

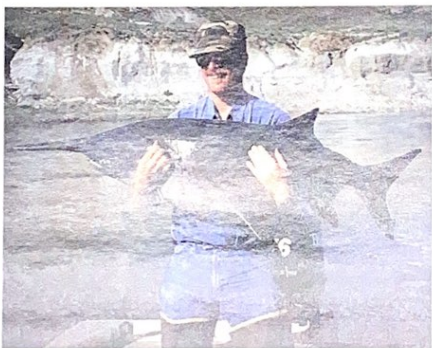
MANAGING MONTANA'S PADDLEFISH: NEW APPROACHES

by DENNIS SCARNECCHIA and PHIL STEWART

Yellowstone and Missouri. Hallowed blue-ribbon trout waters, right? In their upper reaches, where they run clear and cold, yes. But farther east, out on the prairie, where these rivers

surge and roil with spring runoff the color of cocoa, they become home to sauger, catfish, sturgeon, and a unique, ancient fish known as the paddlefish.

Granted, if delicate flyrods and matching the hatch are your passion, fishing for paddlefish may not be for you. They do not have the tradition and mystique of trout. Nor do they have the toothy pugnacity of fish like bass and northern pike. But they do have *size*. Consider that the largest trout ever caught in Montana—a lake trout—weighed 42 pounds, and the largest northern pike a few pounds less. Then add exactly 100 pounds, and you have the weight of Montana's record



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paddlefish.

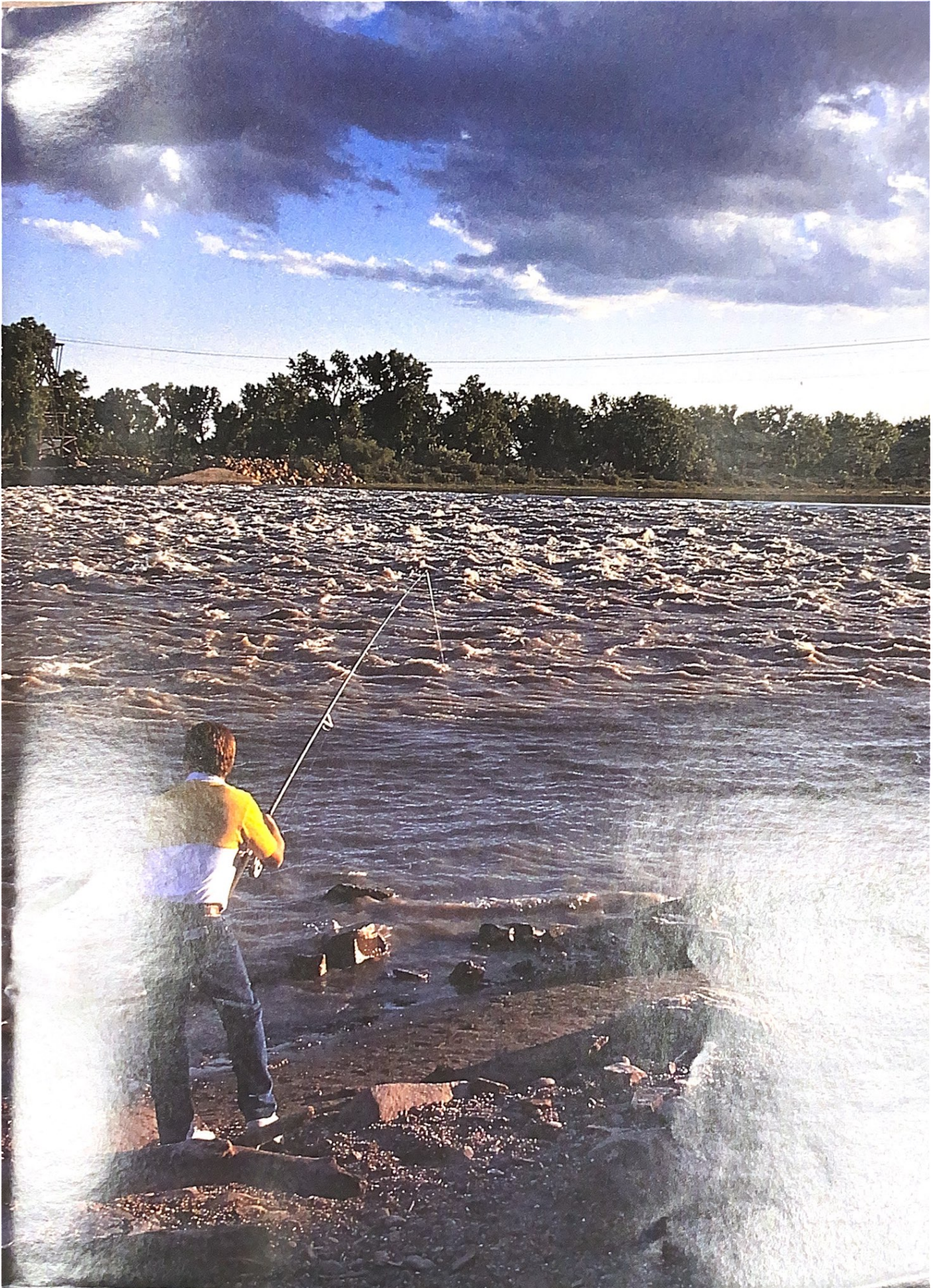
Not surprisingly, catching a fish of this size requires special gear. Because paddlefish eat tiny organisms called zooplankton, they don't strike at baits or lures.

Anglers must instead snag them as they congregate on their upriver spawning migrations, either in deep holes or below obstructions such as diversion dams.

Snagging gear consists of a long spinning rod and a spinning reel filled with 20- to 50-pound-test line. Attached to the end of the line are an 8/0 to 10/0 treble hook and a 4- to 6-ounce

Popular spots for snagging paddlefish include Fred Robinson Bridge on the Missouri River northeast of Lewistown and the Intake diversion on the Yellowstone River 15 miles northeast of Glendive (right).





weight. The hook and lead are jerked through the water in probable paddlefish haunts until hook meets fish. When the hook lodges in the fish's tough skin, the fight is on. Depending on the size of the fish, where it is hooked, the water temperature, and the river stage, landing a paddlefish may consist of a 60-second tug-of-war or a 20-minute struggle an angler will never forget.

Fishing for paddlefish in Montana takes place primarily in two locales: the lower Yellowstone River below Glendive, and the Missouri River just upstream from Fort Peck Reservoir. Each spring, mature paddlefish living in Lake Sakakawea (a Missouri River reservoir in North Dakota) migrate upstream to the mouth of the Yellowstone River, then up the Yellowstone to Intake, a diversion dam 15 miles northeast of Glendive. In high water years, these fish may continue as far as the Cartersville diversion at Forsyth. Other paddlefish migrating upstream from Lake Sakakawea stay in the Missouri River, some going as far as the dredge cuts below Fort Peck Dam. These fish all belong to the Yellowstone Sakakawea stock, one of two stocks of paddlefish inhabiting Montana.

The other, known as the upper Fort Peck stock, consists of fish that mature in Fort Peck reservoir and migrate up the Missouri River above the reservoir to spawn. These fish are caught at popular fishing spots such as Slippery Ann and the Fred Robinson Bridge northeast of Lewistown.

Although paddlefish are distributed throughout the Missouri and Mississippi rivers in portions of 22 states, they are not abundant in most of their range due to habitat loss and exploitation. Paddlefish need free-flowing rivers, often with high natural sediment loads, for successful spawning and survival of young. Because most free-flowing rivers have been interrupted with reservoirs, much paddlefish spawning habitat (seasonally flooded gravel bars) has been destroyed. Overfishing has also depleted populations in many states, particularly commercial fishing for meat and eggs.

Montana's paddlefish continue to



Paddlefish eggs are donated to the Glendive Chamber of Commerce in exchange for fish cleaning services, with proceeds from the sale of caviar helping to fund community projects as well as paddlefish management and research.

thrive because good spawning habitat still exists in the lower Yellowstone River and the Missouri river above Fort Peck Reservoir. Today, Montana's stocks are among the nation's last remaining wild stocks capable of supporting sport fisheries.

An overharvested paddlefish stock may take years to recover, if it ever does. One reason is that paddlefish are finicky spawners, even in free-flowing rivers. Cooperative research by Montana Fish, Wildlife & Parks (FWP) and the North Dakota Game and Fish Department on the Yellowstone-Sakakawea stock indicates that years of high flows during May and June on the Yellowstone—1991, 1993, and 1995—resulted in much better reproductive success than did the intervening years of low flows. Paddlefish require the right combination of flows, temperatures (about 60°F), and perhaps other factors such as turbidity (silt load) for spawning. Suitable conditions do not occur every year.

Second, young paddlefish take many years to mature once they emerge from their eggs and move down into the reservoirs to feed. Males typically need eight or nine years of growth before they migrate upriver the first time, while females may need 15 to 18 years

or even longer. In four years of intensive sampling at Intake, biologists have found fewer than 10 female paddlefish younger than 15 years of age. Once mature, individual males may participate in spawning only every other year and females only every three or more years.

Obviously, rebuilding a stock with such a long life cycle is a slow, difficult task. It is much better to keep the stock healthy in the first place. For this reason, FWP has made a long-term commitment to continual stock assessment and careful management of this unique fish. The intent is to provide sustainable fishing for wild fish while ensuring that overharvest does not occur.

Unfortunately, throughout much of its range down the Missouri and lower Mississippi rivers, the paddlefish has not been managed carefully in the past. Ironically, it has often been viewed as an oddity, or even a rough fish, of limited use and interest. Regulations in most states have been inconsistent and counterproductive, and paddlefish have often been taken in commercial fishing operations directed at more abundant species. In Montana, however, paddlefish fisheries have been monitored closely.

This monitoring began soon after paddlefish were first reported at Intake

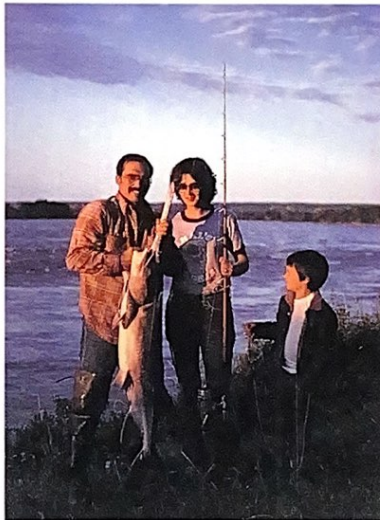


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Biologists in North Dakota and Montana tag paddlefish to learn more about harvest rates and migration patterns. The Montana and North Dakota stocks are among the last wild stocks in the nation capable of supporting sport fisheries.

in 1962. Although there have long been paddlefish in the Yellowstone River, the Yellowstone-Sakakawea stock increased greatly in numbers after Garrison Dam created Lake Sakakawea in 1953. Such population booms are common in new reservoirs for many fish species, but have not been well documented in other paddlefish populations. Flooding of nutrient-rich vegetation and soils results in productive, sparsely inhabited waters. Nine years after Lake Sakakawea began to fill, the first large group of paddlefish was detected migrating up the Yellowstone, and the Intake fishery began to increase in popularity.

J. W. Robinson, a Montana State University (MSU) graduate student who investigated the age of these fish in 1964 and 1965 by counting annual rings (called annuli) on their lower jawbones, reported that nearly all were males about 10 years old. Clearly, they were among the first of the strong year classes of paddlefish benefiting from the food supply in newly formed Lake Sakakawea. The females, which would



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not mature for several years, were still down in the reservoir and had not yet made their first trip up the Yellowstone.

The next decade was to be a paddlefish version of the baby boom, with many years of successful reproduction in the Yellowstone and good survival of young in the gradually filling reservoir. By the mid-1970s, both female and male paddlefish were being caught at Intake. By this time females had begun to outnumber males in the harvest.

Bruce Rehwinkel, now a biologist with FWP, sampled the Yellowstone fish in 1973 and 1974 as part of his graduate work at MSU. He found that

these paddlefish were nearly all less than 20 years old, which meant they were born after the reservoir had begun to fill. The "baby boomers" were now resulting in a substantial fishery at Intake. In 1973 and 1974, 4,600 and 4,300 fish were caught by anglers; of these, slightly more than half were kept and the rest released.

By the mid-1980s, the paddlefish baby boomers had aged, and older females predominated in the harvest. Younger fish were still being caught, but older females produced the memorable catches. Most of these large female fish were 15 to 30 years old. Annual catches at Intake in the 1980s varied from 500 to more than 5,000 fish, with the largest catches occurring in years of high May-June flows on the Yellowstone.

Beginning in 1991, FWP began to monitor the harvest at Intake even more closely. From 1991 to 1994, the paddlefish stock at Intake continued to age. The baby boomers, still the source of most of the large females, were now 25 to 35 years old. In 1993 and 1994 there were indications that these fish were finally being depleted. From now on, the fishery will have to be sustained by the natural, year-in, year-out productivity of the reservoir, not from the benefits of initial filling.

Although the fishery at Intake has been one of the nation's most closely monitored paddlefish fisheries, the need, as well as the opportunity, for careful management increased even more in 1990 when the Montana Legislature authorized a roe donation program. Although paddlefish roe has long been recognized as a valuable source of caviar, until recent years most snaggers at Intake discarded the eggs with the rest of the entrails. Under the roe donation program, anglers can have their fish cleaned by the Glendive Chamber of Commerce and Agriculture. The Chamber processes the eggs into caviar and markets them, with 60% of the proceeds going to regional community programs (FWP receives 40% of net caviar income for management, research, and fishing access site development).

Although still managed strictly as a



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Montana anglers are allowed to keep one or two paddlefish per year, depending on the area being fished. A locking tag must be placed in the dorsal fin of each fish harvested.

recreational fishery, the paddlefishery has seen increased interest both in Montana and downriver in North Dakota. As a result, both of Montana's paddlefish stocks are now managed under a cooperative 10-year plan. Joint management is essential for the Yellowstone-Sakakawea stock because, although these fish migrate into Montana to spawn, they spend most of their time in North Dakota. Although North Dakota's harvest was much smaller than Montana's during the mid-1980s, by 1995 it had grown to equal the Montana harvest.

Several features of the Montana/North Dakota paddlefish management plan distinguish it from efforts in other states:

- *Emphasis on maintaining wild stocks.*—While most paddlefish stocks elsewhere are supplemented by hatchery fish, FWP biologists and many others believe that maintaining good natural habitat, natural spawning, and wild genetics is the best way to ensure long-term health of Montana's paddlefish.

- *Interstate cooperation.*—FWP and North Dakota biologists work together on the river and meet regularly to coordinate management. Biologists in both states tag adult paddlefish and exchange information on tag recoveries to obtain a better picture of harvest rates and migration patterns.

- *Three-stage early warning system using population age structure as an assessment tool.*—Young-of-the-year and yearling paddlefish are counted each August and September in Lake Sakakawea to give an index of reproductive success. After the yearling stage, biologists don't know how well the stock is doing until the fish mature, migrate upriver to spawn, and are harvested by anglers. At this stage, biologists develop a Spawning Adult Index by estimating the relative abundance of young (8- to 12-year-old) male paddlefish in the harvest. Good catches of young males mean there are females of these ages still down in the reservoir; the absence of young males means that reproduction was unsuccessful in the past and that few females can be expected in future years.

- *Total harvest quota for the Yellowstone-Sakakawea stock.*—Although total harvest quotas have been used successfully for other (especially marine) fisheries, such a quota has seldom been used for paddlefish. In 1996, anglers in Montana and North Dakota will be permitted to harvest a maximum of 1,500 fish from this stock in each state (currently there is no quota for the upper Fort Peck stock). The quota, presently based mainly on historic harvest levels, is intended to return total harvest of Yellowstone-Sakakawea paddlefish to the level of the 1970s.

- *Concerted information and education effort.*—FWP provides information to anglers and other interested persons on paddlefish and the fishery both at Intake and at Region 7 headquarters in Miles City. The department also seeks input from anglers on their preferences and attitudes about paddlefish and paddlefishing. In 1993, angler surveys provided detailed information on who participates in the fishery, where, and why. Like traditional anglers, paddlefish anglers cite being outdoors, experiencing the thrill of catching fish, and spending time with friends as primary motivations. Although these anglers rate paddlefish meat highly, obtaining meat is a secondary consideration.

- *Tag-based harvest system.*—In

both Montana and North Dakota, all paddlefish anglers are required to purchase a locking tag that is attached to the front of the dorsal fin when a fish is landed. This system provides useful information about fishermen and their catches, and makes enforcement easier.

- *Controlled catch-and-release fishery.*—From 1981 through 1993, the limit on the Yellowstone was two paddlefish per person per year with mandatory retention of snagged fish. This regulation served to prevent high-grading of the largest fish, all of which are females. In 1994, in response to concern about aging of the stock, an increasing overall harvest rate, and decreasing success of snaggers at Intake, anglers were limited to one fish per year. In 1995, the one-fish limit was continued; however, in response to anglers' requests to be able to continue fishing after filling their tag, two weekly catch-and-release periods (Wednesday and Sunday, 3:00 p.m. to 9:00 p.m.) were established at Intake during the six-week season.

In 1995 FWP biologists were on hand to assist in release of snagged fish and monitor the effects of snagging. Results indicate that paddlefish survive being snagged when they are released promptly and not handled by the gills. In addition, wounds from snagging are in nearly all cases minor; the tough skin usually protects the fish from serious damage, and wounds do not become infected by bacteria or fungi. Based on success of this trial catch-and-release program in 1995, it has been renewed for 1996.

All seven of these features—maintaining genetic integrity and habitat, interstate cooperation, an early warning system, a total harvest quota, an information and education program, a tag-based harvest system, and opportunity for catch-and-release fishing—are important for effective paddlefish management in Montana. The paddlefish is an irreplaceable part of the state's natural and recreational heritage. Its abundance in the twenty-first century will depend on these and other new management approaches, as well as continued cooperation between anglers and biologists. ■