RECOVERY PLANNING, SCIENCE, AND FLEXIBILITY UNDER THE ENDANGERED SPECIES ACT

INTRODUCTION

In the Pacific Northwest, on June 26, 1990, the United States Fish and Wildlife Service ("FWS") listed the Northern Spotted Owl as threatened under the Endangered Species Act of 1973 ("ESA").[1] In the 1992 draft recovery plan, the FWS cited loss of habitat and inadequate regulatory mechanisms as the cause of the owl's decline.[2] The recovery plan cited loss of critical habitat as the most significant threat to the spotted owl, attributed to timber harvesting of old growth forests.[3] In response, the Northwest Forest Plan dramatically reduced logging and set aside 24 million acres of federal land as a refuge for the declining owl.[4] The spotted owl population continues to decline today despite this sweeping protection, maintenance, and restoration of suitable habitat.[5] In May 2008, the FWS released a new recovery plan stating that, according to the "best available scientific information, competition from the barred owl poses a significant threat to the spotted owl."[6] Although environmentalists and timber

1. U.S. FISH & WILDLIFE SERVICE, RECOVERY PLAN FOR THE NORTHERN SPOTTED OWL VII (2008), http://www.fws.gov/pacific/ecoservices/endangered/recovery/pdf/NSO Final Rec Plan 051408.pdf [hereinafter SPOTTED OWL RECOVERY PLAN]; Endangered Species Act of 1973, 16 U.S.C. §§ 1531–1544 (1994).

2. SPOTTED OWL RECOVERY PLAN, *supra* note 1, at VII; *see* discussion *infra* Part I.A.3.

3. *See* SPOTTED OWL RECOVERY PLAN, *supra* note 1, at VII.

4. SECRETARY OF AGRICULTURE & SECRETARY OF INTERIOR, RECORD OF DECISION FOR AMENDMENTS TO FOREST SERVICE AND BUREAU OF LAND MANAGEMENT PLANNING DOCUMENTS WITHIN THE RANGE OF THE NORTHERN SPOTTED OWL 1 (1994), http://www.reo.gov/library/reports/newroda.pdf. The Northwest Forest Plan was adopted in 1994 to assist in the management of federal forests in the Pacific Northwest within the range of the Northern Spotted Owl. Regional Ecosystem Office, Northwest Forest Plan Overview, http://www.reo.gov/general/aboutNWFP.htm (last visited Nov. 21, 2009). The purpose of the Northwest Forest Plan is to manage public land in a way that protects the Northern Spotted Owl yet allows for production of timber products. *Id.*

5. *See* SPOTTED OWL RECOVERY PLAN, *supra* note 1, at VII.

6. *Id.*

industry representatives disagree on the magnitude of the threat posed by the barred owl, the spotted owl remains endangered, and other factors have been identified that contribute to its endangerment.[7]

Today, the spotted owl is "closer than ever to extinction" and some contemplate its "virtual disappearance."[8] Why did recovery efforts continue down the same path for sixteen years when those efforts were clearly not working? The time between the original recovery plan and the new recovery plan constitutes sixteen critical years of protection lost for the spotted owl because of its misdiagnosis, leading to ineffective recovery. Recovery planning for the spotted owl presents an alarming example of the consequences resulting from inadequate recovery efforts and provides a starting point to analyze specific problems within the ESA's recovery planning provision.

Congress enacted the ESA in 1973 to provide conservation of ecosystems necessary for endangered and threatened species.[9] The ESA also provides for the conservation of such species through a program that protects, recovers, and prevents species from becoming extinct.[10] Referred to by some as the "pit bull" of environmental law, the ESA is considered one of the most powerful and far-reaching conservation statutes in the United States.[11] However, the issues surrounding the Northern Spotted Owl represent a common problem with species recovery planning under the ESA. Since 2003, fewer than thirty out of over one thousand species have been removed from the endangered or threatened species list.[12] Sadly, more than half of the thirty species were removed because they are now extinct.[13] For fiscal years 2005 and 2006, only eight percent of listed species were

7. *See* Erik Stokstad, *Spotted Owl Recovery Plan Flawed, Review Panel Finds*, 320 J. SCI. 594–95 (2008), *available at* http://www.nccsp.org/stewarding_the_land/wild-lands-projects/federal-lands-management-project/northwest-forest-plan-1/spotted _owl_science.pdf.

8. Warren Cornwall, *As Spotted Owl's Numbers Keep Falling, Some Fear It's Doomed*, SEATTLE TIMES, Aug. 13, 2008, http://seattletimes.nwsource.com/html/localnews/2008109742_spottedowl13m.html.

9. 16 U.S.C. § 1531(b) (1994). *See generally* Jennie L. Bricker & David E. Filippi, *Endangered Species Act Enforcement and Western Water Law*, 30 ENVTL. L. 735, 741 (2000) (providing an overview of the ESA).

10. 16 U.S.C. § 1531(b).

11. JAMES RASBAND ET AL., NATURAL RESOURCES LAW AND POLICY 341 (2004).

12. Kevin W. Moore, *Seized by Nature: Suggestions on How to Better Protect Animals and Property Rights Under the Endangered Species Act*, 12 GREAT PLAINS NAT. RESOURCES J. 149, 163–64 (2008).

13. *Id.*

reported as improving, yet thirty-four percent were classified as declining.[14]

One would hope that a hard lesson has been learned in the spotted owl controversy, but a similar scenario regarding an endangered fish species appears to be developing. On March 25, 1999, the National Oceanic Atmospheric Administration's Fisheries Service ("NOAA Fisheries") listed the Middle Columbia River Steelhead as threatened with extinction.[15] In August 2008, NOAA Fisheries developed a recovery plan citing several factors contributing to the steelhead's decline.[16] One factor stated is the destruction of habitat because of water diversions.[17] The principal focus of the steelhead recovery plan is to improve watershed health by increasing instream flows.[18] Interestingly, even before implementation of the recovery plan, the majority of the recovery effort already focused on restoring instream flows.[19] However, these efforts to increase stream flow have been ineffective in recovering fish species.[20] For example, since 1993, organizations such as Oregon Water Trust[21] have successfully restored instream flows in the John Day Basin through various programs.[22] Fish species continue to decline despite the increased flows remaining instream, yet no alternatives have been

14. U.S. FISH & WILDLIFE SERVICE, RECOVERING THREATENED AND ENDANGERED SPECIES 27 (2005–2006), www.fws.gov/endangered /recovery/reports_to_congress/2005-6/summary_2005-6Recovery.pdf.

15. OREGON DEPARTMENT OF FISH & WILDLIFE SERVICE, CONSERVATION AND RECOVERY PLAN FOR OREGON STEELHEAD POPULATIONS IN THE MIDDLE COLUMBIA RIVER STEELHEAD DISTINCT POPULATION SEGMENT 1-3 (2008), http://www.dfw.state.or.us/fish/CRP/docs/mid_columbia/Mid-C_Recovery_Plan_August_2008.pdf [hereinafter STEELHEAD RECOVERY PLAN].

16. *Id.* at 1-6.

17. *Id.*

18. *Id.* at 1-27. Improving watershed health includes restoration of instream habitat conditions, providing fish "passage and floodplain connectivity, and addressing water quality and flow concerns." *Id.*

19. The Freshwater Trust, http://www.thefreshwatertrust.org/who-we-are/about-us (last visited Nov. 21, 2009).

20. *See* JAYME SCHRICKER & WAYNE WILSON, OREGON DEPARTMENT OF FISH & WILDLIFE, ADULT SPRING CHINOOK PRE-SPAWNING MORTALITY SURVEYS OF THE MIDDLE FORK JOHN DAY RIVER, NORTH FORK JOHN DAY RIVER, AND GRANITE CREEK SYSTEM 2 (2007) [hereinafter MORTALITY SURVEYS].

21. The Freshwater Trust, *supra* note 19. Oregon Water Trust recently merged with Oregon Trout and the organization is now called The Freshwater Trust. The Freshwater Trust is a non-profit organization that works with landowners to keep more water in rivers. *Id.*

22. OREGON WATER TRUST, 2007 ANNUAL REPORT, 9 (2007).

considered for their protection.[23] If inadequate recovery methods continue to be utilized, it will be too late to recover the steelhead.

The ESA's lack of success is in part due to the absence of scientific data and inflexibility in developing and implementing recovery plans. The ESA requires the FWS and NOAA Fisheries to develop and implement a recovery plan for threatened and endangered species.[24] A recovery plan sets out steps for a species' recovery by identifying management actions that will promote its recovery.[25] The ESA also demands that FWS and NOAA Fisheries use the "best scientific data available" to determine whether to list a species as endangered or threatened, in designating its critical habitat, and to determine whether agency action will place a listed species in jeopardy.[26] However, in *developing and implementing a recovery plan for a species*, the ESA is silent as to the need for the use of the "best scientific data available" standard, or any scientific standard at all.[27] The recovery plan for the Middle Columbia River Steelhead illustrates the problems that ensue without utilization of a scientific standard.

Another limitation of the ESA lies within implementation of its "site-specific" provision.[28] Each recovery plan requires a description of "site-specific management actions" that are necessary to achieve recovery of the species.[29] However, despite this provision, in practice, one recovery plan for a species is employed over a large geographical area even though the plan may not be compatible with particular areas within the region. This lack of flexibility in recovery planning fails to account for regional and ecological variations. For example, as the Middle Columbia River Steelhead Recovery Plan demonstrates, one recovery strategy governs multiple rivers, despite

23. *See* MORTALITY SURVEYS, *supra* note 20, at 2 (discussing mortality rates of adult Spring Chinook Salmon in the Middle Fork and North Fork of the John Day River and the Granite Creek System).

24. 16 U.S.C. § 1533(f)(1) (1994).

25. RASBAND ET AL., *supra* note 11, at 358.

26. 16 U.S.C. §§ 1533(b), 1536(a)(2).

27. *Id.* § 1533(f); *see* Federico Cheever, *The Road to Recovery: A New Way of Thinking About the Endangered Species Act*, 23 ECOLOGY L.Q. 1, 40 (1996) (stating neither the ESA nor agency regulations set forth specific requirements for developing and implementing recovery plans).

28. *See* 16 U.S.C. § 1533(f)(B)(1)(i).

29. *Id*.

various ecological differences that are critical to the recovery of the species.[30]

This Note proposes two suggestions to increase the ESA's effectiveness. First, the ESA should require use of the most current and updated scientific data in drafting recovery plans to ensure implementation of the best possible recovery strategy for the species. Second, the FWS and NOAA Fisheries should adhere to the "site-specific" provision in the ESA. Adherence to this provision will provide more flexibility in implementing recovery plans, taking into account ecological variations, to ensure that the needs of each species are met. Part I of this Note examines the sections of the ESA governing listing, critical habitat, recovery planning, and protection of endangered and threatened species, as well as Oregon water law and its relationship to the ESA. Parts II and III discuss the importance of recovery plans and the problems that ensue when the best science available and a site-specific approach are not applied. Part IV illustrates the inadequacies of recovery plans without flexibility and a science standard through a case study of the Middle Columbia River Steelhead in the John Day River Basin and its tributaries. Part V suggests improvements in the recovery planning process to provide for more successful species recovery.

I. THE ENDANGERED SPECIES ACT

Congress intended that the ESA provide protection to species and the ecosystems they rely on by implementing methods designed to bring endangered and threatened species to healthy population levels.[31] The ESA contains several important sections outlining procedures for listing species, designating critical habitats, and protecting endangered or threatened species. Section 4 of the ESA describes the required procedures when making listing decisions, designating critical habitat, and developing recovery plans.[32] Section 7 governs the practices of federal agencies to ensure their actions will not harm species that are listed as endangered or threatened.[33] The ESA's section 9 governs the actions of individual persons.[34]

30. *See* STEELHEAD RECOVERY PLAN, *supra* note 15, at 1-2 to 1-4.
31. 16 U.S.C. §§ 1531(b), 1532(3).
32. *Id.* § 1533.
33. *Id.* § 1536.
34. *Id.* § 1538.

Additionally, section 6 describes the relationship between the ESA and state water rights.[35]

A. Section 4 of the Endangered Species Act: Listing, Designation of Critical Habitat, and Recovery Planning

The ESA provides protection only to species that are listed as endangered or threatened.[36] Section 4 of the ESA sets forth the procedures to list a species as endangered or threatened and governs designation of critical habitats for listed species.[37] Additionally, section 4 provides guidelines for developing and implementing recovery plans.[38]

1. Listing a Species as Endangered or Threatened

Any interested person may petition to list a species as endangered or threatened, or the government may initiate the listing process.[39] Depending on the species in question, the ESA delegates to the FWS, or to the NOAA Fisheries, the responsibility of making decisions to list a species as endangered or threatened.[40] NOAA Fisheries manages marine species such as whales and turtles,[41] and anadromous fish species.[42] The FWS is responsible for terrestrial species and freshwater fish species.[43]

In determining whether to list a species as endangered or threatened, the FWS and NOAA Fisheries must first decide whether the species proposed for listing meets the statutory definition of a species.[44] The ESA defines "species" broadly; the term encompasses

35. *Id.* § 1531(c)(2).

36. RASBAND ET AL., *supra* note 11, at 342.

37. 16 U.S.C. § 1533.

38. *Id.*

39. *Id.* § 1533(b)(3)(A).

40. *Id.* § 1533. FWS is in the Department of Interior and NOAA Fisheries is in the Department of Agriculture.

41. About National Marine Fisheries Service, http://www.nmfs.noaa.gov/aboutus.htm (last visited Nov. 23, 2009).

42. Holly Doremus, *The Purposes, Effects, and Future of the Endangered Species Act's Best Available Science Mandate,* 34 ENVTL. L. 397, 401 (2004). Anadromous fish species are "fishes that migrate as juveniles from freshwater to salt water and then return as adults to spawn in freshwater; most Pacific salmon are anadromous." U.S. DEPARTMENT OF COMMERCE, NOAA FISHERIES GLOSSARY 2 (2006), http://www.st.nmfs.noaa.gov/st4/documents/FishGlossary.pdf.

43. Doremus, *supra* note 42, at 401.

44. 16 U.S.C. § 1532(16).

a "subspecies"[45] or a "distinct population segment"[46] as well as the broader classification of "species." If the agency determines that an organism fits within the definition of a species, it next decides whether the species should be listed as endangered or threatened.[47] This determination is based on the following factors: (1) the present or threatened destruction, modification, or curtailment of the species' habitat or range; (2) overutilization of the species for commercial, recreational, scientific, or educational purposes; (3) disease or predation; (4) the inadequacy of existing regulatory mechanisms; and (5) other natural or man-made factors affecting the species' continued existence.[48] The existence of at least one of these factors justifies the listing of the species as threatened or endangered.[49] An "endangered species" is one endangered "throughout all or a significant portion of its range."[50] A "threatened species" is a species likely to become endangered in the near future "throughout all or a significant portion of its range."[51]

Under the citizen petition procedure, the FWS and NOAA Fisheries must determine "to the maximum extent practicable," whether the petition "presents substantial scientific or commercial information indicating that the petitioned action may be warranted" within ninety days.[52] If the petition presents adequate information, the agency must review the status of the species to determine whether listing is warranted, not warranted, or "warranted but precluded"

45. *Id*. FWS defines a subspecies as, "a taxonomic rank below that of species, usually recognizing individuals that have certain heritable characteristics distinct from other subspecies of a species." U.S. FISH & WILDLIFE SERVICE, ENDANGERED SPECIES GLOSSARY 10 (2005), http://www.fws.gov/endangered/pdfs/glossary.pdf.

46. 16 U.S.C. § 1532(16). The FWS defines a distinct population segment, or DPS, as "a subdivision of a vertebrate species that is treated as a species for purposes of listing under the Endangered Species Act." U.S. FISH & WILDLIFE SERVICE, ENDANGERED SPECIES GLOSSARY 3 (2005), http://www.fws.gov/endangered/pdfs/glossary.pdf. "To be so recognized, a potential distinct population segment must satisfy standards specified in a FWS or NOAA Fisheries policy statement." *Id.* at 3–4. "The standards require it to be separable from the remainder of and significant to the species to which it belongs." *Id.* at 4.

47. 16 U.S.C. § 1533(a). Range is defined as "the geographic area a species is known or believed to occupy." U.S. FISH & WILDLIFE SERVICE, ENDANGERED SPECIES GLOSSARY 8 (2008), http://www.fws.gov/endangered/pdfs/glossary.pdf.

48. 16 U.S.C. § 1533(a)(1).

49. 50 C.F.R. § 424.11(c).

50. 16 U.S.C. § 1532(6).

51. *Id.* § 1532(20).

52. *Id.* § 1533(b)(3)(A).

within twelve months.[53] If listing the species is warranted, the responsible agency publishes a proposed regulation in the Federal Register, identifying the species as endangered or threatened.[54] Public notice must be published, giving an opportunity for comment regarding the proposed regulation within ninety days before the effective date of the regulation.[55] If any person files a request, a hearing must be held within forty-five days after publication of the notice.[56] If listing the species is not warranted, the responsible agency publishes this finding in the Federal Register.[57] "Warranted but precluded" means that listing the species is warranted but immediate listing is prevented by more pressing priorities such as other pending listing proposals.[58] If listing the species is "warranted but precluded," the FWS or NOAA Fisheries must consider a resubmitted petition each year.[59]

The determination to list a species as endangered or threatened must be made "solely on the basis of the best scientific and commercial data available."[60] Therefore, economic considerations may not be taken into account during the listing stage.[61] Decisions to list a species under the ESA are subject to the "arbitrary and capricious" standard of the Administrative Procedure Act ("APA").[62] If the FWS or NOAA Fisheries decides not to list a species or that listing is warranted but precluded, this decision may be set aside if it is "arbitrary, capricious, an abuse of discretion, or otherwise not in

53. *Id.* § 1533(b)(3)(B).

54. *Id.* § 1533(b)(3)(B)(ii). Listing a species is warranted if one or more of the following factors exists: 1) the present or threatened destruction, modification, or curtailment of habitat or range; 2) overutilization for commercial, recreational, scientific, or educational purposes; 3) disease or predation; 4) the inadequacy of existing regulatory mechanisms; and 5) other natural or man-made factors affecting continued existence. *Id.* § 1533(a)(1).

55. *Id.* § 1533(b)(5).

56. *Id.* § 1533(b)(5)(E).

57. *Id.* § 1533(b)(3)(B)(i).

58. *Id.* § 1533(b)(3)(B)(iii).

59. *Id.* § 1533(b)(3)(C)(i).

60. *Id.* § 1533(b)(1)(A).

61. RASBAND ET AL., *supra* note 11, at 343.

62. *See* J. Tavener Holland, Comment, *Regulatory Daubert: A Panacea for the Endangered Species Act's "Best Available Science" Mandate?,* 39 MCGEORGE L. REV. 299, 304 (2008) (discussing the APA); RASBAND ET AL., *supra* note 11, at 220. Congress enacted the APA in 1946, which established procedures agencies must adhere to when making rules and adjudicating conflicts.

accordance with law."[63] To make this finding a court considers whether the agency relied on relevant factors, considered important aspects of the problem, offered an explanation for the decision that conflicts with evidence, and whether the decision was implausible.[64]

2. Designation of Critical Habitat

Once the FWS or NOAA Fisheries decides to list a species as endangered or threatened, the agency must generally determine the species' critical habitat within one year, based on the "best scientific data available."[65] In contrast to listing a species, "economic impact" may also be considered when designating critical habitat.[66] A species' critical habitat includes geographical areas that are occupied by the species, founded on "physical or biological features" that are "essential to the conservation of the species and which may require special management considerations or protection."[67] Critical habitat also includes geographical areas not occupied by the species but necessary for its recovery.[68]

Designation of critical habitat is not required at the time of listing if it is "not prudent" to do so or if the agency is unable to determine the species' critical habitat.[69] Designation of critical habitat is "not prudent" when the identification of critical habitat may increase the threat to the species through vandalism, takings, and other human activity, or when designating critical habitat would not be beneficial to the species.[70] The agency cannot designate critical habitat when it has insufficient information to determine the impacts of doing so, or when the biological needs of the species are not sufficiently known to identify its critical habitat.[71]

3. Recovery Planning

The ESA requires the FWS and NOAA Fisheries to "develop and implement" recovery plans for the "conservation and survival" of

63. 5 U.S.C. § 706(A) (2006); s*ee* RASBAND ET AL., *supra* note 11, at 346.

64. Motor Vehicle Mfrs. Ass'n v. State Farm Mut. Auto. Ins. Co., 463 U.S. 29, 43 (1983).

65. 16 U.S.C. § 1533(b).

66. *Id.*

67. *Id.* § 1532(5)(A)(i).

68. *Id.* § 1532(5)(A)(ii).

69. 50 C.F.R. § 424.12(a) (2008).

70. *Id.*; RASBAND ET AL., *supra* note 11, at 353.

71. 50 C.F.R. § 424.12(a).

endangered and threatened species unless they determine that a recovery plan will not "promote the conservation of the species."[72] Recovery plans identify the tasks necessary to achieve a particular species' recovery.[73] "Recovery" is defined as "improvement in the status of listed species to the point at which listing is no longer appropriate under the criteria set out in section 4(a)(1) of the Act."[74] "To the maximum extent practicable," the agency must give priority to species most likely to benefit from a recovery plan, particularly those species that are threatened by "development projects or other forms of economic activity."[75] The recovery plan must include: (1) a description of such site-specific management actions as may be necessary to achieve the plan's goal for the conservation and survival of the species; (2) objective, measurable criteria which, when met, would result in a determination, in accordance with the provisions of this section, that the species be removed from the list; and (3) estimates of the time required and the cost to carry out those measures needed to achieve the plan's goal and to achieve the intermediate steps toward that goal.[76]

In developing and implementing recovery plans, the FWS and NOAA Fisheries may request assistance from other appropriate agencies and qualified persons.[77] Before the final recovery plan is approved and implemented, public notice must be provided and all information received during the "public comment period" must be considered.[78] Every two years, the agencies are required to submit a report to the Environment and Public Works and Merchant Marine and Fisheries Committees on the status of the development and implementation of the recovery plan for the listed species.[79]

Aside from requiring the drafting of a recovery plan, if it will "promote the conservation of the species," the ESA does not include specific requirements for recovery or use of scientific data for

72. 16 U.S.C. § 1533(f)(1).

73. Cheever, *supra* note 27, at 74.

74. 50 C.F.R. § 402.02.

75. 16 U.S.C. § 1533(f)(1)(A).

76. *Id.* § 1533(f)(B).

77. *Id.* § 1533(f)(B)(2).

78. *Id.* § 1533(f)(B)(4)–(5). The "public comment period" provides an opportunity for "public review and comment" on a proposed recovery plan.

79. *Id.* § 1533(f)(B)(3). The Environment and Public Works Committee is within the Senate and the Merchant and Marine Fisheries Committee is within the House of Representatives.

developing and implementing recovery plans.[80] The ESA instead requires the FWS and NOAA Fisheries to publish a system for developing and implementing recovery plans in the Federal Register.[81] The guidelines published by NOAA Fisheries in consultation with FWS state that a recovery plan should describe aspects of the species' biology, history, and threats applicable to its endangerment and recovery.[82] The plan should also identify the actions and strategies necessary to achieve recovery of the species, along with goals and criteria to measure the species' recovery.[83] The secondary function of recovery plans is enlisting "potential cooperators and partners" by describing the reasons the species is threatened or endangered, the reason that the current recovery actions are the most effective, and the rationale behind the recovery efforts.[84] In addition, the plan serves as a tool for monitoring recovery activities and obtaining funding.[85]

Although the ESA requires *development* of recovery plans, these plans are considered "guidance documents," not "regulatory documents."[86] Therefore, the ESA does not require the FWS or NOAA Fisheries to *implement* the specific recovery actions or strategies set out in a recovery plan.[87] Furthermore, the specific duties that recovery plans impose are not directly enforceable against a federal agency or anyone else.[88]

80. *Id.* § 1533(f); *see* Cheever, *supra* note 27, at 40 (discussing FWS and NOAA Fisheries Recovery Planning Guidelines); *see also* Daniel J. Rohlf, *Section 4 of the Endangered Species Act: Top Ten Issues for the Next Thirty Years*, 34 ENVTL. L. 483, 497 (2004) (describing recovery steps as "comically vague").

81. 16 U.S.C. § 1533(h)(4).

82. NATIONAL MARINE FISHERIES, ENDANGERED AND THREATENED SPECIES RECOVERY PLANNING GUIDANCE 15 (2004), http://www.nmfs.noaa.gov/pr/recovery [hereinafter RECOVERY PLANNING GUIDANCE].

83. *Id.*

84. *Id.*

85. *Id.*

86. *Id.*

87. *Id.*

88. Defenders of Wildlife v. Lujan, 792 F. Supp. 834, 835 (D.D.C. 1992); *see also* Cheever, *supra* note 27, at 58–64 (discussing that recovery plans and recovery duties are not directly enforceable).

B. Sections 7 and 9 of the Endangered Species Act: Protection of Endangered or Threatened Species

After a species is listed as endangered or threatened, the ESA protects it through two regulatory provisions.[89] First, the ESA prohibits federal agencies from engaging in actions that would "jeopardize" the endangered or threatened species.[90] It also imposes a duty on federal agencies to conserve the protected species.[91] Second, the ESA prohibits all persons from taking an endangered species.[92]

1. Federal Agencies

The ESA requires that all federal agencies must, "in consultation" with the FWS or NOAA Fisheries, insure that actions they authorize, fund, or carry out are not likely to "jeopardize" a threatened or endangered species or result in destruction or adverse modification of critical habitat.[93] If any federal agency plans to engage in such action, it must first engage in a consultation process.[94] The first step in that process requires the federal agency to ask the FWS or NOAA Fisheries about threatened or endangered species in the area.[95] If the federal agency is advised of protected species in the area, the FWS and NOAA Fisheries must prepare a "biological assessment" to determine whether the action will affect the protected species.[96] The FWS and NOAA Fisheries must make this biological assessment based on "the best scientific and commercial data available."[97] If the biological assessment indicates that an agency's proposed action may affect a listed species, the FWS and NOAA Fisheries must then prepare a biological opinion addressing whether the action will jeopardize the protected species or result in the adverse modification of its critical habitat.[98] If the biological opinion concludes the action will jeopardize the species or adversely modify

89. 16 U.S.C. §§ 1536(a)(2), 1538 (1994).

90. *Id.* § 1536(a)(2).

91. *Id.* § 1536(a)(1).

92. *Id.* § 1538.

93. *Id.* § 1536(a)(2); *see* N. Spotted Owl v. Lujan, 758 F. Supp. 621, 628–30 (W.D. Wash. 1991) (stopping old growth logging on public lands).

94. 16 U.S.C. §§ 1536(a)(1), 1532(7). Federal agency includes "any department, agency, or instrumentality of the United States."

95. *Id.* § 1536(c)(1).

96. *Id.*

97. *Id.*

98. RASBAND ET AL., *supra* note 11, at 361.

its critical habitat, the FWS or NOAA Fisheries must suggest "reasonable and prudent alternatives" to avoid the risk.[99] If the proposed action would not cause jeopardy but would result in a taking of an endangered species, the FWS or NOAA Fisheries can issue an incidental take permit with the biological opinion.[100]

2. All Persons

In addition to prohibiting federal agencies from jeopardizing a protected species, the ESA prohibits all persons from taking an endangered species.[101] All persons include individuals, corporations, partnerships, or any other private entity, and officers and employees of the federal, state, or foreign government subject to the jurisdiction of the United States.[102] A taking is defined as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct."[103] Harm includes adverse modification of critical habitat if it results in actual harm to the protected species.[104] Actual harm is "an act which actually kills or injures wildlife," and includes habitat modification that impairs "essential behavioral patterns including breeding, feeding, or sheltering."[105] Adverse modification of non-critical habitat can also constitute a taking, if the modification results in actual harm to the species.[106] The ESA prohibits intentional takings as well as unintentional takings.[107]

In certain circumstances, the FWS and NOAA Fisheries may issue an incidental take permit to any public or private party, "if such a taking is incidental to, and not for the purpose of, the carrying out of an otherwise lawful activity."[108] The applicant for an incidental take permit must prepare a conservation plan detailing what the applicant will do to "minimize and mitigate" the impacts of the taking.[109] The

99. *Id.*

100. *Id.*

101. 16 U.S.C. § 1538.

102. *Id.* § 1532(13).

103. *Id.* § 1532(19).

104. 50 C.F.R. § 17.3 (2008).

105. *Id.*

106. Mountain States Legal Found. v. Hodel, 799 F.2d 1423, 1427–28 (10th Cir. 1986).

107. Babbit v. Sweet Home Chapter of Communities for a Great Oregon, 515 U.S. 687, 700–01 (1995).

108. 16 U.S.C. § 1539(a)(1)(B).

109. *Id.* § 1539(a)(2)(A).

incidental take permit will be granted only if the applicant will "minimize and mitigate the impacts of such taking" and the taking will not "appreciably reduce the likelihood of the survival and recovery of species in the wild."[110]

C. Oregon Water Law

State water laws may influence fish species recovery under the ESA. Water law in the West developed because of the scarcity of water and the need for irrigation.[111] Settlers moving West found the land was too dry to support agriculture, but farmers adapted and began diverting water from rivers and streams.[112] Irrigation dramatically changed the dry areas of the West, transforming barren land into land with high yielding crops.[113]

1. The Doctrine of Prior Appropriation

Oregon adopted the doctrine of prior appropriation to meet the demands of progress and development, providing that "all water within the state from all sources of water supply belongs to the public."[114] Prior appropriation establishes a hierarchy of water rights based on the initial date of acquiring the right.[115] Under prior appropriation, the first person to divert water from a stream and put it to a beneficial use has a right to continued use of the water.[116] First appropriators acquire senior water rights and later appropriators have junior water rights.[117] Under this principle of "first in time, first in right," later appropriators may divert water only if the senior appropriator's rights are satisfied.[118] Additionally, appropriators may

110. *Id.* § 1539(a)(2)(B).

111. *See generally* Bricker & Filippi, *supra* note 9, at 738–39 (discussing the history of the prior appropriation doctrine).

112. BETTE RODA ANDERSON ET AL., THE GREAT NORTHWEST: THE STORY OF A LAND AND ITS PEOPLE 265 (Donald E. Bower & Patricia Kollings eds., 1973).

113. *Id.* at 265–66.

114. OR. REV. STAT. § 537.110 (2007).

115. Melissa K. Estes, Comment, *The Effect of the Federal Endangered Species Act on State Water Rights*, 22 ENVTL. L. 1027, 1044 (1992).

116. Teel Irrigation Dist. v. Water Res. Dep't of State of Oregon, 919 P.2d 1172, 1175 (Or. 1996); *see generally* Bricker & Filippi, *supra* note 9, at 739 (discussing the requirements of the prior appropriation doctrine).

117. *See* Joseph Q. Kaufman, *An Analysis of Developing Instream Water Rights in Oregon*, 28 WILLAMETTE L. REV. 285, 294 (1992) (discussing the doctrine of prior appropriation).

118. *Id.*

forfeit their right to use the water if they fail to use it for a period of time.[119]

2. Oregon Instream Water Rights

To counter the effects of overappropriated rivers, streams, or lakes, Oregon was one of the first states in the West to preserve instream flows for fish habitat.[120] Instream rights are enforceable under the doctrine of prior appropriation and are a legally enforceable claim to a specific amount of water for a non-consumptive use.[121] Non-consumptive uses are instream uses that do not require water diversion or any other physical control.[122] An instream water right is "a water right held in trust by the Water Resources department for the benefit of the people of the State of Oregon to maintain water in-stream for public use."[123] Instream is defined as naturally flowing water within a stream channel or lakebed.[124] Public use includes recreation, conservation of fish and wildlife, pollution abatement, and navigation.[125]

Instream rights are created in three different ways.[126] First, the Instream Water Rights Act established instream water use as a beneficial use and directed the Water Resources Commission to convert minimum stream flows to instream rights.[127] Second, state agencies may apply for instream rights for a public use.[128] For example, the Oregon Department of Fish and Wildlife may request instream water rights for the conservation of fish and wildlife.[129] In addition, the Oregon Department of Environmental Quality can apply for instream rights for pollution abatement, and the Oregon Parks and Recreation Department for "recreation and scenic attraction."[130] The third way to create an instream right is by purchase, lease, or gift of a

119. *Id.*
120. *Id.* at 286, 297.
121. *Id.* at 297.
122. OR. REV. STAT. § 537.332(3) (2007).
123. *Id.*
124. *Id.* § 537.332(1).
125. *Id.* § 537.332(5).
126. *See* Robert David Pilz, Comment, *At the Confluence: Oregon's Instream Water Rights Law in Theory and Practice*, 36 ENVTL. L. 1383, 1387 (2006).
127. OR. REV. STAT. § 537.346.
128. *Id.* § 537.336.
129. *Id.* § 537.336(1).
130. *Id.* § 537.336(2)–(3).

water right by a private party for conversion to instream use.[131] Water rights may be leased for temporary conversion to an instream use or may be sold permanently.[132]

Because the first two methods of establishing instream rights have later priority dates than many senior appropriators, the utility of these two methods is minimal.[133] Instead, the most widely used method of establishing instream water rights is by purchase, lease, or gift.[134] Although the doctrine of prior appropriation and instream water rights make up Oregon's water law, federal laws play a part as well.

3. The Relationship Between Oregon Water Law and the Endangered Species Act

Several federal statutes, including the ESA, influence the state doctrine of prior appropriation.[135] Many environmental protection statutes provide a clause that declares the federal statute will not supersede state water laws, presumably because of the regional differences affecting conservation objectives.[136] However, the ESA merely provides that "federal agencies shall cooperate with State and local agencies to resolve water resource issues in concert with conservation of endangered species."[137] Courts have held that although the ESA requires cooperation with states to resolve water resource issues, "the Act provides no exemption from compliance to persons possessing state water rights," and there is no "privilege to ignore the ESA."[138] Although the ESA does not explicitly state that it preempts state water law, cases have held that diversions by a state water rights holder can constitute a violation of the Act.[139] In *United*

131. *Id.* § 537.348.

132. *Id.*

133. Pilz, *supra* note 126, at 1387.

134. *Id.*

135. *See generally* Estes, *supra* note 115, at 1044–47 (discussing the effect of federal statutes on state law such as the Reserved Rights Doctrine, Equitable Apportionment, the Navigation Servitude Doctrine, the Commerce Clause, and the Supremacy Clause).

136. *See generally* Bricker & Filippi, *supra* note 9, at 750–51 (discussing federal statutes that defer to state law such as the Supremacy Clause, the Desert Lands Act of 1877, the Reclamation Act of 1902, and the Clean Water Act).

137. 16 U.S.C. § 1531(c)(2) (1994).

138. United States v. Glenn-Colusa Irrigation Dist., 788 F. Supp. 1126, 1134 (E.D. Cal. 1992).

139. Estes, *supra* note 115, at 1053.

States v. Glenn-Colusa Irrigation District, a federal district court enjoined an irrigation district from diverting water.[140] Previously, under state water laws, the district was permitted to divert water from the Sacramento River to provide irrigation water to farms.[141] The court found the irrigation diversions resulted in a taking of the Winter Chinook Salmon, which were protected under the ESA.[142]

Because destruction or adverse modification of critical habitat may also constitute a violation under the ESA, agencies and individuals who possess water rights in Oregon may not be immune from the ESA's regulations. For example, in *Riverside Irrigation District v. Andrews*, the court found that reduction of stream flow adversely modified the critical habitat of the whooping crane, which was listed as endangered.[143] Thus, the court held the building of a dam and reservoir was prohibited under the ESA.[144] Furthermore, courts have held that adverse modification of habitat not designated as critical can also constitute a taking under the ESA even though agencies and individuals may hold Oregon water rights.[145] In *Mountain States Legal Foundation v. Hodel*, the court stated that a property owner can be required to remove grazing animals from his land if the animals modify a protected species' natural habitat in a way that would directly injure the species.[146]

In the Middle Columbia River Steelhead Recovery Plan, NOAA Fisheries cited water diversions as a significant factor contributing to the steelhead's decline and listed water quantity as an essential feature of the species' critical habitat.[147] Even though NOAA Fisheries has not designated specific instream flow amounts, if water diversions adversely affect habitat, causing actual harm to the steelhead, it is considered a taking under the ESA.[148] Therefore, state water rights may be reduced or eliminated by the ESA. This power allows the

140. *Glenn-Colusa Irrigation Dist.*, 788 F. Supp. at 1135.

141. *Id.* at 1129.

142. *Id.* at 1133.

143. Riverside Irrigation Dist. v. Andrews, 758 F.2d 508, 514 (10th Cir. 1985).

144. *Id.*

145. Mountain States Legal Found. v. Hodel, 799 F.2d 1423, 1427–28 (10th Cir. 1986); *see also* Estes, *supra* note 115, at 1042 (discussing that even if stream flow is not designated as critical habitat, depletion of stream flow may be a violation of section 7 under the ESA).

146. *Mountain States Legal Found.*, 799 F.2d at 1427–28.

147. STEELHEAD RECOVERY PLAN, *supra* note 15, at 1-6–1-7.

148. *See* Bricker & Filippi, *supra* note 9, at 744.

ESA to trump state laws without any requirement of science in determining the factors contributing to the species' decline.[149]

II. NO SCIENTIFIC DATA REQUIREMENT IN RECOVERY PLANNING UNDER THE ESA

The FWS and NOAA Fisheries must make a number of decisions based on the best scientific data available. The purpose of the "best scientific data available" standard is to ensure that the ESA is not "implemented haphazardly, on the basis of speculation or surmise."[150] Congress expressly required application of the "best scientific data available" standard at three stages of the ESA: listing, designation of critical habitat, and the biological assessment.[151] The determination to list a species as endangered or threatened must be made "solely on the basis of the best scientific and commercial data available."[152] Critical habitat designation must be based on the best scientific data available, but may additionally consider economic impacts.[153] Likewise, when the FWS or NOAA Fisheries prepares a biological assessment pursuant to the actions of a federal agency, the assessment must be based on the "best scientific and commercial data available."[154]

Although use of the best science available is explicitly required in many stages of the ESA, the express requirement is absent at perhaps the most critical stage—the recovery planning section of the Act.[155] NOAA Fisheries describes the recovery plan as the "road map to species recovery—it lays out where we need to go and how best to get there."[156] Because the central purpose of the ESA is the conservation of protected species and the ecosystems on which they depend,[157] recovery plans play an invaluable role in accomplishing this goal.[158] The ESA identifies recovery plans as "the central

149. *See id*. at 750–51.

150. Bennett v. Spear, 520 U.S. 154, 176 (1997).

151. 16 U.S.C. §§ 1533(b)(1)(A), 1533(b)(2), 1536(a)(2) (1994).

152. *Id.* § 1533(b)(1)(A).

153. *Id.* § 1533(b)(2).

154. *Id.* § 1536(a)(2); *see supra* Part I.B.2.

155. John M. Volkman, *The Endangered Species Act and the Ecosystem of Columbia River Salmon,* 14 HASTINGS W.-NW. J. ENVTL. L. & POL'Y 833, 846 (2008) (discussing the importance of recovery plans).

156. RECOVERY PLANNING GUIDANCE, *supra* note 82, at 15.

157. 16 U.S.C. § 1531(b).

158. *See* Cheever, *supra* note 27, at 25–26 (discussing the role of recovery planning).

organizing tool for guiding each species' recovery process," yet there is no mention of any scientific standard to guide species' recovery.[159]

NOAA Fisheries states in its Recovery Planning Guidelines that "a recovery plan is one of the most important tools to ensure sound scientific and logistical decision making throughout the recovery process."[160] Although this vague mention of science lurks within the guideline documents, the ESA does not provide a scientific standard or require implementation of specific recovery strategies or actions in recovery plans.[161] Furthermore, even if the guidelines provided an adequate scientific standard for recovery plans, the plans themselves are not legally enforceable.[162] The absence of the science requirement in recovery planning can lead to inadequate species recovery by prescribing an incorrect or insufficient recovery strategy.

Without a science requirement, recovery plans may be based on speculation as to the causes of a species' decline and the remedies to provide recovery. The case of the Northern Spotted Owl illustrates the devastating consequences that result from a misdiagnosis, leading to the wrong recovery strategy because of the lack of a scientific requirement. The original recovery plan for the Northern Spotted Owl focused too narrowly on one threat, while ignoring another. An overlooked threat to the spotted owl turned out to be another owl, not habitat loss due to timber harvesting.[163] This mistake was not corrected until sixteen years later.[164] It is less likely that the spotted owl would be hovering on the brink of extinction today had the best scientific data available been required in developing and implementing the spotted owl's recovery plan in the beginning.[165]

Endangered fish species recovery appears to be headed down the same path as the spotted owl. Lack of science combined with

159. RECOVERY PLANNING GUIDANCE, *supra* note 82, at 15.

160. *Id.*

161. *Id.*

162. Fund for Animals, Inc. v. Rice, 85 F.3d 535, 547 (11th Cir. 1996).

163. *See* SPOTTED OWL RECOVERY PLAN, *supra* note 1, at VII.

164. *Id.*

165. *See id*.

> [I]t is becoming more evident that securing habitat alone will not recover the spotted owl. Based on the best available scientific information, competition from the barred owl (*S. varia*) poses a significant and complex threat to the spotted owl. Past habitat loss and current habitat loss are also threats to the spotted owl, even though loss of habitat due to timber harvest has been greatly reduced on Federal lands for the past 2 decades.

Id.

inflexibility leads to what critics of recovery plans call "management for extinction."[166]

III. NO FLEXIBILITY IN RECOVERY PLANNING UNDER THE ESA

The ESA requires that each recovery plan include "a description of such site-specific management actions as may be necessary to achieve the plan's goal for the conservation and survival of the species."[167] However, in practice, recovery plans are often implemented in the form of a general, one-size-fits-all approach.[168] Critics call the recovery steps in existing plans "comically vague," leading only a "tiny fraction" of species to actual recovery.[169]

Despite the importance of recovery plans and the need to account for geological variations, recovery plans do not apply a "site-specific" approach.[170] The limited success in species recovery is due in part to the lack of implementation of site-specific management plans.[171] The following case study of the Middle Columbia River Steelhead demonstrates the need for a true site-specific approach and a scientific standard in recovery plans under the ESA.

IV. CASE STUDY: RECOVERY PLANNING FOR ENDANGERED FISH SPECIES IN THE JOHN DAY BASIN

This case study of the Middle Columbia River Steelhead Recovery Plan illustrates the insufficiency of recovery planning when no scientific standard is required and suggests that the current recovery strategy may be doing more harm than good. The geography and ecology of the John Day Basin also demonstrates why flexible recovery planning is imperative.

166. *See* Cheever, *supra* note 27, at 26–27 (stating recovery plans prescribe "management for extinction" rather than "management for recovery").

167. 16 U.S.C. § 1533(f)(1)(B)(i) (1994).

168. *See* STEELHEAD RECOVERY PLAN, *supra* note 15, at 1-2 to 1-3.

169. Rohlf, *supra* note 80, at 497–98.

170. *See* STEELHEAD RECOVERY PLAN, *supra* note 15, at 1-2 to 1-3 (stating the recovery plan governs nine major Columbia River tributaries and numerous smaller river systems).

171. *See generally* Rohlf, *supra* note 80, at 497–99 (discussing the flaws in recovery plans).

A. Geography of the John Day Basin

The John Day River, located in rural Eastern Oregon, is the Columbia River Basin's "most biologically diverse river system."[172] A tributary of the Columbia River, it is one of the major rivers in the Middle Columbia River system.[173] The John Day Basin is characterized as having a semi-arid climate with hot, dry summers and cold winters.[174] Average annual precipitation at lower elevations is between ten and twelve inches.[175] The John Day Basin includes five tributaries: The Lower Mainstem, North Fork, Middle Fork, South Fork, and Upper Mainstem.[176] Native fish species include several trout species, salmon, and steelhead.[177]

Flowing about 280 miles and draining 8,100 square miles between the Blue and Cascade mountain ranges, the John Day is the longest undammed river with wild runs of anadromous salmon and steelhead in the United States.[178] Salmon and steelhead make the 450-mile journey from the Pacific Ocean each year to spawn in the John Day River.[179] This river provides some of the best habitat for fish species because of the absence of dams and hatcheries.[180] Although the John Day River contains healthy populations of Spring Chinook Salmon, it is also home to Bull Trout and Summer Steelhead, which are listed as threatened under the ESA.[181]

172. Wild Salmon Center, http://www.wildsalmoncenter.org/programs/north_america/john_day.php (last visited Nov. 21, 2009).

173. STEELHEAD RECOVERY PLAN, *supra* note 15, at 1-2–1-3. Other major rivers in the Middle Columbia River system include the White Salmon, Deschutes, Klickitat, Umatilla, Walla Walla, and Yakima rivers and Fifteenmile, Rock, and Willow creeks. *Id.* A tributary is a stream that flows into a larger stream or other body of water. THE AMERICAN HERITAGE DICTIONARY OF THE ENGLISH LANGUAGE 858 (3d ed. 1994).

174. OREGON WATER RESOURCES DEPARTMENT, JOHN DAY IRRIGATION RETURN FLOW STUDY 1 (1988).

175. *Id.*

176. STEELHEAD RECOVERY PLAN, *supra* note 15, at 1-10.

177. *See* OREGON WATER TRUST, 2007 ANNUAL REPORT 9 (2007) (stating the Upper John Day River is critical habitat for steelhead, salmon, and bull trout).

178. Oregon Water Trust Projects John Day Basin, http://www.owt.org/basin-john-day.html (Feb. 5, 2009) (on file with author).

179. OREGON WATER TRUST, 2007 ANNUAL REPORT 9 (2007).

180. Oregon Water Trust Projects John Day Basin, http://www.owt.org/basin-john-day.html (Feb. 5, 2009) (on file with author).

181. *Id.*

B. Listing and Designating Critical Habitat of the Middle Columbia River Steelhead Under the Endangered Species Act

On March 25, 1999, NOAA Fisheries listed the Middle Columbia River Steelhead as threatened with extinction.[182] A recovery plan was developed in August 2008, citing the factors required by the ESA as contributing to the steelhead's decline: (1) the present or threatened destruction, modification, or curtailment of habitat or range; (2) overutilization for commercial, recreational, scientific, or educational purposes; (3) disease or predation; (4) the inadequacy of existing regulatory mechanisms; and (5) other natural or man-made factors affecting continued existence.[183] Under the first factor, the recovery plan cites water diversions, forestry, agriculture, mining, and urbanization as destroying or degrading habitat.[184] Under the second factor, the plan cites overfishing in the early years of European settlement.[185] Under disease or predation, the plan states that introductions of nonnative species and habitat modifications have increased predator populations.[186] For the fourth factor, the plan identifies various inadequate regulatory mechanisms anticipated to reduce habitat loss and degradation caused by human use and development.[187] Finally, under the fifth factor, the plan cites variability in ocean and freshwater conditions.[188]

On January 2, 2006, NOAA Fisheries designated critical habitat for the steelhead.[189] Essential features of the species' critical habitat include substrate,[190] water quality,[191] water quantity, water

182. STEELHEAD RECOVERY PLAN, *supra* note 15, at 1-3. Although the salmon are endangered on the Columbia River and its tributaries, there is no written recovery plan for salmon on the John Day River. E-mail from Jeff Neal, Acting District Fish Biologist, Oregon Department of Fish & Wildlife (Mar. 5, 2009, 09:40 PST) (on file with author).

183. 16 U.S.C. § 1533(a)(1) (1994).

184. STEELHEAD RECOVERY PLAN, *supra* note 15, at 1-6.

185. *Id.*

186. *Id.* at 1-7.

187. *Id.*

188. *Id.*

189. *Id.*

190. U.S. DEPARTMENT OF COMMERCE, NOAA FISHERIES GLOSSARY 51 (2006), http://www.st.nmfs.noaa.gov/st4/documents/FishGlossary.pdf. NOAA Fisheries defines substrate as "seafloor or other solid surface to which animals or plants attach, or on which they move."

191. *Id.* at 59. NOAA Fisheries defines water quality as "the chemical, physical and biology characteristics of water in respect to its suitability for a particular purpose." *Id.* Water quality criteria are the specific levels of water quality desired

temperature, food, riparian vegetation, velocity, space, and safe passage.[192] In citing the factors involved in the steelhead's decline and its critical habitat, the ESA requires use of the best scientific data available.[193] However, the utilization of any science standard ends before the recovery planning process begins.[194]

C. Recovery Planning for Threatened and Endangered Fish Species on the John Day River

The decline of fish species is frequently blamed on water diversions for irrigation.[195] For example, an article in the Cascadia Times declares that irrigators are responsible for "dewatering" the John Day River, calling it a "tragedy."[196] WaterWatch of Oregon[197] states, "You've got too many people taking too much water out of the river and not enough is left in stream for fish."[198] The Fresh Water Trust claims that current irrigation practices adversely affect stream flows and fish populations.[199]

Seemingly, because of the popular belief that irrigation is the primary cause for the decline of fish species, the principal focus of steelhead's recovery is to improve watershed health by increasing instream flows.[200] The Middle Columbia Steelhead Recovery Plan states its primary goal is to remove the steelhead from the threatened and endangered species list, which requires populations to reach

for identified uses, including "drinking, recreation, farming, fish production, propagation of other aquatic life, and agricultural and industrial processes." *Id.*

192. STEELHEAD RECOVERY PLAN, *supra* note 15, at 1-7.

193. 16 U.S.C. § 1533(b)(1)–(2) (1994).

194. *See* Volkman, *supra* note 155, at 846–47 (discussing the shortcomings of recovery planning).

195. Michael R. Moore et al., *Water Allocation in the American West: Endangered Fish Versus Irrigated Agriculture*, 36 NAT. RESOURCES J. 319, 325 (1996) (stating "agricultural activities are a factor in the decline of almost seventy-five percent" of western fish species).

196. Paul Koberstein, *Top 10 Western Rivers Trampled by the Livestock Industry*, CASCADIA TIMES, Summer 2002, http://www.times.org/archives/2002/johndayriver.htm.

197. Welcome to WaterWatch, http://www.waterwatch.org (last visited Nov. 21, 2009). WaterWatch of Oregon was founded in 1985. Its mission is to restore instream flows to benefit fish and wildlife. *Id.*

198. Koberstein, *supra* note 196.

199. Oregon Water Trust Projects John Day River Basin, http://www.owt.org/basin-john-day.html (Feb. 5, 2009) (on file with author).

200. *See* OREGON WATER TRUST, 2007 ANNUAL REPORT, 9–10 (2007) (discussing plans to improve watershed health in the Upper Mainstem of the John Day River by increasing instream flows).

levels of biological viability.[201] The broad recovery goal is to rebuild populations to levels that will provide for "sustainable fisheries and other ecological, cultural, and social benefits."[202] To determine the recovery strategy or action, NOAA Fisheries considers the limiting factors and threats to the steelhead population.[203] The primary threats to the steelhead are listed as habitat degradation because of modified and reduced stream flows and impaired water quality because of elevated water temperatures.[204] Therefore, the recovery strategy is to reduce these threats to the steelhead population by increasing instream flows.[205]

D. The Problems with Current Recovery Plans

Few would argue that fish species do not need water to survive. In fact, because the FWS and NOAA Fisheries cite inadequate stream flows as a cause of fish species decline, it is logical to keep more water flowing instream.[206] With the exclusive focus on increasing stream flows to recover threatened and endangered fish species, however, alternative recovery options are not thoroughly considered, even when current recovery efforts are not successful.

1. There Is No Increase in Stream Flow When Irrigation Diversions Are Shut Off

In the John Day Basin, irrigation represents the major consumptive use of water, totaling about ninety percent of appropriated water.[207] Despite attempts to increase stream flow by reducing irrigation diversions, the John Day Basin has experienced little increase in stream flow. For example, in 2006, the Oregon

201. STEELHEAD RECOVERY PLAN, *supra* note 15, at 1-11.

202. *Id.*

203. *Id.* at 23. Limiting factors are "the physical, biological, or chemical conditions of the environment and associated ecological process and interactions (e.g. habitat connectivity, water quality, physical habitat quality, etc.) that influence Middle Columbia steelhead viable salmonid population parameters, including abundance, productivity, special structure, and diversity." *Id.* Threats are "human actions (e.g. fishing, operation of hatcheries, operation of hydrosystem, land use practices, etc.) or natural events (e.g. flood, drought, volcano, etc.) that cause or contribute to limiting factors." *Id.* "Threats may influence one or multiple life stages and may occur in the present or future or have occurred in the past." *Id.*

204. *Id.*

205. *Id.* at 1-27.

206. *Id.* at 1-23.

207. OREGON WATER RESOURCES DEPARTMENT, JOHN DAY IRRIGATION RETURN FLOW STUDY 2 (1988).

Water Trust completed a restoration project on the Middle Fork of the John Day River with the owner of the Austin Ranch, a senior water right holder.[208] The purpose of the project was to increase available fish habitat and improve water quality by keeping additional water instream.[209] The owner agreed to permanently stop irrigating after July 20 of each year in exchange for monetary compensation.[210] Shortening the irrigation season requires the owner to run about twenty percent fewer cattle.[211] Viewed as a "landmark agreement," the goal of this project was to add ten cubic feet per second (cfs) to water flowing in the Middle Fork during the late summer low flow period, a time most critical for spawning and rearing fish.[212]

However, the 2008 Monitoring Report revealed little to no increase in stream flow as a result of the project. Measurements were taken at five locations on the Middle Fork of the John Day River before July 20 and after the Austin Ranch owner turned off his irrigation diversions, through October.[213] On July 19, 2008, at the point of diversion, there was 4.107 cfs instream. On July 21, 2008, there was 5.623 cfs instream, representing only about a 1.5 cfs increase in stream flow immediately after the diversion was shut off.[214] Although the stream flow predictably increased immediately after the diversion was turned off, the flow was not maintained in the critical dry months after July. At another location on the owner's property, there was 5.644 cfs instream on July 19 and 7.588 cfs instream on July 21, representing a 1.944 cfs increase. However, by September 16, 2008, instream flow decreased to 4.602 cfs.[215] Upstream from the owner's property, there was 35.997 cfs instream on June 9, 2008, but this number dropped to 6.296 cfs by July 19, 2008.[216] These figures show that stream flows will naturally decrease in the late summer months.[217] The decrease of stream flow in the late

208. *See* T.J. Burnham, *Groups Aim to Raise Stream Flow*, WESTERN FARMER-STOCKMAN, Jan. 2007, at 30 (discussing the OWT's transaction with this landowner).

209. Pilz, *supra* note 126, at 1415–16.

210. *Id.*

211. *Id.*

212. *Id.*

213. SCOTT PEERMAN, OREGON WATER TRUST, JOHN DAY BASIN MONITORING REPORT 3–5 (2008).

214. *Id.* at 4.

215. *Id.*

216. *Id.*

217. *See* TROY W. BAKER, WALLA WALLA BASIN WATERSHED COUNCIL, WALLA WALLA RIVER SURFACE WATER BUDGET ASSESSMENT 3 (Jan. 6, 2009),

summer is because of less rainfall.[218] For example, the mean daily stream flow in the Middle Fork on July 1, 2005 was 84 cfs, dropping to 23 cfs on August 23, 2005.[219]

Logic suggests instream flow should increase by reducing the amount of water taken out of stream. Then why does this data not reflect the expected increase? The answer is simply that a substantial amount of the water from irrigation returns to the stream through seepage.[220] Therefore, turning off the diversion has almost no effect on the amount of water instream.[221] Furthermore, even when no water is diverted, the high fish mortality rate continues.[222]

2. High Fish Mortality Continues When Water Remains Instream

Recovery plans call for more water instream to protect threatened and endangered fish species.[223] In response, less water is being diverted for irrigation through conservation organizations purchasing land and water rights.[224] Despite the efforts of increasing stream flow, fish continue to die.[225]

In July 2007, the FWS conducted pre-spawning mortality surveys of adult Spring Chinook Salmon in the Middle Fork and North Fork of the John Day River.[226] The Middle Fork was the most

http://www.wwbwc.org/Projects/Monitoring_Research/S-G Monitoring Walla Walla Basin OWEB 6-253 Final.pdf (stating Western watersheds are characterized by having higher flows in the winter and spring and lower flows in the summer and fall).

218. *See* OREGON WATER RESOURCES DEPARTMENT, JOHN DAY IRRIGATION RETURN FLOW STUDY 2 (1988).

219. WATER RESOURCES DEPARTMENT, HYDROGRAPHICS DATABASE, MIDDLE FORK JOHN DAY RIVER AT RITTER, OREGON, http://apps2.wrd.state.or.us/apps/sw/hydro_report/gage_data_request.aspx?station _nbr=14044000 (last visited Nov. 21, 2009).

220. OREGON WATER RESOURCES DEPARTMENT, JOHN DAY IRRIGATION RETURN FLOW STUDY 21 (1988).

221. *Id.*

222. *See* MORTALITY SURVEYS, *supra* note 20, at 2.

223. STEELHEAD RECOVERY PLAN, *supra* note 15, at 1-27.

224. *See* Pilz, *supra* note 126, at 1415–16 (discussing the Oregon Water Trust's restoration project on the Austin Ranch).

225. *See* MORTALITY SURVEYS, *supra* note 20, at 2.

226. *Id.* at 1–3. Because it takes the steelhead nine months to migrate back to the John Day River from the ocean, as opposed to five months for the Spring Chinook Salmon, there were no steelhead in the river during this time. Interview with Jeff Neil, Acting District Fish Biologist, Oregon Dep't of Fish & Wildlife in John Day, Or. (June 3, 2009). Therefore, mortality surveys were conducted of the Spring Chinook Salmon to measure the effects of reducing the irrigation season. *Id.*

affected, with surveyors finding 118 carcasses and only 37 live fish.[227] The FWS concluded that extreme water temperatures and low water levels caused the high fish mortality rate.[228] The FWS conducted the surveys on property owned by the Nature Conservancy, Forest Service, and the Confederated Tribes, where no water is diverted out of stream.[229] All 118 fish carcasses were found on this property, whereas no carcasses were found on the Austin Ranch, which is located upstream from the other property surveyed.[230] Interestingly, the Austin Ranch, as discussed above, diverts water for irrigation, and the surveys were completed one year after the transaction with the Oregon Water Trust, which shut off irrigation after July 20 of each year.[231] The FWS mortality surveys illustrate that turning off diversions upstream did not result in less fish mortality downstream. In fact, the majority of fish carcasses were found where water was not diverted, which is most likely because of elevated water temperatures.[232] Despite the high fish mortality, the same recovery strategy continues to be implemented in the John Day Basin and across the state.

3. Implementation of an Already Failed Recovery Plan

Although the Middle Columbia River Steelhead Recovery Plan was implemented just one year ago, the strategy of restoring stream flow is not new. Even before implementation of the steelhead recovery plan, much of the recovery effort in the John Day Basin already focused on restoring instream flows. For example, since 1993, organizations like Oregon Water Trust have instituted programs to restore surface water flows for healthier streams in the John Day Basin.[233] In 1955, Oregon's instream flow programs sought to keep more water instream for fish habitat in response to overappropriated rivers and streams.[234] For sixteen years, the Pacific Northwest has attempted to recover salmon in the Columbia River by restoring

227. MORTALITY SURVEYS, *supra* note 20, at 2.

228. *Id.*

229. *Id.* at 1; *see* Pilz, *supra* note 126, at 1415–16 (discussing water users downstream from the Austin Ranch are conservation entities such as Nature Conservancy and the Warm Springs Tribe who are not interested in out-of-stream uses).

230. MORTALITY SURVEYS, *supra* note 20, at 3.

231. *Id.* at 2; Pilz, *supra* note 126, at 1415–16.

232. MORTALITY SURVEYS, *supra* note 20, at 2–3.

233. The Freshwater Trust, *supra* note 19.

234. Kaufman, *supra* note 117, at 286, 304.

instream flow.[235] Given its failure to achieve measurable success, increasing stream flow should not be the only tool used to preserve fish populations.

Despite failed recovery strategies of the past, the same methods are being employed today. The recovery plan for the Middle Columbia River Steelhead incorporates the tried and failed methods of the past. Its persistent goal to restore instream flow is identical to most endangered fish species recovery plans throughout the state.[236] In the meantime, species are left with ineffective recovery strategies because of the absence of a scientific standard, as well as implementation of a site-specific approach.

4. A One-Size-Fits-All Approach

Despite the ESA's site-specific provision, recovery plans are often implemented in the form of a broad, one-size-fits-all approach.[237] This flawed approach to recovery planning encompasses large geographical areas, failing to account for various differences within those areas that require distinct management strategies.

Although recovery plans focus on an individual species, subspecies, or distinct population segment, the recovery plan for that species governs a very large geographical area.[238] The Middle Columbia Steelhead Recovery Plan governs nine major Columbia River tributaries and numerous smaller systems.[239] This one-size-fits-all approach hinders even the best recovery strategy because it does not consider ecological variations. For example, the John Day Basin differs in three important ways from its surrounding river systems. The John Day Basin has no dams and no hatcheries, and its climate varies dramatically in comparison to other parts of the state.[240]

235. Volkman, *supra* note 155, at 834.

236. *See* U.S. FISH & WILDLIFE SERVICE, BULL TROUT DRAFT RECOVERY PLAN 7, 23–26 (2002), http://www.fws.gov/pacific/bulltrout/RP/Chapter_9%John%Day.pdf (stating the strategy of recovery for the Bull Trout is to restore stream flows).

237. 16 U.S.C. § 1533(f)(B)(1)(i) (1994).

238. RECOVERY PLANNING GUIDANCE, *supra* note 82, at 25.

239. *See* STEELHEAD RECOVERY PLAN, *supra* note 15, at 1-2.

240. Wild Salmon Center, http://www.wildsalmoncenter.org/programs/north_america/john_day.php (last visited Nov. 21, 2009); *see* BONNEVILLE POWER ADMINISTRATION, BACKGROUNDER, COLUMBIA RIVER HATCHERIES: AN EVOLVING ROLE 1 (2006), http://www.bpa.gov/corporate/pubs/backgrounder/06/bg120306.pdf (discussing the role of hatcheries in the Columbia River Basin); GEORGE TAYLOR, OREGON CLIMATE SERVICE, CLIMATE OF OREGON SPECIAL REPORT, http://www.ocs.orst.edu/page_links/climate_data_zones/climate_oregon.html (April 4,

a. No Dams in the John Day Basin

The John Day Basin has unique water flows because it does not have water storage systems such as dams or reservoirs to create holdback for late season flows.[241] Late season flows are imperative in the John Day Basin because stream flows are critically low during the late summer months.[242] Thus, while irrigation may provide holdback for late season flow, which improves fish habitat in the John Day Basin, such a practice may not be necessary in basins that have dams or reservoirs providing for late season flow.[243] Moreover, irrigation for purposes of providing return flow may not even be feasible in other basins, as soil, stream-laid sediment deposits, and other factors affect the amount of return flow.[244] For instance, the Upper Mainstem of the John Day River has alluvial deposits, which have high permeability.[245] However, deposits and soils differ even within the John Day Basin, affecting permeability rates, depending on the location in the basin.[246]

b. No Hatcheries in the John Day Basin

Unlike most basins in Oregon, the John Day Basin does not have hatcheries.[247] In 1877, the Northwest began building hatcheries to restore salmon populations affected by harvesting.[248] Today, there are

2009) (on file with author).

241. Wild Salmon Center, http://www.wildsalmoncenter.org/programs/north_america/john_day.php (last visited Nov. 21, 2009); *see* OREGON WATER RESOURCES DEPARTMENT, JOHN DAY IRRIGATION RETURN FLOW STUDY 4 (1988). Late season flows refers to the amount of water instream during the late summer season.

242. *See* OREGON WATER RESOURCES DEPARTMENT, JOHN DAY IRRIGATION RETURN FLOW STUDY 1 (1988).

243. For example, the Columbia River Basin has hydropower dams. *See* Volkman, *supra* note 155, at 835.

244. *See* OREGON WATER RESOURCES DEPARTMENT, JOHN DAY IRRIGATION RETURN FLOW STUDY 5–6 (1988). Return flow refers to the water that was taken from the stream for irrigation or other purposes and then later returns to the stream through seepage. *Id.* Return flow is cooler and cleaner than when the water left the stream. SHAUN W. ROBERTSON & KENNETH DELANO, HOLLIDAY RANCH RETURN FLOW COOLING PROJECT 1 (2001).

245. OREGON WATER RESOURCES DEPARTMENT, JOHN DAY IRRIGATION RETURN FLOW STUDY 5–6 (1988).

246. *See id.* (describing geo-hydrology and soils within the John Day Basin).

247. OREGON WATER TRUST, 2007 ANNUAL REPORT, 9 (2007); *see* BONNEVILLE POWER ADMINISTRATION, BACKGROUNDER, COLUMBIA RIVER HATCHERIES: AN EVOLVING ROLE 1 (2006), http://www.bpa.gov/corporate/pubs/backgrounder/06/bg120306.pdf (discussing hatcheries in the Columbia River Basin).

248. BONNEVILLE POWER ADMINISTRATION, BACKGROUNDER, COLUMBIA RIVER

approximately 200 hatcheries in the Columbia River Basin.[249] Hatcheries play a major role in the effort to recover salmon, steelhead, and other fish species listed under the ESA by supplementing natural populations.[250] About eighty percent of salmon and steelhead that return to the Columbia as adults were hatched and reared in hatcheries.[251] In 2005, hatcheries in the Northwest released 134 million salmon and steelhead in the Columbia River Basin.[252]

The absence of hatcheries in the John Day Basin renders it the longest free flowing river with the largest remaining wild runs of anadromous salmon and steelhead in the continental United States.[253] Despite some benefits, hatcheries raise a number of concerns, such as hatchery fish competing with wild fish for food and habitat and reduction of genetic diversity.[254] Additionally, hatchery fish have not reproduced as well as wild fish, raising concerns of interbreeding and weakening of wild populations.[255] Because the John Day Basin has wild anadromous fish species, it is an important area for recovery of wild salmon in the Columbia River Basin.[256]

c. Differences in Climate and Precipitation

The John Day Basin differs significantly from other areas of the state with respect to climate and precipitation. Characterized as a semi-arid climate, the John Day Basin has hot and dry summers and cold winters.[257] Average annual precipitation is about thirteen inches while the western part of the state receives more than eighty-six inches annually.[258] In the John Day Basin, most of the precipitation at

HATCHERIES: AN EVOLVING ROLE 1 (2006), http://www.bpa.gov/corporate/pubs/backgrounder/06/bg120306.pdf.

249. *Id.*

250. *Id.* at 1–2.

251. *Id.* at 1.

252. *Id.* at 2.

253. Oregon Water Trust Projects John Day Basin, http://www.owt.org/basin-john-day.html (Feb. 5, 2009) (on file with author).

254. BONNEVILLE POWER ADMINISTRATION, BACKGROUNDER, COLUMBIA RIVER HATCHERIES: AN EVOLVING ROLE 2 (2006), http://www.bpa.gov/corporate/pubs/backgrounder/06/bg120306.pdf.

255. *Id.*

256. OREGON WATER TRUST, 2007 ANNUAL REPORT 9 (2007).

257. OREGON WATER RESOURCES DEPARTMENT, JOHN DAY IRRIGATION RETURN FLOW STUDY 1 (1988).

258. TAYLOR, *supra* note 240.

the higher elevations is in the form of snow, which provides stream flow during the hot months of late spring and summer.[259] The John Day Basin's stream flows vary throughout the year, but flows are lowest during the summer months.[260]

The absence of dams and hatcheries, as well as climate variations, significantly alters the landscape of water management and indicates the need for a truly site-specific approach to recovery planning. One recovery strategy governing a large geographical area is unlikely to adequately address the needs of the threatened or endangered species, as regional and ecological differences vary dramatically.

E. Thinking Outside of the Box to Successfully Recover Threatened and Endangered Fish Species

The persistent instream approach dominating fish species recovery plans has proved to be of limited success. Instead of waiting until it is too late to provide an effective recovery strategy for the steelhead, it is time to experiment with alternative recovery options.

Several studies suggest that not only may irrigation not harm fish, but it may benefit threatened and endangered fish species recovery. First, recent studies show that most water diverted for irrigation returns to the stream through seepage.[261] Moreover, return flow not only increases instream flows but returns water to the stream colder than if it had been left in the stream.[262]

1. Irrigation Provides Higher Inflows

A project completed in the Walla Walla Basin provides an innovative example of alternative methods of fish species recovery.[263] In 2001, the Walla Walla Basin Watershed Council began monitoring instream flow, diversions, and tributary flow to quantify water volume in the Walla Walla River.[264] Data was collected in June, when the Bull Trout are moving to the upper watershed to spawn, and

259. OREGON WATER RESOURCES DEPARTMENT, JOHN DAY IRRIGATION RETURN FLOW STUDY 1 (1988).

260. *Id.*

261. *See* BAKER, *supra* note 217, at 13.

262. ROBERTSON & DELANO, *supra* note 244, at 1.

263. *See* BAKER, *supra* note 217, at 3–4.

264. *Id.*

in August, when the steelhead return to the river.[265] For a period of five years, water resource scientists and watershed managers collected flow measurements to analyze water management challenges for future project planning, development, and policy decisions.[266] The primary objective of this study was to assist water and fishery managers to better understand surface-groundwater interactions as they relate to fish species recovery.[267] The project found that instream flows were significantly influenced by much higher inflows of ground water that had been diverted for irrigation.[268]

A study conducted on the Upper Mainstem of the John Day River found similar results. The amount of return flows directly correlated with the amount of water applied to the field.[269] For example, from August 1 to August 17, diversions were gradually decreased and return flows began to decline beginning on August 5.[270] When diversions resumed on August 18, return flows increased.[271] The largest return flows were recorded in late August to the middle of September.[272] This finding is significant because river levels are lower at the end of the summer, but irrigation creates a holdback, releasing water back into the stream, creating late season flow during the critical low flow periods.[273] These return flows would not have occurred without summer irrigation.[274] In addition to providing return flows during critical low flow periods, irrigation also improves water quality.[275]

2. Irrigation Provides Cooler Return Flows

Low stream flow is correlated with high water temperatures; therefore, water diversions are blamed not only for causing low stream flows, but also for increasing water temperatures.[276] The ideal

265. *Id.* at 4.
266. *Id.* at 4, 22.
267. *Id.* at 3, 22.
268. *Id.* at 13.
269. OREGON WATER RESOURCES DEPARTMENT, JOHN DAY IRRIGATION RETURN FLOW STUDY 21 (1988).
270. *Id.*
271. *Id.*
272. *Id.*
273. *Id.* at 4, 21.
274. *Id.* at 21.
275. *See* ROBERTSON & DELANO, *supra* note 244, at 1.
276. *See* Holly Doremus, *Water, Population Growth, and Endangered Species in the West*, 72 U. COLO. L. REV. 361, 367–68 (2001).

water temperature range for steelhead during spawning is fifty to sixty degrees Fahrenheit.[277] During rearing, the ideal temperature range is 53.6 to 64.4 degrees, with an upper limit of 77 degrees Fahrenheit.[278] A study completed in the John Day River Basin created an underground system of buried pipe to measure temperature of return flows.[279] The study indicated that below ground return systems have a significant cooling effect on return flow temperatures.[280] The below ground return flows tended to be cooler than river temperatures, staying below sixty-four degrees Fahrenheit more frequently and for longer periods of time.[281] This finding is significant and should be considered when developing strategies for threatened and endangered fish species.

V. HOW THE ESA CAN BE MORE SUCCESSFUL

Recovery planning is central to a species' population stability and existence. Given the importance of recovery planning, the ESA should place more emphasis on the recovery phase and require adherence to stricter scientific demands. To accomplish recovery goals, it is crucial that recovery plans take a site-specific approach and utilize the best available science in development and implementation.

A. Flexibility in Implementing Recovery Plans: The Need for a Site-Specific Approach

The ESA's site-specific requirement for recovery plans is to be implemented "as necessary to achieve the plan's goal for the conservation and survival of the species."[282] The purpose of a recovery plan is to determine the best strategy that will guide a

277. U.S. ARMY CORPS OF ENGINEERS, WALLA WALLA DISTRICT, SALMON RIVER IDAHO AQUATIC ECOSYSTEM RESTORATION PROJECT 1 (2006), http://www.nww.usace.army.mil/salmonriver/steelhead.htm. Spawning is defined as the release of ova fertilized or to be fertilized. U.S. DEPARTMENT OF COMMERCE, NOAA FISHERIES GLOSSARY 47 (2006), http://www.st.nmfs.noaa.gov/st4/documents/FishGlossary.pdf.

278. U.S. ARMY CORPS OF ENGINEERS, WALLA WALLA DISTRICT, SALMON RIVER IDAHO AQUATIC ECOSYSTEM RESTORATION PROJECT 2 (2006), http://www.nww.usace.army.mil/salmonriver/steelhead.htm.

279. ROBERTSON & DELANO, *supra* note 244, at 1.

280. *Id.*

281. *Id.*

282. 16 U.S.C. § 1533(f)(1)(B)(i) (1994).

particular species to recovery.[283] If species recovery is to be successful, it is imperative to develop and implement an effective recovery plan for the particular species in the specific area.

To achieve a true site-specific approach, the FWS and NOAA Fisheries should develop and implement recovery plans in smaller areas, where those areas are geographically and ecologically distinct. For example, if developing and implementing a recovery plan for endangered or threatened fish species, a separate and specific plan for each tributary should be required. Therefore, in the John Day Basin, a separate recovery plan would be required for the Lower Mainstem, North Fork, Middle Fork, South Fork, and Upper Mainstem. Within those separate recovery plans, management actions can be broken down even further as differences in geography and ecology require. In the Upper Mainstem sub-basin for instance, there are approximately 25,000 acres of irrigated cropland and soils have high permeability.[284] Therefore, within the Upper Mainstem, irrigation to create late season flow should be utilized as a recovery method.

Requiring more specific recovery plans will increase the number of recovery plans produced. This requirement may increase the length of time to complete a recovery plan and raise costs in an already time consuming and expensive process.[285] However, breaking up recovery plans into smaller areas will more sufficiently address the needs of species and provide a greater chance of recovery. True site-specific recovery plans will efficiently implement the management actions necessary for recovery of a particular species in a specific area, thereby decreasing the amount of time and resources needed to continue those management actions.

This solution is practical, as it merely requires the FWS and NOAA Fisheries to implement an ESA provision already in place, as

283. *See* RECOVERY PLANNING GUIDANCE, *supra* note 82, at 15.

284. OREGON WATER RESOURCES DEPARTMENT, JOHN DAY IRRIGATION RETURN FLOW STUDY 2, 5 (1988).

285. *See* Volkman, *supra* note 155, at 847. Developing recovery plans requires an enormous amount of time and resources, often taking years to complete. In contrast to the strict timelines set out for listing and critical habitat designations, the ESA provides no specified time limits for completing recovery plans. Rohlf, *supra* note 80, at 497–98. The FWS and NOAA Fisheries guidelines set a goal of two and a half years after the species is listed as endangered or threatened for a completed and approved final recovery plan. RECOVERY PLANNING GUIDANCE, *supra* note 82, at 23. However, it is rare that a final recovery plan is completed within these time lines and many endangered and threatened species have no recovery plan at all. Rohlf, *supra* note 80, at 497–98.

opposed to amending the Act. True site-specific recovery plans combined with sound scientific data will adequately address the needs of the individual species and provide a chance for recovery.

B. The Need for a Scientific Standard in Recovery Plans

Courts have interpreted the "best scientific data available" standard in other provisions of the ESA as a tool to ensure the Act is not "implemented haphazardly, on the basis of speculation or surmise."[286] The lack of any science requirement at the recovery planning stage allows recovery plans to be developed and implemented based on exactly that—speculation and assumptions.

Because recovery planning is perhaps the most important phase of recovery for endangered and threatened species, the ESA should be amended to require at a minimum, the "best scientific data available" standard. By requiring use of the "best scientific data available" standard when developing and implementing recovery plans, the ESA will ensure the best recovery strategy is applied to each particular species' needs. This mandate would require the FWS and NOAA Fisheries to determine the best strategy of recovery for the species based on sound and corroborative science.

The "best scientific data available" standard should be applied in conjunction with implementation of true site-specific recovery plans. The scientific data should be determined for the particular species and the specific location of the species. Requiring this scientific standard guarantees that each species is receiving the best protection possible and will lead to a more successful recovery of endangered and threatened species.

CONCLUSION

Despite the valiant efforts of the ESA, threatened and endangered species continue to decline. The absence of a scientific standard and failure to implement a true site-specific approach has contributed to the limited success of recovery planning. Greater emphasis and scrutiny on recovery plans can provide a means for improvement.

Guiding the recovery process, recovery plans are perhaps the most important element of a species' recovery. The ESA does not require any scientific standard during the recovery planning stage,

286. Bennett v. Spear, 520 U.S. 154, 176 (1997).

despite the invaluable role that recovery planning plays.[287] The absence of a scientific standard leads to insufficient recovery strategies and, in the case of the spotted owl, an irreversible decline.[288] Furthermore, agencies rarely adhere to the ESA's "site-specific management actions" provision, and instead implement a one-size-fits-all approach to recovery planning.[289] Under this approach, recovery plans govern large geographical areas, without regard for the significance of geographical, ecological, and hydrological differences that impact species' recovery.[290] The lack of a scientific standard, combined with the implementation of a one-size-fits-all approach, results in vague, speculative management actions and ultimately little success in recovering species.

Application of the "best scientific data available" in recovery planning is imperative to reverse the trend towards extinction. Applying science to the Middle Columbia River Steelhead Recovery Plan reveals that the method of keeping more water instream is not the solution for its recovery. Efforts to restore stream flows by turning off diversions result in minimal increases in water instream and in some cases, higher fish mortality rates.[291] Contrary to current recovery plans, irrigation may be an ally to fish species, at least in certain ecosystems, by providing a holdback and returning cooler water to the stream.[292] Moreover, use of the one-size-fits-all approach in implementing recovery plans hinders recovery success. A closer look at specific areas reveals stark variations among basins, sub-basins, rivers, and tributaries. Dissimilarities such as the presence of dams, hatcheries, climate, and precipitation make a drastic difference in the application of management actions.[293] To provide for

287. RECOVERY PLANNING GUIDANCE, *supra* note 82, at 15.

288. *See* Warren Cornwall, *As Spotted Owl's Numbers Keep Falling, Some Fear It's Doomed,* SEATTLE TIMES, Aug. 13, 2008, http://seattletimes.nwsource.com/html/localnews/2008109742_spottedowl13m.html (stating the spotted owl is now "closer than ever to extinction").

289. 16 U.S.C § 1533(f)(1)(B)(i) (1994).

290. *See* STEELHEAD RECOVERY PLAN, *supra* note 15, at 1-2 (stating the recovery plan governs nine major Columbia River tributaries and numerous smaller river systems).

291. *See* PEERMAN, *supra* note 213, at 3–5; *see also* MORTALITY SURVEYS, *supra* note 20, at 2–3.

292. OREGON WATER RESOURCES DEPARTMENT, JOHN DAY IRRIGATION RETURN FLOW STUDY 4, 21 (1988); ROBERTSON & DELANO, *supra* note 244, at 1.

293. *See* Wild Salmon Center, http://www.wildsalmoncenter.org/programs/north_america/john_day.php (last visited Nov. 21, 2009) (stating that the John Day Basin is an important area of recovery for wild salmon due to the lack of hatcheries and

successful species recovery, agencies should consider these disparities when developing and implementing recovery plans.

The ESA's recovery efforts failed the spotted owl, and the steelhead is just another example of an inadequate recovery strategy, involving the same mistakes. If current recovery strategies persist, the steelhead will continue to decline and one more species will be removed from the ESA's list of endangered species—not because it has recovered, but because it is now extinct.

Riccola J. Voigt[*]

dams); *see also* BONNEVILLE POWER ADMINISTRATION, BACKGROUNDER, COLUMBIA RIVER HATCHERIES: AN EVOLVING ROLE 3 (2006), http://www.bpa.gov/corporate/pubs/backgrounder/06/bg120306.pdf (discussing management practices integrated with hatchery programs); *see also* TAYLOR, *supra* note 240 (discussing precipitation trends throughout Oregon).

* B.A. Sociology, University of Texas at Austin; J.D. Candidate, Thomas Jefferson School of Law, December 2010. I would like to thank my parents—my dad for inspiring this topic and for all of his support and guidance in developing it, and my mom for her endless love, encouragement, and support. I owe sincere thanks to Kyle Sullivan and Jason Kehrberg at the Grant County Soil and Water Conservation District and Jeff Neil at the Oregon Department of Fish and Wildlife for providing essential documentation and for their expertise and invaluable suggestions. Special thanks to Professor Rierson and Professor Kass for their superior advice and encouragement. I am also grateful to my editors, Carmela Blair and Mary Scott-Hattendorf for their countless hours of work and dedication throughout the writing and editing process. Finally, I would like to thank the 2009–2010, Thomas Jefferson Law Review Managing Board for their support and commitment in assembling the final manuscript.

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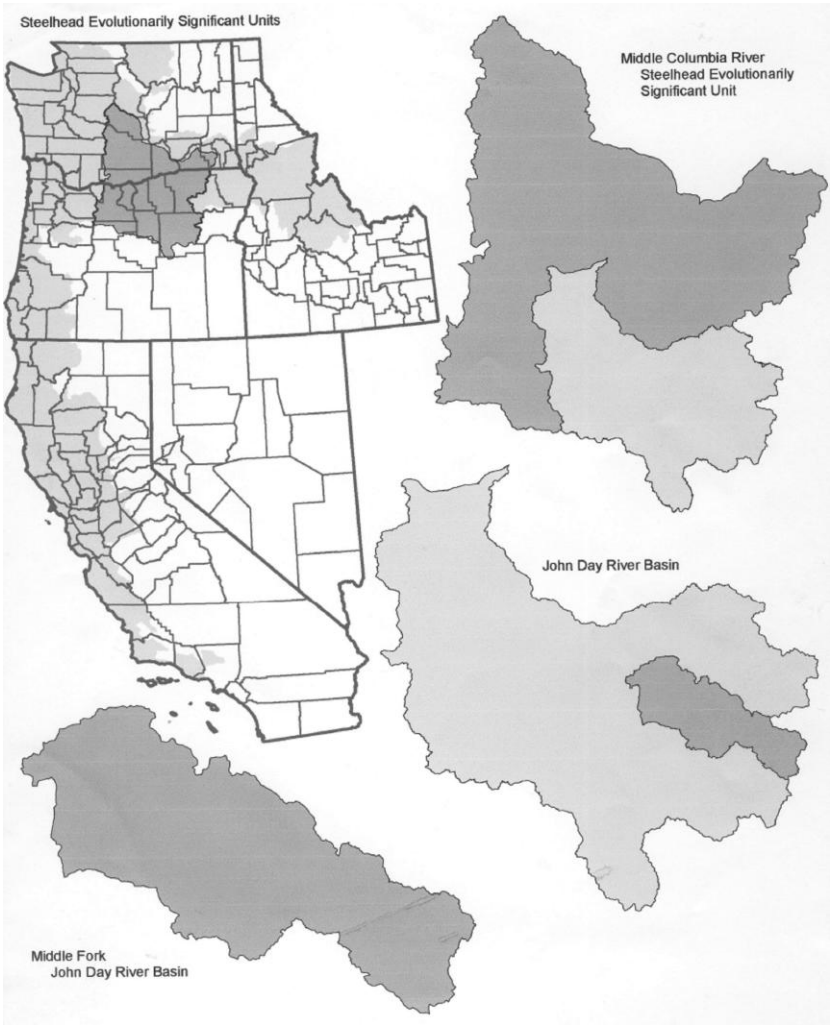
APPENDIX


Steelhead Evolutionarily Significant Units
Middle Columbia River
Steelhead Evolutionarily
Significant Unit
John Day River Basin
Middle Fork
John Day River Basin