bring one a piece home on a five day trip.
- I prefer to fish Cabbage Hollow but high water prevented me from doing so.
- I was catfishing and the bill on the paddlefish had gotten tangled in my lead line of my pole. I got it in and I released it. I was in a boat.
- I will use next year.
- I'm a fishing guide. I try to catch and release depending on customer. I feel all game rangers did an excellent job and support them 100%.
- Not sure where I was, I was with friends.
- Released because they were too small
- Released mine for wanting to get a big one, never did.
- This is my first year of the snagging game and it is a blast. When the water's right and it's sunny, there's nothing like looking into a big old spoonbill! I appreciate all the new laws for snagging. I believe it will improve the fish numbers tremendously. I caught a lot this year but I'm proud to say all were legal fish. Well, supper's done. Gatta eat some spoonbill. Mr. Green, keep up the good work! Oh, and Mr. Green have a great summer!
- This is my first year.
- Too much flooding.
- Too much water to be safe. [Regarding the PRPC] I live in Sapulpa and the price of gas makes it unreasonable to drive that far for one fish.
- Wanted to keep one on last day, never caught one.
- Water too high in Chouteau Bend area. Thanks.
- Water too high to get to our boat.
- We always use a guide.
- We no keep that day.
- Will try next year.

### **2009-Season Survey:**

- Been spoonbiling for 25 years-mostly in Missouri. First time in Oklahoma. Awesome time had by us, all nine. Will be back.
- Been there for past ten years, friendly people, conservation officers are very cordial and not screwing with you all the time like here in Nebraska. I will keep coming until I can't. Thank you.
- Catching a big fish like that is very exciting.
- Dang Nebraskans!!
- Did not catch any fish this year. Caught one fish last year. Awesome time fishing.
- Didn't utilize the program.
- Don't go to Grand...too many a\*\*h\*\*\*s.
- Don't know. First time this year. Will have more to say next year.
- Enjoyed myself much. Did not catch one fish. Next year I will bring boat and heavier sinker.
- Everyone who fishes under Kaw dam is an a\*\*h\*\*\*.
- Excellent, great time, lot of fun, thanks.
- Fantastic!
- First experience and I'll definitely be back next year!
- First time fishing for paddlefish – lots of fun. Many people fishing the same area and all were very considerate of other boats.
- First time paddlefishing and enjoyed it. I will be back.
- First time. Had fun, but no catch.
- First year paddlefishing. Liked it, planning on coming back.
- First year to catch paddlefish. It was awesome. Can't wait to share with my kids this much fun!!
- First year to go spoonbiling. Know lots folks who go and we were successful this year. Can't wait until next year.
- Fished below Kaw Lake dam. Happy to see the survey, hope it helps the fishing stay good.
- Fished two days- no fish!
- Four of the fish kept were taken with a bow after releasing the snagged fish.
- Getting together with old friends is a great time. I came all the way from Florida.
- Good fun.
- Good.
- Gotta love fishing!!!
- Great fishing experience! We are from Kansas and can absolutely appreciate new type of fishing. Be back.
- Great fishing, dat.
- Great time fishing, thanks!
- Great time had, two kids and it's something they will always remember. After all, isn't that what it's all about?
- Great time, friendly people.
- Great, we will be back next year, lord willing.
- Great. (2 respondents)
- Had a great time.
- Had a real nice trip. Everything was real good.
- I am an Arkansas resident and moved to Missouri. I have fished Missouri Lake of the Ozarks for years, Arkansas on the river. Oklahoma is the best for big cats and spoons. Every fish we snag is 45 and up to 86. Twenty minutes a fish average.
- I do enjoy going to the dam at Ft. Gibson lake and watch others fish and catch paddlefish. It's exciting.
- I don't care for the meat. Just catch and release.
- I don't fish every year for paddlefish but the years I have I have enjoyed.

- I enjoy catching paddlefish and have a good time doing it. Thanks for the season!
- I enjoy fishing grand lake. Beautiful place. Keep up the good work!!
- I enjoy introducing newcomers to the sport. I think Oklahoma has done a great job, keep it up.
- I enjoy my fishing and look forward to next year.
- I enjoy the opportunity to catch and release large fish.
- I enjoyed it.
- I enjoyed my fishing trip very much.
- I fish for anything I can catch...
- I fished with my dad and older brother in the Red River below the Denison Dam. We never caught a fish. It's not about catching fish, my dad taught me it's all about the quality time I get to spend with him. (8 years old)
- I had a great time and the fishing was great!
- I have been down six out of last eight years and will come back many more. Thanks.
- I have caught paddlefish and released them while jug fishing in Ft. Gibson lake.
- I have many family members that do paddlefish in the river by Cleveland.
- I have never caught a paddlefish yet. I tried too late in the season. But next year I plan to catch as many as possible.
- I just like to relax by the water and if I catch anything, great!
- I just wasn't lucky this year. Keep up the good work.
- I kept only four fish the five day trip. The channel cat fishing was outstanding, so I spent time pursuing other species.
- I like paddlefishing in Oklahoma. Have been doing it for ten. My 14 year old son loves it to. Thanks.
- I look forward to seeing the results of this study. I am very happy to have the opportunity to fish for paddlefish and all other fish in Oklahoma. Thank you.
- I love it there especially because of the fish and game, great help.
- I love snagging for spoonbill but rarely harvest them. I like the fight of a big fish more than anything. I don't keep spoonbill unless one of my buddies wants one.
- I love them fish, please protect them!!!!
- I think it is great fun, very unique experience to catch a big fish.
- I think paddlefishing is better now than 25 years ago. I love the way things are being done. Good sport
- I was very impressed with my Oklahoma fishing trip and I am excited about another.
- I would love to see your paddlefish center, when I'm back there.
- I'm new to paddlefishing, and was surprised how good the meat is.
- If I did catch a paddlefish I would turn it loose because I heard they don't taste good.
- If you clean paddlefish right they are good. One paddlefish usually gives me enough fish along with my crappie and catfish. I just like to catch nice sized fish.
- It is fun to catch paddlefish.
- It is fun.
- It was fun even though I didn't catch one.
- It was my first time fishing in Oklahoma. Very happy with the abundance of fish. DNR people very helpful. Thanks.
- It's a great sport I am very thankful to live in a state where paddlefishing is available.
- It's a blast and I look forward to this fishing every year.
- It's very exciting and it's fun to catch big fish.
- Look forward to paddlefishing every year. Have never met friendlier people than folks from Oklahoma. Thank you.
- Love it! Look forward to it each year!!

- Many thanks to ranger Green. Everyone I fished with ranging from locals to those from out of state (KS, MO, IA) appreciated his efforts cleaning debris from the water and shoreline of Miami Park.
- Met Keith Green and I am very appreciative of his efforts!
- Most of the fish (27) were in the 30 to 40 lb range, a few in the 40's and one over 50 lbs. We visited several times with game wardens, all very nice and professional.
- My dad would help with the processing. I had a blast and appreciate the paddlefish program Oklahoma has.
- My first time to do this kind of fishing. I caught it on my third cast. That was cool. Even though the people upstream was there for three hours and still didn't catch.
- My group (3 total) caught and released 96 fish in 2 ½ days and had 6 processed at the research center.
- My husband loves to paddlefish. I just try sometimes.
- My kids and I had a great time and a wonderful experience.
- My son and I look forward to going every year. We love it.
- Myself and my wife come down to OK on a Friday caught two paddlefish. Went out with guide on Saturday caught 29 paddlefish. Then caught five on Sunday. We always have a great time in Oklahoma paddlefishing.
- Native Oklahoman, been going at least once a year for six years, enjoy it very much.
- Never been to the center and I enjoy paddlefishing very much.
- No fish caught this year- but there's always next year.
- No one should throw guts or any parts of fish on the shore of the river or lake.
- On keeping one paddlefish every day of fishing depends if I have fish at home.
- On light line, they are real fun.
- Paddlefishing is a very fun and exciting way to fish. Was hooked my very first time.
- Paddlefishing is very important to me. One paddlefish can feed a family for three days and exciting/fun.
- Spoonbill are fun to catch for anybody. Keep up the good work and keep 'em around.
- Ten year old and I caught one paddlefish each. Amazing how much fun we had. Both about 35 pounds from Oologah dam.
- Thank you for allowing me to be involved in your survey. The Wildlife Conservation is doing a great job! The game ranger in Okfuskee county area is doing a great job! Thanks for letting us have a good officer who knows and does his job. Thanks again.
- Thank you for letting me catch fish.
- Thank you for sending.
- Thank you very much
- Thank you!
- Thank you.
- Thanks a lot for the good times!
- Thanks for asking.
- Thanks for making something perfect even better.
- Thanks for taking care of Oklahoma fishing!
- Thanks for the opportunity to participate.
- Thanks guys. Personnel are well informed and well manifested. Keep up the great work- hope to see you next year.
- Thanks- it was great!
- Thanks to all whose efforts make it possible for me, and when my son gets old enough, to fish for paddlefish. To have such a great opportunity so close to home. Fantastic!
- Thanks!
- Thanks. Good work.

- The fish were caught below Oologah dam.
- There are still a lot of spoonbills in the lakes, you got to know where to go and how to catch them.
- There were at least 12 other people fishing below the low water dam, N of 412 (bank fishermen). Also, another five to six boats fishing as well. There had to have been thousands of fish in there as everyone had a fish on most of the time. Many folks were catch and release fishing the whole time.
- This was a good year.
- This was my first time snagging for paddlefish. We used a local guide - very helpful.
- This was the first year I fished for paddlefish, and I enjoyed it very much and plan on going again next year but will release all the fish I catch because the meat has a bit of a strong taste to me.
- This year's fishing was very, very good. There must be a tremendous amount of paddlefish in that area. Plus the lake is beautiful. We served my three fish to a crowd of around 75 people at my son's 40th birthday party and there wasn't a piece left. Everyone loved it. Thanks again, see you next year.
- To whom it may concern: I fish for paddlefish in July on Kaw Lake, Sallisaw Landing area.
- Too many inconsiderate out of staters.
- Traded fish at park for one already cleaned.
- Very fun fish to fish! Exciting and surprising.
- Very fun. Can't wait to go back next year!
- Very satisfactory. I've never caught one yet but I'm trying.
- Was my first time and it was fun....
- Was sand bass fishing in May and in a four to five hour time frame, I saw at least 100 spoonbill snagged. Kept ten sm.
- We enjoy a spoonbill fry each spring, then concentrate on white bass and blue cats.
- Weather and high water slowed fishing.
- Wildlife people picked up our fish.
- Wish could catch at least one per year.
- Would use a processing center.

## **VI. Did Not Fish for Paddlefish**

### ***2008-Season Survey:***

- What is a paddlefish?
- I do not fish for paddlefish.
- Do not fish for paddlefish at all!
- Don't fish for paddlefish ever.
- I don't fish for paddlefish. (2 respondents)
- I have never purchased a paddlefish permit.
- Was not told about permit when license was purchased.
- If I knew it came with my license, I would have went fishing for them!
- I thought about it but wasn't for sure that I actually had the paddlefish permit.
- I got the permit just in case.
- [Got the PFP ] Just in case I went.
- If I knew more about fishing for paddlefish, I would probably do it.
- Please send me information on how safe it is to eat paddlefish in Grand Lake.
- Please send me new regulations for paddlefish.
- If can please send me info on it, please if can.
- We came but were fished out.
- I'm disabled. I tried to go, threw my line out one time and had to stop. Could barely reel it in.

- I didn't get to go out of town – working.
- Maybe next year – or this year.
- No time.
- Sick.
- Too many rules and regulations.
- There are other things to worry about than a paddlefish. This is a waste of money!
- I sure do enjoy watching them when they dive out of the water like dolphins.
- Think green!
- Have fished for paddlefish in the past.
- Caught two below Grand Lake Dam by accident while catfishing and released them.
- Have never saw this fish, we fish Altus Lugert lake in SW Oklahoma. Catfishing is good. Thank you.
- Lake Texoma – striper.
- I am going this year. [But hadn't yet at the time of the survey.]

**2009-Season Survey:**

- Don't even know what paddlefish are.
- I don't know what is a paddlefish.
- I don't know what paddlefish is, I just want to take my kid fishing. We fish at El Reno lake only so far.
- I have never seen a paddlefish.
- Did not fish for paddlefish. (7 respondents)
- No I haven't fished this year.
- Did not fish.
- Do not fish for.
- Didn't fish for or catch.
- Didn't fish for them.
- Do not paddlefish.
- Never fish for paddlefish...
- Never have fished for that fish ever.
- No- don't fish for them.
- No never fish for paddlefish.
- I don't paddlefish, but enjoy your Oklahoma lakes..thanks.
- No, do not paddlefish at all.
- No, I did not.
- No, I don't ever fish for paddlefish.
- No-don't fish for them.
- Have never fished or caught a paddlefish.
- I did not fish for paddlefish!!
- I did not or I have not paddlefished ever and don't plan to.
- I do not fish for or have I caught a paddle fish.
- No and I don't like surveys either.
- I do not fish for paddlefish nor have I ever caught one.
- I don't fish for them at all.
- I don't fish for paddlefish.
- I have never paddlefished, or ever will.
- Hope I don't catch one! Don't care anything about it. Don't see the use in spending money for surveys, program coordinators, research centers or other programs about paddlefish.
- I never fish the paddlefish before and I never ate the paddlefish before.

- I never fish for paddlefish and don't know how it taste. But I saw a lot of people fish for paddlefish with three hooks and they don't take home, let it go. Make fish get serious injury. I think people do this way, unacceptable sir.
- I don't fish for paddlefish and you should sell fishing permits at a lower cost for people who don't.
- I like the program even though I did not fish for paddlefish.
- I think this program is very good for Grand Lake - even if I don't fish for paddlefish.
- I am happy Oklahoma has an active paddlefish program. It is just not what I fish for.
- I've never paddlefished and not interested with that type of fish.
- I don't like to fish for spoonbill cat or eat it. I like fishing for catfish, carp and fish like that.
- No - bass fish. (2 respondents)
- Fished for crappie.
- For catfish.
- No, and if I did get a permit it's news to me.
- If I got one I did not know it.
- Didn't receive a permit.
- No didn't get a permit.
- Didn't fish for paddlefish. As far as I know I didn't get a permit intentionally or otherwise.
- If I got a paddlefish permit I was uninformed.
- No, I do not have a paddlefish permit.
- Didn't know I had one.
- No, do I have a paddlefish permit?
- No, and did not know I had one. Sorry for your trouble. I have never fished for paddlefish.
- No, ran out of time and didn't get a permit.
- My fishing license does not show I had a paddlefish permit.
- Or actually I did not know I had a paddlefish permit.
- No I didn't have time and I didn't get to get a permit.
- I never even realized I had a paddlefish permit. I have never been told anything about paddlefishing. We were only fishing for crappie and bluegill, which was lousy while we were there. Maybe we will learn about Oklahoma fishing next time.
- I considered paddlefishing. I didn't know I needed a permit.
- No I got a regular fishing permit license but not a paddlefish permit.
- Just got a fishing license.
- I got a regular fishing permit and a trout fishing permit.
- I purchased a fishing license and he gave me hunting and fishing. I don't even know what paddlefish is.
- Permit was free and included at time of license renewal.
- They gave me the permit.
- The paddlefish permit was either free or required to purchase. I wanted to go but didn't get a chance.
- Got the permit just in case because it was free this year.
- Just in case I caught one.
- I got a permit on purpose but I don't really know how to fish for them. I heard you have to snag them. Please send me something telling me how to fish them. I just got a permit in case I caught one.
- I got my permit because I took other people in my boat to fish for them and make sure I was licensed right.
- I have friends so I thought I'd be legal if I ever went with them! By the way, I have been to your new facility. Looks first class. Also, I've seen Outdoor Oklahoma commentary – good job!
- Got permit, planned on going but have not had time.
- Still will paddlefish if time. Thank you for making out of state fishing available.
- Will not be able to paddlefish until August or September...in the military.

- Haven't fished yet.
- Not yet.
- I have not fished yet in the lake.
- I will before year out.
- I do intend to fish for paddlefish this year!
- Planned on going – didn't get to. (2 respondents)
- Very good program, just didn't get a chance to fish this year! Keep up the good work.
- Did not get time to go!
- Just didn't have time to go.
- I do enjoy paddlefishing, but didn't get to in 2009. Keep up the good work..thank you.
- Keep up the good work! It shows, saw lots of fish being caught, just didn't get a chance to go. I'm a long haul driver. Great job everyone.
- We were going to fish but I did not fish for any species. I do understand you have a very good paddlefish program. I did not fish because of health. Maybe fish next year.
- I was real sick all winter, but plan on going!
- I use to fish for paddlefish in Iowa years ago. Not enough time while in Oklahoma. Maybe next year.
- Didn't fish for paddlefish because didn't have the pole to.
- Didn't fish for reasons of family crisis, but I would like to.
- About the time I was ready to go paddlefishing, a tornado wiped us out and altered my priorities.
- Failed to fish for them - had bad back.
- Gout, too involved.
- Had back surgery...couldn't fish.
- Injured in auto accident. Suffered back damage. Emergency room doctor specified no casting for spoon bill.
- Unable to fish due to surgery.
- Was put in hospital. Can't fish for awhile.
- Too much rain this year.
- The wind was too strong.
- Weather didn't agree with days off to go fishing!
- Water too high.
- Due to high water could not fish.
- Note: water below Kaw dam was too much or too less. Did not fish. Thank you.
- I would like to go paddlefishing but as a teenager living in Watonga it is just too far to drive this year to get to do it.
- I've not fished for paddlefish since regulations have changed.
- We would like to fish for them, but we need to know how and where.
- Too much work.

## **VII. Other Comments**

### ***2008-Season Survey:***

- Do something about your pathetic crappie situation on Grand!
- Need to do something about Grand Lake's crappie. Talk to several fishermen and old timers at the fishing docks about crappie situation. Crappie getting very scarce in Grand Lake. Used to go down and catch 2-3 pounds crappie all the time. I know the flood waters have an effect on fishing. The largemouth, white bass and catfish are still popular in this lake. We need to concentrate on black and

white crappie in the Lake of Cherokee, before we lose all the crappie population. Thank you for taking your time to read this letter.

***2009-Season Survey:***

- If this concerns a lifetime permit, my husband died in 2004.
- Need lifetime fishing permit.
- I am a Missouri resident who purchased an Oklahoma fishing permit.
- Will striped bass live in grand lake? Do/would you stock them in Grand Lake? Where are the bluegill?
- More attention needs to be made toward all game fishing-it's very important still to some of us. Very important to our family. Less restrictions.
- I think the program is great and will be beneficial to the fish and the people who fish for them. I would like to see more research centers in the future for different species of fish.

# 2010 Post-Season Surveys of Paddlefish Permit Holders

Oklahoma Department of Wildlife Conservation

Prepared by Andrea Crews, December 22, 2010

## Introduction

In 2008, the Oklahoma Department of Wildlife Conservation (ODWC) opened a Paddlefish Research and Processing Center (PRPC). Data were collected from paddlefish caught by anglers, roe were removed to make caviar (later sold by ODWC), and meat processed and packaged for anglers to take home. Each year, a survey of paddlefish permit holders was implemented at the end of the main paddlefish run to determine expectations of the fishery, paddlefishing participation, use of the PRPC, satisfaction with the experience, and the impact of the PRPC on paddlefish harvest. These results will assist with long-range planning of paddlefish management.

## Methods

Paddlefish permit holders provided the sampling frame for post-season mail surveys. Free, annual permits available from license vendors were required of all paddlefish anglers. Sampled permit holders were mailed a pre-survey postcard, followed a few days later by a survey and cover letter with a postage-paid reply envelope, and a second mailing to non-respondents a few weeks later (Appendix B).

In 2010, at the time of sampling (May 24), 39,412 paddlefish permits had been issued. Seventy percent of permits were purchased through a license vendor using the ODWC electronic system, 17 percent through a vendor issuing hand-written licenses, 12 percent through online sales and less than one percent directly through the ODWC license section.

Prior to sampling, duplicates, non-U.S. residents and incomplete records were eliminated, leaving 38,944 records. With a target mail size of 12,000, the random sample was over-drawn at 13,500 permit holders, to allow for elimination of bad addresses during mail preparation. Fewer than 1,500 were eliminated; extras were randomly selected for removal to reduce the mailing size to exactly 12,000.

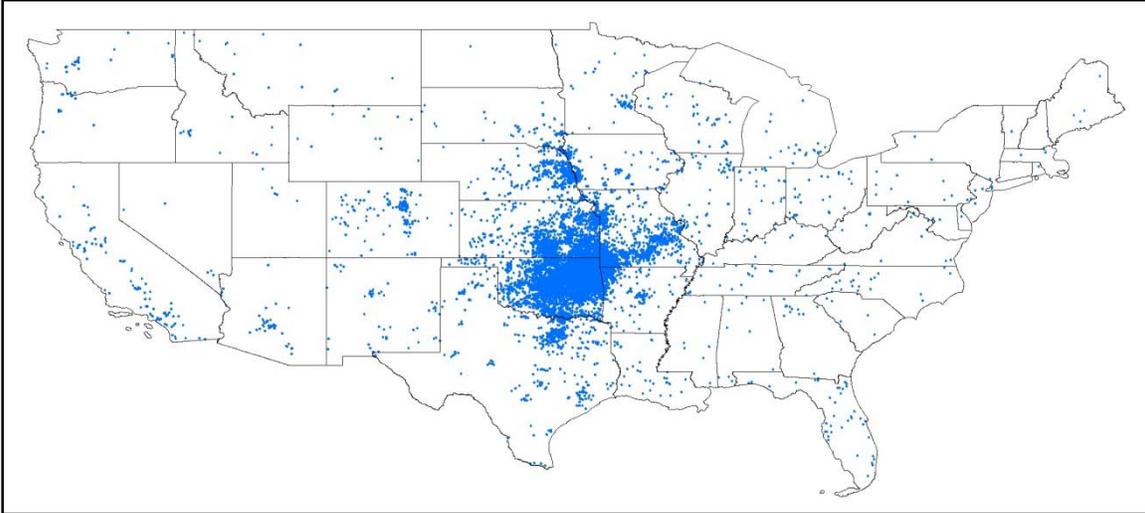
The pre-survey notification card was mailed June 1. The survey was mailed June 8, with a follow-up sent to non-respondents June 29. Bulk-rate third class mail rates were used; undeliverable surveys were not returned. Unique, useable surveys were received from 4,512 paddlefish permit holders through November 30, 2010 for a response rate of 38 percent. (Discarded from analysis were 70 duplicate surveys and seven without an identification number.) Methods were similar in 2008 and 2009 (see Boxrucker 2009).

Differences between categorical variables were detected using chi-square. Normality was tested using the Shapiro-Wilk. In cases of nonparametric data, medians were compared using the Mann-Whitney U test. All tests were considered significant at  $P \leq 0.05$ .

## Results

Paddlefish permit holders came from 51 states and provinces, as determined by the address used when acquiring the permit (Figure 1 and Table 1). Most permit holders (73 percent) were from Oklahoma. Among nonresidents, 76 percent came from just three states: Arkansas, Kansas and Missouri.

**Figure 1.** Distribution of 2010 paddlefish permit holders by zip code of residence in the continental U.S.



### *Use of the Paddlefish Permit*

ODWC suspected the number of paddlefish anglers, as measured by permits issued, was exaggerated. Some anglers requested the permit along with their fishing license simply because it was free. Some vendors automatically issued the free permit along with each fishing license sale. The initial question on the survey sought to assess this suspected inflation.

Overall, 41 percent of respondents in 2010 fished for paddlefish (Figure 2). Just over a quarter (26 percent) did not fish but intentionally got the permit. A third (33 percent) did not fish and did not intend to get the permit. (Respondents who did not fish and did not indicate whether or not their permit acquisition was intentional [ $n = 227$ ] were counted among those who did not intend to get a permit.) Nonresidents were more likely to use their paddlefish fishing permit privileges than residents ( $P \leq 0.001$ ). See Table A1 for 2008-2009 responses.

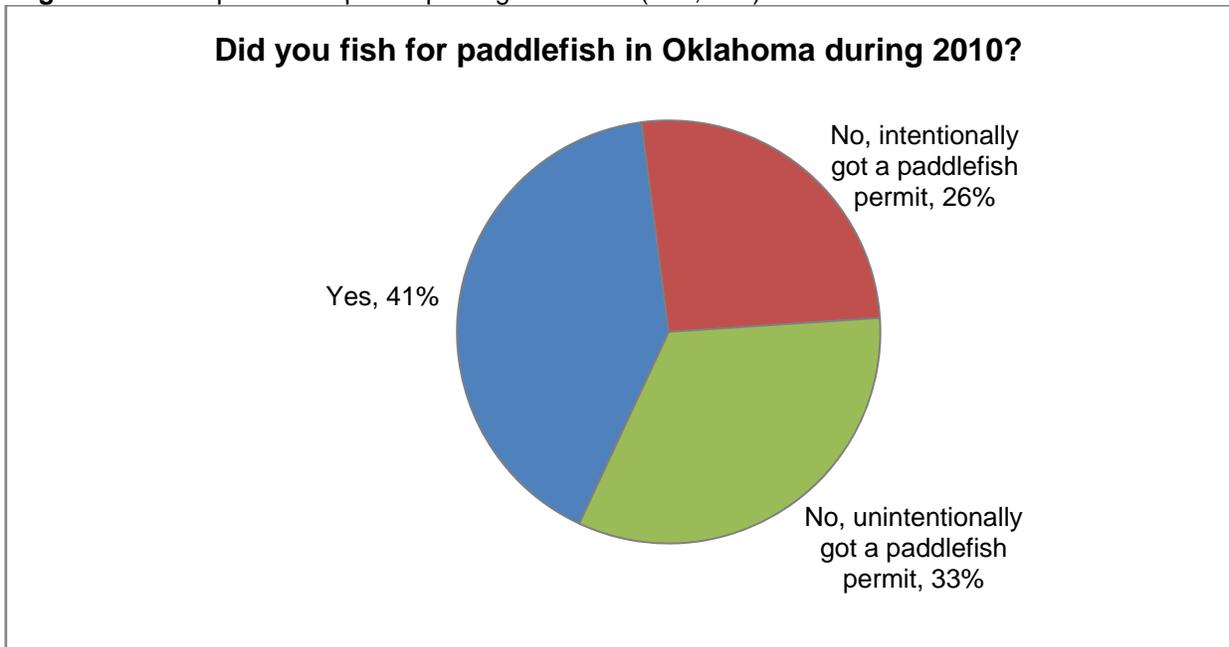
The number of active paddlefish anglers was estimated each year, overall and by residency (Table 2). The total number of anglers increased 16 percent from 2008 to 2009 and seven percent from 2009 to 2010. The total growth of 24 percent could reflect growing popularity of the sport, increased familiarity with the permitting process, or both.

Each year, roughly a third of active paddlefish anglers were nonresidents. Because the needs and expectations of residents and nonresidents may differ, many survey items were analyzed by residency. No further survey questions were asked of permit holders who did not fish for paddlefish. The remainder of this report presents results from respondents who fished for paddlefish (2010  $n=1,863$ ; 2009:  $n=1,884$ ; 2008:  $n=734$ ).

**Table 1.** Distribution of 2010 paddlefish permit holders by state or province, within the population, the sample and survey respondents.

| State          | Population    |               | Sample        |               | Respondents  |               |
|----------------|---------------|---------------|---------------|---------------|--------------|---------------|
|                | N             | %             | n             | %             | n            | %             |
| AK             | 10            | 0.03          | 1             | 0.01          | 1            | 0.02          |
| AL             | 12            | 0.03          | 1             | 0.01          | 0            | 0.00          |
| AR             | 1,219         | 3.10          | 285           | 2.38          | 94           | 2.08          |
| AZ             | 42            | 0.11          | 6             | 0.05          | 5            | 0.11          |
| CA             | 97            | 0.25          | 8             | 0.07          | 2            | 0.04          |
| CO             | 160           | 0.41          | 24            | 0.20          | 10           | 0.22          |
| DE             | 1             | 0.00          | 0             | 0.00          | 0            | 0.00          |
| FL             | 41            | 0.10          | 4             | 0.03          | 1            | 0.02          |
| GA             | 14            | 0.04          | 2             | 0.02          | 1            | 0.02          |
| HI             | 1             | 0.00          | 0             | 0.00          | 31           | 0.69          |
| IA             | 292           | 0.74          | 48            | 0.40          | 0            | 0.00          |
| ID             | 13            | 0.03          | 2             | 0.02          | 0            | 0.00          |
| IL             | 63            | 0.16          | 6             | 0.05          | 2            | 0.04          |
| IN             | 27            | 0.07          | 8             | 0.07          | 2            | 0.04          |
| KS             | 2,589         | 6.58          | 663           | 5.53          | 367          | 8.13          |
| KY             | 11            | 0.03          | 1             | 0.01          | 0            | 0.00          |
| LA             | 34            | 0.09          | 4             | 0.03          | 2            | 0.04          |
| MA             | 3             | 0.01          | 0             | 0.00          | 0            | 0.00          |
| MD             | 3             | 0.01          | 0             | 0.00          | 0            | 0.00          |
| ME             | 4             | 0.01          | 0             | 0.00          | 0            | 0.00          |
| MI             | 23            | 0.06          | 1             | 0.01          | 1            | 0.02          |
| MN             | 70            | 0.18          | 1             | 0.01          | 1            | 0.02          |
| MO             | 4,116         | 10.46         | 1,180         | 9.83          | 524          | 11.61         |
| MS             | 9             | 0.02          | 1             | 0.01          | 1            | 0.02          |
| MT             | 16            | 0.04          | 4             | 0.03          | 1            | 0.02          |
| NB             | 1             | 0.00          | 0             | 0.00          | 0            | 0.00          |
| NC             | 21            | 0.05          | 1             | 0.01          | 0            | 0.00          |
| ND             | 1             | 0.00          | 0             | 0.00          | 0            | 0.00          |
| NE             | 690           | 1.75          | 155           | 1.29          | 108          | 2.39          |
| NH             | 1             | 0.00          | 0             | 0.00          | 0            | 0.00          |
| NJ             | 3             | 0.01          | 0             | 0.00          | 0            | 0.00          |
| NM             | 50            | 0.13          | 11            | 0.09          | 5            | 0.11          |
| NV             | 8             | 0.02          | 0             | 0.00          | 0            | 0.00          |
| NY             | 5             | 0.01          | 0             | 0.00          | 0            | 0.00          |
| OH             | 25            | 0.06          | 3             | 0.03          | 2            | 0.04          |
| OK             | 28,905        | 73.44         | 9,395         | 78.29         | 3,270        | 72.47         |
| ON             | 1             | 0.00          | 0             | 0.00          | 0            | 0.00          |
| OR             | 13            | 0.03          | 0             | 0.00          | 0            | 0.00          |
| PA             | 11            | 0.03          | 3             | 0.03          | 1            | 0.02          |
| RI             | 2             | 0.01          | 0             | 0.00          | 0            | 0.00          |
| SC             | 5             | 0.01          | 1             | 0.01          | 0            | 0.00          |
| SD             | 93            | 0.24          | 13            | 0.11          | 10           | 0.22          |
| TN             | 22            | 0.06          | 4             | 0.03          | 3            | 0.07          |
| TX             | 534           | 1.36          | 156           | 1.30          | 66           | 1.46          |
| UT             | 5             | 0.01          | 1             | 0.01          | 0            | 0.00          |
| VA             | 8             | 0.02          | 1             | 0.01          | 0            | 0.00          |
| VT             | 1             | 0.00          | 0             | 0.00          | 0            | 0.00          |
| WA             | 26            | 0.07          | 1             | 0.01          | 0            | 0.00          |
| WI             | 40            | 0.10          | 1             | 0.01          | 0            | 0.00          |
| WV             | 6             | 0.02          | 0             | 0.00          | 0            | 0.00          |
| WY             | 14            | 0.04          | 4             | 0.03          | 1            | 0.02          |
| <b>Total</b>   | <b>39,361</b> | <b>100.00</b> | <b>12,000</b> | <b>100.00</b> | <b>4,512</b> | <b>100.00</b> |
| <i>Missing</i> | <i>51</i>     | <i>-</i>      | <i>0</i>      | <i>-</i>      | <i>7</i>     | <i>-</i>      |

**Figure 2.** Use of paddlefish permit privileges in 2010 (n=4,512.)



**Table 2.** Estimated number of active paddlefish anglers by year.

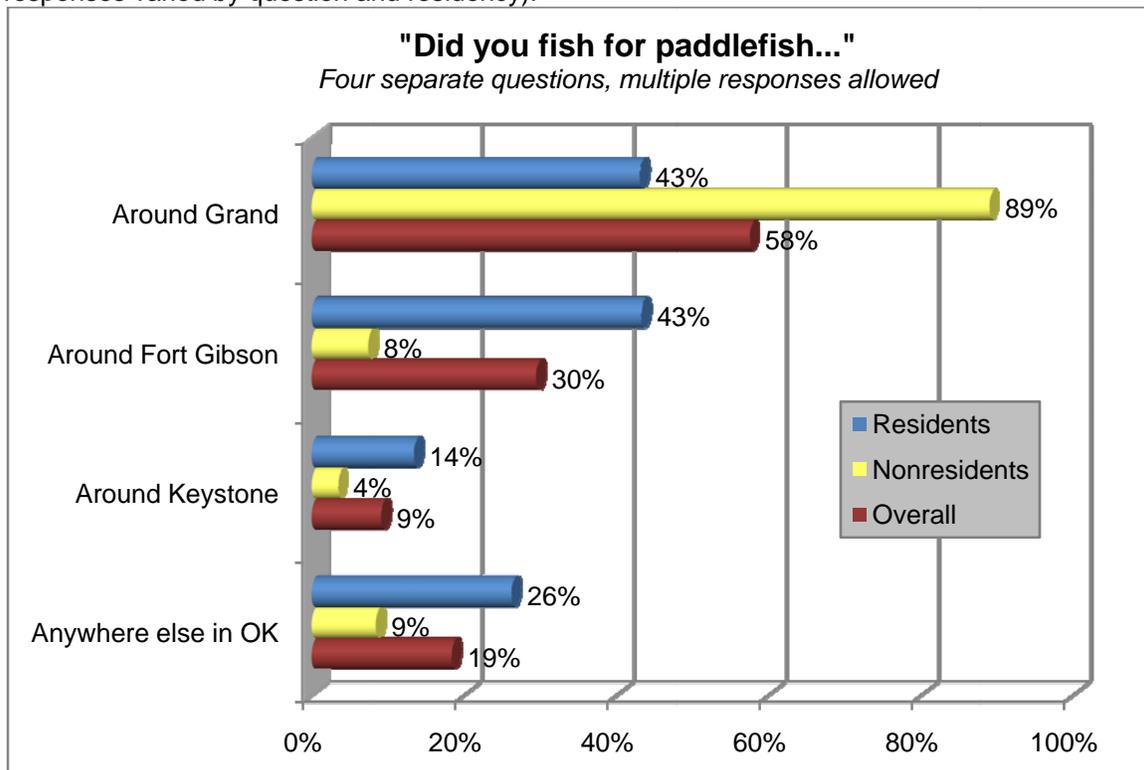
|  | <i>Estimated Anglers</i> | <i>Percent of Yearly Total</i> |
|--|--------------------------|--------------------------------|
| <b>2008</b>  |                          |                                |
| Residents (38.8% of 21,615 resident permit holders)      | 8,387                    | 64%                            |
| Nonresidents (61.0% of 7,723 nonresident permit holders) | 4,711                    | 36%                            |
| Total  | 13,098                   | 100%                           |
| <b>2009</b>  |                          |                                |
| Residents (39.1% of 24,201 resident permit holders)      | 9,462                    | 62%                            |
| Nonresidents (61.8% of 9,224 nonresident permit holders) | 5,700                    | 38%                            |
| Total  | 15,162                   | 100%                           |
| <b>2010</b>  |                          |                                |
| Residents (37.5% of 28,905 resident permit holders)      | 10,839                   | 67%                            |
| Nonresidents (51.4% of 9,224 nonresident permit holders) | 5,374                    | 33%                            |
| Total  | 16,213                   | 100%                           |

### Location of Paddlefish Fishing Across the Fishery

Active paddlefish anglers were asked if they fished in each of three major paddlefish fisheries (Grand Lake, Fort Gibson and Keystone) or anywhere else in the state. Multiple responses were allowed.

Overall, the Grand Lake fishery was used by the largest portion of 2010 paddlefish anglers (Figure 3, red bar). However, the popularity of the Grand Lake area was largely driven by nonresidents, who were more than twice as likely to fish the area than were residents ( $P \leq 0.001$ ). In fact, residents were just as likely to fish around Fort Gibson as around Grand (43 percent in each case). Residents were more likely than nonresidents to use the Fort Gibson area ( $P \leq 0.001$ ), the Keystone area ( $P \leq 0.001$ ) and other areas of the state ( $P \leq 0.001$ ; Figure 3, comparison of blue and yellow bars). See Table A2 for 2008-2009 data.

**Figure 3.** Percent of active paddlefish permit holders fishing at each area in 2010, overall and by residency (Overall  $n=1,863$ ; Residents  $n=1,225$ ; Nonresidents  $n=638$ ; the number of missing responses varied by question and residency).

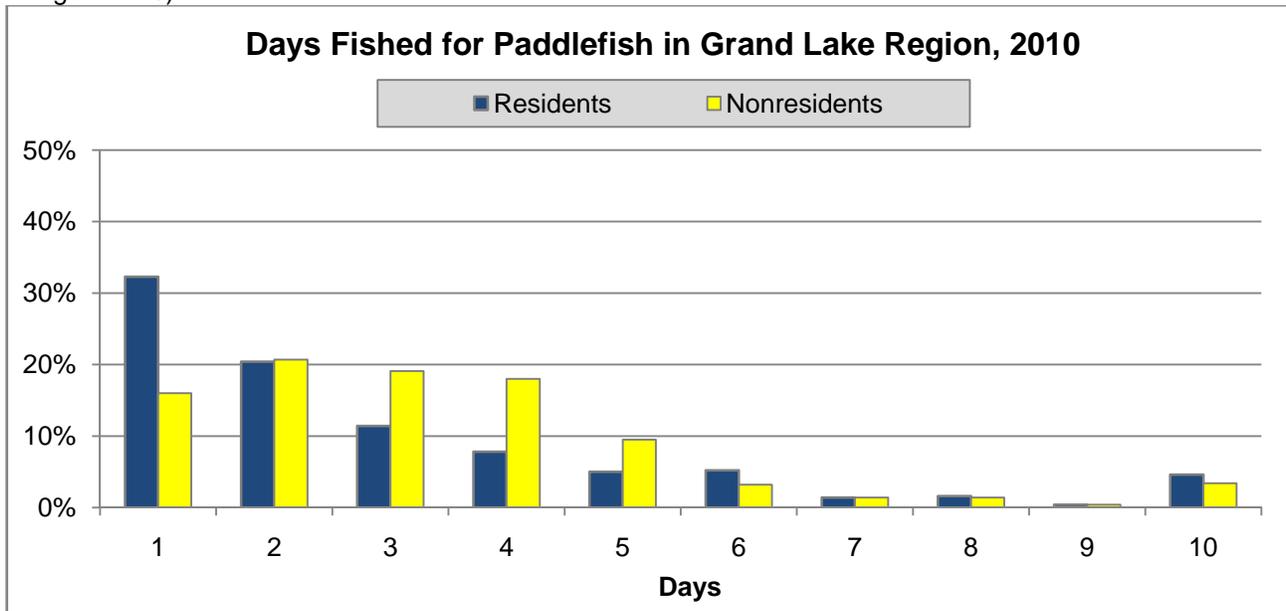


The “Grand Lake Region” of the paddlefish fishery was of particular because of its proximity to the Paddlefish Research and Processing Center. The “Ft. Gibson Lake Region” was also of interest, as the Department is considering a second Paddlefish Research and Processing Center in the area. The Keystone fishery was singled out for the first time in 2010 to learn more about fishing pressure on this separate population of paddlefish.

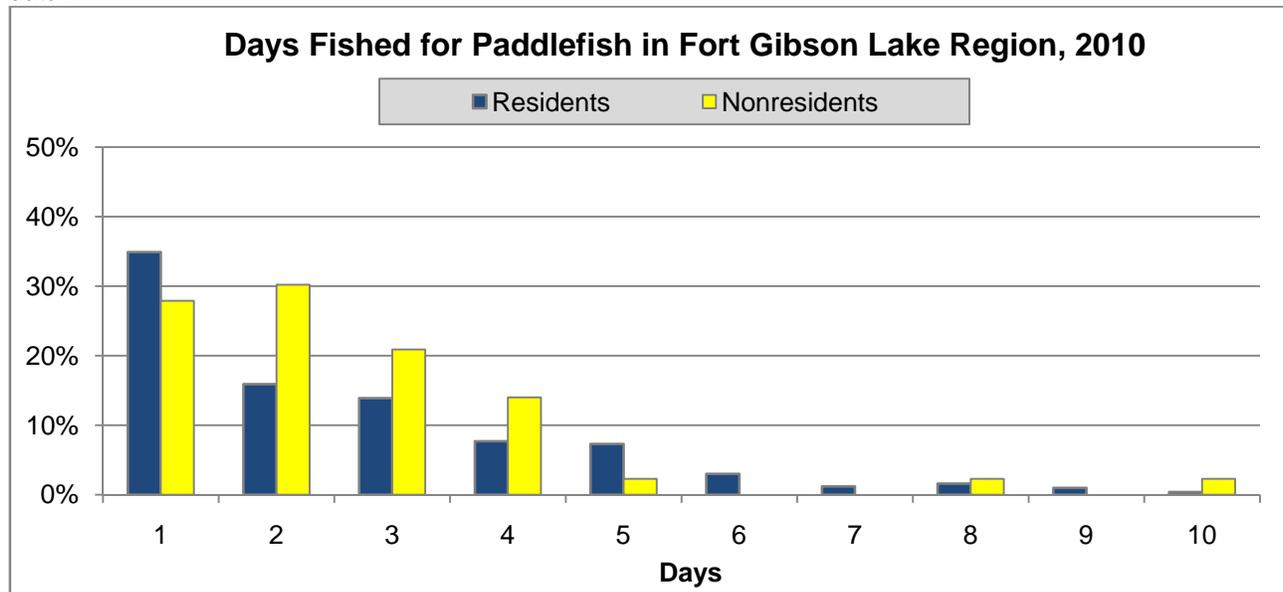
## Days Fished

The number of days fished by active paddlefish anglers by region (2008-2010) are shown in Table A3. Data were not normally distributed in any region in any year. The distribution of days of fishing in 2010 around Grand Lake, Fort Gibson and Keystone are shown in Figures 4-6. Median differences by residency, when present, are indicated in Table A3.

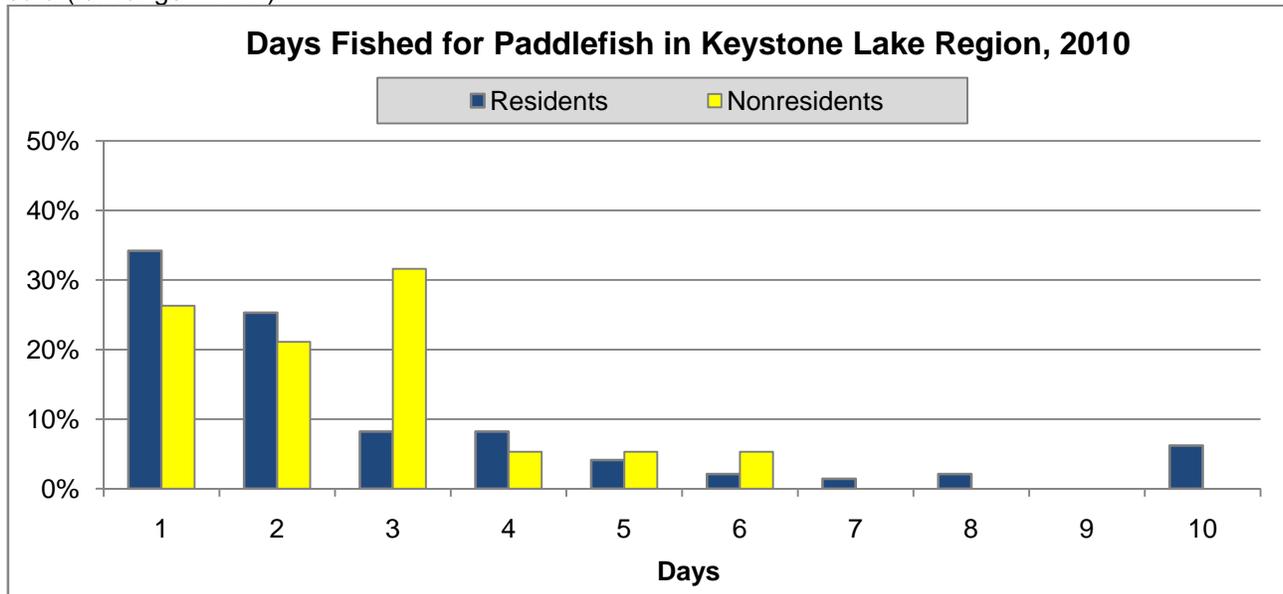
**Figure 4.** Days fished for paddlefish, by residents ( $n=499$ ) and nonresidents ( $n=555$ ) who fished in the Grand Lake Region, 2010. Graph displays 90% of resident data (full range = 1-75) and 93% of nonresident data (full range = 1-46).



**Figure 5.** Days fished for paddlefish, by residents ( $n=496$ ) and nonresidents ( $n=43$ ) who fished in the Fort Gibson Lake Region, 2010. Graph displays 87% of resident data (full range = 1-100) and 100% of nonresident data.



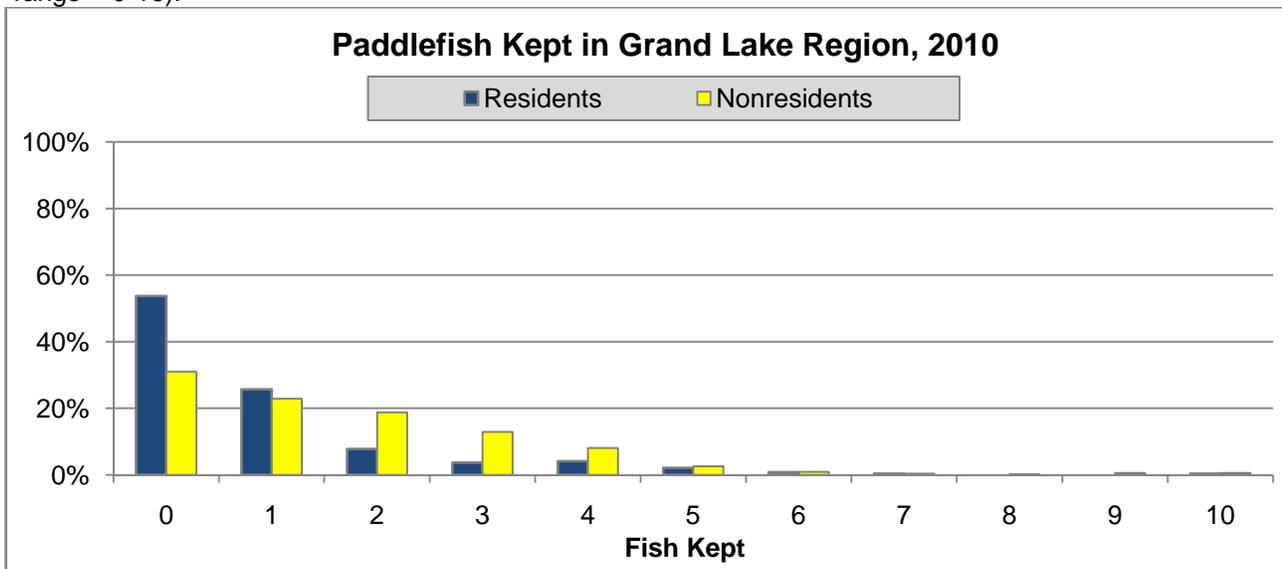
**Figure 6.** Days fished for paddlefish, by residents ( $n=146$ ) and nonresidents ( $n=19$ ) who fished in the Keystone Lake Region, 2010. Graph displays 87% of resident data (full range = 1-40) and 95% of nonresident data (full range = 1-14).



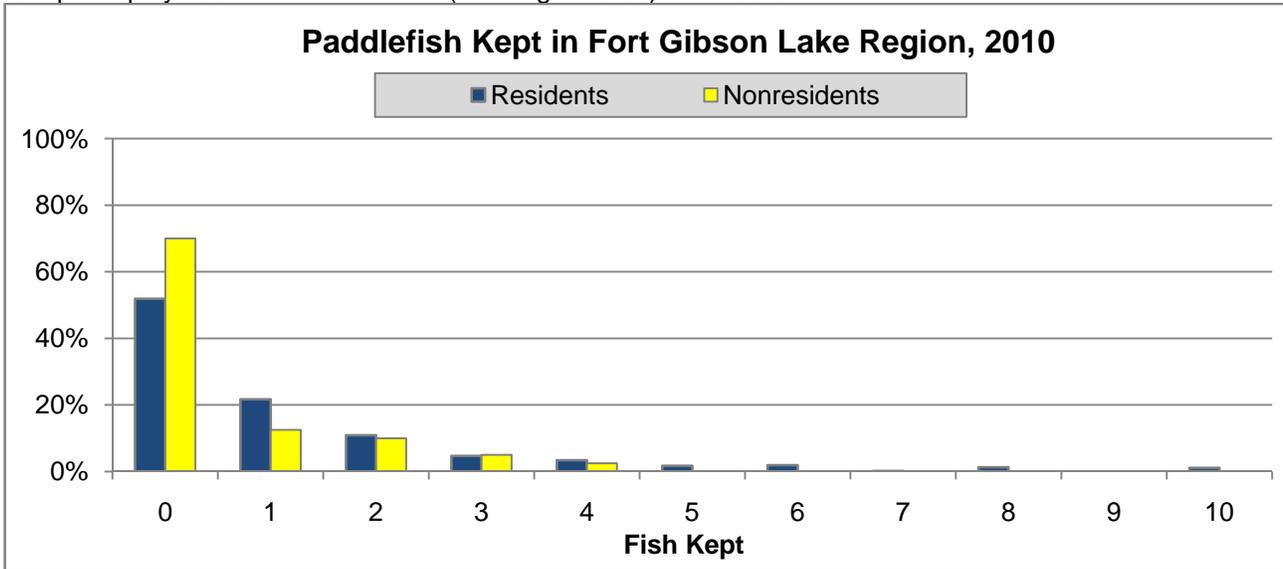
### Fish Kept

The number of fish kept by active paddlefish anglers by region (2008-2010) are shown in Table A4. Data were not normally distributed in any region in any year. The distribution of fish kept in 2010 around Grand Lake, Fort Gibson and Keystone can be seen in Figures 7-9. Median differences by residency, when present, are indicated in Table A4.

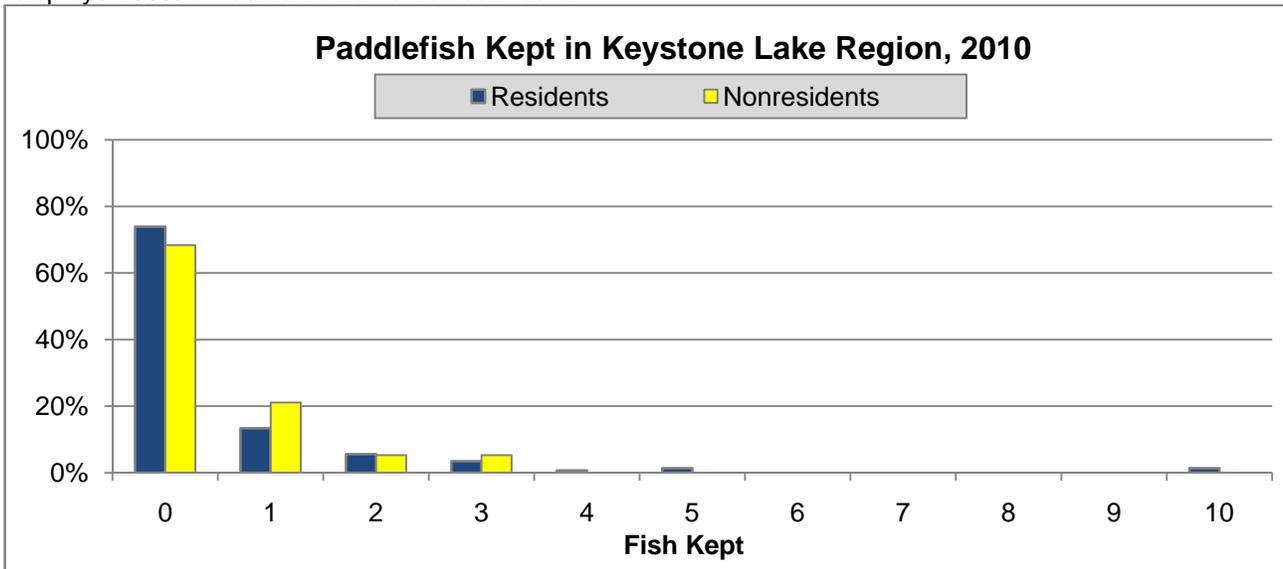
**Figure 7.** Paddlefish kept by residents ( $n=486$ ) and nonresidents ( $n=542$ ) who fished in the Grand Lake Region, 2010. Graph displays 99% of resident data (full range = 0-25) and 99% of nonresident data (full range = 0-16).



**Figure 8.** Paddlefish kept by residents ( $n=470$ ) and nonresidents ( $n=40$ ) in the Fort Gibson Region, 2010. Graph displays 99% of resident data (full range = 0-30) and 100% of nonresident data.



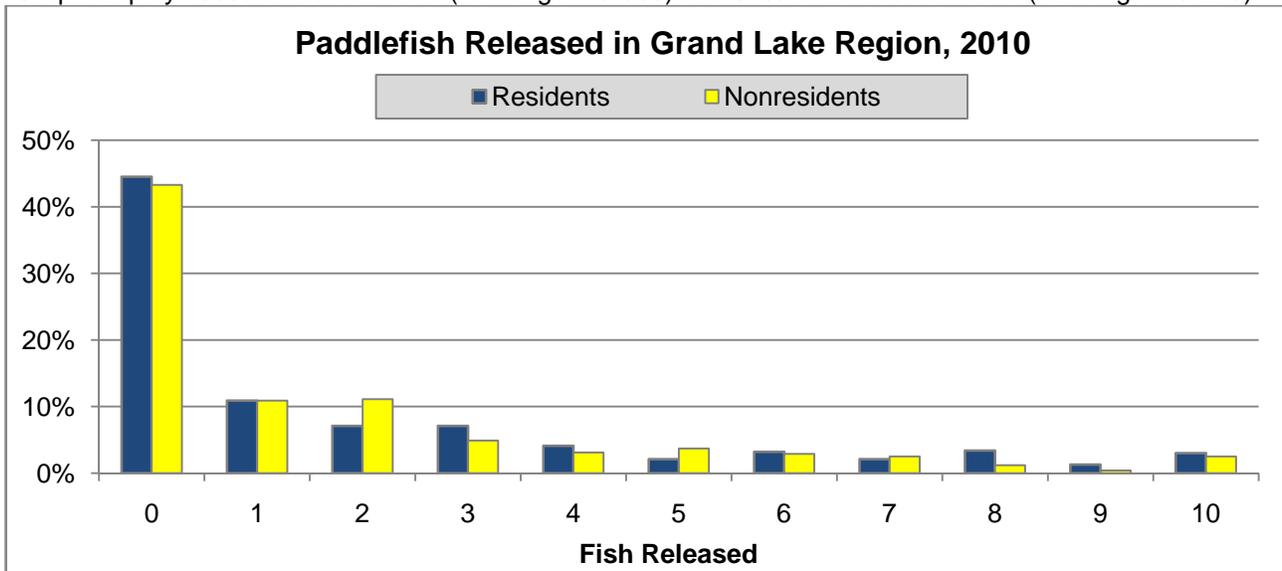
**Figure 9.** Paddlefish kept by residents ( $n=142$ ) and nonresidents ( $n=19$ ) in the Keystone Region, 2010. Graph displays 100% of resident and nonresident data.



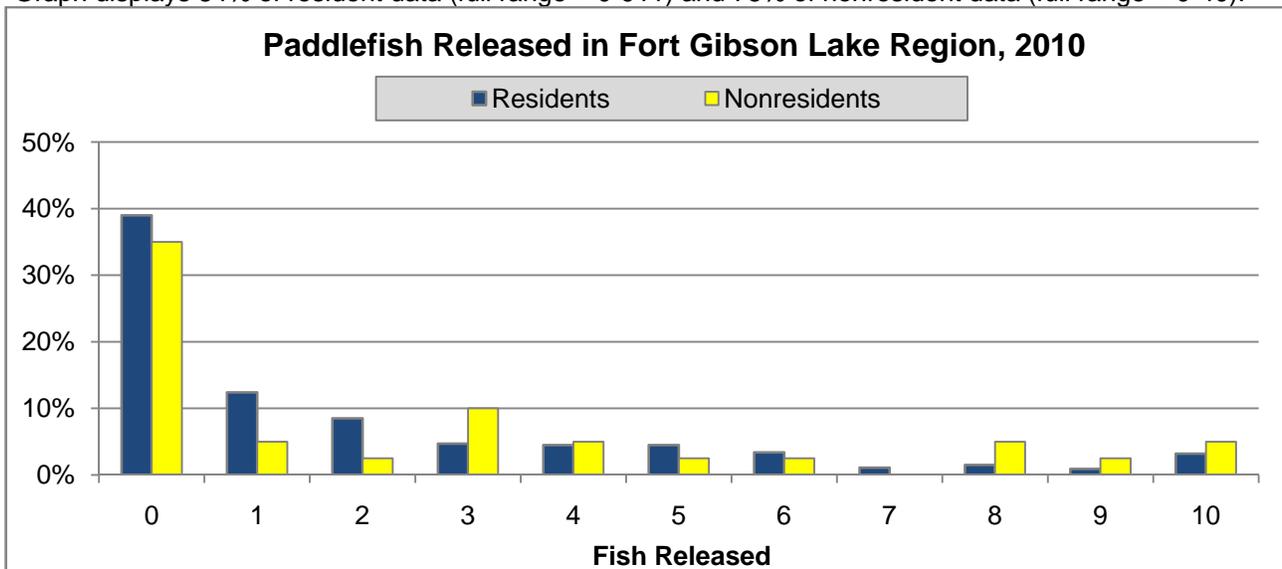
## Fish Released

The number of fish released by active paddlefish anglers by region (2008-2010) are shown in Table A5. Data were not normally distributed in any region in any year. The distribution of fish released in 2010 around Grand Lake, Fort Gibson and Keystone can be seen in Figures 10-12. Median differences by residency, when present, are indicated in Table A5.

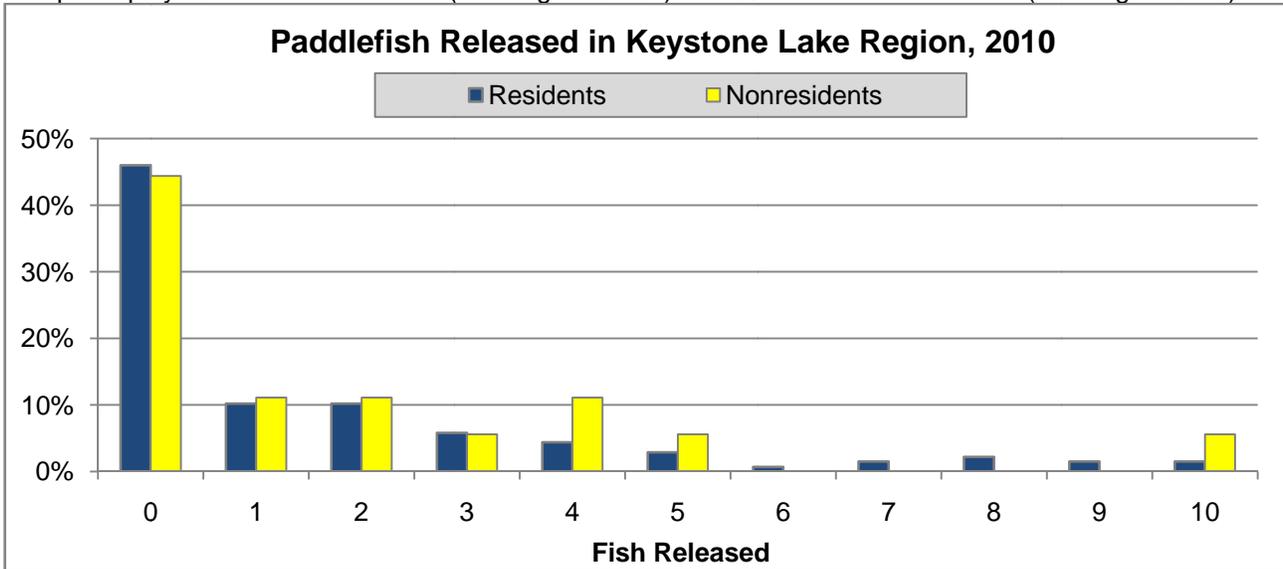
**Figure 10.** Paddlefish released by residents ( $n=467$ ) and nonresidents ( $n=515$ ) in the Grand Lake Region, 2010. Graph displays 89% of resident data (full range = 0-300) and 87% of nonresident data (full range = 0-215).



**Figure 11.** Paddlefish released by residents ( $n=469$ ) and nonresidents ( $n=40$ ) in the Fort Gibson Region, 2010. Graph displays 84% of resident data (full range = 0-911) and 75% of nonresident data (full range = 0-40).



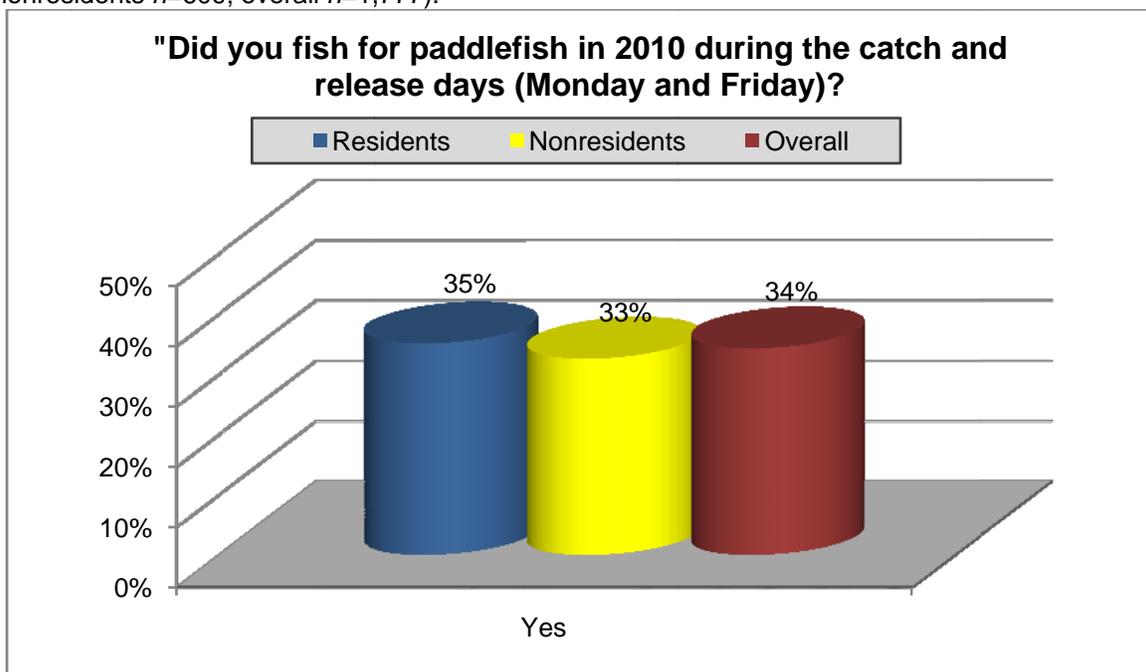
**Figure 12.** Paddlefish released by residents ( $n=137$ ) and nonresidents ( $n=18$ ) in the Keystone Region, 2010. Graph displays 87% of resident data (full range = 0-100) and 95% of nonresident data (full range = 0-15).



### Catch-and-Release Days

In 2010, Monday and Friday were designated as catch-and-release days. A third (34 percent) of active paddlefish anglers fished these days (Figure 13). Participation did not differ by residency ( $P = 0.291$ ).

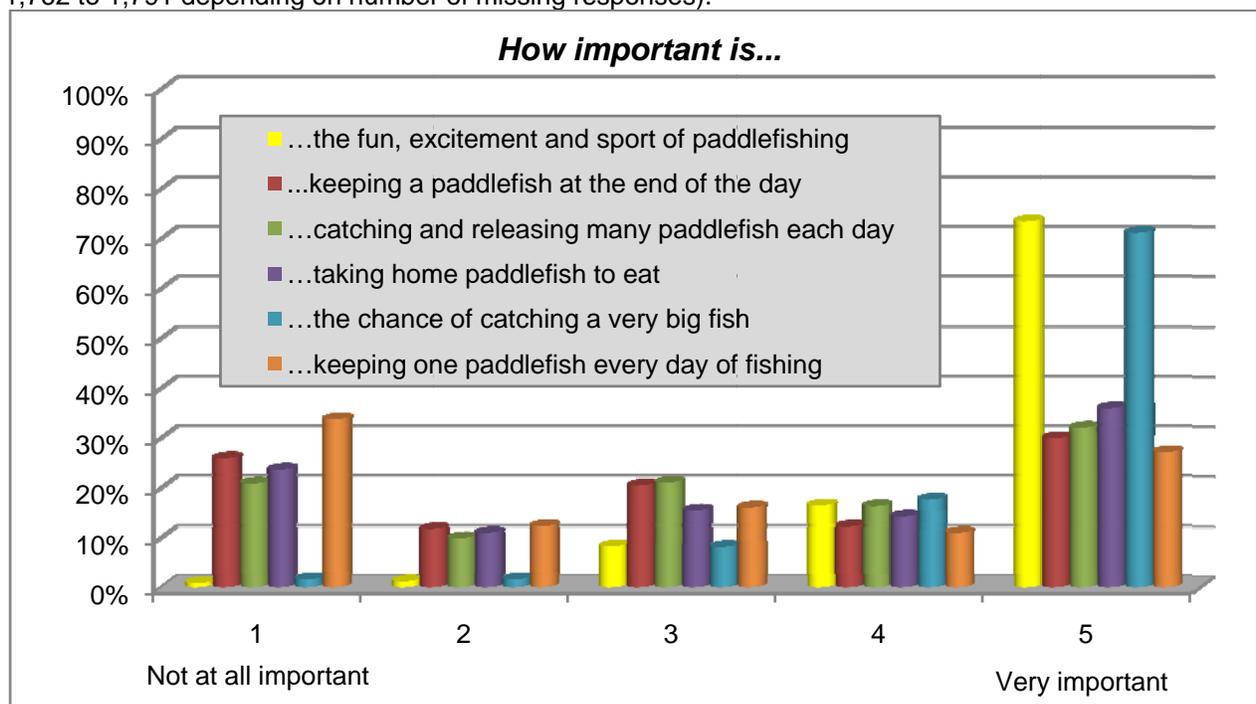
**Figure 13.** Participation in paddlefishing on catch-and-release days in 2010 (residents  $n=1,168$ ; nonresidents  $n=609$ ; overall  $n=1,777$ ).



### Factors Related to a Successful Paddfishing Experience

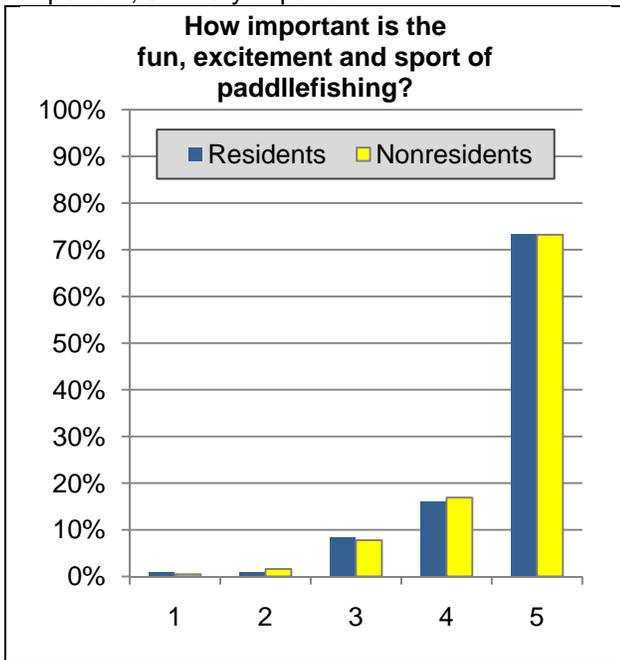
Active paddfish anglers were asked to rate the importance of six items potentially related to evaluation of a paddfishing experience in Oklahoma as successful (Figure 14). Factors rated highest by paddfish anglers overall were “the fun, excitement and sport of paddfishing” and “the chance of catching a very big fish.” Although most (>70 percent) of paddfish anglers agreed these two items were very important, anglers were not unified in rating the other four items. Several were bimodal, with high response at each end of the scale. Results from 2009 were similar and can be found in Table A6.

**Figure 14.** Importance of factors related to a successful paddfishing experience in 2010 (*n* size ranged from 1,762 to 1,791 depending on number of missing responses).

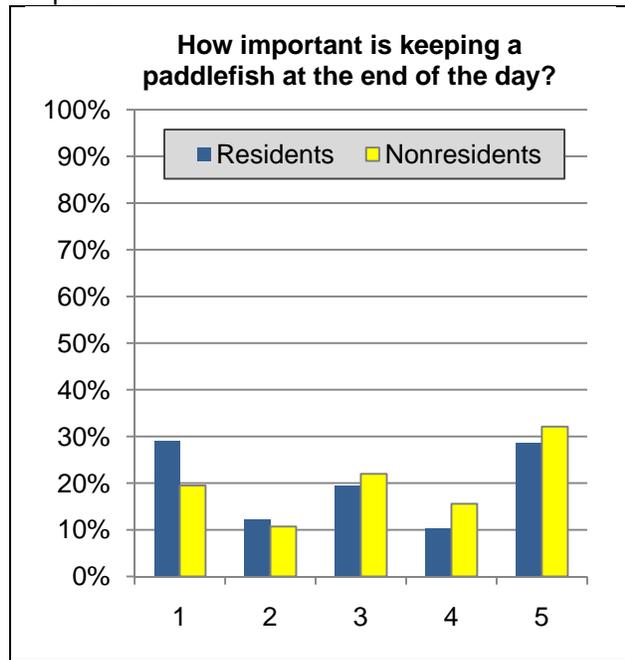


Residents and nonresidents were compared in an effort to identify subcategories of paddfish anglers for whom different aspects of the paddfishing experience were important. Nonresidents were more likely than residents to place importance on keeping a paddfish at the end of the day (Figure 16;  $P \leq 0.001$ ), taking home paddfish to eat (Figure 18;  $P \leq 0.001$ ), and keeping one paddfish every day (Figure 20;  $P \leq 0.001$ ). Other items did not significantly differ by residency (Figures 15, 17 and 19). Nonresidents appeared to place greater value on the consumption of paddfish than did Oklahoma residents. Many of the regulation changes in 2010 would have therefore impacted nonresidents more than residents.

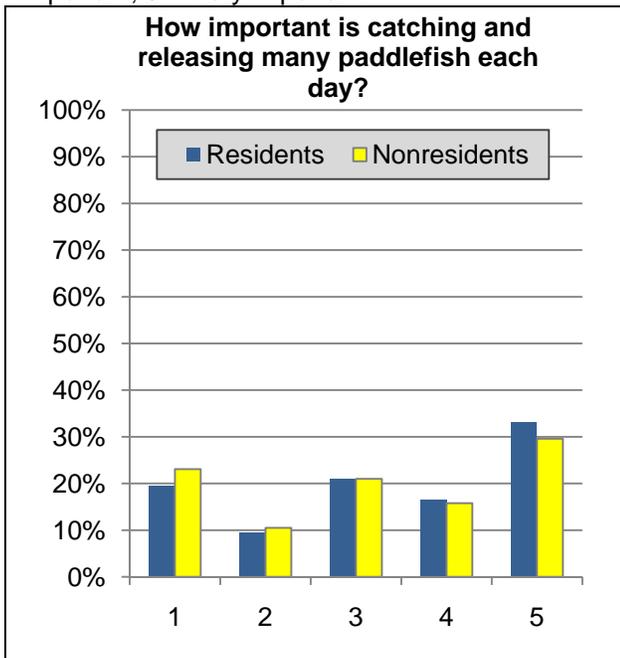
**Figure 15.** Importance of the excitement/sport of paddlefishing to residents ( $n=1,175$ ) and nonresidents ( $n=616$ ), 2010. Scale:1=Not at all important; 5 = Very important.



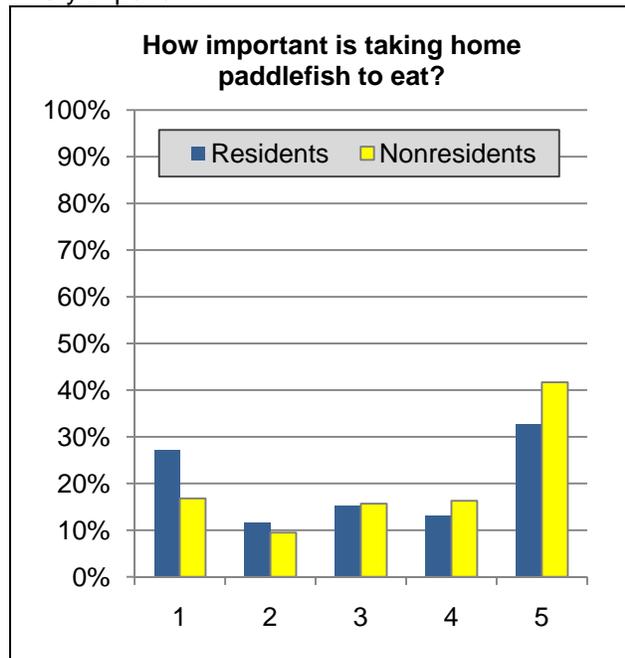
**Figure 16.** Importance of keeping a paddlefish to residents ( $n=1,168$ ) and nonresidents ( $n=614$ ), 2010. Scale:1=Not at all important; 5 = Very important.



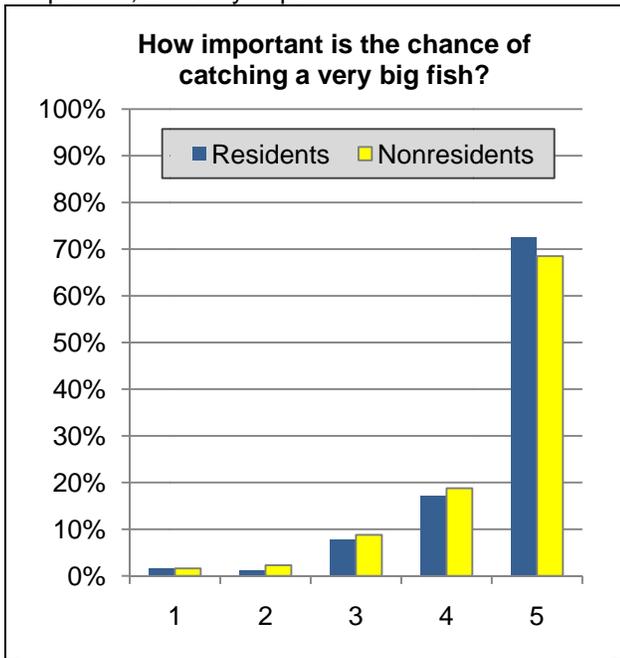
**Figure 17.** Importance of catching and releasing many paddlefish to residents ( $n=1,161$ ) and nonresidents ( $n=601$ ), 2010. Scale:1=Not at all important; 5 = Very important.



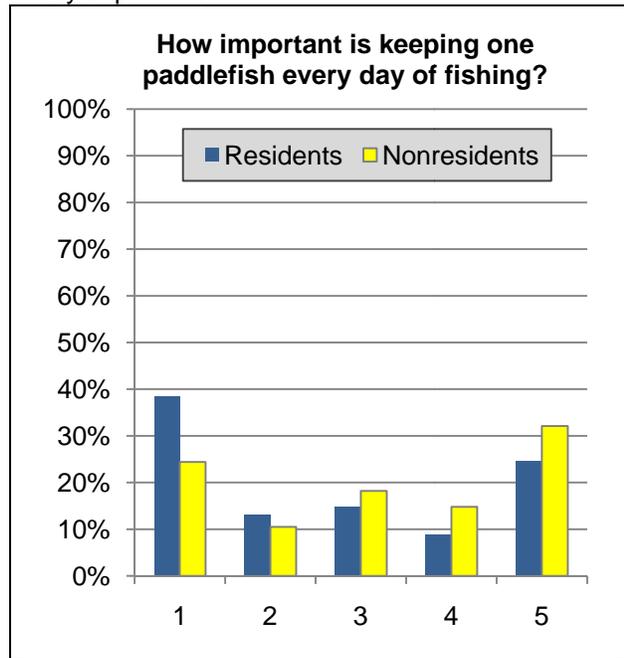
**Figure 18.** Importance of taking home paddlefish to eat to residents ( $n=1,170$ ) and nonresidents ( $n=612$ ), 2010. Scale:1=Not at all important; 5 = Very important.



**Figure 19.** Importance of the chance to catch a big paddlefish to residents ( $n=1,172$ ) and nonresidents ( $n=613$ ), 2010. Scale:1=Not at all important; 5 = Very important.



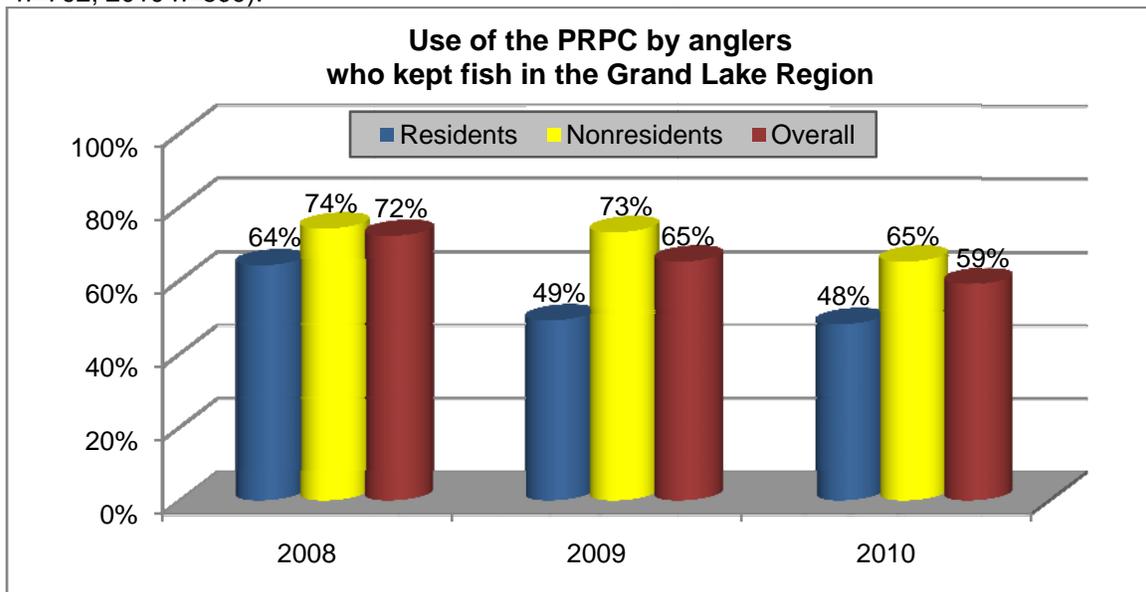
**Figure 20.** Importance of keeping one paddlefish each day to residents ( $n=1,168$ ) and nonresidents ( $n=610$ ), 2010. Scale:1=Not at all important; 5 = Very important.



### Use of the Paddlefish Research and Processing Center (PRPC)

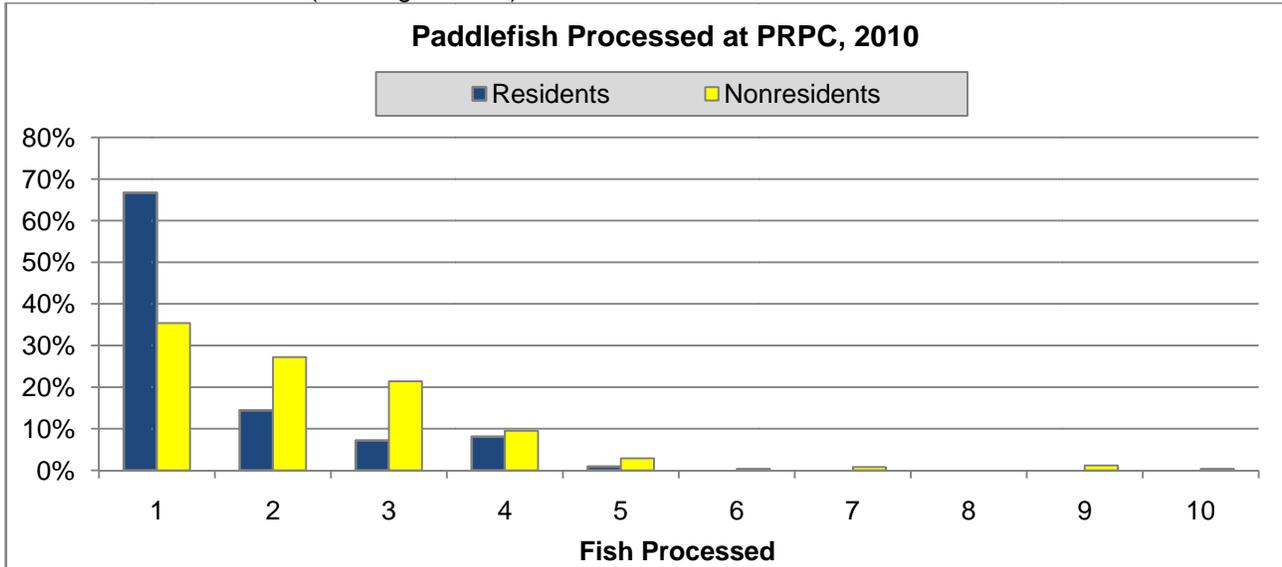
Fifty-nine percent of 2010 Grand Lake Regions anglers who kept at least one paddlefish used the PRPC (Figure 21 and Table A7). Nonresidents continued to use the PRPC more than residents ( $P \leq 0.001$ ).

**Figure 21.** Use of the Paddlefish Research and Processing Center (PRPC) by anglers who caught and kept paddlefish in the Grand Lake Region, by residency (Overall: 2008  $n=263$ ; 2009  $n=792$ ; 2010  $n=599$ ).



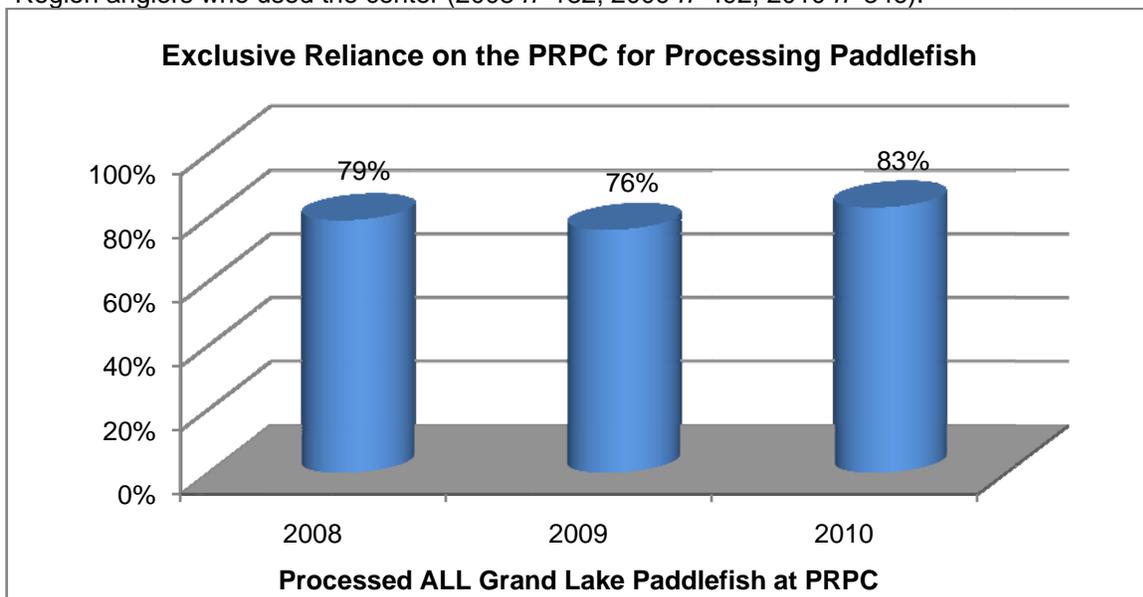
Grand Lake Region anglers who used the PRPC in 2010 reported taking an average of 2.3 paddlefish for processing (Table A8). Data were not normally distributed. Nonresidents tended to process more paddlefish at the PRPC than did residents ( $P \leq 0.001$ ). Median differences by residency, when present, are indicated in Table A8.

**Figure 22.** Number of paddlefish processed at the PRPC by resident ( $n=111$ ) and nonresident ( $n=243$ ) Grand Lake Region anglers who used the PRPC, 2010. Graph displays 97% of resident data (full range = 0-25) and 99% of nonresident data (full range = 0-16).



Some anglers brought all the paddlefish they harvested to the PRPC for processing, while some brought in only a portion of their harvest. In 2010, 83 percent of PRPC users brought all fish caught in the Grand Lake Region to the center for processing (Figure 23).

**Figure 23.** Level of reliance on the Paddlefish Research and Processing Center by Grand Lake Region anglers who used the center (2008  $n=182$ ; 2009  $n=492$ ; 2010  $n=346$ ).



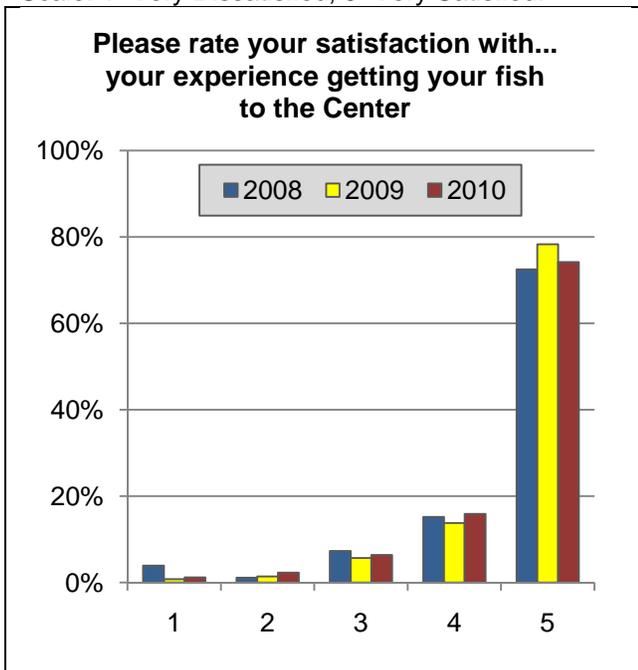
## Unreported Harvest

Paddlefish anglers who fished the Grand Lake Region reported keeping a number of fish but not processing them at the PRPC. The rate of “unreported harvest” was 46.5 percent in 2010 (Table A9). The unreported harvest as measured by this survey has remained approximately half of the fish harvested in the Grand Lake Region in all three years. Survey estimation of unreported harvest allowed ODWC to estimate total harvest. For 2010, the PRPC processed 3,948 fish (i.e., reported harvest) and the estimated total harvest was 7,379 (49 percent decline from the 2009 estimate of 15,071).

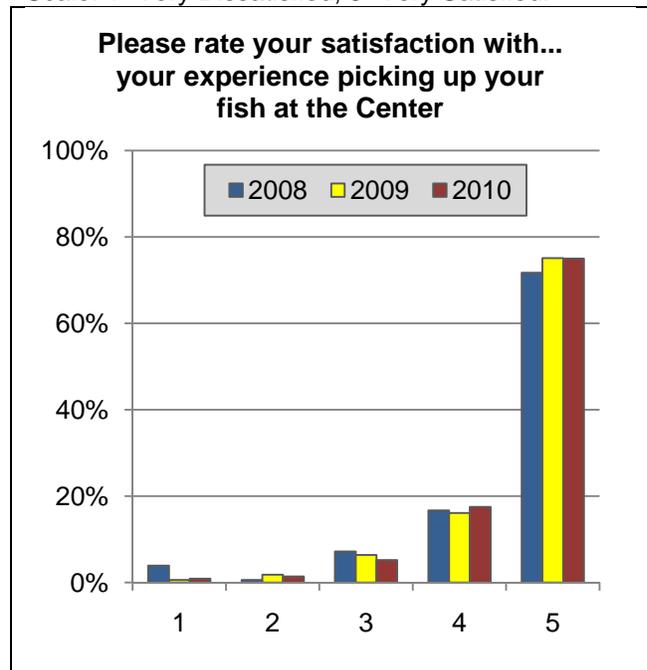
## Satisfactions with Aspects of the Paddlefish Program

Paddlefish anglers who used the PRPC were asked to rate their satisfaction with several aspects of the PRPC operation. In all cases, the majority of respondents were very satisfied (Figures 24-28). In 2010, differences in satisfaction by residency were found only with regard to the quality of meat received from the PRPC ( $P=0.045$ ); 84 percent of residents vs. 72 percent of nonresidents were “Very Satisfied.” Data for all years can be found in Table A10.

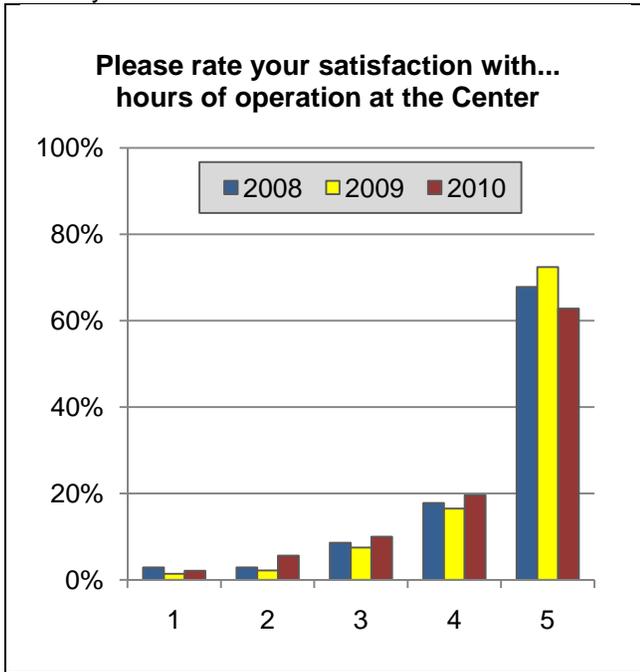
**Figure 24.** Satisfaction with the experience of getting paddlefish to the Paddlefish Research and Processing Center, by anglers who had fish processed (2008  $n=178$ ; 2009  $n=506$ ; 2010  $n=345$ ). Scale: 1=Very Dissatisfied, 5=Very Satisfied.



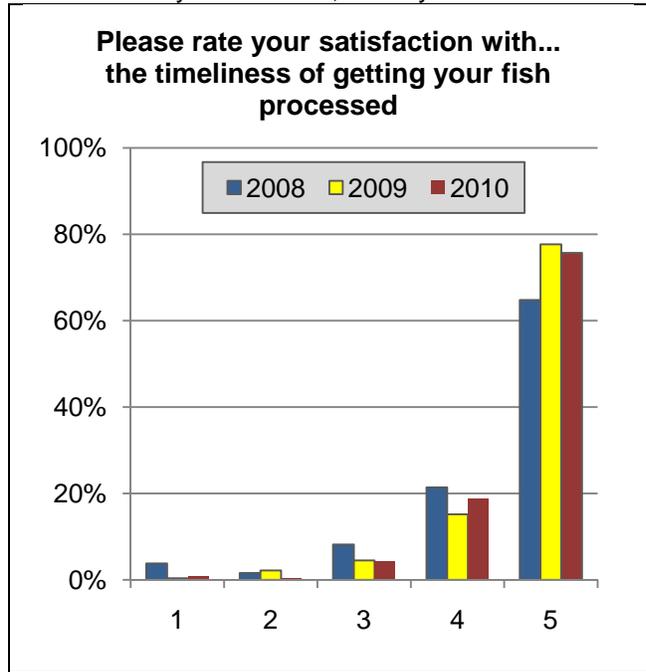
**Figure 25.** Satisfaction with the experience of picking up paddlefish at the Paddlefish Research and Processing Center, by anglers who had fish processed (2008  $n=180$ ; 2009  $n=503$ ; 2010  $n=348$ ). Scale: 1=Very Dissatisfied, 5=Very Satisfied.



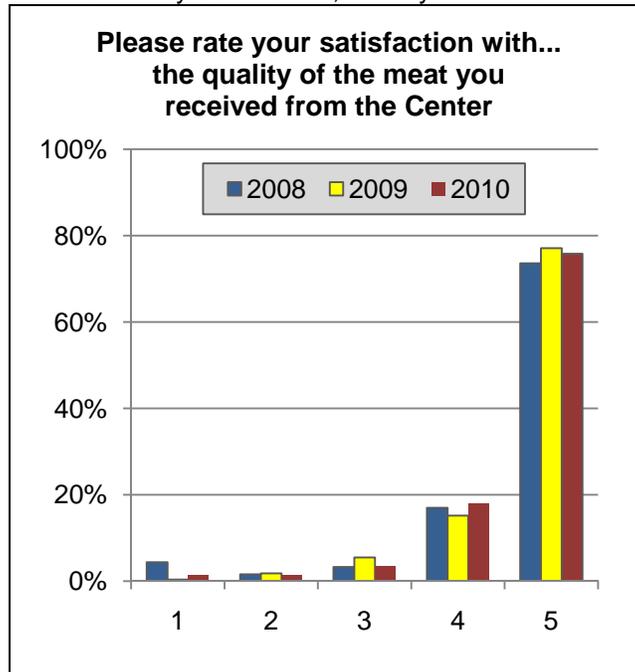
**Figure 26.** Satisfaction with hours of operation at the Paddlefish Research and Processing Center, by anglers who had fish processed (2008  $n=174$ ; 2009  $n=492$ ; 2010  $n=341$ ). Scale: 1=Very Dissatisfied, 5=Very Satisfied.



**Figure 27.** Satisfaction with the timeliness of getting your fish processed at the Paddlefish Research and Processing Center, by anglers who had fish processed (2008  $n=182$ ; 2009  $n=506$ ; 2010  $n=345$ ). Scale: 1=Very Dissatisfied, 5=Very Satisfied.



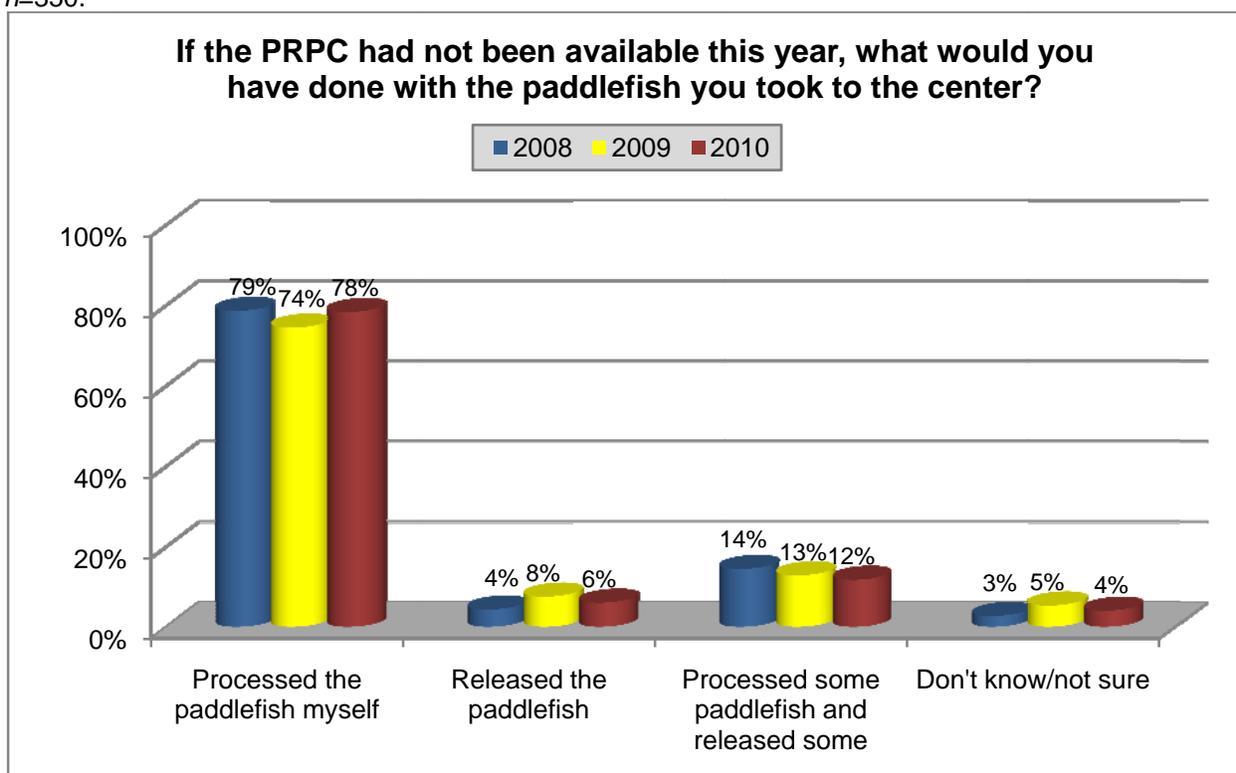
**Figure 28.** Satisfaction with the quality of meat received from the Paddlefish Research and Processing Center, by anglers who had fish processed (2008  $n=182$ ; 2009  $n=507$ ; 2010  $n=347$ ). Scale: 1=Very Dissatisfied, 5=Very Satisfied.



## Impact of PRPC on Paddlefish Harvest

Fisheries managers are carefully monitoring the paddlefish population to ensure the free meat processing service offered by the PRPC does not contribute to an overharvest of paddlefish. These surveys were used to assess what anglers might have done with the paddlefish they caught if the PRPC had not been available. Most anglers indicated they would have processed the paddlefish themselves (Figure 29). 2010 nonresidents were significantly more likely to process the paddlefish themselves than were residents (84 percent vs. 66 percent;  $P \leq 0.001$ ). Data for all years can be found in Table A11.

**Figure 29.** Hypothetical disposition of paddlefish processed at the Paddlefish Research and Processing Center if the center had not been available, by anglers who used the service (2008  $n=187$ ; 2009  $n=508$ ; 2010  $n=350$ ).



## Conclusion

The annual survey of paddlefish permit holders is valuable to resource managers. The data provide an understanding of angler use of the fishery (number of anglers, days fished, harvest), popularity of the PRPC, and reported/unreported harvest. This survey is the primary method by which ODWC is able to estimate angler harvest from Grand Lake, as recovery rates of paddlefish bands are too low to provide robust estimation. Satisfaction questions have helped to improve and monitor operations at the PRPC, and a better understanding of preferences for the paddlefishing experience have been helpful in considering regulatory changes. At this time, ODWC will likely continue the annual paddlefish permit holder survey.

## References

Bockrucker, J. 2009. Fish research for Oklahoma waters: Stock assessment of the Grand Lake paddlefish population. F-50-R-16(27). Oklahoma Department of Wildlife Conservation. Oklahoma City, OK.

## Appendix A

**Table A1.** Use of paddlefish permit privileges.

| “Did you fish for paddlefish in [year]?”        | Overall         | Residents       | Non-Residents   |
|---|-----------------|-----------------|-----------------|
| 2008  | <i>n</i> =1,595 | <i>n</i> =1,072 | <i>n</i> =515   |
| Yes   | 46%             | 39%             | 61%             |
| No, I wanted to but did not have a chance       | 26%             | 30%             | 18%             |
| No, I did not intend to get a paddlefish permit | 28%             | 31%             | 21%             |
| 2009  | <i>n</i> =4,073 | <i>n</i> =2,792 | <i>n</i> =1,279 |
| Yes   | 46%             | 39%             | 62%             |
| No, but I intentionally got a paddlefish permit | 24%             | 27%             | 16%             |
| No, I unintentionally got a paddlefish permit   | 30%             | 34%             | 22%             |
| 2010  | <i>n</i> =4,512 | <i>n</i> =3,270 | <i>n</i> =1,242 |
| Yes   | 41%             | 38%             | 51%             |
| No, but I intentionally got a paddlefish permit | 26%             | 28%             | 19%             |
| No, I unintentionally got a paddlefish permit   | 33%             | 34%             | 30%             |

**Table A2.** Paddlefishing participation by region.

| “Did you fish for paddlefish in [region]?” | Overall         | Residents       | Non-Residents |
|--|-----------------|-----------------|---------------|
| 2008                                       | <i>n</i> =734   | <i>n</i> =413   | <i>n</i> =314 |
| Grand Lake Region                          | 50%             | 24%             | 84%           |
| Fort Gibson Region                         | 30%             | 48%             | 6%            |
| 2009                                       | <i>n</i> =1,884 | <i>n</i> =1,093 | <i>n</i> =791 |
| Grand Lake Region                          | 65%             | 47%             | 90%           |
| Fort Gibson Region                         | 29%             | 43%             | 10%           |
| 2010                                       | <i>n</i> =1,863 | <i>n</i> =1,225 | <i>n</i> =638 |
| Grand Lake Region                          | 58%             | 43%             | 89%           |
| Fort Gibson Region                         | 30%             | 43%             | 8%            |
| Keystone Region                            | 9%              | 14%             | 4%            |

**Table A3.** Days of paddlefishing by region. Superscripts denote significant differences between residents and nonresidents within an area (row) in a given year.

| Number of days fished            | Overall |        |       | Residents |                |       | Non-Residents |                |       |
|----------------------------------|---------|--------|-------|-----------|----------------|-------|---------------|----------------|-------|
|                                  | Mean    | Median | Range | Mean      | Median         | Range | Mean          | Median         | Range |
| <b>2008</b>                      |         |        |       |           |                |       |               |                |       |
| All Areas ( <i>n</i> = 707)      | 6.6     | 3      | 1-150 | 8.1       | 4 <sup>a</sup> | 1-150 | 4.5           | 3 <sup>b</sup> | 1-60  |
| Grand Area ( <i>n</i> = 350)     | 5.7     | 3      | 1-102 | 8.2       | 3 <sup>a</sup> | 1-102 | 4.6           | 3 <sup>a</sup> | 1-60  |
| Ft Gibson Area ( <i>n</i> = 210) | 6.8     | 3      | 1-60  | 7.1       | 3 <sup>a</sup> | 1-60  | 3.4           | 2 <sup>a</sup> | 1-9   |
| <b>2009</b>                      |         |        |       |           |                |       |               |                |       |
| All Areas ( <i>n</i> = 1,790)    | 5.9     | 3      | 1-130 | 7.0       | 3 <sup>a</sup> | 1-130 | 4.5           | 3 <sup>b</sup> | 1-72  |
| Grand Area ( <i>n</i> = 1,152)   | 5.5     | 3      | 1-110 | 7.0       | 3 <sup>a</sup> | 1-110 | 4.5           | 3 <sup>a</sup> | 1-72  |
| Ft Gibson Area ( <i>n</i> = 519) | 4.7     | 3      | 1-90  | 5.0       | 3 <sup>a</sup> | 1-90  | 2.9           | 2 <sup>a</sup> | 1-15  |
| <b>2010</b>                      |         |        |       |           |                |       |               |                |       |
| Grand Area ( <i>n</i> = 1,054)   | 4.8     | 3      | 1-75  | 5.1       | 2 <sup>a</sup> | 1-75  | 4.4           | 3 <sup>b</sup> | 1-46  |
| Ft Gibson Area ( <i>n</i> = 539) | 4.8     | 2      | 1-100 | 5.0       | 2 <sup>a</sup> | 1-100 | 2.6           | 2 <sup>a</sup> | 1-10  |
| Keystone Area ( <i>n</i> = 165)  | 4.2     | 2      | 1-40  | 4.3       | 2 <sup>a</sup> | 1-40  | 3.2           | 3 <sup>a</sup> | 1-14  |

**Table A4.** Fish kept by region. Superscripts denote significant differences between residents and nonresidents within an area (row) in a given year.

| Number of paddlefish kept        | Overall |        |       | Residents |                |       | Non-Residents |                |       |
|----------------------------------|---------|--------|-------|-----------|----------------|-------|---------------|----------------|-------|
|                                  | Mean    | Median | Range | Mean      | Median         | Range | Mean          | Median         | Range |
| <b>2008</b>                      |         |        |       |           |                |       |               |                |       |
| All Areas ( <i>n</i> = 688)      | 2.4     | 1      | 0-80  | 2.5       | 1 <sup>a</sup> | 0-80  | 2.2           | 2 <sup>b</sup> | 0-18  |
| Grand Area ( <i>n</i> = 343)     | 2.5     | 2      | 0-80  | 2.9       | 1 <sup>a</sup> | 0-80  | 2.3           | 2 <sup>b</sup> | 0-18  |
| Ft Gibson Area ( <i>n</i> = 199) | 2.5     | 1      | 0-30  | 2.6       | 1 <sup>a</sup> | 0-30  | 2.3           | 2 <sup>a</sup> | 0-6   |
| <b>2009</b>                      |         |        |       |           |                |       |               |                |       |
| All Areas ( <i>n</i> = 1,745)    | 2.3     | 1      | 0-110 | 2.3       | 1 <sup>a</sup> | 0-110 | 2.4           | 2 <sup>b</sup> | 0-64  |
| Grand Area ( <i>n</i> = 1,121)   | 2.3     | 1      | 0-110 | 2.1       | 1 <sup>a</sup> | 0-110 | 2.4           | 2 <sup>b</sup> | 0-64  |
| Ft Gibson Area ( <i>n</i> = 510) | 2.0     | 1      | 0-30  | 2.1       | 1 <sup>a</sup> | 0-30  | 1.7           | 1 <sup>b</sup> | 0-6   |
| <b>2010</b>                      |         |        |       |           |                |       |               |                |       |
| Grand Area ( <i>n</i> = 1,028)   | 1.5     | 1      | 0-25  | 1.1       | 0 <sup>a</sup> | 0-25  | 1.8           | 1 <sup>b</sup> | 0-16  |
| Ft Gibson Area ( <i>n</i> = 510) | 1.3     | 0      | 0-30  | 1.4       | 0 <sup>a</sup> | 0-30  | 0.6           | 0 <sup>b</sup> | 0-4   |
| Keystone Area ( <i>n</i> = 161)  | 0.6     | 0      | 0-10  | 0.6       | 0 <sup>a</sup> | 0-10  | 0.5           | 0 <sup>a</sup> | 0-3   |

**Table A5.** Fish released by region. Superscripts denote significant differences between residents and nonresidents within an area (row) in a given year.

| Number of paddlefish released    | Overall |        |       | Residents |                |       | Non-Residents |                |       |
|----------------------------------|---------|--------|-------|-----------|----------------|-------|---------------|----------------|-------|
|                                  | Mean    | Median | Range | Mean      | Median         | Range | Mean          | Median         | Range |
| <b>2008</b>                      |         |        |       |           |                |       |               |                |       |
| All Areas ( <i>n</i> = 659)      | 11.6    | 2      | 0-440 | 15.1      | 3 <sup>a</sup> | 0-440 | 6.9           | 1 <sup>b</sup> | 0-155 |
| Grand Area ( <i>n</i> = 318)     | 11.0    | 2      | 0-415 | 21.4      | 4 <sup>a</sup> | 0-415 | 7.2           | 1 <sup>b</sup> | 0-155 |
| Ft Gibson Area ( <i>n</i> = 200) | 9.2     | 3      | 0-138 | 9.5       | 3 <sup>a</sup> | 0-138 | 6.3           | 1 <sup>a</sup> | 0-49  |
| <b>2009</b>                      |         |        |       |           |                |       |               |                |       |
| All Areas ( <i>n</i> = 1,675)    | 8.4     | 2      | 0-345 | 8.9       | 2 <sup>a</sup> | 0-300 | 7.7           | 1 <sup>b</sup> | 0-345 |
| Grand Area ( <i>n</i> = 1,069)   | 7.2     | 1      | 0-272 | 8.0       | 2 <sup>a</sup> | 0-272 | 6.7           | 1 <sup>a</sup> | 0-250 |
| Ft Gibson Area ( <i>n</i> = 490) | 7.6     | 2      | 0-100 | 7.0       | 2 <sup>a</sup> | 0-100 | 11.1          | 4 <sup>b</sup> | 0-65  |
| <b>2010</b>                      |         |        |       |           |                |       |               |                |       |
| Grand Area ( <i>n</i> = 982)     | 6.7     | 1      | 0-300 | 6.9       | 1 <sup>a</sup> | 0-300 | 6.5           | 1 <sup>a</sup> | 0-215 |
| Ft Gibson Area ( <i>n</i> = 509) | 8.6     | 1      | 0-911 | 8.6       | 1 <sup>a</sup> | 0-911 | 8.3           | 3 <sup>a</sup> | 0-40  |
| Keystone Area ( <i>n</i> = 155)  | 4.8     | 1      | 0-100 | 5.1       | 1 <sup>a</sup> | 0-100 | 2.6           | 1 <sup>a</sup> | 0-15  |

**Table A6.** Importance of different aspects of the paddlefishing experience (1 = Not at all important, 5 = Very Important).

| How important is...                                 | Overall<br>(percent)       |    |    |    |    | Residents<br>(percent)     |    |    |    |    | Non-Residents<br>(percent) |    |    |    |    |
|---|----------------------------|----|----|----|----|----------------------------|----|----|----|----|----------------------------|----|----|----|----|
|   | 1                          | 2  | 3  | 4  | 5  | 1                          | 2  | 3  | 4  | 5  | 1                          | 2  | 3  | 4  | 5  |
| <b>2009</b>   | (minimum <i>n</i> = 1,782) |    |    |    |    | (minimum <i>n</i> = 1,034) |    |    |    |    | (minimum <i>n</i> = 748)   |    |    |    |    |
| ...the fun, excitement and sport of paddlefishing?  | 0                          | 1  | 7  | 17 | 74 | 0                          | 1  | 8  | 18 | 72 | 1                          | 1  | 6  | 16 | 76 |
| ...keeping a paddlefish at the end of the day?      | 21                         | 13 | 22 | 14 | 30 | 26                         | 14 | 21 | 12 | 27 | 15                         | 12 | 24 | 16 | 33 |
| ...catching and releasing many paddlefish each day? | 16                         | 11 | 20 | 18 | 35 | 16                         | 10 | 20 | 18 | 35 | 16                         | 12 | 20 | 17 | 35 |
| ...taking home paddlefish to eat?                   | 20                         | 10 | 18 | 16 | 36 | 26                         | 10 | 17 | 14 | 34 | 12                         | 10 | 19 | 18 | 39 |
| ...the chance of catching a very big fish?          | 1                          | 2  | 8  | 17 | 72 | 1                          | 2  | 9  | 14 | 74 | 1                          | 2  | 8  | 21 | 68 |
| ...keeping one paddlefish every day of fishing?     | 28                         | 13 | 19 | 11 | 29 | 34                         | 14 | 17 | 10 | 25 | 20                         | 11 | 21 | 14 | 35 |
| <b>2010</b>   | (minimum <i>n</i> = 1,762) |    |    |    |    | (minimum <i>n</i> = 1,161) |    |    |    |    | (minimum <i>n</i> = 601)   |    |    |    |    |
| ...the fun, excitement and sport of paddlefishing?  | 1                          | 1  | 8  | 16 | 73 | 1                          | 1  | 8  | 16 | 74 | 1                          | 2  | 8  | 17 | 73 |
| ...keeping a paddlefish at the end of the day?      | 26                         | 12 | 20 | 12 | 30 | 29                         | 12 | 20 | 10 | 29 | 20                         | 11 | 22 | 16 | 32 |
| ...catching and releasing many paddlefish each day? | 21                         | 10 | 21 | 16 | 32 | 20                         | 10 | 21 | 17 | 33 | 23                         | 11 | 21 | 16 | 30 |
| ...taking home paddlefish to eat?                   | 24                         | 11 | 15 | 14 | 36 | 27                         | 12 | 15 | 13 | 33 | 17                         | 10 | 16 | 16 | 42 |
| ...the chance of catching a very big fish?          | 2                          | 2  | 8  | 18 | 71 | 2                          | 1  | 8  | 17 | 73 | 2                          | 2  | 9  | 19 | 69 |
| ...keeping one paddlefish every day of fishing?     | 34                         | 12 | 16 | 11 | 27 | 39                         | 13 | 15 | 9  | 25 | 24                         | 11 | 18 | 15 | 32 |

**Table A7.** Use of the PRPC by Grand Lake Region anglers who caught and kept at least one paddlefish.

| Use of the PRPC | Overall       | Residents        | Nonresidents     |
|-----------------|---------------|------------------|------------------|
| <b>2008</b>     | <i>n</i> =263 | <i>n</i> =47     | <i>n</i> =216    |
| Yes             | 72%           | 64%              | 74%              |
| <b>2009</b>     | <i>n</i> =792 | <i>n</i> =276    | <i>n</i> =516    |
| Yes             | 65%           | 49% <sup>a</sup> | 73% <sup>b</sup> |
| <b>2010</b>     | <i>n</i> =599 | <i>n</i> =225    | <i>n</i> =374    |
| Yes             | 59%           | 48% <sup>a</sup> | 65% <sup>b</sup> |

**Table A8.** Number of fish processed at PRPC by Grand Lake Region anglers.

| <b>Fish Processed at PRPC</b> |        |      |       |                  |                |      |       |                     |                |      |       |
|-------------------------------|--------|------|-------|------------------|----------------|------|-------|---------------------|----------------|------|-------|
| <b>Overall</b>                |        |      |       | <b>Residents</b> |                |      |       | <b>Nonresidents</b> |                |      |       |
| Mean                          | Median | Mode | Range | Mean             | Median         | Mode | Range | Mean                | Median         | Mode | Range |
| <b>2008 (n=192)</b>           |        |      |       |                  |                |      |       |                     |                |      |       |
| 2.6                           | 2      | 2    | 1-24  | 3.7              | 2 <sup>a</sup> | 1    | 1-24  | 2.4                 | 2 <sup>a</sup> | 2    | 1-13  |
| <b>2009 (n=549)</b>           |        |      |       |                  |                |      |       |                     |                |      |       |
| 2.3                           | 2      | 1    | 1-17  | 2.1              | 1 <sup>a</sup> | 1    | 1-17  | 2.4                 | 2 <sup>b</sup> | 1    | 1-15  |
| <b>2010 (n=354)</b>           |        |      |       |                  |                |      |       |                     |                |      |       |
| 2.3                           | 2      | 1    | 1-25  | 2.2              | 1 <sup>a</sup> | 1    | 1-25  | 2.4                 | 2 <sup>b</sup> | 1    | 1-16  |

**Table A9.** Unreported harvest in the Grand Lake Region, as calculated by the proportion of paddlefish harvested in the area but not processed at the Paddlefish Research and Processing Center. Only individuals with valid data for both variables (number of fish kept in Grand Lake Region and number of fish processed at PRPC) were used in the calculation of unreported harvest.

| <b>Total Paddlefish Harvested</b> | <b>Total Paddlefish Processed at PRPC</b> | <b>Reported Paddlefish Harvest</b> | <b>Unreported Paddlefish Harvest</b> |
|-----------------------------------|---|------------------------------------|--------------------------------------|
| <b>2008</b>                       |   |                                    |                                      |
| 815 (n=329)                       | 473 (n=182)                               | 58.0%                              | 42.0%                                |
| <b>2009</b>                       |   |                                    |                                      |
| 2,313 (n=1,098)                   | 1,135 (n=492)                             | 49.1%                              | 50.9%                                |
| <b>2010</b>                       |   |                                    |                                      |
| 1,514 (n=1,021)                   | 810 (n=346)                               | 53.5%                              | 46.5%                                |

**Table A10.** Importance of different aspects of the paddlefishing experience (1 = Very Dissatisfied, 5 = Very Satisfied).

| Please rate your satisfaction with...                 | Overall (percent)        |   |    |    |    | Residents (percent)      |    |    |    |    | Non-Residents (percent)  |   |    |    |    |
|---|--------------------------|---|----|----|----|--------------------------|----|----|----|----|--------------------------|---|----|----|----|
|   | 1                        | 2 | 3  | 4  | 5  | 1                        | 2  | 3  | 4  | 5  | 1                        | 2 | 3  | 4  | 5  |
| <b>2008</b>   | (minimum <i>n</i> = 168) |   |    |    |    | (minimum <i>n</i> = 24)  |    |    |    |    | (minimum <i>n</i> = 144) |   |    |    |    |
| ...your experience getting your fish to the Center    | 4                        | 1 | 7  | 15 | 73 | 8                        | 4  | 8  | 8  | 72 | 3                        | 1 | 7  | 16 | 73 |
| ...your experience picking up your fish at the Center | 4                        | 1 | 7  | 17 | 72 | 4                        | 0  | 11 | 15 | 70 | 4                        | 1 | 7  | 17 | 72 |
| ...Hours of operation at the Center                   | 3                        | 3 | 9  | 18 | 68 | 0                        | 12 | 12 | 15 | 62 | 3                        | 1 | 8  | 18 | 69 |
| ...the timeliness of getting your fish processed      | 4                        | 2 | 8  | 21 | 65 | 4                        | 4  | 15 | 15 | 63 | 4                        | 1 | 7  | 23 | 65 |
| ...the quality of meat you received from the Center   | 4                        | 2 | 3  | 17 | 74 | 7                        | 0  | 7  | 18 | 68 | 4                        | 2 | 3  | 17 | 75 |
| ...the requirement that fish must be alive to process | 4                        | 3 | 15 | 24 | 53 | 4                        | 4  | 11 | 14 | 68 | 5                        | 3 | 16 | 26 | 51 |
| ...the new paddlefish permit requirement              | 6                        | 6 | 17 | 24 | 48 | 8                        | 15 | 15 | 0  | 62 | 6                        | 4 | 17 | 28 | 45 |
| ...the change to paddlefish tagging requirement       | 5                        | 4 | 19 | 23 | 49 | 8                        | 13 | 17 | 8  | 54 | 5                        | 2 | 19 | 26 | 49 |
| <b>2009</b>   | (minimum <i>n</i> = 492) |   |    |    |    | (minimum <i>n</i> = 129) |    |    |    |    | (minimum <i>n</i> = 363) |   |    |    |    |
| ...your experience getting your fish to the Center    | 1                        | 1 | 6  | 14 | 78 | 2                        | 3  | 10 | 11 | 75 | 1                        | 1 | 4  | 15 | 79 |
| ...your experience picking up your fish at the Center | 1                        | 2 | 6  | 16 | 75 | 1                        | 2  | 3  | 15 | 79 | 1                        | 2 | 8  | 17 | 74 |
| ...Hours of operation at the Center                   | 1                        | 2 | 8  | 17 | 72 | 2                        | 4  | 10 | 12 | 72 | 1                        | 2 | 7  | 18 | 73 |
| ...the timeliness of getting your fish processed      | 0                        | 2 | 5  | 15 | 78 | 0                        | 2  | 6  | 15 | 78 | 1                        | 2 | 4  | 15 | 78 |
| ...the quality of meat you received from the Center   | 0                        | 2 | 6  | 15 | 77 | 2                        | 4  | 5  | 16 | 74 | 0                        | 1 | 6  | 15 | 78 |
| <b>2010</b>   | (minimum <i>n</i> = 341) |   |    |    |    | (minimum <i>n</i> = 104) |    |    |    |    | (minimum <i>n</i> = 237) |   |    |    |    |
| ...your experience getting your fish to the Center    | 1                        | 2 | 6  | 16 | 74 | 1                        | 5  | 5  | 15 | 75 | 1                        | 1 | 7  | 16 | 74 |
| ...your experience picking up your fish at the Center | 1                        | 1 | 5  | 18 | 75 | 0                        | 2  | 4  | 11 | 83 | 1                        | 1 | 6  | 20 | 71 |
| ...Hours of operation at the Center                   | 2                        | 6 | 10 | 20 | 63 | 3                        | 5  | 10 | 14 | 68 | 2                        | 6 | 10 | 22 | 60 |
| ...the timeliness of getting your fish processed      | 1                        | 0 | 4  | 19 | 76 | 0                        | 0  | 4  | 14 | 82 | 1                        | 0 | 5  | 21 | 73 |
| ...the quality of meat you received from the Center   | 1                        | 1 | 4  | 18 | 76 | 2                        | 2  | 0  | 12 | 84 | 1                        | 1 | 5  | 20 | 72 |

**Table A11.** Disposition of paddlefish if the PRPC did not exist.

| <b>“If the Paddlefish Research and Processing Center had not been available this year, what would you have done with the paddlefish you took to the Center?”</b> | <b>Overall</b> | <b>Residents</b> | <b>Non-Residents</b> |
|--|----------------|------------------|----------------------|
| <b>2008</b>  | <i>n</i> =187  | <i>n</i> =29     | <i>n</i> =158        |
| Processed the paddlefish myself  | 79%            | 55%              | 83%                  |
| Released the paddlefish  | 4%             | 7%               | 4%                   |
| Processed some paddlefish and released some  | 14%            | 28%              | 12%                  |
| Don't know/not sure  | 3%             | 10%              | 1%                   |
| <b>2009</b>  | <i>n</i> =508  | <i>n</i> =135    | <i>n</i> =373        |
| Processed the paddlefish myself  | 74%            | 66%              | 78%                  |
| Released the paddlefish  | 8%             | 14%              | 5%                   |
| Processed some paddlefish and released some  | 13%            | 15%              | 12%                  |
| Don't know/not sure  | 5%             | 5%               | 5%                   |
| <b>2010</b>  | <i>n</i> =350  | <i>n</i> =108    | <i>n</i> =242        |
| Processed the paddlefish myself  | 78%            | 66%              | 84%                  |
| Released the paddlefish  | 6%             | 15%              | 2%                   |
| Processed some paddlefish and released some  | 12%            | 13%              | 11%                  |
| Don't know/not sure  | 4%             | 7%               | 3%                   |

## Appendix B: Survey Instrument

Dear Oklahoma Angler,

Pre-survey notification 2010.

In about a week, you will receive in the mail a brief survey for an important study by the Oklahoma Department of Wildlife Conservation.

The study is about the Oklahoma paddlefish program. We hope you will take a minute to complete this short survey even if you did not fish for paddlefish.

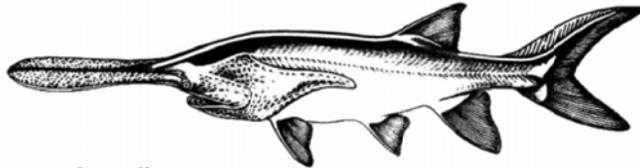
We are sending this notice in advance because we have found many people like to know ahead of time that they will be contacted. Your help with this study will allow us to improve Oklahoma's paddlefish program in the future.

Thank you for your time and consideration.

Sincerely,



Keith Green, Paddlefish Program Coordinator



**Oklahoma Department of Wildlife Conservation**  
P.O. Box 53465 Oklahoma City, OK 73152

Nonprofit Org.  
US Postage Paid  
Norman, OK  
Permit No. 35



## Oklahoma Department of Wildlife Conservation Paddlefish Angler Survey

June 8, 2010

Dear Oklahoma Paddlefish Permit holder,

Our records show that you had an Oklahoma Paddlefish Permit for 2010. Some anglers may not have realized they received this free permit when purchasing a fishing license. Even if you did not fish for paddlefish in Oklahoma during 2010, please respond to the first question of the survey and return it today in the pre-paid envelope provided.

We want to know about your experiences and satisfaction with recent changes to the Oklahoma paddlefish program, including the Paddlefish Research and Processing Center. Your input is critical and will help us improve Oklahoma's paddlefish program in the future.

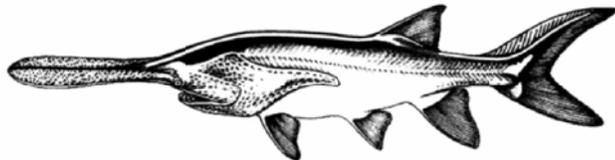
Please complete and return the enclosed survey today. Your answers will be kept confidential. When you return your questionnaire, we will remove your name from our paddlefish survey list for subsequent mailings.

If you have questions or would like a copy of the final report for this study, please contact Andrea Crews at (405) 522-0769 or [acrews@odwc.state.ok.us](mailto:acrews@odwc.state.ok.us). Your help in this project is greatly appreciated and we look forward to hearing from you.

Sincerely,

A handwritten signature in cursive script that reads "Keith Green".

Keith Green  
Paddlefish Program Coordinator





**Oklahoma Department of Wildlife Conservation  
Paddlefish Angler Survey**

July 6, 2010

Dear Oklahoma Paddlefish Permit holder,

We recently sent you a survey regarding Oklahoma's paddlefish program. If you have already completed the survey and mailed it back, let me thank you for your assistance.

If you have not yet completed the survey, please take a few minutes to do so today. Even if you did not fish for paddlefish during 2010, please let us know by answering the first question on the survey. For your convenience, a postage-paid envelope is provided.

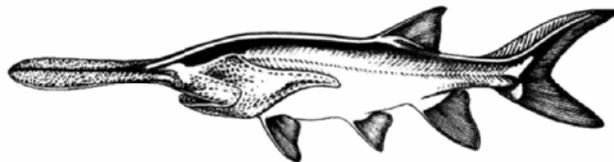
We want to know about your experiences and satisfaction with recent changes to the Oklahoma paddlefish program, including the Paddlefish Research and Processing Center. Your input is critical and will help us improve Oklahoma's paddlefish program in the future. Your answers will be kept confidential. When you return your questionnaire, we will remove your name from our paddlefish survey list for subsequent mailings.

If you have questions or would like a copy of the final report for this study, please contact Andrea Crews at (405) 522-0769 or [acrews@odwc.state.ok.us](mailto:acrews@odwc.state.ok.us). Your help in this project would be greatly appreciated and we look forward to hearing from you.

Sincerely,

A handwritten signature in black ink that reads "Keith Green".

Keith Green  
Paddlefish Program Coordinator



## 2010 PADDLEFISH ANGLER SURVEY

1. Did you fish for paddlefish in Oklahoma during 2010?

Yes

No → 1a. If no: Our records show that you have a free paddlefish permit.

Did you intend to get the free paddlefish permit?

Yes

No

If you did not fish for paddlefish in Oklahoma during 2010, your survey is now complete. Please mail it today. Thank you!

2. Did you fish for paddlefish **around Grand Lake?** (For example: Miami Park, Conner's Bridge, Twin Bridges, Gray's Ranch, Neosho River, Grand Lake, etc.)



Yes →  
 No

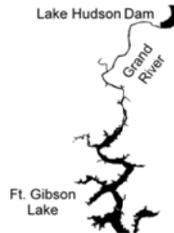
**Total for all your paddlefishing in the Grand Lake area:**

Number of days fished: \_\_\_\_\_ days

Number of fish kept: \_\_\_\_\_ fish kept

Number of fish released: \_\_\_\_\_ fish released

3. Did you fish for paddlefish **around Fort Gibson?** (For example: below Hudson dam, the low water bridge north of 412, in the river south of 412, Ft. Gibson Lake, etc.)



Yes →  
 No

**Total for all your paddlefishing north of Ft. Gibson:**

Number of days fished: \_\_\_\_\_ days

Number of fish kept: \_\_\_\_\_ fish kept

Number of fish released: \_\_\_\_\_ fish released

4. Did you fish for paddlefish **around Keystone Lake?** (For example: in Keystone, in the Arkansas River up to Kaw Dam, in the Salt Fork, in the Cimarron River, etc.)



Yes →  
 No

**Total for all your paddlefishing in the Keystone area:**

Number of days fished: \_\_\_\_\_ days

Number of fish kept: \_\_\_\_\_ fish kept

Number of fish released: \_\_\_\_\_ fish released

5. Did you fish for paddlefish **anywhere else in Oklahoma?** (For example: Pensacola tailwaters, Hudson Lake, Ft. Gibson tailwaters, Arkansas River from Keystone to the Arkansas state line, Verdigris River to Oologah dam, Texoma tailwaters, Eufaula tailwaters, etc.)

Yes

No

6. Did you fish for paddlefish in 2010 during the catch-and-release days (Monday and Friday)?

- Yes
- No

7. Please indicate how important each of the following is to you, for a successful paddlefishing experience in Oklahoma. Circle a number on the scale for each statement.

| How important is...                                | Not at all Important |   |   |   |   | Very Important |
|--|----------------------|---|---|---|---|----------------|
| ...the fun, excitement and sport of paddlefishing  | 1                    | 2 | 3 | 4 | 5 |                |
| ...keeping a paddlefish at the end of the day      | 1                    | 2 | 3 | 4 | 5 |                |
| ...catching and releasing many paddlefish each day | 1                    | 2 | 3 | 4 | 5 |                |
| ...taking home paddlefish to eat                   | 1                    | 2 | 3 | 4 | 5 |                |
| ...the chance of catching a very big fish          | 1                    | 2 | 3 | 4 | 5 |                |
| ...keeping one paddlefish every day of fishing     | 1                    | 2 | 3 | 4 | 5 |                |

8. During 2010, did you have any paddlefish processed at the Paddlefish Research and Processing Center, at Twin Bridges State Park?

- Yes → 8a. How many? \_\_\_\_\_
- No →

If you did not use the Paddlefish Research and Processing Center, your survey is now complete. Please mail it today. Thank you!

9. Please rate your satisfaction with the following aspects of Oklahoma's paddlefish program and the Paddlefish Research and Processing Center during 2010:

|  | Very Dissatisfied |   |   | Very Satisfied |   |  |     |
|--|-------------------|---|---|----------------|---|--|-----|
| Your experience getting your fish to the Center      | 1                 | 2 | 3 | 4              | 5 |  | n/a |
| Your experience picking up your fish at the Center   | 1                 | 2 | 3 | 4              | 5 |  | n/a |
| Hours of operation at the Center                     | 1                 | 2 | 3 | 4              | 5 |  | n/a |
| The timeliness of getting your fish processed        | 1                 | 2 | 3 | 4              | 5 |  | n/a |
| The quality of the meat you received from the Center | 1                 | 2 | 3 | 4              | 5 |  | n/a |

10. If the Paddlefish Research and Processing Center had not been available this year, what would you have done with the paddlefish you took to the Center?

- Processed the paddlefish myself
- Released the paddlefish
- Processed some paddlefish and released some
- Don't know/not sure

Comments or feedback about Oklahoma's paddlefish program: \_\_\_\_\_

\_\_\_\_\_

**Thank you! Please mail your completed survey today!**

## Appendix C: Comments

### Comments from permit holders who did not fish for paddlefish but intentionally got the permit:

- A friend of my cousin caught a paddlefish while we were at lake Eufaula. Everyone was excited.
- All the paddlefish I catch are by accident when fishing for striped bass - thank you.
- All though many people enjoy catching and/or eating paddlefish, this fish hasn't changed in million years.
- B. May gives tickets to people that have caught them by mistake. He said you could have cut your line and not brought the fish in to shore.
- Because it was free.
- Can't keep them why fish for them, ought to be a difference between snagged fish and fish hooked in mouth.
- Dear Mr. Green, I got the permit in case I wished to try some paddlefishing. Without it I would be fishing illegally you idiots, you made the law, I have to abide by it.
- Did not fish because of O.T.
- Did not fish.
- Didn't get chance to fish!
- Didn't get to go this year.
- Didn't get a chance to go fish for paddlefish.
- Didn't have time.
- Doing a good job keep it up!! Try a fundraiser for a reservation for paddlefish spawn a great number of paddlefish the release them into the wild.
- Don't have the equipment to paddlefisn yet, but plan/want to! Will use the research process center when I do. Any program that researches our Natural Resources is a good one to me.
- Don't know much about it. I was told without and caught one I would be fined if caught in the boat.
- Due to an illness we haven't been fishing but plan to fish soon.
- Due to an illness we were unable to fish but hope to soon.
- Fished for crappie when ice was on in KS, fished at Oologah had planned to go back for paddlefish but didn't make it.
- Fished for paddlefish for a couple of years. I love it. I never have kept a fish just take pictures. Didn't fish this year because of work schedule.
- Forgot.
- Get out and do your own job! That is what we pay for in tags and license! Don't kill trees.
- Glad to participate...expect to paddlefisn before the year is out. Will be my first time.
- Good deal.
- Got a free permit in case I did catch one and the person selling my permit recommended it because it's free.
- Got sick in hospital.
- Great program but I feel they need to limit the keeping of large females during spawn to ensure healthy spoonbill population in Grand River System.
- Great.
- Had arm injury. Unable to fish this year.
- Had back surgery, couldn't fish.
- Had to cancel vacation, sorry-caught paddlefish for 10 years.
- How about a white bass permit only. So many of us from Missouri come to your nice state just for the fun of white bass. Also, increase the limit on white bass on the Spring River arm to make it worth our while to drive from Douglas County MO a few times a year. After all, we do enjoy the fun and pay higher for our permits.
- How do I get it?
- How much did mailing these surveys cost? Take that cost off the license!!! Then save more money and cut your job off payroll for having someone to read these.
- Husband had injury and kept us from going.
- I believe it is a very good program. I caught a few paddlefish on jug lines at Ft. Gibson.
- I checked the box for paddlefish because it was free. I have never fished for paddlefish and probably never will. However, I would fish for them given the right opportunity.
- I decided not to in order to help the spoonbill population, and a chance for longer fish in the future.
- I did not have the time to go this year, however it seems that there are more and more rules every year. I suspect that one day paddlefishing will be over. I do see that that is what you are trying to prevent. Thanks.

- I did watch fish being caught.
- I didn't fish for paddlefish this year, however I got the permit in case there was opportunity to do so.
- I didn't catch any myself but I was with other people who did.
- I didn't have the time to go this year, however it seems that there are more and more rules every year
- I didn't know I had a paddlefish permit. If I would have known I would have fished the Neosho River.
- I do not like catch and release, we use to go get my fish in little to no time, now you have to wait forever for people to get out of the good spots to get your fish.
- I do plan on paddlefishing before the year is up. Plan on fishing on Arkansas River.
- I do plan to fish for paddlefish in July at Ft Gibson.
- I don't fish because of illness and injuries, but will be taking advantage of future permits.
- I don't fish for paddlefish very often but it is fun when I get a chance to.
- I figured someday I would try it. Thanks for the survey.
- I fish not for paddlefish but if I caught one and wanted to keep it I could.
- I got the free permit because of B. May giving tickets to people that caught them by mistake.
- I got the free permit just in case I caught one in Grand Lake while fishing for bass, crappie, whites.
- I have fished for paddlefish many times in recent years, but so far none this year.
- I have not as of yet. Is it too late?
- I haven't been paddlefishing this year. Didn't have time. Don't know how to answer this form.
- I haven't been paddlefishing yet.
- I intended to catch my first paddlefish in 2010 and didn't make it, I was in school.
- I intended to go paddlefishing, but just didn't get the time. Question to the processing center: do you try and fertilize the eggs to make new fish when you butcher them? It would be sad if they ever expired. They are very good eating, even though they don't clean but a third of their weight by the time you take out the red strip.
- I know that changes in regulations are needed, but they can be confusing.
- I last fished for paddlefish about five years ago but I do want to do it again.
- I like having the permit just in case I catch one, while fishing for something else.
- I like the old regulations better. The last year I fished for them I couldn't catch a fish that wasn't already scarred up by catch and release and most of them were bad enough that they would soon die. That's why they don't get as big now.
- I love to eat paddlefish. They are good.
- I never fish for paddlefish but I would like to.
- I never received anything about free paddlefish permit. Thank you, though if I got to fish it would be Ft. Gibson.
- I noticed new regulations about fishing in tailwaters for paddlefish and I really didn't understand them. These things need clarification.
- I only got the tag in case I hooked it while fishing for other kinds of fish. I didn't want to get.
- I planned on fishing for them but didn't get rigged up in time.
- I planned snagging but had no time. Please keep up this program, it's a good one.
- I planned to go fishing, but never did. Good program.
- I purchased the permit prior to reading the new regulations-only to figure out that my work schedule [conflicted?]
- I quit fishing for paddlefish due to the fact it's not worth the money or time to only keep one fish.
- I rarely paddlefish and picked up the permit for just in case I accidently catch one as has happened in the past. My experience with paddlefish is from the Grand Lake area.
- I seen a few caught in the 30-40 lb range. All very healthy. Red river below Denison dam.
- I still want to go.
- I think it's a great thing, thank you so very much on having one in the Twin Bridges area.
- I think more people would be interested, and make better use of the fish if instructions on "how to make caviar" were included and if the center made it.
- I think the processing center is a wonderful addition.
- I think the rules are ridiculous. It was not worth going this year. It was bad enough only keeping one fish but now you are only allowed to keep them on certain days. Thanks for running another good thing!!!
- I typically fish for paddlefish in Miami Park area. I did not this year because of Mon-Fri catch and release days. These are days I can get off work easily and I like to keep a fish or two.

- I usually go every year and I fish the Kaw Lake tailwaters. This year seems like I had to work or weather was bad or no water being released so I didn't make it. But will go next year. Your program is great. Sure wish there was a way we could drop off eggs at Kaw. Seems like a waste to throw away.
- I wanted the paddlefish tag but forgot to ask. Didn't realize I had gotten it anyway or I would have went a couple of days when a friend asked. I would like to know – can we not fish for paddlefish in the rest of the lake after spring season anymore?
- I was going to now that the center cleans them for you. Just couldn't find time this year.
- I was not able to paddlefish this year. My wife got sick and had surgeries. I enjoy fishing and think ODWC is doing a great job.
- I was told it was free so I got it just in case I wanted to.
- I was unable to fish but know a lot of people I was going to fish with and wouldn't have been able to keep them if I didn't a paddlefish permit.
- I would love to catch a paddlefish and would like a permit.
- I'm not good at snagging. Tried last year. Was told I had weight too far from hook. Didn't get to go this year. Med problems.
- I'm glad that we have the paddlefish program. The paddlefish is a very cool species and I'm glad to have them in our state and be able to pursue them. Thanks to all who are involved.
- Intended to go but had family emergency that kept me away from state.
- Intended to paddlefish but work, school didn't allow time off.
- It was free.
- It was not free.
- It's a great program.
- It's a long way for me to drive to only be able to keep one paddlefish.
- It's too bad if so limited time for fishing paddlefish. I am working till 8:00 pm and can't get to fishing place. That's terrible. Will be good if you change that time to fish.
- Just in case I had the opportunity.
- Keep it free!
- Keep up the good work. I am 72 years old and the hunting/fishing is better than when I was a child!!!
- Like to learn more about paddlefish.
- Look forward to trying it next year.
- Missed fishing for paddlefish this year 2010. Just didn't make it down to river. Maybe next spring 2011.
- Must be working - Sunday morning 6-13-10 we were fishing for white bass and seen at least 40 paddlefish jump the time I was out.
- My neighbor was not able to take me out.
- Need more accurate fishing reports.
- Need to stop snagging. Friend say they are getting on small size by Fort Gibson dam.
- No time.
- Not yet. (2 respondents)
- OK nonresident fishing permit too expensive! Since you threatened me with subsequent mailings I hope this suffices.
- Paddlefish catch and release is stupid. Make it no snagging on those days, most fish will die if caught.
- Paddlefish is good food.
- Paddlefish program is very good for Oklahoma. Thank you.
- Personally I would of fished for them more, but I think you guys should make the limit two a day.
- Switched jobs and didn't find time to go.
- Thank you for fine program.
- Thank you for your good management of and your fish and game.
- Thank you very much just didn't get time.
- Thank you, I fully intended to catch a paddlefish, but did not have the time to go fishing.
- Thanks for everything you folks do for the program...my only want is for the field possession to change. If I go out of town and fish one day, catch one and then stay the night in a hotel and fish the next and catch one I'm in violation. This needs to be resolved. Thank you very much.
- The best way to clean them (example on white page attached).
- The number of paddlefish below Webbers Falls Lock and Dam are so great, that at times its impossible to fish without hanging one.

- There was too much wind, rain, and cold day on the weekends to fish.
- They should have designated areas away from regular fisherman.
- Think you are doing a good job keeping paddlefish alive. Thank you.
- Thought I might go to Twin Bridges for paddlefishing, but the expense of driving there for just one fish is just not worth the time or expense.
- Too much rain.
- Try focusing on the crappie disaster!
- Usually go to Choteau, just didn't get a chance this year. (Crappie at Oologah were hot!)
- Vip: please send info on paddlefish.
- Wanted to fish at Kaw, but not enough water.
- Wanted to fish this year, but job didn't let me working overtime. Keep up the good work it is awesome when we can go fishing. The fish are there to catch. Again keep up the great work.
- Wanted to go just couldn't find the time.
- We catfish and once in a while we catch a paddlefish.
- We fish around weekends and the catch and release days fall on bad days to fish three or more days in a row. I live in Texas and get my fish license every year since 1996.
- We just did not get a chance to go. Thanks for all your hard work in managing this great resource!
- We just didn't find the right time to fish this year, but we look forward to it in the future.
- Went too early and didn't get a chance to go back. Maybe next year. Keep up good work. Thanks for all you do
- When we fish for crappie and sand bass we got a paddlefish license just in case. We enjoy watching others catch paddlefish while fishing for sand bass and crappie.
- Why have the limits changed this year? The paddlefish and the limit of days?
- Why just two days during the week to catch and release. I work during the week.
- Why not answer question #7.
- You charge me \$100.00 a year for a dock permit, and then you make Spring River a sanctuary. I am very disturbed about this.
- You should send this survey at the end of the year, not the middle. Haven't gone yet, may go later.
- You shouldn't have to say yes if you want a paddlefish permit. You should get to fish on an Oklahoma permit, for paddlefish regardless.

**Comments from permit holders who did not fish for paddlefish and did not intend to get the permit:**

- #1 is I didn't know I had a permit for it.
- Did not fish for paddlefish anytime in 2010 or years before.
- Did not know about permit.
- Did not realize I had a free permit.
- Didn't fish for paddlefish in 2010.
- Didn't know about it. I am disabled and on a very limited income. Is there a way of getting a disabled card for a discount on fishing and/or camping. I have been disabled since 2004.
- Didn't know anything about paddlefish but would like for my wife and I to have a free permit. However, she's already got a lifetime fishing permit, does she need another one for paddlefish.
- Didn't know I had a free tag.
- Didn't realize license included in paddlefish fishing. Have fished for them in the past. It was fun.
- Don't paddlefish.
- Don't fish for paddlefish at all we just added paddlefish on my license because it was free.
- Don't fish for them.
- Don't fish for them. Catfish and bass only.
- Had a family member did this; with great success and very well pleased and treasured the experience and thrill of catching it.
- Haven't been yet, but plan on going. Thanks.
- Heavy snagging at Fort Gibson dam has left the water so fouled with heavy line and spider wire other fishing is difficult. Can you drag the area below the turbines and the float line to reduce this problem.
- I am sure it's a great program. I just don't paddlefish. Thanks.
- I did not fish for paddlefish. But if I did I would take advantage of the research and processing center!
- I did not get a free paddlefish permit.

- I didn't know I got one with my license but I have thought of fishing for them just to catch a big fish.
- I do not fish for paddlefish.
- I do not fish for spoonbill!
- I do not paddlefish at all!
- I don't fish for paddlefish.
- I don't have a paddlefish permit.
- I don't fish for paddlefish at all...thanks.
- I don't know about it.
- I don't paddlefish, just crappie.
- I don't think it's fair when these people (knowing the limit of these fish) continue catch them and make everyone in their path to remove or move their line from the water to get the fish out of the water. We can't fish because it happens about every 20 to 30 minutes.
- I enjoy fishing but I usually fish light for pan fish so I have never fished for paddlefish.
- I have been in hospital since April, will try again next year.
- I have caught paddlefish in the past as far down as Kerr lock. We released all of the fish.
- I have never had a paddlefish permit. I do have a lifetime hunting license only. Thanks.
- I just fish for crappie and bass! People need to leave the paddlefish alone!
- I live off the Arkansas river and spend lots of time on the river when Kaw lake is shut. I have found two dead tagged paddlefish that got stuck in low water once the dam was shut off. When the dam gets shut off the paddlefish (spoonbill) struggle to make it into deeper water to survive. I usually round them up and get them into deeper water. I don't catch or kill this type of fish. Thanks.
- I may of gotten a permit but I assure you it wasn't free nothing is free when you pay for a license.
- I might try to fish for paddlefish in the future.
- I never gone paddlefishing. I fish for catfish only.
- I personally don't fish for paddlefish, but for those who do, I'm glad they enjoy it.
- I think your whole program sucks! All you care about is the revenue from the eggs! And the people get nothing in return!
- I would be interested in learning more about paddlefish rules and regulations. Thanks!
- I would be very pleased if you could send me a chart showing all the Oklahoma game fish. Been in the state 10 years and never seen one.
- I would like to fish for paddlefish someday when I get time. It's good to know you have a program.
- I would like to see paddlefish left alone for two years then every other year.
- It's too bad if so limited time for fishing paddlefish. I'm working until 8 pm and can't get to fishing.
- It's a great program and the fish if processed right is good eating.
- Need more crappie, white bass, and catfish.
- Never did paddle fishing. All I do is catfish and bass.
- Never did paddlefish, don't know anything about.
- Never fished for paddlefish. (2 respondents)
- Never heard of them until I moved here from Kansas. Didn't find time.
- Never tried, but like to.
- No equipment for it or would.
- Note: got permit in case I decided to fish for spoonbill.
- Note: not sure if paddlefishing is different from other types-just use bait, etc.
- Once you caught one, get boring. Thank you!
- Please outlaw paddlefish fishing in this state. We need to keep some for our kids and their kids. So please closed this fishing for a few years about 10 years so they can rebuild the stock already in the waters now, before we lose it all soon.
- Program is fine. Some fishing should be fun for everyone.
- Send me something free.
- Thank you for the free paddlefish permit.
- The permit came with my fishing license.
- There was too much wind, rain, and cold day on the weekends. Water was running too fast, not safe.
- To snag a fish is cruel.
- Um it's OK I guess but I would prefer to process the carcass myself due to the red meat on the fish -it's nasty.

- Unable to fish yet, had a heart attack and other problems and had surgery. Hopefully soon.
- Was told it came with fishing license.
- We snagged two paddlefish on jug lines at Ft Gibson. We released them alive and unharmed. We would like to fish for them but we cannot cook them and make them taste good. We don't know how to clean the fish properly.
- When I purchased my combo license the paddlefish permit was added because I purchased a trout stamp.
- White bass only.
- Why is it that I see paddlefish clearing water (jumping in the air) on Grand Lake?
- Would like to learn more about the sport. Such as how to fish for them and how to prepare a meal or what do they taste like?
- Would love to try!
- Years ago I fished for them for their shark like meat. Would one day like to try it again. But what I really would like to see is more TV shows about them on OETA or Discovery Channel to know and learn more about them.
- You waste money by sending out a card saying you're sending out a survey. You waste more by sending them to anglers that have no history of taking paddlefish.
- I would volunteer if you need me. I am a biology teacher.
- [Angler] deceased as of 3-14-10.

**Comments from permit holders who did not fish for paddlefish and did not answer question about intent to get permit:**

- Beautiful lake.
- Beautiful.
- Didn't know it came with fishing permit.
- Didn't realize I received a free permit.
- Don't fish that.
- Don't know anything about paddlefish.
- Got the permit but never fished.
- Haven't fished paddlefish in four years 1992-2006. You make it no fun! We used to love fishing and eating.
- Haven't fished yet in 2010.
- Having to get a separate stamp for paddlefish seems to be a little redundant. Do appreciate the Department effort to manage the resource.
- I am an avid catfish fisherman only.
- I did intend to but never got a chance.
- I did not know I had a free paddlefish permit or I would have fished for them.
- I didn't know you had to have a special permit. I wanted to be legal if I did catch one.
- I do not paddlefish at all.
- I do not support this program. It's illegal for an individual to sell wildlife, it should be for the resource agency responsible for wildlife protection.
- I don't fish for paddlefish.
- I don't fish that.
- I get a permit every year because the paddlefish get tangled in my trot line for catfish. I tag them as the law requires and clean them myself and give the meat away. I consider them a nuisance and could care less if they disappeared from the face of this earth.
- I got it just in case I wanted to go.
- I have not finished for paddlefish before. Thanks.
- I have property in Oklahoma that I pay taxes on to Oklahoma, I have two boats registered in Oklahoma. Why should I have to pay so much for fishing license (out of state) I'm 65 and should not pay anything at all.
- I like catch and release only enjoy the fight, don't care for how sore I get. Don't care for the meat. Thank you for doing more for our paddlefish.
- In a time of extreme economic distress, this seems a colossal waste of resources when we all know many paddlefish anglers do not even get a license. Besides 99% don't care.
- It was flooded.
- It's cool. I wish Kansas took care of the lakes like Oklahoma.
- Never tried. Can you give me a list to go paddlefish-all places?

- No not in four years you make it no fun. We (my husband and I) used to love fishing and eating these (polyodon spathula) but you flood where we fish at low water at Lake Hudson and you've got way too many rules and regulations. We quit for good! Maybe they'll get big again.
- No not in four years, but we used to at low water at Lake Hudson. Enjoy it tremendously but you flood low water dam when they're swimming up river to spawn and you've got way too many rules and regulations please ease up a little. We never took more than we could eat.
- Not paddlefish fisherman.
- Not yet.
- Thank you, I fully intended to catch a paddlefish, but did not have the time to go fishing. Thanks for the opportunity.
- Thanks for your support.
- Too much work for me.
- Very good. Good to see what you're doing with the state of Kansas to help paddlefish in our lakes?
- Would like to keep paddlefish eyes for my own use.

**Comments from permit holders who did fish for paddlefish:**

- \$1 million or more made in eggs. What was total cost of overhead? Sounds good until overhead was figured in.
- 45 min is what I drive for paddlefishing and to only be able to keep one isn't hardly worth the drive.
- 50 lb min and no giant hooks.
- 6th year to fish down there and will keep coming back. We love that you clean the paddlefish for us.
- A great program.
- A map of all places that can be paddlefished. Thanks for the enjoyment of being able to paddlefish. And free permits. God bless.
- Absolutely love the processing center. Thanks Oklahoma.
- Add low water and 412 bridge to the fishing reports. Add paddlefish to every lake report, I always find out by the word of mouth and not from the fishing reports.
- Agree with the catch/release days and look forward to seeing its rewards and then day changes if possible.
- All good.
- Allow more fish per day. Some people only get to go one or two days per year.
- Although I did not catch any fish, my husband did and we both really like the center's operation. We wish they were open one more hour in the evening.
- Although I didn't catch a paddlefish this year, I have used the PRPC at Twin Bridges and think it's extremely beneficial and they do a fantastic job.
- Amazing!!! The processing center saves a lot of time - that was a great idea!!!
- Annual trip. Look forward to it every year. From out of state.
- Answers for questions two and three are the same trip. Chouteau Bend area is Neosho River to me.
- Appreciate the cleaning station. Reinstate fishing for paddlefish on Friday or Monday-one extra day would make a big difference for people that drove eight hours to fish. This will hurt your local business when we go to a different state.
- As a family tradition for over 35 years. Family from 12 states meet every year. From now on we will be fishing the James River in Missouri from now on starting next year.
- As a first time paddlefishing experience for me I was very satisfied and happy with the fish we got.
- As an out of state angler the research/processing center is a bonus, but also think that only keeping one fish a day compared to the cost of travel is very expensive.
- As high as gas is it's not worth the trip for one fish.
- Awesome program. Great job to the Fish and Wildlife Dept.
- Awesome!!!
- Because of a time factor, we didn't use the center. Next year I plan to use the processing center.
- Being able to have two fish in possession at one time, caught on two diff days. I have a two hour drive to try to snag for paddlefish. Thanks for all of the effort!
- Can I please get an overall report of the info collected from this survey.
- Can we just fish.
- Can't keep one on Friday and Monday. Sucks. Can't use gaff to hook fish in mouth to land. Have been spoonbiling since 1959 – Oceola, MO. I process my own paddlefish. Don't need you to do it for me.

- Catch and release days should be during the week and not on Friday.
- Catch and release on Friday is not good.
- Catch/ release doesn't seem like a good idea (hurts fish!). Closing Spring River was a great idea. Thanks.
- Catch/release should only be on Mondays.
- Caught several good paddlefish out of the Salt Fork. Saw two fish caught that weighed 100+ lbs. Thanks!
- Caught three fish on a Friday so I didn't get to keep any fish this year but still enjoyed it just the same.
- Caught two while bass fishing below Oologah dam, both around 20 pounds, they were released unharmed.
- Change the law on paddlefish on weekends.
- Change your catch/release days, so they don't start right before the weekend and end right after the weekend. Monday and Fridays suck for people from out of state!
- Charge for the paddlefish permit instead of selling eggs.
- Clean up the lake water in general-too much pollution going into the lake-our boat was greasy and slimy.
- Close too early (day time) especially Sunday. Closed too early (season) run was late and run lasted several days after close.
- Closing the Spring River and catch and release Monday and Friday is a bad idea
- Continue to share the data learned from this research. I spoke with some locals who were skeptical of your research. By sharing your findings you may convince them as to the value of it.
- Could stay a little later than 6:30. Does not make since to hook and injure one if can't keep it.
- Cut back on the out of state paddlefishermen.
- Did not catch one. Fished mostly for white bass-paddlefish on the side. Last year used processing center, experience A+, was very satisfied.
- Did not like fishing Neosho River, I have always fished Spring River, Friday and Monday are days off, so I couldn't keep my spoonbill, not a very good system for my schedule (on the catch and release days).
- Did not use processing center.
- Did shutting off the Spring River work? How many fish were you down from 2009 to 2010?
- Didn't know needed one until this year! The permit for paddlefish needs to remain free.
- Didn't like not being able to keep a paddlefish on Friday. That's my only day off.
- Didn't like the catch/release only on Friday, my only day off. The cleaning station is okay but when they are busy you will be there a while - too many fish for one station.
- Disappointed about the catch/release days, but if that is what is necessary to maintain the population, do what needs to be done.
- Disappointed the Spring River was closed this year.
- Do a good job cleaning fish, but need to take a bit more red off fish before vacuum in plastic bag.
- Do not like catch/release on Monday/Friday if you take a trip to Oklahoma to fish you usually go on Friday so that hurts the business.
- Do not like the additional restrictions like no fish to be kept on Friday plus the 24hour pick-up causes problems since you are closed on Friday, when dropped off on Thursday. Personnel unable to pick up the fillet on Friday since you were closed. He said he was there all day Friday but ropes blocked the driveway. How are we to know? Please do not limit access to the south bank at Conner's Bridge!!
- Do not like the catch/release program.
- Do whatever it takes to maintain the fish population. Don't let paddlefish get fished out or numbers drop too low. Close the season if necessary!!
- Do you have an answer for why the run was so short this year? We went about the middle of April. The next week some of the guys went back everybody told them the run was over. They caught no fish. That's not good. I will retire in 9-26-11 and would like to get into your fish cleaning program. Please let me know.
- Doing a good job.
- Doing a great job, keep it up!!
- Don't fish for what you won't eat. I enjoy ok. Fishing for food could use more keepers. Overall – exciting! Good job OK!
- Don't know about the program, but I like to eat paddlefish.
- Don't like the catch and release program. I think you need to keep your first fish of the day. Thank you.
- Don't like the catch and release, I think the mortality rate is high. Catch one; when its consumed I go catch another.
- Don't like the cut off at 10 p.m. because most of us don't get off until late and is also very hot.
- Don't like the Monday/Friday thing and the one a day per person. Like it better when there was three mo when it was three per person. My kids love eating paddlefish.

- Don't like the no paddlefishing from 10 p.m. to 6 a.m. Too hot during the day. Would like to fish at night because its cooler, like to see that changed to lower water bridge.
- Don't like the split fishing days.
- Don't take the gaff hook away. Take the lines to one. Was poor.
- Don't use the process center.
- Don't mind paying for a tag to make sure paddlefish are plentiful.
- Due to the very profitable processing of paddle fish eggs it would be nice to have free license or drawings for anglers.
- Enforce usage of proper trash disposal at all dams; it's getting out of hand. Stop people from killing gar, carp, buffalo and drum, just to leave them rot in the sun and ruin fishing experience for everyone else. Spent line has to stop going into our rivers. Below Hudson is crazy there's probably millions of the line unspooled and thrown into the water.
- Enjoy coming every year very good family fun. Catch/release good program.
- Enjoy fishing in OK!
- Enjoy it very much-keep up the good work!!
- Enjoy the experience. Keep up the good work.
- Enjoyable experience!
- Excellent program, excellent biologist.
- Excellent! (3 respondents)
- Excellent.
- Excellent. My son and I, first time. We will return to Twin Lakes camp ground next year and bring my brother from Nebraska.
- Extended evening hours at the RPC-didn't get the fish there early enough and had to clean myself one night.
- Fantastic program-keep up the great work so that we can continue to enjoy the technique and sport of harvesting large paddlefish.
- First time ever fishing for paddlefish. Didn't catch any but had fun learning, will try again.
- First time fishing paddlefish - awesome experience.
- First time was fun but didn't catch one at all. Fished three days around Miami Park and Conner Bridge.
- Fish cleaning facilities at park in Miami Oklahoma are not sanitary or safe! Millions of flies and fish guts. The facility needs attention immediately. If it wasn't for the processing center there would be a number of anglers and friends who would not return.
- Fish that get away seem more harmful with barbless hooks. Seems more get away. Are they getting tore up. I don't understand and [you are] punishing the pole fisherman because commercial using the eggs.
- Fish was given to my kids, friends, and people that needed something to eat. Thanks.
- Fish were not running, so didn't catch any-never got to go back fishing.
- Fishing rules ok. Low water dam at Kerr dam bank are very trashy. I know, not your job. Pass it on.
- For many years we always come to Oklahoma for a weekend and Monday fishing. The new catch and release on Monday and Friday caused us to stay an extra day.
- Friday and Monday were not good days for catch/release - couldn't take a long weekend for snagging!
- Friday you should be able to fish. Main time you fish.
- Ft. Gibson needs a cleaning station above hwy 412.
- Fun in winter
- Fun, exciting, just hatten [hopping?] if fish are stacked. About wore me out trying to snag one.
- Fun. (2 respondents)
- Fun. Thank you!
- Game wardens are very rude, unprofessional, we all were treated like common criminals every time I was around them. Very poor representation. Keith Green did a good job.
- Get rid of time limit of 10 p.m. at low water dam and Kerr dam. Also have Friday and Saturday as normal catch and keep days. 2009 my kids and I would fish from dark until daylight Friday and Saturday night. Went at least four weeks in a row. 2010 - went two times all year due to regulation change!
- Get the park permit back at Miami Park and you wouldn't have so many violators. That's a fact.
- Getting better.
- Glad to see the egg hunting foreigners gone this year. They were getting out of control last couple.
- Go back to three per day and no release.

- Going again. Haven't had that much fun in a long time.
- Good job keeping limits down. We only fish these for fun and only keep ones that may be a record.
- Good job, Oklahoma. We love your paddlefishing.
- Good job.
- Good job. I hope it's successful.
- Good job. My son-in-law caught a tagged fish.
- Good program. (3 respondents)
- Good program. Need to relax the tag your fish at river side. Tickets for carrying your fish to the truck is ridiculous!
- Good work in keeping paddlefish in Oklahoma's river systems.
- Good.
- Good-one small male, let my boy reel it in. Keep up good work! Notice they are already jumping in the lake.
- Great eating fish, fun to catch.
- Great experience!
- Great experience, like to do it again real soon.
- Great fun, would like to eat one. Had both 15 lb and 35 lb in mid-March and was told about the permit after catching one and release it.
- Great job !!! Need more game rangers to stop illegal fishing.
- Great job of managing so that my grandchildren can someday enjoy some of what I have been blessed with.
- Great job Oklahoma you have a great resource.
- Great job! Keep up the great work.
- Great opportunity! Thanks!!
- Great program and I can't wait for it to keep being improved.
- Great program except wouldn't mind being able to keep more than one fish a day because its fishing not catching. Some days you don't catch any and that gets expensive. Thank you and keep up the good work.
- Great program! Everyone I have come into contact with that work for the Dept of Wildlife are wonderful people.
- Great program!! Keep it up!
- Great program, keep up the good work. (2 respondents)
- Great program, love it.
- Great program. (4 respondents)
- Great program. I have friends in Kansas that love to come to Grand for the paddlefish.
- Great program. Keep up the good work. I hope Spring River will be available to fish for paddlefish next year above Twin Bridges.
- Great program. Restrict more catch/release days if needed to keep healthy population.
- Great program-keep it up.
- Great service. Very friendly staff, enjoyable season!
- Great sport Okies love it!
- Great sport-let's keep it coming. Promote more catch and release.
- Great time, would recommend to anyone.
- Great time.
- Great year for paddlefishing and look forward to doing it many more years.
- Great year. Hope to see you next year.
- Great!
- Great! Everyone fisherman-woman should try this! Thanks again.
- Great! If you changed to all catch/release at Texoma-Red River- would be okay with me and others to help keep numbers up.
- Great.
- Great. Been doing it for 15 years. No plan to quit, thanks.
- Had a blast!!!
- Had a wonderful fishing trip.
- Had fun, but no luck.
- Had too much water release on days I could go fishing-everyone should try paddlefishing at least once.
- Hang in there so there will always be fish!
- Having a longer area on dam. Walkway on dam over crowded for fishing.

- Heard that processing plant might be moved-would like it to remain at Twin Bridges.
- Hope the research on the paddlefish keeps the quality of fishing up for many years to come. Not a big fan of Monday catch and release.
- Hope to see the program continue including the processing center-keep up the good work-thank you.
- Hope to see you next year. Thanks.
- Hope you never close, I enjoy visiting with you guys also! Great job! Everything is great, two things I wish would change. Maybe close later, it's hard to get a fish from Conners or Miami by 7 p.m., still go fishing maybe open later like maybe even two shifts, and could you please put another day besides Friday for Catch and Release. Very important yes, but weekends for out-of-states is too [?!] Including Friday.
- Hope you open fishing in the Spring River again.
- Hours of operation at center should be loner after daylight savings time change has occurred.
- How about using some of the money made to upgrade the boat ramp at the number 10 bridge on Spring River, especially if you all plan to open Spring River back up in the future to snagging. A lot of out of state money contributes to the paddlefish program, in which they all or most also white bass fish.
- How much money did Oklahoma make by selling all the eggs?
- Hung up three times in a row and then quit fishing.
- Husband did fish two days and brought home one fish. I was not so fortunate to catch one.
- I "liked" paddlefishing up the Spring River. Why is it now closed?
- I am 62 on disability a free paddlefish permit would be great. Thank you.
- I am a bad fisher because I went several times and did no good!
- I am glad that someone is taking an interest in protecting our natural resources. Thank you.
- I am glad we have this program. I have been fishing for paddlefish for 40 years and hope my great grandchildren can say the same in the future. Great job!!
- I am happy that the men there are very good at what they do. I thank all the men there for cleaning my fish.
- I am real impressed with the processing center being here. I hope to start using the center in future fishing trips. Thank you.
- I am tired of going to Ft Gibson dam to go paddlefishing and losing all my gear because of a bunch of people is getting drunk at the dam and throwing over everyone's line. P.S. Thank you.
- I am tired of seeing bow fishermen releasing spoonbill that will just die from them shooting them at Hudson Dam and low water dam and not getting fined or arrested for such a regulation violation. Also, in regulations; need clarification on where you can snag for spoonbill from floodgate outlet at Little Blue State Park to where highline crossing is at.
- I am very disappointed in the Oklahoma Wildlife Department for their cavalier approach to what has been a traditional outing for my family. I you would like to contact me I will elaborate on my dissatisfaction for I have fished in Oklahoma most of my life.
- I am very impressed with the service I have had with the paddlefish center over the last several years that I've used it. Very professional and well organized. Thanks!
- I am very pleased with any program that will protect any fish or game. I released 30 nice spoonbill up to 57 pounds.
- I am very pleased with the efforts of the ODWC and Warden Green in particular-I wish Green could come back to Craig County to stop the deer poachers and road hunters.
- I appreciate and completely support this program. As a lifetime sportsman I realize and understand the positive effects of research and associated rules and regs, I try to impress this on fellow sportsman that it greatly improves our wildlife programs. Thanks.
- I believe it's very important to keep this experience alive for future generations to enjoy. Last year was my second year to fish for paddlefish and I truly enjoy just spending time with friends and family.
- I believe that catch and release should be outlawed due to the nature of how you catch paddlefish. Sometimes they are mortally wounded during the process. Therefore if you don't want any fish kept on Monday's or Friday's don't allow any snagging on those days.
- I believe the catch/release days will have a positive impact on the paddlefish population as well as younger angler's attitudes toward the "release for the future" campaign.
- I believe the paddlefish processing center has hurt the fishing in Grand Lake. I have not caught as big of fish since it opened. I feel it promotes killing our breeder female fish.
- I believe there should be a length limit that cannot be kept but smaller fish can be kept. Not close off Spring River.

- I believe we could of made the state and cities more money by having catch/release on Monday and Tuesday because of people traveling from out of state to fish here. Thank you.
- I believe we need more rangers and wardens to be more stern about the rules. Too many non-license holders.
- I believe you are a little wrong in not letting out of staters bring home a complete female fish, my money, my lie [life? line?], my time, my fish – am I wrong?
- I bring 16 people to OK every year for paddlefishing. This year because of the Monday and Friday rule of no fishing only four came. Go back to every day.
- I caught a 60 lb. female first cast, lots of fun.
- I caught a paddlefish last year (2009) and used the research center. I was a great experience.
- I caught and released 27 paddlefish in the upper end of Lake Hudson. Thank you for researching and monitoring the population of this unique fish. I tried to fish at the Miami Park but lost too many hooks and sinkers on the many snags in the river. “Catch and release” days are a good idea, regardless of the guides opposition.
- I caught no fish of any kind.
- I caught no fish, paddlefish or otherwise, but I enjoyed the experience. My husband fished and caught one which was processed at the center. It was very helpful. We have eaten most of it. We will probably fish again next year.
- I did not keep any fish! Nor would I.
- I did not like the days of the catch and release. When you have to travel more than two hours it’s nice to have more days around the weekend.
- I didn’t like the catch/release because it seems like it harms the fish more than biting fish does. Would rather catch and keep my limit for that reason.
- I didn’t like Friday being one of catch and release days because it’s a popular fishing day that disrupts my fishing adventures.
- I didn’t like the new rule that you couldn’t snag north of the 412 bridge to Hudson dam between 10 and 6. I usually had my best luck against the Hudson Dam at night and since you can’t snag within a 1000 yards of the dam before 10, I didn’t have a good experience this year. Thanks.
- I disagree with shutting down Spring River. That’s where I have had my best days, I think a different approach should be taken to limit fish being kept. If this rule continues I will not fish in Oklahoma for paddlefish.
- I do look forward to using the processing center if and when I catch a spoonbill but due to my age I need help in landing any fish I catch. So I need someone to go with me to help land any fish I catch and they have to have a license. I wish there was a center at the Disney/Langly area.
- I do not believe in catch and releasing. I see more fish dying from this practice. I believe in catch one keep one.
- I do not care for the catch and release program. If we are hurting the population of fish maybe you need to shorten the season. Open season only in March and April, no catch and release.
- I do not like the cut-off at 10:00p.m. because most of us do not get off till late and is also very hot so snagging at night is better and the Monday and Friday thing is not good either and with as many accidents on lake every year due to them jumping out of water, means we need more catch limit each day.
- I do not want to mislead. I have fished for paddlefish but have never hooked one.
- I don’t catch for sport I catch to eat. Paddlefish is good to eat and provides a lot of meat off one fish.
- I don’t feel that Friday should be a catch and release day. Most of the people I fish with can only go weekends and Fridays, but what’s the point if you can’t take home fish to eat? Take one of the two days away.
- I don’t fish for paddlefish but sometimes they get hung up in my jugs.
- I don’t fish for paddlefish on catch/release days because sometimes the stress kills the fish anyway.
- I don’t keep paddlefish. Catch them on my trout line and release them. Don’t even pull out of the water.
- I don’t like that there is no more night fishing!! It was the best time to go out and catch the big one.
- I don’t think the state should be involved in selling fish commercially if I as a license holder can’t do the same.
- I don’t think you should not close Spring River side of Twin Bridges. The paddlefish down in the lake looks like porpoises jumping all over.
- I don’t like when people clean fish and throw remains on bank or in the water at low water dam below Hudson. It make a big stinking mess.

- I enjoy fishing for paddlefish. I think that the new laws are great and helping. I will do my best to keep ours fished and live and well, cause I am true Oklahoma outdoorsmen. Thank you.
- I enjoy paddlefishing and hope that we won't be charged for the permit in the future.
- I enjoy sport paddlefishing on occasion. I think it's a good thing our Wildlife Department is able to generate revenue for their Department using this program.
- I enjoy the opportunity to come down experience a different way of fishing during the winter. Usually come in February. Congratulations on the success of your program.
- I enjoyed paddlefishing very much. We seem to have a good program.
- I feel with the number of paddlefish by the cable below Grand River Dam that the fish caught there shouldn't be kept but just below the bridge by the golf course.
- I felt like Brent Gordon and his crew of biologist should be given a huge "Job well done!"
- I finished the survey based on years past even though I did not use the process center this year.
- I fish for catfish at the Ft. Gibson Dam off the wall. I am usually on the water around 200 days a year. But when the catfish aren't biting I'll rig up for paddlefish. The only paddlefish that I keep are the ones that are belly hooked because I believe (not that I am an expert) that released belly hooked paddlefish die. I think along with the new laws and rules on paddlefish that any belly hooked paddlefish should be your limit for the day. More research may need to be done. But anyone snagging paddlefish and catching and releasing 15 to 20 a day is bound to belly hook at least one. Thanks for your concern.
- I fish for food, catch/release stupid! If I catch a record fish I have to release it!
- I fish for paddlefish mainly below Kaw lake and they hardly ever let enough water out to allow the fish to get that far until the spawn is over!!!!
- I fish on the Osage River in Missouri and the fish on average are 10 to 20 pounds heavier and I can keep two a day. I feel one a day in Oklahoma is not adequate fishing, to drive all the way just for one fish. I also am wondering why we cannot transport eggs across state lines. I love to eat them and can't now unless I fish in Missouri. Also for mudd streek the fish here in Missouri are cleaner looking meats than in OK. Why? Both places are muddy. By cleaner, I mean the fish in OK are a yellowish colored meat and ours are whitish red. This 2010 season is the first season in over seven years I have fished in OK, but it was a must because of no water in MO and season ended. I had my licenses bought or I may not have snagged at all. I feel that to make seasons on snagging spoonbill would greatly help the population and size of fish. Billing is fun and enjoyable but the other reason I am hesitant to snag in Miami Park is due to the snags in the river. Seven years ago I lost \$150 worth of hooks and sinkers, but yet this year the same old snags are still there and we are all ticked off about it. I bought a park permit at the time and was told it was to support parks and river upgrading and cleaning the river. What happened to cleaning the river? I will come back and even purchase a license if the river was cleaned out!!! If Conservation wants money, all ya have to do it collect all the lead out of the rivers!!! Bet there's enough in there to buy a new patrol boat for you all. I know I have lost over a lifetime well over \$1,000 worth!!! But in all seriousness, please clean the river out. All of us anglers would have a better time. Thank you for your time.
- I give most of the fish away to the old ones around me so they can enjoy it to, thanks.
- I greatly enjoy the paddlefish resource that we have in our state. For me it's more about the sport of catching them than eating them. I want to thank you for helping maintain this valuable Oklahoma resource.
- I had a great time! This was my first year to paddlefish. I plan to go every year!!! Great time!! I will have my sons-in-law with me next year. Thank you.
- I have always loved the snagging. As I am older it's still good exercise. The only draw backs is too many fish getting hooked many times and infection setting in. Also, the state shouldn't get too greedy for the eggs dollars. Thanks you.
- I have been fishing with my family every year at Twin Bridges since I was three years old and next year will be going to James River in Missouri because of limited fishing areas, limits on paddlefish and catfish and type of people in park has severely changed.
- I have fished for paddlefish three years. We have always had a real good time. We really appreciate all the fine work and efforts the Wildlife Dept. puts into this program. Thanks.
- I have fished in Oklahoma for about 40 years. It has been fun, you almost have to be a lawyer to read new laws each year. I do not go as much now.
- I have fished in Oklahoma over 50 years (I live in MO) I go to Twin Bridges and fish Neosho and Spring River for fish to eat.
- I have high hopes of ensuring its maintain population of paddlefish for future generations to enjoy.
- I have paddlefishing a long time, 20 years. Numbers are good, size is small. Need more regulations on snagging. ODWC is doing a good job.

- I have to drive a very long way to fish for paddlefish and the possession limit are good but limit me to enjoying the trip by limit my consumption. I would like to be able to start next day after midnight and have two in possession at end second day.
- I have to drive so far just to catch one fish it aggravates because you always have idiots to screw things up. It's sad that law abiding citizens have to always pay for someone else's stupidity. Have a good day.
- I hope the information you get will help bring back the 100 to 140lb fish that was caught at Miami City Park in the late 50's and 60's. Thank you.
- I hope the permit is always free or free for lifetime license users.
- I know the center is doing research to bring back big fish. Also bringing money to Oklahoma wildlife. Thanks.
- I like it as long as it is free.
- I like it but feel limit should be raised to two fish.
- I like program. Water too low this year. Maybe next year. Thank you for the privilege.
- I like the catch and release days.
- I like the catch/release of the paddlefish and I would probably use the cleaning or processing center if it were closer to Miami Park. I think a lot of people would use them if the processing center was closer.
- I like the program because you can have as much fun paddlefishing as you like.
- I like the program. They do a good job and I don't have to dispose of the waste.
- I like to keep more paddlefish.
- I like to keep my eggs, for fishing.
- I like what you are doing protecting the paddlefish. I want my grandchildren to enjoy these fish.
- I live in western Oklahoma so I don't get to go paddlefishing four or five days a year. We usually only keep what we eat in camp, so Monday and Friday are NO EAT DAYS!!!
- I live on Grand Lake and fish most all the time. So snagging is really important to me and my friends.
- I lived in California for two years, sturgeon fishing needs your program. I was happy to come back home to have the chance to fish for the paddlefish (great job). Thank you.
- I look forward to coming back for many years. It's a great program you have and managed well.
- I love catching big fish like I did six to ten years ago.
- I love catching spoonbill, but I don't like catch/release days. I feel such things should be at my discretion. Thank you.
- I love it !!! Can't wait for next season.
- I love it. Thanks so much.
- I love the ODWC, a flagship of modern conservation. Oklahoma is blessed to have such a fine organization.
- I love the paddlefish center!
- I love the program it makes fishing for paddlefish a much more enjoyable trip for me and my family.
- I love to eat the eggs and use for bait. I think the amount of eggs you can keep is too low.
- I love what the state is doing with the paddlefish program, it insures a good time for years to come.
- I loved the experience of big fish inland!
- I only fished for spoonbills one day on the Grand River in Prior area. I never felt a fish. Though all else caught fish.
- I only got to paddlefish one afternoon below Ft Gibson dam, caught nothing, didn't have a chance to try again.
- I personally believe we should put a three year ban on keeping paddlefish. Maybe that will increase the size and population of the fish. I've been snagging since I could hold a surf rod. Before that, my dad used to roll us down the wall at Ft. Gibson dam in a radio flyer wagon. It kinda became a family tradition. Back then it was nothing to see seven or eight guys hooked onto a paddlefish over 60 lbs at one time. Nowadays everybody thinks they have a huge fish if its 45 lbs. I think the Monday and Friday catch and release days are a good idea, but I think it should be the other way around more like only two days that you can keep paddlefish I also think they should outlaw bowfishing for paddlefish. I've seen way to many guys shoot a decent size paddlefish and throw them back. The chances of that fish surviving are slim to none. Maybe more laws against paddlefishing will help increase the size and population. Then future generation will get to join in on the fun of catching spoonbill too.
- I personally like the Monday-Friday of release only, but several clients would not book on those days and some like to fish on Fridays w/guide then go back on Saturday and Sunday.
- I really enjoy Oklahoma paddlefishing. The fish do seem to be getting smaller but size is not everything. ODWC is doing a great job!!!

- I really enjoy spoonbiling. I think everyone should try it, I believe there are enough rules to protect the fish, we don't need any more.
- I really like the paddlefish program. Works great for us and we have more time to do other fishing.
- I snagged my first spoon this year! It was an awesome experience.
- I think if you get one paddlefish you should keep it I caught one and it looked sick because of the hook holes.
- I think it a great deal.
- I think it has been an excellent program. It has brought out very valuable information that has helped protect paddlefish and insure this resource is available for future generations.
- I think it is great.
- I think it is great. My son and boyfriend used research center. I will use it in the future.
- I think it needs to stop for a little while so some paddlefish can get bigger, so it's more of a job to get them in if they were bigger.
- I think it's a great program and I'm glad about the rules because it holds fish for anglers in the years to come.
- I think it's a great program.
- I think it's a great thing to have the processing center. My only complaint is I wish there were better cleaning stations for cleaning fish. I am from Nebraska, so having the fish cleaned up is important to me. If the processing center is closed I have to go to the park at Miami. I'm usually with seven to ten friends and if we come with fish and other people are there it can take a long time to get fish cleaned. If we can we try to make the processing center. I'm not trying to be a whiner because we always have a great experience. This was our 6<sup>th</sup> trip. Thank you for all of the fun.
- I think it's good that you want the population of spoonbill to grow maybe weigh more and bigger fish.
- I think it's important to have restrictions to help bring bigger paddlefish numbers up.
- I think it's not fair that we can't keep spoonbills on Mondays and Fridays!
- I think it's pretty good. Look forward to catch another fish or two next year. I'm a rookie at it.
- I think keeping the Spring River a sanctuary is going to be very good. The processing center is great but I don't like the disappearance of the other cleaning stations. Due to time of day we do clean some paddlefish ourselves and Friday I fished for other species with nowhere to clean them.
- I think program is very beneficial and will help keep paddlefishing intact for the future. Thank you for the great job you are doing.
- I think some of the rules that have been applied to paddlefishing have become redundant and stupid. My opinion. One fish per day, barbless hooks, catch and release days, what's next we can't use a pole?
- I think that it would be better to make catch/release on Monday, Tuesday, Wednesday, and open it up Thursday through Sunday. People travel from out of state and making Friday catch and release kills their trip.
- I think that these fish do not need to be caught so many times. Also OK trapping regulations are a joke! And non-res trapping permits are overpriced. You need to rethink a lot of the trapping regs for the sake of damage to landowners and wildlife lost to predation!!
- I think the catch/release days are a joke. Being an avid fisherman, what is the point of catch/release. I think the state should incorporate a slot limit if the paddlefish population is on the decline. Thank you.
- I think the Friday/Monday catch and release days are bad because I live a long ways from good fishing waters and would like to fish three or four days around the weekends.
- I think the heavy rains threw off the normal paddlefish runs this year. We didn't hook one at all at our normal spots.
- I think the new restrictions are a good idea! The cleaning station at Miami park could be improved.
- I think the processing center is a great thing and the people was very courteous and great to try to help.
- I think the program is very good. I've fished a lot of places and this is the best program I have seen.
- I think the program is very good-also it has improved over the two years-would like more info-how long it takes for the fish to mature and get to 40 lbs.
- I think the program is working very well for every angler in the state.
- I think the programs great-very important for future fishing.
- I think the regulations about tagging fish with permit number is a little ridiculous with all the regulations. I am scared of getting in trouble by accident. It seems a lot to keep up with.
- I think the rule of no snagging above 412 bridge after 10 p.m. is wrong, basically cuts me off from snagging for paddlefish altogether.

- I think the three/day limit needs to come back. I know me and my family will snag 10 maybe 15 fish before we would keep a big fish turning back those 30 and 35 pound fish. I remember those three a day you would keep those fish.
- I think there needs to be a weight limit so paddlefish species can grow to a bigger weight. Too many small fish.
- I think there numbers are down compared to last two years.
- I think this is one of the best programs for fishing there is. The whole experience.
- I think what you are doing is great! We just got there too late.
- I think you need to make it illegal to use paddlefish eggs to fish with. I saw at least 10 people who caught at least four to five fish each, take their eggs out and turn the fish back in the water just so they could catch some blue cat. P.S. I do love fishing for paddlefish but I miss catching 80 lbs and 90 lbs fish. Try to do something about this. My kids will be big enough to fish someday.
- I think you running a great program down there and hope to enjoy fishing in Oklahoma for many years.
- I think you should be able to keep paddlefish Friday, Saturday, Sunday and Monday.
- I think you should have catch and release like on Monday and Thursday instead of Friday.
- I think your changes are very beneficial and I think it will help improve the overall part of it.
- I think your program and processing center are a great benefit for fisherman, thank you.
- I thoroughly enjoyed the experience. It was my first time to fish for paddlefish.
- I thought that about catching paddlefish a lot, but when I tried it hurt me too much. However, I will definitely try again.
- I took two friends with me this year - both of them got one each. One was 20 pounds and one was 31 pounds. They both used paddlefish research. I did not get one. Had a lot of fun.
- I understand the need to protect the paddlefish, but I would've fished more this year if Monday/Friday weren't catch and release days. I believe that is a rule that you need to review and discontinue.
- I understand the new changes to the program to keep fishing at its best.
- I use them for bait. They taste like crap.
- I use to fish Kaw and Grand below the dam eight to ten days when the fish were running. It's a one or four hour drive one way. You could keep three fish each day and build up a good supply of fish. However, you didn't catch fish every day but you knew tomorrow you might catch three and your weekend wasn't a total loss. We would try to get off work Fri, Sat, Sun or Sat, Sun, Mon when we went fishing. Now it is not worth the money to go to Grand. We caught more paddlefish at Grand in one year than I've caught at Kaw in the past ten years of paddlefishing. This year was the first fish in three years. The fun and excitement is gone.
- I want to know the results of all tests and how much money did the state make, how much did the people processing the eggs make. Who decided which person could have control of the raw eggs. What was the reason for closing Spring River? Send all results with all facts – don't hide anything!
- I was disappointed that the Spring River was closed to paddlefish fishing this year.
- I wish I had made it to fish close enough to use the processing center maybe another alternate site would be more useful if by Hudson or Grand Lakes! Thanks for the opportunity to participate as a female angler.
- I wish it was like 20 years ago. Three fish/day. When you drive 70 mi one way, would be nice to keep three fish a day not just one. Missouri's must be better, we can keep two a day.
- I wish we would go back to keeping the first three fish we catch or even two. I don't like the Monday-Friday only release days.
- I worry about the sustainability of the paddlefish population in Grand Lake with as much harvest that is going on.
- I would have liked to know the weight and length of my fish when I picked it up.
- I would like more info on the paddlefish research and processing center.
- I would like to have Monday and Friday also to take one.
- I would like to have some eggs for fish bait.
- I would like to keep more because it is too expensive to go there for just one fish a day.
- I would like to know what the survival rate is when you practice catch and release with paddlefish.
- I would like to know where I can bow fish in Oklahoma. It's hard to understand in the regulation book.
- I would like to know why Spring River was closed.
- I would like to see a length limit equal to about 35-40 pound fish before its legal to keep.
- I would like to see a paddlefish center at Ft. Gibson.
- I would like to see a paddlefish research and processing center a little closer to Tulsa! I would like to use a center if there is one closer to me.

- I would like to see more control placed on people fishing from boats up and down Neosho River.
- I would like to see somewhere, web site or bulletin board, to have an update of where the big fish are being caught at, also when are the best times that year to make a trip down to Twin Bridge State Park, when spoonbill are running.
- I would like to see the daily limit increased even if that decreases the seasonal days because of the distance of my drive to get there.
- I would not come to Grand if the processing center wasn't open. I spend about \$2,000.00 a year up there.
- I would rather fish Spring river because it's cleaner and I know where the deep holes are.
- I would use a processing center if it were closer to the areas I fish. Would also appreciate an explanation of new imposed regulations. I have serious concerns about the illicit harvest and sell of paddlefish eggs and would like to see more targeted efforts to halt this activity. I enjoy this fish and the enjoyment and meat it produces. I would like to insure its future for future generations to enjoy. I appreciate the efforts of ODWC to study and regulate the fish but feel that regulations efforts could be better directed towards targeting poachers.
- I'm tired of seeing bow fishermen releasing spoonbill that will just die from them shooting them.
- I'm very sorry I didn't send this in sooner. I only got to go a few times. It's a great sport in catching a paddlefish. I had to have a total knee replacement – hopefully I'll get to go in 2011.
- If the numbers are declining, shut down for a couple of years for re-growth. I come from out of state.
- If you have to get a five day fishing license you should be able to keep five fish or paddlefish.
- I'm glad ODWC is trying to reduce harvest by closing certain days and the Spring River. ODWC should charge \$20 for the out of state paddlefish permits, if they drive all the way from Nebraska or 500 miles away they will pay \$20.
- I'm glad someone is concerned-the sizes were getting smaller, but the quantity was not. I believe your program will bring the size of the fish back.
- I'm not very excited about the Monday and Friday catch and release program.
- I'm very unhappy with the closing of Friday and Monday and the Spring River. One day or the other but not both.
- In my opinion I think the catch/release days are not beneficial to fishing. Reason being the fish is harmed either way if you have a limit of one per day most will catch one and go home instead of injuring fish all day long on Monday and Fridays.
- In my opinion, it's important to pull cord out of fish for better quality of taste.
- Increase limits of kept fish and bring back Friday night for keepers.
- Is it getting better? I love to paddlefish.
- It appears the wardens have turned paddlefishing into a source of revenue. Please don't allow this to get out of hand.
- It had been several years since my last trip. I am impressed with the changes you've made.
- It is a good thing for paddlefishing in our state. Hi Keith.
- It is a very good program for the game and fish to raise some money.
- It is a very good system you have.
- It is great I wouldn't change anything. Me and my boy really enjoy coming to Oklahoma to paddlefish!!
- It is not the out of states keeping too many fish.
- It is okay. Thank you.
- It is very good, keep up the good work. Thanks.
- It is very well run.
- It seemed a lot of fishermen where confused about regulations on stringing and what's exactly legal and what is not legal.
- It seems to be a good program. We enjoy it very much.
- It sucks. I don't know why we have to have a permit if it's free and if you don't have it you get a ticket but if y'all ever do charge us for that permit I think the person's that own a lifetime should be exempt from having a permit, but do like the keep only one fish.
- It upsets me to see illegals fishing and taking advantage of great fishing spots and trashing our waters.
- It was a great experience. Plan on doing it in years to come.
- It was an educational experience. I really enjoyed getting to ask questions at the center. Thanks to all the men at the research center (away from their families) who helped out.
- It was great, keep up the good work.
- It was the worst year I have ever seen as far as snagging goes.

- It was very poor this year.
- It would be nice to be able to continue catch/release fishing after paddlefish has been tagged. For non-residents the fear of going home without a tagged fish exists. This fear can penalize the angler by shortening the duration of the day.
- It's a good program.
- It's a very exciting fun sport. Love to keep fishing paddlefish for years to come.
- It's fun once a year.
- It's very good. Need to open Spring River again. Catch more bigger ones on that river than Neosho.
- It's a great program. I have been very pleased with it. Keith Green is doing a great job.
- It's a great program. I like all uses of this program.
- It's a great thing. I wait all winter for it. The money spent goes to good things.
- It's f-d up! Used to catch more and much larger fish five to ten years ago- research and processing center a joke! Used to fish Fridays and some Mondays – weekends are nuts – too many boats/snaggers – dangerous!
- Its gonna be great for my boys when they grow up!!!
- Its good experience and I enjoy taking new family members to hook their biggest fish what a thrill for them below Oologah Dam is where I go. A lot of fish there!
- It's hard work and fun.
- It's very important to keep paddlefish numbers up for future generations to get the chance to catch one.
- I've been fishing OK for 40 years and I think you are getting too many restrictions on paddlefish. We pay a lot for out of state license.
- I've been snagging for many years. I think the processing center is a great idea for the fisherman and the future of paddlefish. Thank you!
- I've seen too many people that are fishing without license or they are using large nets to catch fish.
- Just wonderful. The research center was great. The people could not of been nicer. What a great program.
- Kaw lake needs to regulate their release amount of water to better support paddlefish anglers.
- Keep station open longer for pick up and cleaning even if it's to weigh and record and not clean after a certain hour on last day of fishing.
- Keep the good work up. Think the processing center is the best thing you've ever done. I love to catch paddlefish.
- Keep the limit to one a day, that is more than enough fish for one person. Would like to see bigger fish in the future.
- Keep the Russian foreigners from stealing and sneaking our eggs out of our state.
- Keep up the good work, fishing is good.
- Keep up the good work, put measures in place to grow bigger fish.
- Keep up the good work. (11 respondents)
- Keep up the good work. Interesting project and it is a change from normal fishing.
- Keep up the good work. Thank you!
- Keep up the wonderful job you are doing. More states need to follow your lead. You should be proud of your state game commission.
- Keith Green (ranger) and his assistants do a great job. Need to remove excess trees above dam in Miami and repair lights on river and put some on the east side of the river. Maybe remove some trees below the park area to allow opportunity for more fishermen. Is there any way of removing brush/trash and sediment (snags immediately below the dam to prevent snags?)
- Keith Green needs to be back in the field, get the bad guys.
- Keith- please keep up the good work!
- Last year I received the wrong fish! (different tag) Smaller fish. Last one to get mine. There was no more fish! Someone else got my fish.
- Let people fish both rivers Spring and Neosho.
- Let us fish the Spring River.
- Letting us take a small amt of eggs home (across state lines) for personal consumption! (I've been fishing there for most of 15 years.) Thanks! Great fishery and great people running paddlefish processing center.
- Lifetime license. Paddlefished at Webbers Falls.
- Like fishing for paddlefish.
- Like to see Spring River opened up for paddlefish program again. Neosho river became too congested.
- Love it!

- Love it! Very proud of OK Dept of Wildlife for utilizing state resources while providing a wonderful service to OK anglers.
- Love it!!!
- Lower the limits, quit cleaning them!! Go to catch and release only Spring Creek.
- Make it keep one a day always.
- Make more catch and release days only.
- Make rules consistent.
- Many of my friends and myself were not as successful as previous years because of some changes and the catching of fish by means of a gate or net trap.
- May I suggest a length limit on paddlefish to be kept instead of catch release days only. Maybe on Monday and Friday a fisherman can only keep a paddlefish if it is 40 inches from eye to fork in tail, just an idea.
- Me and my friends who are all lifetime license holders don't see the need for the paddlefish permit. If I was to get a paddlefish processed you could use my lifetime number just like they do for checking deer and turkey. It costs us time and money to drive and get the paddlefish permit!
- Millions have come in. None back to our area north Grand lake. Please contact me!
- Monday and Friday no fishing for paddlefish unless we are able to keep them.
- Monday/Friday catch and release ruins a weekend. Also think it is hard on the released fish.
- More fish daily limits. (More than one per day.) Open lock dams for bow fishing for spoonbill.
- More info about eggs and how to process eggs for consumption-we think the eggs they get at the center should go to a fish hatchery instead of being sold.
- More info on the different locations where you can catch paddlefish would be nice. Also an up-to-date fishing report would help out a lot.
- More interested in Grand's crappie and hybrid population.
- Most fish caught in May, I-44 bridge.
- My family loves snagging for spoonbill we look forward to it every year!!
- My family really enjoys the paddlefish program. Thank you.
- My opinion is that Friday through Monday should not be catch and release. Nearby residents could catch and release from Tuesday thru Thursday leaving the weekend days open for those of us who travel only once a year to fish for paddlefish.
- My son and I enjoy trying to catch them every year. We look forward for April to get here so we can go try for a big one.
- My son had a fish processed at the center, therefore I am answering based on that.
- My sons and grandsons had fish processed at Twin Bridges. The experience and hospitality was great. I did not keep a spoonbill. I released my fish.
- My weekends are Friday and sat so I don't like the catch/release days. Arrest the people taking the eggs out of Oklahoma. Make the fines bigger.
- Need a phone number or website to check water level at Choteau bend before making long trip.
- Need a processing center at Hudson low water dam. Not keeping on Monday and Friday sucks.
- Need bigger fish.
- Need more fish to fish for. Restocking help better fishing.
- Need research and processing center below low water dam.
- Need to be able to keep more than one.
- Need to be able to keep two fish and stop the catch/release start size limit.
- Need to open other river up to paddlefish!
- Need to open the section next to Keystone dam to snagging and fishing.
- Need to raise limit or going to have a big fish kill.
- Need to raise limit to two fish.
- Need to remove sign below Keystone dam. If you wouldn't read regulations sign would get you a ticket. Crazy, you can't snag in river till 44 bridge, don't even know where that is.
- Never fished for these before. I do intend on more paddlefish fishing in the future. Thanks.
- No fish hooked.
- No more rules for free fish or fee's. Too many rules I will stop fishing for them.
- No trolling of boats at Conner's Bridge.
- None.

- Not all wildlife programs are ok. If needed and money is spent right but your paddlefish needs to be three fish limit. I live in Tulsa and drove a long way to fish, I am a meat man, so I don't go fishing for paddlefish any more.
- Not allowing use of the Spring River made it very dangerous fishing on the Neosho River due to amount of boats and short tempers of other anglers. Not allowing fish to be kept on Monday and Friday put more pressure on Saturday and Sunday. For these reasons will not come back.
- Not happy about Spring River being closed to paddlefish fishing.
- Not impressed that I cannot keep fish on Friday!!
- ODWC fisheries seems to have a handle on impacting the sportsman's recreational agenda.
- Oklahoma has the best program of any state I have fished, MO, KS, SD, OK, and NE. The snagging experience in Oklahoma is absolutely fantastic. Great job!
- Once a year we (10-17 of us) come down just to catch paddlefish. The Oklahoma program is much better than Nebraska's. We weren't all that enthused with your program this year but realize many, many fish were taken in 2009. The pressure is great on those beautiful fish and hope Oklahoma comes up with a working program to keep them producing for years to come.
- One fish per day so an angler can keep snagging after keeping one fish.
- Online paddlefish permit is a terrible joke. Shouldn't be any harder than purchasing a license. Getting a game warden by phone is impossible.
- Only fished one day and did not catch any.
- Oologah dam is an upcoming paddlefish river but there are a lot of people that don't follow the rules.
- Open Spring River for fishing-not cool losing our right to fish on our waters. Stop the poaching, go to a tag system, fill your tags and you are done for the year. Receive your tags with your license.
- Open up Spring River too many people on Neosho river for snagging.
- Open up the Spring again.
- Over the past few years I can tell just by fishing the Three Fingers area above Sailboat Bridge that the action (quick) has slowed over the past three years. So I'm starting to get concerned. The amount harvested each year is deceiving because the number of anglers change each year.
- Paddlefish fishing is one of the greatest experiences you can have in Oklahoma.
- Paddlefish is so Oklahoma! Thanks for your efforts it's tough not to have Monday or Friday.
- Paddlefish limit needs to go up from one a day to two a day.
- Paddlefish processing is a great thing. I had people with me use it and loved it.
- Paddlefish should be catch and release only at any distance behind any dam (Webbers Falls lock).
- Paddlefish size has greatly decreased over the past 15 years. Catch/release needs to be Friday and Saturday instead of Monday.
- Paddlefishing is a fun sport. I enjoy catch/release. Thank you and keep up the good work. As you know we do have those who do not comply with regulations.
- Paddlefishing is awesome! Please preserve this fishery!! Thank you for all your hard work!
- Pick up hours for your meat could be longer or earlier. Twice we sent fish in off the water because we had people still fishing and when we got done the station was closed for processing and pickup. Maybe someone could stick around a little longer or earlier in the morning strictly for pickup.
- Pick up of fish at Miami Park needs to be on both sides of river. Could possibly get more fish to processing center.
- Please don't make us buy another license for this sport.
- Please go back to one paddlefish per day seven days a week.
- Please send me a copy of the final report. Thank you.
- Please work on getting bigger fish back in Grand Lake !!
- Processing center opens three hours after start of fishing time. Monday and Friday cut trip time by at least one day.
- Processing center should help stop poaching. Still saw many locals abuse the privilege. We called one year on some guys and nothing was done. The Monday/Friday catch and release was a deal breaker for several in our group. They don't plan to come back. I think I will.
- Put minimum size limit on paddlefish (for example: 25lbs to 30 lbs) otherwise keep what you catch.
- Really did not have the time to fish this year.
- Really enjoy the catch and release. I think there should be a yearly possession limit. You guys are doing a great job. Thanks.

- Really enjoy the processing center but do not mind processing our own fish either. Not sure if the Monday/Friday catch and release days work with our schedule. We only get down once a year and with not getting to spend more than a few days there it would be nice to keep a fish every day that we can to get out max limit. The middle of the week would work better for catch and release days for people out of town!
- Really nice time fishing everyone at the center was really nice.
- Reinvest money from sale of roe to the area where fish are harvested. Open areas to public lands leased back to farmers and more boat ramps.
- Reopen Spring River - over crowded on Neosho River, and get rid of catch/release for at least one of the current days.
- Require single point hooks-90% as effective and a little less harmful to fish.
- Rules and regulations are taking fun, excitement and sport away from the gains of fishing for paddlefish.
- Rules on possession and who can keep or give a fish away could be a lot clearer. Example I catch a fish can someone else tag it, etc., all laws could be clearer.
- Saw lots of paddlefish at Keystone dam but can't fish until 44 bridge. Sign at dam is confusing - says you can below sign. I read regs.
- Seeing wardens at fishing locations was nice. Finally got to see my tax money at work. Plus it kept people 'in-line' keeping up with all the regulations is a hassle.
- Should be able to have one fish on the line tagged and fish for a bigger one because you don't always get the big one. Probably won't even go next year, too many regulations.
- Silly law. I'm not going to drive 75 miles round trip to river and not keep fish. Monday/Friday deal is crazy. Every year more regulations on paddlefishing. What's next tagging in at check station like deer?
- Small fish that is not hurt should be released (15 pounds or less).
- Snagging has changed a lot since I started snagging 15 years ago. Now I only snagged one day this year. The size and number of fish are too low to make it worth my time. Personally I blame illegal fishers for this. There are many of them. I know because I am not a game ranger and when I see the game ranger I see a lot of people sneak off. We need more game rangers, not smaller bag limits.
- Snagging should not be allowed at all on Monday and Friday. I have seen over 30-40 die after being released by many careless people.
- Some of your paddlefish rules suck!!!
- Some people at Ft. Gibson dam are taking more fish than they are suppose to. Check into it. Thanks.
- Some people in our group had fish processed and liked it very much. Thank you.
- Some questions on [survey question] #7 depend on if I already have fish in the freezer. If I do, it's not as important to keep some, but if I don't I want to take some home, no matter what day it is.
- Special thanks to Keith Green and the processing crew. They took a little extra time to show my 15 year old girl how the fish were processed. Thank you all!!
- Spring River should "not!!!" be closed, catch/release would be better.
- Stop advertising it so much, too many people keeping fish they have no intention on eating. Has become a circus.
- Stop changing the regulations! Pick a guide line and stick to it.
- Stop it for awhile the paddlefish are too small. They are not too big.
- Stop the catch and release, the fish are taking a beating, small chance this will ever happen.
- Sure missed Spring River. Keith Green seems like he does a good job and has good people helping him.
- Take the money generated and put towards cleaning up, maintaining, or policing the prime areas for littering. It's not very fun taking your family to an area full of rotten fish and trash. When you have to worry about stepping on fish hooks and getting tangles in someone's discarded line.
- Thank you for all your hard work!
- Thank you so much! It was great, see you next year.
- Thank you! For the processing center, I have heard great feedback and for your rangers for keeping the waterways safe. Thank you.
- Thank you.
- Thanks for a great season.
- Thanks for finally starting to do some conservation on paddlefishing. We enjoy the opportunity to fish in Oklahoma for paddlefish.
- Thanks for the chance to fish for these great fish, and for the hard work of the OK Conservation Dept.
- Thanks for the opportunity to catch a paddlefish. Was really something different.

- Thanks for the privilege. Keep up the good work. Hope to return to Oklahoma in the future to fish for paddlefish. Grand experience.
- Thanks for the processing center. It's a big help.
- Thanks from Texas, you gave my family a great trip. Hooking a fish is what it is all about. I could buy beef for what I spend on gas. Also, thanks for selling non-resident license!!!
- Thanks, great fishery!
- Thanks.
- The 2010 year was the least productive for us in many years. Thanks for your research into this matter.
- The catch and release program is a great idea, it allows the ones released to grow and mature.
- The catch/release is B.S. If you do not want out of state fisherman, this is working.
- The catch/release program is ill-conceived at best, no person benefits, yet the fish get impaled, played out and handled. I travel two hours to paddlefish and usually fish for two days (not anymore). If more money is needed for paddlefish study/restock, charge \$1 for the permit; or better yet, ask for donations. I would certainly donate to this worthy cause.
- The emergency paddlefish rules suck. I am very concerned about the state making money and I have no fish in my freezer! Something is wrong with this! Catch and release days are a joke! It is hard enough to get time to go in the spring and now you take away two more days of the week. Why not just make a 'season' like Missouri. Past ten years the fishing keeps going downhill
- The fish seem to be smaller every year.
- The fisheries crew taking the biological information was very pleasant and knowledgeable. Very fun bunch of professionals.
- The guys on the river and lakes were helpful and very nice, and we were happy to see them.
- The last one I caught was 2008-2009. It was the first one I had processed at Twin Bridges. Need more.
- The last time I went to the processing center it was a one hour wait. I will not go back.
- The limit should be two per day.
- The middle of the week would work better for catch/release days for people out of town! Really enjoy.
- The Monday and Friday thing has really messed up a three day weekend. Probably won't fish as much now that Spring River is closed.
- The Monday/Friday catch/release program-sucks. It makes it very hard to take three to four day fishing trip.
- The Monday/Friday release program is ineffectual unless rangers are there to enforce it for the "ignorant, Alien, fishermen." They keep everything regardless. This irritates me and other sportsmen who try to abide by the law and these guys don't.
- The Monday/Friday release program is wrong. You're still killing fish.
- The new rules make it where me and my ten year old can no longer go. Thank you for ending our paddlefish.
- The only place I have fished for paddlefish is Texoma tailwaters. It's worth going. It's a different experience, they are good grilled or fried.
- The paddlefish research and processing for 2009 were awesome. I got a 50 pounder. We were out on Friday.
- The program I believe is a excellent program. I've been coming down for almost ten years and the paddlefish are some of the best I've ever seen. I'm still curious as to why Monday and Friday are catch and release. I'm sure there is a reason, by the way white bass were awesome on Friday and Monday.
- The program is amazing! I have recommended everyone to use our facility.
- The program is working. Caught more, bigger fish this year. Probably about as good as it was in early 90's. Best in 15 years. Thank you.
- The program seems okay, but the catch/release all day and no keeping fish on Monday/Friday needs to change. Keep it simple!
- The program seems to be working. Well, it would be nice to see more fishing reports regarding paddlefish on the website (other than Grand Lake).
- The rangers in park were a-----s. I was there when a guy took eggs out of fish to use as bait and they threw a fit.
- The regulations are very difficult to understand. I had to call Brent to make sure I was in compliance during my April trip to Choteau Bend. I'd be happy to discuss in more detail.
- The rules are getting so strict it takes the fun out of going. That's why I only went one day this year.
- The Spring River was where I fished the most. I hope you reopen this area again.

- The staff at the Twin Bridges processing center seemed to be agitated upon pick up of our group's fish. Previous years they were exceptional.
- The two days of releasing of fish is hard for me and friends for a three day weekend from Nebraska (we love to eat paddlefish).
- The water was too low, that ruined our trip!
- There is no way you are paying Keith and Brent enough for what they do.
- There should be a process center located at Choteau Bend to help manage the fish population in area.
- There was many, many people including myself that was not willing to have the center process their fish this year because of the catch and release only on Mondays and Fridays. Most people went back to cleaning their own fish, themselves. That is what we did before the paddlefish research and processing center opened. If Mr. G1 was in charge and ran the center without Mr. G2's involvement, things would run more smoothly. Mr. G2 always has a arrogant attitude with the fisherman or fisherwoman. Mr. G1 will take the time to answer questions and be friendly to the fisherman no matter how busy he seems to be which makes Mr. G2 look unprofessional. Everyone that I know of including myself would be pleased if Mr. G2 was not around period. The fisherman does not see what the state sees in Mr. G2. So we wonder if the Wildlife Conservation people/employees are like Mr. G2. Since Mr. G2 is allowed to present himself the way he does. In other words, if you are all alike. Because of the way Mr. G2 goes about doing his job and the way he approaches people with his attitude and arrogance, it disgraces the uniform he wears. Feel free to call for more comments.
- There's no reason to fish on Monday and Friday. If you can't keep one that might be a very big fish. So you should make it no fishing for paddlefish on Mondays and Fridays so there will be bigger future fish.
- Think it is great-hopefully paddlefish will be back in the 100+ lb sizes.
- This is a great program, I hope you continue to keep Oklahoma a premier paddle fishing state.
- This is my second year into this kind of fishing. Very fun, exciting. I believe the research center and fish cleaning station is a great thing. Finally had a chance to try the meat and that meat had come from a friend that used your service. After talking with other fishermen I was reluctant to try it but somehow believe it was the difference in your cleaning station! Good job.
- This is the only survey I received.
- This program appears to be having excellent results. The fishing is far better than ten years ago. Don't understand the stopping of night fishing North of 412 bridge.
- This program is a rip off in every way! That money should be put back in pot to help the fishing people instead of buying more trucks, boats, holding big fish fries. You do stuff that is illegal for everyone else. Over \$4 million rip-off for the people you work for. Thanks. Cheap.
- This program is essential for conservation. However many cities and businesses depend on the economic value of the paddlefish.
- This survey should be sent out at the end of the year, not in mid June.
- This was my first time fishing for paddlefish and I had a really good time.
- This was my first time to paddlefish and I loved it! A lot of work but if you catch one it's so cool. I didn't know that they were so delicious! We have been grilling paddlefish steaks. The processing center and people there were wonderful! They were very friendly and processed my fish really fast. Thank you for having this center! Catching just one paddlefish made buying my five-year license worth it! I buy a license every year and don't catch many fish, let alone keep them.
- This was my first year and I have had a great time. I would like to know more about the paddlefish research.
- This was my first year and I have had great time. I would like know more about the paddlefish research and processing center.
- This was my first year and it was very fun.
- This year I found no fish! After fishing this area many years, I find this very odd.
- This year when my family and I were down there it seemed harder to catch a spoonbill than previous years.
- Time to go paddlefishing loved it.
- Too many fish taken by a few people, limit fish per year or days think about charging for the permit. I saw many violations.
- Too many fisherman up one river. Game wardens everywhere you look. It would be nice just to fish.
- Traveling over 300 miles for the last five years and not being able to snag and keep on Friday was not ideal especially when we don't get there till late Thursday and leaving on Sunday. Cut our fun short. Especially this year, the weekend we were there the weather was not cooperative. But we enjoyed it.
- Updated or current activity during season would be helpful.

- Very enjoyable.
- Very exciting sport, my three boys love it, I feel barbless hooks are great so you don't harm the fish and I love the catch and release.
- Very fair and sportsman like to all paddlefish fishermen.
- Very few fisherman ever turn a paddlefish loose since the paddlefish research and processing center started. Before this program started I would say that over 90% of females were turned loose now I would say less than 5% are turned loose. This statement is based on over 40 years of paddlefish fishing. Please stop this program. It's causing to many fish to be killed for money.
- Very fun, great catch, and good fish.
- Very good program, however I would of rather given the eggs and parts of the catch for research and kept the rest of the fish. I feel I would have had more meat off the fish.
- Very good program, keep up the great work. (2 respondents)
- Very good program. I hope they open the water back up some day north of 60. Please continue this service. It's good for everyone.
- Very good.
- Very happy to have the pick-up boats come by and pick up fish then have them processed. Having the fish processed made the fishing more fun.
- Very helpful and convenient.
- Very much enjoy paddlefishing sport-very exciting. Thank you.
- Very satisfied.
- Very well done! But need to do something about the Russians and foreigners who kill paddlefish just for their eggs! It's very disturbing to see that! We saw it first hand at low water and the 412 Twin Bridges.
- Wardens and local fisherman are available to help fisherman. Some people who are in violation sometime are misinformed by local fishermen on correct regulations.
- Wardens are not polite or kind during heavy part of snagging season. Each warden needs to be on the same page about snagging and keeping a flathead. It is not defined as a game fish in the regulations.
- Was hoping to paddlefish on Spring River. Too many regulations! OK nonresident fishing permit is too high.
- Was unable to fish much because the days I was able to fish are Monday and Friday. No sense in fishing if you don't or can't keep the fish. I don't pay for a license to catch fish and not keep them.
- Was very displeased that the Spring River at Twin Bridges was closed. I fished on the Neosho were there were too many boats and became dangerous and took the fun out of the sport if this is in place next year I won't be back.
- Water was really low at times below low water dam. Heard they were working on Ft. Gibson dam. But made for great catfishing below 412bridge when water was running.
- We always cut the fishes tail off and let it bleed. The meat then is snow white. The people at the center were very efficient and friendly.
- We always fish at Connor Bridge. It's fantastic that they pick up and process the fish for us. I hope this program lasts forever! Thank you!!
- We always snagged up Spring River, so we were disappointed about that. Neosho is just too muddy and trashy, so we didn't snag as much as usual.
- We appreciate getting free ice some days. Would be nice to have access to it more days especially to ice the fish on the trip home. Thank you! We look forward to spoonbill fishing every year.
- We drive 435 miles on Sunday to fish Monday-Tuesday-Wednesday. We are not satisfied with the catch/release on Monday.
- We drive 450 mi to fish. Monday/Friday are lost days to us. If we have to catch and release we'll probably go home!!
- We encountered a very rude employee at the processing center on the first day of our fishing trip.
- We enjoy fishing below Kaw dam. Is there any info available on the best current, or flow of the river to optimize our success. Thought we had it figured out, LOL.
- We enjoyed our fish and how we were treated. Thank you very much!
- We enjoyed our visit with Mr. Green-we will be back in 2011. Thanks.
- We had a good time. We had no idea of the catch/release days. Next year ask people on survey how far they came to fish. Thank you.
- We have a great time fishing for paddlefish, we catch/release most of them.
- We have been going to Grand Lake for seven years, this is the first year we didn't get our limit. (Very disappointed, probably won't come back.)

- We need to protect this fishery at all cost. It's the most unique in the nation.
- We process our own meat!
- We should have the right to fish for paddlefish in Spring River!!
- We went with a friend that had fished for paddlefish every year. It was very interesting.
- We were out on Friday Catch and Release day and see a boat that would catch one and take off like a shot and then come back out. Kansas has it you get three a day they need to back of to one a day. We come down from Kansas it sure would be nice to be able to keep a fish on Friday, we fish Friday, Saturday and a short on Sunday then head back.
- We won a day trip of paddlefishing at the OKC Expo and we had a fun and exciting time with John Stahl and the other guide. Thank you!
- Well enjoyed program like the fact about the Miami Park transport trucks and free permits.
- Went to processing center with a friend. Workers were not near as friendly as past two years and complained about being there till 7 p.m. Past two years I had fish cleaned at a little after 8 p.m. I thought the trade off for getting fish cleaned without complaining was your Department making a lot of money!
- Went to Webber Falls with my son. Was my first time, caught one at 35 pounds. Am ready for next year now. Will only catch and release paddlefish. These fish are neat and have been around for a long time. Respect these fish.
- We've been coming down to Grand lakes the last six years and we've always had a "great time" and good eating.
- What does the money go from the eggs you sell? Heard your numbers were down on Neosho River. Why did you close Spring River if you collect eggs?
- What has happened to the bigger paddlefish? Caught 25-30 pound fish.
- What is the reason for the catch/release days (Monday-Friday)?
- What's with catch and release. Only time I went (Monday-Friday) and couldn't keep, which sucked.
- When we could catch and keep three fish/day you had people coming in from California, N and S Dakota, from Illinois, from all over and money coming in for food, sleep, gas, a lot of money come into town. Now you don't have very much money coming in just for one keepable fish. People are complaining about one fish limit to keep.
- When you get your permit is it good for every paddlefish you catch or do you have to go get new permit after you catch one fish?
- Why do you need to know this stuff anyways?
- Why is Eufaula dam only dam where you must be one mile below it to fish four paddlefish? Please respond.
- Why is there no information and research on the nutritional content of paddlefish and the level of toxins in paddlefish meat. It seems to me that both of these are easy to research and easier still to provide accurate facts to the consuming public.
- Why not Tuesday or Wednesday instead of Friday? The PRPC is very impressive. Wish I had the chance to use it.
- Wildlife officers need to visit areas more often to catch illegal fisherman keeping more fish than they should.
- Wish there were more places to fish from the bank at Grand Lake that the public could get to.
- Wonderful experience. I will be back.
- Wonderful fishing.
- Wonderful program! I would like to see what this money is actually doing for the ok fisheries-maybe it is an 'Outdoor Oklahoma' magazine article. Would be great PR.
- Wonderful program. Processing program great.
- Won't use processing center again. Did poor job of cleaning. I threw meat away.
- Would be nice if could keep more than one paddlefish, two or three perhaps. Webbers Falls lock and dam 16 bad year.
- Would have fished more but boat broke second day.
- Would like more info about paddlefishing in Keystone.
- Would like to go on Friday and catch them and keep them seeing how I only get to go on Friday and Saturday.
- Would like to have a three fish a day season back even if it's a short one.
- Would like to have reports of the lakes, etc, for the paddlefish. I'm a beginner and don't know where to go.
- Would like to see daily limit upped to two fish per day!
- Would like to see limit put on number of fish kept each year.

- Would like to see more game wardens in fishing area to promote honest fisherman and would like to see someone clean area below Pensacola Dam for bank fishermen.
- Would like to see research and processing center near low water dam or somewhere at Ft. Gibson.
- Would like to see Spring River open back up.
- Would prefer hours extended to midnight. Would have liked to have kept more fish.
- Would use the processing center if it were closer to where we fish Miami Park and Neosho River.
- Ya'll are doing a great job. Thank you.
- Yes, I didn't like the Monday and Friday rules. I would like to know what that is about.
- You guys and ladies are doing a great job.
- You guys are doing a good job. Keep it up.
- You guys are doing great job. Should let us process some roe. Wished Nebraska would follow some of your rules i.e., barbless hooks.
- You guys do a great job.
- You have a great program. Thanks for giving me a place where I can still catch large fish.
- You have an excellent program.
- You have the best program I have ever used.
- You need to limit the number on fish taken.
- You should be able to keep fish on Friday. No keep should be in middle of week.
- You should have your game rangers doing more frequent searches. I saw a lot of illegal snagging of catfish and keeping them, on the river, not so much in lakes.
- You should let people spoonbill on Spring River, it gets over crowded with boats on Neosho River. Thanks.
- You should teach our Federal government how to run a public program. You folks did a marvelous job in every way. Great job. Thank you.
- You're doing a great job. Thank you.
- Your cleaning station is very good. Used it ever since was in. Glad you put it in. Will always use it.
- Your paddlefish program is very strong, keep up the good work. My first time and I had a great experience.
- Your stupid law of not keeping a fish on Monday and Friday was not obeyed at Ft. Gibson.

# 2011 Post-Season Survey of Paddlefish Permit Holders

## Oklahoma Department of Wildlife Conservation

Prepared by Andrea Crews, December 2, 2011

### Introduction

In 2008, the Oklahoma Department of Wildlife Conservation (ODWC) opened a Paddlefish Research and Processing Center (PRPC). Data were collected from paddlefish caught by anglers, roe were removed to make caviar (later sold by ODWC), and meat processed and packaged for anglers to take home. Each year, a survey of paddlefish permit holders was implemented at the end of the main paddlefish run to determine expectations of the fishery, paddlefishing participation, use of the PRPC, satisfaction with the experience, and the impact of the PRPC on paddlefish harvest. These results will assist with long-range planning of paddlefish management.

### Methods

Methods were similar 2008 through 2011 (see Boxrucker 2009, Crews 2010). Paddlefish permit holders provided the sampling frame for post-season mail surveys. Free, annual permits available from license vendors were required of all paddlefish anglers. Sampled permit holders were mailed a pre-survey postcard, followed a few days later by a survey and cover letter with a postage-paid reply envelope, and a second mailing to non-respondents a few weeks later (Appendix B).

In 2011, at the time of sampling (May 27), 46,060 paddlefish permits had been issued. Seventy-six percent of permits were issued through license vendors using the ODWC electronic system, 13 percent through a vendor issuing hand-written licenses, 11 percent through online sales and less than one percent directly through the ODWC license section.

Some records were deemed ineligible for the survey and removed from the sampling frame (duplicates, non-U.S. residents and incomplete records). The sampling frame included 45,807 records. A sample of 12,000 permit holders was randomly selected.

The pre-survey notification card was mailed June 1. The survey was mailed June 8, with a follow-up sent to non-respondents July 7. Bulk-rate third class mail rates were used; undeliverable surveys were not returned.

Non-response bias (resulting when the proportion of the sample from whom survey data was received does not represent the proportion from whom no data was received) is sometimes formally addressed by a follow-up study of non-respondents, comparative analysis, and subsequent weighting of the original data if differences are found. Alternatively, responses of early and late respondents can be compared for a few key variables. The presumption is that people who do not complete the survey (non-respondents) are likely more similar to those that responded slowly than those who responded quickly. This second approach (comparison of early vs. late respondents) was used to assess non-response bias.

Differences between categorical variables were detected using chi-square (Pearson, Fisher's Exact Test, or Linear-by-Linear Association as appropriate). Normality was tested using the Shapiro-Wilk. In cases of nonparametric data, medians were compared using the Mann-Whitney U test. All tests were considered significant at  $P \leq 0.05$ .



**Table 1.** Distribution of 2011 paddlefish permit holders by state or province, within the population, the sample and survey respondents.

| State          | Population    |               | Sample        |               | Respondents  |               |
|----------------|---------------|---------------|---------------|---------------|--------------|---------------|
|                | N             | %             | n             | %             | n            | %             |
| AA             | 14            | 0.03          | 0             | 0.00          | 0            | 0.00          |
| AK             | 7             | 0.02          | 1             | 0.01          | 1            | 0.03          |
| AL             | 10            | 0.02          | 3             | 0.03          | 1            | 0.03          |
| AR             | 1,153         | 2.51          | 266           | 2.22          | 78           | 2.48          |
| AZ             | 41            | 0.09          | 10            | 0.08          | 2            | 0.06          |
| CA             | 87            | 0.19          | 31            | 0.26          | 9            | 0.29          |
| CO             | 122           | 0.27          | 40            | 0.33          | 11           | 0.35          |
| CT             | 1             | 0.00          | 0             | 0.00          | 0            | 0.00          |
| FL             | 36            | 0.08          | 9             | 0.08          | 4            | 0.13          |
| GA             | 16            | 0.03          | 5             | 0.04          | 1            | 0.03          |
| HI             | 1             | 0.00          | 1             | 0.01          | 0            | 0.00          |
| IA             | 225           | 0.49          | 57            | 0.48          | 22           | 0.70          |
| ID             | 10            | 0.02          | 2             | 0.02          | 1            | 0.03          |
| IL             | 56            | 0.12          | 15            | 0.13          | 6            | 0.19          |
| IN             | 23            | 0.05          | 6             | 0.05          | 2            | 0.06          |
| KS             | 2,525         | 5.49          | 651           | 5.43          | 274          | 8.72          |
| KY             | 4             | 0.01          | 1             | 0.01          | 0            | 0.00          |
| LA             | 34            | 0.07          | 9             | 0.08          | 2            | 0.06          |
| MA             | 5             | 0.01          | 1             | 0.01          | 0            | 0.00          |
| MD             | 3             | 0.01          | 1             | 0.01          | 0            | 0.00          |
| ME             | 1             | 0.00          | 1             | 0.01          | 0            | 0.00          |
| MI             | 19            | 0.04          | 4             | 0.03          | 0            | 0.00          |
| MN             | 72            | 0.16          | 28            | 0.23          | 3            | 0.10          |
| MO             | 4,000         | 8.70          | 1,051         | 8.76          | 320          | 10.18         |
| MS             | 15            | 0.03          | 2             | 0.02          | 2            | 0.06          |
| MT             | 14            | 0.03          | 3             | 0.03          | 1            | 0.03          |
| NC             | 23            | 0.05          | 8             | 0.07          | 4            | 0.13          |
| ND             | 9             | 0.02          | 4             | 0.03          | 2            | 0.06          |
| NE             | 690           | 1.50          | 173           | 1.44          | 92           | 2.93          |
| NH             | 1             | 0.00          | 0             | 0.00          | 0            | 0.00          |
| NJ             | 3             | 0.01          | 0             | 0.00          | 0            | 0.00          |
| NM             | 45            | 0.10          | 15            | 0.13          | 4            | 0.13          |
| NV             | 10            | 0.02          | 2             | 0.02          | 2            | 0.06          |
| NY             | 8             | 0.02          | 1             | 0.01          | 0            | 0.00          |
| OH             | 27            | 0.06          | 8             | 0.07          | 4            | 0.13          |
| OK             | 35,782        | 77.80         | 9,348         | 77.90         | 2,219        | 70.62         |
| OR             | 14            | 0.03          | 3             | 0.03          | 2            | 0.06          |
| PA             | 8             | 0.02          | 3             | 0.03          | 1            | 0.03          |
| SC             | 15            | 0.03          | 4             | 0.03          | 0            | 0.00          |
| SD             | 76            | 0.17          | 19            | 0.16          | 14           | 0.45          |
| TN             | 22            | 0.05          | 5             | 0.04          | 1            | 0.03          |
| TX             | 650           | 1.41          | 184           | 1.53          | 51           | 1.62          |
| UT             | 5             | 0.01          | 2             | 0.02          | 0            | 0.00          |
| VA             | 10            | 0.02          | 2             | 0.02          | 0            | 0.00          |
| WA             | 42            | 0.09          | 9             | 0.08          | 4            | 0.13          |
| WI             | 34            | 0.07          | 5             | 0.04          | 0            | 0.00          |
| WV             | 7             | 0.02          | 1             | 0.01          | 0            | 0.00          |
| WY             | 18            | 0.04          | 6             | 0.05          | 2            | 0.06          |
| <b>Total</b>   | <b>45,993</b> | <b>100.00</b> | <b>12,000</b> | <b>100.00</b> | <b>3,142</b> | <b>100.00</b> |
| <b>Missing</b> | <b>67</b>     | <b>-</b>      | <b>0</b>      | <b>-</b>      | <b>3</b>     | <b>-</b>      |

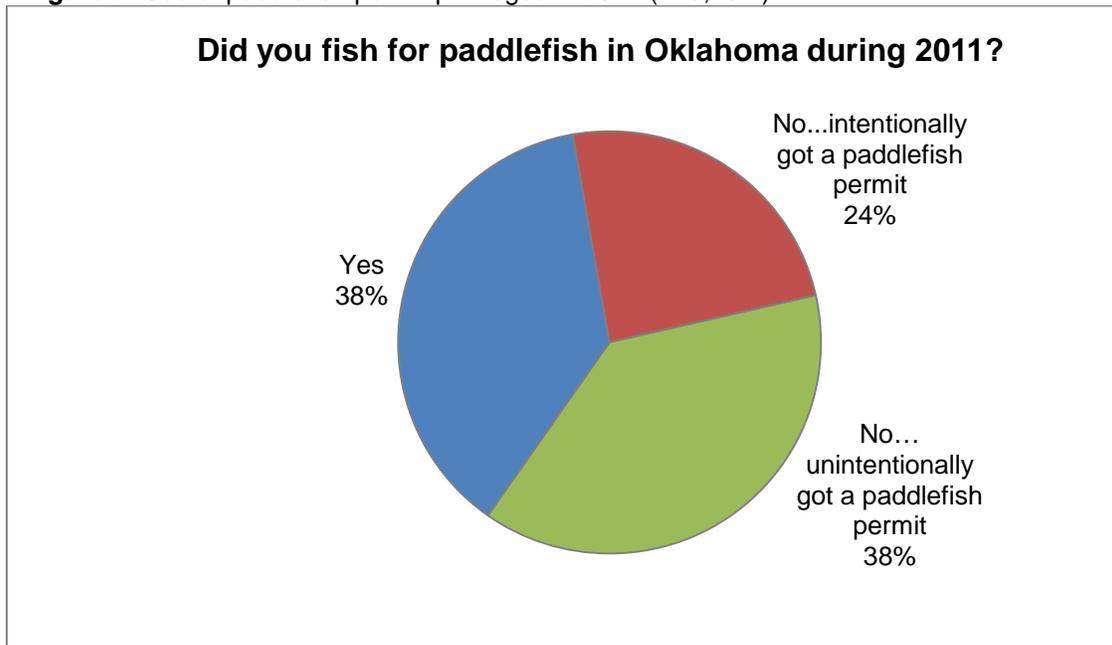
The randomly selected sample reflected the state distribution found in the population (Table 1). However, in the final respondent dataset, Oklahoma residents were slightly under-represented (seven percent). The differential response rate by residency was statistically significant ( $P \leq 0.001$ ), but likely linked to higher permit use rate by nonresidents (see below).

#### *Use of the Paddlefish Permit*

ODWC suspected the number of paddlefish anglers, as measured by permits issued, was exaggerated. Some anglers requested the permit along with their fishing license “just in case” or simply because it was free. Also, some vendors automatically issued the free permit along with each fishing license sale. The initial question on the survey sought to assess this suspected inflation.

Overall, 38 percent of respondents in 2011 fished for paddlefish (Figure 2). Nearly one-quarter (24 percent) did not fish but intentionally got the permit. Thirty-eight percent did not fish and did not intend to get the permit. (Respondents who did not fish and did not indicate whether or not their permit acquisition was intentional [i.e., “missing”  $n = 127$ ] were counted among those who did not intend to get a permit.) Nonresidents were more likely to use their paddlefish fishing permit privileges than residents ( $P \leq 0.001$ ). See Appendix A, Table 1 for 2008-2011 responses.

**Figure 2.** Use of paddlefish permit privileges in 2011 ( $n=3,107$ .)



The number of active paddlefish anglers was estimated, overall and by residency (Table 2). The total number of anglers increased 16 percent from 2008 to 2009 and seven percent from 2009 to 2010. Growth slowed to a one percent increase in 2011. The total growth of 25 percent could reflect growing popularity of the sport, increased familiarity with the permitting process, or both.

**Table 2.** Estimated number of active paddlefish anglers by year.

|   | <b>Estimated Anglers</b> | <b>Percent of Yearly Total</b> |
|---|--------------------------|--------------------------------|
| <b>2008</b>   |                          |                                |
| Residents (38.8% of 21,615 resident permit holders)       | 8,387                    | 64%                            |
| Nonresidents (61.0% of 7,723 nonresident permit holders)  | 4,711                    | 36%                            |
| Total   | 13,098                   | 100%                           |
| <b>2009</b>   |                          |                                |
| Residents (39.1% of 24,201 resident permit holders)       | 9,462                    | 62%                            |
| Nonresidents (61.8% of 9,224 nonresident permit holders)  | 5,700                    | 38%                            |
| Total   | 15,162                   | 100%                           |
| <b>2010</b>   |                          |                                |
| Residents (37.5% of 28,905 resident permit holders)       | 10,839                   | 67%                            |
| Nonresidents (51.4% of 10,456 nonresident permit holders) | 5,374                    | 33%                            |
| Total   | 16,213                   | 100%                           |
| <b>2011</b>   |                          |                                |
| Residents (30.0% of 35,782 resident permit holders)       | 10,735                   | 65%                            |
| Nonresidents (55.4% of 10,211 nonresident permit holders) | 5,657                    | 35%                            |
| Total   | 16,392                   | 100%                           |

No further survey questions were asked of permit holders who did not fish for paddlefish. The remainder of this report presents results from respondents who fished for paddlefish (2011  $n = 1,177$ ; 2010  $n=1,863$ ; 2009:  $n=1,884$ ; 2008:  $n=734$ ).

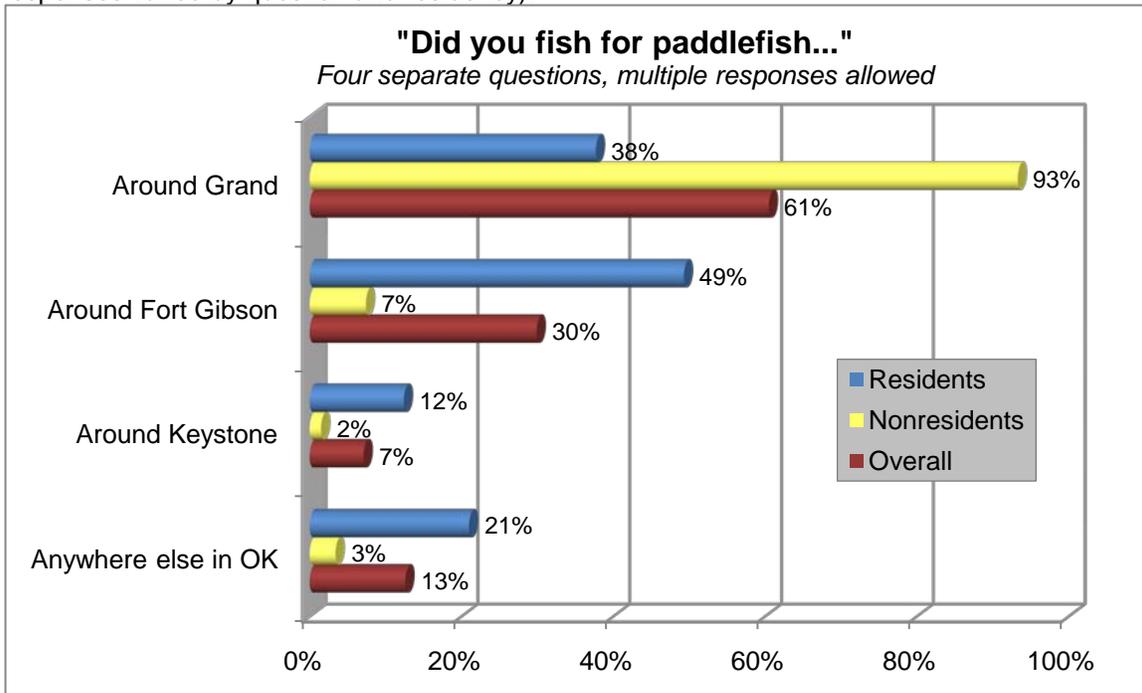
Each year, thirty to forty percent of the active paddlefish anglers surveyed were nonresidents (Table A2). Because the needs and expectations of residents and nonresidents may differ, many survey items were analyzed by residency.

#### *Location of Paddlefish Fishing Across the Fishery*

Active paddlefish anglers were asked if they fished in each of three major paddlefish fisheries (Grand Lake, Fort Gibson and Keystone) or anywhere else in the state. Overall, the Grand Lake fishery was used by the largest portion of 2011 paddlefish anglers (Figure 3, red bar). However, the popularity of the Grand Lake area was largely driven by nonresidents, who were more than twice as likely to fish the area than were residents ( $P \leq 0.001$ ). In fact, more residents fished around Fort Gibson than around Grand (49 percent vs. 38 percent, respectively). Residents were more likely than nonresidents to use the Fort Gibson area ( $P \leq 0.001$ ), the Keystone area ( $P \leq 0.001$ ) and other areas of the state ( $P \leq 0.001$ ; Figure 3, comparison of blue and yellow bars). See Table A3 for 2008-2011 data.

The “Grand Lake Region” of the paddlefish fishery was of particular interest because of its proximity to the Paddlefish Research and Processing Center. The “Ft. Gibson Lake Region” was of specific interest as the potential site of a second Paddlefish Research and Processing Center. The “Keystone Lake Region” was identified to support a field research project underway to increase understanding of this separate population of paddlefish.

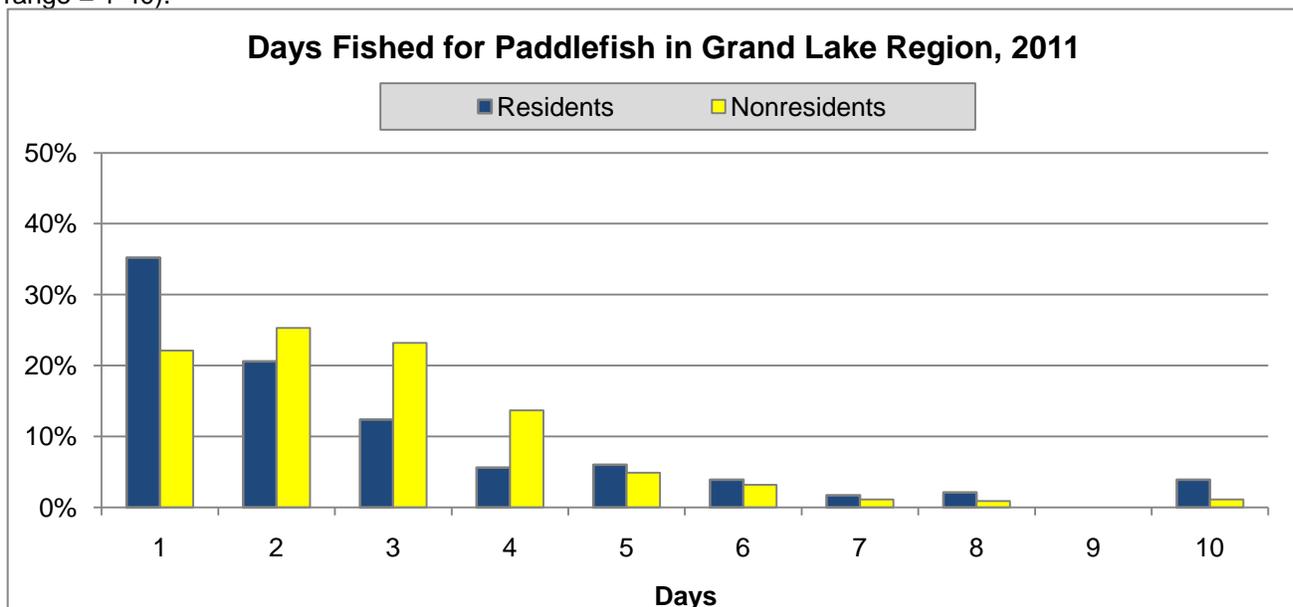
**Figure 3.** Percent of active paddlefish permit holders fishing at each area in 2011, overall and by residency (Overall  $n=1,863$ ; Residents  $n=666$ ; Nonresidents  $n=511$ ; the number of missing responses varied by question and residency).



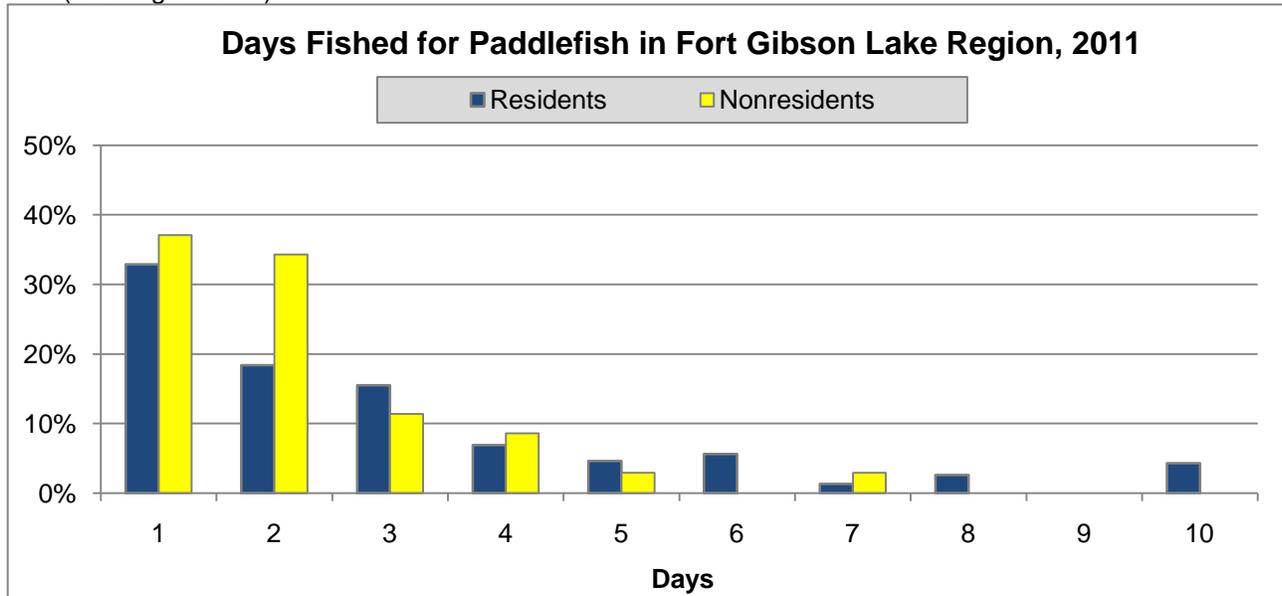
### Days Fished

The number of days fished by active paddlefish anglers by region (2008-2011) are shown in Table A4. Data were not normally distributed in any region in any year. The distribution of days of fishing in 2011 around Grand Lake, Fort Gibson and Keystone are shown in Figures 4-6. Median differences by residency, when present, are indicated in Table A4.

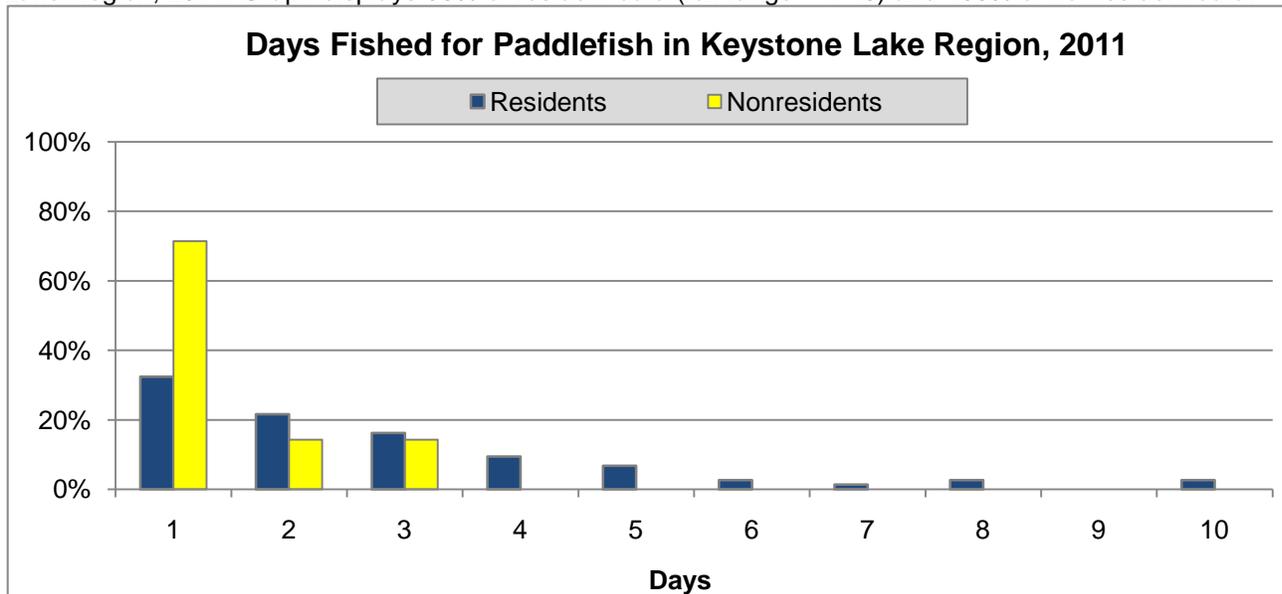
**Figure 4.** Days fished for paddlefish, by residents ( $n=233$ ) and nonresidents ( $n=466$ ) who fished in the Grand Lake Region, 2011. Graph displays 91% of resident data (full range = 1-35) and 96% of nonresident data (full range = 1-40).



**Figure 5.** Days fished for paddlefish, by residents ( $n=304$ ) and nonresidents ( $n=35$ ) who fished in the Fort Gibson Lake Region, 2011. Graph displays 92% of resident data (full range = 1-100) and 97% of nonresident data (full range = 1-15).



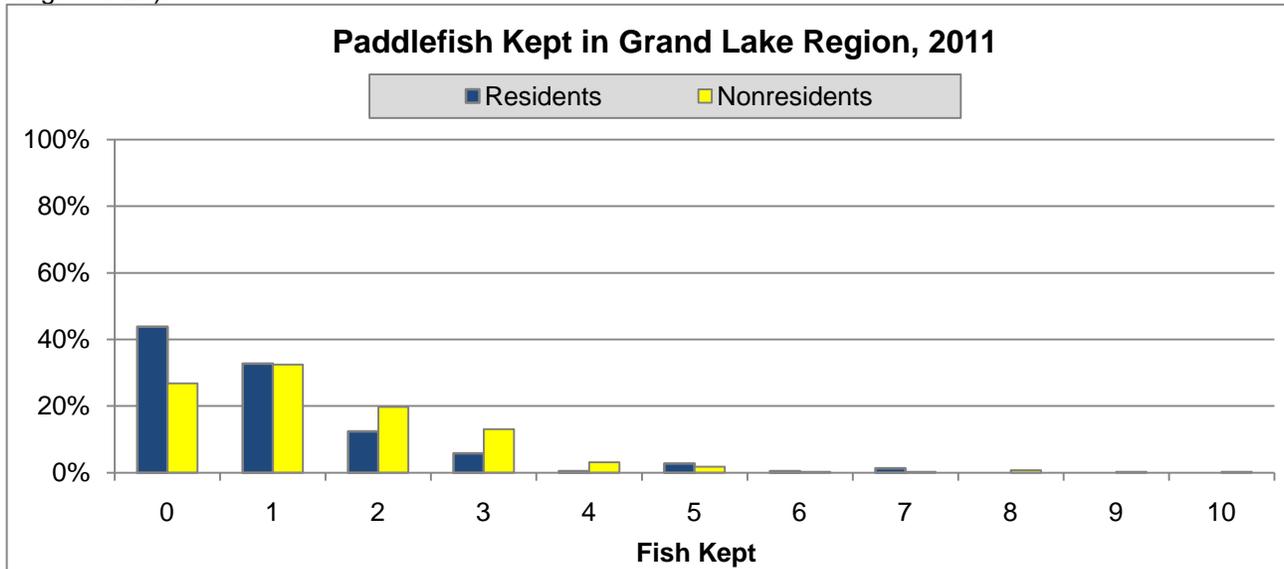
**Figure 6.** Days fished for paddlefish, by residents ( $n=74$ ) and nonresidents ( $n=7$ ) who fished in the Keystone Lake Region, 2011. Graph displays 96% of resident data (full range = 1-40) and 100% of nonresident data.



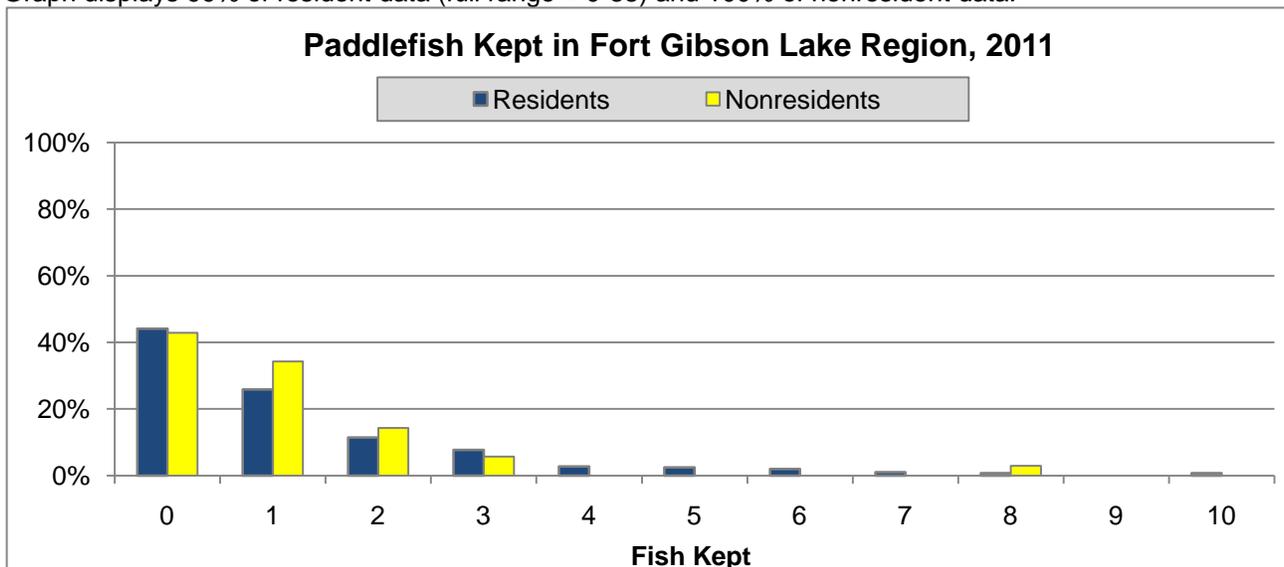
## Fish Kept

The number of fish kept by active paddlefish anglers by region (2008-2011) are shown in Table A5. Data were not normally distributed in any region in any year. The distribution of fish kept in 2011 around Grand Lake, Fort Gibson and Keystone can be seen in Figures 7-9. Median differences by residency, when present, are indicated in Table A5.

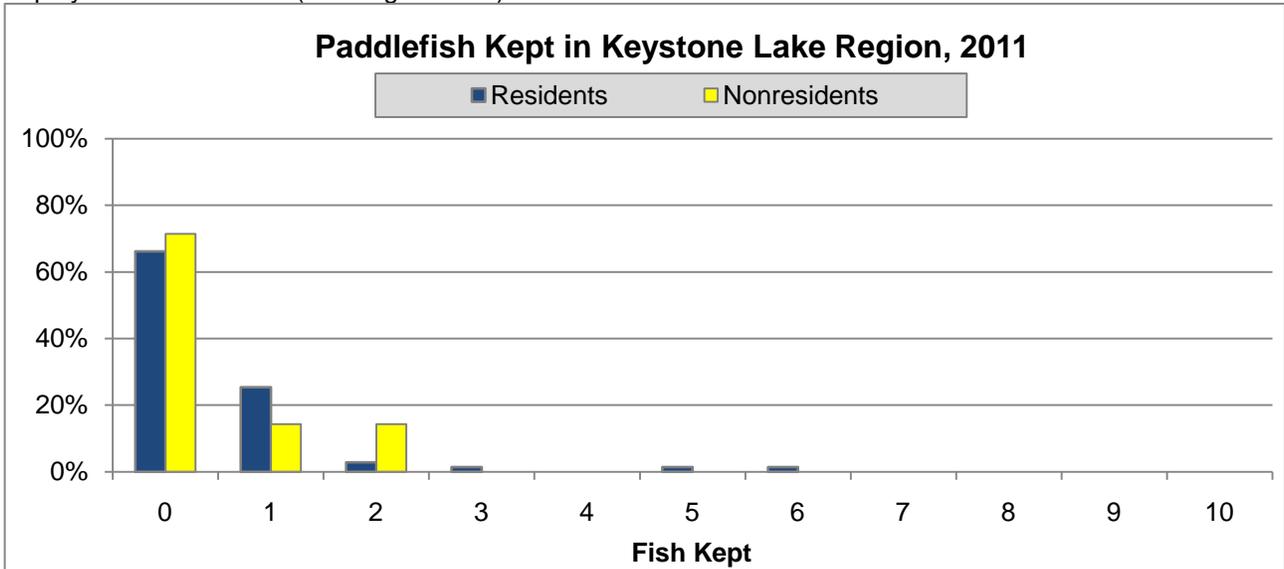
**Figure 7.** Paddlefish kept by residents ( $n=226$ ) and nonresidents ( $n=447$ ) who fished in the Grand Lake Region, 2010. Graph displays >99% of resident data (full range = 0-13) and 98% of nonresident data (full range = 0-20).



**Figure 8.** Paddlefish kept by residents ( $n=297$ ) and nonresidents ( $n=35$ ) in the Fort Gibson Region, 2011. Graph displays 99% of resident data (full range = 0-38) and 100% of nonresident data.



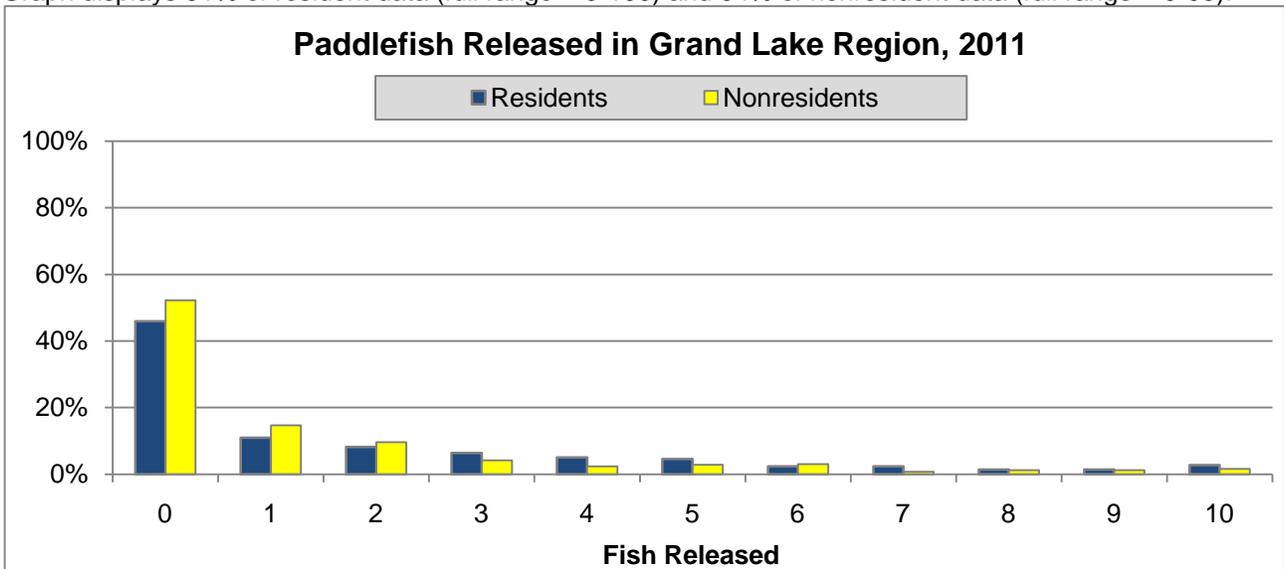
**Figure 9.** Paddlefish kept by residents ( $n=71$ ) and nonresidents ( $n=7$ ) in the Keystone Region, 2011. Graph displays 99% of resident (full range = 0-20) and 100% of nonresident data.



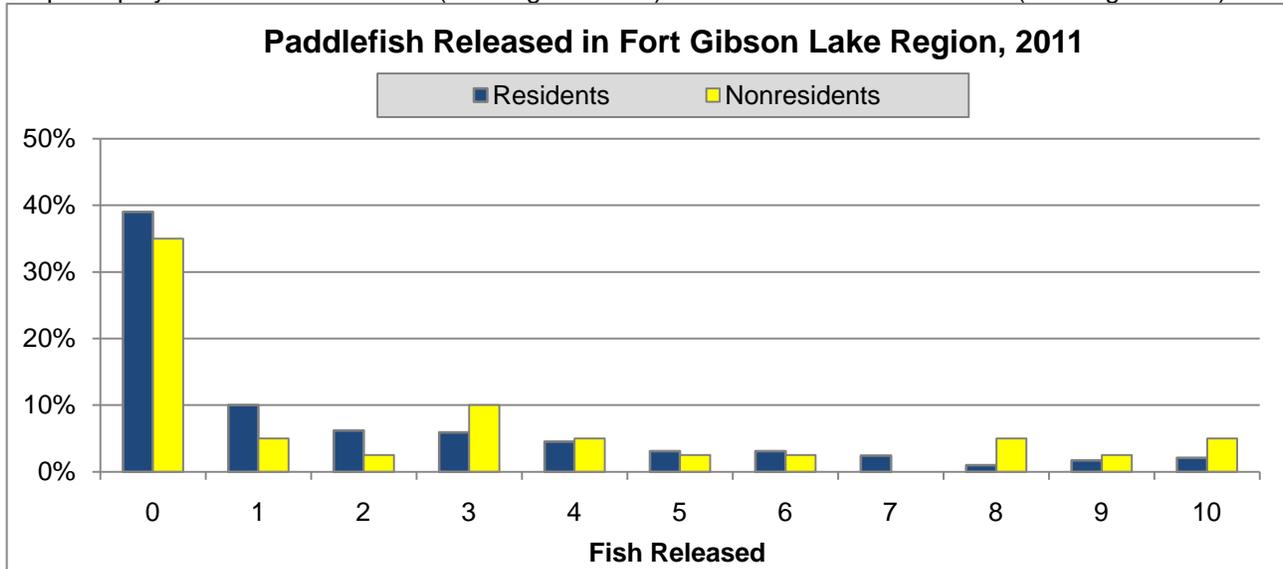
*Fish Released*

The number of fish released by active paddlefish anglers by region (2008-2011) are shown in Table A6. Data were not normally distributed in any region in any year. The distribution of fish released in 2011 around Grand Lake, Fort Gibson and Keystone can be seen in Figures 10-12. Median differences by residency, when present, are indicated in Table A6.

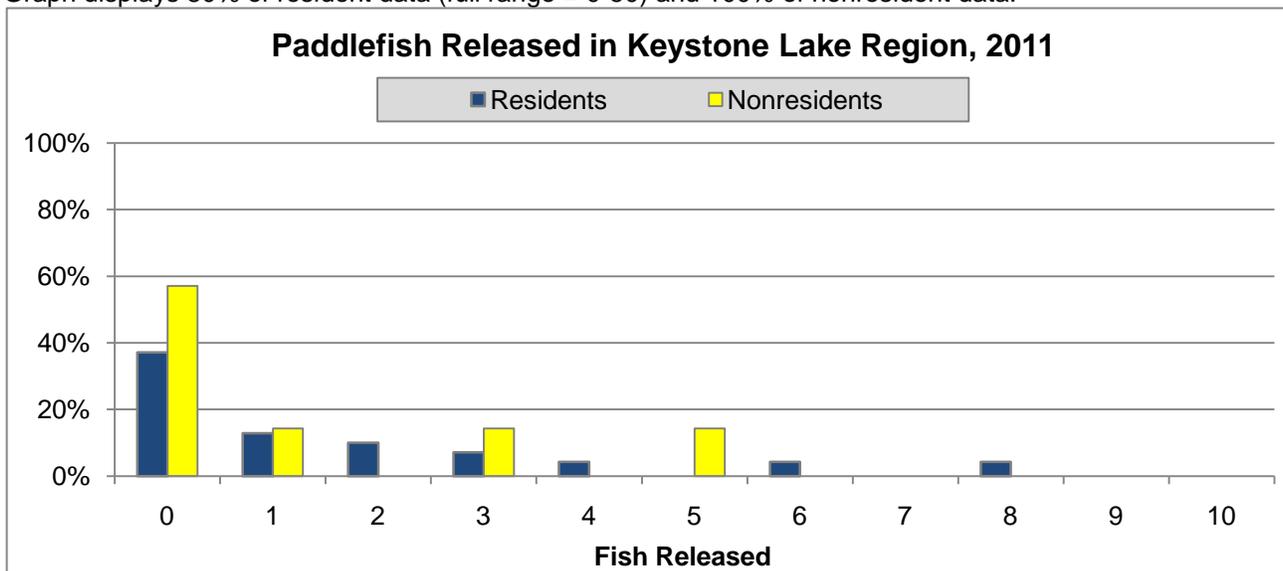
**Figure 10.** Paddlefish released by residents ( $n=220$ ) and nonresidents ( $n=429$ ) in the Grand Lake Region, 2011. Graph displays 91% of resident data (full range = 0-100) and 94% of nonresident data (full range = 0-95).



**Figure 11.** Paddlefish released by residents ( $n=290$ ) and nonresidents ( $n=34$ ) in the Fort Gibson Region, 2011. Graph displays 79% of resident data (full range = 0-150) and 75% of nonresident data (full range = 0-40).



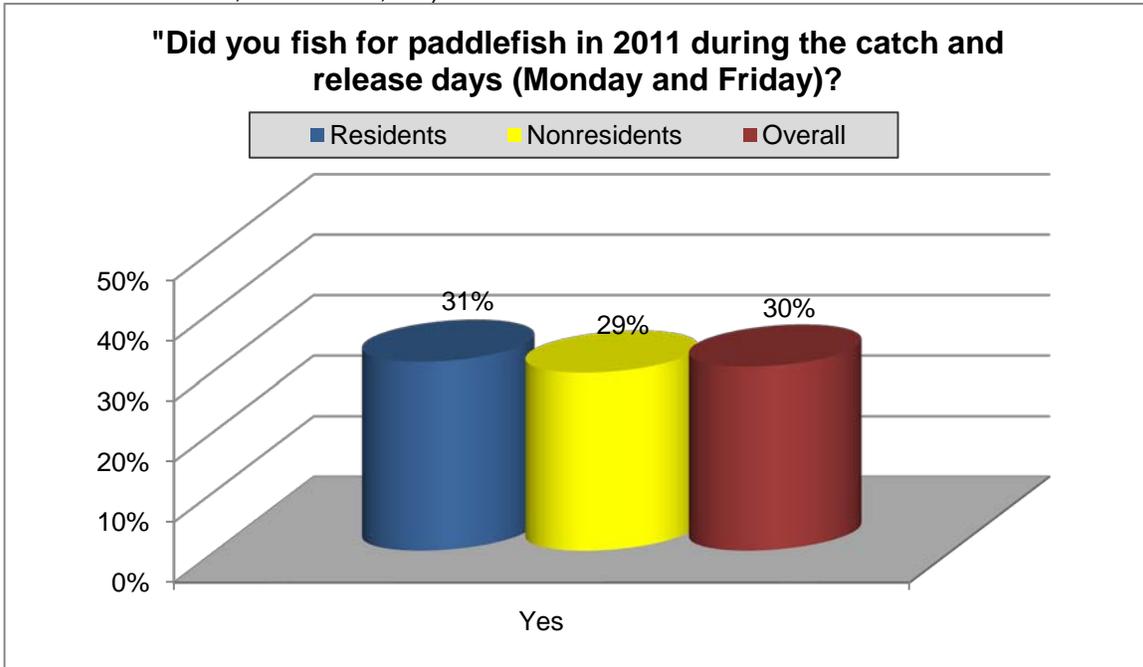
**Figure 12.** Paddlefish released by residents ( $n=70$ ) and nonresidents ( $n=7$ ) in the Keystone Region, 2011. Graph displays 80% of resident data (full range = 0-50) and 100% of nonresident data.



### Catch-and-Release Days

Monday and Friday were designated as catch-and-release days beginning in 2010. In 2011, just under a third (30 percent) of active paddlefish anglers fished these days (Figure 13). Participation did not differ by residency ( $P = 0.506$ ). Results were similar to 2010 and can be compared in Table A7.

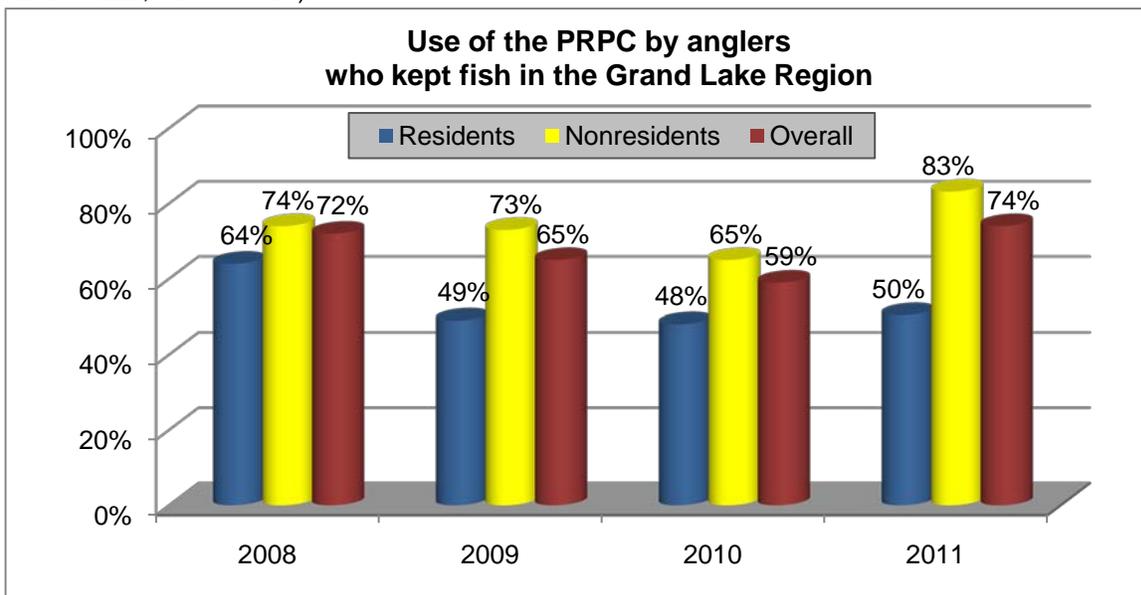
**Figure 13.** Participation in paddlefishing on catch-and-release days in 2011 (residents  $n=647$ ; nonresidents  $n=500$ ; overall  $n=1,147$ ).



*Use of the Paddlefish Research and Processing Center (PRPC)*

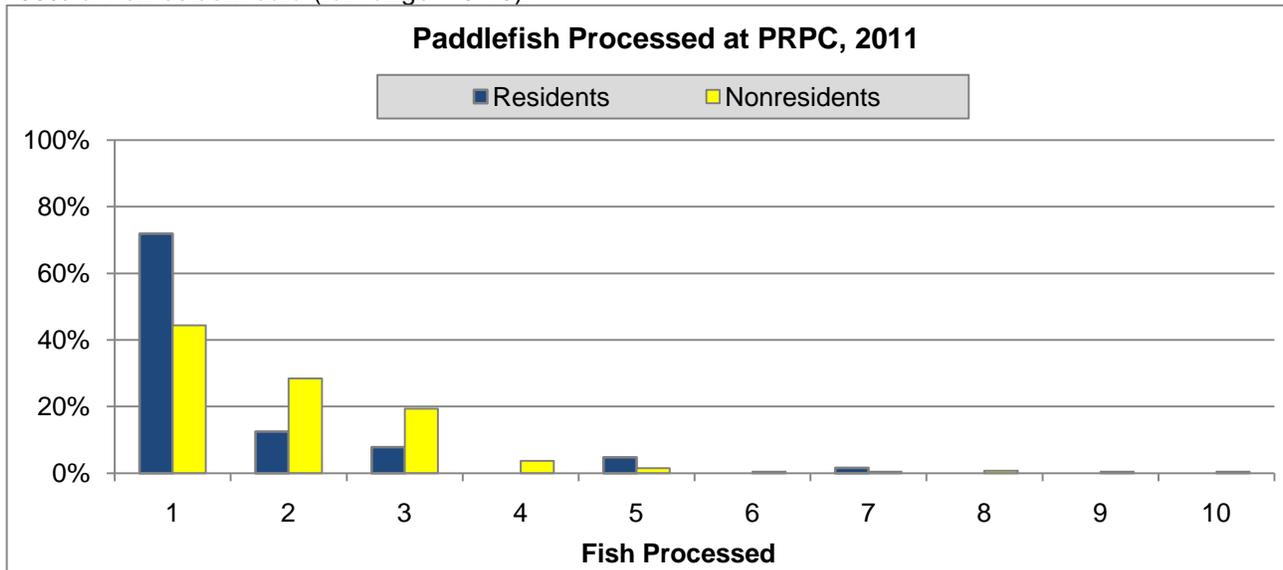
Seventy-four percent of 2011 Grand Lake Regions anglers who kept at least one paddlefish used the PRPC (Figure 14 and Table A8). Nonresidents continued to use the PRPC more than residents ( $P \leq 0.001$ ). In fact, 81 percent PRPC users were nonresidents.

**Figure 14.** Use of the Paddlefish Research and Processing Center (PRPC) by anglers who caught and kept paddlefish in the Grand Lake Region, by residency (Overall: 2008  $n=263$ ; 2009  $n=792$ ; 2010  $n=599$ ; 2011  $n=454$ ).



Grand Lake Region anglers who used the PRPC in 2011 reported taking an average of 2.0 paddlefish for processing (Table A9). Data were not normally distributed. Nonresidents tended to process more paddlefish at the PRPC than did residents (Figure 15;  $P \leq 0.001$ ). Median differences by residency, when present, are indicated in Table A9.

**Figure 15.** Number of paddlefish processed at the PRPC by resident ( $n=64$ ) and nonresident ( $n=268$ ) Grand Lake Region anglers who used the PRPC, 2011. Graph displays 99% of resident data (full range = 0-13) and >99% of nonresident data (full range = 0-13).



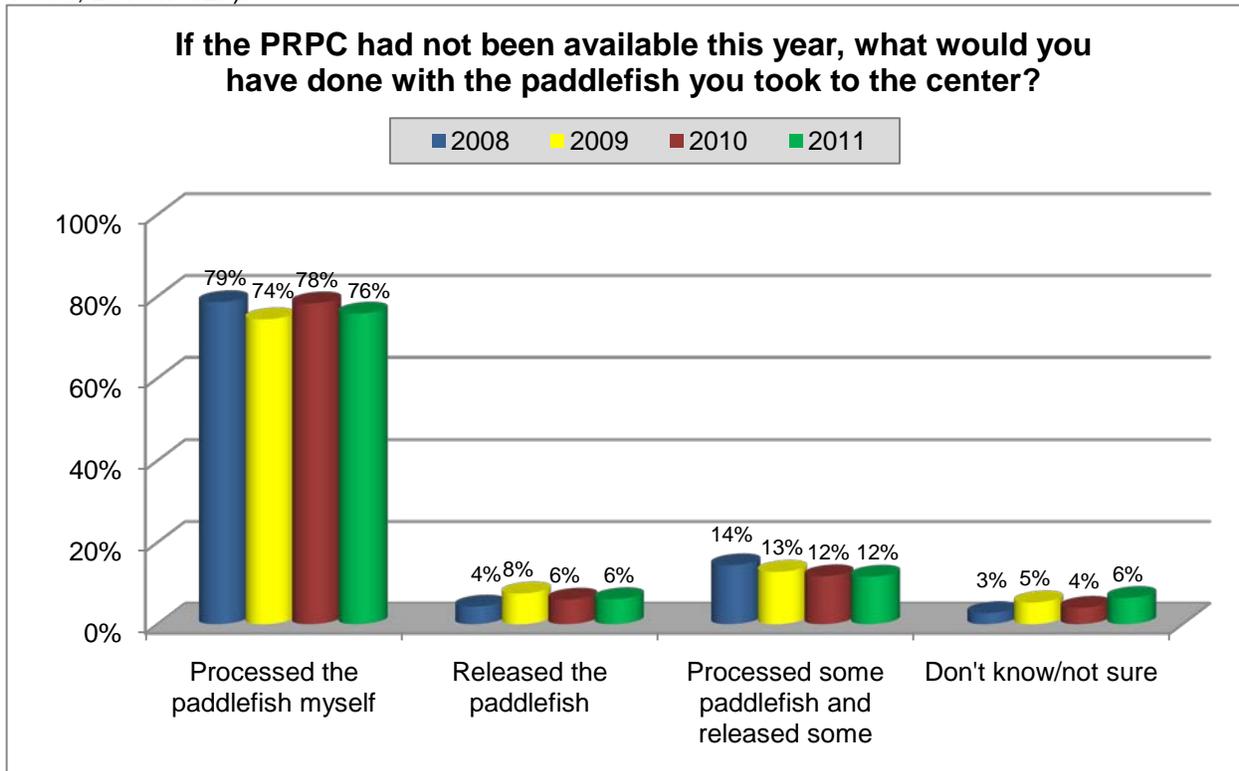
### Unreported Harvest

Paddlefish anglers who fished the Grand Lake Region reported keeping a number of fish but not processing them at the PRPC. The rate of “unreported harvest” was 32.5 percent in 2011, a drop from previous years (Table A10). Survey estimation of unreported harvest allowed ODWC to estimate total harvest. For 2011, the PRPC processed 4,609 fish (i.e., reported harvest) and the estimated total harvest was 6,825 (8 percent decline from the 2010 estimate of 7,379).

### Impact of PRPC on Paddlefish Harvest

Fisheries managers carefully monitor the paddlefish population to ensure the free processing service offered by the PRPC does not contribute to an overharvest of paddlefish. These surveys were used to assess what PRPC-users might have done with their paddlefish if the PRPC had not been available. Most anglers indicated they would have processed the paddlefish themselves (Figure 16). 2011 nonresidents were significantly more likely to process the paddlefish themselves than were residents (80 percent vs. 61 percent;  $P \leq 0.001$ ). Data for all years can be found in Table A11.

**Figure 16.** Hypothetical disposition of paddlefish processed at the Paddlefish Research and Processing Center if the center had not been available, by anglers who used the service (2008  $n=187$ ; 2009  $n=508$ ; 2010  $n=350$ ; 2011  $n=327$ ).



In 2011, the issue of PRPC impact on harvest was examined with multiple measures. Anglers who used the PRPC were asked to indicate their agreement with several statements. (See Table A12 for agreement with all items, overall and by residency.)

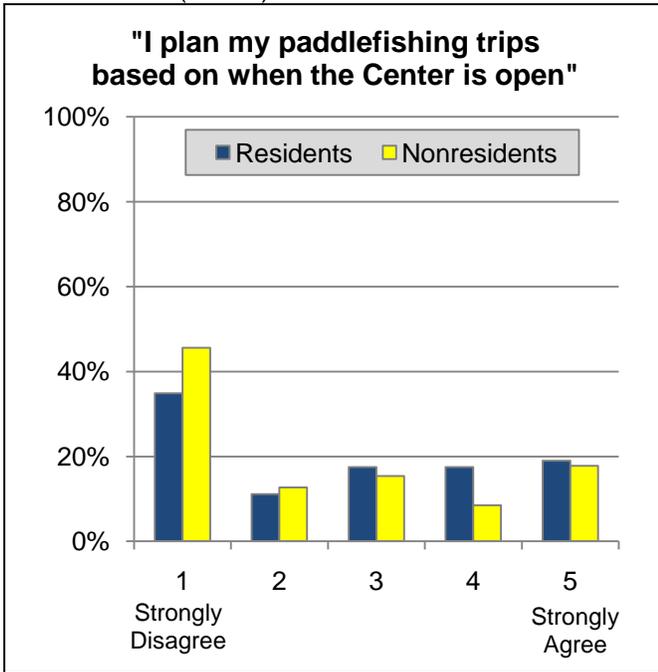
When asked if plans for a paddlefish trip were based on the availability of the PRPC, the most frequent response (44 percent) was “strong disagreement” (Figure 17). However, anglers were far from unified, and nearly one in five strongly agreed with the statement. Response did not differ by residency ( $P=0.233$ ).

Many anglers also indicated the availability of the PRPC was not a consideration in the decision to keep a fish (Figure 18). Residents were more likely than nonresidents to agree that the PRPC was a determining factor in keeping paddlefish ( $P=0.035$ ).

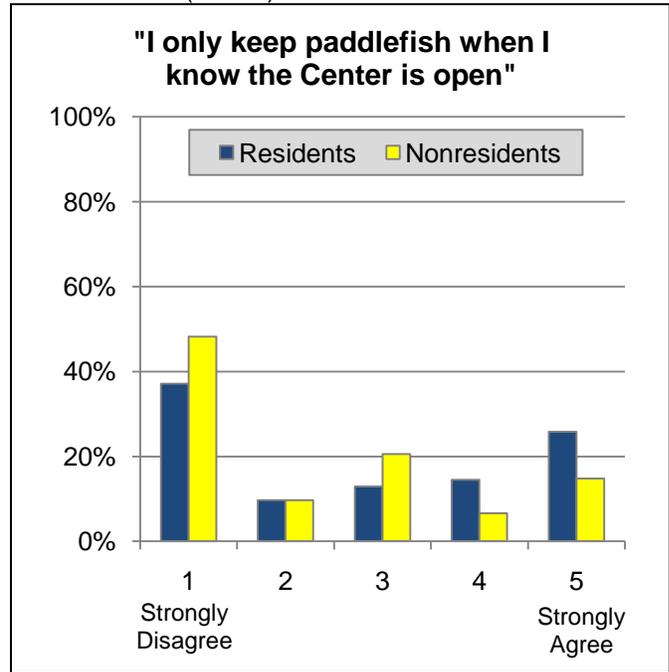
Anglers were more unified in their disagreement with the statement that they would release paddlefish if faced with cleaning the fish themselves (Figure 19). Residents were more likely to agree with this statement than nonresidents ( $P \leq 0.001$ ).

Response to these three items together seem to indicate the PRPC is recovering roe from nonresidents that would otherwise be lost, while at the same time possibly encouraging residents to harvest fish they might otherwise have released. Given that 81 percent of the PRPC users were nonresidents, the recovery of roe may be an issue of greater magnitude than additional harvest by residents.

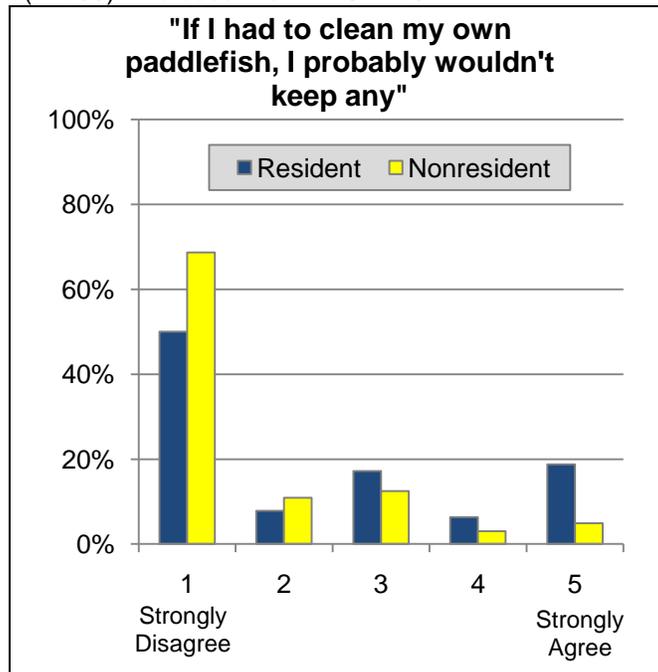
**Figure 17.** Agreement with the statement that the PRPC availability is a consideration when planning paddlefishing trips, by residents ( $n=63$ ) and nonresidents ( $n=259$ ) who used the PRPC in 2011.



**Figure 18.** Agreement with the statement that the PRPC availability is a consideration when deciding to keep paddlefish, by residents ( $n=62$ ) and nonresidents ( $n=257$ ) who used the PRPC in 2011.



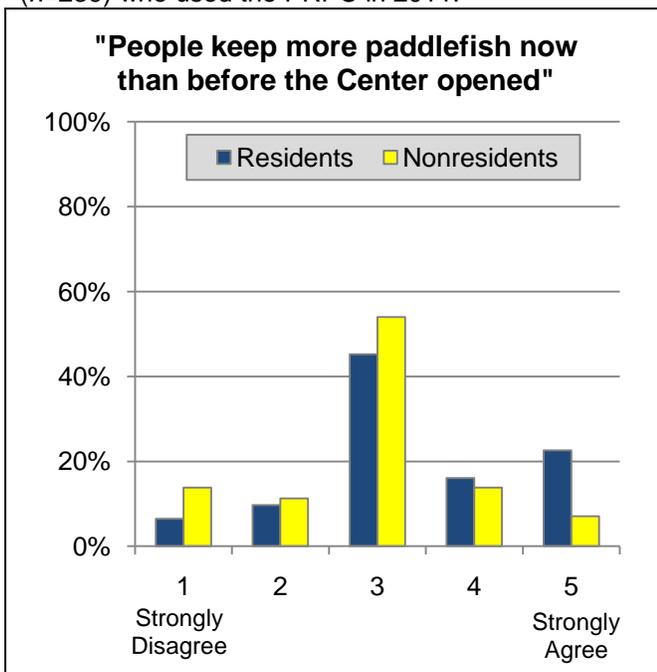
**Figure 19.** Agreement with the statement that paddlefish would be released if the angler had to clean them, by residents ( $n=64$ ) and nonresidents ( $n=265$ ) who used the PRPC in 2011.



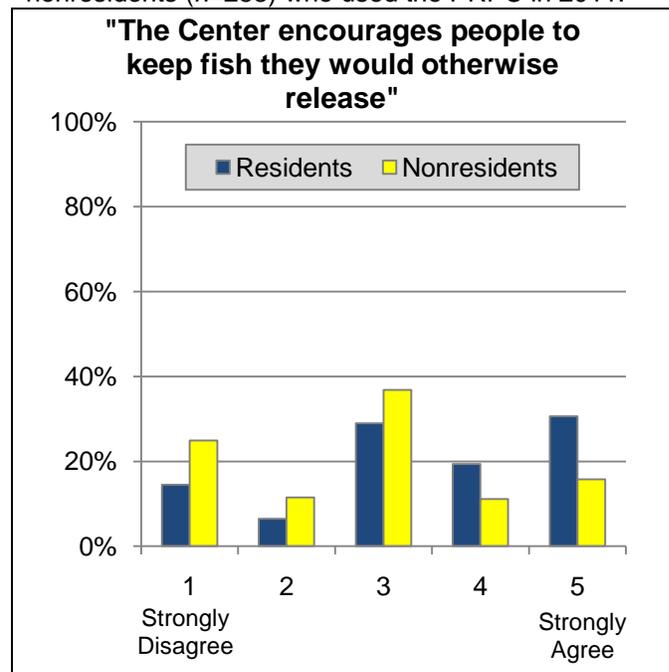
The following four items (Figures 20-23) were also asked only of PRPC users. In hindsight, it might have been helpful to address these questions to all active paddlefish anglers.

Anglers who used the PRPC were asked to indicate their agreement with two items regarding the impact of the PRPC on angler behavior overall, not necessarily themselves. In both cases, many selected a neutral point on the scale, perhaps indicating uncertainty about the behavior of other anglers in response to the PRPC (Figures 20 and 21). Residents were more likely than nonresidents to agree that anglers keep more paddlefish currently than before the PRPC opened ( $P = 0.006$ ) and that the PRPC encourages anglers to keep fish they would otherwise release ( $P = 0.012$ ). Possibly this perception among residents was a reflection of their own changed behavior, as the previous items (Figures 17-19) suggested the PRPC may encourage additional harvest among residents.

**Figure 20.** Agreement with the statement that anglers keep more paddlefish since the opening of the PRPC, by residents ( $n=62$ ) and nonresidents ( $n=239$ ) who used the PRPC in 2011.

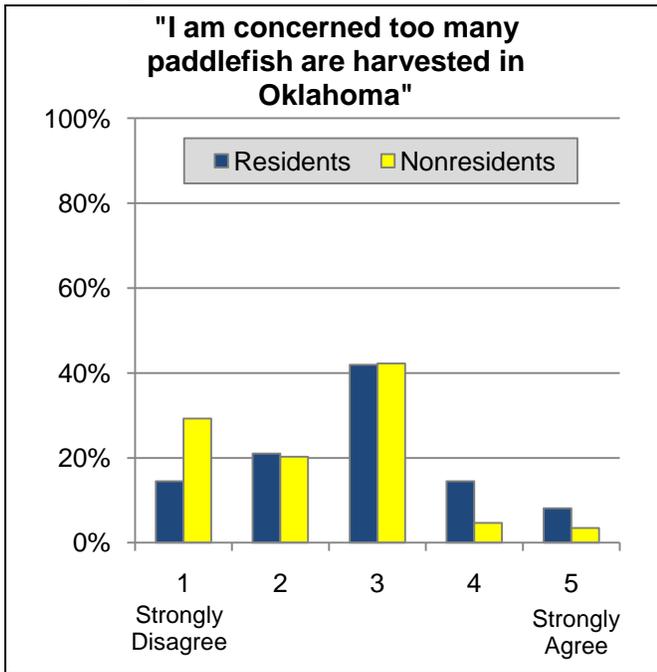


**Figure 21.** Agreement with the statement that the PRPC encourages keeping of paddlefish that would otherwise be released, by residents ( $n=62$ ) and nonresidents ( $n=253$ ) who used the PRPC in 2011.

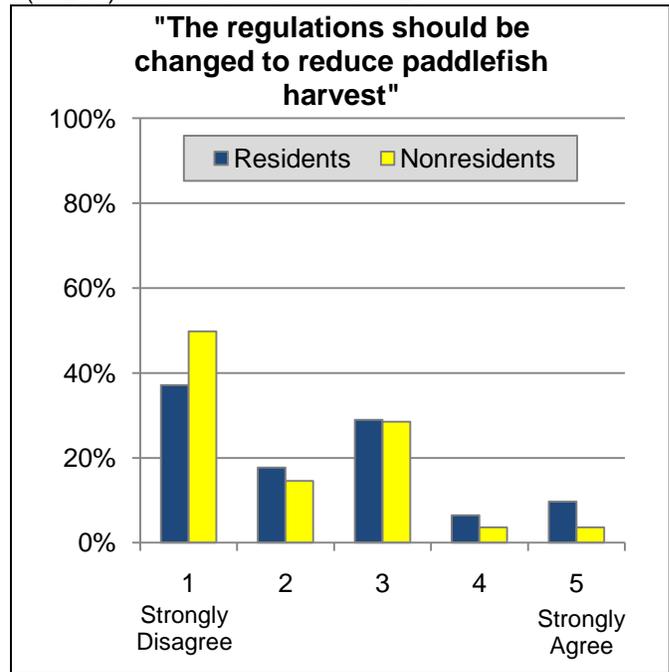


Anglers who used the PRPC were also asked to indicate their agreement with two general items regarding harvest of paddlefish in Oklahoma. Many selected a neutral response when presented an item expressing concern about overharvest (Figure 22). Residents were more likely than nonresidents to agree with the statement expressing concern about paddlefish harvest ( $P = 0.008$ ). Given that many respondents appeared uncertain about potential overharvest, it's not surprising that most disagreed that regulations were needed to reduce harvest (Figure 23). Response did not differ by residency ( $P = 0.139$ ).

**Figure 22.** Agreement with the statement expressing concern for paddlefish overharvest, by residents ( $n=62$ ) and nonresidents ( $n=256$ ) who used the PRPC in 2011.

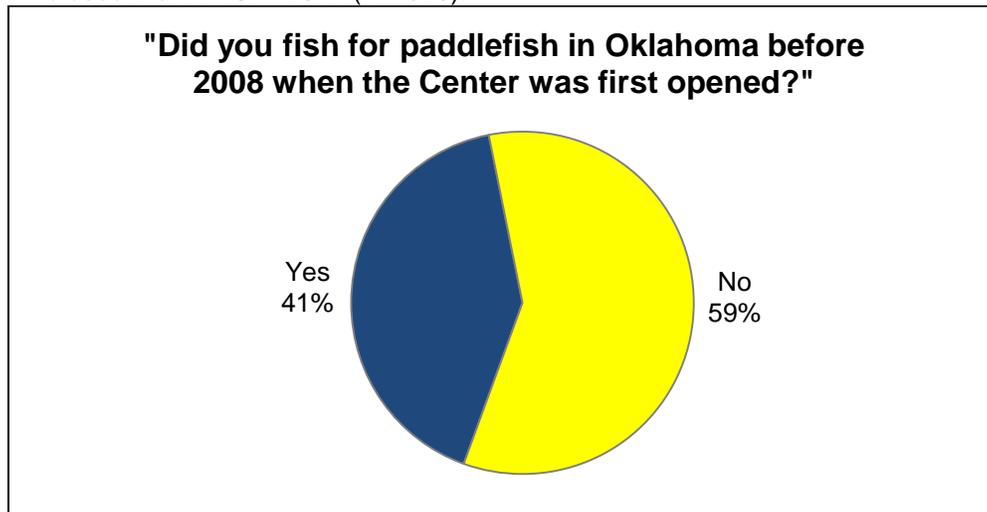


**Figure 23.** Agreement with the statement that the regulations should be changed to reduce paddlefish harvest, by residents ( $n=62$ ) and nonresidents ( $n=253$ ) who used the PRPC in 2011.



Concerns have been raised that perhaps the creation of the PRPC, the excellent paddlefishing conditions in 2009, and the publicity associated with both may have increased harvest pressure by recruiting new paddlefish anglers. Anglers who used the PRPC were asked if they had fished for paddlefish in Oklahoma before 2008 when the Center was first opened. Roughly four out of ten anglers who used the PRPC in 2011 were new to paddlefishing (Figure 24). Response did not differ by residency ( $P = 0.972$ ).

**Figure 24.** Paddlefishing in Oklahoma before the opening of the Center, by anglers who used the PRPC in 2011 ( $n = 329$ ).



## *New PRPC at Fort Gibson*

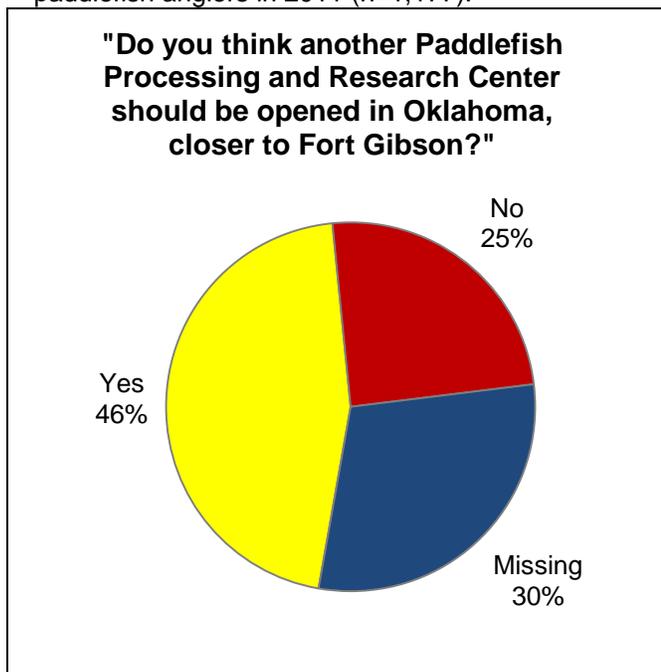
All active paddlefish anglers (regardless of their use of the PRPC) were asked if another PRPC should be opened closer to Fort Gibson. While the majority who answered the question supported the idea, of practical significance is the fact that 30 percent of the data were missing (Figure 25). In all other cases in this report, missing data were minimal (typically two or three percent) and were excluded from analysis. Missing data for this item might be translated as “no opinion” (an option not provided to respondents). However, it’s also possible the survey layout lead some respondents to miss the question entirely. This item was intended to be the final question for non-PRPC users, and some may have read the directions in the adjacent callout text box before answering this item, ending the survey prematurely. (See Appendix B.)

An effort was made to assess possible bias related to the missing data. Not surprisingly, paddlefish anglers who fished the Fort Gibson Lake Region were more likely to answer the question than were those who did not fish the area ( $P \leq 0.001$ ). Paddlefish anglers for whom data were missing were more likely to have fished the Grand Lake Region ( $P \leq 0.001$ ) or the Keystone Lake Region ( $P = 0.025$ ). Nonresidents were also more likely to skip the question than residents ( $P = 0.001$ ). No difference in tendency to answer the question was found by use of the PRPC ( $P = 0.062$ ) or paddlefishing “anywhere else” in Oklahoma ( $P = 0.359$ ).

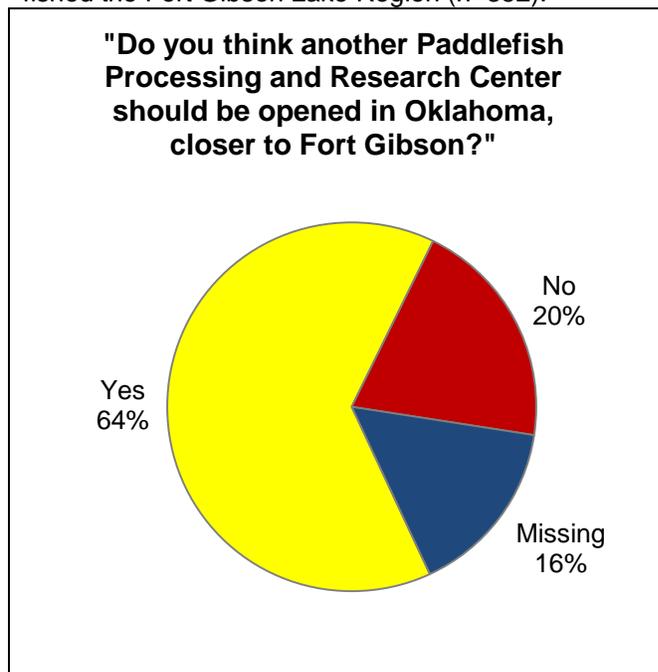
Another limitation of this item is that it compounds two potentially separate constructs: opinion on opening a second PRPC, and opinion on location (Fort Gibson). The specific location mentioned seemed to drive some portion of the responses. Once missing data were removed from the analyses, anglers who fished the Fort Gibson Lake Region were more likely to support this idea than were those who did not fish near Fort Gibson ( $P \leq 0.001$ ). In contrast, anglers who fished the Keystone Lake Region were less likely to think another PRPC should be opened closer to Fort Gibson than were those who did not fish near Keystone ( $P = 0.004$ ). Also, anglers who used the PRPC in 2011 were more likely to think another center should be opened than were those who had not used the center ( $P = 0.030$ ). Response did not differ by residency ( $P = 0.496$ ), whether or not anglers paddlefished in the Grand Lake Region ( $P = 0.102$ ) or “anywhere else” in Oklahoma ( $P = 0.779$ ).

Given all these concerns, the response set was narrowed to anglers who fished the Fort Gibson Lake Region and might be impacted by the availability of a second PRPC. The majority of paddlefish anglers who fished near Fort Gibson were in favor of opening a second PRPC nearby (Figure 26).

**Figure 25.** Distribution of agreement with opening another PRPC near Fort Gibson, by active paddlefish anglers in 2011 ( $n=1,177$ ).



**Figure 26.** Distribution of agreement with opening another PRPC near Fort Gibson, by anglers who fished the Fort Gibson Lake Region ( $n=352$ ).

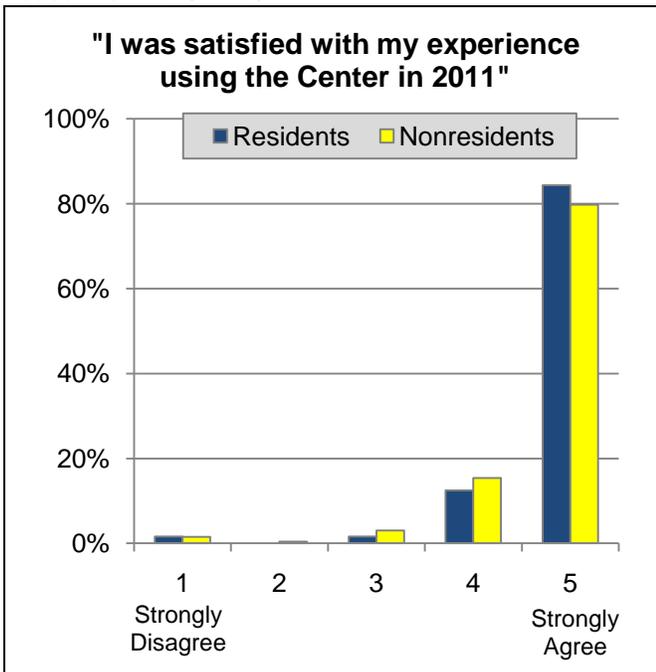


### *Satisfaction with the PRPC*

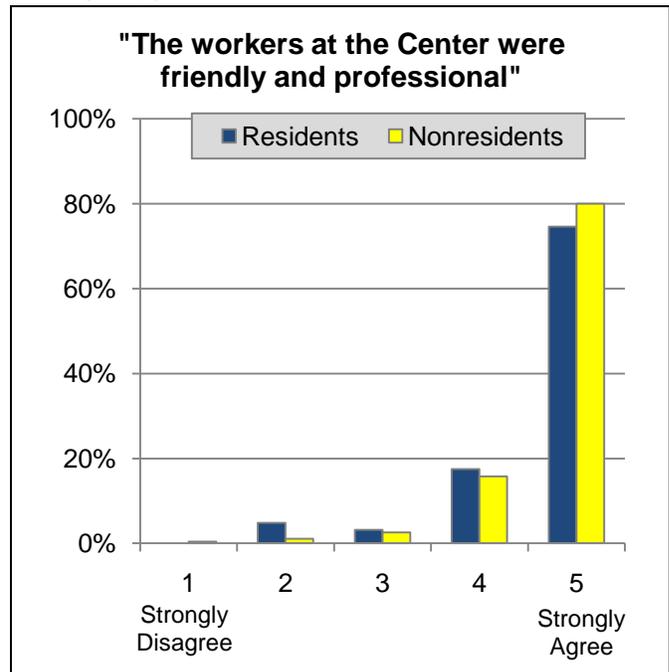
Anglers who used the PRPC were asked to indicate their agreement with several items designed to assess the quality of their experience at the PRPC. A great majority of anglers were satisfied with their experience (Figure 27) and agreed the workers were friendly and professional (Figure 28). Neither item differed by residency (satisfaction:  $P = 0.902$ ; workers:  $P = 0.376$ ). Most anglers agreed they would likely use the PRPC again (Figure 29) and that the PRPC is a good idea (Figure 30). Neither item differed by residency (future use of PRPC:  $P = 0.888$ ; good idea:  $P = 0.728$ ).

The 2008-2010 season paddlefish surveys also asked users of the PRPC to rate satisfaction with several aspects of the PRPC operation. These items were replaced with the above items in 2011, but prior results can be found in Table A13.

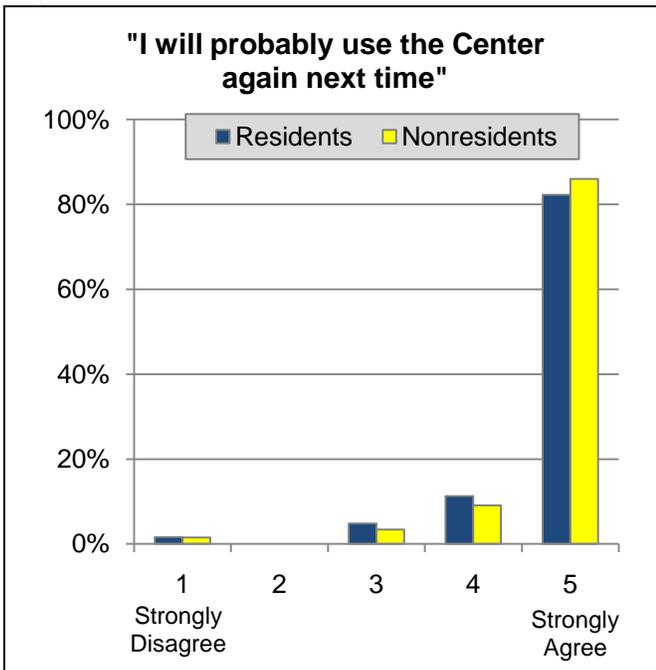
**Figure 27.** Agreement with the statement expressing satisfaction with the experience of using the PRPC, by residents ( $n=64$ ) and nonresidents ( $n=267$ ) who used the PRPC in 2011.



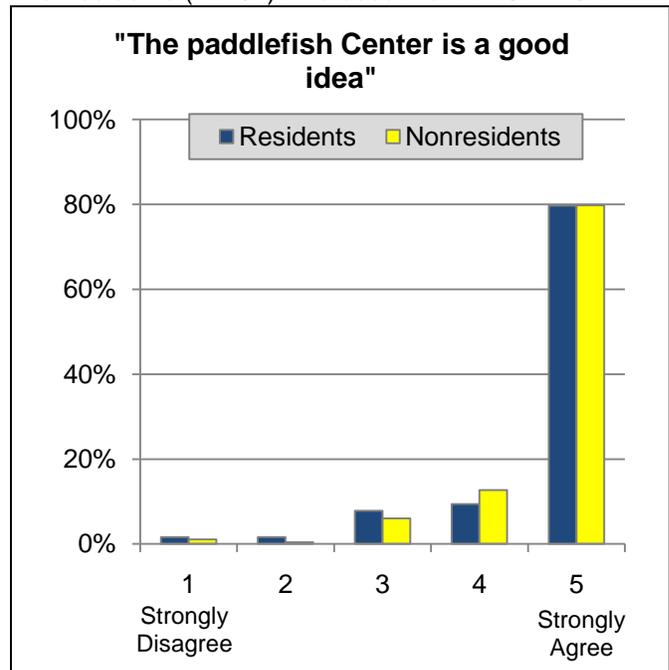
**Figure 28.** Agreement with the statement that PRPC workers were friendly and professional, by residents ( $n=63$ ) and nonresidents ( $n=265$ ) who used the PRPC in 2011.



**Figure 29.** Agreement with the statement expressing intent to use the PRPC again, by residents ( $n=62$ ) and nonresidents ( $n=265$ ) who used the PRPC in 2011.



**Figure 30.** Agreement with the statement that the PRPC is a good idea, by residents ( $n=64$ ) and nonresidents ( $n=267$ ) who used the PRPC in 2011.



## *Factors Related to a Successful Paddlefishing Experience*

The 2009 and 2010 season paddlefish surveys asked active paddlefish anglers to rate the importance of six items potentially related to evaluation of a paddlefishing experience in Oklahoma as successful. These items were replaced in 2011 but previous results can be found in Table A14.

### *Comments*

Survey respondents were invited to provide comments or feedback during the survey. All comments can be found in Appendix C. Direct communication was initiated with 56 anglers who requested a response by providing contact information in the comment section.

### **Conclusion**

The annual survey of paddlefish permit holders is valuable to resource managers. The data provide an understanding of angler use of the fishery (number of anglers, days fished, harvest), popularity of the PRPC, and reported/unreported harvest. This survey is the primary method by which ODWC is able to estimate angler harvest from Grand Lake, as recovery rates of paddlefish bands are too low to provide robust estimation. Satisfaction questions have helped to improve and monitor operations at the PRPC, and a better understanding of preferences for the paddlefishing experience have been helpful in considering regulatory changes. At this time, ODWC will likely continue the annual paddlefish permit holder survey.

### **References**

- Boxrucker, J. 2009. Fish research for Oklahoma waters: Stock assessment of the Grand Lake paddlefish population. F-50-R-16(27). Oklahoma Department of Wildlife Conservation. Oklahoma City, OK.
- Crews, A. 2010. 2010 post-season survey of paddlefish permit holders. Oklahoma Department of Wildlife Conservation. Oklahoma City, OK.

## Appendix A

**Table A1.** Use of paddlefish permit privileges. Superscripts denote significant differences between residents and nonresidents within a fishing area (row) in a given year.

| “Did you fish for paddlefish in [year]?”        | Overall         | Residents                    | Non-Residents                |
|---|-----------------|------------------------------|------------------------------|
| 2008  | <i>n</i> =1,595 | <i>n</i> =1,072 <sup>a</sup> | <i>n</i> =515 <sup>b</sup>   |
| Yes   | 46%             | 39%                          | 61%                          |
| No, I wanted to but did not have a chance       | 26%             | 30%                          | 18%                          |
| No, I did not intend to get a paddlefish permit | 28%             | 31%                          | 21%                          |
| 2009  | <i>n</i> =4,073 | <i>n</i> =2,792 <sup>a</sup> | <i>n</i> =1,279 <sup>b</sup> |
| Yes   | 46%             | 39%                          | 62%                          |
| No, but I intentionally got a paddlefish permit | 24%             | 27%                          | 16%                          |
| No, I unintentionally got a paddlefish permit   | 30%             | 34%                          | 22%                          |
| 2010  | <i>n</i> =4,512 | <i>n</i> =3,270 <sup>a</sup> | <i>n</i> =1,242 <sup>b</sup> |
| Yes   | 41%             | 38%                          | 51%                          |
| No, but I intentionally got a paddlefish permit | 26%             | 28%                          | 19%                          |
| No, I unintentionally got a paddlefish permit   | 33%             | 34%                          | 30%                          |
| 2011  | <i>n</i> =3,142 | <i>n</i> =2,219 <sup>a</sup> | <i>n</i> =923 <sup>b</sup>   |
| Yes   | 38%             | 30%                          | 55%                          |
| No, but I intentionally got a paddlefish permit | 24%             | 28%                          | 16%                          |
| No, I unintentionally got a paddlefish permit   | 38%             | 43%                          | 28%                          |

**Table A2.** Distribution of residency of active paddlefish anglers.

| “Did you fish for paddlefish in [year]?” | Residents              | Non-Residents        |
|--|------------------------|----------------------|
| 2008 : Yes ( <i>n</i> =734)              | 57% ( <i>n</i> =416)   | 43% ( <i>n</i> =314) |
| 2009: Yes ( <i>n</i> =1,884)             | 58% ( <i>n</i> =1,093) | 42% ( <i>n</i> =791) |
| 2010: Yes ( <i>n</i> =1,863)             | 66% ( <i>n</i> =1,225) | 34% ( <i>n</i> =638) |
| 2011: Yes ( <i>n</i> =1,177)             | 57% ( <i>n</i> =666)   | 43% ( <i>n</i> =511) |

**Table A3.** Paddlefishing participation by region. Superscripts denote significant differences between residents and nonresidents within a fishing area (row) in a given year.

| “Did you fish for paddlefish in [region]?” | Overall         | Residents        | Non-Residents    |
|--|-----------------|------------------|------------------|
| 2008                                       | <i>n</i> =734   | <i>n</i> =413    | <i>n</i> =314    |
| Grand Lake Region: Yes                     | 50%             | 24% <sup>a</sup> | 84% <sup>b</sup> |
| Fort Gibson Region: Yes                    | 30%             | 48% <sup>a</sup> | 6% <sup>b</sup>  |
| 2009                                       | <i>n</i> =1,884 | <i>n</i> =1,093  | <i>n</i> =791    |
| Grand Lake Region: Yes                     | 65%             | 47% <sup>a</sup> | 90% <sup>b</sup> |
| Fort Gibson Region: Yes                    | 29%             | 43% <sup>a</sup> | 10% <sup>b</sup> |
| 2010                                       | <i>n</i> =1,863 | <i>n</i> =1,225  | <i>n</i> =638    |
| Grand Lake Region: Yes                     | 58%             | 43% <sup>a</sup> | 89% <sup>b</sup> |
| Fort Gibson Region: Yes                    | 30%             | 43% <sup>a</sup> | 8% <sup>b</sup>  |
| Keystone Region: Yes                       | 9%              | 14% <sup>a</sup> | 4% <sup>b</sup>  |
| Anywhere else: Yes                         | 19%             | 26% <sup>a</sup> | 9% <sup>b</sup>  |
| 2011                                       | <i>n</i> =1,177 | <i>n</i> =666    | <i>n</i> =511    |
| Grand Lake Region: Yes                     | 61%             | 38% <sup>a</sup> | 93% <sup>b</sup> |
| Fort Gibson Region: Yes                    | 30%             | 49% <sup>a</sup> | 7% <sup>b</sup>  |
| Keystone Region: Yes                       | 7%              | 12% <sup>a</sup> | 2% <sup>b</sup>  |
| Anywhere else: Yes                         | 13%             | 21% <sup>a</sup> | 3% <sup>b</sup>  |

**Table A4.** Days of paddlefishing by region. Superscripts denote significant differences between residents and nonresidents within a fishing area (row) in a given year.

| Number of days fished            | Overall |        |       | Residents |                |       | Non-Residents |                |       |
|----------------------------------|---------|--------|-------|-----------|----------------|-------|---------------|----------------|-------|
|                                  | Mean    | Median | Range | Mean      | Median         | Range | Mean          | Median         | Range |
| <b>2008</b>                      |         |        |       |           |                |       |               |                |       |
| All Areas ( <i>n</i> = 707)      | 6.6     | 3      | 1-150 | 8.1       | 4 <sup>a</sup> | 1-150 | 4.5           | 3 <sup>b</sup> | 1-60  |
| Grand Area ( <i>n</i> = 350)     | 5.7     | 3      | 1-102 | 8.2       | 3 <sup>a</sup> | 1-102 | 4.6           | 3 <sup>a</sup> | 1-60  |
| Ft Gibson Area ( <i>n</i> = 210) | 6.8     | 3      | 1-60  | 7.1       | 3 <sup>a</sup> | 1-60  | 3.4           | 2 <sup>a</sup> | 1-9   |
| <b>2009</b>                      |         |        |       |           |                |       |               |                |       |
| All Areas ( <i>n</i> = 1,790)    | 5.9     | 3      | 1-130 | 7.0       | 3 <sup>a</sup> | 1-130 | 4.5           | 3 <sup>b</sup> | 1-72  |
| Grand Area ( <i>n</i> = 1,152)   | 5.5     | 3      | 1-110 | 7.0       | 3 <sup>a</sup> | 1-110 | 4.5           | 3 <sup>a</sup> | 1-72  |
| Ft Gibson Area ( <i>n</i> = 519) | 4.7     | 3      | 1-90  | 5.0       | 3 <sup>a</sup> | 1-90  | 2.9           | 2 <sup>a</sup> | 1-15  |
| <b>2010</b>                      |         |        |       |           |                |       |               |                |       |
| Grand Area ( <i>n</i> = 1,054)   | 4.8     | 3      | 1-75  | 5.1       | 2 <sup>a</sup> | 1-75  | 4.4           | 3 <sup>b</sup> | 1-46  |
| Ft Gibson Area ( <i>n</i> = 539) | 4.8     | 2      | 1-100 | 5.0       | 2 <sup>a</sup> | 1-100 | 2.6           | 2 <sup>a</sup> | 1-10  |
| Keystone Area ( <i>n</i> = 165)  | 4.2     | 2      | 1-40  | 4.3       | 2 <sup>a</sup> | 1-40  | 3.2           | 3 <sup>a</sup> | 1-14  |
| <b>2011</b>                      |         |        |       |           |                |       |               |                |       |
| Grand Area ( <i>n</i> = 699)     | 3.8     | 2      | 1-40  | 4.2       | 2 <sup>a</sup> | 1-35  | 3.6           | 3 <sup>a</sup> | 1-40  |
| Ft Gibson Area ( <i>n</i> = 339) | 5.0     | 2      | 1-100 | 5.3       | 2 <sup>a</sup> | 1-100 | 2.5           | 2 <sup>a</sup> | 1-15  |
| Keystone Area ( <i>n</i> = 81)   | 5.1     | 2      | 1-90  | 5.5       | 2 <sup>a</sup> | 1-90  | 1.4           | 1 <sup>b</sup> | 1-3   |

**Table A5.** Fish kept by region. Superscripts denote significant differences between residents and nonresidents within a fishing area (row) in a given year.

| Number of paddlefish kept        | Overall |        |       | Residents |                |       | Non-Residents |                |       |
|----------------------------------|---------|--------|-------|-----------|----------------|-------|---------------|----------------|-------|
|                                  | Mean    | Median | Range | Mean      | Median         | Range | Mean          | Median         | Range |
| <b>2008</b>                      |         |        |       |           |                |       |               |                |       |
| All Areas ( <i>n</i> = 688)      | 2.4     | 1      | 0-80  | 2.5       | 1 <sup>a</sup> | 0-80  | 2.2           | 2 <sup>b</sup> | 0-18  |
| Grand Area ( <i>n</i> = 343)     | 2.5     | 2      | 0-80  | 2.9       | 1 <sup>a</sup> | 0-80  | 2.3           | 2 <sup>b</sup> | 0-18  |
| Ft Gibson Area ( <i>n</i> = 199) | 2.5     | 1      | 0-30  | 2.6       | 1 <sup>a</sup> | 0-30  | 2.3           | 2 <sup>a</sup> | 0-6   |
| <b>2009</b>                      |         |        |       |           |                |       |               |                |       |
| All Areas ( <i>n</i> = 1,745)    | 2.3     | 1      | 0-110 | 2.3       | 1 <sup>a</sup> | 0-110 | 2.4           | 2 <sup>b</sup> | 0-64  |
| Grand Area ( <i>n</i> = 1,121)   | 2.3     | 1      | 0-110 | 2.1       | 1 <sup>a</sup> | 0-110 | 2.4           | 2 <sup>b</sup> | 0-64  |
| Ft Gibson Area ( <i>n</i> = 510) | 2.0     | 1      | 0-30  | 2.1       | 1 <sup>a</sup> | 0-30  | 1.7           | 1 <sup>b</sup> | 0-6   |
| <b>2010</b>                      |         |        |       |           |                |       |               |                |       |
| Grand Area ( <i>n</i> = 1,028)   | 1.5     | 1      | 0-25  | 1.1       | 0 <sup>a</sup> | 0-25  | 1.8           | 1 <sup>b</sup> | 0-16  |
| Ft Gibson Area ( <i>n</i> = 510) | 1.3     | 0      | 0-30  | 1.4       | 0 <sup>a</sup> | 0-30  | 0.6           | 0 <sup>b</sup> | 0-4   |
| Keystone Area ( <i>n</i> = 161)  | 0.6     | 0      | 0-10  | 0.6       | 0 <sup>a</sup> | 0-10  | 0.5           | 0 <sup>a</sup> | 0-3   |
| <b>2011</b>                      |         |        |       |           |                |       |               |                |       |
| Grand Area ( <i>n</i> = 673)     | 1.5     | 1      | 0-20  | 1.1       | 1 <sup>a</sup> | 0-13  | 1.7           | 1 <sup>b</sup> | 0-20  |
| Ft Gibson Area ( <i>n</i> = 332) | 1.6     | 1      | 0-38  | 1.6       | 1 <sup>a</sup> | 0-38  | 1.0           | 1 <sup>a</sup> | 0-8   |
| Keystone Area ( <i>n</i> = 78)   | 0.8     | 0      | 0-20  | 0.8       | 0 <sup>a</sup> | 0-20  | 0.4           | 0 <sup>a</sup> | 0-2   |

**Table A6.** Fish released by region. Superscripts denote significant differences between residents and nonresidents within a fishing area (row) in a given year.

| Number of paddlefish released    | Overall |        |       | Residents |                  |       | Non-Residents |                  |       |
|----------------------------------|---------|--------|-------|-----------|------------------|-------|---------------|------------------|-------|
|                                  | Mean    | Median | Range | Mean      | Median           | Range | Mean          | Median           | Range |
| <b>2008</b>                      |         |        |       |           |                  |       |               |                  |       |
| All Areas ( <i>n</i> = 659)      | 11.6    | 2      | 0-440 | 15.1      | 3 <sup>a</sup>   | 0-440 | 6.9           | 1 <sup>b</sup>   | 0-155 |
| Grand Area ( <i>n</i> = 318)     | 11.0    | 2      | 0-415 | 21.4      | 4 <sup>a</sup>   | 0-415 | 7.2           | 1 <sup>b</sup>   | 0-155 |
| Ft Gibson Area ( <i>n</i> = 200) | 9.2     | 3      | 0-138 | 9.5       | 3 <sup>a</sup>   | 0-138 | 6.3           | 1 <sup>a</sup>   | 0-49  |
| <b>2009</b>                      |         |        |       |           |                  |       |               |                  |       |
| All Areas ( <i>n</i> = 1,675)    | 8.4     | 2      | 0-345 | 8.9       | 2 <sup>a</sup>   | 0-300 | 7.7           | 1 <sup>b</sup>   | 0-345 |
| Grand Area ( <i>n</i> = 1,069)   | 7.2     | 1      | 0-272 | 8.0       | 2 <sup>a</sup>   | 0-272 | 6.7           | 1 <sup>a</sup>   | 0-250 |
| Ft Gibson Area ( <i>n</i> = 490) | 7.6     | 2      | 0-100 | 7.0       | 2 <sup>a</sup>   | 0-100 | 11.1          | 4 <sup>b</sup>   | 0-65  |
| <b>2010</b>                      |         |        |       |           |                  |       |               |                  |       |
| Grand Area ( <i>n</i> = 982)     | 6.7     | 1      | 0-300 | 6.9       | 1 <sup>a</sup>   | 0-300 | 6.5           | 1 <sup>a</sup>   | 0-215 |
| Ft Gibson Area ( <i>n</i> = 509) | 8.6     | 1      | 0-911 | 8.6       | 1 <sup>a</sup>   | 0-911 | 8.3           | 3 <sup>a</sup>   | 0-40  |
| Keystone Area ( <i>n</i> = 155)  | 4.8     | 1      | 0-100 | 5.1       | 1 <sup>a</sup>   | 0-100 | 2.6           | 1 <sup>a</sup>   | 0-15  |
| <b>2011</b>                      |         |        |       |           |                  |       |               |                  |       |
| Grand Area ( <i>n</i> = 649)     | 3.5     | 0      | 0-100 | 4.3       | 1 <sup>a</sup>   | 0-100 | 3.1           | 0 <sup>b</sup>   | 0-95  |
| Ft Gibson Area ( <i>n</i> = 324) | 7.3     | 2      | 0-150 | 7.4       | 2 <sup>a</sup>   | 0-150 | 6.7           | 3.5 <sup>a</sup> | 0-40  |
| Keystone Area ( <i>n</i> = 77)   | 5.7     | 1      | 0-50  | 6.1       | 1.5 <sup>a</sup> | 0-50  | 1.3           | 0 <sup>a</sup>   | 0-5   |

**Table A7.** Fishing on catch-and-release days. Superscripts denote significant differences between residents and nonresidents within an area (row) in a given year.

| “Did you fish for paddlefish in [year] during the catch and release days (Monday and Friday)?” | Overall         | Residents        | Non-Residents    |
|--|-----------------|------------------|------------------|
| 2010   | <i>n</i> =1,777 | <i>n</i> =1,168  | <i>n</i> =609    |
| Yes  | 34%             | 35% <sup>a</sup> | 33% <sup>a</sup> |
| 2011   | <i>n</i> =1,147 | <i>n</i> =647    | <i>n</i> =500    |
| Yes  | 30%             | 31% <sup>a</sup> | 29% <sup>a</sup> |

**Table A8.** Use of the PRPC by Grand Lake Region anglers who caught and kept at least one paddlefish. Superscripts denote significant differences between residents and nonresidents within an area (row) in a given year.

| Use of the PRPC | Overall       | Residents        | Nonresidents     |
|-----------------|---------------|------------------|------------------|
| 2008            | <i>n</i> =263 | <i>n</i> =47     | <i>n</i> =216    |
| Yes             | 72%           | 64%              | 74%              |
| 2009            | <i>n</i> =792 | <i>n</i> =276    | <i>n</i> =516    |
| Yes             | 65%           | 49% <sup>a</sup> | 73% <sup>b</sup> |
| 2010            | <i>n</i> =599 | <i>n</i> =225    | <i>n</i> =374    |
| Yes             | 59%           | 48% <sup>a</sup> | 65% <sup>b</sup> |
| 2011            | <i>n</i> =454 | <i>n</i> =225    | <i>n</i> =374    |
| Yes             | 74%           | 50% <sup>a</sup> | 83% <sup>b</sup> |

**Table A9.** Number of paddlefish processed at PRPC by Grand Lake Region anglers who caught and kept at least one fish.

| Fish Processed at PRPC |        |      |       |           |                |      |       |              |                |      |       |
|------------------------|--------|------|-------|-----------|----------------|------|-------|--------------|----------------|------|-------|
| Overall                |        |      |       | Residents |                |      |       | Nonresidents |                |      |       |
| Mean                   | Median | Mode | Range | Mean      | Median         | Mode | Range | Mean         | Median         | Mode | Range |
| 2008 (n=192)           |        |      |       |           |                |      |       |              |                |      |       |
| 2.6                    | 2      | 2    | 1-24  | 3.7       | 2 <sup>a</sup> | 1    | 1-24  | 2.4          | 2 <sup>a</sup> | 2    | 1-13  |
| 2009 (n=549)           |        |      |       |           |                |      |       |              |                |      |       |
| 2.3                    | 2      | 1    | 1-17  | 2.1       | 1 <sup>a</sup> | 1    | 1-17  | 2.4          | 2 <sup>b</sup> | 1    | 1-15  |
| 2010 (n=354)           |        |      |       |           |                |      |       |              |                |      |       |
| 2.3                    | 2      | 1    | 1-25  | 2.2       | 1 <sup>a</sup> | 1    | 1-25  | 2.4          | 2 <sup>b</sup> | 1    | 1-16  |
| 2011 (n=332)           |        |      |       |           |                |      |       |              |                |      |       |
| 2.0                    | 2      | 1    | 1-13  | 1.8       | 1 <sup>a</sup> | 1    | 1-13  | 2.0          | 2 <sup>b</sup> | 1    | 1-13  |

**Table A10.** Unreported harvest in the Grand Lake Region, as calculated by the proportion of paddlefish harvested in the area but not processed at the Paddlefish Research and Processing Center. Only individuals with valid data for both variables (number of fish kept in Grand Lake Region and number of fish processed at PRPC, when applicable) were used in the calculation of unreported harvest.

|             | Survey Results                             |           |                               |                       | Survey Results Applied to PRPC Data |                         |       |        |
|-------------|--|-----------|-------------------------------|-----------------------|-------------------------------------|-------------------------|-------|--------|
|             | Sum of Fish Harvested in Grand Lake Region |           | Sum of Fish Processed at PRPC |                       | Total Fish Processed at PRPC        | Estimated Total Harvest |       |        |
|             |  |           |                               | Reported Harvest Rate | Unreported Harvest Rate             |                         |       |        |
| <b>2008</b> | 815  | (n=329)   | 473                           | (n=182)               | 58.0%                               | 42.0%                   | 4,222 | 7,275  |
| <b>2009</b> | 2,313                                      | (n=1,098) | 1,135                         | (n=492)               | 49.1%                               | 50.9%                   | 7,408 | 15,097 |
| <b>2010</b> | 1,514                                      | (n=1,021) | 810                           | (n=346)               | 53.5%                               | 46.5%                   | 3,948 | 7,379  |
| <b>2011</b> | 967  | (n=667)   | 653                           | (n=330)               | 67.5%                               | 32.5%                   | 4,609 | 6,825  |

**Table A11.** Disposition of paddlefish if the PRPC did not exist, by Grand Lake Region anglers who used the PRPC. Superscripts denote significant differences between residents and nonresidents within a fishing area (row) in a given year.

| <b>“If the Paddlefish Research and Processing Center had not been available this year, what would you have done with the paddlefish you took to the Center?”</b> | <b>Overall</b> | <b>Residents</b>           | <b>Non-Residents</b>       |
|--|----------------|----------------------------|----------------------------|
| <b>2008</b>  | <i>n</i> =187  | <i>n</i> =29 <sup>a</sup>  | <i>n</i> =158 <sup>b</sup> |
| Processed the paddlefish myself  | 79%            | 55%                        | 83%                        |
| Released the paddlefish  | 4%             | 7%                         | 4%                         |
| Processed some paddlefish and released some  | 14%            | 28%                        | 12%                        |
| Don't know/not sure  | 3%             | 10%                        | 1%                         |
| <b>2009</b>  | <i>n</i> =508  | <i>n</i> =135 <sup>a</sup> | <i>n</i> =373 <sup>b</sup> |
| Processed the paddlefish myself  | 74%            | 66%                        | 78%                        |
| Released the paddlefish  | 8%             | 14%                        | 5%                         |
| Processed some paddlefish and released some  | 13%            | 15%                        | 12%                        |
| Don't know/not sure  | 5%             | 5%                         | 5%                         |
| <b>2010</b>  | <i>n</i> =350  | <i>n</i> =108 <sup>a</sup> | <i>n</i> =242 <sup>b</sup> |
| Processed the paddlefish myself  | 78%            | 66%                        | 84%                        |
| Released the paddlefish  | 6%             | 15%                        | 2%                         |
| Processed some paddlefish and released some  | 12%            | 13%                        | 11%                        |
| Don't know/not sure  | 4%             | 7%                         | 3%                         |
| <b>2011</b>  | <i>n</i> =327  | <i>n</i> =64 <sup>a</sup>  | <i>n</i> =263 <sup>b</sup> |
| Processed the paddlefish myself  | 76%            | 61%                        | 80%                        |
| Released the paddlefish  | 6%             | 16%                        | 4%                         |
| Processed some paddlefish and released some  | 12%            | 16%                        | 11%                        |
| Don't know/not sure  | 6%             | 8%                         | 6%                         |

**Table A12.** Agreement with statements pertaining to the possible impact of the PRPC on the paddlefish fishery, by Grand Lake Region anglers who used the PRPC (1 = Strongly Disagree, 5 = Strongly Agree).

| Please indicate your agreement with the following statements:             | Overall (percent)        |    |    |    |    | Residents (percent)     |    |    |    |    | Non-Residents (percent)  |    |    |    |    |
|---|--------------------------|----|----|----|----|-------------------------|----|----|----|----|--------------------------|----|----|----|----|
|   | 1                        | 2  | 3  | 4  | 5  | 1                       | 2  | 3  | 4  | 5  | 1                        | 2  | 3  | 4  | 5  |
| 2011  | (minimum <i>n</i> = 313) |    |    |    |    | (minimum <i>n</i> = 64) |    |    |    |    | (minimum <i>n</i> = 249) |    |    |    |    |
| ...I was satisfied with my experience using the Center in 2011            | 2                        | 0  | 3  | 15 | 80 | 2                       | 0  | 2  | 12 | 85 | 2                        | 0  | 4  | 15 | 79 |
| ...If I had to clean my own paddlefish, I probably wouldn't keep any      | 64                       | 11 | 13 | 4  | 8  | 51                      | 8  | 16 | 6  | 19 | 68                       | 11 | 13 | 3  | 5  |
| ...I am concerned too many paddlefish are harvested in Oklahoma           | 26                       | 21 | 41 | 7  | 4  | 15                      | 22 | 40 | 15 | 8  | 29                       | 21 | 42 | 5  | 3  |
| ...The workers at the Center were friendly and professional               | 1                        | 2  | 3  | 16 | 79 | 0                       | 5  | 3  | 17 | 76 | 1                        | 1  | 3  | 16 | 79 |
| ...People keep more paddlefish now than before the center was opened      | 13                       | 11 | 15 | 15 | 11 | 6                       | 11 | 44 | 17 | 22 | 14                       | 11 | 53 | 14 | 8  |
| ...The paddlefish Center is a good idea                                   | 1                        | 1  | 7  | 12 | 79 | 2                       | 2  | 8  | 9  | 81 | 1                        | 0  | 7  | 13 | 79 |
| ...I only keep paddlefish when I know the Center is open                  | 46                       | 10 | 19 | 8  | 17 | 37                      | 9  | 14 | 15 | 25 | 49                       | 10 | 20 | 6  | 15 |
| ...I will probably use the Center again next time                         | 2                        | 0  | 4  | 10 | 85 | 2                       | 0  | 5  | 11 | 83 | 2                        | 0  | 3  | 9  | 86 |
| ...The Center encourages people to keep fish they would otherwise release | 23                       | 10 | 36 | 13 | 18 | 16                      | 6  | 30 | 19 | 30 | 24                       | 11 | 38 | 11 | 16 |
| ...The regulations should be changed to reduce paddlefish harvest         | 47                       | 16 | 28 | 5  | 5  | 37                      | 19 | 28 | 8  | 9  | 50                       | 15 | 28 | 4  | 4  |
| ...I plan my paddlefishing trips based on when the Center is open         | 44                       | 12 | 15 | 10 | 19 | 33                      | 11 | 17 | 17 | 23 | 46                       | 13 | 15 | 9  | 18 |

**Table A13.** Satisfaction with different aspects of using the Center by Grand Lake Region anglers who used the PRPC (1 = Very Dissatisfied, 5 = Very Satisfied).

| Please rate your satisfaction with...                 | Overall (percent) |   |    |    |    | Residents (percent) |    |    |    |    | Non-Residents (percent) |   |    |    |    |
|---|-------------------|---|----|----|----|---------------------|----|----|----|----|-------------------------|---|----|----|----|
|   | 1                 | 2 | 3  | 4  | 5  | 1                   | 2  | 3  | 4  | 5  | 1                       | 2 | 3  | 4  | 5  |
| <b>2008</b>   | (minimum n = 168) |   |    |    |    | (minimum n = 24)    |    |    |    |    | (minimum n = 144)       |   |    |    |    |
| ...your experience getting your fish to the Center    | 4                 | 1 | 7  | 15 | 73 | 8                   | 4  | 8  | 8  | 72 | 3                       | 1 | 7  | 16 | 73 |
| ...your experience picking up your fish at the Center | 4                 | 1 | 7  | 17 | 72 | 4                   | 0  | 11 | 15 | 70 | 4                       | 1 | 7  | 17 | 72 |
| ...Hours of operation at the Center                   | 3                 | 3 | 9  | 18 | 68 | 0                   | 12 | 12 | 15 | 62 | 3                       | 1 | 8  | 18 | 69 |
| ...the timeliness of getting your fish processed      | 4                 | 2 | 8  | 21 | 65 | 4                   | 4  | 15 | 15 | 63 | 4                       | 1 | 7  | 23 | 65 |
| ...the quality of meat you received from the Center   | 4                 | 2 | 3  | 17 | 74 | 7                   | 0  | 7  | 18 | 68 | 4                       | 2 | 3  | 17 | 75 |
| ...the requirement that fish must be alive to process | 4                 | 3 | 15 | 24 | 53 | 4                   | 4  | 11 | 14 | 68 | 5                       | 3 | 16 | 26 | 51 |
| ...the new paddlefish permit requirement              | 6                 | 6 | 17 | 24 | 48 | 8                   | 15 | 15 | 0  | 62 | 6                       | 4 | 17 | 28 | 45 |
| ...the change to paddlefish tagging requirement       | 5                 | 4 | 19 | 23 | 49 | 8                   | 13 | 17 | 8  | 54 | 5                       | 2 | 19 | 26 | 49 |
| <b>2009</b>   | (minimum n = 492) |   |    |    |    | (minimum n = 129)   |    |    |    |    | (minimum n = 363)       |   |    |    |    |
| ...your experience getting your fish to the Center    | 1                 | 1 | 6  | 14 | 78 | 2                   | 3  | 10 | 11 | 75 | 1                       | 1 | 4  | 15 | 79 |
| ...your experience picking up your fish at the Center | 1                 | 2 | 6  | 16 | 75 | 1                   | 2  | 3  | 15 | 79 | 1                       | 2 | 8  | 17 | 74 |
| ...Hours of operation at the Center                   | 1                 | 2 | 8  | 17 | 72 | 2                   | 4  | 10 | 12 | 72 | 1                       | 2 | 7  | 18 | 73 |
| ...the timeliness of getting your fish processed      | 0                 | 2 | 5  | 15 | 78 | 0                   | 2  | 6  | 15 | 78 | 1                       | 2 | 4  | 15 | 78 |
| ...the quality of meat you received from the Center   | 0                 | 2 | 6  | 15 | 77 | 2                   | 4  | 5  | 16 | 74 | 0                       | 1 | 6  | 15 | 78 |
| <b>2010</b>   | (minimum n = 341) |   |    |    |    | (minimum n = 104)   |    |    |    |    | (minimum n = 237)       |   |    |    |    |
| ...your experience getting your fish to the Center    | 1                 | 2 | 6  | 16 | 74 | 1                   | 5  | 5  | 15 | 75 | 1                       | 1 | 7  | 16 | 74 |
| ...your experience picking up your fish at the Center | 1                 | 1 | 5  | 18 | 75 | 0                   | 2  | 4  | 11 | 83 | 1                       | 1 | 6  | 20 | 71 |
| ...Hours of operation at the Center                   | 2                 | 6 | 10 | 20 | 63 | 3                   | 5  | 10 | 14 | 68 | 2                       | 6 | 10 | 22 | 60 |
| ...the timeliness of getting your fish processed      | 1                 | 0 | 4  | 19 | 76 | 0                   | 0  | 4  | 14 | 82 | 1                       | 0 | 5  | 21 | 73 |
| ...the quality of meat you received from the Center   | 1                 | 1 | 4  | 18 | 76 | 2                   | 2  | 0  | 12 | 84 | 1                       | 1 | 5  | 20 | 72 |

**Table A14.** Importance of different aspects of the paddlefishing experience (1 = Not at all important, 5 = Very Important).

| How important is...                                 | Overall<br>(percent)       |    |    |    |    | Residents<br>(percent)     |    |    |    |    | Non-Residents<br>(percent) |    |    |    |    |
|---|----------------------------|----|----|----|----|----------------------------|----|----|----|----|----------------------------|----|----|----|----|
|   | 1                          | 2  | 3  | 4  | 5  | 1                          | 2  | 3  | 4  | 5  | 1                          | 2  | 3  | 4  | 5  |
| <b>2009</b>   | (minimum <i>n</i> = 1,782) |    |    |    |    | (minimum <i>n</i> = 1,034) |    |    |    |    | (minimum <i>n</i> = 748)   |    |    |    |    |
| ...the fun, excitement and sport of paddlefishing?  | 0                          | 1  | 7  | 17 | 74 | 0                          | 1  | 8  | 18 | 72 | 1                          | 1  | 6  | 16 | 76 |
| ...keeping a paddlefish at the end of the day?      | 21                         | 13 | 22 | 14 | 30 | 26                         | 14 | 21 | 12 | 27 | 15                         | 12 | 24 | 16 | 33 |
| ...catching and releasing many paddlefish each day? | 16                         | 11 | 20 | 18 | 35 | 16                         | 10 | 20 | 18 | 35 | 16                         | 12 | 20 | 17 | 35 |
| ...taking home paddlefish to eat?                   | 20                         | 10 | 18 | 16 | 36 | 26                         | 10 | 17 | 14 | 34 | 12                         | 10 | 19 | 18 | 39 |
| ...the chance of catching a very big fish?          | 1                          | 2  | 8  | 17 | 72 | 1                          | 2  | 9  | 14 | 74 | 1                          | 2  | 8  | 21 | 68 |
| ...keeping one paddlefish every day of fishing?     | 28                         | 13 | 19 | 11 | 29 | 34                         | 14 | 17 | 10 | 25 | 20                         | 11 | 21 | 14 | 35 |
| <b>2010</b>   | (minimum <i>n</i> = 1,762) |    |    |    |    | (minimum <i>n</i> = 1,161) |    |    |    |    | (minimum <i>n</i> = 601)   |    |    |    |    |
| ...the fun, excitement and sport of paddlefishing?  | 1                          | 1  | 8  | 16 | 73 | 1                          | 1  | 8  | 16 | 74 | 1                          | 2  | 8  | 17 | 73 |
| ...keeping a paddlefish at the end of the day?      | 26                         | 12 | 20 | 12 | 30 | 29                         | 12 | 20 | 10 | 29 | 20                         | 11 | 22 | 16 | 32 |
| ...catching and releasing many paddlefish each day? | 21                         | 10 | 21 | 16 | 32 | 20                         | 10 | 21 | 17 | 33 | 23                         | 11 | 21 | 16 | 30 |
| ...taking home paddlefish to eat?                   | 24                         | 11 | 15 | 14 | 36 | 27                         | 12 | 15 | 13 | 33 | 17                         | 10 | 16 | 16 | 42 |
| ...the chance of catching a very big fish?          | 2                          | 2  | 8  | 18 | 71 | 2                          | 1  | 8  | 17 | 73 | 2                          | 2  | 9  | 19 | 69 |
| ...keeping one paddlefish every day of fishing?     | 34                         | 12 | 16 | 11 | 27 | 39                         | 13 | 15 | 9  | 25 | 24                         | 11 | 18 | 15 | 32 |

## Appendix B: Survey Instrument

Pre-survey notification 2011.

Dear Oklahoma Angler,

In about a week, you will receive in the mail a brief survey for an important study by the Oklahoma Department of Wildlife Conservation.

The study is about the Oklahoma paddlefish program. We hope you will take a minute to complete this short survey even if you did not fish for paddlefish.

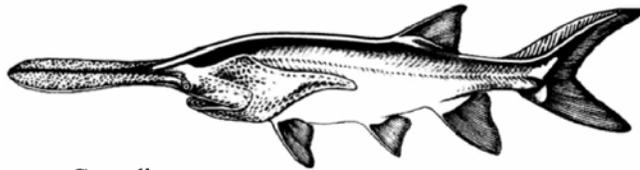
We are sending this notice in advance because we have found many people like to know ahead of time that they will be contacted. Your help with this study will allow us to improve Oklahoma's paddlefish program in the future.

Thank you for your time and consideration.

Sincerely,



Keith Green, Paddlefish Program Coordinator



**Oklahoma Department of Wildlife Conservation**  
P.O. Box 53465 Oklahoma City, OK 73152

Nonprofit Org.  
US Postage Paid  
Norman, OK  
Permit No. 35



## Oklahoma Department of Wildlife Conservation Paddlefish Angler Survey

June 8, 2011

Dear Oklahoma Paddlefish Permit holder,

Our records show that you had an Oklahoma Paddlefish Permit for 2011. Some anglers may not have realized they received this free permit when purchasing a fishing license. Even if you did not fish for paddlefish in Oklahoma during 2011, please respond to the first question of the survey and return it today in the pre-paid envelope provided.

We want to know about your experiences and satisfaction with recent changes to the Oklahoma paddlefish program, including the Paddlefish Research and Processing Center. Your input is critical and will help us improve Oklahoma's paddlefish program in the future.

Please complete and return the enclosed survey today.

If you have questions or would like a copy of the final report for this study, please contact Andrea Crews at (405) 522-0769 or [acrews@odwc.state.ok.us](mailto:acrews@odwc.state.ok.us). Your help in this project is greatly appreciated and we look forward to hearing from you.

Sincerely,

A handwritten signature in black ink that reads "Keith Green".

Keith Green  
Paddlefish Program Coordinator





## Oklahoma Department of Wildlife Conservation Paddlefish Angler Survey

July 5, 2011

Dear Oklahoma Paddlefish Permit holder,

We recently sent you a survey regarding Oklahoma's paddlefish program. If you have already completed the survey and mailed it back, let me thank you for your assistance.

If you have not yet completed the survey, please take a few minutes to do so today. Even if you did not fish for paddlefish during 2011, please let us know by answering the first question on the survey. For your convenience, a postage-paid envelope is provided.

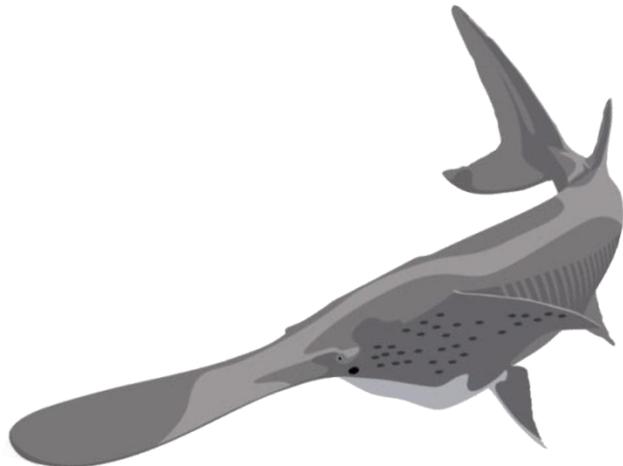
We want to know about your experiences and satisfaction with recent changes to the Oklahoma paddlefish program, including the Paddlefish Research and Processing Center. Your input is critical and will help us improve Oklahoma's paddlefish program in the future.

If you have questions or would like a copy of the final report for this study, please contact Andrea Crews at (405) 522-0769 or [acrews@odwc.state.ok.us](mailto:acrews@odwc.state.ok.us). Your help in this project would be greatly appreciated and we look forward to hearing from you.

Sincerely,

A handwritten signature in black ink that reads "Keith Green".

Keith Green  
Paddlefish Program Coordinator



## 2011 PADDLEFISH ANGLER SURVEY

1. Did you fish for paddlefish in Oklahoma during 2011?

Yes

No → 1a. If no: Our records show that you have a free paddlefish permit.

Did you intend to get the free paddlefish permit?

Yes

No

If you did not fish for paddlefish in Oklahoma during 2011, your survey is now complete. Please mail it today. Thank you!

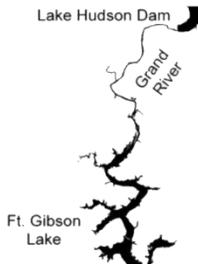
2. Did you fish for paddlefish **around Grand Lake?** (For example: Miami Park, Conner's Bridge, Twin Bridges, Gray's Ranch, Neosho River, Grand Lake, etc.)



Yes →  
 No

| Total for all your paddlefishing in the <b>Grand Lake area:</b> |                     |
|---|---------------------|
| Number of days fished:  | _____ days          |
| Number of fish kept:  | _____ fish kept     |
| Number of fish released:  | _____ fish released |

3. Did you fish for paddlefish **around Fort Gibson?** (For example: below Hudson dam, the low water dam north of 412, in the river south of 412, Ft. Gibson Lake, etc.)



Yes →  
 No

| Total for all your paddlefishing <b>north of Ft. Gibson:</b> |                     |
|--|---------------------|
| Number of days fished:                                       | _____ days          |
| Number of fish kept:   | _____ fish kept     |
| Number of fish released:                                     | _____ fish released |

4. Did you fish for paddlefish **around Keystone Lake?** (For example: in Keystone, in the Arkansas River up to Kaw Dam, in the Salt Fork, in the Cimarron River, etc.)



Yes →  
 No

| Total for all your paddlefishing in the <b>Keystone area:</b> |                     |
|---|---------------------|
| Number of days fished:  | _____ days          |
| Number of fish kept:  | _____ fish kept     |
| Number of fish released:                                      | _____ fish released |

5. Did you fish for paddlefish **anywhere else in Oklahoma?** (For example: Pensacola tailwaters, Hudson Lake, Ft. Gibson tailwaters, Arkansas River from Keystone to the Arkansas state line, Verdigris River to Oologah dam, Texoma tailwaters, Eufaula tailwaters, etc.)

Yes

No

6. Did you fish for paddlefish in 2011 during the catch-and-release days (Monday and Friday)?

- Yes
- No

7. During 2011, did you have any paddlefish processed at the Paddlefish Research and Processing Center, at Twin Bridges State Park?

- Yes → 7a. How many? \_\_\_\_\_
- No

8. Do you think another Paddlefish Research and Processing Center should be opened in Oklahoma, closer to Fort Gibson?

- Yes
- No

If you did not use the Center at Twin Bridges, your survey is now complete.

9. If the Paddlefish Research and Processing Center had not been available this year, what would you have done with the paddlefish you took to the Center?

- Processed the paddlefish myself
- Released the paddlefish
- Processed some paddlefish and released some
- Don't know/not sure

10. Please indicate your agreement with the following statements:

|  | Strongly Disagree |   |   | Strongly Agree |   |
|--|-------------------|---|---|----------------|---|
| I was satisfied with my experience using the Center in 2011            | 1                 | 2 | 3 | 4              | 5 |
| If I had to clean my own paddlefish, I probably wouldn't keep any      | 1                 | 2 | 3 | 4              | 5 |
| I am concerned too many paddlefish are harvested in Oklahoma           | 1                 | 2 | 3 | 4              | 5 |
| The workers at the Center were friendly and professional               | 1                 | 2 | 3 | 4              | 5 |
| People keep more paddlefish now than before the Center opened          | 1                 | 2 | 3 | 4              | 5 |
| The paddlefish Center is a good idea                                   | 1                 | 2 | 3 | 4              | 5 |
| I only keep paddlefish when I know the Center is open                  | 1                 | 2 | 3 | 4              | 5 |
| I will probably use the Center again next time                         | 1                 | 2 | 3 | 4              | 5 |
| The Center encourages people to keep fish they would otherwise release | 1                 | 2 | 3 | 4              | 5 |
| The regulations should be changed to reduce paddlefish harvest         | 1                 | 2 | 3 | 4              | 5 |
| I plan my paddlefishing trips based on when the Center is open         | 1                 | 2 | 3 | 4              | 5 |

11. Did you fish for paddlefish in Oklahoma before 2008 when the Center was first opened?

- Yes
- No      11a. What year did you start paddlefishing in Oklahoma? \_\_\_\_\_

Use this space for comments or feedback about Oklahoma's paddlefish program. If you would like a response, please provide your contact information. \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**Thank you! Please mail your completed survey today!**

## Appendix C: Comments

### Respondents who fished for paddlefish:

- [Open another Center] if it's profitable. Not if it's using taxpayer money or using fishing license proceeds.
- [RPC] too far away. Great fishery. Keep three fish per week, three in one day no more for week, but still keep fishing.
- 6:00 a.m. is starting time to catch paddlefish, Center doesn't open until 9:00 a.m. We start at 6:00 a.m. and some eggs spoil before the Center opens. I also think snagging fish should go back to the 7 days a week again.
- 63 caught in 3 days is not an exaggeration.
- A better way is needed to make sure you get the fish you caught from the Center.
- A really good program.
- A very expensive, non-productive, two days.
- Another Research Center closer to Ft. Gibson would be great!!
- Ban the Russians.
- Catch and release is not a good idea. What's the point in fishing and not being able to keep your catch.
- Catch and release Mondays and Fridays probably helped but I do not fish Fridays any longer as a wounded fish on Friday neither helps the fish or my appetite. I would like to see more people keep and less turning wounded back while they keep fishing for a 40-50 pounder. How about anything over 25 pounds has to be kept for that day's harvest? I clean all my own fish. But another Center might mean me going by and reporting my results.
- Catch and release sucks!! Hard to believe the sportsmen of state support this regulation.
- Caught 34 fish at Webbers Falls. Kept two. Caught none at Kaw Dam.
- Change the rules back to they used to be. New rules are stupid. Typical when the state gets involved. Just like the water turkeys!!
- Charge \$5 a fish for cleaning. Increase revenue.
- Concerned about the Asian carp. Can there be a snagging season for carp.
- Delete catch and release on Monday and Friday. Vacation can be planned and you can fish before and after a weekend. Make it Tuesday through Thursday.
- Did not catch any but received good information from Center. They are doing a great job.
- Didn't use Processing Center, just caught and released fish.
- Disagree with the closing of Spring River to fish for paddlefish. Fished up there for almost 40 years. Why is the extra permit necessary when you have a lifetime permit.
- Do whatever it takes to keep the fishing good and protect the fish – we like to keep some but want it to last forever! Seems like lots of people fishing, every year it is busier – Center and research is good! Cleaned one myself as they were closed when I returned from fishing.
- Don't waste money on a permanent facility. Keep it simple and portable.
- Due to moving the Center farther up, hope you have more people to transport due to loading the boat, etc. Might not be able to get them to the Center alive.
- Eggs should be used in a fishery instead of caviar.
- Excellent program – keep it going!
- Fantastic Center.
- Fantastic fishing. Very good eating.
- Fishing guides are very rude to other fishermen. One time our boat got swamped with water because they met another and shut their boat down right beside us. Also we had one that was going across the channel and cut our lines.
- For me, it's a good way to entertain out of state friends to come and snag and send them home with a cleaned fish!

- Get rid of the catch and release and shorten the season to two months. When you drive 600 miles, catch and release stinks.
- Gone fishing!
- Good job. (2 responses)
- Good job. You should have started the reduced limits years earlier.
- Good.
- Got 25 to 30 pound battle.
- Great experience – would not have fished had the Processing Center not been in service.
- Great experience. We didn't do as good as previous years. I love snagging a 50 pound spoonbill and having the Department pick it up on the river, clean it, and I pick it up the next day.
- Great fishery, keep up the good work. Thank you.
- Great job to those working at the Processing Center. Very nice, very clean and quick!
- Great job. (3 responses)
- Great program, I recommend that paddlefish should be legal to catch directly below Keystone dam. There is an abundance of them in summer months and many are caught by accident.
- Great program. I fish for paddlefish in Nebraska and having the Processing Center greatly adds to the experience in a positive way. Keep up the great work.
- Great time!
- Had a great time.
- Had lots of fun, see you next year. Mr. Paddlefish.
- Have XXXXX work on his penmanship.
- Have more catch and release days.
- Have the Center open until midnight. You could have two shifts. This way people could get their fish cleaned before the catch and release days are up. Thank you!
- Hire more game wardens to watch and arrest the Russians who are wasting the paddlefish just to get the eggs. I worry there won't be enough paddlefish left for future generations.
- Hire some under cover game wardens. There are so many Russians fishing illegally between the 412 bridge and low water.
- Hook 'em hard!!!
- How bid do paddlefish get.
- How many paddlefish are you able to keep daily and how do you tag them and are you able to swap fish if you catch a bigger one.
- Hudson and Keystone no fish caught. Bad weekend. You guys are doing a great job, keep it up!
- I believe it's not fair to get only one paddlefish when there is more in the water. I also believe that the Center is a waste of funds.
- I believe revenue from the sale of paddlefish eggs should be used directly to reduce fishing permit cost. I would then use the Center to harvest my catch.
- I believe that licensed fisher should be allowed to keep two per day, they do it for food, not sport.
- I believe there should be a size limit like Missouri does. I also snagged there with family. It's a two-fish 36 inches or longer limit, but thank you for all the snagging. I've recently got my boys started.
- I can't comment on the Center. I have never used it.
- I catch and release. I only keep one a year. Monday-Friday catch and release is a great idea. Keep up the good work!! Thanks.
- I caught a paddlefish with a tag in lip. Called in to report it. Person taking call could care less about the tag. No more call ins for me – waste of time.
- I did not know that there was a Processing Center at all. Fort Gibson is too far away for me. Just so you know, many paddlefish are caught in Kay, Osage and Pawnee counties.
- I do not agree on paying \$15 more this year than the last on the license. I know the Processing Center has

made the state a lot of money. So why do out of state people have to pay more money, or anybody for that matter?

- I don't believe in hurting the fish. Some probably die.
- I don't know anything about the Gibson area. Could the state possibly have hats or t-shirts to sell. I sure like the hats Keith and his crew were wearing.
- I don't like the catch and release program.
- I don't specifically fish for paddlefish. I like snagging flathead 1,000 feet below dam. I just get permit in case I snag paddlefish. I seldom keep them. Usually release. Not crazy about the taste.
- I eat what I catch! Catch and release fishing is a bad idea. I have caught fish that had so many gashes they will probably die from their injuries. Go back to the 2 or 3 per day limit and keep what you catch. Fish to eat not for sport.
- I feel catch and release days would be better on Monday-Tuesday-Wednesday and open other four days. A lot of guys travel and you kill one of their fishing days.
- I fish for food.
- I got spoiled the first several years I went fishing. We could catch three a day and they were big fish. I realize regulations are required, it just makes the fish I take home more expensive but the experience priceless. Keep up the good work.
- I grew up paddlefishing in Spring River. I'm familiar with that area. I wish you guys could open Spring River up again for paddlefishing. It would make my paddlefishing much more enjoyable. Thank you.
- I had a great time. Fishing was good.
- I had fun paddlefishing. I caught two paddlefish the first day. Paddlefish are the biggest fish I caught.
- I have snagged a lot but never got anything. Unlucky me!
- I haven't went to any of those places. We fish at Keystone and Frog Frog Rock.
- I like the Center because cleaning paddlefish is a lot of work. It is great if they make money for the Wildlife & Parks Department.
- I liked the survey.
- I live in Nebraska, about a ten hour drive, and I would like to use the full weekend to keep fishing for paddlefish so I don't have to burn all my vacation during the week! I might not go back next year.
- I love paddlefish and your paddlefish program!
- I love to paddlefish because I get to spend time with friends and family and I love the service. I am now only 11 years old.
- I read about it in the fish and game regulations booklet and was interested in going because of your booklet.
- I really enjoyed my time in Oklahoma when I was paddlefishing.
- I really enjoyed my time in Oklahoma. It's a 7 hour drive from Columbus, Nebraska and worth the drive. Look forward to next year.
- I really like what happened. I liked the way that they would come and pick them up by boat. Also how they were relatively quick filleting the fish.
- I really miss paddlefishing on Fridays and Spring River. This makes it very inconvenient and I did not get a paddlefish this year. If I did I would have used the RPC.
- I received a tour of the fish cleaning station. It was cool to see and the time process was amazing!
- I thank you guys for having the Paddlefish Center.
- I think a lot of our Oklahoma paddlefish and would like to thank the program for its good work!
- I think a station at Hudson or Gibson, especially at low water dam between the two, would be helpful to fishermen.
- I think any tags turned in, they (the person) should receive a subscription to Outdoor Oklahoma for free.
- I think catch and release on Mondays and Fridays is wrong!!! Why not Tuesdays and Wednesdays. If we take off work to come fish we should be able to keep a fish.

- I think it is a wonderful program. Please keep it going. I also like the chart with the biggest fish and number of fish caught.
- I think it should go back to the way it was before all of this shit that's going on now. I got one fish.
- I think it's a good idea to keep Spring River closed for a couple more years. The rivers need to be cleaned up. Too many people throw their trash and it is just disgusting.
- I think it's a good program run very well.
- I think it's great.
- I think Oklahoma has a good thing going. Keep up the good work. Thank you.
- I think paddlefish are a plus for Oklahoma and think that we should be able to fish all days because I can only go when I am off work. I also have to drive a very long ways to do so. It would be better to be able to fish when I can. Thanks for keeping the paddlefish intact.
- I think that the Processing Center is a very good and essential project. I tell Nebraska Game and Parks that they should do likewise. PS. I also seen some poaching at Miami Park, just two locals and one hippy from Missouri who caught three in one day but nobody turned him in. Very poor. Thanks.
- I think that you should put a season on them. This was one hard year.
- I think the \$55 for a permit and only one fish a day is kinda a waste. We should at least be able to keep two a day.
- I think the Center makes people follow the regulations and one should be set up on Keystone and Gibson.
- I think the Oklahoma fishery management is doing good work. Around here those that don't fish or have never are the most vocal against any paddlefishing. If I had caught one on a day I could keep it I would have.
- I think the Paddlefish Center is a great idea. Everyone was very nice and helpful. We will definitely use it again.
- I think the paddlefish snagging in Oklahoma is one of the fishing trips my kids most look forward to. Where else can the catch fish bigger than themselves.
- I think the program is working well to build the fish population back up.
- I think the regulations on them suck. I don't know all of their information or where they get it but if it looks like they are going extinct they need to go fishing with different people that can show them how to catch them. And if they shut the sport down for bowfishing on Monday and Friday they should have the same for everyone, so no one can fish. On trotlines we catch the crap out of them because they have cut me off from shooting fish, my sport in taking paddlefish, on them days.
- I think there should be a season limit on paddlefish. Some people fish every day and keep lots of fish each year. So to have a season limit would help protect paddlefishing for generations.
- I think there should be a yearly limit like deer and be able to keep more than one per day. That way people who travel could take more fish home with them. For example maybe keep 2 per day and have a 10 fish "kept" maximum.
- I think this is a great program and hope to be able to take advantage of the processing center next year now that I know how to do this. Thanks for the program.
- I think using the barbless hooks and releasing and one daily limit should help us all. I enjoy the thrill of the fight in the current. I don't care for the meat so I never keep over one or two.
- I think we should be able to fish and keep them 7 days a week. Just put possession limit on them.
- I think we should be able to keep more than one paddlefish a day. People shouldn't keep paddlefish if under 15 pounds.
- I think with the Center being open the fish are more protected and things run well.
- I think you are doing a great job. I enjoy fishing out of Twin Bridges on Grand Lake. Please restore the fish cleaning station in the park. Thanks.
- I think you are doing very good. When you allowed 3 a day they were over-fished.
- I think you should be able to keep them on Fridays.

- I thought Brent Gordon and his crew were very professional and did a great job. Have no idea what you pay Brent Gordon but you should double it.
- I used it in 2009. Loved the concept. I do hope not too many fish are harvested though.
- I used the Center at the Twin Bridges last year and they did a good job.
- I was disappointed in fishing for paddlefish this year. I did not catch any, where five years ago they were very plentiful. I had talked to several other anglers and they had the same story.
- I was impressed with the operation of the Paddlefish Center at Grand Lake. I would like to see more data that the Center collects made available to anglers. The data would help us make better personal decisions on the amount of paddlefish we harvest. I think informed anglers, along with ODWC, can make this a more viable fishery! So far you've done a great job!
- I wish that they would go back to the old paddlefish laws where you don't have to tag them, and three fish a day during season.
- I work weekends – using Friday as a catch and release day only gives me one day to fish.
- I would like a sticker.
- I would like for the limit per day to go up to 2 per day. Then I wouldn't have to go every day. I just give them away to the old ones around me that can't go. Thanks.
- I would like for there to be a Processing Center by the Grand Lake Pensacola Dam.
- I would like some insight on the best time to go paddlefishing. And I would like to know more about the rules and regs for paddlefishing. Thank you.
- I would like to ask if you could help harvest a little less fish. It would help the population and mating.
- I would like to be informed on changes of rules and regulations. Thank you.
- I would like to catch and keep a paddlefish on Mondays and Fridays simply because it's more convenient for me. You could change one of the days off to Thursday. Thanks!
- I would like to know about how much the Center makes and if they make money it's almost worth an extra \$5 a permit but then more Centers need to be open. Thanks! I'll be there in 2012.
- I would like to see a minimum size limit put on paddlefish like other states do.
- I would like to see a station near the low water dam near 412, and I strongly dislike not being able to keep any fish on Fridays!!
- I would like to see the catch and release days moved to either Tuesday, Wednesday or Thursday. Because the group of 15 people I annually come down with from Nebraska. We are only able to be there Friday through Monday. So it only give us two days of four to fish. Thank you.
- I would like to see the Spring River eventually reopened for paddlefishing in the future. I think you guys are doing a good job managing the fish and I love the Research Center. Thanks, Oklahoma.
- I would use the Center if it wasn't so far away. I think it is a wonderful idea that the Center is there and there is a catch and release day.
- I'd like to know the statistics and records regarding paddlefish processed and sold.
- I'm concerned about illegal immigrants catching just for eggs.
- I'm from Kansas and I drive four hours to paddlefish and I do not like the catch and release on Mondays.
- I'm from Missouri and would like to see Missouri adapt this program. I hope they open Spring River for paddlefishing again.
- I'm glad the out of state permits were changed to 6 days.
- I'm glad we have a paddlefish program, keep it up.
- I'm handicapped and the extra ½ mile walk to Kerr Dam is difficult. Only did it once. Also we haven't caught a spoonbill in three years.
- I've completed the paddlefish survey, but wanted to add some additional information. I've had a group of friends come from St. Louis for over 15 years to fish in Oklahoma for paddlefish. The size of the group has ranged from 2 to 12 over the years. We've only had one year that wasn't great and that was 2010. We normally fish in the Ft. Gibson area from Choteau to the dam at Hudson lake. So I called your people at the

Paddlefish Research Center last year. They were very helpful and told us where to fish. We had 2 large boats and 11 people fishing. Your people were fishing in the area near us and after they caught their limit, they allowed some of my friends from Missouri to fish from their boat, using their equipment. Those guys were successful and all the fish we caught that day were processed by the Research Center. My friends from Missouri were very impressed with the friendliness of your staff and the professionalism of all your people. The area near 412 bridge is half the distance from my house, so we'd much rather fish there than Twin Bridges. I realize a great number of fish have been harvested from Grand Lake and the rivers feeding it. But I've fished over twenty years in the Ft. Gibson waters and know the state would have a similar success if you'd move the mobile research center from Twin Bridges to the low water dam or Chouteau Bend area. Plus I believe it would be better for the fish since the game wardens would be around more to keep people from overharvesting fish. I've seen locals and out of state people overharvest fish in the past. I for one enjoy the sport of catching more than anything. We do keep some fish to eat, but we catch and release far more fish than we keep during great years. We almost never keep our first fish and usually catch and release 3 to seven fish before keeping one to take home. My friends from Missouri try and fish for paddlefish around Lake of the Ozarks, but never have the level of success they have in Oklahoma. That's why the numbers grow from year to year that come down to fish. Even during the tough economic times, they come down if this is the only vacation they can afford all year. They also enjoy the sand or white bass run...but nothing is as exciting as hearing the drag scream with a paddlefish in current. In closing, I just wanted to thank you for overseeing the paddlefish fishery and understanding the value of these fish. I know it's not a largemouth bass, but I've fished offshore for 20 plus years and it's hard to beat the feel of a large spoon on a spinning reel with 20 to 30 pound test line. Keep up the great job and pat your folks on the back for me and my crew from Missouri. Keep up the great job and put our vote(s) in for opening up the center in the Ft. Gibson area.

- I've seen a lot of Nebraska boats with four or five people snagging when they already have three to four fish tied up. People need to stop snagging when they keep one. Everybody in the boat doesn't need to keep snagging until everybody has a fish to keep. I see this every year!
- If a reduction in harvest is put in place, maybe so many per year like with sturgeon in Oregon.
- If I had a Center at Ft. Gibson I would use it. I enjoy the paddlefishing in Oklahoma and am proud of the Oklahoma Department of Wildlife.
- If I wasn't with my dad I would not clean them myself. I would just release. Too much work for me. This was my first trip but not my last.
- If it's possible to, fish the Spring River again without hurting the fish numbers.
- If there is anything else I can do. Thanks.
- If you cannot keep your fish, why let them be snagged?? Bad move.
- In 2009 we used the Center. Had better luck. I hope they keep it open. The people were very helpful. Thanks. Hope it will keep going.
- In the three days we fished we released around 35 fish. The river was low at that time and the river was not very wide. That probably helped with our numbers.
- It has become a new spring tradition for my son and I.
- It is a great sport that is under-looked by many Oklahomans.
- It is a win! win! win! Program for everyone, sportspeople and our state.
- It is horse cr\*p that the state keeps and makes money from paddlefish eggs (the whole reasons for the Center) and illegal for Oklahoma anglers.
- It was a heck of experience. I love paddlefishing now especially when the people there process them for you. Makes it much nicer.
- It was so much fun. It was a blast.
- It was very fun.
- It would be really nice to have more Processing Centers. We threw a lot of eggs back in the river.
- It's a great program for all.

- Keep doing what you're doing, it lets you have a great experience down there.
- Keep up the good work!
- Keep up the good work. Nebraska should learn a thing or two from your programs.
- Keep up the great conservation work!
- Keeps fisherman honest/accountable, the presence of wardens and biologists. Our boat released small fish but fished other species besides paddlefish (white bass, catfish).
- Keith and his staff at the Paddlefish Center are second to none. Helpful, courteous, knowledgeable folks. Very, very good experience, can't wait to get back.
- XXXXX should find a different job!
- Keith, keep up the good work!
- Let us catch paddlefish in the first 1,000 feet of any dam. Almost everyone catches and releases anyway. There are too many at Webbers Falls dam. You could catch them on any lure and then get a ticket for snagging. Come on Oklahoma, give me a break.
- Let water levels rise higher, let more paddlefish per person per day be harvested.
- Like the boat picking up my fish and taking it in. Like it being cleaned and bagged and ready for me to claim.
- Limit two with a length limit has worked in Missouri. I have fished Grand since childhood but have started learning Missouri lakes because your license price and rules have gotten ridiculous. \$55 and \$35? That should help with harvest.
- Loved Twin Bridges State Park rangers and park staff great. Game warden was very polite and great to visit with. Would like to return. Maybe next time I can catch a paddlefish.
- Many young people were working or possibly volunteering at the station on a very busy Sunday afternoon – they were not being very efficient – I don't think the fish I caught was the same one they processed and returned to me.
- May need to think about some no release days, one and done on Tuesday, Wednesday and Thursday.
- Miami Park (fairgrounds-side) is a big mess trying to fish. You spend more time getting hung up and re-rigging than you do fishing this area. This side needs drugged out about mid-March or early April to be able to fish it. From the dam in park down to light poles. I thank Keith Green and the processing workers. They do a good job. Helping people get fish to processor like at Conner's bridge, the boat that hauls fish to processor.
- More information/education about paddlefish population should be conducted to control harvest instead of limiting daily harvest numbers or having catch and release days. I would rather go a couple of days and harvest more fish than going several days and only harvesting one fish per day. It wastes gas and time.
- More restrictions for out of state fishermen.
- Most of the workers at the Center were friendly and professional. However a couple of them need to work at Wal-Mart for a while, learning how to greet people and carry on a conversation.
- Mr. Keith Green has done a fabulous job running, promoting, and making the public aware of the program which is a blessing to all paddlefishermen.
- My dad likes it because he is too lazy to clean them himself.
- My first year snagging – that's why I did not answer some questions.
- Need more public cleaning stations.
- Need more research and hatcheries.
- Need to change the Monday/Friday rule.
- Need to check fishermen at Conner's Bridge, lot of people poaching. They would catch one and take off and then come back. Don't like Monday and Friday catch and release, I'm limited to bank fishing.
- Need to keep more fish, make worth taking the trip (1 – 25 pound fish = 1 – 5 pound fish)
- Need to open Spring River at least a day or two!
- Never been to the center. Only caught three in my lifetime. We need more game wardens checking people

who take too many and too small.

- Never heard of the Processing Center.
- No catch.
- Not enough big fish anymore. Any over 40 pounds need released. Way too many 10 to 30 pounds. Miami Park dam needs cleaned out!
- ODWC is doing a great job. Keep up the good and hard work you do.
- Officer Keith Green is doing "A Good Work!"
- Only went one time with my dad while home on leave. We don't know all the stats on the annual harvest. Would be nice if OK put out harvest info like Missouri does for their deer harvest.
- Open the Spring River for snagging! Too many boats on the Neosho River, someone going to get hurt!
- Open the Spring River.
- Open up Fridays for fishing normal again.
- Our first experience, had great time, appreciate Center and learned a lot from people at Center, have also enjoyed consuming the spoonbill. Hope to bring grandson back. Great experience, thanks.
- Our party caught 5 in 2 hours and they were all 50 to 70 pounds. Typically we catch 30-40 pound range, so good year. I'm all for R&D on paddlefish. We love to fish for them once a year in the spring (March). It is doubtful I will use the facility as we prefer catch and release. Keep up the good work. Thanks.
- Paddlefish fishing was a fantastic experience. I plan to return next year. Thank you for a great program. Nothing like it in Iowa.
- Paddlefish was good in July last year at our local river.
- Paddlefishing needs to be closed at some point to allow the fish to get up the river to spawn. Example – April 1 to May 1 and/or no fishing above Twin Bridges State Park. The park in Miami should cease to be open to paddlefishing. The fish have little chance to get up the river with so many people on each bank. There needs to be a plan (long-term) to protect the fish. We are losing the big females and the Processing Center is causing more fish to be taken.
- People are keeping more fish than they are allowed. There needs to be very frequent visits from game wardens at popular snagging places.
- People are taking over their limit. We need to set up the patrol around Oologah dam. Thank you for all your efforts.
- People who catch the paddlefish that have eggs should be given a container of the processed eggs. Since most female spoonbills contain at least three pounds of eggs and once processed the eggs are sold in one-ounce containers. You should involve the area schools in your program.
- Please stop catch and release. I have paddlefished as far as Glendive, Montana and you're required to keep and tag your catch. At low water below Kerr I witnessed some fishermen releasing as many as 20 fish, mishandling most and injuring several. This state needs much stronger regulations and perhaps consider reserve rangers (volunteer).
- Please, please close the Center so the fish will get bigger.
- Provide tub at Miami Park to put fish in at night. Pick up next day at Processing Center.
- Research Center is a great idea for the future population of spoonbill. I love to catch them but only keep what I know will be used. I hope others are doing the same.
- Since fishing for paddlefish requires snagging, I don't believe there should be a catch and release program. There should be a daily limit, because you know as well as I do that a lot of those paddlefish fishermen overfish the limit now. Plus, since they've been snagged, they are now injured and more than likely going to die anyway. So make fishermen keep whatever size they catch and enforce the limit strictly. Plus, fine anyone caught releasing injured fish so they can fish longer. Paddlefish are a natural resource, not just a fish. It takes them so long to reach maturity that there should be stricter laws, fines and enforcement before they are all gone.
- Some of these questions I have no idea about. If you limit possession/harvest further, we may not drive from South Dakota to do this as it is 570 miles one way. Idea: put annual possession limit of four fish on all

anglers.

- Starting the bowfishing for paddlefish later and/or make it longer.
- Tags too high for our of state. Limits too low. Missouri will let you keep two fish a day. Don't have closed days.
- Thank you for providing the Center!
- Thank you for the free trip I won at the Expo.
- Thank you, had a great time.
- The catch and release days are making us change to fishing in Missouri. I understand closing the Center but not closing days all together.
- The catch and release days on Monday and Friday make it tough on people that travel a long way to fish. I travel 600 miles each way.
- The Center is a great idea and program. Please keep it going.
- The center is a great thing and makes process for processing fish. Thank you.
- The Center is very helpful and convenient for out of state people but it seems the catch and release days are to generate more money from people who travel to Oklahoma for paddlefish. The OK rules and regulations are hard to follow and may need to be simplified to better understand and abide by. It was easier this year than the past. Keep up the good work. Hope to come back for many years to come.
- The current regulations seem to work well.
- The first year we cleaned our own, I will to continue to fish for paddlefish as long as you do not shut down the fishing. Don't really care about Center.
- The game and fish workers that were in the boats on the Neosho and Grand river were very professional and pleasant to be around.
- The huts at Twin Bridges State Park are very handy, I believe there should be more of them built. I would also like to do some paddlefishing on the Spring River even if it's only one day a week. I would also like to purchase a lifetime nonresident license.
- The last three years there has been a big increase in paddlefish in the Arkansas River that I can see.
- The new regulations have caused me to quit paddlefishing. Loved it when the limit was 3 fish. Now I only catfish for blues and now those regulations suck too (1 fish over 30 inches).
- The paddlefish are getting smaller each year and I think it should be more days of catch and release.
- The Paddlefish Center should be closed another day. The closing of the Center should also close one more day of catch. Monday, Tuesday & Friday should be catch and release only.
- The people at the Center were friendly and professional – good PR for the Department.
- The Processing Center made the fishing more enjoyable and introduced more friends and family to the lake and fishing.
- The program works great. I am concerned about the size of fish that are currently being caught. Where are the large fish? Do the regulations need to be changed? No 80+ pound fish were checked in.
- The Research and Processing Center was a great experience. The staff was friendly and let us look around. The fish cleaning was fast and efficient. The numbers that come out of the research are beneficial to all anglers.
- The Research Center is an amazing service provided to the people. Definitely an A+ in customer satisfaction.
- The Research Center is an awesome idea. The best part is when they come and pick up the fish for you at the boat. That is part of our vacation so that allow more time for other fun stuff.
- The Research Center should be open later, since many of the paddlefish I catch and see others catch are caught shortly after dark. I don't like the catch and release only on Monday and Friday because a lot of times that's the only time I have available for snagging.
- The restrictions above highway 412, as far as fishing times, really limits the amount of fishing I can do.
- The tail race at Ft. Gibson dam should be changed to the same as Hudson Lake dam. Snagging from sun-

down to sun-up. This would save a lot of confrontations between snaggers and regular fishermen.

- There should be a PRPC around Mazie. It is a popular paddlefishing area also. Thank you!
- There were lots of paddlefish and many anglers caught them. But I wasn't equipped to fish them since I'm from California, but I tried.
- They did better, this last I got 11 pounds of white meat from a 45 pound fish. Last time I got 4 pounds from a 40 pound fish. If I process it I get 1/3 of the live weight in white meat. I weigh all of my fish with a digital scale.
- They need to go to a two-fish limit daily.
- They need to open a Center up near Ft. Gibson dam because it is too far to drive to the Twin Bridges center, I would use it if there was one closer to Gibson.
- This is my first year to paddlefish and I & my family had a great time and when my kids get old enough to paddlefish I would like to teach them, it's fun and hard work.
- This was my first time and I enjoyed it. Fishing was a little slow but fun.
- This was my first time ever to paddlefish and never got a one. Think I will just stick with my catfish that I can catch. But I had a great time trying. Thanks and have a good day!!!
- This was my first time. Before this I had never heard of this fishing paddlefish.
- This was my first year and I absolutely loved it. I'm only 14 years old and will now continue fishing for spoonbill the rest of my life.
- This was my first year paddlefishing. It was a great experience. The people at the Center were outstanding. Very well run.
- This was the first time for me and my two sons. All three of us had a blast. We are counting down until the 2012 season.
- This year was the first time we ever saw a paddlefish, they look scary and mean but they taste good and my husband had fun catching them. He is really hooked. Thank you. My husband's friend showed him how to clean and I soak the meat over night in salt and lemon water, then dip in egg and flour and deep fry. It tastes food. My dogs like it too. No part of the fish goes to waste. Our beagles love fish. With food prices so high the fish really help. Thank you for all your work. P.S. Paddlefish look scary but they taste good.
- Thought it was great when opened Processing Center, less mess for me. For the last two years the party (4) have not snagged a single fish. My luck on the Spring was awesome When are you going to open it again.
- Too many fish kept by illegals and Russian immigrants.
- Too many paddlefish are harvested for eggs.
- Too many people snagging fish Monday and Friday for exercise regardless if they could keep them or not. (Below Ft. Gibson area.) Lot of injured fish.
- Unique experience. First time, self-guided, learned how we should do it. We will go again in 2012. Glad there are many catch and release days. Not sure I will keep one, but perhaps. Great job on this unique fishery and provides us another opportunity to enjoy outdoor Oklahoma. Thank you.
- Very good.
- Watch out for the heavy drinking on the water.
- We always fish below Pensacola Dam. We put in at Bird Hollow – we always go the 1<sup>st</sup> of May. Very few fishermen – always have good luck. We fish for white cats on Monday.
- We as a family have made this a yearly trip. This is the most fun fishing we have as a family. Thank you.
- We had a great time.
- We had a lot of fun and the Center's staff were very nice.
- We just fish for fun – we catch and release anything we can catch. Didn't know there was such a place [PRPC].
- We make at least two yearly trips to Oklahoma fishing and have enjoyed all of them. Not being an Oklahoma resident there was a couple questions I'm not sure of.
- We need a Processing Center in Miami to clean our fish. I think you would get more fish. Thanks!

- We should be able to keep our fish on Friday!!! That is one of more convenient days!! Hope you change it!!
- We use the Center when we want to keep the meat. It's a wonderful idea. The permit is also wonderful since you don't always catch a paddlefish but when you do it's wonderful. Thank you! Please keep up the good work!
- What a waste of money! You can afford to send a postcard saying you are sending a survey, send the survey and pay return postage – but yet you are unable to pay your vendors that sell and promote your paddlefish program to process the necessary useless paperwork.
- What is the mortality rate for fish, paddlefish, that are caught and then released? Thanks, great job. Size limits?
- What is the point [of a second PRPC]? Since when can an angler not clean his own fish!! I think there is probably several other areas of the ODWC government where the resources and money could be used more wisely than worrying about spoonbill!!!
- What kind of research is actually done and why? I believe the Research Center is a good idea for the research aspect, however I don't believe they should offer free fish cleaning just to collect a little research and a lot of caviar. I am a conservationist and have done work on the Lower Mountain Fork River. I do not understand how killing female fish then selling their eggs for people to eat just for a profit is in any way shape or form research or even helpful for the fish. This fish eats zooplankton therefore not a threat to any other animal. The one spoonbill I did catch this year was basically taken from me in the middle of a picture because I took it out of the water for 30 seconds. The research worker gave me no option but to give him the fish for "research." He then proceeded to tell me how much they get paid for one pound of caviar. When I asked about what kind of research he replied "Just the basic stuff." Then he gave me a number and left. This animal is an amazing piece of prehistoric history and I would like to see my children enjoy this animal. The way the staff member presented himself said profit not research.
- When will the catch and release be lifted as well as being able to fish Spring River side? What is the possibility of Oklahoma setting a two-fish limit like Missouri? With the regulations changed, as well as the permit options and the money being made through the Processing Center, what are the chances of a nonresident permit holder getting a price reduction on his/her permit? Thank you - Missouri & Oklahoma fisherman.
- Why is Monday and Friday catch and release only and do you have a map for where is good paddlefishing.
- Why the change for bowfishing only? And why so secretive about the change? Thanks.
- Wonderful program – looking forward to going again.
- Would like to be able to fish 3 consecutive days, Friday, Saturday and Sunday. Arrive on Thursday, leave on Monday. Also Twin Bridges Center closes too early to pick up fish on Sunday.
- Would like to see limit go up. Would like to see Spring River reopened. Very expensive for one fish.
- Would like to see more Oklahoma game rangers visiting the Fort Gibson Dam area in the evening times.
- Ya'll are doing a good job, because a lot more paddlefish are being released with the one fish limit and you can see the increase of paddlefish since the program started.
- You are doing an outstanding job. Keep it up.
- You have taken a pleasurable pastime and made it a difficult experience (unpleasant) with all the dos and don'ts and hard to understand regulations.
- You should be able to keep more fish. But everything else is good.
- You're doing a good job. Thank you.
- Your people were friendly and helpful. A very good experience.
- They need to go back to three a day. That way people will quit catching the little ones and killing them. Would rather have three little than wait for one big one.

**Respondents who did not fish for paddlefish:**

- 2011 is the first year I've missed since 2002. I enjoy the sport immensely and personally strictly practice

catch and release. They (paddlefish) are too valuable a resource to deplete for food or eggs by sportsmen (in my opinion). I greatly appreciate ODWC's efforts to preserve the fishery for this great species. Keep up the good work! I would support a strict catch and release in the Arkansas River if that's what it took!  
Thanks!

- Always look at Lake Texoma but never see any. Have permit just in case.
- Bass fisherman! Grand lake.
- Bought hooks for it, just never go around to it.
- Cannot eat, so I do not catch them. The Center is a good thing. Thank you.
- Change job assignments!
- Did not even know the program existed. Otherwise I might have.
- Did not get or fish for paddlefish.
- Did not have time since you can't fish from 10:00 p.m. to 6:00 a.m. Used to fish a lot but mainly at night. Now where I went you can't fish between 10:00 p.m. and 6:00 a.m.
- Did not realize I had a free one, never fished for paddlefish before.
- Didn't fish due to low flows at Kaw.
- Didn't know about it. Oklahoma should reduce creel and increase minimum size like Missouri. I release all. I personally would rather catch two 80-pounders than ten 20-pounders.
- Didn't realize I had it or I would've got at least one.
- Do not send this again.
- Don't know what paddlefish is.
- For as long as I can remember I have never eat any type of fish. I fish and release any kind of fish. I think people should do the same but not everyone is like me. I would love to help out in any way but I'm not a fish eater. I know a lot of people who fish for paddlefish and the way they act is very sickening. It's a sport I know some eat them some just simply abuse the wildlife. Myself I was taught only fish or hunt what you need. My father and three brothers fished and hunted but they only took enough to feed their families. I am a 2009 graduate of Redland Community College from the Cops program. I understand the laws and I haven't gotten into anything that has to do with the law due to blowed out knees and breast cancer. But I would love to work somewhere in the wildlife. I would love to help this paddlefish project or program to the best of my ability. Thank you very much for taking time to read this.
- Gas too expensive to travel for fishing.
- Glad the state has this service.
- Grand River below Hudson is very dirty with lots of trash (low water dam). I've seen people take 4, 5 and 6 paddlefish out there.
- Had complications and couldn't make it this year.
- Hispanics are no following out game laws. More fines need to be given to them so they will not overharvest our resources. Thank you.
- How can we give our input so early into the season? Date of survey – June 2011. Fishing ends – ? Incomplete survey!
- How did I get it then? I may want to fish for them in the future. I know Gene Gilliland.
- I did not apply for a paddlefish permit.
- I did not fish for paddlefish.
- I did not fish for paddlefish. I only had it so I wouldn't get in any trouble if I was to catch one.
- I did not get a paddlefish license, my husband did!
- I did not know that I had a paddlefish permit. If I had I would have fished for them. ODWC needs to let people know about this.
- I did not know you had to have a permit for spoonbill. I used to fish for them and haven't for about 5 years. Where do you get a permit? How much?
- I didn't go because of busted transportation. If you want information this instrument is badly flawed.

Questions 8, 9, 11 and 11a could have and should have been answered by everybody.

- I do not specifically fish for paddlefish but because we occasionally catch them on the Arkansas River below Kerr Dam, I do get the free permit. Thanks.
- I don't fish for them.
- I don't know what a paddlefish is. Thank you.
- I fish a lot in Oklahoma and would like to see the out of state license go down so we could afford to fish in Oklahoma and so would a lot of other fishermen.
- I fish for sand bass on Grand River and sometimes for paddlefish. Did not this year due to weather.
- I generally buy a license whether I fish or not, to support wildlife programs in OK. (I am not really a fisherperson, but on occasion I put a worm on a hook.) I have not been yet!
- I get the permit so I will be legal if I catch one.
- I get the permit to be legal while fishing for catfish below the dam at Hugo lake. Caught one 43 pounder in April.
- I have heard that paddlefish are fun but I also hear they are boney and not much worth eating. I don't hunt or fish for the fun of killing. I hunt and fish for food only!
- I have never seen a live one! There are so many people fishing for paddlefish at Ft. Gibson dam, you cannot find a place to fish for anything else. Also, I've never seen a game warden down there checking people out or responding to duck and geese hunters shooting them off ponds in residential areas at early and late hours I have called in. Why do Oklahoma licenses not run from date of purchase instead of set date? I usually don't get mind until May or June so I lose fishing time and money. I am former TPWD hunter education instructor. Have made Oklahoma my home for last six years. I never hear of hunter education classes here. I would be interested in helping teach hunter education classes.
- I haven't had a chance for them. I do plan on it.
- I just learned this year what a paddlefish was.
- I just never got time to go this year.
- I knew that I had a paddlefish [permit] but had not fished yet.
- I live in Joplin. Due to storm I was not able to fish.
- I love fishing for paddlefish. I have not been able to this year but I am happy that the Center is open. Although I clean my own fish I would like to try the Center to see what it is like.
- I may only fish six to ten times a year, mainly at Skiatook lake, and not for paddlefish. Thank you.
- I mostly enjoy crappie fishing but I think ODWC & OFRL do great things in our state. Thank you and keep up the fantastic work.
- I need a dock permit please. I need to build a small dock. Thanks.
- I only get the paddlefish permit because I fish a lot of places and want to make sure I have a license for everything possible in case I accidentally catch one.
- I think that we should be allowed more to catch. That is why I never used the paddlefish part of my license.
- I took the free paddlefish permit because I was going to be fly fishing around the state and didn't want to be pulling in a paddlefish by catching it fishing on the bottom with my flies.
- I was going to fish for paddlefish in April but due to the heavy rain I ran out of time.
- I was not aware of the free permit. I will probably check it out and make use of it in the future.
- I was not informed that I had received this permit.
- I was told I had to pay for paddlefish license if I wanted to fish for paddlefish.
- I was unable to fish because of health concerns but am looking forward to next spring.
- I watched below the Ft. Gibson dam. I saw several caught. I do not care how many are caught or when. Let people catch paddlefish. What's the big deal? Some people need them to eat. There are thousands of these fish and there are few people that fish for them and from what I have seen they just keep what they need.

- I went to the low water dam above Choteau Bend. They were catching many fish but I had wrong tackle. Went back to fish twice but too much water.
- I will try!
- I'm a nonresident – we fished Tenkiller in late March for three days. Caught one keeper bass and several throwback sheephead. That's it. Will never fish Oklahoma in late March again. Joined sons and grandsons from Colorado, Georgia, Wisconsin for an "adventure" gathering in Oklahoma, during school spring break. Oklahoma was centrally located. We stayed at Tenkiller State Park.
- I've only had my 2011 fishing license for about a month. I may fish for paddlefish in Grand lake sometime this year.
- If there was another open, I would use it. (Closer.) People need to be asked if they want paddlefish permit!
- Is there an easier way to obtain a paddlefish permit than going to Wal-Mart and waiting forever to get it because I am a lifetime license holder and would like to get it easier. Thank you.
- Just wanted permit for trout fishing.
- My husband goes fishing below Kaw dam for paddlefish. But I don't fish for paddlefish.
- Never asked for permit they gave it to me instead of Legacy Permit. I have never fished for paddlefish.
- Never fished for paddlefish.
- Not interested in paddlefish. I like sand bass fishing only.
- Paddlefish are weird looking and ugly and they're hard to catch to me.
- Thank you.
- Thanks for keeping those snaggers "off limits" to the Spring River for us white bass fishermen.
- The guy at the store said it was automatic.
- This would have been nice to know. Thanks for letting me know after the season. Did not know I had the license or I would have [fished].
- Too many laws.
- Too many paddlefish seem to be taken on Grand lake.
- Was going to try paddlefishing but talked to other people and they say catching them is slim to none.
- We did catch a couple in a cast net in early May east of Nowata, north to Big Creek Ram.
- We do not like catch and release days!
- We fished for paddlefish last year. We think that people should not throw back any paddlefish because the fish hook makes a hole and some fish we got last year were infected???
- We haven't fished for paddlefish in 2011, but we did in 2010. We fish on Lake Hudson, so we clean our own. We do think the program going on is a good thing.
- We just fish for fun. We don't try and catch anything in particular. If we should happen to catch a paddlefish we need the permit.
- We think too many paddlefish are taken and too many catfish jugs being put out in Grand lake.
- Why can't you snag for spoonbill, gar, etc. from Keystone dam to I-44 bridge in Tulsa? I live close to Keystone dam and would like to see this area opened up especially when I see plenty of gar in river area.
- Will never fish for paddlefish in Oklahoma.
- Would love to fish for them sometime!!
- You asked for my opinion, so I will give it. Around here, the paddlefish snaggers are inconsiderate, littering, poaching slob. They take more than their limit, leave the carcasses and guts strewn all over the shoreline. These jerks have to snag fish because they aren't smart enough to get fish to take their bait. The Department of Wildlife Conservation should send more officers down to the low water dam on any given weekend to catch these law breakers. (The low water dam on Grand river.) Snagging paddlefish is no different than shooting fish in a barrel, and these people are just taking advantage of and abusing the privilege!
- Your out-of-state fishing license is too high!
- Your paddlefish program is very good and I usually fish for them every year. But with the cost of fuel when

I came to Oklahoma to fish this year and for your out of state license that went up, I opted for a six-day permit and will not fish them again this year, until fuel comes down.