Policy Analysis Group – College of Natural Resources

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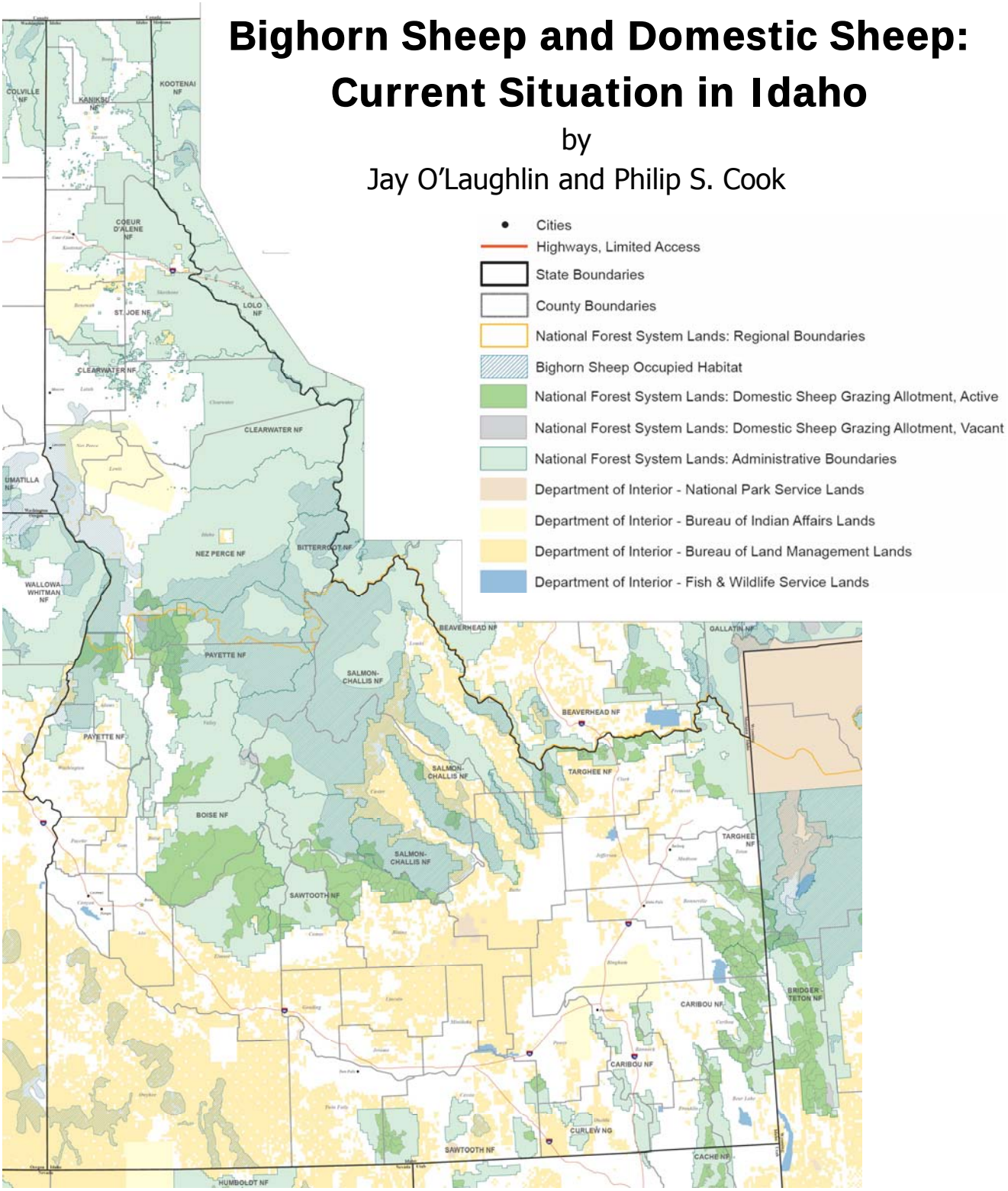
Bighorn Sheep and Domestic Sheep: Current Situation in Idaho

by

Jay O'Laughlin and Philip S. Cook



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Role and Mission. The Idaho Legislature created the Policy Analysis Group (or "PAG") in 1989 as a way for the University of Idaho to provide timely, scientific and objective data and analysis, and analytical and information services, on resource and land use questions of general interest to the people of Idaho (see Idaho Code § 38-714). The PAG is a unit of the College of Natural Resources Experiment Station, administered by William J. McLaughlin, Director, and Dean, College of Natural Resources.

PAG Reports. This is the 30th in a series of PAG reports (see inside cover). The PAG is required by law to report the findings of all its work, whether tentative or conclusive, and make them freely available. PAG reports are primarily policy education documents, as one would expect from a state university program funded by legislative appropriation. The PAG identifies and analyzes scientific and institutional problems associated with natural resource policy issues. In keeping with the PAG's mandate, several alternative policy options are developed and their potential benefits and detrimental effects are analyzed. As an operational policy the PAG does not recommend an alternative.

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Reviewers' comments improved the report considerably and we are grateful for their help. However, the authors alone are responsible for any errors of omission or commission.

In addition to formal review comments of draft reports, we also benefitted from conversations with Cal Groen,* and Jim Unsworth, Idaho Department of Fish and Game; Andy Brunelle,* U.S. Forest Service; Kent Henderson,* Idaho Wildlife Federation; Bonnie Butler, Office of the Governor; Wally Butler, Idaho Farm Bureau Federation; and Keith Lawrence, Nez Perce Tribe Wildlife Department.

The map on the report cover is a draft drawn by the U.S. Forest Service. It is one of 13 maps of domestic sheep and bighorn sheep for the western states that can be downloaded by following instructions at the "Full Curl" webpage devoted to bighorn sheep: http://www.fs.fed.us/biology/wildlife/curl.html

*These individuals are members of the Policy Analysis Group's Advisory Committee.

Table of Contents

Image from a pictograph panel at Buffalo Eddy, Hells Canyon National Recreation Area

This image is used throughout the report to fill blank spaces at the end of **Chapters**, **Appendices**, etc.

Source: copied from U.S. Forest Service website http://www.fs.fed.us/hellscanyon/overview/index.shtml

NOTE: The numbering system for **Boxes, Figures, and Tables** lists the number of the chapter first, followed by a hyphen then the order of like items within the chapter.

List of Boxes

List of Exhibits

List of Figures and Tables

Executive Summary

This report describes the current situation for the conservation and sustainability of wild Rocky Mountain bighorn sheep (BHS) populations in Idaho, while also maintaining domestic sheep (DS) operations, some of them reliant on federal land grazing allotments. Reducing the risk of DS transmitting fatal respiratory disease to BHS involves separating BHS and DS to prevent contact between these sheep cousins. Separation can adversely affect some DS operations. The main problem addressed herein is BHS/DS interaction. Following the suggestion of the University of Idaho's College of Natural Resources Policy Analysis Group (PAG) Advisory Committee (listed on inside cover page), we do not identify alternatives to the current situation, but instead describe the various "moving parts" involved in the BHS/DS interaction issue (all acronyms are expanded in the **Glossary**). The main parts are 1) decision processes and events for BHS conservation that affect DS grazing in the vicinity of BHS, 2) the participants involved in those processes and their perspectives, and 3) the information they rely on. This report puts these parts into one package.

Decision Process and Events. Two decision processes are involved—one federal, the other state. A chronicle of events is included in **Appendix A**. At this writing the key federal process is an amendment to Payette National Forest's (PNF) Land and Resource Management Plan (LRMP) that must provide habitat that can ensure BHS ***viability***.[1] A Record of Decision is expected in 2010 and it may lead to modification or closure of some grazing allotments. To comply with a 2009 state law, the Idaho Department of Fish and Game (IDFG) identified 18 DS operations either on or immediately adjacent to BHS range; 12 of these operations have voluntarily agreed to employ best management practices to keep DS separated from BHS, and as state law requires, the IDFG has certified that the risk to BHS is acceptable.

Participants. Federal land managers are responsible for administering 90% of the BHS habitat in the state, as well as issuing permits for domestic livestock grazing on federal lands. The IDFG is responsible for managing wildlife populations. Some people favor using federal lands for BHS conservation and cancelling DS grazing because of disease transmission risk, others favor DS grazing and feel that too much is made of the risk to BHS populations. Two collaborative processes are ongoing, one convened by Idaho Governor C.L. "Butch" Otter to help guide development of an updated statewide BHS management plan, the other by U.S. Senator Mike Crapo focuses on the Payette NF. Interest group perspectives are summarized in **Appendix B**. As explained in a chapter by law professor Angelique EagleWoman of the University of Idaho, all of the six American Indian Tribes surrounded by the State of Idaho have cultural traditions involving BHS, and some (including the Nez Perce Tribe) have off-reservation hunting rights that are broadly stated in various treaties, require careful judicial interpretation, and implementation through a government-to-government relationship with the state.

Disease Transmission. The premise underlying the BHS/DS separation strategy is the "contact hypothesis"—bighorn sheep have a high likelihood of contracting fatal respiratory disease following contact with domestic sheep. Although most scientists accept the hypothesis as if it were fact, a few do not. A summary of this science issue was commissioned and published by the Council on Agricultural Science and Technology (CAST) in 2008. Dr. Marie Bulgin of the University of Idaho's Caine Veterinary Research & Teaching Center was one of the three co-authors. The peer-reviewed CAST report recognizes that interaction between BHS and DS under range conditions increases the probability of BHS mortality and supports a broad management approach that includes preventing contact between DS and BHS.

Conclusion. Whatever Payette National Forest officials decide about grazing allotments in 2010, their amended forest plan likely will be appealed and perhaps litigated unless all sheep interests can reach some agreement. Although by design we do not identify alternatives to the current situation, we hope the information herein will help Idahoans understand the full range of issues as they seek ways to sustain ***viable*** bighorn sheep populations and domestic sheep operations throughout the state.

[1] ***Viable*** and ***viability*** are highlighted throughout, as the concept is central to the BHS/DS interaction issue.

Chapter 1. Introduction, Problem Statement, and Report Organization

> "The challenge of balancing species conservation and livestock-based livelihoods is exemplified by the respiratory disease complex affecting North American bighorn sheep (*Ovis canadensis*). Despite evidence that domestic sheep diseases threaten the persistence of bighorn sheep populations, the economic consequences of restricting domestic sheep grazing have polarized the debate, with some arguing that disease risk posed by domestic sheep has been exaggerated and grazing restrictions should be eased."[2]

Introduction

In southwestern Idaho, Payette National Forest (PNF) officials for at least 15 years have been concerned about bighorn sheep (BHS) and domestic sheep (DS) interactions and how to balance BHS conservation with the livelihood of DS ranchers. The current situation was triggered by an appeal of the PNF's 2003 Land and Resource Management Plan (LRMP). The LRMP is required by the National Forest Management Act of 1976 (NFMA). To comply with the National Environmental Policy Act of 1969 (NEPA), the LRMP identifies a range of alternative land-use management decisions, evaluates their environmental consequences, and provides for public involvement in the planning process.

One management decision—the allocation of rangeland resources to domestic sheep (DS) grazing—involves the potential risk of transmitting bacteria from DS that cause pneumonia in BHS and subsequent mortality. Following appeal of the PNF's 2003 LRMP, the Reviewing Officer for the Chief of the U.S. Forest Service in March 2005 reversed the Regional Forester's approval of the LRMP and called for analysis of the risks to BHS ***viability***[3] on the PNF. ***Viability*** is a vaguely defined legal requirement all Forest Service managers must meet for all native and desirable non-native species of plants and animals.

The Regional Forester directed PNF officials to adequately address the long term ***viability*** of BHS and amend the LRMP appropriately. After reviewing risks to BHS ***viability*** and analysis of management alternatives, in September 2008 the PNF released for public comment the Draft Supplemental Environmental Impact Statement (DSEIS) for the LRMP amendment.[4] In response to those comments, the PNF will release additional supplemental information on 25 January 2010, followed by a 45-day period for public comment.[5]

The complicated situation was described succinctly by journalist Pete Zimowsky, along with some geographical context:

> "A controversy is ever growing on the Idaho side of the Snake River in Hells Canyon on whether domestic sheep grazing is causing the problem and should be allowed. Sheep grazing is not allowed on the Oregon side of the Snake River, but bighorns swim back and forth between Oregon and Idaho. Conservationists are asking the Payette National Forest to find alternative grazing allotments for domestic sheep to get them out of historic wild sheep habitat. . . . It's hard for the public to understand the bureaucratic foreign language in an environmental impact statement. The crux of the [issue] is how to manage the separation of domestic sheep and bighorn sheep in the Payette National Forest. It can affect bighorns and the businesses of sheep ranchers."[6]

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[2] Clifford, D.L., Schumaker, B.A., Stephenson, T.R., Bleich, V.C., Cahn, M.L., Gonzales, B.J., Boyce, W.M. & Mazet, J.A.K. (2009). "Assessing disease risk at the wildlife-livestock interface: a study of Sierra Nevada bighorn sheep." *Biological Conservation* 142: 2559-2568.

[3] ***Viable*** and ***viability*** are highlighted throughout; the concept is central to the BHS/DS interaction issue.

[4] U.S. Forest Service (September 2008). Southwest Idaho Ecogroup Land and Resource Management Plans, Draft Supplemental Environmental Impact Statement [for the Payette National Forest]. Available at http://www.fs.fed.us/r4/payette/publications/big_horn/index.shtml

[5] U.S. Forest Service (17 December 2009). "Additional bighorn sheep information to be released in January [2010]." Payette National Forest news release. http://www.fs.fed.us/r4/payette/news/2009/121709_suppinfoBHS.shtml

[6] Zimowsky, P. (21 December 2008). "Help protect Hells Canyon bighorns: comment on how to keep domestic and wild sheep from mixing in the Payette forest." *Idaho Statesman*, Boise, Idaho.

At some time in 2010, the PNF will issue a Record of Decision (ROD) on the LRMP amendment, which will explain how the PNF is planning to provide habitat capable of sustaining BHS ***viability***. This may lead to modification or closure of some DS grazing allotments on the PNF. Whether the new supplemental information or the subsequent ROD will quell the long-standing controversy over BHS/DS interaction is in doubt.

The BHS/DS interaction issue on the PNF is being watched closely by BHS conservationists and DS ranchers across the West.[7] There are 4.3 million DS in states with BHS, and more than 2.8 million of them are located where grazing allotments overlap BHS habitat.[8] Margaret Soulen Hinson, Vice President of the American Sheep Industry Association, member of a family with a grazing permit on the PNF, and a member of the Policy Analysis Group's Advisory Committee that suggested this report, said,

> "It's high stakes for the entire sheep industry. In the Western states everyone is kind of watching what happens on the Payette on this issue. [More than 70 percent] of domestic sheep in this country reside in states with BHS populations. What happens here could potentially transfer across the West and in essence it will destroy the domestic sheep industry in this country if the decision goes badly."[9]

In Idaho the BHS/DS interaction issue affects not only the Payette, but also the Sawtooth, Salmon-Challis and Caribou-Targhee National Forests. The issue could potentially affect lands administered by the federal Bureau of Land Management and the State of Idaho's endowment trust lands that often are included with and managed as part of federal permits. In addition, the states of Oregon and Washington could be affected, as they have made a long-term commitment to restore BHS herds along their common borders with Idaho. Furthermore, the well-being of Native American Indian Tribes surrounded by Idaho is at issue. Federal treaties guarantee the Tribes the right to harvest BHS in portions of Idaho in perpetuity, and the Tribes look to federal land management agencies as responsible for ensuring that treaty rights are protected.

On 29 July 2009 the Regional Forester of the Intermountain Region (R4) of the U.S. Forest Service elevated concerns about BHS conservation in Idaho by identifying the species as "sensitive" region-wide (i.e., southern Idaho, Nevada, western Wyoming, and Utah). The Forest Service has identified 3,250 "sensitive" species that need special management to maintain and improve their status on National Forests, and prevent a need to list them under the Endangered Species Act.[10]

Purpose and Problem Statement

The purpose of this report is to describe the current situation in Idaho so that as the state's comprehensive BHS management plan continues to develop, and other policies that affect BHS and DS are considered by various participants in these processes, all stakeholder concerns and their interrelationships are considered, otherwise plans and policies are likely to fail and will resurface quickly as a problem needing attention. Although policy analysis typically identifies alternative options for improving a problem situation, and their probable consequences, by design this report does not.

The various "moving parts" involved in BHS/DS issues are described herein, following the suggestion made by the Advisory Committee of the University of Idaho's College of Natural Resources Policy Analysis Group during its meeting on April 30, 2009.[11] The main moving parts are 1) the decision

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[7] Hoffman, N. (1 October 2007). "Sheep v. sheep: a legal battle over Hells Canyon grazing could determine the future of wild sheep and sheep ranching across the West." *High Country News*, Paonia, Colorado. http://www.hcn.org/issues/355/17521

[8] M. Woolever, review comments.

[9] Barker, E. (2 March 2009). "Common ground sought on Payette: interests on both sides of wild sheep vs. domestic sheep controversy are trying to collaborate for solutions." *Lewiston Morning Tribune*, Lewiston, Idaho.

[10] U.S. Forest Service (March 2009). "Threatened, Endangered & Sensitive Species Program." U.S. Dept. of Agriculutre, Forest Service, Washington, DC. 1 p. http://www.fs.fed.us/biology/tes/index.html

[11] Advisory Committee members are identified on the inside cover of this report.

processes and events that determine where BHS conservation efforts will take place and how that will affect DS grazing in the vicinity of BHS, 2) the participants involved in those processes, and 3) the information they rely on. We hope this information will help Idahoans understand the issues better as they seek to find ways to sustain ***viable*** BHS populations and DS operations in the state.

The following problem statement has been reformulated numerous times over the course of this study as we developed a richer understanding of the social and decision contexts in which the BHS/DS interaction issue is embedded:

> ***Problem Statement.*** Bighorn sheep (BHS) habitat in Idaho is mostly on National Forest System lands that must be managed so that the ***viability*** of BHS populations can be sustained. There is a consensus among scientists that interaction between BHS and domestic sheep (DS) increases the probability of BHS mortality from respiratory disease and that preventing contact between BHS and DS is an appropriate management strategy.[12] Therefore the separation of BHS and DS can help ensure BHS ***viability***.[13] Separation involves the management of BHS populations and habitat quality, including DS grazing locations and practices as well as the distribution and abundance of BHS. Such conservation efforts can adversely affect some DS operations. The State of Idaho has management authority for Idaho's wildlife, including BHS, and the state should be involved in defining BHS population ***viability*** on National Forests. A current comprehensive management plan for BHS would help do that, and one is under development.

Report Organization

Events provide temporal benchmarks for helping understand the BHS/DS situation. **Appendix A** provides a chronological listing of these events, so as not to interrupt the flow of the report. Similarly, a wide variety of individuals, groups and organizations have participated in BHS conservation decision processes, and their perspectives gleaned from various sources are summarized in **Appendix B**. These events and perspectives define the features and contours used to "map" the BHS/DS situation in Idaho. Drawing from these two appendices, **Chapter 2** presents a "situation map" describing the features of the social and decision contexts for BHS conservation, organized in a framework built on the five elements necessary for sustainable natural resource management: lands & resources, governance, society & culture, economy, and ethics & equity. These elements of sustainability provide the chapter headings used to organize the report. Each chapter is briefly summarized as follows.

Both BHS and DS are currently at about 10% of their historic levels. The status of BHS, DS, and their interaction is reviewed in **Chapter 3**. There is no dispute that respiratory disease periodically reduces BHS populations, sometimes substantially. The onset of some pneumonia epidemics in BHS has been associated with the presence of DS on native range. Interactions between BHS and DS increase the probability of BHS mortality and reduced lamb survival, primarily because of respiratory disease. One of the most practical ways to decrease the overall likelihood of epidemics in wild sheep populations is preventing contact between BHS and DS.[14]

The current BHS/DS situation in Idaho will change, and soon, and will be shaped by the outcome of two separate public agency planning processes that will drive decisions regarding where, when, and under what conditions BHS conservation efforts will proceed, and DS will be allowed to graze on federal lands. The planning processes are:

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[12] Miller, M.W., Knowles, D.P. & Bulgin, M.S. (2008). "Pasteurellosis transmission risks between domestic and wild sheep." CAST Commentary QTA2008-1. Council for Agricultural Science and Technology, Ames, Iowa. 8 pp. http://www.cast-science.org/websiteUploads/publicationPDFs/Sheep%20Pasteurellosis%20Commentary156.pdf

[13] WAFWA (21 June 2007). *Recommendations for Domestic Sheep and Goat Management in Wild Sheep Habitat*. Western Association of Fish and Wildlife Agencies, Wild Sheep Working Group, 27 pp. http://www.wafwa.org/documents/wswg/WSWGManagementofDomesticSheepandGoatsinWildSheepHabitatReport.pdf

[14] Miller, Knowles & Bulgin (2008), *idem*.

1. Federal: To meet the mandates of the National Forest Management Act (NFMA), U.S. Forest Service managers prepare a Land and Resource Management Plan (LRMP). Because of concerns about BHS ***viability***, the Payette National Forest (PNF) LRMP is being amended pursuant to a remand decision by the U.S. Forest Service Chief's Office.[15] A Draft Supplementary Environmental Impact Statement (DSEIS) for the LRMP amendment was issued for public comment in September 2008.[16] Additional supplementary information will be released in January 2010. A final Record of Decision (ROD) on the LRMP amendment will follow later in 2010, and it could affect grazing allotments. Details are provided in **Chapter 4**.
2. State: Since 2007 the Idaho Department of Fish and Game (IDFG) has been working on an updated bighorn sheep management plan. When the plan is completed, approval authority rests with the Idaho Fish and Game Commission. The planning process now includes the 2009 State of Idaho mandate[17] that the IDFG work with ranchers to develop best management practices designed to keep DS separate from BHS on the 18 DS operations where there is potential interaction between DS and BHS. For 12 of them the IDFG director has certified that the risk to BHS is acceptable if agreed-to plans are followed. The details are covered in **Chapter 5**.

Social and cultural perspectives on the BHS/DS interaction issue are provided in **Appendix B** and summarized in **Chapter 6**, which includes the concise one-paragraph summary of public comments received on the PNF's DSEIS for the BHS ***viability*** amendment to the LRMP.[18]

As a federal land management agency, PNF officials are charged with ensuring that the U.S. government fulfills its responsibilities under federal treaties with affected Native American Indian Tribes. **Chapter 7** is an original contribution prepared especially for this report by Angelique EagleWoman, Associate Professor, College of Law, University of Idaho, describing the cultural significance of bighorn sheep to the six Tribes surrounded by the State of Idaho, their treaty rights relative to BHS, and agreements for state-tribal consultation.

Chapter 8 presents the economic arguments offered by participants in the BHS/DS situation, including testimony to the Idaho Legislature and impact analysis presented in the DSEIS for the PNF's BHS ***viability*** amendment to the LRMP. Hunting and recreational values associated with BHS are included, as requested by several reviewers of earlier drafts of this report.

Ethics and fairness are part of the BHS/DS separation issue and are addressed in **Chapter 9**. A touchstone for sheep producers is a 1997 letter of agreement from the Hells Canyon Bighorn Sheep Restoration Committee to the Idaho Wool Growers Association:

> "The Committee is interested in having the support of the woolgrowers industry . . . and understands that bighorns may occasionally migrate outside of their designated range and come into contact with domestic sheep. These bighorns will be considered "at risk" for potential disease transmission and death. . . . This means that the Committee recognizes the existing domestic sheep operations in or adjacent to the Hells Canyon complex, on both National Forest and private lands, and accepts the potential risk of disease transmission and loss of bighorn sheep when bighorns invade domestic sheep operations."[19]

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[15] U.S. Forest Service (2005). *Decision for Appeal of the Payette National Forest Land and Resource Management Plan Revision*. Washington, DC. 41 pp. http://www.fs.fed.us/r4/payette/publications/big_horn/ appealdec.pdf

[16] U.S. Forest Service (September 2008), *idem*.

[17] Idaho Code § 36-106(e)5(E). http://www.legislature.idaho.gov/idstat/Title36/T36CH1SECT36-106.htm

[18] U.S. Forest Service (June 2009). Summary of Public Comment, Payette National Forest Draft Supplemental Environmental Impact Statement for Bighorn Sheep Viability Analysis and Forest Plan Amendment. NEPA Support Group, U.S. Dept. of Agriculture, Forest Service, Salt Lake City, UT. http://www.fs.fed.us/r4/payette/publications/big_horn/CAReport_final.pdf

[19] Richmond, R.M., et al. (26 January 1997). Letter from Wallowa-Whitman National Forest Supervisor, and others, to S. Boyd, Executive Director, Idaho Wool Growers Association; also signed by the federal Bureau of Land

The concluding **Chapter 10** identifies near future events that will attempt to resolve some of the BHS/DS interaction issues. The Payette NF will make a decision on the LRMP amendment in 2010. Before that happens, the PNF will release on 25 January 2010 two new sets of information that will contribute to a better understanding of the BHS/DS situation: 1) quantitative risk assessment regarding BHS/DS interaction on the PNF (see **Chapter 3**), and 2) economic analysis in more depth than that provided in the DSEIS issued for public comment in September 2008 (see **Chapter 8**).

The IDFG, fully engaged from May to September 2009 in certifying whether DS operations that voluntarily agree to employ best management practices provide an acceptable level of risk to BHS, is now refocusing attention on developing a BHS management plan. The State of Idaho would like all participants with an interest in BHS and DS to be engaged in the process of developing it.

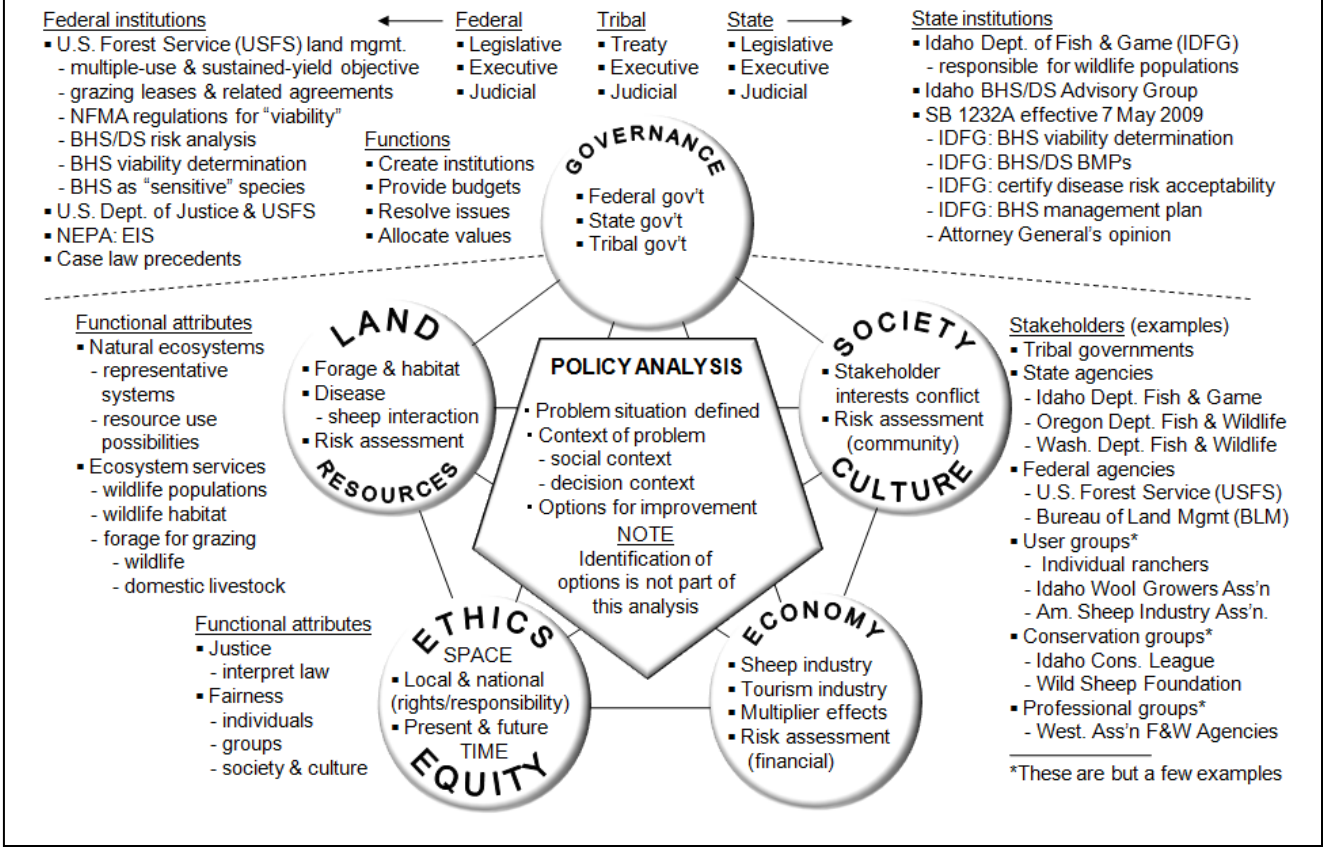
Although it may seem likely that the trajectory of current events is moving the resolution of BHS/DS interaction issues in Idaho to federal court, alternatives do exist. It is beyond the scope of this study to identify them.

Management, Idaho Dept. Fish and Game, Oregon Dept. of Fish and Wildlife, Washington Dept. of Fish and Wildlife, and the Foundation for North American Wild Sheep. The letter is included herein as **Exhibit A** and discussed in **Chapter 9**.

Chapter 2. Situation Map: Elements of Sustainability

A "situation map" puts all the parts of the BHS/DS situation on one diagram (**Figure 2-1**). A situation map depicts various concerns people have about an issue and is useful for facilitating communication and understanding in collaborative learning processes.[20] Such devices provide a "conceptual map"[21] of the key elements of a problem situation and generally are developed by stakeholders in facilitated forums to enhance their understanding and improve collaborative learning opportunities. In this case however, the situation map is based on the authors' understanding of the issues surrounding BHS/DS management in Idaho, and is grounded in discussions with the Policy Analysis Group's Advisory Committee members,[22] reviewers of earlier report drafts, some of the participants and stakeholders in the BHS/DS situation, peer-reviewed literature, journalistic reports, and other sources of information as necessary to flesh out social and cultural perspectives on BHS/DS issues. These sources are cited in footnotes, with a **Bibliography** that can be used to access full citations more readily than combing through the footnotes.

Figure 2-1. Bighorn Sheep and Domestic Sheep Situation Map in Idaho



The situation map (**Figure 2-1**) is based on a general framework for sustainable resource management that expands upon the relationship or interconnection between land and resources on the one hand and society and culture on the other:

[20] Daniels, S.E. & Walker, G.B. (2001). *Working Through Environmental Conflict: The Collaborative Learning Approach*. Praeger, Westport, Connecticut, 328 pp.

[21] deLeon, P. & Steelman, T.A. (2001). "Making public policy programs effective and relevant: the role of policy sciences." *Journal of Policy Analysis and Management* 20: 163–71.

[22] Advisory Committee members are identified on the inside cover of this report.

- ***Land & Resources*** (biophysical situation)
- ***Society & Culture*** (social/cultural situation), and three sub-components:
  - ***Economy*** (especially benefits to individuals, groups, and society)
  - ***Ethics & Equity*** (rights & responsibilities of all participants)
  - ***Governance*** (legislative, executive, and judicial institutions and interactions among federal, state, and tribal governmental entities)

Each of the five perspectives is contained in a sphere (**Figure 2-1**) and connected to the other spheres. Each of the five spheres is an essential element of sustainability, and each is used as an organizing theme for the chapters in this report. Each perspective needs to be considered in the quest to design and implement sustainable natural resource management policies, programs, plans, and projects. The multiple perspectives stakeholders and participants have on the BHS/DS situation in Idaho are provided in **Appendix B**, a tabular format cataloging the various perspectives. Government perspectives are those expressed by federal, tribal, and state organization and agency officials. Interest groups are categorized as professional, citizen conservation, and trade associations/business firms that have a stake in the outcome of the decision process.[23] The governance sphere in (**Figure 2-1)** is an institutional creation of our society and cultures within it, as are the spheres representing economy and ethical and equity considerations.

All five perspectives are relevant for the BHS/DS situation and any other resource management policy problem, and are illustrated in this manner to provide a summary of the perspectives framework that can help identify the key parts of the interactions among the five perspectives, institutions, and stakeholder groups. There are simply too many stakeholders in the BHS/DS situation to depict them all on the situation map.

Policy analysis is central to the framework (**Figure 2-1**). The interrelationship of the five perspectives on natural resource issues is represented at the intersection or center of these five spheres by connecting lines between the spheres that trace the outline of a pentagon labeled "policy analysis." From this central vantage point information can be developed to design options to improve problem situations as they arise. It should be noted that information generated by policy analysis informs choices; it does not make the choice from among options.

This framework was developed as a comprehensive approach to policy analysis that could be applied to a variety of natural resource situations where sustainability is at issue.[24] The framework relies on the "policy sciences"—an integrative, interdisciplinary field of scholarship and practice that provides an explicitly problem-oriented framework applicable to a range of environmental policy challenges that have included large mammal conservation.[25] Policy scientists approach policy analysis by carefully defining and clarifying the problem. This is done by relating the problem to its social and decision contexts, using multiple methods that are appropriate for the problem situation.[26]

[23] Cubbage, F.W., O'Laughlin, J. & Bullock, C.S., III (1993). *Forest Resource Policy*. J. Wiley & Sons, New York, NY. 562 pp.

[24] O'Laughlin, J. (2004). "Policy analysis framework for sustainable forestry: national forest case study." *Journal of Forestry* 102(2): 34-41.

[25] Wilshusen, P.R. & Wallace, R.L (2009). "Integrative problem solving: the policy sciences as a framework for conservation policy and planning." *Policy Sciences* 42: 91-93.

[26] Clark, T.W. (2002). *The Policy Process: A Practical Guide for Natural Resource Professionals*. Yale University Press, New Haven, Connecticut. 215 pp.

Chapter 3. Lands & Resources: Sheep Status and Disease Transmission

> "Formerly abundant throughout western North America, many bighorn sheep populations declined or were eliminated by the early 1900s due to over-hunting, disease, competition with domestic livestock for forage, and competition with humans for space."[27]

This chapter first reviews the status of domestic sheep (DS) and then bighorn sheep (BHS) nationwide and in Idaho. Then we review the BHS/DS interaction issue involving disease transmission, i.e., the "contact hypothesis" and the separation of BHS and DS around which social and cultural issues swirl.

Domestic Sheep (DS)

The dominant feature of domestic sheep (*Ovis aries*) production in the United States, and, thus, the focus of much producer and policy concern in Idaho, has been the steady decline in sheep and lamb inventories since the mid-1940s. Sheep ranching peaked in Idaho in the 1930s with 2.7 million head of breeding stock.[28] By 2009 less than 10% of that number remained, with 210,000 head and 1,200 sheep producers.[29]

Nationwide the industry began a steady decline from a peak of 56 million head in 1942 to 6.2 million in 2007. No one factor, event, or policy change is responsible for the contraction of the industry but rather a confluence of forces against which U.S. sheep producers have had to struggle, including disease, predation, genetic resources, land stewardship, and international trade and exchange rates.[30]

Wool was at one time considered the primary product of sheep production, with lamb and mutton as byproducts. Today, the situation is reversed and reflects the decline in the relative profitability of wool production vs. lamb production. In range production systems wool currently accounts for 10 to 30 percent of sheep production income. [31]

The survival of the U.S. sheep industry depends on the potential for profitability, and it is affected by various economic factors, such as scale of operation, production efficiency, and costs of labor and feed.[32] The profitability and survival of the industry, however, is also dependent on the potential for continued scientific advances to improve profitability in various areas, including sheep breeding and genetics (e.g., the introduction of new breeds and mapping the sheep genome), improvements in reproductive efficiency, and improvements in nutrition. Also important is the sheep-environment interface, including sheep grazing behavior, interactions with wildlife (especially BHS), and the management of predators.[33]

About half of the U.S. lamb crop comes from range operations located in 11 western states and South Dakota where there are vast areas of public grazing lands. The majority of the land is unfenced, unimproved, native high-mountain and desert pastures. Bands of sheep that graze open range often must move long distances from season to season, thus requiring on-site herders. The competitiveness of range band operations is affected by government controls over public grazing lands and changes in public grazing fees.[34]

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[27] Beuchner, H.K. (1960). "The bighorn sheep in the United States, its past, present and future." *Wildlife Monographs* 4: 1–174.

[28] Hoffman (2007), *idem*.

[29] American Sheep Industry Association (2009). "Fast Facts About Sheep Production in the United States." http://www.sheepusa.org/get_file/file_id/438d9de19087aeb56a6737ddd9582003

[30] NRC (2008a). *Changes in the Sheep Industry in the United States: Making the Transition from Tradition*. National Research Council, National Academies of Science, National Academies Press, Washington, DC. 348 pp.

[31] NRC (2008a), *idem* at 9.

[32] NRC (2008a), *idem* at 4.

[33] NRC (2008a), *idem*.

[34] NRC (2008a), *idem* at 24-27.

An estimated 25 percent of the national sheep inventory spends a significant portion of the year grazing on western public land under permits managed by the Forest Service of the U.S. Department of Agriculture and the Bureau of Land Management (BLM) of the U.S. Department of the Interior.[35] In western states with large public land holdings, wildlife are generally managed by the state, yet federal land managers are responsible for land and livestock management.[36]

Conflicts may occur when either wildlife or livestock populations are allowed to exist at densities where overgrazing damages plant communities and rangeland health.[37] This is generally relevant because both wild and domestic animals are competing for the limited forage resource available on federal lands. However, relative to the BHS/DS issue, overgrazing and damage to plant communities is not the overarching concern.[38] Although in the past sheep overgrazing occurred on both private and public rangelands, today restoration practices have generally improved both land and animal productivity, and sheep producers are required to have herders with their sheep while they are grazing on federal lands. For such range operations labor is the largest sheep production expense.[39]

Margaret Soulen Hinson's family grazes 9,000 ewes on a combination of private, state and federal lands, including the Payette National Forest.[40] She says that if her grazing allotment were cancelled, it would mean the end to the family's 80-year sheep-ranching history. Without the allotment, she says, the family would have to sell off 1,500 acres of prime riverfront real estate in Valley County near McCall, Idaho. Then she would consider dividing up 50,000 acres of southwest Idaho ranchland into hundreds of ranchettes, maybe saving a few acres to run some cattle. But she would much rather not sell out: "We like what we do," she says.[41]

Across the West, sheep ranchers view BHS as a threat to their way of life,[42] including Idaho ranchers with federal grazing allotments.[43] Tom McDonnell, Executive Vice President of the Idaho Cattle Association and formerly an official with the American Sheep Industry Association, said, "Some of these ranches are 130 years old, [and] are being destroyed by BHS. You never know when they're going to show up."[44] Such strong feelings are part of the current BHS/DS situation in Idaho.

Bighorn Sheep (BHS)

> "Early explorers and settlers reported seeing bighorn sheep by the thousands in the valleys and mountains of Idaho. Disease and the restrictions of native habitat by an advancing civilization were cardinal factors in reducing the statewide population to an estimated 1,000 animals by the early 1920s. At about this point the downward trend was halted. More rigid hunting restrictions and a decrease during that period in the number of people and livestock in wilderness areas were key factors coming to the bighorn's aid."[45]

The management of BHS is a compelling story of wildlife conservation:

> "By the second half of the 19th century, populations of native sheep were dropping all over the West. Some of the carnage was due to unregulated hunting, but a lot of bighorns simply fell sick and died. By the 1940s, U.S. herds had plummeted by 99

[35] NRC (2008a), *idem*.
[36] *Ibidem*.
[37] D. Toweill, review comments.
[38] C. McCarthy, review comments.
[39] *Ibidem*.
[40] Hoffman (2007), *idem*.
[41] *Ibidem*.
[42] *Ibidem*.
[43] W.G. Myers III, review comments.
[44] Hoffman (2007), *idem*.
[45] Smith, D.R. (1954). *The Bighorn Sheep in Idaho: Its Status, Life History, and Management*. Wildlife Bulletin No. 1, Idaho Dept. of Fish & Game, Boise. 154 pp.

> percent. The Audubon bighorn, which had lived in river breaks and badlands as far east as the Dakotas, was extinct; the Rocky Mountain subspecies was hanging on only in the most remote and inaccessible mountains.
>
> "Today, long after better hunting laws and wildlife management techniques have brought other big game animals back, wild sheep still seem fragile—unable to reclaim the territories they have lost, suffering from ailments carried by their tame relatives. While the species has made a modest recovery in the past 50 years, we still do not fully understand its needs, and the changing character of the West itself now further imperils these charismatic animals.
>
> "Despite their recent troubles, wild sheep are one of the planet's great success stories. Equipped with industrial-strength digestive systems that can handle wind-battered, dusty alpine plants, and an amazing ability to negotiate rough terrain, they came into their own in the Pleistocene period of the last million years. During melt-offs of the great ice sheets, these glacier followers spread from their original home south of the Himalayas all around the northern hemisphere."[46]

Current BHS numbers in Idaho are estimated at less than 10% of the historical level.[47] Although no reliable record of bighorn sheep (BHS) numbers prior to the arrival of European settlers exists, BHS were perhaps the "single most abundant species in Idaho prior to 1850" and likely could have occupied nearly the entire state.[48] Between 1870 and 1920, BHS were nearly exterminated from Idaho, with perhaps as few as 300-400 in 1906.[49]

Two subspecies of BHS inhabit the state, in individual herd units of 20 to 75 individuals.[50] The Rocky Mountain BHS (*Ovis canadensis canadensis*) subspecies is found in many locations north of the Snake River (**Figure 3-1**).[51] Abundant in Idaho prior to European settlement, Rocky Mountain BHS reached a modern peak of 4,000 animals in 1990, and subsequently have declined to about 1,700.[52] South of the Snake River, the California BHS subspecies (*Ovis canadensis californiana*) has been translocated from outside the state. The population peaked at 1,800 animals in 1994 and now numbers about 1,000.[53] In the Idaho Comprehensive Wildlife Conservation Strategy, California BHS are rated "S-1"; this is a designation indicating the species is of high concern because of small populations and limited distribution that may result in the population becoming critically imperiled in the future.[54]

NatureServe[55] considers BHS in Idaho, Oregon, and Utah to be "vulnerable" (S3 status). In Montana and Nevada BHS are "apparently secure" (S4 status) and in Washington and Wyoming BHS are rated somewhere between "vulnerable" to "apparently secure" (S3S4 status). In Canada, BHS are

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[46] Bama, L. (3 March 1997). "Bringing back the bighorn." *High Country News,* Paonia, Colorado. http://hcn.org/issues/98/3028

[47] Forsgren, H. (25 March 2009). Letter from Harv Forsgren, U.S. Dept. of Agriculture, Forest Service, Regional Forester (intermountain Region 4), to Cal Groen, Idaho Dept. of Fish and Game Director, re "considering adding bighorn sheep to sensitive species list."

[48] *Ibidem*.

[49] Groen, C. (30 April 2009). Letter from Cal Groen, Director, Idaho Dept. of Fish & Game, to Lee Jacobsen, USDA Forest Service Region 4 TES Program Leader, re "adding bighorn sheep to Region 4 sensitive species list."

[50] *Ibidem*.

[51] Toweill, D.E. & Geist, V. (1999). *Return of Royalty: Wild Sheep of North America*. Boone and Crockett Club and Foundation for North American Wild Sheep, Missoula, MT. 214 pp.

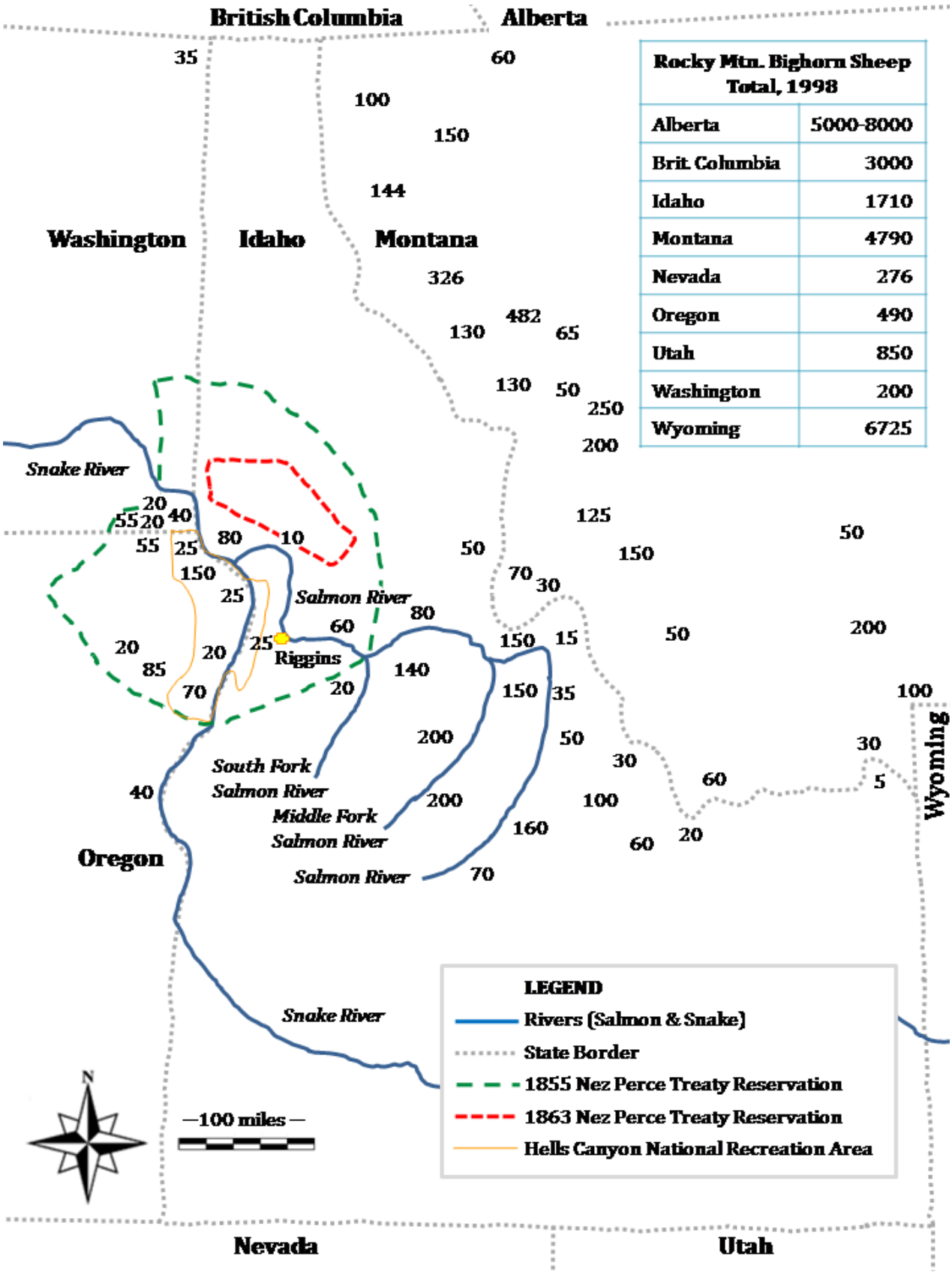
[52] Groen (2009), *idem*.

[53] *Ibidem*..

[54] Idaho Dept. of Fish and Game (2005). *Idaho Comprehensive Wildlife Conservation Strategy*, approved by U.S. Fish & Wildlife Service (2006). http://fishandgame.idaho.gov/cms/tech/CDC/cwcs_table_of_contents.cfm

[55] NatureServe is a non-profit conservation organization whose mission is to provide the scientific basis for effective conservation action. NatureServe and its network of natural heritage programs are the leading source for information about rare and endangered species and threatened ecosystems.

Figure 3-1. Rocky Mountain Bighorn Sheep Populations in Idaho and the Region, 1998



Source of data: Toweill & Geist (1999), *idem*.

"vulnerable" (S3) in Alberta and "imperiled-to-vulnerable" in British Columbia (S2S3).[56] The U.S. Forest Service recently recognized BHS in Region 4 (i.e., south of the Salmon River in Idaho) as a "sensitive" species for which population ***viability*** is of concern due to downward trends in either population or habitat capability.[57] The Forest Service also considers BHS a "sensitive" species in Oregon and Washington.[58]

The State of Idaho considers Rocky Mountain BHS as a game species and regulates hunting via permits. Like most wildlife, the State of Idaho has responsibilities for BHS population management, whereas the actions of landowners affect the quality of the habitat BHS depend on. Federal land management agencies are responsible for most of the land that currently provides BHS habitat in Idaho. One parameter of habitat quality is the interaction of DS with BHS.

Throughout significant portions of their range, BHS suffer from periodic population depression, largely resulting from recurrent respiratory disease epizootics.[59] There are many human-caused (e.g., displacement/disturbance) and environmental (e.g., predation, climatic) stressors that also influence the dynamics and ***viability*** of wild sheep populations.[60] Some factors affecting wild sheep population performance can be managed, others cannot.[61]

Hells Canyon. Hells Canyon is the deepest gorge in North America, with 8,000 feet of elevation from the Snake River to the highest point on the canyon's east rim.[62] Hells Canyon meets the criteria to be a national park, but in 1975 was designated Hells Canyon National Recreation Area (HCNRA),[63] administered by the U.S. Forest Service in the Wallowa-Whitman National Forest in Oregon, and in Idaho, the Payette and Nez Perce National Forests. The HCNRA is located along the Idaho/Oregon border, south from the Idaho/Oregon/ Washington intersection point for more than 100 miles along the Snake River (**Figure 3-2**).

More than 50% of the Hells Canyon area is publicly owned and managed by federal and state agencies.[64] Historically, DS grazing was common; however, most public lands DS grazing allotments have been terminated.[65]

In the early to mid-1850s, perhaps as many as 10,000 BHS inhabited Hells Canyon and the surrounding mountains.[66] BHS were extirpated from Hells Canyon by 1945.[67] Reasons cited by biologists include competition for forage with domestic livestock, unregulated hunting, and diseases carried by DS.[68] As discussed in the next section, disease transmission from DS to BHS is highly debated.

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[56] NatureServe (2009). NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia. Bighorn sheep at http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Ovis canadensis

[57] Barker, E. (7 Aug 2009). "Fish & Game approves plans that include kill permits." *Lewiston Morning Tribune*, Lewiston, Idaho.

[58] C. McCarthy, review comments.

[59] WAFWA (2007), *idem*.

[60] *Ibidem*.

[61] *Ibidem*.

[62] U.S. Forest Service (2009a). "Hells Canyon National Recreation Area." http://www.fs.fed.us/hellscanyon/overview/index.shtml

[63] MacCracken, J.G. & O'Laughlin, J. (1992). *A National Park in Idaho? Proposals and Possibilities*. Report No. 7, Policy Analysis Group, College of Natural Resources, University of Idaho, Moscow. 33 pp.

[64] Cassirer, E.F. & Sinclair, A.R.E. (2007). "Dynamics of pneumonia in a bighorn sheep metapopulation." *Journal of Wildlife Management* 71(4): 1080-1088.

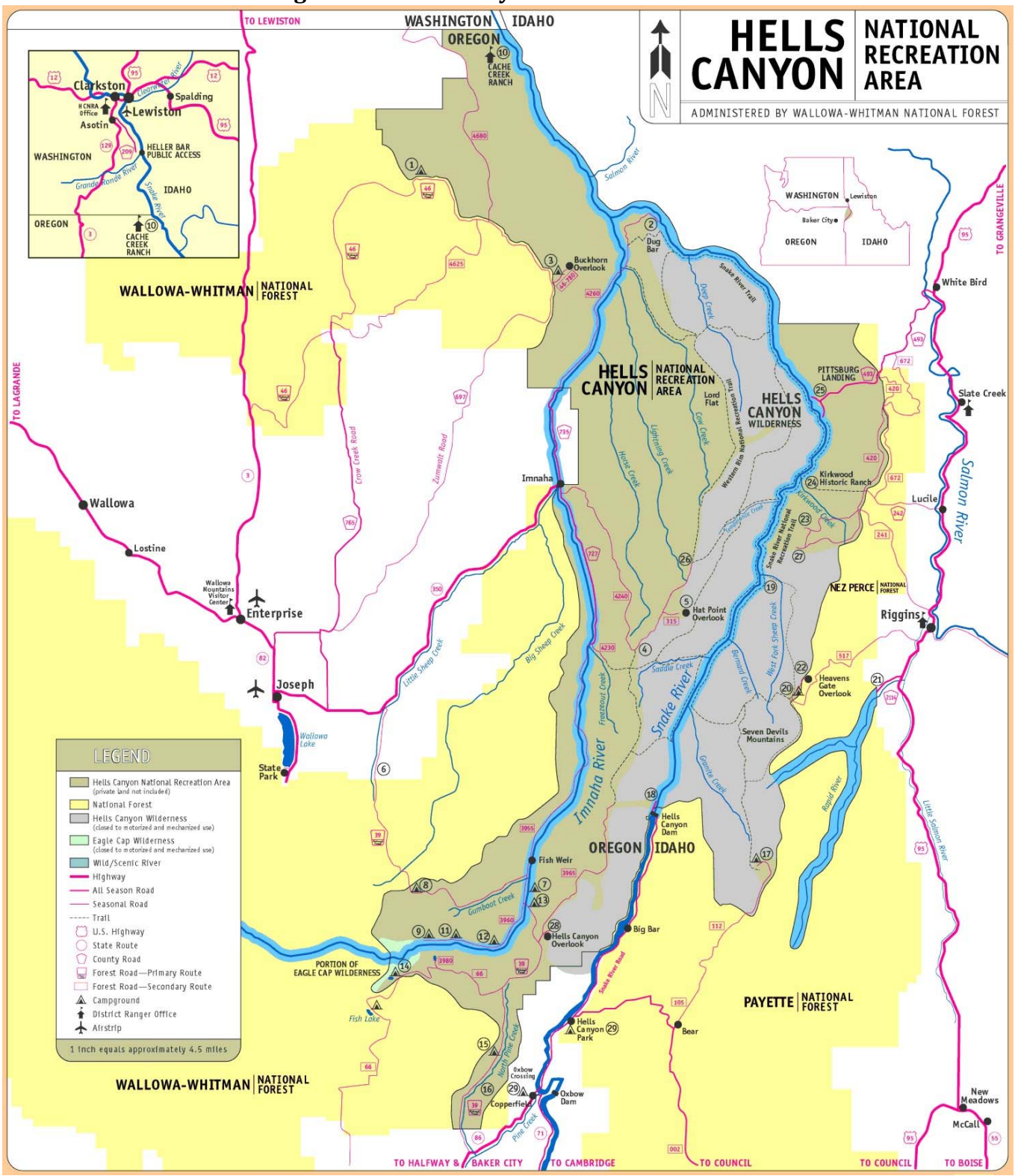
[65] *Ibidem*.

[66] Hells Canyon Bighorn Sheep Restoration Committee (2005). Hells Canyon Initiative Annual Report FY 05. Idaho Dept. of Fish and Game, Oregon Dept. of Fish and Wildlife, Washington Dept. of Fish and Wildlife, U.S. Forest Service, U.S. Dept. of the Interior – Bureau of Land Management, Foundation for North American Wild Sheep. Available at Idaho Dept. of Fish & Game, Lewiston, Idaho.

[67] Smith (1954), *idem*.

[68] Hells Canyon Bighorn Sheep Restoration Committee (2005), *idem*.

Figure 3-2. Hells Canyon of the Snake River



Source: http://www.fs.fed.us/hellscanyon/things_to_see_and_do/recmap.shtml

In 1971 efforts to reintroduce BHS in the Hells Canyon area commenced with translocation into Oregon. The first translocation into Idaho was made in 1975.[69] By 2004, 474 BHS had been translocated to Hells Canyon, and at various times between 1971 and 2004, 126 BHS were relocated from one herd to another within the Hells Canyon area.[70] Disease is a recurring problem. In 1996, a die-off killed about 300 animals and since then, different herds in the canyon have struggled as lambs succumb to pneumonia.[71]

Cassirer & Sinclair (2007)[72] evaluated the importance of disease, predation, and other sources of mortality on BHS population growth in Hells Canyon from 1997 to 2003. Pneumonia was the most common cause (43%) of adult mortality and the primary factor limiting population growth. Cougar (*Puma concolor*) predation was the second most-frequent source (27%) of adult mortality but did not reduce the rate of population growth significantly. Periodic introduction of novel pathogens from contact with domestic sheep or goats may have been an important external factor precipitating and perpetuating pneumonia-caused mortality in the BHS population.[73]

Whether DS are implicated in these die-offs is debatable; there have not been any DS in the canyon for the last three years, yet BHS have died from other causes not attributable to DS.[74] Despite multiple die-offs from disease, the Hells Canyon herds have shown a positive annual population growth since reintroduction began in 1971,[75] with an estimated 875 BHS in the tri-state area (Idaho, Oregon, and Washington) in 2005,[76] and perhaps 780 today.[77]

Between 1978 and 2005, a total of 278 rams have been harvested in the Hells Canyon project area, including 11 rams in 2005. Hunting is by controlled permit and in all three states limited to rams only. Success rate for the limited number of hunting permits has exceeded 90%. [78]

Salmon River. Conservation efforts targeting BHS along the Salmon River allowed recovery of the native population to 2,000 animals by 1949.[79] This is the only native population in the State of Idaho and there have not been any augmentation or reintroduction efforts. Compared with Hells Canyon, far less is known about the wild sheep in the Salmon River country between Riggins and the South Fork of the Salmon. Biologists estimate there are about 100 native BHS there and population trend surveys show BHS numbers have declined by 70 percent in the last two decades, which nearly all wildlife biologists attribute to the presence of DS.[80] Results of recent studies of radio-collared BHS have confirmed the presence of BHS on DS allotments.[81]

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[69] Toweill & Geist (1999), *idem*.

[70] Hells Canyon Bighorn Sheep Restoration Committee (2005), *idem*.

[71] Barker, E. (1 March 2009a). "Bighorn battle could doom sheep ranchers: bid to save Idaho's iconic wild sheep could doom four sheep ranches to extinction." *Lewiston Morning Tribune*, Lewiston, Idaho.

[72] Cassirer & Sinclair (2007), *idem*.

[73] *Ibidem*.

[74] K. Lauer & S. Boyd, review comments.

[75] Hells Canyon Bighorn Sheep Restoration Committee (2004). The Hells Canyon Initiative Hells Canyon Bighorn Sheep Restoration Plan. Idaho Dept. of Fish & Game, Oregon Dept. of Fish & Wildlife, Washington Dept. of Fish & Wildlife, U.S. Forest Service, U.S. Dept. of the Interior – Bureau of Land Management, Foundation for North American Wild Sheep. Available at Idaho Dept. of Fish & Game, Lewiston, Idaho.

[76] Hells Canyon Bighorn Sheep Restoration Committee (2005), *idem*.

[77] C. McCarthy, review comment.

[78] Cassirer, F. (2006). Hells Canyon Bighorn Sheep. Project W-160-R-33 Completion Report. Idaho Department of Fish & Game, Boise. https://research.idfg.idaho.gov/wildlife/Wildlife Technical Reports/W-160-R-33-X Completion.pdf

[79] Groen (2009), *idem*.

[80] Barker, E. (1 March 2009a), *idem*.

[81] M. Woolever, review comment.

Disease Transmission—The "Contact Hypothesis"

Other than wild predators, perhaps the most contentious DS/wildlife interaction issue is with BHS disease.[82] Despite a large body of evidence that DS diseases threaten the persistence of BHS populations, the economic consequences of restricting DS grazing has polarized the debate, with some arguing that disease risk posed by DS has been exaggerated and grazing restrictions should be eased.[83]

The overarching BHS/DS issue is the management strategy for BHS conservation that calls for separation of BHS and DS to eliminate the potential for contact between BHS and DS in order to reduce the risk of disease transmission from DS to BHS. The premise underlying the BHS/DS interaction issue is the "contact hypothesis—bighorn sheep have a high likelihood of contracting fatal respiratory disease following contact with domestic sheep" as stated in a U.S. Forest Service research report (RMRS-GTR-209) in order to frame the issue.[84] The agency was challenged to retract GTR-209. Although a federal district court upheld the challenge, "The court order does not preclude the underlying scientific literature . . . nor the scientific literature referenced in this [report]" (see **Box 3-1**).

Box 3-1. U.S. Forest Service Retracts BHS/DS Disease Transmission Report

Schommer, Timothy J. & Woolever, Melanie M. (2008). ***A Review of Disease Related Conflicts Between Domestic Sheep and Goats and Bighorn Sheep.*** Gen. Tech. Rep. RMRS-GTR-209. U.S. Dept. of Agriculture, Forest Service, Rocky Mountain Research Station, Fort Collins, CO. 16 pp.

"This publication has been removed. On July 1, 2009, the United States District Court for the District of Idaho issued a decision and order in *Idaho Wool Growers Assoc. v. Schafer* which found that the Risk Assessment Disease Transmission Committee and the Payette Principles Committee were advisory committees subject to the procedural requirements of FACA [Federal Advisory Committee Act]. These Committees were established to review information regarding disease transmission between domestic and bighorn sheep for a Forest Planning effort. The order states that 'the Committees' finding and /or conclusions are not to be relied upon by the Forest Service with respect to any future agency decisions.'

"*A Review of Disease Related Conflicts Between Domestic Sheep and Goats and Bighorn Sheep* (RMRS-GTR-209) was prepared to provide a summary of the published scientific literature concerning the issue of disease transmission between bighorn sheep and domestic sheep and goats. Since RMRS-GTR-209 incorporates the principles developed by the Payette Principles Committee, it would not be appropriate for the Forest Service to use this publication in future agency decisions or policy development in light of the July 1, 2009, decision. Given these circumstances, the agency has retracted RMRS-GTR-209.

"The court order does not preclude the underlying scientific literature reviewed by the Payette Principles Committee nor the scientific literature referenced in this GTR."

Source: http://www.fs.fed.us/rm/pubs/rmrs_gtr209.html

Some people involved in the BHS/DS situation continue to dispute the disease transmission contact hypothesis and do not publicly acknowledge the merits of the separation approach as a BHS risk reduction strategy. Ranchers with DS operations on federal lands feel aggrieved by a separation management strategy or policy that would reduce their grazing allotments. Regardless, the contact hypothesis is a useful way to frame discussion of the disease transmission issue, and also uses information consistently with the federal district court order, as the court itself confirmed.[85]

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[82] NRC (2008a), *idem*.

[83] Clifford et al. (2009), *idem*.

[84] Schommer, T.J. & Woolever, M.M. (2008). *A Review of Disease Related Conflicts Between Domestic Sheep and Goats and Bighorn Sheep*. General Technical Report RMRS-GTR-209, U.S. Dept. of Agriculture, Forest Service, Rocky Mountain Research Station, Fort Collins, Colorado. 16 pp. Withdrawn by U.S. Forest Service (but see **Box 3-1**); in author's files.

[85] Winmill, B.L. (9 November 2009). *IWGA and Bulgin vs. Schafer et al*. Case No. CV-08-394-S-BLW, Docket No. 39, Document 46. Memorandum decision and order re: defendants' motion to clarify court's order.

CAST Report—Consensus Viewpoint? CAST is the Council for Agricultural Science and Technology. Its purpose, origin, and work are explained in **Box 3-2**. The CAST report on BHS/DS disease transmission risk was written by three veterinary scientists with considerable experience researching sheep diseases, including Dr. Marie Bulgin of the University of Idaho.[86] The CAST report conclusions (see **Box 3-3**) can be said to represent a consensus viewpoint. In short, The CAST report recognizes that interaction between BHS and DS under range conditions increases the probability of BHS mortality and supports management that includes preventing contact between DS and BHS.

Box 3-2. What is the Council for Agricultural Science & Technology (CAST)?

"CAST is a nonprofit 501 (c)(3) organization composed of scientific societies and many individual, student, company, nonprofit, and associate society members. CAST's Board is composed of representatives of the scientific societies, commercial companies, and nonprofit or trade organizations, and an executive committee. CAST was established in 1972 as a result of a 1970 meeting sponsored by the National Academies of Science, National Research Council.

"The primary work of CAST is the publication of task force reports, commentary papers, special publications, and issue papers written by scientists from many disciplines. The CAST Board is responsible for the policies and procedures followed in developing, processing, and disseminating the documents produced. These publications and their distribution are fundamental activities that accomplish our mission to assemble, interpret, and communicate credible science-based information regionally, nationally, and internationally to legislators, regulators, policymakers, the media, the private sector, and the public. The wide distribution of CAST publications to nonscientists enhances the education and understanding of the general public. CAST addresses issues of animal sciences, food sciences and agricultural technology, plant and soil sciences, and plant protection sciences with inputs from economists, social scientists, toxicologists or plant pathologists and entomologists, weed scientists, nematologists, and legal experts." (Source: http://www.cast-science.org/governce.asp)

Box 3-3. CAST Report on BHS/DS Disease Transmission Risk

"[B]oth endemic and introduced pathogens are believed to contribute to contemporary pasteurellosis epidemics in bighorn sheep. . . . Based on evidence from empirical studies and field observations, ***interactions between wild sheep and domestic sheep increase the probability of mortality and reduced lamb survival in wild sheep populations***, primarily because of respiratory disease." [Emphasis added.]

Conclusion. "Although the authors acknowledge that the current understanding about pasteurellosis in wild and domestic sheep is incomplete, respiratory disease clearly is a serious problem in both. Because the ***onset of some pneumonia epidemics in bighorn sheep has been associated with the presence of domestic sheep on native range***, and because other outbreaks seem to have resulted from pathogens already endemic in affected wild sheep herds, accurately quantifying the risk of interspecies disease transmission in range conditions is problematic. Consequently, a ***broad approach*** to population health management currently may be the most practical way ***to decrease the overall likelihood of epidemics*** in wild sheep populations. Such an approach ***includes***, but does not rely solely on, ***practices that prevent interactions between wild and domestic sheep*** that could result in respiratory pathogen transmission. Preventing contact between wild and domestic sheep, better monitoring of exchanges and interactions between wild sheep populations, and managing population and habitat quality all have some value in improving and maintaining the overall health of wild sheep populations and preventing pneumonia epidemics. Ongoing and planned research also is likely to provide a better understanding and new tools that may further improve approaches for wild and domestic sheep health management on native ranges." [Emphasis added.] (Miller, Knowles & Bulgin (2008), *idem*.)

[86] Miller, Knowles & Bulgin (2008), *idem*.

University of Idaho "Sheep Flap."[87] Although most scientists involved in BHS/DS issues accept the contact hypothesis as if it were fact, a few do not, including Dr. Marie Bulgin,[88] and Dr. Glen Weiser,[89] her colleague at the University of Idaho's Caine Teaching and Research Center in Caldwell. Dr. Bulgin, in her role as past president of the Idaho Wool Growers Association, testified before the Idaho Legislature in 2009 during debate over SB 1175, a controversial BHS/DS separation bill that passed the Legislature and was vetoed by Governor Otter (see **Chapter 5**).

During her testimony in 2009, Dr. Bulgin did not refer to the above CAST report findings (**Box 3-3**) she co-authored in 2008. Instead she testified that over the last 19 years, the Caine Center has investigated every major die-off of BHS in the western states, Alaska, Canada, and Mexico, and "There has been no scientific evidence that domestic sheep have caused the die-offs."[90]

Approximately two months after Dr. Bulgin's testimony, the Western Watersheds Project discovered research performed at the Caine Center in 1994 purportedly providing evidence that bighorn sheep can get deadly diseases directly from domestic sheep on the open range, despite Dr. Bulgin's insistence to the contrary.[91] In light of this Dr. Bulgin at one point said she's rethinking her stance; as she put it, "This kind of compromises me, because of what I've been saying. I didn't know [about that study]."[92] A few days later, in an interview with Eric Barker of the *Lewiston Morning Tribune*, she told him the 1994 study results did not convince her that DS transmitted pneumonia to wild BHS. She said, ". . . bighorn biologists believe domestics are responsible for the demise of bighorns, but they have been able to show with time and many different studies in different countries that it isn't so. Something that is coincidental isn't proof."[93]

In the 1994 study, Caine Center scientists, including Dr. Bulgin's daughter, used DNA tests to determine organisms causing fatal pneumonia in two BHS—one each from Oregon and Nevada—were identical to bacteria found in DS that had commingled with the dead BHS. Transmission "likely occurred between the species on the range," the Caine Center concluded at the time in a letter sent to wildlife biologists in Oregon and elsewhere. Dr. Bulgin contends she didn't know of or suppress the Caine Center studies, which were never published in wildlife journals.[94] However, wildlife professionals in Nevada,[95] Oregon,[96] and California[97] knew about the Caine Center's results. California Department of Fish and Game senior wildlife veterinarian Dr. David Jessup wrote to Dr. Alton Ward of the Caine Center that he considered the results a missing link that proves disease transmission from DS to BHS on the range.[98]

On 17 June 2009, the University of Idaho placed Dr. Bulgin on administrative leave while her testimony on DS/BHS disease transmission to the Idaho Legislature and documents submitted to a

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[87] Barker, E. (18 June 2009). "UI researcher placed on leave in sheep flap: Bulgin's testimony on disease transmission is being investigated." *Lewiston Morning Tribune*, Lewiston, Idaho

[88] Bulgin, M. (3 April 2009). Testimony to the Idaho Senate Resources and Environment Committee, Boise, Idaho. http://www.legislature.idaho.gov/sessioninfo/2009/standingcommittees/sresmin.pdf

[89] Weiser, G. (9 March 2009). Testimony to the Idaho Senate Resources and Environment Committee, Boise, Idaho. http://www.legislature.idaho.gov/sessioninfo/2009/standingcommittees/sresmin.pdf

[90] Bulgin (3 April 2009), *idem*.

[91] Miller, J. (6 June 2009). "Bighorn battle intensifies: group says UI research center had evidence of disease link." Associated Press, Boise, Idaho, in *Lewiston Morning Tribune*, Lewiston, Idaho.

[92] *Ibidem*.

[93] Barker, E. (12 June 2009). "Sick sheep dispute intensifies: daughter of embattled UI researcher tested bighorn that had died in the '90s after mixing with domestics." *Lewiston Morning Tribune*, Lewiston, Idaho.

[94] Miller, J. (8 October 2009). "UI questions prof's attendance at bighorn meeting." Associated Press, Boise, Idaho. http://groups.yahoo.com/group/RangeTree/message/629

[95] *Ibidem*.

[96] Barker, E. (12 June 2009), *idem*.

[97] Trillhaase, M. (14 June 2009). Editorial: "When a scientist becomes an apologist." *Lewiston Morning Tribune*, Lewiston, Idaho.

[98] *Ibidem*.

federal district court in Boise are investigated.[99] In August 2009, Dr. Bulgin was interviewed by *The Shepherd: A Guide for Sheep and Farm Life*, an "industry journal" based in New Washington, Ohio. In the interview, published in the journal's October 2009 edition, she insisted there is no proof that BHS die after catching diseases from domestic sheep on the range.[100] The University of Idaho's investigation did not find evidence of scientific misconduct in Dr. Bulgin's testimony or written statements, and she will resume her former role in teaching, research and coordinating the veterinary medicine education program at the Caine Center. Under university policy, Bulgin will operate under an approved conflict management plan that will address, among other things, her private activities as an advocate for the sheep industry.[101]

Testing the "Contact Hypothesis." A journalist has compared the respiratory disease linkage between DS and BHS with that of cigarettes and lung cancer—it is "logical, statistically obvious, and extremely difficult to prove."[102] Some ranchers dispute the idea that DS carry diseases that kill BHS.[103] As in establishing a relationship between cigarettes and cancer, the issue with disease transmission between DS and BHS is not necessarily proof, but rather the preponderance of information in the form of published literature and professional opinion that supports the contact hypothesis.

It is common for opponents of environmental action to argue that the scientific basis for purported harms is uncertain, unreliable, and fundamentally unproven.[104] In response, many scientists believe that their job is to provide the *proof* that society needs. Both the complaint and the response are misguided. We look to science to tell us if a problem is real, and if so what to do about it. Within a scientific community, different individuals may weigh evidence differently and adhere to different standards of demonstration, and these differences are likely to be amplified when the results of inquiry have political, religious, or economic ramifications. *Proof* does not play the role in science most people think it should, and science cannot play the role in policy that skeptics demand. Although the sciences never provide absolute proofs, nevertheless we look to scientific research to provide the nearest approximation to proof that we can obtain. At best science produces a robust consensus based on a process of inquiry that allows for continued scrutiny, re-examination, and revision.[105]

The BHS/DS interaction and disease transmission issue is treated herein as a testable hypothesis. Scientists with the U.S. Forest Service refer to this as the "contact hypothesis—bighorn sheep have a high likelihood of contracting fatal respiratory disease following contact with domestic sheep."[106] The contact hypothesis is a useful way to frame the disease transmission issue. The scientific method is such that the hypothesis would be rejected, given evidence that the likelihood of fatal disease in BHS following contact with DS is low, rather than high. Although quantifying the likelihood, or probability, is problematic,[107] new methods have been developed for quantifying disease risk arising from BHS/DS interaction for the endangered and ESA-protected Sierra Nevada BHS population.[108]

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[99] Barker, E. (18 June 2009), *idem*.

[100] Miller, J. (16 November 2009). "UI professor reasserts bighorn disease claims: past comments led to university inquiry." Associated Press, Boise, Idaho, in *Spokesman-Review*, Spokane, Washington. http://www.spokesman.com/stories/2009/nov/16/ui-professor-reasserts-bighorn-disease-claims/

[101] University of Idaho (4 January 2010). "University statement on scientific misconduct assessment [of Dr. Marie Bulgin's testimony and written statements]." http://www.uidaho.edu/newsevents/item?name=university-statement-on-scientific-misconduct-assessment

[102] Bama (1997), *idem*.

[103] AP (24 Jan 2008). "Idaho's new bighorn plan could mean more wild sheep would be killed." Associated Press, Boise, Idaho.

[104] Oreskes, N. (2004). "Science and public policy: what's proof got to do with it?" *Environmental Science & Policy* 7: 369-383.

[105] *Ibidem*.

[106] Schommer & Woolever (2008), *idem*, but see **Box 3-1**.

[107] Miller, Knowles & Bulgin (2008), *idem*.

[108] Clifford et al. (2009), *idem*.

Wildlife scientists attempt to explain processes within biological systems and to predict how changes will affect specific wildlife populations.[109] The scientific method is a circular process in which previous information is synthesized into a theory, predictions are deduced from the theory, the predictions are stated explicitly in the form of hypotheses, hypotheses are tested through an investigation involving experimentation, observation, or quantitative models, the theory is rejected, supported, modified, or expanded on the basis of the results of these tests, and the process starts again. If the data support the hypothesis, we cannot conclude the theory (model) is true, but only that it has not been rejected. Of central importance is that we do not *prove* a research hypothesis or theory to be correct. The credibility of the hypothesis increases as more of its predictions are supported and alternative hypotheses are rejected.[110]

Much of the disease problem in BHS is caused by various bacteria in the genus *Pasteurella*, which cause pneumonia in both domestic and wild sheep.[111] Over centuries, DS have developed a resistance to the bacteria, but BHS have not.[112] BHS and other wildlife species populations are often infected with various strains of *Pasteurella* spp. bacteria and may transmit the organism to other members of the population.[113] Transmission between animals occurs via nose to nose contact or through contact with aerosolized droplets containing the bacteria. Direct contact may not be necessary for transmission, as the *P. multocida* strain remains ***viable*** when aerosolized for up to 18 meters.[114]

Pasteurella normally will not trigger pneumonia episodes unless infected animals are stressed; stressors in BHS may include undernutrition, predator attacks, trapping and relocation, hunting and other human disturbances, climate, and other disturbances related to inappropriate habitat.[115] Outbreaks manifest acutely as an all-age mortality event often followed by 3-5 years of low survival of lambs born to possibly chronically infected ewes.[116, 117]

Much of the scientific basis for the contact hypothesis comes from planned pen experiments with BHS and DS[118, 119, 120, 121, 122] and observations of accidental interspecies contacts of semi-free

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[109] Garton, E.O., Ratti, J.T. & Giudice, J.H. (2005). "Research and experimental design." Chapter 3, in, *Techniques for Wildlife Investigations and Management*, Braun, C., ed. The Wildlife Society, Bethesda, Maryland.

[110] *Ibidem*.

[111] Miller, M.W. (2001). "Pasteurellosis." In, *Infectious Diseases of Wild Mammals*, 3rd ed. Williams, E.S.& Barker, I.K., eds. Iowa State University Press, Ames, Iowa. Pp. 330-339; as cited by Miller, Knowles & Bulgin (2008), *idem*.

[112] Barker, R. (7 June 2009). "Can Idaho manage wild and domestic sheep together?" *Idaho Statesman*, Boise, Idaho.

[113] Knowles, D. & Rink, A. (2006). "Outline of concerns relating to perception of disease transmission issues at the livestock/wildlife interface in the western United States." Unpublished paper prepared for the American Sheep Industry Association, Nevada Dept. of Agriculture, and U.S. Dept. of Agriculture, Agricultural Research Service. 5 pp., in author's files.

[114] Dixon, D.M., Rudolph, K.M., Kinsel, M.L., Cowan, L.M., Hunter, D.L. & Ward, A.C.S. (2002). "Viability of airborne *Pasteurella* spp." Proceedings of the Biennial Symposium Northern Wild Sheep and Goat Council 13: 6-13.

[115] Knowles & Rink (2006), *idem*.

[116] George, J.L., Martin, D.J., Lukacs, P.M. & Miller, M.W. (2008). "Epidemic pasteurellosis in a bighorn sheep population coinciding with the appearance of a domestic sheep." *Journal of Wildlife Diseases* 44(2): 388-403.

[117] Cassirer & Sinclair (2007), *idem*.

[118] Callan, R.J., Bunch, T.D., Workman, G.W. & Mock, R.E. (1991). "Development of pneumonia in desert bighorn sheep after exposure to a flock of exotic domestic sheep." *Journal of the American Veterinary Medical Association* 198: 1052-1056.

[119] Foreyt, W.J. (1989). "Fatal Pasteurella haemolytica pneumonia in bighorn sheep after direct contact with clinically normal domestic sheep." *American Journal of Veterinary Research* 50: 341-344.

[120] Foreyt, W.J. (1990). "Pneumonia in bighorn sheep: effects of *Pasteurella haemolytica* from domestic sheep and effects on survival and long term reproduction. Proceedings of the Biennial Symposium of the Northern Wild Sheep and Goat Council 7: 92–101.

[121] Foreyt, W.J., Snipes, K.P. & Kasten, R.W. (1994). "Fatal pneumonia following inoculation of healthy bighorn sheep with *Pasturella hemolytica* from healthy domestic sheep." *Journal of Wildlife Diseases* 2: 137-145.

ranging BHS[123] held in large enclosures (2.5-445 ha). These commingling experiments support the hypotheses that BHS contract fatal respiratory disease from apparently healthy DS. In these 12 trials, all but one (79/80) of the exposed BHS died from pneumonia while all DS and domestic-exotic hybrid sheep remained healthy.[124] It should be noted however, that experimental conditions are different than those found on rangelands.[125]

The majority of documented bighorn sheep die-offs follow contact with DS.[126, 127] For instance, George et al. (2008) describe a pasteurellosis epidemic and its effects on population performance in a Colorado BHS population in which the onset of this epidemic coincided in both time and space with the appearance of a single DS on occupied BHS winter range. From observations they concluded that pasteurellosis epidemics in free-ranging BHS can arise through incursion of DS onto native ranges.[128] Researchers summarize the supporting evidence this way:

> "There is substantial, albeit circumstantial, evidence that contact with domestic sheep is associated with respiratory disease outbreaks causing significant morbidity and mortality in free-ranging bighorn sheep populations."[129]
>
> "These large-scale respiratory disease die-offs in free-ranging bighorn are most often attributed to pneumonia caused by *Pasteurella* genus bacteria."[130]
>
> "Active recovery efforts (transplantation into unoccupied habitat, augmentation of existing herds, and habitat manipulation) have had varying success but have been consistently unsuccessful in areas where contact with domestic sheep has occurred."[131]

Contrary evidence also exists that BHS with no known contact with DS may also carry *Pasteurella*, and respiratory disease outbreaks in free-ranging BHS have occurred in the absence of any known association with DS.[132] For example, *Pasteurella* have been isolated from BHS that had never been known to have been in contact with domestic sheep in Alaska[133] and Idaho.[134] Also, following an outbreak of pneumonia in Hells Canyon in 1996, two BHS were autopsied by the Idaho Department of Fish and Game's Wildlife Health Laboratory. Dr. Hunter, the veterinarian performing the autopsy, wrote to the Idaho Wool Growers Association that there is no evidence that DS were incriminated in this episode (see **Exhibit B**).

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[122] Onderka, D.K. & Wishart, W.D. (1988). "Experimental contact transmission of Pasteurella haemolytica from clinically normal domestic sheep causing pneumonia in Rocky Mountain bighorn sheep." *Journal of Wildlife Diseases* 24: 663-667.

[123] Foreyt, W.J. & Jessup, D.A. (1982). "Fatal pneumonia of bighorn sheep following association with domestic sheep." *Journal of Wildlife Diseases* 18: 163-168.

[124] Schommer & Woolever (2008), *idem*, but see **Box 3-1**.

[125] F. Cassirer, review comments.

[126] Foreyt et al. (1994), *idem*.

[127] Martin, K.D., Schommer, T. & Coggins, V.L. (1996). "Literature review regarding the compatibility between bighorn and domestic sheep." Proceedings of the Biennial Symposium of the Northern Wild Sheep and Goat Council 10: 72-77.

[128] George et al. (2008), *idem*.

[129] Martin et al. (1996), *idem*.

[130] Schommer & Woolever (2008), *idem*, but see **Box 3-1**.

[131] Schommer, T. & Woolever, M. (2001). "A process for finding management solutions to the Incompatibility between domestic and bighorn sheep." U.S. Dept. of Agriculture, Forest Service, Wallowa-Whitman National Forest, Baker City, Oregon. 40 pp., at 20.

[132] Goodson, N.J. (1982). "Effects of domestic sheep grazing on bighorn sheep populations: a review." Proceedings of the Biennial Symposium of the Northern Wild Sheep and Goat Council 3: 287-313.

[133] Martin et al. (1996), *idem*.

[134] Ward, A.C., Hunter, D.L., Jaworski, M.D., Benolkin, P.J., Dobel, M.P., Jeffress, J.B. & Tanner, G.A. (1997). "*Pastuerella* spp. in sympatric bighorn and domestic sheep." *Journal of Wildlife Diseases* 3: 544–557.

According to the CAST report, quantifying the risk of BHS/DS interspecies disease transmission in a natural setting is problematic (see **Box 3-3**). Further work is needed to understand better the magnitude of potential risk to wild sheep arising from interactions with domestic goats, cattle, and other wild ruminant species, as well as potential influences of seasonal and environmental factors on these risks.[135] Developing methods that decrease the occurrence or severity of pneumonia and pasteurellosis in either domestic or wild sheep might lead to advances in managing all impacted species.[136] To better inform the issue, two veterinary scientists[137] emphasized the need for additional research that addresses the genetic basis of enhanced susceptibility of BHS to respiratory disease; the percentage of BHS that carry and transmit pathogens associated with respiratory disease; and what, if any, are the conditions that trigger transmission of pathogens and development of respiratory disease in BHS in their natural habitat.[138]

Regarding uncertainty of disease transmission, suffice it to say that a few members of the scientific community believe the risk of disease transmission is low, and many more believe it is high. Many, if not most all, wildlife biologists accept the contact hypothesis as if it were fact.[139] The contact hypothesis has not been rejected yet.

Reducing Risk of Disease Transmission. The most practical approaches identified thus far for minimizing risk involve preventing interspecies interactions that could result in respiratory pathogen transmission. One strategy for achieving "effective separation" (i.e., separation sufficient to minimize opportunities for pathogen transmission) is for herdsmen and wildlife managers to actively discourage BHS from approaching or commingling with DS, and vice versa.[140]

Maintaining separation between BHS and DS involves the management of BHS populations and habitat quality, including the amount, distribution and connectivity of these habitats, and ensuring that DS grazing locations and practices avoid areas where BHS occur.[141] According to the Idaho Department of Fish and Game (IDFG), the primary concern is eliminating the potential for direct contact between BHS and DS, rather than eliminating the overlap of areas used by BHS and DS during different seasons.[142]

The fundamental problem is reducing the risks of contact with DS. At issue is not whether to separate BHS and DS, but how to keep them separated without a complete prohibition of DS grazing on public lands in the vicinity of BHS. A BHS management plan perhaps can be devised to delineate where, when, and how to sustain ***viable*** BHS populations and DS operations by keeping wild and domestic sheep separated.

The separation issue is complicated by the tendency of BHS to wander great distances, which potentially puts them into contact with DS. BHS are naturally attracted to DS, their cousins, whether they are on public or private land. On the Oregon side of Hells Canyon, in 1993 the Wallowa-Whitman National Forest attempted to keep BHS and DS separated by prohibiting DS from grazing on public lands.[143] The decision was challenged and upheld in court; the judge concluded that DS pose a threat to BHS.[144] Oregon wild sheep surprised biologists by regularly crossing the Snake River from Oregon to

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[135] Miller, Knowles & Bulgin (2008), *idem*.
[136] *Ibidem*.
[137] Knowles & Rink (2006), *idem*.
[138] NRC (2008a, pp. 62-63), *idem*.
[139] C. McCarthy & M. Woolever, review comments.
[140] *Ibidem*.
[141] C. McCarthy, review comments.
[142] D. Toweill, review comments.
[143] Schommer, T. (2002). "Bighorn sheep in Hells Canyon: historical background and the Hells Canyon bighorn sheep restoration project." *Wild Sheep Magazine*. http://www.fs.fed.us/hellscanyon/life_and_the_land/wildlife/bighorn-sheep.shtmlhttp://www.fs.fed.us/hellscanyon/life_and_the_land/wildlife/bighorn-sheep.shtml
[144] Ashmanskas, D.C. (10 April 1996). *Idaho Wildlife Federation et al. v. Richmond et al*. Civil No. 94-1347-AS. 33 pp. Opinion. http://www.hellscanyon.org/files/HCNRA_bighorn.pdf

Idaho where they were near sheep allotments on the PNF.[145] In Idaho however, closing DS allotments on federal land will not entirely eliminate the potential for contact between BHS and DS because of private lands, as pointed out in the following *Lewiston Morning Tribune* editorial:

> "About 7,000 acres of grazing land along the main Salmon River upstream of Riggins is in private hands. Limiting domestic sheep grazing in the roughly 20,000 public acres will reduce—but not eliminate—the threat that BHS will contract disease from DS.
>
> "Set in motion now is a process where private producers could be kicked off public lands, BHS remain at risk and ordinary Idahoans may lose more of their heritage. Here's one more lesson from the bighorn mess: When politics dictates and collaboration fails, nobody wins.
>
> "The Idaho Legislature can't stop the feds from shutting down domestic sheep grazing in the Salmon and Hells Canyon areas. But the feds can't stop domestic grazing on private lands—and even if they could, it would be a Pyrrhic victory for wildlife and their advocates. For the sake of argument, say cutting back on public lands sheep grazing by 60 percent makes sheep ranching on adjacent private property economically untenable. What happens next? Does the landowner subdivide or develop his land? How does that serve the interests of Idaho wildlife or even Idahoans who prize this state's open spaces?"[146]

Additional risk reduction strategies are needed because not all pasteurellosis epidemics in BHS can be attributed to contact with DS. Wildlife managers should recognize the potential for moving pathogens via translocations and should monitor BHS herds routinely for pathogens of concern, using only healthy herds as source stock.[147]

Because of uncertainty, the Western Association of Fish and Wildlife Agencies recommended the use of risk assessments to encourage objective decision making by land managers.[148] Although the separation of BHS and DS can help ensure BHS ***viability***,[149] separation can adversely affect DS economic ***viability*** where the current ranges of BHS and DS overlap, creating financial risk for some DS operations. The primary issue is how DS and BHS can be managed so that the ***viability*** of BHS populations and DS operations both can be sustained. The topics of risk assessment and ***viability*** are discussed in some detail in **Chapter 4**.

[145] *Ibidem*.
[146] Trillhaase, M. (24 June 2009). Editorial: "Politics won't fix the bighorn sheep mess." *Lewiston Morning Tribune*, Lewiston, Idaho.
[147] Miller, Knowles & Bulgin (2008), *idem*.
[148] WAFWA (2007), *idem*.
[149] *Ibidem*.

Chapter 4. Governance: Federal Land & Resource Management

> "Present information strongly suggests that the greatest challenge today is the task of maintaining adequate suitable habitat in the face of growing commercialization and industrial demands. A wilderness animal, the bighorn will surely be a loser if there are additional exploitations of the wild lands in central Idaho."[150]

Although some things have changed since the above quotation was written in 1954, the same BHS conservation challenge remains. The Wilderness Act of 1964 now protects four million acres of National Forest System lands in Idaho, including more than one-third of the 215,000 acres of wilderness in the Hells Canyon National Recreation Area (HCNRA) established in 1975 (**Figure 4-1**).

Federal land managers are responsible for administering 90% of the occupied BHS habitat in Idaho.[151] Like most complicated wildlife issues the science is disputed, there are high stakes on both sides, and a federal judge is likely to decide who has the law on their side.[152] Although the HCNRA lands in Oregon were closed to grazing in the mid-1990s, the Idaho HCNRA lands remained open to grazing until a litigation settlement temporarily closed them in 2007. The pending decision by Payette National Forest officials on the BHS amendment to the PNF's Land & Resource Management Plan (LRMP) could adversely affect some DS grazing allotments on the PNF in order to sustain the ***viability*** of BHS, perhaps closing some of them.

This chapter identifies the mandates of federal laws with respect to the BHS/DS situation, the efforts of U.S. Forest Service officials to comply with the mandates, and the actions of BHS and DS interests and federal courts to assure compliance with the laws. Although Rocky Mountain BHS are not protected by the Endangered Species Act of 1973, two BHS subspecies are protected in California, and we begin there. Then an overview of the HCNRA Act of 1975 as it pertains to the BHS/DS situation is presented. Making up the bulk of this chapter is discussion of the National Forest Management Act of 1976 and its ***viability*** regulation for implementing the law's "diversity" mandate, and to comply with the NFMA for an LRMP, the ongoing development of the PNF's LRMP . The chronological sequence of events in the BHS/DS situation can be followed in **Appendix A**; in the following text these events overlap somewhat in order to describe the laws and efforts to comply with their mandates.

Endangered Species Act and Bighorn Sheep

Disease has contributed significantly to the decline of BHS populations throughout much of western North America, decreasing many native herds to less than 10% of their historical size and imperiling some populations and subspecies.[153] One of the issues arising from the social and cultural perspectives and decision processes in the BHS/DS situation is the conservation of imperiled species as governed by the federal Endangered Species Act of 1973 (ESA).[154]

Although not currently an issue in Idaho, ESA could emerge as an issue.[155] Idaho BHS populations have been declining over the past two decades, raising discussion among some that BHS could be declared as either "threatened" or "endangered" under provisions of the ESA and protected by the Act until the population has recovered. Should this occur, federal law would pre-empt state management of BHS and require actions necessary to ensure BHS recovery on federal lands, and because of the prohibition of "taking" on all lands, the potential elimination of hunting and killing.

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[150] Smith (1954), *idem* at 15.

[151] D. Toweill, personal communication.

[152] Barker, E. (15 April 2007). "Sheep grazing policy stirs debate." *Lewiston Morning Tribune*, Lewiston, Idaho.

[153] Valdez, R. & Krausman, P.R., eds. (1999). *Mountain Sheep of North America* University of Arizona Press, Tucson, Arizona; as cited by Miller, Knowles & Bulgin (2008), *idem*.

[154] NRC (2008a), *idem*.

[155] D. Toweill, review comments.

Source: http:// www.fs.fed.us/hellscanyon/overview/maps.shtml

The ESA currently affects sheep production several ways, and especially on public lands. Although the Rocky Mountain BHS is not protected by the ESA anywhere in its range, in July 2009 the Intermountain Region of the U.S. Forest Service designated BHS as a "sensitive" species, which promises to focus additional management attention on BHS to ensure that it does not become threatened or endangered.[156] The Sierra Nevada BHS, now a recognized subspecies (*Ovis canadensis sierrae*), has gone through the ESA listing process and has "endangered" status and associated protections, plus 417,557 acres of designated critical habitat in five California counties.[157] In addition, a distinct population segment of desert BHS (*Ovis canadensis nelsoni*) in the Peninsular Range of southern California is an endangered species with 376,938 acres of critical habitat in three counties.[158] A listing of a species under the ESA essentially transfers the responsibility for population management from states to the U.S. Fish and Wildlife Service. The general public, including most livestock producers, support the protection and recovery of threatened and endangered species.[159]

As mentioned in **Chapter 3**, NatureServe considers the Rocky Mountain BHS in Idaho to be "vulnerable" and the State of Idaho recognizes the population of California BHS that have been translocated south of the Snake River to be a species of special concern. This report only treats the Rocky Mountain BHS, all of which are well north of the Snake River that crosses the southern part of the State of Idaho (see **Figure 3-1**).

According to the National Research Council committee that studied the DS industry, populations of BHS in Idaho and other states where they interact with DS "are considered to be 'threatened.'"[160] The committee's choice of words here is questionable, as "threatened" is a classification of imperiled species that are protected by the ESA, and not a single Rocky Mountain BHS population segment has been petitioned for listing as "threatened" species. However, according to Neil Thagard of the Wild Sheep Foundation, "You could have a die-off of a core population that could become threatened under the Endangered Species Act, and the federal government would manage BHS, not the state. That won't be good for anyone."[161]

Hells Canyon National Recreation Area (HCNRA) Mandate

The Hells Canyon National Recreation Area (HCNRA) Act of 1975[162] provides for the "administration, protection, and development" of the HCNRA. One purpose of the Act was to prohibit construction of dams on the Snake River in Hells Canyon. One of the requirements of the HCNRA Act is that the area must be administered ". . . in a manner compatible with . . ." seven objectives, which include ". . . protection and maintenance of fish and wildlife habitat . . ." and continuation of other uses, including grazing, as long as those uses ". . . are compatible with the provisions . . ." of the landscape. Specific to grazing, the Act states that "Where domestic livestock grazing is incompatible with the protection, restoration, or maintenance of fish and wildlife or their habitats . . . the livestock use shall be modified as necessary to eliminate or avoid the incompatibility. In the event the incompatibility persists after the modification or modification is not feasible, the livestock use shall be terminated."[163]

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[156] U.S. Forest Service (March 2009), *idem*.

[157] U.S. Fish & Wildlife Service (5 Aug 2008). "Designation of critical habitat for the Sierra Nevada Bighorn Sheep (*Ovis canadensis sierrae*) and taxonomic revision." *Federal Register* 73(151): 45533-45604.

[158] U.S. Fish & Wildlife Service (14 April 2009). "Designation of critical habitat for Peninsular Bighorn Sheep and determination of a distinct population segment of desert bighorn sheep (*Ovis canadensis nelsoni*); final rule." *Federal Register* 74(70): 17287-17365.

[159] NRC (2008a), *idem*.

[160] NRC (2008a), *idem* at 102.

[161] Barker, R. (7 June 2009), *idem*.

[162] P.L. 94-199, found at 16 U.S.C. 460gg-4.

[163] 36 C.F.R. 292.48(b).

In 1993, as mentioned in **Chapter 3**, Wallowa-Whitman National Forest officials decided to terminate all DS grazing allotments in Hells Canyon, based primarily on the incompatibility of DS with the HCNRA Act.[164] A court upheld the decision.[165] The Wallowa-Whitman NF is on the Oregon side of Hells Canyon. On the Idaho side, DS allotments remained open for grazing until court action closed them temporarily in 2007, pending an amendment to the Payette NF's Land & Resource Management Plan (LRMP), discussed in detail in the next section.

National Forest Management Act (NFMA) and the "Diversity" Mandate

This section describes decision process features that affect the quality of BHS habitat on National Forest System lands and the issuance of term grazing permits for DS. The National Forest Management Act (NFMA) of 1976 was devised by Congress to be the means for determining which multiple uses, from those recognized in the Multiple-Use Sustained-Yield Act of 1960, are appropriate for specific land areas. If grazing permits may be part of the mix of multiple uses, as determined by an environmental analysis pursuant to the National Environmental Policy Act of 1969 (NEPA), then a grazing permit can be issued. The U.S. Forest Service describes such permits as a privilege, not an obligation.[166] The National Forest Management Act (NFMA) requires that

> "the Secretary [of the Department of Agriculture] shall . . . promulgate regulations, under the principles of the Multiple-Use, Sustained-Yield Act of 1960, that set out the process for the development and revision of the land management plans, and the guidelines and standards prescribed by this subsection. The regulations shall include, but not be limited to specifying guidelines for land management plans developed to achieve the goals of the Program which provide for diversity of plant and animal communities based on the suitability and capability of the specific land area in order to meet overall multiple-use objectives, and within the multiple-use objectives of a land management plan adopted pursuant to this section, provide, where appropriate, to the degree practicable, for steps to be taken to preserve the diversity of tree species similar to that existing in the region controlled by the plan."[167] [Emphasis added.]

Regulations for implementing NFMA were promulgated in 1982 and revised in 2000 (**Table 4-1**).

Table 4-1. Comparison of NFMA "diversity" mandate regulations under two sets of planning rules

1982 Planning Rule	2000 Planning Rule
36 C.F.R. 219.19 Fish and wildlife resource	36 C.F.R. 219.20 Ecological sustainability
Habitat – maintain ***viable*** populations of existing native and desired non-native vertebrate species in the planning area	Provides for ecological conditions that provide a high likelihood of supporting the ***viability*** of native and desired non-native species well distributed throughout their ranges within the plan area
Management indicator species (MIS)	Provides for the maintenance or restoration of ecosystem diversity within the expected range of variability
Monitoring of MIS population trends	Requires rationale to adopt or reject discretionary conservation recommendations
Endangered Species Act (ESA) coordination	Focal species, species-at-risk, and federally listed (ESA) species

Source : U.S. Forest Service (2009b). "Comparison of 2000 Rule and 1982 Rule."

[164] Schommer, T. (2002), *idem*.
[165] Ashmanskas, D.C. (10 April 1996), *idem.*
[166] M. Woolever, review comment.
[167] 16 U.S.C. § 1604(g)(3)(B),

The NFMA "planning rule" regulations were again revised in 2005 and 2008, but as a result of litigation, courts have rejected the 2005 and 2008 rules. At this writing the U.S. Forest Service is developing a new planning rule; meanwhile the 2000 planning rule is in effect, and it allows the U.S. Forest Service to use provisions of the 1982 rule.[168] As illustrated in **Table 4-1**, the two rules require attention to species ***viability***, with the 2000 rule adding a few additional terms but retaining the same vagueness as apparent in the 1982 rule.

What is Viability? Although ***viability*** is a desirable characteristic, it is not clearly defined in scientific literature,[169] federal regulations,[170] or state law.[171] This is problematic. During his tenure as U.S. Forest Service Chief in the mid-1990s, Jack Ward Thomas had considerable experience with implementation of the ***viability*** concept during controversy concerning conservation of the northern spotted owl (*Strix occidentalis caurina*). He wrote,

> "One of the most confusing and stringent portions of the [1982 NFMA] regulations that has caused the most problems in application and in subsequent court actions is the ***viability*** regulations. These regulations require the Forest Service, in its planning, to maintain all native and nonnative vertebrates in '***viable***' status. This is to be accomplished by maintaining habitat for those species in the size, amount, and distribution that will maintain the numbers and distribution necessary to ensure ***viability*** 'within the planning area.'
>
> "This regulation is even more stringent that the requirements of the Endangered Species Act (ESA), in that all vertebrate species must be considered and that ***viability*** must be maintained on each planning area. This has come to be interpreted as the national forest covered by the plan in question. The ESA, in contrast, applies only to those species that are officially judged to be threatened or endangered, and the recovery plan applies across the range of that species, and not on a piece-by-piece basis.
>
> "It seems likely that the Committee of Scientists, established by the NFMA to give advice on the regulations to be issued pursuant to that act, based on the ***viability*** regulation in the instruction in the act that the 'diversity of plant and animal communities be preserved.' They meant the ***viability*** regulation to be a statement of policy as opposed to a requirement for a rigorous assessment of the ***viability*** of every vertebrate species within a planning area.
>
> "Since the development of the present planning regulations nearly [thirty] years ago, there has been the development of rigorous technical processes for evaluating ***viability*** of species (a risk assessment) under some array of projected conditions. Unfortunately, there are very few species for which adequate data exist to make such assessments. Even in the case of the northern spotted owl, well-credentialed and experienced biological scientists debate vigorously over the validity of those assessments.
>
> "Environmentalists have come to love the ***viability*** regulation because it makes demands of the Forest Service that are, pragmatically, impossible to meet—certainly, impossible to achieve in a way that cannot be challenged on technical grounds. As a

[168] U.S. Department of Agriculture (17 December 2009). "USDA Forest Service launches collaborative process for new planning rule." News Release No. 0620.09. http://www.fs.fed.us/news/2009/releases.shtml

[169] Regan, H.M., Colyvan, M. & Burgman, M.A. (2002). "A taxonomy and treatment of uncertainty for ecology and conservation biology." *Ecological Applications* 12(2): 618-628.

[170] *Ibidem*.

[171] Strack, S.W. (27 April 2009). Letter from Steven W. Strack, Deputy Attorney General, State of Idaho, to Sen. Gary J. Schroeder, Chairman, Idaho Senate Resources and Environment Committee, re "Senate Bill 1232 – bighorn sheep."

> result, the ***viability*** regulation and the adequacy of the plans to meet the requirement have been increasingly successfully employed in numerous appeals and lawsuits."[172]

In short, the NFMA requires that national forest managers maintain ***viable*** populations of native and desired non-native species. Given that the vast majority of occupied BHS habitat in Idaho is on National Forest System land, a workable definition of ***viability*** would be one that is consistent with federal regulations for implementing the NFMA. However, ***viability*** is not well defined in NFMA regulations or interpretations thereof. General direction is provided by NFMA regulations that describe a ***viable*** population as "one which has the estimated numbers and distribution of reproductive individuals to insure its continued existence is well distributed in the planning area."[173] The PNF is the relevant "planning area." For these purposes the most relevant interpretation was written by the Chief's Office specifically for the BHS/DS situation on the PNF (**Box 4-1**).

Box 4-1. Species Viability and the U.S. Forest Service

"The NFMA [National Forest Management Act] regulations provide that "[f]ish and wildlife habitat shall be managed to maintain ***viable*** populations of existing native and desired non-native vertebrate species in the planning area" (36 CFR 219.19, emphasis added). The regulations also state: "All management prescriptions shall . . . (6) Provide for adequate fish and wildlife habitat to maintain ***viable populations*** of existing native vertebrate species and provide that habitat for species chosen under Sec. 219.19 is maintained and improved to the degree consistent with multiple-use objectives established in the plan" (36 CFR 219.27(a), emphasis added).

"In the Payette NF LRMP ROD [see **Glossary**], the Regional Forester states: "The Revised Plan addresses ***species viability*** in several ways. Forest-wide management direction and prescriptions included standards and guidelines specifically designed to protect, improve, and/or mitigate impacts to watersheds, riparian and aquatic habitats, and threatened, endangered, and sensitive species habitats" (Payette NF LRMP ROD, p. 32, emphasis added).

"There is no specific required procedure for conducting a ***viability assessment and analysis*** of potential effects, but whatever process is used must provide for making ***viability determinations*** consistent with the NFMA regulations. The introduction to the ***viability analysis*** in the FEIS [Final Environmental Impact Statement] indicates that approaches described by Andelman et al. (2001) and Holthausen et al. (1999) were used in developing procedures for assessing viability (FEIS, p. 3-295). Methodologies for ***viability analysis*** are further discussed in the Biological Evaluation (AR Doc. #2098) and the Biological Assessment (AR Doc. #2356).

Source: U.S. Forest Service (2005, p. 9). *Decision for Appeal of the Payette National Forest Land and Resource Management Plan Revision*. Washington, DC. 41 pp. http://www.fs.fed.us/r4/payette/publications/big_horn/appealdec.pdf

Without a current State of Idaho bighorn sheep management plan to help define ***viability*** parameters, PNF officials lack specific guidance from the State of Idaho that could help them decide how to provide adequate habitat for BHS ***viability*** on the PNF. However, wildlife biologists working for western state wildlife management agencies have formed a Wild Sheep Working Group. The group defines ***viability*** as "the demographic and genetic status of an animal population whereby long-term persistence is likely."[174] This is similar to what appears in conservation biology literature: "***viability*** is . . . persistence of the population over some relatively long temporal interval."[175]

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[172] Steen, H.K. & Thomas, J.W. (2004). *Jack Ward Thomas: The Journals of a Forest Service Chief*. University of Washington Press, Seattle, Washington. 417 pp.

[173] 36 C.F.R. 219.19.

[174] WAFWA (2007), *idem* at 24.

[175] Gilpin, M.E. & Soule, M.E. (1986). "Minimum viable populations: processes of species extinction." In, *Conservation Biology: The Science of Scarcity and Diversity*, Soule, M.E., ed., Sinauer Associates, Inc., Sunderland, Massachusetts, pp. 19-34.

Viability, however defined in law and policy, is a probabilistic statement referring to the likelihood that a population of animals within a defined area will continue to persist over a defined period of time.[176] Within that defined area habitat quality matters, including the amount, distribution and connectivity of habitats where BHS occur, and also ensuring that DS grazing locations and practices avoid areas where BHS occur.[177] As a probabilistic concept, ***viability*** is a statement of risk that the population may not be self-sustaining in a given area over a given period of time. Because it is about the future, ***viability*** estimates are uncertain. It is therefore useful, before considering the specifics of land management policies for BHS/DS interaction in Idaho, to digress and consider the relationship of risk and uncertainty and implications for BHS conservation.

Risk and Uncertainty

The BHS/DS "situation map" (**Figure 2-1**) identifies three types of risk assessment that are relevant to sustainable natural resource management situations: biophysical/ecological, economic/financial, and social/cultural risk assessments. Each of these produces useful information for decision-makers. If a biophysical/ecological risk assessment is capable of demonstrating how BHS/DS interaction affects BHS ***viability***, then it is relevant to the BHS/DS situation in Idaho.

Although risk is pervasive in our everyday lives, risk assessment is a difficult undertaking, but necessary for sustainable resource management:

> "Virtually every aspect of life involves risk; how we deal with risk depends largely on how well we understand it. . . . Uncertainty is inherent in all stages of risk assessment."[178]

> "Uncertainty pervades all our attempts to ascertain the truth about the natural and physical environment."[179]

> "Without uncertainty there is no risk, only adversity."[180]

Risk and uncertainty are closely-related concepts. As hinted at by the third quotation above, risk has two component parts. Risk first of all is the magnitude of an adverse effect upon something people value, which is a real and tangible thing; second, risk is the likelihood that an event producing the adverse effect will occur, and this is an imaginary construct called probability.[181] Risk is when we know enough about a situation to quantify relationships. For example, in financial risk assessment, when a sum of money is invested with the expectation of financial gain, the risk assessment endpoint is the invested capital, and an adverse effect would be a reduction or loss of the invested amount. Of course, one invests to increase the capital amount, but by doing so puts it at risk. The potential gains or losses can usually be quantified based on a history of comparable investments and arrayed as a probability distribution of the expected value of the gains or losses on the investment.

Viability and Ecological Risk Assessment. In ecological risk assessment an "endpoint" representing an ecological entity is put at risk by a specific "stressor" that will degrade the endpoint; e.g., sediment from roads is a stressor for organisms dependent on water quality that is relatively

[176] D. Toweill, review comments.
[177] C. McCarthy, review comments.
[178] NRC (2008b). *Science and Decisions: Advancing Risk Assessment*. National Research Council, National Academies of Science, National Academies Press, Washington, DC. 424 pp., at 3, at 7.
[179] Regan et al. (2002), *idem*.
[180] Cooke, R.M. (2009). "A brief history of quantitative risk assessment." *Resources* 172: 8-9.
[181] Haimes, Y.Y. (2004). *Risk Modeling, Assessment, and Management*, 2nd ed. J. Wiley & Sons, New York, NY. 837 pp.

sediment-free.[182] The stressor-endpoint relationship is quantified, and probabilities of different outcomes based on scenarios for different stressor values can be expressed to provide resource managers and water quality regulators with information on the amount of sediment expected from various management alternatives. The same approach can be taken for smoke and air quality.[183] Quantitative risk assessment can also be applied to BHS conservation.[184]

In the BHS/DS situation, federal land management agencies are required by law to maintain a ***viable*** BHS population ". . . well distributed across the planning area . . ."; i.e., the PNF. From an ecological risk assessment perspective, species populations are a risk assessment endpoint.[185] ***Viability*** analysis is the relationship of the risk assessment endpoint with various stressors considered to be important. Disease is one stressor on the BHS population endpoint. The PNF views disease as the most significant factor affecting BHS ***viability***.[186] This emphasis is consistent with the LRMP remand from the Forest Service Chief's Office, [187] details of which are presented in the next sub-section.

A ***viable*** BHS population in the PNF is a risk assessment endpoint, and respiratory disease is one stressor that potentially affects that endpoint. If there were adequate data describing the relationship of the stressor to the endpoint, the relationship could be quantified and expressed as a probability distribution. Then one could state with some degree of certainty the cause-effect relationship of BHS interaction with DS under various conditions; i.e., quantifying the probability that BHS will develop fatal respiratory disease following contact with DS. As discussed in **Chapter 3**, data may be insufficient, otherwise the BHS/DS disease transmission contact hypothesis would not be a prominent issue. Like the relationship of cigarettes and cancer, it is the preponderance of information that speaks to the potential for risk to BHS from disease transmission by DS.

Uncertainty comes in two main flavors: epistemic and linguistic.[188] When uncertainty is associated with natural variability over time or space, insufficient data, or subjective judgment, it is about our limited knowledge of the state of the system. This is called epistemic uncertainty. Linguistic uncertainty stems from our natural language. Much of our scientific vocabulary is underspecific, ambiguous, vague, context dependent, or exhibits theoretical indeterminacies.[189]

The BHS/DS situation is characterized by both types of uncertainty. Because of epistemic uncertainty, debate continues over the disease transmission issue, specifically the "contact hypothesis." Groups supporting wildlife interests are often in conflict with domestic sheep producers about the validity of scientific evidence.[190] Linguistic uncertainty is inherent in the term ***viability*** as it is applied to species or populations of a species. Federal regulations, for example, define ***species viability*** as

> ". . . a species consisting of self-sustaining and interacting populations that are well distributed through the species' range. Self-sustaining populations are those that are sufficiently abundant and have sufficient diversity to display the array of life history strategies and forms to provide for their long-term persistence and adaptability over time."[191]

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[182] EPA (1998). *Guidelines for Ecological Risk Assessment*. EPA/630/R-95/002F. U.S. Environmental Protection Agency. http://oaspub.epa.gov/eims/eimscomm.getfile?p{ldownload}id=36512

[183] O'Laughlin, J. (2009). "Ecological risk assessment to support fuels treatment decisions." In, *Forest Environmental Threats Encyclopedia*, at*:* http://www.forestencyclopedia.net/p/p3142; also in, *Advances in Threat Assessment and their Application to Forest and Rangeland Management,* J.M. Pye, et al., eds. General Technical Report PNW-xxx, U.S. Dept. of Agriculture, Forest Service, Pacific Northwest Station, Portland, OR (in press).

[184] Clifford et al. (2009), *idem*.

[185] EPA (1998), *idem*.

[186] P. Soucek & S. Rainville, review comments.

[187] C. McCarthy, review comments.

[188] Regan et al. (2002), *ide*m.

[189] *Ibidem*.

[190] Knowles & Rink (2006), *idem*.

[191] *Federal Register* 65(218), C.F.R. 219.36, cited by Regan et al. (2002), *idem*.

The use of other vague terms in the above ***viability*** definition provides insight into how widespread vagueness is in scientific language and how difficult it would be to eliminate;[192] e.g., "well distributed" and "sufficiently abundant." Although v***iability*** is underspecific, vague, and context dependent, nevertheless it is a goal in federal land and resource management policy, and the uncertainty associated with such vagueness can have debilitating effects on decision-making.[193] Before attempting to determine if a population is ***viable***, or deal with other vague nonnumerical terminology, Regan et al. (2002) recommend developing multidimensional measures that can be treated numerically.[194]

For the purposes of national forest planning, and despite the lack of specifics for defining and measuring ***viability***, in the BHS situation it is possible to describe what the term means relative to the abundance and distribution of BHS in Idaho, and refine it for individual species and particular landscapes.[195] Clifford et al. (2009) provide such an example for Sierra Nevada BHS.[196]

Risk Analysis for BHS/DS Interaction. Due to uncertainty, risk assessments are recommended to encourage objective decision making by land managers.[197] Without an objective scientific framework from which to evaluate the magnitude of risk and the mitigation potential of different alternatives, implementing management alternatives for improving the BHS/DS situation will be difficult.[198]

According to Clifford et al. (2009), previous attempts to characterize BHS/DS disease transmission risk and analyze management alternatives have been solely qualitative in nature, due to data uncertainties and the complexities of making a model relevant for land-use decision makers. For example, Payette National Forest (PNF) officials conducted a two-part BHS risk analysis in 2006,[199, 200] and the U.S. Forest Service summarized findings in GTR-209,[201] but a court has ordered the Forest Service not to cite these BHS/DS risk analysis reports for the purpose of supporting management decisions because the risk analysis process was in violation of the Federal Advisory Committee Act (FACA) as well as the NFMA.[202] (Details of these events are chronicled in the ***PNF Risk Analysis*** subsection below.) State wildlife agencies have cited the results[203] and are free to continue to do so and likely will because the results support the "contact hypothesis" discussed in **Chapter 3**. More relevant for this report, the court order regarding the risk analysis does not make the underlying science go away (see **Box 3-1**), even though it continues to be disputed.

As Clifford et al. (2009) noted, bias can be exhibited when qualitatively evaluating risk,[204] and risk trade-offs often may favor the traditional economics of a situation.[205] Consequently people may resist responding proactively to a threat of an event that has a low probability of occurring even though there are major consequences if the event does occur. For example, the likelihood of a disease outbreak

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[192] Regan et al. (2002), *idem*.
[193] *Ibidem*.
[194] *Ibidem*.
[195] C. McCarthy, review comments.
[196] Clifford et al. (2009), *idem*.
[197] WAFWA (2007), *idem*.
[198] Clifford et al. (2009), *idem*.
[199] RADT Committee (6 Feb 2006). "Risk Analysis of Disease Transmission Between Domestic Sheep and Bighorn Sheep on the Payette National Forest." 41 pp. Withdrawn by U.S. Forest Service; in author's files.
[200] Payette Principles Committee (2 Nov 2006). "Summary of the Science Panel Discussion" [re RADT Committee, 6 Feb 2006]. 24 pp. Withdrawn by U.S. Forest Service; in author's files.
[201] Schommer & Woolever (2008), *idem*, but see **Box 3-1**.
[202] Winmill, B.L. (1 July 2009). *Idaho Wool Growers Association and Bulgin v. Schafer et al*. CV-08-394-S-BLW, Docket No. 23. Memorandum decision and order re: IWGA's motion for summary judgment.
[203] WAFWA (2007), *idem*.
[204] Hunter, P.R. & Fewtrell, L. (2001). "Acceptable risk." In, *Water Quality: Guidelines, Standards, and Health*. Fewtrell, L. & Bartram, J., eds. IWA Publishing, London, UK, as cited by Clifford et al. (2009), *idem*.
[205] Graham, J.D. & Weiner, J.B. (1995). *Risk vs. Risk: Tradeoffs in Protecting Health and the Environment*. Harvard University Press, Cambridge, Massachusetts, as cited by Clifford et al. (2009), *idem*.

in BHS may be low, but the consequences of such an outbreak could lead to extinction of local populations. The net effect of this uncertainty is that despite evidence of a threat, land managers across the West have not substantially modified activities regarding the permitting of DS grazing on federal lands in proximity to BHS ranges.[206]

Although Clifford et al. (2009) said there was a clear need for an objective method to help land managers identify and mitigate risk to BHS, they noted that a repeatable approach for quantitatively modeling disease risk posed by DS in specific situations has not been available,[207] so they developed for the endangered and ESA-protected population of Sierra Nevada BHS a spatially explicit disease transmission model to quantitatively assess the risk of respiratory disease transmission from DS to BHS and to predict impacts of a respiratory disease outbreak in terms of mortality and risk of disease spread within and among herds. Their broader goals were to provide scientifically-based recommendations to managers responsible for BHS and the lands they inhabit, and to develop a tool that could be applied to other diseases transmitted between species at the wildlife-livestock interface.[208]

Payette National Forest (PNF) Land & Resource Management Plan (LRMP) and Risk Analysis for Bighorn Sheep Viability

The Payette National Forest's Land & Resource Management Plan (LRMP) was revised in 2003 to meet legal and regulatory requirements of the NFMA and to address changes, issues, and concerns that had arisen since the completion of the original LRMP in 1988. An assumption in the Final Environmental Impact Statement (FEIS) accompanying the 2003 LRMP was that disease transmission between DS and BHS could occur, based on the preponderance of scientific literature. Although that assumption was not challenged in 2003, the PNF did receive several appeals on the 2003 Record of Decision (ROD) for the FEIS on the LRMP, in part because of the way the LRMP addressed the BHS/DS interaction issue.

Following the appeals of the 2003 LRMP by several parties, the Regional Forester reviewed the LRMP and signed off on it, indicating approval. At the next and final level of appeal, in February 2005 the Reviewing Officer for the Chief of the U.S. Forest Service found that the LRMP did not provide for ***viable*** populations of BHS,[209]and remanded the plan to the Regional Forester. He then instructed the PNF to amend the LRMP because of the potential for disease transmission arising from BHS/DS interaction, and associated implications for BHS ***viability*** relative to habitat. The instructions to the PNF that came down from the Chief's Office were to take necessary actions so the Forest Service could fulfill its regulatory mandate to:

> ". . . provide habitat to ensure the maintenance of a ***viable*** bighorn sheep population within the Payette NF . . . as required by the National Forest Management Act (36 CFR 219.19) [and] . . . protect bighorn sheep populations and habitat in the Hells Canyon National Recreation Area (36 CFR 292.48)."[210]

Further direction from the Chief's Office was that information be provided to specifically address the issue of threats to BHS arising from diseases transmitted from DS grazed on the PNF. Given this specific charge, PNF officials set out to evaluate the amount of contact between BHS and DS, the science supporting the potential for DS transmitting fatal disease to BHS, and the risk and uncertainty with which decision-makers must contend. Discussion of the resulting risk analysis is provided in the following ***PNF Risk Analysis*** subsection. Inherent in this direction from the Chief's Office is the "contact hypothesis"—there is a high likelihood that domestic sheep transmit fatal respiratory diseases to bighorn sheep,[211] and therefore habitat used by DS was unavailable for use by BHS, perhaps not always,

[206] Clifford et al (2009), *idem*.
[207] *Ibidem*.
[208] *Ibidem*
[209] U.S. Forest Service (2005), *idem.*
[210] *Ibidem*.
[211] Schommer & Woolver (2008), *idem*, but see **Box 3-1**.

but during some seasons. Compounding the difficulty of the risk analysis was the fact that the NFMA and HCNRA Act have full force of law as mandated by the U.S. Congress, while the decision of where, when, and even if livestock grazing is to be allowed is a decision made locally by PNF officials, and may be altered at any time to comply with other legal provisions of PNF management.[212]

With regard to the 2003 LRMP, the Chief's Office upheld the appeal on the basis that habitat occupied by DS is not available for use by BHS because of potential disease transfer and subsequent consequences to BHS and thus the PNF must re-evaluate its Forest Plan[213] for compatibility with the National Forest Management Act. In fact, the associated Rangeland Resource "Guideline" states explicitly that "Within bighorn habitat emphasis areas, close [domestic] sheep allotments as they become vacant, or convert them to cattle where appropriate, to eliminate risk of disease transmission from domestic to wild sheep. Do not convert cattle allotments to [domestic] sheep allotments within occupied bighorn sheep habitat."[214]

PNF Risk Analysis. In February 2006 the PNF convened a committee of wild sheep experts, state fish and game biologists, and rangeland management experts to analyze the risk individual DS grazing allotments posed to BHS, with the intention of using the results to amend the LRMP as instructed by the Chief's Office. This effort was originally called the "risk analysis expert panel." As a result of court action this group is now referred to as the Risk Analysis Disease Transmission (RADT) Committee, and its report[215] and related reports have been withdrawn by the Forest Service (**see Box 3-1**).

The court action, initiated by the Idaho Wool Growers Association and its president at the time, Dr. Marie Bulgin of the University of Idaho, is discussed in the ***PNF Risk Analysis Goes to Court*** subsection below. At least one reviewer of this report felt the following information should be deleted because of that court action.[216] However, it may help the reader understand the issues better by knowing what was challenged in court.

In November 2006 the PNF convened a second committee of scientists. It was originally called the "science panel" but as a result of the same court action above is referred to as the Payette Principles Committee. Its objective was to clarify the science-based concerns about the RADT Committee's risk analysis and to allow other experts to provide additional science-based information regarding disease transmission and its risk of occurring on the PNF that officials should consider along with the risk analysis. The Payette Principles Committee's summary was expressed in six points. Point number one is particularly relevant to the BHS/DS interaction issue and consisted of three parts:

a) Scientific observation and field studies demonstrate that "contact" between DS and BHS is possible under range conditions. This contact increases the risk of subsequent BHS mortality and reduced recruitment, primarily due to respiratory disease.
b) The complete range of mechanisms/causal agents that lead to epizootic disease events cannot be conclusively proven at this point.
c) Given the two previous statements, it is prudent to undertake management to prevent contact between these species.[217]

These and the other five summary points[218] became known by wildlife biologists as the "Payette Principles,"[219] which in short said that contact between DS and BHS is possible in range conditions, such

[212] P. Soucek & S. Rainville, review comments.
[213] U.S. Forest Service personnel, courts, stakeholders, and others, often refer to a Land & Resource Management Plan (LRMP) as a "Forest Plan."
[214] *Ibidem*, citing U.S. Forest Service, SW Forest Ecogroup LRMP Revisions, Payette National Forest, Errata #3.
[215] RADT Committee (6 Feb 2006), *idem*.
[216] W.G. Myers III, review comments.
[217] Payette Principles Committee (2 Nov 2006), *idem*.
[218] *Ibidem,* at 1.
[219] WAFWA (2007), *idem*.

contact increases the risk that BHS will contract pneumonia, and therefore it is prudent to prevent contact between DS and BHS.[220]

The September 2008 DSEIS[221] assessment for the LRMP amendment involved conducting a ***viability*** analysis for BHS on the PNF in order to amend the LRMP. The PNF had received legal challenge tied to changed conditions on the landscape that warranted LRMP revision.[222] Disease transmission between DS and BHS was identified as a "Need For Change" topic area in the Preliminary Analysis of the Management Situation in the LRMP documents. BHS were identified as a species of special interest for the LRMP revision effort and the needs of BHS were translated into a significant issue used in effects analysis, alternative formulation, and development of management direction.[223]

The DSEIS used information from the PNF risk analysis, including a review of the available BHS source habitat, its distribution across the PNF, and how contiguous or connected it was. Additional considerations included the existing and historical uses of habitat by BHS at a landscape scale specific to the PNF and also with adjacent federal lands. The relative risk for contact between BHS and DS on permitted grazing allotments was also considered. Several management alternatives were developed for the DSEIS and a "Preferred Alternative" was identified. Specifically identified resource areas from the 2003 LRMP FEIS that were supplemented include Wildlife, Rangeland, and Tribal Rights and Interests. Based on the risk analysis the PNF modified the Annual Operating Instructions for DS grazing near BHS, closing grazing in some areas.[224] The DSEIS also included an LRMP amendment with directions that will ensure BHS ***viability*** for the PNF and compliance with federal laws including the NFMA and the HCNRA Act.[225]

Sheep Allotments in Bighorn Habitat Closed on PNF. In April 2007, after several last-minute attempts to reach an agreement, including offers to buy out some of the allotments, three citizen conservation groups—the Western Watersheds Project, the Hells Canyon Preservation Council, and The Wilderness Society—sued the Forest Service for failing to protect a ***viable*** population of BHS. The Nez Perce Tribe filed a brief in support, but did not join the lawsuit. The suit alleged the Forest Service had violated the HCNRA Act as well as NFMA. The plaintiffs also claimed that the Forest Service had allowed grazing to continue without conducting the environmental assessments required by NEPA.[226] The suit asked the court not to allow grazing until the LRMP revision based on the remand from the Chief's Office was finished.[227] The plaintiffs' attorney asked the Idaho District Court in Boise, Judge B. Lynn Winmill presiding, for a preliminary injunction to halt grazing on six allotments in the PNF before the 15 May 2007 turnout date. Jon Marvel, Executive Director of the Western Watersheds Project, said, "After dealing with this for years, we know that the agency won't do it unless they are put in a box and slowly submerged in cold water."[228]

Early in May 2007, Assistant U.S. Attorney Deborah A. Ferguson told Judge Winmill that the PNF would stop grazing for the season on portions of two DS allotments in the BHS country on the Idaho side of the Snake River. Furthermore, DS grazing on two allotments on the Salmon River would also be curtailed.[229] A settlement was reached based upon recommendations by the Nez Perce Tribe that disallowed grazing in high-risk areas.[230] Sheep have not been turned out on these allotments since 2007, pending completion of the LRMP amendment.

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[220] Payette Principles Committee (2 Nov 2006), *idem*.
[221] U.S. Forest Service (September 2008), *idem*.
[222] U.S. Forest Service (June 2009), *idem*.
[223] *Ibidem*.
[224] *Ibidem*.
[225] *Ibidem*.
[226] Hoffman (2007), *idem*.
[227] Barker, E. (1 March 2009a), *idem*.
[228] Hoffman (2007), *idem*.
[229] *Ibidem*.
[230] Barker, E. (1 March 2009a), *idem*.

In November 2007, Judge Winmill rejected a motion by the Carlson Livestock Co. to return DS to the Allison-Berg allotment in the Salmon River canyon east of Riggins. The court order leaves little doubt he was influenced by the ***PNF Risk Analysis*** described above. Judge Winmill wrote,

> "The [Shirts Brothers and Carlson Livestock Co.] Intervenors argue that there is no evidence that (1) the domestic sheep grazed on the Allison-Berg allotment harbor any respiratory disease organisms, and (2) the bighorn herds in the area are not already infected with these organisms. . . .
>
> "Given the precarious nature of the bighorn populations, and the wide-spread agreement among experts that sheep might transmit a deadly disease to bighorns, a substantial risk exists even without the specific proof demanded by the Intervenors. . . .
>
> "A cautious approach is particularly appropriate here because the bighorns sighted near the Allison-Berg allotment are a native species. The loss of this herd would create an irreparable injury to the genetic diversity of bighorns.
>
> "Because the balance of hardships tips decidedly toward the Forest Service, the Intervenors must raise more than serious questions—they must show a likelihood of success. They have not carried that burden and hence their oral motion for a stay [on the grazing allotment closure] will be denied."[231]

PNF Risk Analysis Goes to Court. In September 2008 the Idaho Wool Growers Association and Dr. Marie Bulgin—who at the time was the association's president as well as director of the University of Idaho's Caine Veterinary Teaching and Research Center at Caldwell (see **"Sheep Flap"** in **Chapter 3**)—filed a lawsuit claiming that the way the PNF officials conducted the BHS/DS risk analysis was in violation of the Federal Advisory Committee Act (FACA) and the NFMA. In January 2009 the same plaintiffs challenged the PNF risk analysis results on Data Quality Act considerations.[232] In July 2009 Judge Winmill agreed with parts of both challenges and provided the requested remedy:

> ". . . an order setting aside the Committees' findings and conclusions and precluding the Forest Service's future reliance on the reports generated therefrom. . . . The Court's findings in this limited respect should not be simultaneously interpreted as an endorsement of Plaintiff's position on disease transmission between domestic sheep and bighorn sheep."[233]

In response to this ruling, the Forest Service retracted the committee reports and its scientists' report on BHS/DS transmission (RMRS-GTR-209,[234] see **Box 3-1**) and instructed Forest Service units, including the PNF, not to refer to these documents. But, as Judge Winmill said, "If, indeed, the Committees represented only a mechanism to collect and summarize all available data relevant to the [BHS/DS separation] issue at hand, the same underlying information would exist to support further agency decisions as well."[235]

When the Forest Service requested clarification from the court regarding the use of information in the three withdrawn reports in the preparation of future documents, Judge Winmill said,

> "1. The Forest Service may not rely upon the Committees' findings and/or conclusions in reaching future agency decisions. If the Final SEIS and ROD cannot be drafted without relying upon those portions of the Draft SEIS that relied solely, or primarily, upon Committees' findings and/or conclusions, the Final SEIS and ROD cannot be based upon the Draft SEIS. However, if, in responding to the Draft SEIS and public comments, the Final SEIS and ROD can be drafted independent of the Committees' recommendations, the Final SEIS and ROD can be based upon the Draft SEIS.

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[231] Winmill, B.L. (13 Nov 2007). *Western Watersheds Project, et al., v. U.S. Forest Service*. Case No. CV-07-151-E-BLW. Memorandum Decision and Order. U.S. District Court for the District of Idaho.

[232] Plaintiffs were the Idaho Woolgrowers Association and Dr. Marie S. Bulgin.

[233] Winmill (1 July 2009), *idem*.

[234] Schommer & Woolever (2008), *idem*.

[235] Winmill (1 July 2009), *idem*.

> "2. Materials relying specifically upon the Payette Principles and RADT reports and providing the foundation for any subsequent recommendations are excluded from the Final SEIS and ROD. However, materials that only cite to Payette Principles and RADT reports, while independently reaching conclusions relating to disease transmission between domestic and bighorn sheep populations may be cited by the Forest Service in later agency decisions." [236]

Forthcoming Record of Decision on LRMP Amendment. In September 2008 the PNF completed a draft of its LRMP amendment, which can be viewed as the proposed BHS plan for the PNF. After taking public comment on the DSEIS for the proposed amendment (see **Chapter 6** for summary of comments), the PNF has been revising the risk analysis to meet NFMA ***viability*** requirements for BHS populations and will use it to support the decision on the LRMP amendment expected in 2010,[237] when a Record of Decision (ROD) and Supplemental Environmental Impact Statement (SEIS) on the LRMP amendment for BHS ***viability*** will be issued. As detailed in **Chapter 5**, the State of Idaho hopes to influence the PNF's final LRMP decision and its effects on grazing allotments by certifying that the risk is acceptable on DS operations that have agreed to implement best management practices.[238] The PNF, however, could decide to disregard the State's actions and reduce or end DS grazing in areas occupied by BHS.[239]

The PNF is continuing efforts to develop a quantitative risk analysis. The supplementary information is scheduled for release to the public on 25 January 2010, and will be followed by a 45-day comment period. Results will be used to reconsider the range of alternatives in the ROD and SEIS for the LRMP amendment. The SEIS will determine lands within the PNF that are suitable for DS grazing, but PNF officials will not make an allotment management plan decision in the ROD. The SEIS and ROD documents will provide guidance for the reissuance of DS grazing permits on the PNF, but additional work will have to be completed and new allotment management plans will need to be done based on the SEIS.[240]

In August 2009, the Intermountain Region of the U.S. Forest Service, which includes the PNF, added BHS to its list of "sensitive" species. The designation means the agency will work to prevent BHS from advancing to threatened or endangered status under the Endangered Species Act, and all national forests in the region will have to consider how BHS will be affected by proposed actions.[241] The PNF is already doing that.

[236] Winmill (9 November 2009), *idem*.
[237] S. Rainville, personal communication with J. O'Laughlin, 1 September 2009.
[238] Barker, R. (7 June 2009), *idem*.
[239] Barker, E. (7 Aug 2009), *idem*.
[240] P. Soucek & S. Rainville, review comments.
[241] U.S. Forest Service (March 2009), *idem*.

Chapter 5. Governance: State of Idaho Bighorn Sheep Management Plan

The decision process on the Payette National Forest described in **Chapter 4** would be better informed if the State of Idaho had a current and comprehensive statewide management plan for bighorn sheep. Beginning in the 1970s, the Idaho Department of Fish and Game (IDFG) has developed statewide comprehensive management plans for all wildlife species. These multi-year plans consider management challenges and objectives and establish the statewide framework for future management actions. The plans, developed by wildlife managers in concert with public involvement opportunities, are revised as necessary to reflect changes in management strategies and are published for public review prior to adoption by the Idaho Fish and Game Commission. In 2007 the IDFG established a planning team to update the statewide management plan for bighorn sheep. The chronological sequences of events since then can be followed in **Appendix A**; in this chapter these events overlap somewhat in order to describe the State of Idaho's efforts to meet the objectives of particular governance initiatives.

Idaho BHS/DS Working Group and Idaho BHS/DS Advisory Group

The IDFG process for updating the BHS management plan was delayed in November 2007 when Governor C.L. "Butch" Otter instructed the IDFG to work together with the Idaho Department of Agriculture on BHS/DS issues. Internal IDFG planning efforts were set aside as the two agencies formed a BHS/DS Working Group which quickly developed an interim strategy for BHS management.[242] The idea was to allow BHS to remain ***viable*** while also keeping DS operations in business.[243] The plan relied, in part, on the long-standing policy of the IDFG to remove any BHS (by lethal means if necessary) known to have contacted DS developed as a risk-management response to prevent potential spread of disease.[244]

The interim strategy was approved by the Idaho Fish and Game Commission in February 2008. After the Commission plan was adopted, the working group evolved into the Idaho BHS/DS Advisory Group, which identified the following goals:

1) provide recommendations to the State on where BHS will receive management emphasis, and where DS will receive management emphasis;
2) provide recommendations on the development of management strategies for areas where bighorn and domestic sheep may interact, including strategies for farm flocks;
3) provide input on development of the statewide Bighorn Sheep Management Plan; and
4) provide active support and outreach for mutually agreed upon goals and management strategies for bighorn and domestic sheep.[245]

Goals and management strategies were designed to provide predictable outcomes in both the short- and long-term perspectives. The interim strategy relied heavily on guidelines developed by a select committee of wild sheep managers representing the Western Association of Fish and Wildlife Agencies (WAFWA). The plan, in part, called for hazing, capturing, or killing BHS to prevent contact with DS. While the policy allowed BHS to be killed in buffer zones, past experience indicated that only a few BHS had been killed (two to six annually) in each of the past few years. [246] When asked whether the newly announced policy would increase that number, Dale Toweill, IDFG's program coordinator for BHS, said he was uncertain: "I'm not sure anyone has an answer to that. In some areas the plan is going to

[242] D. Toweill, review comments.
[243] AP (24 Jan 2008), *idem*.
[244] D. Toweill, review comments.
[245] *Ibidem*.
[246] *Ibidem*.

work to the benefit of bighorns. In some areas it's going to work to the benefit of domestics." [247] The Commission policy was opposed by the Nez Perce Tribe and environmental groups.[248]

The BHS/DS Advisory Group collaborative met several times in 2008 and during the first four months of 2009. In April 2009 Governor Otter vetoed the first of two legislative attempts to deal with BHS/DS interaction and wrote, "I am committed to seeing that collaboration process to completion." In early May 2009 he signed the second version of the bill into law. Then the Nez Perce Tribe, the Idaho Conservation League, and the Wild Sheep Foundation dropped out of the collaborative process.[249] They were concerned that BHS would be left vulnerable. Gray Thornton, president and CEO of the Wild Sheep Foundation, said, "The recent legislation made working as a collaborative kind of impossible."[250] The Nez Perce Tribe also doubts that a collaborative effort was going to go anywhere with this new legislation in place.[251]

Officials with the IDFG and Idaho Department of Agriculture postponed future meetings of the group until after the BHS/DS separation plans required by the new law were completed.[252]At this writing, IDFG has met the deadline for the BHS/DS separation plans for individual producers desiring to participate (see **SB 1232A** section below). On 29 September 2009 the IDFG reconvened Governor Otter's BHS/DS Advisory Group. Originally this group was viewed as a way to bring all interests to the table to prepare a statewide BHS plan, but was put on hold while IDFG complied with the new law. Some of the BHS interests left the group because of the new law, and some have said they would not return because of a belief that legislative action, i.e., SB 1232A, precluded a collaborative resolution process. Some, though, have returned to try to develop a collaborative outcome.

SB 1232A—Certifying Individual DS Management Plans to Reduce Risk to BHS

In January 2009, sheep rancher Ron Shirts, who blames grazing restrictions designed to protect BHS for blocking his access to public grazing lands, asked state lawmakers for help. In 2005, DS Annual Operating Instructions issued by the Payette National Forest affected Shirt's grazing plans for 2007 and 2008. He told legislators that the PNF restrictions on DS grazing have caused 60 percent of his grazing area to be closed. The restrictions were put in place to stem potential disease transmission between DS and BHS.[253]

Shirts asked the lawmakers to help him preserve a way of life. He referred to the 1997 letter of agreement on BHS reintroductions signed by the U.S. Forest Service, the Idaho Department of Fish and Game, and others on the Hells Canyon BHS Restoration Committee (see **Exhibit A**). The letter stated that "the potential risk, if any, of disease transmission and loss of bighorn sheep when the same invade domestic livestock or sheep operations is accepted." The concept of acceptable risk was codified by the Idaho Legislature in 1997. Shirts said, "I make an agreement—I live by that agreement."[254] In 2007, the sworn declaration of the Forest Supervisor charged with overseeing Hells Canyon National Recreation Area affirmed his intention that the Payette National Forest was part of the agreement (**Exhibit C**). This issue is revisited in **Chapter 9**.

In April 2009 the Legislature approved two bills, both introduced by Idaho State Senator Jeff Siddoway, R-Terreton. Both bills focused on the BHS/DS situation. SB 1175 passed the Legislature and was vetoed by Governor Otter; SB 1232A was signed into law, effective 7 May 2009.

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[247] AP (15 Feb 2008). "Fish and Game plan sets March deadline for bighorn buffer zone." Associated Press, Lewiston, Idaho.
[248] *Ibidem*.
[249] *Ibidem*.
[250] AP (29 July 2009). "Plan near to keep bighorn and domestic sheep apart. Associated Press, Twin Falls, Idaho.
[251] Barker, R. (7 June 2009), *idem*.
[252] *Ibidem*.
[253] AP (21 Jan 2009). "Sheep rancher fights for his livelihood: restrictions protecting bighorn sheep have reduced grazing area for domestic sheep." Associated Press, Boise, Idaho.
[254] *Ibidem*.

Idaho State Senator Monty Pearce, R-New Plymouth, is not a DS producer but is sympathetic to people's rights. "We sometimes need to push back against the federal government and say it's gone too far," Pearce said. "We need American producers to be here and not get pushed off areas. This [bill] is a chance to send a message."[255]

When Governor Otter signed the second bill (SB 1232A) into law on 6 May 2009, it went into effect the next day. Senator Jeff Siddoway, author of the bill, stated that he was prompted to prepare it after reviewing the PNF decision process that could reduce DS grazing in Hells Canyon and the Salmon River canyon by about 60 percent. In both areas BHS have been documented with pneumonia and the Salmon River herds have declined by more than 70 percent in the past 20 years.[256]

The new law mandated that the IDFG seek management plan agreements with all DS producers whose animals could come in contact with BHS. According to the law, those plans were to be certified by IDFG Director Cal Groen by 6 August 2009.[257] By certifying the plans, Groen said IDFG is saying the plans "provide for the separation that reduces the risk of disease transmission between DS and BHS to a level that is acceptable to BHS ***viability***."[258] Wayne Wright, chairman of the Idaho Fish and Game Commission, said, "It puts a real onus on our director. He will be pulled from both sides."[259]

Participation by the DS producers is voluntary.[260] Groen said the department determined 18 DS producers in the state operate in areas where contact with BHS is possible. The plans range from simple to complex, and a range of management practices is outlined depending on the threat of contact on each of the allotments. DS producers will use extra herders, guard dogs and other "best management practices" to keep BHS away from DS. But if contact is made—and in some cases that means coming within 100 yards of each other—then BMPs allow BHS to be moved or killed.[261] In some instances straying DS may also be removed.[262] The new law had no effect on the Department's already existing authority to implement removal or lethal control of BHS.[263]

On 5 August 2009, Groen certified 11 plans, noting that four permittees declined to work with the department to craft the plans. One more operation was certified shortly after that. For two other operations, the IDFG and DS producers continued to work on plans acceptable to both sides. Jim Unsworth, IDFG deputy director, said, "We will move forward on the ones we are still working on and hope to get something accomplished on them. We may or may not. This is a voluntary deal on the producers' side. They may decide the (best management practices) we suggest are not appropriate."[264] He said, "They are going to promote separation, and some will be harder to do than others."[265] The hope is that by certifying that the plans are likely to work, the PNF will take that into account in its decision process on whether to continue to allow DS grazing in BHS habitat.[266]

Some of the plans include kill permits allowing ranchers and sheep herders to kill BHS if they are seen mixing with DS. The kill permits were included so ranchers can help ensure that BHS coming in contact with DS do not have an opportunity to carry disease back to their herds and infect other BHS.[267] Unsworth said in several of the plans the IDFG also has permission to kill and remove DS that wander into areas where they could come in contact with BHS. He said, "We have allowed kill permits for BHS,

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[255] Senator Monty Pearce (3 April 2009). Idaho Senate Resources and Environment Committee. http://www.legislature.idaho.gov/sessioninfo/2009/standingcommittees/sresmin.pdf
[256] AP (29 April 2009), *idem*.
[257] Barker, E. (7 Aug 2009) *idem*.
[258] *Ibidem*.
[259] Barker, R. (7 June 2009), *idem*.
[260] Barker, E. (7 Aug 2009), *idem*.
[261] Barker, R. (7 June 2009), *idem*.
[262] Barker, E. (7 Aug 2009)., *idem*.
[263] B. Compton, review comments.
[264] Barker, E. (7 Aug 2009), *idem*.
[265] Barker, R. (7 June 2009), *idem*.
[266] *Ibidem*.
[267] Barker, E. (7 Aug 2009), *idem*.

and the opposite of that is permission is given to Fish and Game to kill DS if they are in the wrong places."[268]

The plans cover 62 individual grazing allotments in central and southern Idaho. They include allotments in the Lost River Range and Boulder-White Cloud Mountains in central Idaho, and allotments in Twin Falls County in south-central Idaho and Owyhee County in southwest Idaho. They are intended to protect BHS from diseases carried by DS while also keeping DS producers in business. "The agreements we've reached, without exception, reduce the risk for direct contact between the two species," said Dale Toweill, IDFG's trophy species program manager. He said some DS producers have agreed to increase the number of sheep herders and dogs, and some have agreed to equip herders with satellite phones so they can quickly report possible intermingling of domestic and bighorn sheep. Fish and Game officials can kill BHS that stray into allotments and come in contact with DS. Toweill said some sheep producers have agreed to the killing of DS that stray out of allotments.[269]

R14 Roams About Sick and is Shot—A Cautionary Tale

On 18 May 2009, shortly after the new BHS/DS law became effective, Riggins rancher Mick Carlson saw a bighorn ram near his sheep. The ram was coughing, sneezing and clearly ill. In March 2008 a radio-collar transmitter was affixed to the ram, known to biologists with the Nez Perce Tribe as R14.[270] Carlson called the Idaho Wool Growers Association, and the IDFG was contacted. By long-standing IDFG policy, any obviously sick BHS may be killed. Removal of R14 became an immediate priority to reduce the potential spread of disease to other BHS.[271] No one saw R14 closer than 50 to 75 feet from Carlson's sheep.[272] Although R14's radio-transmitter was functioning, due to rugged terrain and tree cover in the Salmon River canyon he eluded biologists for three weeks before they were able to shoot and kill R14.[273] On several occasions during that time, R14 was observed with up to 11 other BHS rams that live near Carlson's ranch. [274] These rams are known to travel both downstream and upstream of the ranch.[275] Details from the formal diagnostic report on R14 show the animal had "low grade pneumonia associated with lungworms and some bacterial infiltrates in a small area of the lungs, but highly pathogenic bacteria were not isolated from the lungs."[276] As it turned out, R14 posed no serious threat to his kin.[277]

The R14 episode is a cautionary tale, reflecting the issue DS ranchers and BHS advocates had debated in the Idaho Legislature during the 2009 session: Can BHS coexist with DS? The State of Idaho's approach was to rely on ranchers and IDFG to keep BHS separated from DS. Others feel DS should be removed from public lands. John Robison, Idaho Conservation League's associate director and a member of the Advisory Committee that suggested this report, said the R14 episode shows that "even with a collared animal they couldn't prevent this."[278] However, these sheep were not on the U.S. Forest Service allotments that adjoin Carlson's land, thus there were no guard dogs, stock dogs, sound cannons, men or vehicles to keep BHS and DS separated, as required when sheep graze on Forest Service land.[279]

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[268] *Ibidem*.
[269] AP (7 Aug 2009). "State cuts 11 deals to help protect bighorn sheep." Associated Press, Boise, Idaho.
[270] Barker, E. (7 Aug 2009), *idem*.
[271] *Ibidem*.
[272] Barker, R. (7 Aug 2009), *idem*.
[273] Barker, E. (7 Aug 2009), *idem.*
[274] Barker, R. (7 Aug 2009), *idem*.
[275] B. Compton, review comments.
[276] Idaho Dept. of Fish and Game (27 July 2009). Laboratory Report N09-065f, Wildlife Health Laboratory, Idaho Dept. of Fish and Game, Caldwell, Idaho. 3 pp., in author's files.
[277] K.Lauer & S. Boyd, review comments.
[278] Barker, R. (7 Aug 2009). "Idaho meets deadline for bighorn plans – mostly: the state cuts 11 deals with ranchers to keep domestic and wild sheep from mingling." *Idaho Statesman*, Boise, Idaho.
[279] K. Lauer & S. Boyd, review comments.

Under the new state law best management practices apply to private as well as public ground, and R14 showed up sick on private land. This point is underplayed in some of the R14 stories reported in the media,[280] but was made clearly in a *Lewiston Morning Tribune* editorial (emphasis added):

> "For those who believe federal land and resource managers can counter Idaho's pro-domestic sheep stance by curtailing Forest Service or Bureau of Land Management grazing allotments, consider where R14 was spotted. ***On private land***."[281]

The R14 story has the hunters who have worked to restore BHS through the Wild Sheep Foundation worried that they are seeing their worst fears play out.[282] Dr. Jim Peek, retired University of Idaho wildlife professor and frequent columnist for the *Lewiston Morning Tribune*, is also concerned:

> "Bighorn sheep in Idaho are suffering the consequences of political intervention into their management. We have the wool growers forcing legislation that requires the Idaho Department of Fish and Game to kill individual bighorns that are seen with domestic sheep. At least one bighorn has been killed as a result. . . . [An] unintended consequence has to do with the U.S. Forest Service designating the bighorn as a sensitive species. This means steps will be taken to minimize mortality, whether it is caused by contact with domestic sheep or contact with Fish and Game employees with guns."[283]

Another cautionary tale is offered by Bill Myers, one of the reviewers of this report, as well as another PAG report,[284] and counsel for sheep rancher Mick Carlson:

> "The 'cautionary tale' is that a bighorn ram was shot and killed even though his 'contact' with domestic sheep did him no harm. Perhaps R14 was an illustration how Salmon River bighorn sheep have co-existed with domestic sheep for 87 years—but now after human intermeddling, another one is dead. Rather sad."[285]

The R14 episode illustrates two different stakeholder viewpoints described in **Chapter 6**. One favors BHS more than DS, the other vice versa. Because of treaty rights, the views of the American Indian Tribes surrounded by the State of Idaho are key (see **Chapter 7**). Before he saw the management plans for individual DS operators developed in cooperation with the Idaho Department of Fish and Game, Samuel N. Penney, chairman of the Nez Perce Tribal Executive Committee said, "We hope that [these plans] do not advocate continued DS grazing in or adjacent to occupied BHS habitat."[286] Tribal officials said they would not return to discussions with the State of Idaho until the current policy to kill or move BHS was abolished.[287]

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[280] *Ibidem*.
[281] Trillhaase (24 June 2009), *idem*.
[282] Barker, R. (7 Aug 2009), *idem*.
[283] Peek, J. (26 November 2009). Commentary: "Politicizing bighorn policy comes at a price." *Lewiston Morning Tribune*, Lewiston, Idaho.
[284] O'Laughlin, J., Hundrup, W.R. & Cook, P.S. (1998), *History and Analysis of Federally Administered Lands in Idaho.* Report No. 16, Policy Analysis Group, College of Natural Resources, University of Idaho. 125 pp.
[285] W.G. Myers III, review comments.
[286] Barker, R. (7 Aug 2009), *idem*.
[287] *Ibidem*.

Chapter 6. Society & Culture

> "We [Advocates for the West] brought this case[288] in March 2007 [on behalf of the Western Watersheds Project and other plaintiffs] to prevent the Forest Service from authorizing domestic sheep grazing in allotments on Payette and Nez Perce National Forests that pose a 'high risk' of spreading diseases that kill Rocky Mountain bighorn sheep, which are native to the Hells Canyon and Salmon River region of central Idaho. Our litigation relies on science from the Forest Service and other agencies documenting that domestic sheep spread fatal diseases to bighorn sheep; yet political pressure prevented the agency from closing the allotments to protect the bighorn sheep populations. In response to several injunction motions we filed, the Forest Service has temporarily closed the allotments to sheep grazing; and is undertaking a new EIS process to close them permanently. Litigation will continue until the closures are permanent, and expected sheep industry challenges are rejected."[289]

The Payette National Forest decision process for amending its Land & Resource Management Plan in order to provide ***viability*** for BHS (see **Chapter 4**) includes public involvement, which the U.S. Forest Service accomplishes through comments collected at public meetings and through public notices requesting comments on documents prepared to meet the mandates of the National Environmental Policy Act (NEPA). **Box 6-1** provides a concise summary of those comments, and reveals two types of interested parties: those who support BHS conservation efforts regardless of potential effects on DS operations, and those who support sheep ranching regardless of its potential effects on BHS.

Box 6-1. Summary of Public Comments on the Payette National Forest's Draft Supplementary Environmental Impact Statement (DSEIS) for the Bighorn Sheep Amendment to the Land & Resource Management Plan (LRMP)

"Public comment on the DSEIS includes a wide range of concerns that tend to fall into two general categories: those favoring the survival and protection of wild bighorn sheep in lieu of using of federal lands for domestic sheep grazing and those who favor the privilege and heritage of domestic sheep grazing and feel that too much is made of the risk to wild bighorn sheep populations. Many comments on both sides of the issue emphasize that science was not appropriately applied to analysis, while others felt that scientific findings supporting the separation of wild bighorn sheep and domestic sheep were ignored or not included. The crux of the overall public concern regarding the survival of bighorn sheep lies in disease transmission from domestic sheep to bighorn sheep. Some assert that domestic sheep transmit lethal diseases to bighorn sheep while others maintain that it has not been proven that bighorn sheep populations are dwindling specifically due to this phenomenon. The separation of the sheep was largely commented on with more respondents being supportive of separation and buffer zones. Several commenters worried about the effectiveness of separation and the overwhelming majority wanted bighorn sheep removed permanently from federal lands. A few respondents questioned the suitability of the habitat to support wild bighorn sheep while others asserted that the species could live nowhere else but in their current habitat as they are bighorn specialists and the domestics could graze in other places. A few commenters noted the potential economic impact that may occur if established sheep ranchers were disallowed the use of federal lands for grazing while others cited public appreciation and ecosystems health as justification for eliminating or limiting domestic sheep grazing and the economic benefit for having robust bighorn populations."

Source: U.S. Forest Service (June 2009). Summary of Public Comment, Payette National Forest Draft Supplemental Environmental Impact Statement for Bighorn Sheep Viability Analysis and Forest Plan Amendment. NEPA Support Group, U.S. Dept. of Agriculture, Forest Service, Salt Lake City, UT. http://www.fs.fed.us/r4/payette/publications/big_horn/CAReport_final.pdf

[288] *Western Watersheds Project v. U.S. Forest Service*, 07-cv-151-BLW (D. Idaho), filed 30 March 2007.

[289] Advocates for the West. http://www.advocateswest.org/case/bighorn-sheep-hells-canyon-and-salmon-river

Public comments on the September 2008 DSEIS[290] for the proposed LRMP amendment to provide BHS ***viability*** were accepted through March 2009. The PNF received 14,089 comments. These included 509 original responses, 5 public meeting comment forms, and 13,575 form responses generated by organized campaigns.[291]

PNF planner Patti Soucek said after reviewing the comments, the agency will make adjustments to the plan before issuing a final Record of Decision (ROD).[292] She said, "You have people's livelihoods that depend on the domestic sheep, you have people's livelihoods that depend on the wild sheep and you have the tribes that depend on the resource. It's social, it's political, it's tribal, it's economic. It is not your typical clean-cut resource analysis. It's a very complex one."[293]

The four families of sheep ranchers who operate on the PNF could stand to lose not only their livelihoods but the traditional work that has been a part of their families for generations.[294] Sheep ranching played a significant role in the development of the West. Ranchers view their work as a way of life that keeps them connected to the land. They say the preferred alternative selected by PNF managers in the draft BHS plan of September 2008 would cut them out of the sheep business.[295] One of them, Margaret Soulen Hinson, said the plan would essentially put all of the sheep ranchers who use the Salmon River canyon and Hells Canyon out of business.[296] Another, Ron Shirts, said, "We poured our hearts and guts and soul into this whole thing. We have worked and sacrificed and gave to get where we are at today and when someone tries to move you out of the way, especially when you feel you are completely right and they are wrong, it's no time to roll over. A person can't do that. You have to stand up and fight."[297]

If the final LRMP does not help BHS recover, the people who visit Idaho's pristine backcountry could lose the opportunity to view or hunt one of the state's most treasured animals, and the Nez Perce Tribe and other Indian tribes could lose access to an animal their ancestors hunted and depended on for centuries. Keith Lawrence, wildlife manager for the Nez Perce Tribe, said the situation along the main Salmon River is reaching the crisis stage. Sheep numbers there have declined by 70 percent in the past 20 years, he said. "There really needs to be an intervention to turn that trend around before there is an emergency."[298]

On his *Spatial Interest* website,[299] Dr. Dennis Murphy describes the BHS/DS situation as "neighbors butting heads" (see **Box 6-2**).

The general perspectives on managing land and resources to meet both BHS and DS interests are outlined in the sustainable resource management framework presented in **Figure 2-1**. Details on the perspectives different agencies and organizations have on BHS/DS issues are provided in **Appendix B**. An in-depth study of the social and cultural context of the BHS/DS situation is beyond the scope of this report. However, it should be said that at this writing two collaborative approaches trying to improve the BHS/DS situation in Idaho are ongoing. One is the Idaho BHS/DS Advisory Group convened by Governor Otter (see **Chapter 5**). The other was convened by U.S. Senator Mike Crapo's Office to focus on the Payette National Forest situation.

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[290] U.S. Forest Service (September 2008), *idem*.

[291] U.S. Forest Service (June 2009). *Summary of Public Comment Payette National Forest Draft Supplemental Environmental Impact Statement for Bighorn Sheep Viability Analysis and Forest Plan Amendment*. NEPA Services Group, Salt Lake City, UT. http://www.fs.fed.us/r4/payette/publications/big_horn/CAReport_final.pdf

[292] Barker, E. (1 March 2009a), *idem*.

[293] *Ibidem*.

[294] Barker, E. (1 March 2009b), *idem*.

[295] Barker, E. (1 March 2009a), *idem*.

[296] *Ibidem*.

[297] *Ibidem*.

[298] Barker, E. (1 March 2009b), *idem*.

[299] Murphy, D.L. (20 October 2008). "Counting sheep before they sleep." *Spatial Interest* 1(17). http://www.spatialinterest.info/Vol01Num17.html

Box 6-2. Public Information Meeting: Neighbors Butting Heads

A McCall public information meeting reviewed the Draft Supplementary Environmental Impact Statement (DSEIS) for the Payette National Forest (PNF) shortly after its release for public comment in September 2008. The meeting attracted a diversity of stakeholders. Several audience questions were purely informational, others revealed two distinct neighborhood perspectives. One group's paramount concern is the extirpation of BHS. The second group perceives a threat of a different extirpation—that of a century old rural way of life. The defenders of BHS sheep questioned why the federal government allows DS grazing on a National Forest, at any price, but also for the current rate set by Congress. One participant promoted ecotourism for local economic development as an alternative, and wanted to see decent forests "when we are out there"—implying landscapes without DS herds.

Three of the four allotment permittees on the PNF explained the business of raising sheep. Their history in the region extends nearly a century. One of the ranchers suggested a benefit from integrating land use history with tourism, and gave the example of the annual Trailing of the Sheep Festival (in Ketchum, Idaho). The festival celebrates the cultural heritage of this rural lifestyle, and tourists flock each year to participate. The festival website notes that MSN Travel rated the event as one of the top ten fall festivals in the world.

The discussion highlighted that the neighborhood is even more complex than the model reviewed for the meeting. The analysis excluded the adjacent landowners that also provide grazing for domestic sheep, and the potential for disease transmission. These landowners include the Bureau of Land Management, the bordering National Forests, Idaho Department of Lands, and private owners. The audience questioned whether the DSEIS preferred alternative offers a ***viable*** strategy considering that key landowners are waiting on the sidelines for the outcome on the Payette.

Source: Murphy, D.L. (20 October 2008). "Counting sheep before they sleep." *Spatial Interest* 1(17). http://www.spatialinterest.info/Vol01Num17.html

Part of the social and cultural setting for BHS/DS is hunting bighorn sheep in the wild. In addition, just seeing them has value to many people. Efforts to assign monetary values to such experiences are reviewed in **Chapter 8**. Another part of the context is the value that some people place on the traditions of sheep ranching. The economic impact of DS operations that use grazing allotments on the PNF is featured in **Chapter 8**. There are some issues associated with the ethics and equity of past agreements made between BHS conservationists and sheep ranchers, featured in **Chapter 9**.

Not to be overlooked is the relationship of the United States Government with American Indian Tribes. All six of the Tribes surrounded by the State of Idaho have traditional cultural associations with BHS, as well as other fish and wildlife that provided subsistence, and much more.[300] Agreements expressed through treaties dating to the mid-19th century give the Tribes rights to wildlife, in some cases off their own reservations. The Draft Supplemental Environmental Impact Statement (DSEIS) prepared by the PNF provides some background information about the Tribes with off-reservation interests and rights in the lands now administered by the Boise, Payette, and Sawtooth National Forests (**Box 6-3**). An Appendix to the DSEIS has some additional information on these four Tribes.[301]

This report takes a wider and deeper look at the cultural affiliation the six Tribes surrounded by the State of Idaho have with BHS, their treaty rights, and agreements for state-tribal consultation. These are provided in **Chapter 7**.

[300] See, EagleWoman, A. (2009) "Tribal hunting and fishing lifeways & Tribal-state relations in Idaho." *Idaho Law Review* (in press).

[301] U.S. Forest Service (September 2008b). Southwest Idaho Ecogroup Land and Resource Management Plans, Draft Supplemental Environmental Impact Statement, Appendix D. American Indian Background Information. 9 pp. http://www.fs.fed.us/r4/payette/publications/big_horn/DSEIS_Appendix_D_Tribal.pdf

Box 6-3. Tribal Interests in Southwestern Idaho National Forests

The Nez Perce, Shoshone-Bannock, Shoshone-Paiute, and the Confederated Tribes of the Umatilla Indian Reservation interests goes beyond that of spiritual, cultural, and economic to the unique legal relationship that the United States government has with American Indian tribal governments. Federally recognized tribes are sovereign nations who work with the federal government and its agencies through the process of government-to-government consultation. The federal trust relationship with each tribe was recognized by, and has been addressed through, the Constitution of the United States, treaties, executive orders, statutes, and court decisions. In general, these mandates protect and enhance interests and uses on the three Forests. The federal trust doctrine requires federal agencies to manage the lands under their stewardship with full consideration of tribal rights and interests. In addition, the Forest Service must ensure that the statutory reserved rights of Tribes on National Forest Service lands are provided.

Many of the treaties and executive orders signed by the United States government in the mid-1800s reserved homeland for the tribes. Additionally, the treaties with the Nez Perce, Shoshone-Bannock, and Confederated Tribes of the Umatilla Indian Reservation reserved certain rights outside of established reservations, including fishing, hunting, gathering, and grazing rights.

The gathering of these and other natural resources is still a significant part of the individual cultures of the Nez Perce, Shoshone-Bannock, Shoshone Paiute, and the Confederated Tribes of the Umatilla Indian Reservation. The Tribes see the continuation of gathering as an important link to their past as well as an essential ingredient to their continuing culture.

Because of their concern with the continuation of this aspect of their cultures, the tribes are taking an increasingly active role in protecting and restoring various species of plants, animals, and fish. Where these treaty-guaranteed resources exist within the tribes aboriginal use areas on the Payette we have a statutory duty to protect and enhance them for the benefit of the Tribe.

The analysis on the effects to tribal rights and interests related to bighorn sheep is tied directly to the following factors: 1) the continued persistence of the species over time in harvestable numbers; 2) the historical number of animals as it relates to present and future habitat carrying capacity; 3) the Tribes' annual harvest need; 4) the number harvested by non-tribal members; and 5) the historical locations the tribal members wish to utilize for their hunts. The effects are directly related to [among other things] . . . the potential relative risk of contact between bighorn sheep and domestic sheep with the subsequent implications for reasonable numbers of harvestable animals for the Tribes.

Source: U.S. Forest Service (September 2008b). Southwest Idaho Ecogroup Land and Resource Management Plans, Draft Supplemental Environmental Impact Statement, Appendix D. American Indian Background Information. 9 pp. http://www.fs.fed.us/r4/payette/publications/big_horn/DSEIS_Appendix_D_Tribal.pdf

Chapter 7. Tribal Bighorn Sheep Cultural & Subsistence Resource; Aboriginal & Tribal Treaty Rights; and State-Tribal Consultation

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Tribal Bighorn Sheep Cultural & Subsistence Resource

The bighorn sheep (BHS), also referred to as mountain sheep, are a significant cultural and subsistence resource for all of the Tribes surrounded by the state of Idaho. There are currently six federally-recognized Tribes in the state. From north to south, they are: Kootenai Tribe of Idaho, Coeur d'Alene Tribe, Nez Perce Tribe, Shoshone-Bannock Tribes, Northwestern Band of Shoshone Nation, and Shoshone-Paiute Tribes. In reviewing the historic accounts of tribal hunting patterns and resource harvesting, all of the Tribes relied on the BHS as an important resource for specific tribal uses. Each Tribe's relationship with the BHS will be examined.

The Kootenai Tribe has been known as divided into the Lower and Upper "Kutenai" in historical works. The Lower "Kutenai" is the Tribe in Idaho and utilized a rich environment of resources on a seasonal basis. "Throughout the year they hunted a number of large game animals found in their territory including big horn sheep."[302] In the book, *The Forgotten Kutenai*, the use of "mountain sheep" meat in a drying process for use in the winter is well-documented.[303]

As a culturally significant animal, the Kootenai have cultural accounts and references to the BHS. In recent years, tribal elders have been in the process of providing written accounts of culturally-based teachings. One such book, *Ktunaxa Legends*, recounts the story, "Adventures of the Kids and Young Sheep."[304] In the story, two young mountain goats are admired by two women eagles who seek to marry the goats.[305] The father of the goats calls a gathering and the bighorn sheep father and his sons join the celebration. The goat father asks the bighorn sheep father to substitute the bighorn sheep young men for his sons in marriage to the eagles. The bighorn sheep father agrees and the young men bighorn sheep marry the eagle women.[306] The BHS are interwoven into the cultural accounts of the Kootenai in stories such as this.

Closely aligned with the Kootenai Tribe were the Salish and the Kalispel Tribes (also called the Pend d'Oreilles Indians). The Kalispel Tribe relied on the same rich environment as the Kootenai Tribe. "Large game animals hunted included elk, moose, deer, mountain goat, mountain sheep, brown bear, and grizzly bear."[307] The Kalispel Tribe is located in contemporary times north of Spokane, Washington. Aboriginal Kalispel lands extend across the northern panhandle of Idaho.[308] The Kalispel Tribe continues to have a limited number of acres in Idaho as habitat conservation sites.[309]

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[302] Deward E. Walker, Jr., INDIANS OF IDAHO 37 (The University of Idaho Press, A Division of the Idaho Research Foundation, Inc. Moscow, Idaho 1978).

[303] Paul E. Baker, THE FORGOTTEN KUTENAI: A STUDY OF THE KUTENAI INDIANS, BONNERS FERRY, IDAHO, CRESTON, BRITISH COLUMBIA, CANADA, AND OTHER AREAS IN BRITISH COLUMBIA WHERE THE KUTENAI ARE LOCATED 29 (Mountain States Press, Inc. Boise, Idaho 1955).

[304] Kootenai Culture Committee, Confederated Salish and Kootenai Tribes, Ktunaxa Legends 366 (Salish Kootenai College Press 1997 ed.)

[305] *Id*. at 374.

[306] *Id*. at 375.

[307] Walker, *supra* n. 302, at 55.

[308] *See* Reservation Maps, Kalispel Tribe of Indians, Map 6 of 8, at: http://www.kalispeltribe.com/maps/album/Reservation-Maps (last visited on October 3, 2009).

[309] *See* Maps, Kalispel Tribe of Indians, at: http://www.kalispeltribe.com/maps/ (last visited on October 3, 2009).

In western Montana on the Flathead Reservation, the three tribal peoples are joined together—Salish, Kootenai and the Kalispel, known as the Confederated Salish and Kootenai Tribes.[310] When the Confederated Salish and Kootenai Tribes entered into the 1855 Hell Gate Treaty with the United States to establish a reservation in Montana,[311] the Kootenai Tribe of Idaho were not signatories.[312] However, in subsequent judicial proceedings[313] the Kootenai Tribe of Idaho has been designated a beneficiary of that treaty and has the reserved hunting rights contained therein.[314]

Another closely related tribal people, the "Schitsu'umsh,"[315] commonly called the Coeur d'Alene Tribe are located in northern Idaho. The anthropological record for the Tribe clearly establishes the significant usage of the bighorn sheep in the daily lives of the Coeur d'Alene Tribe. In describing the living quarters of the tribal people, the bedding used were "made of skins spread over mats and grass or brush, or sometimes mats alone, or of skins alone spread over these materials."[316] The skins used for the bedding were: "[s]kins of buffalo, bear, goat, and elk with the hair on were much used as bedding; also skins of deer, sheep, and old robes of any kind."[317]

Mountain sheep were hunted for meat and skins historically by the Coeur d'Alene Tribe.[318] The bighorn sheep served as a culturally significant resource for tribal sustenance. Furthermore, the special use of the bighorn sheep's horn was in making bows. "A good many bows were made of mountain ram's-horn in single piece. Only the largest horns were used for making bows. They were split lengthwise and a central piece taken out the full length. The horn was made pliable by boiling it or heating it over the fire. Usually the outside of the horn formed the inside of the bow."[319] The Coeur d'Alene people were known for taking up to two weeks to make some of their best bows.[320] In these ways, the bighorn sheep have been culturally significant to the Coeur d'Alene Tribe on a daily household basis and for men's activities.

Farther south, the Nez Perce Tribe likewise had a close connection to the bighorn sheep as a cultural resource. Historically, the Tribe has hunted large game animals in their aboriginal territory including "the elk, deer, moose, mountain sheep and goat, as well as black, brown, and grizzly bear."[321] The Tribe regarded the bighorn sheep as "an important source of food, used their horns to make prized

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[310] *See* Salish-Pend d'Oreille Culture Committee and Elders Cultural Advisory Council, Confederated Salish and Kootenai Tribes, The Salish People and the Lewis and Clark Expedition, (University of Nebraska Press Lincoln, Nebraska 2005).

[311] Treaty of July 16, 1855, 12 Stat. 975, ratif. March 8, 1859, available at: http://www.cskt.org/documents/gov/helgatetreaty.pdf (last visited on October 3, 2009).

[312] *See* History, Kootenai Tribe of Idaho, at: http://www.kootenai.org/history.html (last visited on October 3, 2009). "The Kootenai people lived in peace until the arrival of strangers who spoke a new language and used guns to get their way. They wanted Native Americans to sign a treaty and move to the reservations. The Kootenai people kept the Covenant, and no Kootenai ever signed the treaty." *Id.*

[313] *See State v. Coffee*, 556 P.2d 1185 (1976) where the Idaho Supreme Court found that the ratification of the 1855 Hell Gate Treaty included cession of lands belonging to the Kootenai of Idaho although they were not parties to the treaty and that by virtue of the land cession the Idaho Kootenai Tribe has hunting and fishing rights on "open and unclaimed land" as specified in the treaty. *Id*. at 1193.

[314] See next section for greater detail.

[315] *See* Overview, Official Site of the Coeur d'Alene Tribe, at: http://www.cdatribe-nsn.gov/TribalGov/Overview.aspx (last visited on October 3, 2009).

[316] Franz Boas and James Teit, Coeur d'Alene, Flathead and Okanogan Indians 27 (Ye Galleon Press Fairfield, Washington 1996) reprinted from: The Salishan Tribes of the Western Plateaus. Forty-fifth Annual Report of the Bureau of American Ethnology 1927-1928, (United States Government Printing Office, Washington, D.C. 1930).

[317] *Id.*

[318] *Id.* at 60.

[319] *Id*. at 61.

[320] *Id*. at 62.

[321] *See* Walker, *supra* n. 302, at 72.

bows and their thin but tough hides to make men's shirts."[322] In contemporary times, the link between traditional subsistence activities and the maintenance of tribal cultural has become increasingly solidified.

"Social and religious functions of traditional subsistence activities are self-evident. They are the key symbols of Nez Perce ethnic identity, traditional education, and Indian religion. Whenever individuals express their Nez Perce ethnic identity, they relate to hunting, fishing and gathering."[323] Thus, the ability to continue to hunt and harvest traditional resources, such as the bighorn sheep, has a deep impact on the cultural sustainability of the Tribe. The cultural importance of the bighorn sheep and other large game animals cannot be overstated in this regard for the Nez Perce Tribe and the other Tribes in Idaho.

In the southern Idaho region, the bond between the bighorn sheep and tribal peoples is even more apparent where some tribal peoples have historically been referred to as the "Sheepeaters." A leading author on the Shoshone-Bannocks Tribe has explained the joining of the Tribes and the label of "Sheepeaters."

> Along with kinship and subsistence strategies, language provided the main source of precontact identity in these regions. Shoshones spoke Central Numic, whereas Bannocks, who began to intermarry with Shoshones in Idaho in the early eighteenth century, spoke Western Numic. Snake country Numics identified themselves generally as *Nimi* (the people), but they also self-identified by the type of subsistence activity they engaged in at any stage of their seasonal pattern. They called themselves *agaideka'a* (fish eaters), *tukudeka'a* (mountain sheep eaters), or a variety of other names derived from terms for key food sources.[324]

Thus, the Shoshone referred to themselves differently on a seasonal basis and for a time during the yearly cycle were the "Sheepeaters."[325] As a cultural resource, the petroglyphs in Yellowstone National Park attest to the significance of the bighorn sheep to the Tribes in the Basin-Plateau area.[326] Bighorn sheep were a primary food source seasonally, culturally significant, and incorporated into the traditional beliefs of the Tribes.

The histories of the Shoshone and Bannocks in southern Idaho includes frequent attacks from white settlers,[327] seeking refuge in isolated areas from whites,[328] consolidation of tribal groups for

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[322] Eric Barker, "Both sides cling to traditions: Sheep ranchers fear losing a way of life, while tribes, conservationists cite bighorn impact on culture, tourism," Lewiston Morning Tribune March 1, 2009, 2009 WNLR 6761470.

[323] Hiroaki Kawamura, "Symbolic and political ecology among contemporary Nez Perce Indians in Idaho, USA: Functions and meanings of hunting, fishing, and gathering practices," 21 Agriculture and Human Values 157 – 169, 163 (2004).

[324] John W. Heaton, THE SHOSHONE-BANNOCKS: CULTURE AND COMMERCE AT FORT HALL, 1870-1940 22 (University Press of Kansas Lawrence, Kansas 2005).

[325] For a detailed account of the use of the label "Sheepeaters," *see* David Dominick, "The Sheepeaters," 3-5 Annals of Wyoming (1964) Chief Washakie Foundation at: http://www.windriverhistory.org/exhibits/sheepeaters/Resources/Dominick.pdf (last visited on October 3, 2009).

[326] *See* Sheepeater Cliff, Inside Yellowstone, 2008 Yellowstone Park Foundation at: http://www.nps.gov/archive/yell/insideyellowstone/sheepeatercliffranscript.html (last visited on October 3, 2009).

[327] *See* Hank Corless, THE WEISER INDIANS: SHOSHONI PEACEMAKERS 116 (University of Utah Press Salt Lake City, Utah 1990). The Shoshone were blamed for the killing of five Chinese miners which led to the so-called "Sheepeaters Campaign." The U.S. army was called in to investigate. "It was well known in military circles that a few of the whites were 'anxious for another Indian War in the Boise Country' because of the financial benefits to be gained in the path of a military campaign, as was the case in the Nez Perce War of 1877 and the Bannock War of 1878." *Id.*

[328] *Id*. at 117.

protection,[329] and removal to the Fort Hall Reservation following the 1868 Fort Bridger Treaty.[330] The shared history in southern Idaho by Tribes of resisting white encroachment and seeking to maintain their traditional cultural resources, included the commonplace hunting of the bighorn sheep.

The Northwestern Band of Shoshoni Nation received federal recognition on April 29, 1987 as a separate group of the Shoshone.[331] Similarly to other bands of the Shoshone, the Northwestern Band "traveled with the changing season."[332] They would also share in the cultural understanding of the importance of the bighorn sheep as a food source and resource for daily use items.

Linguistically related to the Shoshone, Bannock, Ute, and other Tribes in the Basin-Plateau area were the Northern Paiute.[333] The Northern Paiute historically "spent most of their lives in pursuit of food."[334] One of the common techniques used to hunt large game animals included the ambush. "Mountain sheep also were driven into ambushes or stalked by an individual."[335] Horns were fully utilized by the Northern Paiute for arrow tips, knives, and scrapers. "Spoons and ladles were made of mountain sheep horn, wood, and jack rabbit and wildcat scapulae."[336] All of these implements point to the bighorn sheep's usefulness to the cultural subsistence of the Northern Paiute who joined with the Shoshone on the Shoshone-Paiute Reservation established by Executive Order on April 16, 1877.[337]

In sum, the bighorn sheep are culturally significant, a traditional sustenance resource, and closely tied to the cosmology of the Tribes in Idaho as a native species. In contemporary times, the preservation and reintroduction of the bighorn sheep are of concern across the board for Tribes in Idaho. The legal underpinnings for these activities are more fully explored in the next section.

Aboriginal & Tribal Treaty Rights

The Tribal Nations now surrounded by the state of Idaho are recognized as sovereign governments by the U.S. In the foundation of U.S. federal Indian law, Tribes have been characterized as "domestic dependent nations" which retain all inherent sovereignty unless limited by congressional act or treaty.[338] On-reservation native resources are protected under tribal law as a general matter.[339] Off-reservation resources may require analysis as to whether they fall under aboriginal rights or treaty reserved rights. Any resource located in a tribal aboriginal area must be evaluated based upon whether it is a resource reserved under the relevant treaty for hunting, fishing or gathering purposes or whether there are other federal statutes on point for the particular Tribe(s). Hunting, fishing, and gathering resources in aboriginal areas not reserved through treaty are considered included in aboriginal rights.

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[329] *See* Brigham D. Madsen, THE LEMHI: SACAJAWEA'S PEOPLE 29 (The Caxton Printers, Ltd. Caldwell, Idaho 1979). "By the time white fur hunters got around to operating in the Lemhi country, though, Shoshoni band organization had gone through a remarkable change. Instead of moving about in small groups, or even in moderately large mounted bands, the Shoshoni had consolidated into two large composite bands, one of which included Bannock leadership and people." *Id.*

[330] July 13, 1868, 15 Stat. 673. See Treaties and Cessions, Historical Background, Shoshone-Bannock Tribes at: http://www.shoshonebannocktribes.com/fhbc.html (last visited on October 3, 2009).

[331] *See* News & Events, Northwestern Band of the Shoshone Nation Federal Recognition 1987, Northwestern Band of Shoshone Nation at: http://www.nwbshoshone-nsn.gov/culture/history/recognition.htm#content (last visited on October 3, 2009).

[332] *See* NW Shoshone, Northwestern Band of Shoshone Nation at: http://www.nwbshoshone-nsn.gov/culture/history/nwshoshone.htm#content (last visited on October 3, 2009).

[333] *See* Dominick, *supra* n. 325, at 2.

[334] *See* Walker, *supra* n. 302, at 100.

[335] *Id*. at 101.

[336] *Id*.

[337] *See* History, Shoshone-Paiute Tribes of the Duck Valley Reservation, at: http://www.shopaitribes.org/spt-15/index.php?option=com_content&view=article&id=46&Itemid=82 (last visited on October 3, 2009).

[338] Felix Cohen's Handbook of Federal Indian Law § 4.01[1][a] (2005 ed.).

[339] See, e.g., *New Mexico v. Mescalero Apache Tribe*, 462 U.S. 324 (1983).

Aboriginal title refers to the land title held by Tribes historically. "Aboriginal title, along with its component hunting, fishing, and gathering rights, remains in the tribe that possessed it until it has been granted to the United States by treaty, abandoned, or extinguished by statute. A claim based on aboriginal title is good against all but the United States."[340] Treaty rights are those based on a specific legally entered agreement between the U.S. and the specific Tribe(s).

Federal courts have held that treaty rights for hunting, fishing and gathering "extend to the harvest of all species currently existing in the tribes' reserved harvesting grounds, subject only to specific treaty limitation."[341] In the territory that became the state of Idaho, there are now six federally recognized Tribal Nations: Kootenai Tribe of Idaho; Coeur d'Alene Tribe; Nez Perce Tribe; Shoshone-Bannock Tribes; Northwestern Band of the Shoshone Nation; and the Shoshone-Paiute Tribes. Not all of the Tribes entered into formal treaties with the United States. In 1871, the U.S. Congress legislated that no further treaties would be entered into with Tribes,[342] rather formal agreements would be the norm.

The Nez Perce Tribe entered the 1855 Treaty of Walla Walla through negotiations with Washington Territorial Governor Isaac Stevens.[343] The Shoshone-Bannock Tribes entered into a series of treaties with most unratified by the U.S. In regard to reserved tribal treaty hunting rights, the Shoshone-Bannock Tribes' 1868 Fort Bridger Treaty[344] has primary relevance. The Kootenai Tribe of Idaho has been designated a beneficiary of the 1855 Hell Gate Treaty[345] which ceded the Tribe's land although no tribal leader agreed to the treaty's terms.

The BHS native area implicates the aboriginal homelands of all the Tribes in Idaho. Three of these Tribal Nations have treaty reserved hunting rights, which would include the bighorn sheep as a native species: the Nez Perce Tribe under the 1855 Treaty of Walla Walla, the Shoshone-Bannock Tribes under the 1868 Fort Bridger Treaty, and the Kootenai Tribe of Idaho as beneficiaries of the 1855 Hell Gate Treaty. The other Tribes in Idaho have continuing aboriginal rights to the resources in their aboriginal land areas subject only to limitation by the United States.

In regard to tribal treaty based rights, there are three treaties that are implicated in the management of the bighorn sheep: the Nez Perce Tribe's 1855 Treaty at Walla Walla, the Shoshone-Bannock Tribes' 1868 Fort Bridger Treaty, and the Kootenai Tribe of Idaho as a beneficiary of the 1855 Hell Gate Treaty. Those Tribes with aboriginal rights to the bighorn sheep have rights in relation to the federal government.[346] As a general matter, federal law and policy pre-empts private and state rights in Indian affairs.[347]

The Nez Perce Tribe's reliance on traditional hunting, fishing and gathering activities are considered as "crucial for their lives."[348] When the 1855 Treaty was entered into by Nez Perce leaders, the reserved rights to hunt, fish, and gather from their seasonal lands located off the reservation were included in the negotiations. These rights are encapsulated in Article 3.

> The exclusive right of taking fish in all streams where running through or bordering said reservation is further secured to said Indians; as also the right of taking fish at all usual

[340] *See* Cohen's, *supra* n. 338, at § 18.01.
[341] *Id.* at § 2.02[2][a].
[342] Act of March 3, 1871, § 1, 16 Stat. 544 (codified at 25 U.S.C. § 71).
[343] 12 Stat. 957, June 11, 1855.
[344] 15 Stat. 673, July 3, 1868.
[345] 12 Stat. 975, July 16, 1855.
[346] *See* Cohen's, *supra* n. 338, at § 18.01. "The power to extinguish aboriginal title or aboriginal use rights rests exclusively with the federal government. If aboriginal title to land is extinguished, the hunting, fishing, and gathering rights on the land are extinguished as well, unless those rights are expressly or impliedly reserved by treaty, statute or executive order. Aboriginal rights will not be extinguished, however, absent 'plain and unambiguous congressional intent.'" *Id*.
[347] *See Worcester v. Georgia*, 31 U.S. (6 Pet.) 515 (1832).
[348] Hiroaki Kawamura, "Symbolic and political ecology among contemporary Nez Perce Indians in Idaho, USA: Functions and meanings of hunting, fishing, and gathering practices," 157, Agriculture and Human Values 21: 157-169 (2004).

> and accustomed places in common with citizens of the Territory; and of erecting temporary buildings for curing, together with the privilege of hunting, gathering roots and berries, and pasturing their horses and cattle upon open and unclaimed land.[349]

Much litigation has arisen over the enforcement of the provisions for treaty based fishing as contained in the 1855 Treaty Article 3. Governor Isaac Stevens negotiated treaties throughout the Washington Territory with standard text similar to that in Article 3 for many of the Pacific Northwest Tribes. Federal judicial interpretation of the "Stevens Treaties" has led to the protection and allocation of fishing resources as legally-protected for those Tribes with Article 3 language.[350]

The relevant treaty language for the Shoshone-Bannock Tribes is in Article 4 of the 1868 Fort Bridger Treaty.

> The Indians herein named agree, when the agency house and other buildings shall be constructed on their reservations named, they will make said reservations their permanent home, and they will make no permanent settlement elsewhere; but they shall have the right to hunt on the unoccupied lands of the United States so long as game may be found thereon, and so long as peace subsists among the whites and Indians on the borders of the hunting districts.[351]

This language encapsulates the reserved hunting rights of the Tribes which is subject to interpretation through special judicial doctrines of interpretation.

The third treaty relevant to the discussion of tribal rights to the continuation of the bighorn sheep is the 1855 Hell Gate Treaty under which the Kootenai Tribe of Idaho are considered beneficiaries. The Idaho Supreme Court's 1976 decision in *State v. Coffee*[352] held that the Kootenai Tribe of Idaho were entitled to beneficiary status since their lands were included in the cession to the United States. The 1855 Hell Gate Treaty was negotiated by Isaac Stevens and is considered one of the "Stevens Treaties" for interpretation purposes. Article 3 of the Treaty is identical to that in the Nez Perce Tribe's 1855 Walla Walla Treaty, also negotiated by Isaac Stevens. Article 3 of the Hell Gate Treaty provides:

> The exclusive right of taking fish in all the streams running through or bordering said reservation is further secured to said Indians; as also the right of taking fish at all usual and accustomed places, in common with citizens of the Territory, and of erecting temporary buildings for curing; together with the privilege of hunting, gathering roots and berries, and pasturing their horses and cattle upon open and unclaimed land.[353]

Treaty rights to hunting, fishing and gathering are often broadly stated and require careful judicial interpretation. Federal courts apply the "Indian canons of construction" to appropriately interpret tribal treaty language.

> The basic Indian law canons of construction require that treaties, agreements, statutes, and executive orders be liberally construed in favor of the Indians; and all ambiguities are to be resolved in favor of the Indians. In addition, treaties and agreements are to be construed as the Indians would have understood them, and tribal property rights and

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[349] 12 Stat. 957. The Treaty of 1855 at Walla Walla can be viewed at: Charles J. Kappler, Indian Affairs: Laws and Treaties, Vol. II Treaties, 702-706 (Washington: Government Printing Office 1904) at: http://digital.library.okstate.edu/Kappler/Vol2/treaties/nez0702.htm (Last viewed on September 26, 2009).

[350] *See, e.g.,* Washington v. Washington State Commercial Passenger Fishing Vessel Ass'n, 443 U.S. 658, 686 (1979)(holding that Tribes are entitled through treaty rights to take up to a maximum of 50 percent of the harvestable fishing resource to ensure a moderate living).

[351] 15 Stat. 673. The Fort Bridger Treaty of 1868 can be viewed at: http://www.ccrh.org/comm/river/treaties/shoban.htm (last visited on October 3, 2009).

[352] 556 P.2d 1185, 1193 (1976).

[353] 12 Stat. 975. The Hell Gate Treaty of 1855 can be viewed at: http://www.cskt.org/documents/gov/helgatetreaty.pdf (last visited on October 3, 2009).

> sovereignty are preserved unless Congress's intent to the contrary is clear and unambiguous.[354]

The canons have been necessary to offset the charges of fraud, coercion, and other improper acts in securing large land cessions through treaties. In addition, treaties were written in English using legal terms and Tribes entered into treaties without adequate legal representation in the U.S. system.[355]

The management of BHS necessarily includes a discussion of relevant treaty hunting provisions and aboriginal rights that involve the management area and aboriginal territories within the state of Idaho. Tribal treaty hunting and fishing rights have been uniformly upheld in federal courts as a matter of federal law under the U.S. Constitution's supremacy clause.[356] The state of Idaho has encapsulated in the Idaho Constitution recognition for the U.S. Constitution "as the supreme law of the land."[357] Also, Idaho state law recognizes federal pre-emption of state jurisdiction over tribal treaty rights. Specifically in I.C. § 67-5103, Idaho state law acknowledges that the limited delegation of jurisdiction unilaterally assumed as an "optional P.L. 280" state will not "deprive any Indian or any Indian tribe, band or community of any right, privilege, or immunity afforded under federal treaty, agreement, statute, or executive order with respect to Indian land grants, hunting, trapping or fishing or the control, licensing, or regulation thereof." Under federal and state law, tribal treaty hunting rights are protected.

State-Tribal Consultation

In the treaty fishing rights context, consultation with the Tribe holding the treaty rights for the fishing resource has been a requirement prior to any state implementation of a management policy. For example, in the closure of the fishing season in the Rapid River area in the early 1980s, a judicial order directed that the state must consult with the Nez Perce Tribe prior to taking such action. Following federal court decisions,[358] the Memorandum Order of March 2nd, 1981 by Judge Reinhardt directed the state of Idaho that prior to actions impacting tribal treaty fishing rights the state "must cooperate with the tribe in determining appropriate fish management programs and must afford the tribe a reasonable, meaningful, and adequate opportunity to participate in the regulation making process."[359] Treaty fishing rights are similar to treaty hunting rights in many respects[360] and consultation between the state and the affected Tribe(s) are required before management decisions are implemented by the state.

Federal, tribal, and state cooperation has recently resulted in the Wolf Conservation Memorandum of Agreement (MOA). The U.S. Department of the Interior oversaw the process by which the state of Idaho, and the Nez Perce Tribe joined together on wolf management policy. In the Preamble to the April 2005 MOA, Section 1(A) provides: "The State of Idaho (State)(as acknowledged in the Governor's Proclamation on State/Tribal Governmental Relations dated July 3, 2002: Appendix A) and the Nez Perce Tribe (Tribe) recognize and respect the authorities, rights, and sovereignty of each respective government, proclaim a policy to promote cooperation and good relations between governments, and commit their respective departments and agencies to maintain a government-to-government relationship in all interactions."[361] This type of state-tribal consultation and cooperative policy-making serves as a template for other aboriginal resources.

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[354] Cohen's *supra* n. 338, at § 2.02[1].

[355] *See* Robert J. Miller, "Treaty Interpretation: Judicial Rules and Canons of Construction," in Paul Finkelman and Tim Alan Garrison (editors), Encyclopedia of United States Indian Policy and Law 771-772 (2009).

[356] U.S. Const. Art. VI, para. 2.

[357] Id. Const. Art. 1, sec. 3.

[358] Relying on *U.S. v. Oregon*, 302 F.Supp. 899 (D.Or. 1969)(consolidated with *Sohappy v. Smith*) and *U.S. v. Washington,* 384 F.Sup. 312 (W.D. Wash. 1974).

[359] Magistrate Judge Reinhardt Memorandum Opinion, District Court of the Second Judicial District of the State of Idaho, Magistrates Division 9 (March 2, 1981).

[360] Treaty hunting and fishing rights often appear in the same treaty article along with gathering/harvesting rights.

[361] Memorandum of Agreement Between the State of Idaho and the Nez Perce Tribe Concerning Coordination of Wolf Conservation and Related Activities in Idaho Preamble, available at:

On June 1st, 2006 Proclamations on State-Tribal Governmental Relations between Idaho and the following Tribes: Burns Paiute Tribe, Coeur d'Alene Tribe, Kalispel Tribe, Nez Perce Tribe, Northwest Band of Shoshoni Nation, Shoshone-Bannock Tribes, and Shoshone-Paiute Tribes were issued by then Idaho Governor James E. Risch. The Proclamations serve as a template for resolving issues such as those surrounding BHS management policy. The Proclamations directed that the government-to-government relationship between Idaho and the Tribes "shall guide state agencies and departments in all interactions with tribal governments."[362] In terms of the protection, preservation and reintroduction of the bighorn sheep, these Proclamations provide a state policy basis for state-tribal consultation.

As Nez Perce tribal councilmember, Brooklyn Baptiste, stated on March 1, 2009, "One day our grandchildren or great-grandchildren, that we will never see, will have the opportunity the see (bighorn sheep) and it won't be just a story that they used to be here. We are filled with those stories."[363] He continued on and stated that, "I want my grandchildren to see them and people who come to the state of Idaho to see them."[364]

http://fishandgame.idaho.gov/cms/wildlife/wolves/esa/nez_perce_tribalMOA.pdf (last visited on October 3, 2009).

[362] *See* June 1st, 2006 State-Tribal Governmental Relations, State of Idaho Proclamation Archives at: http://gov.idaho.gov/mediacenter/proc/procarchives.html (Last visited on September 26, 2009).

[363] *See* Barker, s*upra* n. 322.

[364] *Id.*

Chapter 8. Economics and Other Values

> "The bighorn ram trotted up the trail overlooking Granite Rapids in Hells Canyon about 20 yards away as I was scouting the rapids. It took my breath away. Seeing bighorn sheep is an experience you never forget. Watching that ram cross the trail and then run up the hill is burned in my memory, even though it was more than a decade ago. His eyes gave me a stealthy stare. He carried a majestic set of horns, and you could see the muscles in his legs as he easily traversed the steep hillside."[365]

This quotation in an earlier draft drew comments from some reviewers that it added nothing to the report. However, other reviewers requested the inclusion of a chapter on the economic and other social values of BHS and DS, including especially hunting and recreation. Experiences like Pete Zimowsky wrote about in the above quotation are part of the BHS/DS situation. So, too, are the jobs, income, and economic impacts from having BHS and DS on the landscape. This chapter reports existing information on such values.

During a hearing held by the Idaho Senate Resources and Environment Committee in April 2009, advocates offered economic arguments for BHS and DS. Senator Monty Pearce said in Washington County, where this issue is taking place, the Shirts Brothers infuse four million dollars a year into the county's economy just from one DS operation. He said BHS probably bring in less than $50,000 to that county in a year. For the people that live in Washington County, the BHS/DS interaction issue impacts them and is a hit, economically. Senator Pearce said we need to look at the people who live and work here and the narrow views [of BHS advocates] are incorrect and very un-American.[366]

During the hearing, Dr. Robert DiGrazia, a semi-retired dentist and member of the Wild Sheep Foundation's Idaho Chapter, said that he respectfully disagrees on the economic impact. The city of Lewiston's Chamber of Commerce stated last summer that they felt the value of BHS in Hells Canyon was over a million dollars. When outfitters take their clients down the Middle Fork of the Salmon River, people ask about seeing wild sheep. The Wild Sheep Foundation wants not only to hunt sheep, but to have watchable wildlife.

During the same hearing, Senator Jeff Siddoway said that the BHS industry does not make up five percent of the value of the DS industry in the State of Idaho.[367] Dr. DiGrazia said the issue is hunting, not necessarily just BHS.[368]

According to the Idaho Department of Fish and Game, hunting has a big economic impact, and so does wildlife watching. Every five years, the U.S. Fish and Wildlife Service, U.S. Census Bureau, and others survey the public about wildlife-associated recreation. The latest survey indicates that 156,000 adults hunted in Idaho. Wildlife watching away from home (that is different than viewing wildlife in one's yard) was far more popular, with 498,000 participants in Idaho. All three of these figures include both residents and nonresident participants. In 2006, wildlife watchers spent over $273 million on equipment, food, lodging, transportation and other trip-related items. Hunters spent slightly less but more per person, with trip-related sales at $271 million.[369]

The remainder of this chapter looks first at economic arguments for DS, then BHS—including revisitation of a 1985 study of the total economic value of BHS in Idaho—and closes with the economic impact analysis in the PNF DSEIS for the BHS amendment to the LRMP.[370] We do not attempt to draw

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[365] Zimowsky (2008), *idem*.

[366] Senator Monty Pearce (3 April 2009). Idaho Senate Resources and Environment Committee, Boise, Idaho. http://www.legislature.idaho.gov/sessioninfo/2009/standingcommittees/sresmin.pdf

[367] Dr. Robert DiGrazia (3 April 2009). Idaho Senate Resources and Environment Committee, Boise, Idaho. http://www.legislature.idaho.gov/sessioninfo/2009/standingcommittees/sresmin.pdf

[368] Senator Jeff Siddoway (3 April 2009). Idaho Senate Resources and Environment Committee, Boise, Idaho. http://www.legislature.idaho.gov/sessioninfo/2009/standingcommittees/sresmin.pdf

[369] Idaho Dept. of Fish and Game (2008). "Watching economics." *Idaho Fish and Game News* 20(3): 12. http://fishandgame.idaho.gov/cms/news/fg_news/nov08.pdf

[370] U.S. Forest Service (September 2008), *idem*.

conclusions as to whether DS or BHS have the greater economic value. Given the legal mandates the U.S. Forest Service must follow to provide habitat that supports ***viable*** BHS populations, whether BHS or DS occupying the area provides more economic value from wool and meat production, open spaces, recreational wildlife viewing and hunting is irrelevant, but it is part of the BHS/DS situation because participants make it so. Advocates will find economic data supporting their arguments, whether for BHS or DS.

Domestic Sheep

Joe Shirts, a CPA in Boise for 30 years and brother of sheep rancher Ron Shirts, testified before the Idaho Senate Resources and Environment committee in January 2009 regarding the economic impact of domestic sheep in the state. His testimony follows:

> "I am presenting the value of the sheep industry to Idaho and also the impact of the draft environmental impact study on the life and family of Ron Shirts. The United States Department of Agriculture (USDA) Statistical Services shows that 220 thousand lambs were produced in Idaho in 2007 and wool production was close to 1.9 million pounds. The 2008 information was not yet available. The 2007 information indicates that 37 thousand of these lambs were kept as replacements, leaving 183 thousand of these lambs available to be sold as a product that was raised in Idaho and sold primarily out of State. The value of these lambs would be close to 19 million dollars at a weight of 104 and a price of 98.2 cents per pound. 104 pounds is the average weight of weaned range lambs in the United States per the USDA in the year 2000 and 98.2 cents was the USDA price of lambs in Idaho in 2007. Shirts Brothers lambs price per pound were $1.05 to $1.13 per pound in 2007 and $1.07 in 2008.
>
> "The majority of lambs produced in Idaho is dependent on public lands and are shipped out of State. Idaho lambs produced by Shirts Brothers and many other large producers will exceed 125 pounds if the lambs are not sold early in the year, as was the case of Ron Shirts in 2007 when he was forced from grazing in Hells Canyon. The weight of lambs is based on several factors:
>
> 1. Weather, for example, early springs, sufficient and timely rains and the temperature.
> 2. Sheep management, for example nutrition, herds bred to produce enough milk and having the genetic qualities to produce large healthy twin lambs.
> 3. Dedication of the sheep men who spend countless hours in the lambing sheds and on the range to provide the best nutrition and care possible.
> 4. The range that is so important to provide adequate conditions for the production of a large healthy lamb. The range needs to allow early turn out in the spring and allow changes of elevation to provide tender nutritious feed until the lambs are marketed. In addition, high mountain pastures are a necessity for the breeding of eight-month-old lambs.
>
> "The range on the Smith Mountain Allotment on the Payette National Forest provides all of these features. The Smith Mountain Allotment does not border the wild Snake River in Hells Canyon that jet boaters and rafters enjoy, but only the reservoir behind Hells Canyon Dam.
>
> "What all of these factors mean to Idaho, is over twenty million dollars is coming into the State from other parts of the United States. It is estimated that sheep men that graze on the Payette National Forest produce three to four million of these funds. The sheep men will not be the only losers.
>
> "This small group of sheep ranchers spends an estimated $3 to $4 million in Western Idaho each year and if these ranches don't exist, there is no money to spend at grocery stores, gas stations, repair shops, hardware stores, feed, etc. That hurts everyone in the State of Idaho. How many times do these millions of dollars multiply in the Idaho economy? You have heard 'Buy Idaho' and try to keep dollars in Idaho. These lamb sales bring millions of dollars into our State from other parts of the Country.

> "These lambs are consumed in the large cities all over our nation and the money is coming back to Idaho. Very few of these lambs are consumed in Idaho. If these sheep men go out of business, the people in these cities will still eat lamb, but the dollars will go to foreign owners and these lambs will be raised in places like Australia, New Zealand or Argentina."[371]

Part of the value of sheep ranching is associated with the large areas of rangeland. These open spaces have values to society that exceed ranchers' net income from producing wool and meat and providing jobs and their associated economic impacts. Dr. Dennis Murphy's *Spatial Interest* website focuses some attention on open space values (see **Box 8-1**).

Box 8-1. The Economic Web of Land Use

The economic web of land use is also more complex due to potential cumulative impacts. Phil Soulen, representing Soulen Livestock, described the geographic scope of operations for a wool grower in Idaho. Soulen Livestock started raising sheep in the region during the 1920's. Their federal allotment on the Payette NF is an important piece of an array of rangeland resources that extend from Idaho County to Elmore County. In addition to the Payette NF allotment, the family-owned business grazes sheep on 450,000 acres in the Birds of Prey Area, 25,000 acres on an Idaho Department of Lands lease, 31,000 acres from Potlatch Corporation (former land of Boise Cascade), and 50,000 acres of fee title. The dispersed location and elevation provide grass at different times during the calendar year. Soulen commented that his situation is not unique, as other ranchers have similar grazing arrangements for their operations.

What happens if allotments on the Payette are closed in the future, or substantially reduced? The change may be the tipping point that terminates a viable business. Not unlike the biological hazard of disease transmission, the Payette could adopt a management alternative that has an unintended consequence on its ranching neighbors. A management alternative could initiate a series of market consequences that increase the rate of land use change.

Reducing available rangeland beyond the tipping point for a sheep rancher may compel the private landowner to pursue conversion of grasslands to other uses. Without revenue from their livestock, the real estate market will transmit its influence on the landscape. Such an outcome would be contrary to the objectives of the Forest Service's own National Open Space Conservation Strategy, a management direction that promotes the agency to "cooperate across boundaries to sustain working and natural landscapes."

The Payette National Forest (PNF) Supervisor, Suzanne Rainville, resides in the middle of this neighborhood, listening to comments from the New and Old West. The New West looks to the PNF for aesthetic and recreation enjoyment, while the Old West views the PNF as part of an intricate economic web for resource production that weaves within the forest and beyond its borders. Supervisor Rainville must obey the law, and manage the resource with an alternative that achieves viable populations of BHS. At the same time, the U.S. Forest Service's National Open Space Strategy seeks collaboration to protect working lands. Balancing these often conflicting objectives by selecting a feasible management alternative requires participation from the entire neighborhood. Finding that balance will help all neighbors sleep better, knowing they can count on both Old and New World sheep.

Source: Murphy, D.L. (20 Oct 2008). "Counting sheep before they sleep." *Spatial Interest* 1(17). http://www.spatialinterest.info/Vol01Num17.html

[371] Joe Shirts (19 Jan 2009). Idaho Senate Resources and Environment Committee, Boise, Idaho. http://www.legislature.idaho.gov/sessioninfo/2009/standingcommittees/sresmin.pdf

Wild Sheep

This section considers values used by Wild Sheep Foundation spokesmen, and an update of a 1985 U.S. Forest Service research study of the total economic value of BHS in Idaho.

Wild Sheep Foundation Statistics. Spokesmen for the Wild Sheep Foundation (formerly the Foundation for North American Wild Sheep) use the following statistics to illustrate the benefits of healthy BHS herds in Idaho:[372]

- The tour operators, like commercial jet-boat outfitters, provide the U.S. Forest Service with $90,000 per year for use privileges, as well as bringing many clients to local communities and businesses.
- More than a quarter of a million visitors to Hells Canyon annually hope for a chance to see a bighorn sheep. (With more than 900 bighorns in 17 herds, there's a good chance, whether you are rafting, fishing, hiking or on a tour jet boat.)
- Many local businesses use photos of bighorns on their brochures and Web sites.
- Wildlife-associated activities in Idaho produce more than $808 million in total expenditures annually, and the amount is expected to increase.
- Wildlife viewing alone produced more than $81 million in food and lodging revenues in Idaho.
- Last year, nearly 30,000 visitors signed in at the Hells Canyon National Recreation Area. These visitors spent $140 per day, per person. Most visitors come to Hells Canyon for the wildlife watching and history, and the bighorn is the big draw.

In 2007, Raymond Lee, President, Foundation for North American Wild Sheep (FNAES, but since renamed the Wild Sheep Foundation), filed a declaration in U.S. district court regarding BHS conservation efforts in Hells Canyon. He included the following economic data:

> "The public, often through FNAWS, has made large economic investments toward wild sheep recovery in this region. FNAWS contributions to wild sheep recovery in Hells Canyon have exceeded $600,000 since 1988. In addition, FNAWS sells the Idaho, Oregon, and Washington Governor's wild sheep hunting licenses annually. To date, the proceeds from these permits exceed $3.2 million dollars—these proceeds have been used to benefit the recovery of wild sheep in the Tri-state region. These permits often sell in excess of $100,000 per permit, demonstrating the economic value of the wild sheep. Both resident and non-resident hunters bring significant economic benefits to the local communities. Non-consumptive users, such as river tour operators and their guests, also depend upon and benefit from healthy populations of wild sheep."[373]

Neil Thagard, Operations Officer for the Wild Sheep Foundation, on a recent trip to Washington, D.C., provided U.S. Forest Service and Bureau of Land Management officials with economic information about DS and BHS in western states where the two species exist. According to Thagard, the economic data were "somewhat challenged" during his discussion with the agencies. For example, in Idaho the domestic sheep industry generates about $17 million annually in gross receipts to the State's economy,[374] while wildlife-related activities produced more than $800 million.[375] The contention came as the wildlife related numbers were not specific to wild sheep. However, Thagard was able to provide more localized examples. In Hells Canyon, during 2007 more than 30,000 people toured the canyon and

[372] Zimowsky (2008), *idem*.

[373] Lee, R. (14 April 2007). Declaration. Case No. 07-151-BLW, U.S. District Court for the District of Idaho, filed by Rule, L.M., Attorney for Plaintiff Western Watersheds Project, Boise, ID. 6 pp.

[374] U.S. Dept. of Agriculture (2008). Agricultural Statistics, cited by N. Thagard.

[375] U.S. Department of the Interior, Fish and Wildlife Service, and U.S. Department of Commerce, U.S. Census Bureau (2007). *2006 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation*. FHW/06-NAT. 164 pp. http://library.fws.gov/pubs/nat_survey2006_final.pdf

spent more than $140 per day, per person in the local economy.[376] Also, local citizens who operate commercial tours in Hells Canyon provide the U.S. Forest Service more than $90,000 per year for use fees, while the DS producers provide about $17,000 for their federal land-use fees, based on $1.35 per month for every 10 domestic sheep; however, it cost U.S. taxpayers nearly $5.00 per month to administer each 10 domestic sheep. According to Thagard, people who tour Hells Canyon are there to see three things: 1) the canyon itself, 2) Native American history, and 3) wildlife, which is predominately BHS.[377]

Total Economic Value of BHS in Idaho. A U.S. Forest Service research study published in 1985 reported on efforts to improve information available to federal agencies regarding the valuation of antelope, bighorn sheep, moose, and mountain goat hunting in Idaho.[378] A very limited number of permits are issued for these species and allocated by a random lottery. Using a modification of the conventional travel cost method of recreation benefit estimation, the researchers concluded that the net value of benefits for each BHS permit is $239 per year, and the cost of the permit is another $71. A "typical" management unit offers five permits per year, for a total hunting value of $1,195 per year in the typical unit. In 1985 there were 30 such units statewide.

This is only the hunting value of BHS, not the total economic value of BHS to all persons. Based on a research study of option values and existence values for wildlife in Wyoming,[379] hunting benefits may represent as little as 1% of the total economic benefits of BHS, antelope, moose, and mountain goats in Idaho. Researchers estimated the annual observer option price for a typical BHS unit is $216,535, and the annual existence value (net willingness to pay) for a typical BHS unit is $23,191.[380]

Summing up, when the study was published in 1985, the total economic value estimate for a typical BHS management unit was estimated at $241,050 per year. Between 1985 and 2008 the Consumer Price Index went from 107.6 to 215.3; i.e., it almost exactly doubled. Assuming all other things are equal, in 2008 the total economic value of one typical BHS unit with five annual permits would be $482,100.

Because these calculations provide the average willingness to pay for observer option value and big game hunter existence value, they likely overstate the additional willingness to pay for the option of seeing one more BHS or knowing that one more BHS exists. Partly compensating for the upward bias in this method is that the observer and existence values for BHS in Idaho have been omitted for the nonhunting population in Idaho and other states.[381]

Economic Impact Modeling

The PNF is conducting an economic study of sheep as part of its LRMP amendment process. We were not provided with this information, which at this writing is being finalized for release for public comment on 25 January 2010. What follows is a synopsis of the economic analysis as presented in the DSEIS released for public comment in September 2008.[382]

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[376] Washington Department of Tourism, cited by N. Thagard.

[377] WSF (1 July 2009). "The Wild Sheep Foundation performs advocacy work in Washington, D.C." Wild Sheep Foundation website, News tab, July 2009. http://www.wildsheepfoundation.org/Page.php/News/92/1246424400-1249012800

[378] Loomis, J.J., Donnelly, D.M, Sorg, C.F. & Oldenburg, L. (1985). *Net Economic Value of Hunting Uniques Species in Idaho: Bighorn Sheep. Mountain Goat, Moose, and Antelope*. RM-10, U.S. Dept. of Agriculture, Forest Service, Rocky Mountain Forest and Range Experiment Station, Fort Collins, Colorado. 16 pp.

[379] Brookshire, D.S., Eubanks, L.S. & Randall, A. (1983). "Estimating option prices and existence values for wildlife resources." *Land Economics* 59(1): 1-15.

[380] The observer option price is calculated by taking 75% of the Idaho big game hunters, multiplying by the observer option price per permit of $34 in Wyoming in 1982, then dividing by 30 BHS units; the hunting existence value of BHS is the remaining 25% of Idaho big game hunters multiplied by the mean existence value of $11 per permit in Wyoming for 1982, divided by 30 BHS units.

[381] Loomis et al. (1985), *idem*.

[382] U.S. Forest Service (September 2008), *idem*.

Economic Modeling Specialists, Incorporated (EMSI) of Moscow, Idaho, conducted a socio-economic analysis for the Payette National Forest for the alternatives described in the September 2008 DSEIS, which included the job and earnings impact of various alternatives provided by the PNF.

One of the four primary goals was to calculate the economic impacts of the alternative range management scenarios on the communities for which there are economic impacts of the sheep allotments on the PNF. Those are Riggins, Weiser, and Wilder, Idaho. The seven management scenarios or alternatives in the DSEIS prepared by the PNF were used to consider jobs, earnings, and sales impacts on the three communities.

Domestic Sheep Production.[383] The direct jobs dependent on the sheep allotment alternatives ranged from a high of 21.5 jobs currently employed in the sheep production industry to a low of 1.3 jobs under one of the seven alternatives. Including multiplier effects (see **Box 8-2**), the current level of employment in sheep production produces 37.2 jobs and $672,635 in annual earnings, and the lowest alternative would provide 2.4 jobs and $43,623 in annual earnings.

Box 8-2. Economic Impact Analysis Methods and "Multipliers"

The direct jobs derived from the sheep allotments were used as inputs to community economic input-output models of Riggins, Weiser, and Wilder that were produced using EMSI software. The foundation of these models is economic base theory, which bifurcates local economies into their basic and nonbasic sectors. All economic activity is allocated and attributed to the basic sectors. They are defined in the broadest sense as any economic activity that brings money into the community, including (but not limited to) agriculture industries, timber, manufacturing, and federal and state governmental operations. Nonbasic sectors are economic activities that support the basic sectors.

Nonbase industries depend on base industries for income and could not exist without them. Nonbase industries support base industries, local businesses, and local households to the extent that they supply goods and services and keep money in the community that might have gone elsewhere.

Nonbase industries generally include most of the retail trade and service sectors. The expenditures made at a grocery store, for example, that supply local consumers and businesses would be considered nonbasic. Some businesses have both basic and nonbasic components. If a grocery store has customers from outside the region these expenditures would be considered basic to the community. The outputs of the community economic models include sales, earnings, and jobs. Sales are defined as the total transactions in dollars from direct and indirect economic activity. Earnings are defined as the wage and salary payments (direct and indirect) for labor income to individuals. Jobs represent the total of both direct and indirect employment of workers. Indirect effects are defined as the downstream economic effects on sales, earnings, and jobs in the regional economy from direct spending. These effects are part of the multiplier effects of direct spending. Induced effects are sometimes included in the indirect effects or identified separately. They are defined as the downstream effects of employee-related consumer spending in the economy. They are also part of the multiplier effects.

Source: U.S. Forest Service (September 2008a). Southwest Idaho Ecogroup Land and Resource Management Plans, Draft Supplemental Environmental Impact Statement. Available online at http://www.fs.fed.us/r4/payette/publications/big_horn/index.shtml

Bighorn Sheep Recreation.[384] Riggins and other Idaho communities have realized an influx of visitors into their communities due to a large increase in the amount of available salmon and steelhead fishing opportunities. It is assumed that a similar affect could be realized as bighorn sheep populations recover and restore and hunting and viewing opportunities increase. Restored bighorn sheep populations could lead to an increase in available hunting permits, the need for additional outfitter and guide services, and an increase in watchable wildlife visitors. Each of these uses lead to more

[383] *Ibidem*.
[384] *Ibidem*.

expenditures within the area of the PNF as users travel through and stay in the communities. The level of influx is difficult to determine, but wildlife hunting and viewing is a more than $100 million dollar industry in the state of Idaho. The trend is expected to continue into the foreseeable future.

Hunting bighorn sheep on and adjacent to the PNF is relatively limited, but it still provides a source of jobs and revenue. In bighorn sheep hunt areas on and adjacent to the PNF an average of 44 bighorn sheep permits has been issued over the past 6 to 7 years. In addition, based on the number of hunters that apply for permits, this number could increase substantially if bighorn sheep populations increased in size and distribution.

Hunting bighorn sheep in the Hells Canyon area is limited. The IDFG currently issues only two controlled hunting permits annually. These permits are awarded through a drawing process; 374 hunters applied for the Hells Canyon Hunt Area 11 in 2008. One other bighorn sheep hunting permit for Hells Canyon Hunt Area 11 is auctioned off at an annual benefit auction each season. The actual dollar cost of these three permits varies greatly. The record amount paid for an auctioned bighorn sheep permit was $180,000 in 2005. In 2008, the cost for the standard resident permit was $194.75 and for a nonresident was $1,779.75. These permits allow a hunter to legally hunt and take one bighorn ram in this area in their lifetime, making this a truly once in a lifetime hunt.

Due to the limited amount of hunting permits issued for the Hells Canyon Area, and the difficulty of accessing the area, most bighorn sheep hunters hire local guides. The exact number of hunters that hire a guide is not tracked. The hunting outfitters licensed in Hells Canyon offer only full-service or all-inclusive hunts for bighorn sheep. The amount charged by these outfitters ranges from $6,100 to $8,600 per hunter. With only three permits issued annually in the Hells Canyon area, any other associated costs for hunting bighorn sheep, such as gas, food, and ammunition, would be limited.

Costs for resident and nonresident permits to hunt the Salmon River and Big Creek populations are the same as for Hells Canyon, except there is no auction permit. EMSI assumed that outfitter and guide charges would also be similar to Hells Canyon.

Comparing these data with the economic analysis of the direct jobs dependent on the sheep allotment alternatives requires an assumption of the number of jobs associated with these BHS hunts. Direct jobs associated with sheep production were defined as the actual number of jobs in the sheep production industry dependent on grazing allotments. Forest-dependent herd size was converted to forest-dependent jobs in the livestock sector according to the following labor requirements: 1 worker per 900 head of sheep. Under current conditions of 64,385 headmonths, this resulted in 21.5 jobs directly created by the sheep production industry. On average, 28 percent of the successful hunts were guided. EMSI assumed that a similar number of unsuccessful hunts were gathered, and also assumed that these outfitters and guides were locally operated, thereby returning revenues to the local communities. Based on IDFG statistics, the average hunt lasted 9 days; EMSI estimated each hunt resulted in 12 guided work days requiring 2 workers for a total of 24 days per hunt. During the past 6 to 7 years, an average of 44 permits have been issued per year on and adjacent to the PNF, resulting in 1,056 days or 4 jobs per year (about 264 working days per year) of employment. Based on these estimates, under current conditions, the outfitting and guiding of BHS hunts on and adjacent to the PNF equates to 4 jobs per year.

The change in the hunting revenues (to IDFG and to outfitters and guides) and change in economics (via “direct jobs”) associated with each alternative was assumed to correspond with the change in the potential risk of contact between BHS and DS. Those alternatives that provided the greatest reduction in potential risk of contact between BHS and DS are assumed to provide the greatest increase in revenues and direct jobs associated with BHS hunting.

Over time, it is expected that BHS populations would increase substantially in size and distribution under those alternatives that reduce the potential risk of contact to the greatest degrees. As populations increase and expand, permit revenues and direct jobs are also expected to increase, perhaps substantially. For those alternatives that reduce risk of contact by moderate amounts, changes in permits and associated revenues are less clear, but some benefits via population increases and increased hunting opportunities are likely. Alternatives that “leave a substantial amount of risk” may not

result in any increase in BHS numbers and, in fact, may reduce jobs and revenues if BHS populations actually decline due to contact and subsequent disease.

Cumulative Effect.[385] The number of jobs linked to bighorn sheep restoration is tied directly to the potential for the population to recover and persist over time or the amount of relative risk for contact between bighorn sheep and domestic sheep or goats left on the landscape. With alternatives that retain 100 percent of the risk, the assumption is that no more opportunities for employment or income will occur, and the likelihood is that they will decrease as the bighorn sheep populations decline and/or disappear. Alternatives that provide more opportunity for recovery of the species also provide input into the communities as both employment and income. Alternatives that provide the most opportunity for economic enhancement as no, or nearly no, risk for contact is left on the PNF. That is not to say, however, that all risk is gone from the landscape as small farm flocks of domestic sheep and goats may still exist on private property or other state and federal lands.

[385] *Ibidem*.

Chapter 9. Ethics & Equity

According to Neil Thagard, Operations Officer for the Wild Sheep Foundation, a letter written in 1997 has been cited as a reason why the PNF should not close DS grazing allotments in Hells Canyon. Thagard stated that various courts have said this letter is not valid, and does not hold up under law. He also opined that this letter has made addressing the current PNF situation more difficult.[386] This chapter presents the 1997 letter and tries to explain why it continues to be a focal point in the BHS/DS interaction issue. It is a matter of trust, fairness, and the ethical obligations of public land managers.

Hells Canyon BHS Restoration Committee Letter (1997)

In 1997, the Supervisor of the Wallowa-Whitman National Forest wrote a letter to the Idaho Wool Growers Association requesting their cooperation with BHS conservation efforts in Hells Canyon (**Exhibit A**). It was signed by him, a BLM official, representatives of the Idaho, Oregon, and Washington fish and game departments, and an officer of the Foundation for North American Wild Sheep (FNAWS, since renamed the Wild Sheep Foundation). Together these partners were called the Hells Canyon Bighorn Sheep Restoration Committee. Their letter states:

> "Bighorn straying into currently active sheep allotments will be considered "at risk" by all of the Committee entities. This means that the Committee recognizes the existing DS operations in or adjacent to the Hells Canyon complex, on both National Forest and private lands, and accepts the potential risk of disease transmission and loss of BHS when bighorns invade DS operations."[387]

With respect to this letter of agreement, in the appeal and subsequent remand of the Payette National Forest (PNF) Land and Resource Management Plan (LRMP), the U.S. Forest Service Chief's Office in 2005 stated, in so many words, that the letter of agreement did not apply to the PNF. However, the Wallowa-Whitman National Forest Supervisor filed a sworn declaration in 2007 that the portion of the PNF in Hells Canyon was included in the agreement (**Exhibit C**). The Chief's Office said,

> "According to the SW Idaho Ecogroup FEIS, the purpose of not reducing suitable domestic sheep acres in the Hells Canyon Management Area under the Payette NF LRMP (Alternative 7) 'was to recognize the 1997 agreement reached by members of the Hells Canyon Bighorn Sheep Restoration Committee with the Idaho Woolgrowers Association and to identify an alternative that recognizes the Payette National Forest System lands were not considered as part of the original restoration plan' (FEIS, p. 3-678). This 'agreement' is from 'Restoration of Bighorn Sheep to Hells Canyon: the Hells Canyon Initiative' (Hells Canyon Initiative), 1997, Bureau of Land Management Technical Bulletin 97-14 (AR Doc. #2462). As that publication states: 'The Memorandum of Agreement covers the portion of the project area within the Pacific Northwest Region (Region 6) of the U.S. Forest Service' (Hells Canyon Initiative, p. 1). Several 'contiguous allotments in BHS habitat' within the Payette NF 'are not covered,' yet are 'currently active and are expected to remain so in the near future' (Hells Canyon Initiative, p. 6).
>
> "The purpose of discussing this agreement in the FEIS is not clear. Since the agreement does not cover the Payette NF portion of Hells Canyon, its apparent use in the design of the Payette LRMP (Alternative 7) is problematical. How can the proposed management of lands not covered by the agreement be considered to 'recognize' that

[386] Thagard, N. (4 February 2009). Comment. WAFWA Wild Sheep Working Group meeting notes, Salt Lake City, Utah.

[387] Richmond, R.M., et al. (16 Jan 1997). Letter from R.M. Richmond, Supervisor, Wallowa-Whitman National Forest, and Bureau of Land Management, Idaho Dept. of Fish and Game, Oregon Dept. of Fish and Wildlife, Washington Dept. of Fish and Wildlife, and North Amercian Foundation for Wild Sheep (now the Wild Sheep Foundation), to Stan Boyd, Executive Director, Idaho Wool Growers Association, re "effort to transplant BHS into historic habitat in Hells Canyon." See **Exhibit A** herein.

> agreement? The Hells Canyon Initiative is not accompanied by an environmental analysis under NEPA and had no public involvement, yet it is relied upon for conclusions pertaining to BHS effects in the FEIS (p. 3-287; see also p. 3-316).[388]

The declaration by former Wallowa-Whitman National Forest Supervisor R.A. Richmond (**Exhibit C**) stated that he was authorized by the U.S. Forest Service to sign the letter on behalf of the Payette and Nez Perce National Forests because management of the portions of those NFs "within or adjacent to" the Hells Canyon National Recreation Area is coordinated by the Wallowa-Whitman NF Supervisor. The Chief's Office did not acknowledge this.

Regardless of the veracity of the opinion expressed by the Chief's Office, the 1997 letter (**Exhibit A**) continues to be a source of mistrust for some DS producers:

> "The ranchers don't believe their sheep are making BHS sick. But they also believe a 1997 agreement they signed with the Wallowa Whitman National Forest, Idaho, Oregon and Washington game departments, the Bureau of Land Management and the Wild Sheep Foundation protected them from any negative consequences of the BHS transplanted from other states mixing with DS.[389]
>
> "'My hope is these agencies and groups that signed this 1997 agreement, somewhere somebody is going to stand up and decide they ought to live up to their promises, especially our own government,' said Ron Shirts, who grazes DS on the Payette. 'If we had signed an agreement similar to that, you know dang well what side of the court the ball would be on. We would be made to stand by it and we would stand by it.'[390]
>
> "But people from those agencies say the agreement covered only one specific release of wild sheep, pertaining only to the Wallowa Whitman forest, and doesn't cover wild sheep introduced to the canyon prior to 1997 or sheep native to the canyon. They also say the agreement was signed without proper federal review and environmental analysis. That was stated in the Forest Service 2007 decision to reject the Payette National Forest plan that allowed grazing to continue based on the agreement.[391]

To sheep producers, the agreement described in the 1997 letter is an important part of the BHS/DS interaction issue that today is either ignored or treated too lightly by others.[392]As mentioned in **Chapter 5**, in 2009 Ron Shirts referred to the letter when he asked the Idaho Legislature to help him preserve his way of life. He cited a passage from the letter which states that "the potential risk, if any, of disease transmission and loss of bighorn sheep when the same invade domestic livestock or sheep operations is accepted." This concept of acceptable risk was codified by the Idaho Legislature in 1997, and reaffirmed by the passage and subsequent implementation of SB1232A in 2009. Finding the balance between BHS conservation and DS production in Idaho is the responsibility of the Idaho Department of Fish and Game, made explicit by their mandate to certify that if DS producers agree to adopt recommended best management practices to maintain separation between DS and BHS, the risk to BHS is acceptable.

From the perspective of some sheep producers perhaps the final word is Ron Shirts' statement: "I make an agreement—I live by that agreement."[393] Mr. Shirts has not yet agreed to adopt the legislative solution he sought, i.e., agree to implement the best management practices for BHS/DS separation recommended by the Idaho Department of Fish and Game.

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[388] U.S. Forest Service (2005), *idem*.
[389] Barker, E. (1 March 2009a), *idem*.
[390] *Ibidem*.
[391] *Ibidem*.
[392] K. Lauer, personal communication with J. O'Laughlin.
[393] *Ibidem*.

Chapter 10. Conclusion

The Payette National Forest (PNF) will make a decision on the Land & Resource Management Plan (LRMP) amendment for bighorn sheep (BHS) ***viability*** in 2010 by issuing a Record of Decision (ROD). The forthcoming decision and Supplemental Environmental impact Statement (SEIS) will lead to actions affecting domestic sheep (DS) operations on the PNF. As part of the decision process, on 25 January 2010 the PNF will release two sets of information that will contribute to better understanding of the BHS/DS situation: 1) quantitative risk assessment regarding BHS/DS interaction (see **Chapter 4**), and 2) economic analysis in more depth than in the Draft SEIS issued in September 2008 (see **Chapter 8**). Following a 45-day public comment period, PNF officials will release the ROD and SEIS.

As we understand the BHS/DS situation on National Forest System lands, "wildlife habitat shall be managed to maintain ***viable*** populations of existing native and desired non-native vertebrate species in the planning area."[394] The PNF is one such planning unit, and officials are revising a risk analysis of BHS/DS interaction to reduce risk of disease transmission that will support the ROD. Although conservation biology literature indicates that numerical multi-attribute measures of ***viability***[395]would be useful, such measures perhaps are not determinable in this situation because of the lack of information.[396] However, an overarching concept of ***viability*** can be described, and the State of Idaho clearly should have a leadership role in doing this.[397] Furthermore, the State of Idaho signed a Proclamation on 1 June 2006 guiding its government-to-government relationship with American Indian Tribes surrounded by the state that serves as a template for state-tribal consultation to resolve issues such as BHS/DS interaction (see **Chapter 7**).

To comply with a new state law, the Idaho Department of Fish and Game (IDFG) Director has worked with DS producers on a voluntary basis and recommended "best management practices" that will move towards BHS ***viability***, in part by keeping DS and BHS separated and thereby reducing risk of disease transmission to acceptable levels. The State of Idaho hopes that the PNF will consider these individual management plans, certified as having acceptable levels of risk to BHS, when PNF officials make DS grazing allotment decisions.

If the IDFG defines ***viability*** differently than the PNF, the state definition may not be as useful as it could be for guiding U.S. Forest Service decisions.[398] The IDFG is cooperating with the PNF and their ongoing risk analysis quantification efforts, and that in turn likely will inform the state's effort to craft a comprehensive BHS plan.

The IDFG now is refocusing its attention on developing a BHS management plan to restore and maintain ***viable*** BHS populations in areas where it is socially and culturally desirable to do so. The State of Idaho would like all participants with an interest in BHS and DS to be engaged in the process of developing this comprehensive BHS plan.

Whatever PNF officials decide in 2010, the trajectory of current events makes it likely that the BHS amendment to the LRMP will be appealed. It is then likely that the BHS/DS interaction issue will return to court where a federal judge will have the final say as to whether the PNF has appropriately fulfilled its mandates under federal laws to provide habitat supporting BHS ***viability***. Alternatives to the current situation and event trajectory may exist, but It was not our job to find them.

[394] 36 C.F.R. 219.19.
[395] Regan et al. (2002), *idem*.
[396] P. Soucek & S. Rainville, review comments.
[397] C. McCarthy, review comments.
[398] P. Soucek & S. Rainville, review comments.

Appendix A. Chronology of Events in the BHS/DS Situation

1945	BHS had been extirpated from Hells Canyon	Smith, D.R. (1954). *The Bighorn Sheep in Idaho: Its Status, Life History, and Management*. Wildlife Bulletin No. 1, Idaho Dept. of Fish and Game, Boise. 154 pp.
1971	First translocation of BHS to Oregon portion of Hells Canyon	
1975	First translocation of BHS to Idaho portion of Hells Canyon	
1993	Wallowa Whitman NF terminates DS grazing in Oregon potion of Hells Canyon	(Schommer 2002)
5 Jan 1994	Letter from Hells Canyon National Recreation Area District Ranger to Director, Idaho Dept. of Fish and Game	• Agreement on avoiding intermingling of DS and BHS • Agreement in being specific to Hells Canyon • Agreement on mitigating impacts to permittees • Agreement with multiple-use management, with priority of incompatible uses set by HCNRA Act
1995	Restoration Plan for Hells Canyon BHS	Hells Canyon Initiative established to accelerate BHS restoration in canyon and surrounding areas in Idaho, Oregon, and Washington
22 Jan 1996	Letter from D.L. Hunter, IDFG wildlife veterinarian, to Idaho Wool Growers Association regarding BHS die-off in Hells Canyon	• **Exhibit B** herein • Counters newspaper articles covering die-off • DS are not incriminated in this incident
1996	Challenge to terminate DS grazing in Oregon portion of Hells Canyon upheld in court	(*Idaho Wildlife Federation et al. v. Richmond et al.* Civil No. 94-1347-AS)

16 Jan 1997	Letter from Wallowa-Whitman National Forest Supervisor (and others listed below) to Idaho Wool Growers Association regarding bighorn sheep (BHS) transplant to Hells Canyon
	• USDI Bureau of Land Management (BLM)
	• Idaho Dept. of Fish & Game
	• Oregon Dept. of Fish & Wildlife
	• Wash. Dept. of Fish & Wildlife
	• Foundation for North American Wild Sheep (FNAWS)
		• Hells Canyon BHS Restoration Committee seeking support of DS sheep industry for repopulation
		• BHS that contact DS will be considered "at risk"
		• Idaho, Oregon and Wash. fish & wildlife agencies will
		  ○ assume responsibility for BHS loss if disease spreads due to DS contact, and
		  ○ take actions to reduce loss without adversely impacting existing DS operators.
		• Map shows project area and allotments for determination of "at risk"
		• Committee accepts risk of disease transmission and loss of BHS when BHS stray into DS allotments

24 Mar 1997	Idaho Legislature passes HB 337 creating section 36-106(e)(5)(D) of Idaho Code	• Session Law Chapter 284 • Appears to have codified the 16 Jan 1997 letter. • Unclear is who accepts risk of disease transmission and loss of BHS when BHS stray into DS allotments.
Nov 1977	Payette National Forest (PNF) Preliminary Analysis of Management Situation	Identifies need for change in management direction to include reduction/elimination of conflicts and disease transmission between BHS and DS

25 Jul 2003	Revised Payette National Forest (PNF) Land and Resource Management Plan (LRMP) signed by Regional Forester, USFS Region 4	• LRMP FEIS notes that "BHS populations have greatly declines" and • states that "where DS and BHS come into direct contact, BHS almost always die from infections, whereas DS are unaffected" (p. 3-286) http://www.fs.fed.us/r4/sawtooth/arevision/Pnf_rod.pdf
2004	Appeals of 2003 PNF LRMP filed; appeals denied by Regional Forester; appeals sent to USFS Chief's Office	• 5 different appeals, filed by: ○ Idaho Sporting Congress ○ Idaho Conservation League, et al. ○ Erik Ryberg ○ Nez Perce Tribe ○ Hells Canyon Preservation Council
9 Mar 2005	Appeal of 2003 PNF LRMP upheld by Chief's Office, USDA Forest Service (USFS)	• BHS issues in the appeal were upheld. • Reverses Regional Forester's decision and remands plan to PNF • PNF LRMP does not provide adequate habitat to maintain a ***viable*** BHS population in Hells Canyon Management Area • PNF LRMP not in compliance with National Forest Management Act (NFMA) regulations, and maybe not with Hells Canyon National Recreation Area Act. • PNF to do BHS ***viability*** analysis • PNF begins NEPA analysis http://www.fs.fed.us/emc/applit/includes/woappdec/050309_payette_decision.pdf
6 Feb 2006	"Risk Analysis of Disease Transmission between Domestic Sheep and Bighorn Sheep on the Payette National Forest"	• Risk Analysis of Disease Transmission (RADT) Committee report • This PNF risk analysis report is part of BHS ***viability*** analysis ordered by March 2005 PNF LRMP appeal decision
2 Nov 2006	"Disease Transmission between Domestic and Bighorn Sheep, Payette National Forest, Summary of the Science Panel Discussion"	• Payette Principles Committee Report • 11 experts convened by the PNF to clarify science-based concerns from 6 Feb 2006 PNF risk analysis • Allowed panelists to provide additional science-based information regarding disease transmission and its risk of occurring on the PNF that the PNF supervisor should consider in conjunction with the risk analysis • Results in the "Payette Principles" (WAFWA 2007)
15 Apr 2007	Western Watersheds Project (WWP), Hells Canyon Preservation Council, and The Wilderness Society file for temporary restraining order and/or preliminary injunction against USFS	• Seek to enjoin continued DS grazing on several Hells Canyon and Salmon River allotments • DS producers not able to turn out sheep on allotments in 2007 (mentioned in 11 Feb 2008 press release by Idaho Chapter of Foundation for North American Wild Sheep [FNAWS]) http://www.westernwatersheds.org/legal/legal.html
May 2007	PNF agrees to BHS protection plan drawn up by Nez Perce Tribe (NPT)	• No grazing on two allotments in Hells Canyon and curtailed grazing on two allotments on Salmon River. (reported in *High Country News,* 1 Oct 2007)
8 May 2007	PNF District Ranger modifies Smith Mountain grazing permit	(mentioned in 21 May 2007 letter to Shirts Brothers Sheep Co.)

21 May 2007	PNF Supervisor's letter to Shirts Brothers denying their appeal of modified grazing permit	• District Ranger's decision to preclude grazing on the western portion of the Smith Mountain Allotment is consistent with the following: ○ Chief's direction to the PNF to complete additional environmental analysis to insure compliance with federal laws, and ○ PNF risk analysis report and workshop findings.
Summer 2007	PNF assembles group from USFS, NPT, Shoshone-Bannock Tribe, Shoshone Paiute Tribe, Confederated Tribes of the Umatilla Indian Reservation, and states of Oregon, Washington, and Idaho	• Meeting to assist PNF in developing recommendations that will become amendment to PNF LRMP (mentioned in 11 Feb 2008 press release by Idaho Chapter of FNAWS)
12 Oct 2007	Letter from Governor Otter to Directors of Idaho Dept. of Fish & Game (IDFG) and Idaho Dept. of Agriculture (IDAg) regarding BHS and DS	• Asks directors to provide recommendations for developing a working group, including possible membership and goals • Similar to Wyoming BHS/DS Interaction Working Group
Nov 2007	Governor Otter directs IDFG and IDAg to assemble and co-chair working group to develop statewide BHS/DS separation strategy, with goal of interim guidance	(event was mentioned in the Interim Strategy draft document, 15 Feb 2008)
13 Nov 2007	U.S. District Court Memorandum Decision and Order in *WWP v. USFS* (see 15 April 2007)	• Oral motion from intervenor Carlson Livestock Co. to stay USFS decision prohibiting DS grazing on Allison-Berg allotment from 28 Oct 2007 to 1 Mar 2008 • Court denies motion (see Winmill 2007).
15 Feb 2008	Interim Strategy for Managing Separation Between BHS and DS in Idaho adopted by Idaho Fish and Game Commission	• Written by IDFG with consultation from IDAg • Advice from BHS/DS Working Group • Protocols for temporal and spatial management of BHS and DS
19 Mar 2008	IDFG meets with BLM, USFS, and IDAg to begin implementation of Interim Strategy	(meeting mentioned in 18 April 2008 letter from USFS to IDFG)
26 Mar 2008	Draft Strategy for Managing Separation between BHS and DS and Goats in the Salmon River Area released by IDFG	• Designed to be implemented at allotment level for use during 2008 season • Contains specific Best Management Practices (BMPs) (description from 18 April 2008 USFS letter to IDFG)
July 2008	Western Association of Wildlife Agencies (WAFWA) meeting	(mentioned in 30 April 2009 letter from IDFG Director to USFS R4 TES Program Director)
Aug 2008	Sen. Crapo's office begins a collaborative process focused on the Payette NF	• Nez Perce Tribe, American Sheep Industry Ass'n, Wild Sheep Foundation

Sep 2008	*A Review of Disease Related Conflicts Between Domestic Sheep and Goats and Bighorn Sheep*, RMRS-GTR-209 released	• Mechanisms of disease transmittal not fully understood, but prudent to keep temporal and/or spatial separation. • Scientific literature and expert panel agree
Sep 2008	Lawsuit filed to force retraction of PNF Risk Analysis Panel findings & "Payette Principles"	• Suit filed by Idaho Wool Growers Association and Dr. Marie Bulgin, President of the Association and University of Idaho faculty member
18 Sep 2008	"Draft Supplemental Environmental Impact Statement" (DSEIS) for PNF released for public comment	• DSEIS In response to 9 March 2005 appeal decision on BHS issues. • Public comment period opens this date. http://www.fs.fed.us/r4/payette/publications/big_horn/DSEIS_Entire_Document.pdf
23 Sep 2008	Meeting of Idaho BHS/DS Working Group, Boise	• Meeting objectives: ○ Inform group who developed interim strategy about collaborative advisory process for long-term strategy ○ Invite input regarding collaborative goals, composition, and structure ○ Lessons learned from interim process and improvements
Nov 2008	U.S. Forest Service publication RMRS-GTR-209 (see Sep. 2008) challenged under Data Quality Act by livestock groups	• Coalition of DS interests asks USFS to retract report, and all reliance upon it in forest plans and amendments and grazing permit decisions. • FS will respond by 1 May 2009 (see that date)
26 Jan 2009	Western Watersheds Project submits suit concerning BHS on Sawtooth NF	(USDA Forest Service Update, 25 March 2009)
26 Feb 2009	Meeting of Idaho BHS/DS Advisory Group, Boise	• Objectives: ○ Charter for group ○ Next steps, dates, topics ○ Timing and content of informational presentations at future meetings (PAG has the meeting Agenda and Summary of Meeting Agreements – Draft)
16 Mar 2009	End of PNF DSEIS comment period.	• More than 14,000 comments received. • ROD expected in early 2010
25 Mar 2009	Letter from Regional Forester, USDA Forest Service, Inter-mountain Region to IDFG Director regarding adding BHS to R4 sensitive species list	• In Idaho, sensitive species designation would affect populations on PNF, Boise, Sawtooth, Salmon-Challis, and Caribou-Targhee • Sensitive species would increase BHS management emphasis to insure ***viability*** and preclude ESA listing
31 Mar 2009	SB 1175 introduced in Idaho Senate	• To Resources and Environment Committee
31 Mar 2009	Meeting of Idaho BHS/DS Advisory Group, Boise	(PAG has agenda, but not minutes)
9 Apr 2009	Senate approves SB 1175	• Vote: 27-7-1
16 Apr 2009	House approves SB1175	• Vote: 51-17-2

22 Apr 2009	Meeting of Idaho BHS/DS Advisory Group, Boise	(PAG has agenda, but not minutes)
24 Apr 2009	SB 1232 introduced in Idaho Senate	• To State Affairs Committee
25 Apr 2009	Governor Otter vetoes SB 1175	• Governor Otter expresses desire to seek collaborative solution (PAG has letter of transmittal)
28 Apr 2009	Senate passes SB 1232A	• Vote: 26-8-1
29 Apr 2009	House passes SB 1232A	• Vote: 47-20-3
30 Apr 2009	Response letter from IDFG Director to Threatened, Endangered & Sensitive Species Program Leader, USDA Forest Service, Intermountain Region, regarding adding BHS to R4 sensitive species list	• Addresses six factors from USFS Regional Forester's letter of 25 March 2009 • Response does not imply endorsement of adding BHS to USFS Intermountain Region sensitive species list by IDFG or Idaho Fish and Game Commission
30 Apr 2009	University of Idaho's College of Natural Resources Policy Analysis Group's (PAG) Advisory Committee suggests a 2-phased analysis of the BHS/DS situation	• Phase 1: Current situation analysis, to be completed before the 26 May 2009 meeting of the Idaho BHS/DS Advisory Group • Phase 2: At a later date consider assembling a panel of academic experts to identify options for improving the current situation
1 May 2009	U.S. Forest Service responds to Data Quality Act challenge on RMRS-GTR-209 (see Nov 2008)	• Challenge requesting retraction or new report denied • Challengers given 45 days to file a Request for Reconsideration (see 11 June 2009)
7 May 2009	Governor Otter signs SB 1232A	• Session Law Chapter 314, effective 7 May 2009 • Idaho Code § 36-106(e)5(D)
	Groups resign from Idaho BHS/DS Working Group in protest over SB 1232A	• Nez Perce Tribe • Idaho Conservation league • Wild Sheep Foundation
26 May 2009	Scheduled meeting of Idaho BHS/DS Advisory Group	• Cancelled by IDFG in order to focus on requirements of SB 1232A
19 May 2009	R14 episode (see page 40)	• Sick BHS ram roams near DS on private land and after being pursued for 3 weeks is shot dead by IDFG • Autopsy showed no evidence of DS pathogens
11 June 2009	Request for Reconsideration under Data Quality Act filed on RMRS-GTR-209	• See 28 August 2009 for outcome
17 June 2009	Dr. Marie Bulgin, Director, Caine Veterinary Teaching and Research Center, University of Idaho, placed on administrative leave while her testimony on DS/BHS disease transmission is investigated	• Dr. Bulgin had testified in federal court and before the Idaho legislature that there is no evidence that DS can transmit respiratory disease to BHS under rangeland conditions • Dr. Bulgin was President of the Idaho Wool Growers Association, and filed suit against the U.S. Forest Service for refusing to allow her to be on BHS Risk Analysis or Science Panels. She won the lawsuit

1 July 2009	Judge Winmill finds PNF violated FACA and NFMA in Payette Science Panel process	• See **Box 3-1**
8 July 2009	Addendum to request for reconsideration under Data Quality Act filed on RMRS-GTR-209	• Subsequent to 1 July 2009 Judge Winmill decision regarding FACA & NFMA violations in Payette Science Panel process
29 July 2009	U.S. Forest Service Intermountain Regional Forester declares BHS a "sensitive" species	• In Idaho, sensitive species designation affects BHS populations on Payette, Boise, Sawtooth, Salmon-Challis, and Caribou-Targhee National Forests • Sensitive species increase BHS management emphasis to insure ***viability*** and preclude ESA listing
5 Aug 2009	IDFG Director certifies that for 11 of the 18 DS operations, best management practices will bring risk to acceptable level; soon after a 12th is certified	• 4 operations did not respond to IDFG • 2 operations are negotiating with IDFG at this writing
7 Aug 2009	U.S. Forest Service retracts RMRS-GTR-209 (see Nov 2008)	• Idaho District Court provided reasonable rationale to retract the report without additional analysis of other concerns included
20 Aug 2009	Wild Sheep Foundation agrees to return to Idaho BHS/DS Advisory Group	(*Lewiston Morning Tribune*, 21 Aug 2009)
28 Aug 2009	U.S. Forest Service notifies units regarding retraction of RMRS-GTR-209 (see Sept 2008 and Nov 2008)	• All NFs instructed not to cite this report in decisions • NFs can use science, including science in this report, to inform decisions • Instructions based on outcome of IWGA/Bulgin lawsuit as well as Data Quality Act challenge
29 Sep 2009	Idaho BHS/DS Advisory Group reconvened	• Governor's Office appoints Jim Caswell, former Director, Bureau of Land Management, to facilitate
9 Nov 2009	At request of U.S. Forest Service, court issues additional guidance on use of underlying science in Payette Science Panel reports	• Risk Analysis of Disease Transmission (RADT) and "Payette Principles" reports retracted • NFs can use the science cited in these reports to draw independent conclusions in support of decisions, but may not cite the reports
25 Jan 2010	Payette NF releases supplementary information	• Analysis of alternatives • Quantitative risk analysis of disease transmission • Economic impact analysis
19 Mar 2010	Public comment period for responding to supplementary information ends	Supplementary information (as per above) on which to comment is available at http://www.fs.fed.us/r4/payette/publications/big_horn/index.shtml
May 2010	Payette NF staff expected to issue Record of Decision (ROD) and Supplemental Environmental Impact Statement (SEIS) on amendment of the LRMP to provide BHS ***viability***	Target date mentioned in press release available at http://www.fs.fed.us/r4/payette/news/2010/012510_BHSsuppinforelease.shtml
?? 2010	Payette NF staff will develop Annual Operating Instructions for grazing allotments	

Appendix B. Organizations' Perspectives on the BHS/DS Situation

Governments	
Federal	
U.S. Department of Agriculture, Forest Service (USFS)	• Payette National Forest land and resource management plan must provide adequate habitat to maintain ***viable*** BHS population (9 March 2005, Appeal of 2003 PNF LRMP upheld by USFS Chief). • Must comply with NFMA regulations and Hells Canyon National Recreation Area Act (9 March 2005, Appeal of 2003 PNF LRMP upheld by USFS Chief). • Conclusive proof of DS to BHS diseases transmission lacking, but preponderance of evidence suggests that is the case (evidence introduced in WWP v. USFS, 13 November 2007). • Intend to support collaborative efforts (5 March 2008 letter from USFS Intermountain Regional Forester to Chairman of Idaho Fish and Game Commission). • Designated BHS a "sensitive" species in the Intermountain Region on 29 July 2009. • Current USFS objectives: ○ Address concerns about working landscapes and open space preservation to inform agency policy; ○ Facilitate multi-partner resolution to BHS/DS conflicts by providing the states and federal land management agencies with information; ○ Contribute to scientific literature on BHS/DS management and techniques; and ○ Develop Washington Office directives for field operations (March 2009 "Overview of Disease Transmission from Domestic to BHS Issue," USDA Forest Service Update)
U.S. Department of the Interior, Bureau of Land Management (BLM)	• Have been involved in several BHS reintroduction efforts, including 1997 Hells Canyon initiative. http://www.blm.gov/id/st/en/info/publications/technical_bulletins/TB_97-14.print.html
American Indian Tribes	
Nez Perce Tribe (NPT)	• BHS important for cultural and sustenance reasons. • BHS once most common big game species in NPT homeland. • 1855 Treaty guaranteed right to hunt BHS on open and unclaimed land. • Statewide policy calling for restoration of BHS needed. • NPT is pursuing restoration across Treaty Territory, and population growth. • To achieve goal, NPT needs state and federal policy: ○ No contact policy where DS grazing is not permitted within or adjacent to occupied BHS range; ○ Separation policy with no-grazing buffers outside and adjacent to occupied BHS range; and ○ Adoption of two previous policies in adaptive management framework. • NPT would support state policy that is: ○ Grounded in restoration;

Nez Perce Tribe (NPT, continued)	○ Science-based, incorporating most recent management principles, including no-contact and separation policies; and ○ Applies an adaptive management framework. • State policy must be consistent with federal policies. (From: 28 January 2008 letter from Nez Perce Tribal Committee to Governor Otter submitting NPT recommendations for management of BHS/DS separation.)
Shoshone-Paiute Tribe	• Participated in 26 February 2009 Idaho BHS/DS Advisory Group meeting, but the Tribe's perspective was not recorded.
State	
Idaho Legislature	• Passed Idaho Code 36-106(e)(5)(D) in 1997 providing BHS management direction for IDFG. • Passed SB 1232 in 2009 with modified BHS management direction for IDFG.
Idaho Governor C.L. "Butch" Otter	• Has sought collaborative solutions by establishing the Idaho BHS/DS Working Group for the Interim Strategy (Nov 2007) and long term with the Idaho BHS/DS Advisory Group (Feb 2009).
Idaho Agencies	
Idaho Department of Fish and Game (IDFG)	• Statutory duties, including to preserve, protect, perpetuate, and manage the wildlife of the state (Idaho Code 36-103). • BHS management direction in Idaho Code 36-106(e)(5)(D) and recently enacted SB 1232.
Idaho Department of Agriculture (IDAg)	• Responsible for ensuring imported wildlife are tested for presence of communicable diseases that can be transmitted to domestic livestock (Idaho Code 25-210(3)).
Idaho Department of Lands (IDL)	• Constitutional mandate to "secure the maximum long term financial return" from state endowment lands. (Idaho Constitution, Art. IX, Sec. 8) • 1.7 million acres leased for domestic livestock grazing, produced $1.6 million in revenue FY2007 (net revenue $74,473). • Several grazing leases are in jeopardy due intermingled nature of IDL land ownership with USFS, and proximity to BHS habitat. (review draft comments from IDL Director and Southern Operations Chief to PAG Director, 13 May 2009)
Interest Groups	
Professional Associations	
Western Association of Fish and Wildlife Agencies (WAFWA)	• Objectives: to protect the right of jurisdiction of the western states over their wildlife resources on public and private lands; to scrutinize carefully state and federal wildlife legislation and regulations and to offer opposition to legislative proposals or federal regulations that are deemed inimical to the best interests of the members; to consult with and make recommendations to the federal wildlife and public land agencies in order that federal wildlife management programs and programs involving federal aid to the western states shall be so conducted as to be in the best interests of the western states; to serve as a clearinghouse for the exchange of ideas concerning wildlife management and research techniques.

WAFWA (continued)	• Priority Science and Research Needs, Terrestrial Priorities: "Surveillance, monitoring, and management techniques for wildlife diseases" (http://www.wafwa.org/pdf/PriorityScienceandResearchNeeds.3.4.2.pdf). • Preponderance of evidence in scientific literature evidence indicates significant risk of DS to BHS disease transmission.
Society for Range Management (SRM)	• SRM supports managing combinations of rangeland uses, which best meet the needs and desires of people and are compatible with the sustainability and adaptability of the land. Multiple-use management, where appropriate, is encouraged on both public and private lands. • Uses of rangeland the SRM supports includes: ○ Livestock Grazing: Rangelands provide a forage base for livestock, and livestock are a management tool for rangelands. The Society supports planned and monitored grazing based on scientific principles. ○ Wildlife Management: Rangelands provide habitat for many species of wildlife. The Society promotes rangeland management practices to maintain or restore wildlife habitat. http://www.rangelands.org/about_pos_rangeresources.shtml
Citizen Conservation Groups	
Wild Sheep Foundation (formerly Foundation for North American Wild Sheep (FNAWS))	• Mission: enhance wild sheep populations, promote professional wildlife management, educate the public about wild sheep and the conservation benefits of hunting, encourage fair chase hunting, and protect sportsmen's rights. • In 2007, FNAWS offered to buy grazing allotments on the PNF; also suggested switching allotments to cattle. (*High Country News*, 1 October 2007)
Idaho Sportsmen's Caucus Advisory Council (ISCAC)	• Mission: to protect and improve Idaho's wildlife heritage of hunting, fishing, and trapping, for present and future generations by: ○ Providing an organization where Idaho's sportsmen's organizations can come together to seek consensus on issues important to sportsmen. ○ Providing education to the Idaho sportsmen's organizations, the Idaho Legislature and other governmental entities on sportsmen's issues. ○ Being an information resource to the Legislature and other governmental entities on issues, legislation and rules affecting Idaho's wildlife heritage of hunting, fishing and trapping. • Need for science-based policy. • ISCAC recommends that no interim policy be set and that the BHS/DS working group be allowed to gather the needed data, perform analysis, discuss results, collaborate and gain a consensus before a policy is developed http://www.idahoscac.org/wp-content/uploads/2008/02/08_sheep_working_group_news_release.pdf

Idaho Conservation League (ICL)	• Mission: preserves Idaho's clean water, wilderness and quality of life through citizen action, public education, and professional advocacy. • Wants opportunity to be part of BHS/DS resolution without litigation (12 February 2008 letter from ICL to Governor Otter).
Western Watersheds Project (WWP)	• Mission: to protect and restore western watersheds and wildlife through education, public policy initiatives and litigation. • WWP is one of six steering committee groups in the National Public Lands Grazing Campaign, a plan to end abusive livestock grazing on America's public lands and compensate public-lands ranchers in the process. • "To Do: Get all cows and sheep off public lands ASAP!" http://www.westernwatersheds.org/policy-memos/2
Hells Canyon Preservation Council	• Mission: protects and restores the inspiring wildlands, pure waters, unique habitats and biodiversity of the Hells Canyon-Wallowa and Blue Mountain Ecosystems through advocacy, education and collaboration, advancing science-based policy and protective land management. • Plaintiff party to WWP v. USFS lawsuit. • Working with a collation of BHS advocates to pressure the Payette and Nez Perce National Forests to close DS allotments in bighorn habitat. http://www.hellscanyon.org/whatwedo/bighorn.php
Trade Associations and Business Firms	
American Sheep Industry Association	• ASI is the national organization representing the interests of more than 82,000 sheep producers located throughout the United States [and] a federation of 45 state sheep associations as well as individual members. • ASI's roots date to 1865 • ASI provides the opportunity for producers to work with others in molding the policies and programs that improve the markets for sheep producers through enhanced marketing opportunities and reduced production costs. • ASI is also the best option for those producers wanting to provide input on issues affecting his or her individual sheep operation but in need of a national, cooperative effort to find resolutions. • "The way in which some land management agencies are controlling the interaction of bighorn sheep and domestic herds is one of the most significant threats to the ***viability*** of the sheep industry in the western United States. ASI continues to encourage collaborative efforts in research, surveillance, diagnostics, epidemiology and policy decisions. This issue will be resolved using good sound science and working side-by-side with land managers to get a result everyone can trust." — Jim Logan, DVM (Wyo.), 2008 Animal Health Committee Chair ("American Sheep Industry Association" http://www.sheepusa.org/get_file/file_id/2b2cb4693c577913f99a3599f6f88796)

Idaho Wool Growers Association, Boise, Idaho	• Mission: to forward the production and consumption of lamb and wool and to assist all persons engaged in the sheep industry in Idaho. • Important "to work for federal and state rules and regulations that forward the industry while at the same time protect and enhance Idaho's rangeland resources." • Believes "it is important that committees established by federal agencies include representation from all parties." (http://www.idahowool.org/)
Shirts Brothers Sheep Co., Weiser, Idaho	• Believes the USFS committed to hold DS operators harmless for any disease transmission problem under 1997 letter/agreement (**Exhibit A** herein). • Believes Idaho Legislature codified the "hold harmless" agreement as Idaho Code 36-106(e) 5.D. • Believes that before the USFS changes allotment guidelines, it needs to prove: ○ pathogens can be transmitted from DS to BHS, ○ DS on these allotments have pathogens, ○ levels at which these pathogens are lethal, ○ under what environmental conditions pathogens occur, and ○ that there are no other sources of pathogens than DS. • Inconclusiveness of science should not provide basis for BHS/DS separation. • Believes that birds may also carry pathogen . (There is absolutely no evidence to support this idea. D. Toweill, review comments) • What is "sufficient" contact for pathogens to be passed between DS and BHS? • Why not eliminate other environmental stressors that lead to pathogen outbreaks? • Believes that the USFS should eliminate relocating BHS as an alternative. • Believes that the USFS needs to redo EIS and maintain existing Payette National Forest DS allotments. (Press release "Payette National Forest Releases A Draft EIS as Related to BHS and DS that Omits Commitments Made in 1997 and That Omits Analysis of Many Critical Elements," 7 October 2008.)
Carlson Livestock Co., Riggins, Idaho	• Testified that no evidence of their DS grazing in Salmon Rover canyon harbor respiratory disease organisms • Testified that BHS herds in their portion of the Salmon River canyon are not infected with respiratory disease organisms • In testimony cited 50 years of experience without a dead BHS on their federal grazing allotment • Testified that closure of grazing allotment in 2007 resulted in $75,600 financial loss for replacement forage (*Western Watershed Project v. U.S. Forest Service*, 2007)

Exhibit A – Page 1 of 2

United States Department of Agriculture
Forest Service
Wallowa-Whitman National Forest
P. O. Box 907
Baker City, OR 97814

Reply to: 2210

Date: January 16, 1997

Idaho Woolgrowers Association
Mr. Stan Boyd, Executive Director
P. O. Box 2596
Boise, ID 83701

RECEIVED
MAR 1 1 1997
I. W. G. A.

Dear Mr. Boyd:

The effort to transplant bighorn sheep into historic habitat in Hells Canyon is a cooperative project involving the States of Idaho, Oregon, and Washington, The Foundation for North American Wild Sheep, the Forest Service, and the Bureau of Land Management. The Hells Canyon Bighorn Sheep Restoration Committee (the committee) is interested in having the support of the woolgrowers industry for this effort to repopulate parts of Hells Canyon with bighorn sheep.

The Committee understands that bighorns may occasionally migrate outside of their designated range and come into contact with domestic sheep. These bighorns will be considered "at risk" for potential disease transmission and death. There is also the potential for an exposed bighorn to leave the area and spread disease to other bighorn sheep. Under these conditions, the Idaho Department of Fish and Game, the Oregon Department of Fish and Wildlife, and the Washington Department of Wildlife will assume the responsibility for bighorn losses and further disease transmission in their respective states. The three Departments will also take whatever action is necessary to reduce further losses of bighorn sheep without adversely impacting existing domestic sheep operators. The enclosed map clearly delineates the project area within the Hells Canyon complex. Bighorns straying into currently active sheep allotments will be considered "at risk" by all of the Committee entities. This means that the Committee recognizes the existing domestic sheep operations in or adjacent to the Hells Canyon complex, on both National Forest and private lands, and accepts the potential risk of disease transmission and loss of bighorn sheep when bighorns invade domestic sheep operations.

FS-6200-11b (7/81)

Exhibit A – Page 2 of 2

The Committee will make every effort to keep interested parties informed about actions being considered by the Committee in its effort to repopulate Hells Canyon with bighorn sheep. We will provide all health information gathered on bighorn sheep to the woolgrowers industry and other interested parties.

Sincerely,

R M Richmond — Jan. 16, 1997
USDA Forest Service, Wallowa-Whitman NF — Date

Tom Rich — JAN 23, 1997
Idaho Dept. of Fish and Game — Date

James W. Grey — Feb. 26, 1997
Oregon Dept. of Fish and Wildlife — Date

Wm C Gaffney — Feb 21, 1997
Washington Dept. of Fish and Wildlife — Date

Allan E. Thomas — Jan. 24, 1997
Bureau of Land Management — Date

Duncan B Gilchrist — March 4, 1997
Foundation for N. American Wild Sheep — Date
secretary

Enclosure

cc: Forest Supervisor, Payette NF
Forest Supervisor, Nez Perce NF

Exhibit B

IDAHO FISH & GAME
WILDLIFE HEALTH LABORATORY
16569 S. 10th Ave., Caldwell, ID 83605
(208) 327-7070, (208) 454-7638
(208) 454-7667 FAX

January 22, 1996

Mr. Stan Boyd
Executive Director
Idaho Wool Growers Association
802 W. Bannock
Boise, Idaho 83701

Dear Stan:

This letter is concerning the recent outbreak of pneumonia in bighorn sheep in Hells Canyon. The original animals handled were a domestic goat and two bighorns. These animals were euthanized and tested. Test results indicated these animals did share similar pathogens.

However, the animals dying of pneumonia in our research facility are dying from a different organism. This organism was identified as Pasteurella multocida. Several animals have died of pneumonia upstream from where the 72 bighorn sheep were removed. A Pasteurella multocida was also found in these animals.

As opposed to the newspaper articles concerning the die off, there are no domestic sheep incriminated in this episode. Unfortunately, Oliver Wetz's allotment further upstream was implicated as the potential source of this pneumonia complex. The law suite was filed without input from any of the agencies involved in this matter. Please extend our regrets for any embarrassment the press may have caused. At this point in time, there is no evidence to suspect his domestic sheep or any domestic sheep as the carriers of this organism.

Please inform Mr. Wetz that the information presented in the press did not come from the Wildlife Health Laboratory, or from any of the Wildlife Management Agencies from Idaho, Oregon, and Washington, or from the Foundation of North American Wild Sheep.

In the future, we will fax copies of all news releases from the agencies mentioned above and will contact you with any information on our continuing investigations. Please contact me if you have questions or concerns in this manner.

Sincerely,

David L. Hunter, D.V.M.
Wildlife Veterinarian

DLH/tds
Attachments
cc: Jerry Conley, Jeff Siddoway, Lloyd Oldenburg

Exhibit C – Page 1 of 3

WILLIAM G. MYERS III (ISB #5598)
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Facsimile: (208) 343-8869
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Attorneys for Amici Curiae
Idaho Wool Growers Association and Public Lands Council

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF IDAHO

WESTERN WATERSHEDS PROJECT, et al. Plaintiffs, vs. U.S. FOREST SERVICE, Defendant.	Civil Action No. 4:07-cv-00151-BLW DECLARATION OF ROBERT M. RICHMOND

I, Robert M. Richmond, declare, pursuant to 28 U.S.C. § 1746, that the following statements are true and correct:

1. I was employed by the United States Forest Service for 36 years until my retirement on March 28, 1997 at which time I was the Forest Supervisor of the Wallowa-Whitman National Forest. I had served in that capacity for nine and one-half years prior to my retirement.

Exhibit C – Page 2 of 3

2. I graduated from the University of Idaho with a Bachelor of Science degree in Forestry in 1961. I spent much of my career in range management on national grasslands and national forests in North Dakota, Montana, and Oregon, including service as Director of Range Management for the United States Forest Service Region 6.

3. In my capacity as the Wallowa-Whitman National Forest Supervisor, I signed a letter to the Idaho Wool Growers Association dated January 16, 1997, attached hereto as Exhibit 1. The intent of that letter was to hold domestic sheep operations harmless from any risk associated with the introduction of bighorn sheep into the Hells Canyon complex. The parties that signed the letter accepted any and all risk associated with disease transmission and death from domestic sheep and bighorn sheep interaction and that domestic sheep operators would not be held accountable or liable for any such disease transmission or death.

4. As stated in the letter, "This means that the Committee recognizes the existing domestic sheep operations in or adjacent to the Hells Canyon complex, on both National Forest and private lands, and accepts the potential risk of disease transmission and loss of bighorn sheep when bighorns invade domestic sheep operations." We inserted this language with the intention of including not only bighorn sheep and domestic sheep that might interact on grazing allotments on the Wallowa-Whitman National Forest but also on those portions of the Payette National Forest and Nez Perce National Forest within or adjacent to the Hells Canyon complex.

5. I was one of six signatories to the letter, Exhibit 1, and the only signatory on behalf of the Forest Service. The letter was copied to the Forest Supervisors for the Payette National Forest and Nez Perce National Forest. The reason that I was the only signatory on behalf of the three National Forests was because the Forest Service had decided around 1980 that the Forest Supervisor of the Wallowa-Whitman National Forest would supervise the Hells

Exhibit C – Page 3 of 3

Canyon National Recreation Area regardless of the fact that it covers land within the jurisdiction of other national forests in three different regions of the U.S. Forest Service. I was, therefore, authorized to sign the letter on behalf of the Nez Perce and Payette National Forests and did so knowing that the letter and its "hold harmless" language was intended to and in fact did apply to those national forests.

I declare under penalty of perjury that the foregoing is true and correct.

Dated this 26th day of April, 2007.

/s/ Robert M. Richmond
Robert M. Richmond

3

Bibliography

American Sheep Industry Association (2009). "Fast Facts About Sheep Production in the United States." http://www.sheepusa.org/get_file/file_id/438d9de19087aeb56a6737ddd9582003

AP (24 Jan 2008). "Idaho's new bighorn plan could mean more wild sheep would be killed." Associated Press, Boise, Idaho.

__ (15 Feb 2008). "Fish and Game plan sets March deadline for bighorn buffer zone." Associated Press, Lewiston, Idaho.

__ (21 Jan 2009). "Sheep rancher fights for his livelihood: restrictions protecting bighorn sheep have reduced grazing area for domestic sheep." Associated Press, Boise, Idaho.

__ (29 April 2009). "Senate amends bill on bighorn sheep that was vetoed earlier by governor." Associated Press, Boise, Idaho.

__ (29 July 2009). "Plan near to keep bighorn and domestic sheep apart. Associated Press, Twin Falls, Idaho.

__ (7 Aug 2009). "State cuts 11 deals to help protect bighorn sheep." Associated Press, Boise, Idaho.

Ashmanskas, D.C. (10 April 1996). *Idaho Wildlife Federation et al. v. Richmond et al.* Civil No. 94-1347-AS. 33 pp. Opinion. http://www.hellscanyon.org/files/HCNRA_bighorn.pdf

Bama, L. (3 March 1997). "Bringing back the bighorn." *High Country News*, Paonia, Colorado. http://hcn.org/issues/98/ 3028

Barker, E. (1 March 2009a). "Bighorn battle could doom sheep ranchers: bid to save Idaho's iconic wild sheep could doom four sheep ranches to extinction." *Lewiston Morning Tribune*, Lewiston, Idaho.

__ (1 March 2009b). "Both sides cling to tradition: sheep ranchers fear losing a way of life, while tribes, conservationists cite bighorn impact on culture, tourism." *Lewiston Morning Tribune*, Lewiston, Idaho.

__ (2 March 2009). "Common ground sought on Payette: interests on both sides of wild sheep vs. domestic sheep controversy are trying to collaborate for solutions." *Lewiston Morning Tribune*, Lewiston, Idaho.

__ (15 April 2007). "Sheep grazing policy stirs debate." *Lewiston Morning Tribune*, Lewiston, Idaho.

__ (12 June 2009). "Sick sheep dispute intensifies: daughter of embattled UI researcher tested bighorn that had died in the '90s after mixing with domestics." *Lewiston Morning Tribune*, Lewiston, Idaho.

__ (18 June 2009). "UI researcher placed on leave in sheep flap: Bulgin's testimony on disease transmission is being investigated." *Lewiston Morning Tribune*, Lewiston, Idaho.

__ (7 Aug 2009). "Fish & Game approves plans that include kill permits." *Lewiston Morning Tribune*, Lewiston, Idaho.

Barker, R. (7 June 2009). "Can Idaho manage wild and domestic sheep together?" *Idaho Statesman*, Boise, Idaho.

__ (7 Aug 2007). "Idaho meets deadline for bighorn plans – mostly: the state cuts 11 deals with ranchers to keep domestic and wild sheep from mingling." *Idaho Statesman*, Boise, Idaho.

Beuchner, H.K. (1960). "The bighorn sheep in the United States, its past, present and future." *Wildlife Monographs* 4: 1-174.

Brookshire, D.S., Eubanks, L.S. & Randall, A. (1983). "Estimating option prices and existence values for wildlife resources." *Land Economics* 59(1): 1-15.

Bulgin, M. (3 April 2009). Testimony to the Idaho Senate Resources and Environment Committee, Boise, Idaho. http://www.legislature.idaho.gov/sessioninfo/2009/standingcommittees/sresmin.pdf

Callan, R.J., Bunch, T.D., Workman, G.W. & Mock, R.E. (1991). "Development of pneumonia in desert bighorn sheep after exposure to a flock of exotic domestic sheep." *Journal of the American Veterinary Medical Association* 198: 1052–1056.

Cassirer, F. (2006). Hells Canyon Bighorn Sheep. Project W-160-R-33 Completion Report. Idaho Department of Fish and Game, Boise, Idaho. https://research.idfg.idaho.gov/wildlife/Wildlife Technical Reports/W-160-R-33-X Completion.pdf

__ & Sinclair, A.R.E. (2007). "Dynamics of pneumonia in a bighorn sheep metapopulation." *Journal of Wildlife Management* 71(4): 1080-1088.

Clark, T.W. (2002). *The Policy Process: A Practical Guide for Natural Resource Professionals*. Yale University Press, New Haven, Connecticut. 215 pp.

Clifford, D.L., Schumaker, B.A., Stephenson, T.R., Bleich, V.C., Cahn, M.L., Gonzales, B.J., Boyce, W.M. & Mazet, J.A.K. (2009). "Assessing disease risk at the wildlife-livestock interface: a study of Sierra Nevada bighorn sheep." *Biological Conservation* 142: 2559-02568

Cooke, R.M. (2009). "A brief history of quantitative risk assessment." *Resources* 172: 8-9; published by Resources for the Future, Washington, DC.

Cubbage, F.W., O'Laughlin, J. & Bullock, C.S., III (1993). *Forest Resource Policy*. J. Wiley & Sons, New York, New York. 562 pp.

Daniels, S.E. & Walker, G.B. (2001). *Working Through Environmental Conflict: The Collaborative Learning Approach*. Praeger, Westport, Connecticut. 328 pp.

deLeon, P. & Steelman, T.A. (2001). "Making public policy programs effective and relevant: the role of policy sciences." *Journal of Policy Analysis and Management* 20: 163–71.

Dixon, D.M., Rudolph, K.M., Kinsel, M.L., Cowan, L.M., Hunter, D.L. & Ward, A.C.S. (2002). "Viability of airborne *Pasteurella* spp." Proceedings of the Biennial Symposium of the Northern Wild Sheep and Goat Council 13: 6–13.

Dominick, D. (1964). "The Sheepeaters." *Annals of Wyoming* 36(2): 131-168. http://www.windriverhistory.org/exhibits/sheepeaters/Resources/Dominick.pdf

EagleWoman, A. (2009). "Tribal hunting and fishing lifeways & Tribal-state relations in Idaho." *Idaho Law Review* (in press).

EPA (1998). *Guidelines for Ecological Risk Assessment*. EPA/630/R-95/002F. U.S. Environmental Protection Agency. http://oaspub.epa.gov/eims/eimscomm.getfile?p{Idownload}id=36512

Foreyt, W.J. (1989). "Fatal *Pasteurella haemolytica* pneumonia in bighorn sheep after direct contact with clinically normal domestic sheep." *American Journal of Veterinary Research* 50: 341–344.

__ (1990). "Pneumonia in bighorn sheep: effects of *Pasteurella haemolytica* from domestic sheep and effects on survival and long term reproduction." Proceedings of the Biennial Symposium of the Northern Wild Sheep and Goat Council 7: 92-101.

__ & Jessup, D.A. (1982). "Fatal pneumonia of bighorn sheep following association with domestic sheep." *Journal of Wildlife Diseases* 18: 163–168.

__, Snipes, K.P. & Kasten, R.W. (1994). "Fatal pneumonia following inoculation of healthy bighorn sheep with *Pasteurella hemolytica* from healthy domestic sheep." *Journal of Wildlife Diseases* 2: 137–145.

Forsgren, H. (25 March 2009). Letter from U.S. Dept. of Agriculture, Forest Service Intermountain Regional Forester (Region 4), Ogden, Utah, to C. Groen, Idaho Dept. of Fish and Game Director, Boise, Idaho, re "considering adding bighorn sheep to sensitive species list."

Garton, E.O., Ratti, J.T. & Giudice, J.H. (2005). "Research and experimental design." Chapter 3, in, *Techniques for Wildlife Investigations and Management*, Braun, C., ed. The Wildlife Society, Bethesda, Maryland.

George, J.L., Martin, D.J., Lukacs, P.M. & Miller, M.W. (2008). "Epidemic pasteurellosis in a bighorn sheep population coinciding with the appearance of a domestic sheep." *Journal of Wildlife Diseases* 44(2): 388-403.

Gilpin, M.E. & Soule, M.E. (1986). "Minimum viable populations: processes of species extinction." In, *Conservation Biology: The Science of Scarcity and Diversity*. Soule, M.E., ed., Sinauer Associates, Inc., Sunderland, Massachusetts, pp. 19-34.

Goodson, N.J. (1982). "Effects of domestic sheep grazing on bighorn sheep populations: a review." Proceedings of the Biennial Symposium of the Northern Wild Sheep and Goat Council 3: 287-313.

Graham, J.D. & Weiner, J.B. (1995). *Risk vs. Risk: Tradeoffs in Protecting Health and the Environment*. Harvard University Press, Cambridge, Massachusetts, as cited by Clifford et al. (2009), *idem*.

Groen, C. (30 April 2009). Letter from Idaho Dept. of Fish and Game Director, Boise, Idaho, to L. Jacobsen, U.S. Dept. of Agriculture, Forest Service, Region 4 Threatened, Endangered, and Sensitive Species Program Leader, Ogden, Utah, re "adding bighorn sheep to Region 4 sensitive species list."

Haimes, Y.Y. (2004). *Risk Modeling, Assessment, and Management*, 2nd ed. J. Wiley & Sons, New York, New York. 837 pp.

Hells Canyon Bighorn Sheep Restoration Committee (2004). The Hells Canyon Initiative Hells Canyon Bighorn Sheep Restoration Plan. Idaho Dept. of Fish and Game, Oregon Dept. of Fish and Wildlife, Washington Dept. of Fish and Wildlife, U.S. Forest Service, U.S. Dept. of the Interior – Bureau of Land Management, Foundation for North American Wild Sheep. Available at Idaho Dept. of Fish and Game, Lewiston, Idaho.

__ (2005). Hells Canyon Initiative Annual Report FY 05. Idaho Dept. of Fish and Game, Oregon Dept. of Fish and Wildlife, Washington Dept. of Fish and Wildlife, U.S. Forest Service, U.S. Dept. of the Interior – Bureau of Land Management, Foundation for North American Wild Sheep. Available at Idaho Dept. of Fish and Game, Lewiston, Idaho.

Hoffman, N. (1 October 2007). "Sheep v. sheep: a legal battle over Hells Canyon grazing could determine the future of wild sheep and sheep ranching across the West. *High Country News*, Paonia, Colorado. http://www.hcn.org/issues/355/17521

Hunter, P.R. & Fewtrell, L. (2001). "Acceptable risk." In, *Water Quality: Guidelines, Standards, and Health.* Fewtrell, L. & Bartram, J., eds., IWA Publishing, London, UK, as cited by Clifford et al. (2009), *idem*.

Idaho Dept. of Fish and Game (2005). Idaho Comprehensive Wildlife Conservation Strategy, approved by U.S. Fish and Wildlife Service (2006). http://fishandgame.idaho.gov/cms/tech/CDC/cwcs_table_of_contents.cfm

__ (27 July 2009). Laboratory Report N09-065f, Wildlife Health Laboratory, Idaho Dept. of Fish and Game, Caldwell, Idaho. 3 pp., in author's files.

__ (2008). "Watching economics." *Idaho Fish and Game News* 20(3): 12. http://fishandgame.idaho.gov/cms/news/fg_news/nov08.pdf

Kawamura, H. (2004). "Symbolic and political ecology among contemporary Nez Perce Indians in Idaho, USA: functions and meanings of hunting, fishing, and gathering practices." *Agriculture and Human Values* 21: 157-169.

Knowles, D. & Rink, A. (2006). "Outline of concerns relating to perception of disease transmission issues at the livestock/wildlife interface in the western United States." Unpublished paper prepared for the American Sheep Industry Association, Nevada Dept. of Agriculture, and U.S. Dept. of Agriculture, Agricultural Research Service. 5 pp., in author's files.

Loomis, J.J., Donnelly, D.M, Sorg, C.F. & Oldenburg, L. (1985). "Net Economic Value of Hunting Uniques Species in Idaho: Bighorn Sheep. Mountain Goat, Moose, and Antelope." RM-10, U.S. Dept. of Agriculture, Forest Service, Rocky Mountain Forest and Range Experiment Station, Fort Collins, Colorado. 16 pp.

MacCracken, J.G. & O'Laughlin, J. (1992). *A National Park in Idaho? Proposals and Possibilities*. Report No. 7, Policy Analysis Group, College of Natural Resources, University of Idaho, Moscow. 33 pp.

Martin, K.D., Schommer, T. & Coggins, V.L. (1996). "Literature review regarding the compatibility between bighorn and domestic sheep." Proceedings of the Biennial Symposium of the Northern Wild Sheep and Goat Council 10: 72–77.

Miller, J. (6 June 2009). "Bighorn battle intensifies: group says UI research center had evidence of disease link." Associated Press, Lewiston, Idaho.

__ (8 October 2009). "UI questions prof's attendance at bighorn meeting." Associated Press, Boise, Idaho. http://groups.yahoo.com/group/RangeTree/message/629

__ (16 November 2009). "UI professor reasserts bighorn disease claims: past comments led to university inquiry." Associated Press, Boise, Idaho, in *Spokesman-Review*, Spokane, Washington. http://www.spokesman.com/stories/2009/nov/16/ui-professor-reasserts-bighorn-disease-claims/

Miller, M.W. (2001). "Pasteurellosis." In, *Infectious Diseases of Wild Mammals*, 3rd ed. Williams, E.S. & Barker, I.K., eds., Iowa State University Press, Ames, Iowa, pp. 330-339.

__, Knowles, D.P. & Bulgin, M.S. (2008). "Pasteurellosis transmission risks between domestic and wild sheep." CAST Commentary QTA2008-1. Council for Agricultural Science and Technology, Ames, Iowa, 8 pp. http://www.cast-science.org/websiteUploads/publicationPDFs/Sheep%20Pasteurellosis%20Commentary156.pdf

Murphy, D.L. (20 October 2008). "Counting sheep before they sleep." *Spatial Interest* 1(17). http://www.spatialinterest.info/Vol01Num17.html

NatureServe (2009). "NatureServe Explorer: An online encyclopedia of life" [web application]. Version 7.1. NatureServe, Arlington, Virginia. Bighorn sheep at http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Ovis canadensis

NRC (2008a). *Changes in the Sheep Industry in the United States: Making the Transition from Tradition*. National Research Council, National Academies of Science, National Academies Press, Washington, DC. 348 pp.

__ (2008b). *Science and Decisions: Advancing Risk Assessment*. National Research Council, National Academies of Science, National Academies Press, Washington, DC. 424 pp.

O'Laughlin, J. (2004). "Policy analysis framework for sustainable forestry: national forest case study." *Journal of Forestry* 102(2): 34-41.

__ (2009). "Ecological risk assessment to support fuels treatment decisions." In, *Forest Environmental Threats Encyclopedia*, at: http://www.forestencyclopedia.net/p/p3142; also in, *Advances in Threat Assessment and their Application to Forest and Rangeland Management*, J.M. Pye, et al., eds. General Technical Report PNW-xxx, U.S. Dept. of Agriculture, Forest Service, Pacific Northwest Station, Portland, OR (in press).

__, Hundrup, W.R. & Cook, P.S. (1998). *History and Analysis of Federally Administered Lands in Idaho*. Report No. 16, Policy Analysis Group, College of Natural Resources, University of Idaho, Moscow. 125 pp.

Onderka, D.K. & Wishart, W.D. (1988). "Experimental contact transmission of *Pasteurella haemolytica* from clinically normal domestic sheep causing pneumonia in Rocky Mountain bighorn sheep." *Journal of Wildlife Diseases* 24: 663–667.

Oreskes, N. (2004). "Science and public policy: what's proof got to do with it?" *Environmental Science & Policy* 7: 369-383.

Payette Principles Committee (2 Nov 2006). "Summary of the Science Panel Discussion" [re RADT Committee, 6 Feb 2006]. 24 pp. Retracted by U.S. Forest Service (28 August 2009); in author's files.

Peek, J. (26 November 2009). Commentary: "Politicizing bighorn policy comes at a price." *Lewiston Morning Tribune*, Lewiston, Idaho.

RADT Committee (6 Feb 2006). "Risk Analysis of Disease Transmission Between Domestic Sheep and Bighorn Sheep on the Payette National Forest." 41 pp. Retracted by U.S. Forest Service (28 August 2009); in author's files.

Regan, H.M., Colyvan, M. & Burgman, M.A. (2002). "A taxonomy and treatment of uncertainty for ecology and conservation biology." *Ecological Applications* 12(2): 618-628.

Richmond, R.M., et al. (16 Jan 1997). Letter from Supervisor, Wallowa-Whitman National Forest, LaGrande, Oregon; and Bureau of Land Management, Idaho Dept. of Fish and Game, Oregon Dept. of Fish and Wildlife, Washington Dept. of Fish and Wildlife, and North American Foundation for Wild Sheep (now the Wild Sheep Foundation), to S. Boyd, Executive Director, Idaho Wool Growers Association, Boise, Idaho, re "effort to transplant BHS into historic habitat in Hells Canyon." Included as **Exhibit A**.

Schommer, T. (2002). "Bighorn sheep in Hells Canyon: historical background and the Hells Canyon bighorn sheep restoration project." *Wild Sheep Magazine*. http://www.fs.fed.us/hellscanyon/life_and_the_land/wildlife/ bighorn-sheep.shtml

__ & Woolever, M. (2001). "A process for finding management solutions to the Incompatibility between domestic and bighorn sheep." Unnumbered paper, U.S. Dept. of Agriculture, Forest Service, Wallowa-Whitman National Forest, Baker City, Oregon. 40 pp.

__ & __ (2008). *A Review of Disease Related Conflicts Between Domestic Sheep and Goats and Bighorn Sheep*. General Technical Report RMRS-GTR-209, U.S. Dept. of Agriculture, Forest Service, Rocky Mountain Research Station, Fort Collins, Colorado. 17 pp. Retracted by U.S. Forest Service (28 Aug 2009); in author's files.

Smith, D.R. (1954). *The Bighorn Sheep in Idaho: Its Status, Life History, and Management*. Wildlife Bulletin No. 1, Idaho Dept. of Fish and Game, Boise. 154 pp.

Strack, S.W. (27 April 2009). Letter from Deputy Attorney General, State of Idaho, Boise, to Sen. Gary J. Schroeder, Chairman, Resources and Environment Committee, Idaho Senate, Boise, Idaho, re "Senate Bill 1232 – bighorn sheep."

Steen, H.K. & Thomas, J.W. (2004). *Jack Ward Thomas: The Journals of a Forest Service Chief*. University of Washington Press, Seattle, Washington. 417 pp.

Toweill, D.E. & Geist, V. (1999). *Return of Royalty: Wild Sheep of North America*. Boone and Crockett Club and Foundation for North American Wild Sheep, Missoula, Montana. 214 pp.

Trillhaase, M. (14 June 2009). Editorial: "When a scientist becomes an apologist." *Lewiston Morning Tribune*, Lewiston, Idaho.

__ (24 June 2009). Editorial: "Politics won't fix the bighorn sheep mess." *Lewiston Morning Tribune*, Lewiston, Idaho.

University of Idaho (4 January 2010). "University statement on scientific misconduct assessment [of Dr. Marie Bulgin's testimony and written statements]." http://www.uidaho.edu/newsevents/Item?name=university-statement-on-scientific-misconduct-assessment

U.S. Department of Agriculture (17 December 2009). "USDA Forest Service launches collaborative process for new planning rule." News Release No. 0620.09, Washington, D.C. http://www.fs.fed.us/news/2009/releases.shtml

U.S. Department of the Interior, Fish and Wildlife Service, and U.S. Department of Commerce, U.S. Census Bureau (2007). 2006 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation. FHW/06-NAT. 164 pp. http://library.fws.gov/pubs/nat_survey2006_final.pdf

U.S. Fish and Wildlife Service. (5 Aug 2008). "Designation of critical habitat for the Sierra Nevada Bighorn Sheep (*Ovis canadensis sierrae*) and taxonomic revision." *Federal Register* 73(151): 45533-45604.

__ (14 April 2009). "Designation of critical habitat for Peninsular Bighorn Sheep and determination of a distinct population segment of desert bighorn sheep (*Ovis canadensis nelsoni*); final rule." *Federal Register* 74(70): 17287-17365.

U.S. Forest Service (2005). "Decision for Appeal of the Payette National Forest Land and Resource Management Plan Revision." Office of the Chief, Washington, DC. 41 pp. http://www.fs.fed.us/r4/payette/publications/big_horn/appealdec.pdf

__ (6 Feb 2006). "Risk Analysis Expert Panel." Payette National Forest (see RADT Committee, above).

__ (2 Nov 2006). "Science Panel." Payette National Forest (see Payette Principles Committee, above).

__ (September 2008a). Southwest Idaho Ecogroup Land and Resource Management Plans, Draft Supplemental Environmental Impact Statement [for the Payette National Forest]. http://www.fs.fed.us/r4/payette/publications/big_horn/index.shtml

__ (September 2008b). Southwest Idaho Ecogroup Land and Resource Management Plans, Draft Supplemental Environmental Impact Statement, Appendix D. American Indian Background Information. 9 pp. http://www.fs.fed.us/r4/payette/publications/big_horn/DSEIS_Appendix_D_Tribal.pdf

__ (2009a). "Hells Canyon National Recreation Area." http://www.fs.fed.us/hellscanyon/overview/index.shtml

__ (2009b). "Comparison of [National Forest Management Act] 2000 Rule and 1982 Rule." http://www.fs.fed.us/emc/nfma/includes/sidebyside1982.doc

__ (March 2009). "Threatened, Endangered & Sensitive Species Program." Washington, DC. 1 p. http://www.fs.fed.us/biology/resources/pubs/tes/tes_program_fs_March2009.doc

__ (June 2009). "Summary of Public Comment Payette National Forest Draft Supplemental Environmental Impact Statement for Bighorn Sheep Viability Analysis and Forest Plan Amendment." NEPA Services Group, Salt Lake City, Utah. Chapter pagination. http://www.fs.fed.us/r4/payette/publications/big_horn/CAReport_final.pdf

__ (28 Aug 2009). Letter from J. Holtrop, Deputy Chief, U.S. Dept. of Agriculture, Forest Service, to Regional Foresters and others regarding compliance with July 1, 2009, adverse ruling in *Idaho Wool Growers Assoc. and Bulgin v. Schafer et al.* (see Winmill [1 July 2009] below).

__ (17 December 2009). "Additional bighorn sheep information to be released in January [2010]." Payette National Forest news release. http://www.fs.fed.us/r4/payette/news/2009/121709_suppinfoBHS.shtml

__ (January 2010). Southwest Idaho Ecogroup Land and Resource Management Plans, Update to the Draft Supplemental Environmental Impact Statement [for the Payette National Forest]. http://www.fs.fed.us/r4/payette/publications/big_horn/supplinfo_doc/entire_document_web.pdf

__ (25 January 2010). "Update to bighorn sheep viability study released today." Payette National Forest news release. http://www.fs.fed.us/r4/payette/news/2010/012510_BHSsuppinforelease.shtml

Valdez, R. & Krausman, P.R. (1999). "Description, distribution, and abundance of mountain sheep in North America." In, *Mountain Sheep of North America*. Valdez, R. & Krausman, P.R., eds., University of Arizona Press, Tucson, Arizona, pp. 3–22.

WAFWA (21 June 2007). Recommendations for Domestic Sheep and Goat Management in Wild Sheep Habitat. Western Association of Fish and Wildlife Agencies, Wild Sheep Working Group. 27 pp. http://www.wafwa.org/documents/wswg/ WSWGManagementofDomesticSheepandGoatsin WildSheepHabitatReport.pdf

Ward, A.C., Hunter, D.L., Jaworski, M.D., Benolkin, P.J., Dobel, M.P., Jeffress, J.B. & Tanner, G.A. (1997). "*Pasteurella* spp. in sympatric bighorn and domestic sheep." *Journal of Wildlife Diseases* 3: 544–557.

Weiser, G. (9 March 2009). Testimony to the Idaho Senate Resources and Environment Committee, Boise, Idaho. http://www.legislature.idaho.gov/sessioninfo/2009/standingcommittees/sresmin.pdf

Wild Sheep Foundation (1 July 2009). "The Wild Sheep Foundation performs advocacy work in Washington, D.C." Wild Sheep Foundation website, News tab, July 2009. http://www.wildsheepfoundation.org/Page.php/News/92/1246424400-1249012800

Wilshusen, P.R. & Wallace, R.L (2009). "Integrative problem solving: the policy sciences as a framework for conservation policy and planning." *Policy Sciences* 42: 91-93.

Winmill, B.L. (13 Nov 2007). *Western Watersheds Project, et al., v. U.S. Forest Service*. Case No. CV-07-151-E-BLW. Memorandum Decision and Order. United States District Court for the District of Idaho.

__ (1 July 2009). *Idaho Wool Growers Association and Dr. Marie S. Bulgin v. Schafer, et al.* Case No. CV-08-394-S-BLW, Docket No. 23. Memorandum decision and order re: IWGA's motion for summary judgment. United States District Court for the District of Idaho.

__ (9 November 2009). *Idaho Wool Growers Association and Dr. Marie S. Bulgin vs. Schafer, et al.* Case No. CV-08-394-S-BLW, Docket No. 39, Document 46, Memorandum decision and order re: defendants' motion to clarify court's order. United States District Court for the District of Idaho.

Zimowsky, P. (21 Dec 2008). "Help protect Hells Canyon bighorns: comment on how to keep domestic and wild sheep from sheep from mixing in the Payette forest." *Idaho Statesman*, Boise, Idaho.

Glossary

BHS – Bighorn sheep (*Ovis canadensis*); native "new world" sheep in the western U.S., outside Alaska.

C.F.R. – Code of Federal Regulations

DS – Domestic sheep (*Ovis aries*); "old world" sheep brought to U.S. by European settlers

DSEIS – Draft supplemental environmental impact statement (see **EIS**)

EIS – Environmental impact statement, required by **NEPA** for any "major" federal action

ESA – Endangered Species Act of 1973; requires protection and recovery of rare or imperiled species that qualify as "threatened" or "endangered" under the provisions of the act

FACA – Federal Advisory Committee Act of 1972

FEIS – Final environmental impact statement (see **EIS**)

FNAWS – Foundation for North American Wild Sheep, renamed Wild Sheep Foundation; citizen conservation group comprised largely of hunters

HCNRA – Hells Canyon National Recreation Area, National Forest System lands along the Idaho/Oregon border placed into this designation by an act of Congress in 1975

IDAg – Idaho Department of Agriculture

IDFG – Idaho Department of Fish and Game

LRMP – Land & Resource Management Plan, required for each National Forest System planning unit, such as the **PNF**, by **NFMA**

NEPA – National Environmental Policy Act of 1969

NF – National Forest, a planning unit of the National Forest System

NFMA – National Forest Management Act of 1976

NPT – Nez Perce Tribe

PAG – Policy Analysis Group, College of Natural Resources, University of Idaho

PNF – Payette National Forest, a planning unit of the National Forest System, located in southwestern Idaho

ROD – Record of Decision, final decision document for an environmental impact statement (see **EIS**)

SB 1232A – Senate Bill signed into law 6 May 2009, now Idaho Code § 36-106(e)5(D). http://www.legislature.idaho.gov/idstat/Title36/T36CH1SECT36-106.htm

"Sensitive" species – A U.S. Forest Service designation referring to "species that need special management to maintain and improve their status on National Forests and Grasslands, and prevent a need to list them under the Endangered Species Act." (U.S. Forest Service, March 2009) http://www.fs.fed.us/biology/resources/pubs/tes/tes_program_fs_March2009.doc

Viable/Viability – ". . . a species consisting of self-sustaining and interacting populations that are well distributed through the species' range. Self-sustaining populations are those that are sufficiently abundant and have sufficient diversity to display the array of life history strategies and forms to provide for their long-term persistence and adaptability over time" (C.F.R., in *Federal Register*, Vol. 65, Number 218, §219.36, cited by Regan et a. (2002)).

WWP – Western Watersheds Project; citizen conservation group working on protection and restoration efforts, including a "Get all cows and sheep off public lands ASAP!" policy agenda http://www.westernwatersheds.org/policy-memos/2