Ocean and Coastal Law Journal

Volume 7 | Number 2 Article 3

2001

# Does The Clean Water Act Protect Endangered Species? The Case Of Maine's Wild Atlantic Salmon

Roger Fleming

# DOES THE CLEAN WATER ACT PROTECT ENDANGERED SPECIES? THE CASE OF MAINE'S WILD ATLANTIC SALMON

*Roger Fleming*[*]

*The salmon are a test of a healthy environment, a lesson in environmental needs. Their abundant presence on the spawning beds is a lesson of hope, a reassurance that all is well with water and land, a lesson of deep importance for the future of man. If there ever is a time when the salmon no longer return, man will know he has failed again and moved one stage nearer to his own final disappearance.*

—Roderick Haig-Brown (1974)[1]

## I. INTRODUCTION

There are many reasons that all of us, from expert angler to casual philosopher, should be concerned that the long-term impact of human activities, unmitigated by over a century of failed fishery management policies, have pushed the wild Atlantic salmon (*Salmo salar)* to the brink of extinction.[2] Among these reasons is that wild Atlantic salmon need high

---

* J.D., *Cum Laude* Vermont Law School; M.I.L.R., Cornell University; B.S., Ithaca College. Mr. Fleming is currently an attorney for the Conservation Law Foundation in its Maine Advocacy Center, and is a former Honors Attorney Fellow for the United States Environmental Protection Agency. He gratefully thanks Ann Williams, Patrick Parenteau, Amy B. Mills, and Debra Abelowitz for their assistance.

1. ED BAUM, MAINE ATLANTIC SALMON: A NATIONAL TREASURE 137 (1997). Mr. Baum describes Mr. Haig-Brown as a "world-renowned author, angler, and conservationist." Mr. Haig-Brown was a distinguished conservationist in British Columbia (B.C.), a prolific author and a magistrate in Campbell River, on Vancouver Island. He is perhaps best known for his writings on flyfishing, along with many books on natural history and conservation. He was devoted to the protection of B.C. rivers, particularly those on which wild salmon are dependent for their survival.

2. Endangered and Threatened Species: Final Endangered Status for a Distinct Population Segment of Anadromous Atlantic Salmon (*Salmo salar*) in the Gulf of Maine, 65 Fed. Reg. 69, 459 (Nov. 17, 2000) (to be codified at 50 C.F.R. pt. 224) [hereinafter Listing Decision]. On November 17, 2000, the U.S. Fish and Wildlife Service (FWS) and

quality riverine habitats to thrive and, thus, their presence is considered an indicator of the health of our own human environment.[3] Some scientists suggest that because the wild Atlantic salmon are so inexorably linked to

---

the National Marine Fishery Service (NMFS)(the Services) published the final notice of their decision to list a Distinct Population Segment of Anadromous Atlantic Salmon (*Salmo salar*) in the Gulf of Maine (wild Atlantic salmon) as an endangered species. This listing took effect on December 18, 2000, and was for wild Atlantic salmon located in at least eight Maine rivers including the Dennys, East Machias, Machias, Pleasant, Narraguagus, Ducktrap, Sheepscot and Cove Brook (salmon rivers). The significant threats to the wild Atlantic salmon leading to its listing include the following: disease; current aquaculture practices; inadequate regulation of water withdrawals and disease; and low marine survival rates. The Services also discussed a number of demonstrated and potential impacts to salmon habitat that need to be examined in more detail for their individual and cumulative impacts. *Id.* at 69,475–78. The National Academy of Sciences recently supported the Services' conclusion that there are genetically distinct populations of wild Atlantic salmon and will soon publish a report addressing the causes of their decline and options for recovery. The National Academy of Sciences, Genetic Status of Atlantic Salmon in Maine: Interim Report (2002), *available at* http://www.books.nap.edu/books/0309083117/html (last visited Apr. 30, 2002) [hereinafter NAS].

The annual historic Atlantic salmon adult population returning to all U.S. rivers has been estimated to be between 300,000 and 500,000. *See* Biological Opinion of the U.S. Fish and Wildlife Service and the National Marine Fisheries Service on the U.S. Environmental Protection Agency's proposed approval of the state of Maine's application to administer the National Pollutant Discharge Elimination System permit program, and its effects on the Atlantic salmon (*Salmo salar*) 13–14 (January 12, 2001) [hereinafter Maine NPDES Biological Opinion] (on file with the *Ocean and Coastal Law Journal).* The largest historical salmon runs in New England were likely in the Connecticut, Merrimack, Androscoggin, Kennebec, and Penobscot Rivers. By the early 1800s, Atlantic salmon runs in New England were severely depleted due the construction of dams, overfishing, and water pollution, all of which greatly reduced the species' distribution in the southern half of its range. By the end of the nineteenth century, three of the five largest salmon populations in New England had been eliminated (Connecticut, Merrimack, and Androscoggin Rivers). Total documented adult wild Atlantic salmon returns to the salmon rivers for the six years preceding its listing were: 1995 (83); 1996 (74); 1997 (35); 1998 (23); 1999 (29); and 2000 (22). These counts represent the minimum number of salmon returns because not all of the salmon rivers have trapping facilities to document returns in all years. Counts of redds (egg nests) indicate that total annual returns for all salmon rivers in recent years may be between 100 and 500 adults. *Id.*

3. Baum, *supra* note 1, at 3. *See also* G. TYLER MILLER, JR., ENVIRONMENTAL SCIENCE 87 (6th ed. 1997). For a concise discussion of further reasons we should be concerned about the Atlantic salmon's extinction, *see* BAUM, *supra* note 1, at 2–3. Mr. Baum argues wild salmon are a valuable genetic resource and naturally adapted for survival. The study of Atlantic salmon can help us learn more about the biological systems in which they live, and the loss of wild stocks is irreversible. Mr. Baum also argues that many people derive personal satisfaction knowing we share the planet with uncommon or unusual animals such as salmon and that they are willing to pay something for that satisfaction. In addition, economic benefits may inure from eco-tourism, and efforts at salmon restoration have provided stimulus for pollution abatement and construction of fish passages. BAUM, *supra* note 1, at 2–3.

our overall quality of life, they serve as a "barometer of health" for Maine ecosystems.[4]

Given that there are millions of Atlantic salmon currently living in hatcheries and aquaculture facilities (fish farms)[5] that could be used to stock and restock our rivers, one might ask, "why do we have to save the *wild* Atlantic salmon?"[6] The answer is that wild Atlantic salmon have the best chance of long-term survival in the natural environment.[7] Wild Atlantic salmon spawn without human intervention and their offspring spend four to six years developing in riverine and marine habitats subjected to the rigors of the natural environment and the process of natural selection.[8] This leads to genetic diversity and results in important physiological, morphological, and behavioral differences.[9] Conversely, the controlled environment of cultured salmon stocks circumvents the natural

---

4. Baum, *supra* note 1, at 3.

5. The term aquaculture is popularly defined as the propagation and rearing of aquatic organisms in controlled or selected aquatic environments for any commercial, recreational or public purpose. *See* U.S. Department of Commerce Aquaculture Policy, *available at* http://www.nmfs.noaa.gov/trade/DOCAQpolicy.htm (last visited Apr. 24, 2002). The Services' use of the term aquaculture specifically refers to the floating net pens and/or cages off the coast of Maine used to culture Atlantic salmon for commercial markets (fish farms). For Clean Water Act (CWA) purposes, the term "aquaculture projects" has a very specific regulatory definition that, unfortunately, refers to a different type of activity. Aquaculture Projects, 40 C.F.R. § 122.25 (2001). *See also* 33 U.S.C. § 1328 (2001). Under CWA regulations, fish farms meeting certain criteria and size thresholds fall under the regulatory definition of "concentrated aquatic animal production facilities." Concentrated Aquatic Animal Production Facilities, 40 C.F.R. § 122.24 (2000). For the purposes of this Article, unless otherwise noted, the author's use of the terms aquaculture facilities and aquaculture refers to fish farms and fish farming.

6. BAUM, *supra* note 1, at 2.

7. *Id.*

8. *Id.* at 3. Maine's wild Atlantic salmon are a remarkable species. They take part in extensive marine migrations, including moving to the waters off western Greenland where they become a small portion of a large mixed-stock complex of salmon from both European and North American sources. Unlike Canadian populations, where it is common for salmon to return after only one sea-winter, 94 percent of adults returning to Maine are two sea-winter fish, thus the average size of Maine adults is larger than Canadian adults. When Maine's wild Atlantic salmon return from sea to spawn, they return to their natal stream (the stream where they hatched) nearly every time. *See* NAS, *supra* note 2, at 10–11.

9. BAUM, *supra* note 1, at 3. Examples of physiological, morphological and behavioral differences include disease resistance, fish size and conditions, and run timing and maturity, respectively. Moreover, salmon cultured in commercial fish farms are bred for specific market characteristics including a high rate of growth and maximum adult size, therefore, their genetic material is entirely inconsistent with that needed for survival in the wild. In fact, these salmon often include genetic material from European strains of salmon or may be transgenic (genetically modified) by fish farmers in an effort to encourage faster growth and larger adult size. *See* Listing Decision, Fed. Reg., 69,459, 69,465 (Nov. 17, 2000).

mortality factors that produce healthy, wild salmon stocks that are adapted to survive in nature.[10] In fact, the escape of cultured salmon from fish farms and the risk of subsequent interaction with wild Atlantic salmon is cited by the U.S. Fish and Wildlife Service (FWS) and the National Marine Fishery Service (NMFS)(the Services)[11] as one of the threats to the wild Atlantic salmon pushing it to the brink of extinction.[12]

Finally, Maine is home to the last remaining wild Atlantic salmon population in the United States, and if they are lost, they can never be replaced.[13] For this reason alone, Maine's wild Atlantic salmon populations are a resource of national importance.[14]

Assuming, then that preventing the extinction of the wild Atlantic salmon is a worthwhile goal, the question arises as to whether our laws provide the tools necessary to protect this remarkable species. Two federal statutes, the Endangered Species Act[15] (ESA) and the Clean Water Act[16] (CWA), share complementary goals directed at the protection of aquatic ecosystems and the species they support. In recent years, the Environmental Protection Agency (EPA) and the Services have increased efforts to better integrate their respective CWA and ESA programs in order to meet the goals of both statutes.

The EPA's and Services' integration efforts included entering into ESA consultations on a case-by-case basis during the EPA's approval of state and tribal water quality standards[17] and state National Pollution Discharge Elimination System[18] (NPDES) programs. Discovering, however, that certain issues arise repeatedly during such consultations, the EPA and Services undertook an effort to develop a coordinated national approach

---

10. *See* BAUM, *supra* note 1, at 3–4.

11. The Services have joint jurisdiction over the Atlantic salmon because it is an anadromous fish, that is, they begin their lives in fresh water, where the young grow to several inches in length, and then migrate to the sea, where they grow more rapidly and become sexually mature after one, two or three years. *See* NAS, *supra* note 2, at 10; The Endangered Species Act of 1973, 16 U.S.C. § 1532(15).

12. Listing Decision, 65 Fed. Reg. at 69,478–79. These interactions could include disrupting redds, competing for food and habitat, interbreeding with wild salmon, transferring disease or parasites, and/or degrading the benthic habitat. *Id.*

13. BAUM, *supra* note 1, at 3.

14. *See id.*

15. The Endangered Species Act of 1973, 16 U.S.C. §§ 1531–1544 (1994).

16. Water Pollution Control Act, 33 U.S.C. §§ 1251–1387 (1994 & Supp. III 1997).

17. *Id.* at §§ 1313 and 1314(a). Water quality standards are promulgated by states to establish the desired condition of its waters. *See infra* notes 73–89 and accompanying text.

18. *Id.* at § 1342. The NPDES permitting program is the federal program for permitting point source discharges of pollutants to U.S. waters. Under the CWA, states may apply to run this program, subject to the EPA's oversight. *Id.* at § 1342(b); *see infra* notes 90–101 and accompanying text.

that would help ensure an appropriate level of protection for Listed Species and greater regulatory predictability for states, tribes and the public.[19] This effort culminated in January 2001 when the Agencies signed a memorandum of agreement (MOA) regarding enhanced coordination under the CWA and the ESA (Final Coordination MOA).[20]

One specific concern the Agencies sought to address in the Final Coordination MOA was the Services' inability to consult with states or tribes under the ESA on permits issued by states or tribes under approved NPDES programs.[21] Thus, the Final Coordination MOA establishes a framework for the EPA and the Services to coordinate during the EPA's review and oversight of such permits to more effectively ensure that effects from pollutants on Listed Species are addressed under existing CWA authority.[22]

On January 12, 2001, the EPA approved the state of Maine's application to administer the NPDES program in Maine,[23] testing the ability of the Final Coordination MOA to protect the wild Atlantic salmon from the threats posed by fish farms. Approvals of state NPDES programs are typically more ministerial than noteworthy, being contingent upon a state demonstrating it has adequate authority to meet nine enumerated requirements listed in § 402(b) of the CWA.[24] The EPA's approval of Maine's NPDES program was neither typical nor a simple ministerial task.

---

19. Draft Memorandum of Agreement Between the Environmental Protection Agency, Fish and Wildlife Service, and National Marine Fishery Service Regarding Enhanced Coordination Under the Clean Water Act and the Endangered Species Act, 64 Fed. Reg. 2742 (Jan. 15, 1999) [hereinafter 1999 Draft Coordination MOA].

20. Memorandum of Agreement Between the Environmental Protection Agency, Fish and Wildlife Service and National Marine Fisheries Service Regarding Enhanced Coordination Under the Clean Water Act and Endangered Species Act, 66 Fed. Reg. 11,202 (Feb. 22, 2001) [hereinafter Final Coordination MOA].

21. *See infra* notes 117–118 and accompanying text. To date, the Services and the EPA have not agreed to consult on state or tribally issued permits, even though they are subject to continuing EPA oversight. 1999 Draft Coordination MOA, 64 Fed. Reg. at 2745–46.

22. Final Coordination MOA, 66 Fed. Reg. at 11,215.

23. *See* State Program Requirements; Approval of Application by Maine to Administer the National Pollutant Discharge Elimination System (NPDES) Program; Maine, 66 Fed. Reg. 12,791 (Feb. 28, 2001). The EPA's approval was actually a partial approval because the EPA did not approve Maine to run the NPDES program in waters where the five federally recognized tribes within the borders of Maine assert jurisdiction to run CWA programs. Because the EPA did approve Maine's program for the majority of the state not in controversy, including all waters in which fish farms are currently located, ultimate determination with regard to the Tribal jurisdictional issue is not relevant for this Article.

24. Water Pollution Control Act, 33 U.S.C. § 1342(b)(1)–(9)(1994). Few of the 43 states approved prior to Maine caused significant controversy.

Fish farms are considered point sources[25] under the CWA and are required to have NPDES permits because they discharge pollutants into U.S. waters.[26] Under the EPA's stewardship of the NPDES program in Maine, however, fish farms operated for years without NPDES permits.[27] The Services cited the EPA's failure to issue NPDES permits with conditions designed to prevent and mitigate the impacts from escapes of farm-raised fish as one factor contributing to the threat of extinction to the Atlantic salmon.[28] The question arises as to whether the CWA provides the authority to include or require such conditions in NPDES permits, regardless of whether the permit is issued by the EPA or by a state or tribe after NPDES program approval, because such conditions are directed at regulating the discharge of farm-raised fish, and EPA had never before determined that the escape or release of live fish constituted the discharge of a pollutant. Against this backdrop, the EPA's approval of Maine's NPDES program introduced a fascinating legal question that caused a protracted ESA consultation between the EPA and the Services, and took regulators deep into the fabric of the CWA's and the ESA's interwoven parts.

This Article examines whether the CWA provides the EPA with the necessary legal authority to require that NPDES permits issued to fish farms in Maine include conditions regulating the discharge of farm-raised

---

25. Concentrated Aquatic Animal Production Facilities, 40 C.F.R. § 122.24 and Appendix C (2001). Appendix C establishes thresholds for being automatically considered point sources. The EPA also has the discretion under 40 C.F.R. § 122.24(c) to designate on a case-by-case basis that any fish farm is a point source. Salmon fish farms in Maine fall under the Appendix C criteria and are required to have NPDES permits. *See also* United States Public Interest Research Group v. Atlantic Salmon of Maine, 2002 U.S. Dist. LEXIS 2822, WL 242466 (D. Me. Feb. 19, 2002) (Recommended Decision on Plaintiffs' Motion for Summary Judgment and Defendant's Motion for Summary Judgment, Dist. File) *aff'd* (D. MG. June 17, 2002, Dist. File) [hereinafter ASM]; United States Public Interest Research Group v. Heritage Salmon, Inc., 2002 U.S. Dist. LEXIS 2706, WL 987441 (D. Me. Aug. 28, 2001) (Recommended Decision on Plaintiffs' Motion for Summary Judgment, Defendant's First Motion for Summary Judgment, and Defendant's Second Motion for Summary Judgment, Dist. File) [hereinafter Heritage] (Heritage was not affirmed by the District Court because a settlement was reached and a consent decree and order entered and approved by the court. Consent Decree and Order ____ (on file with the *Ocean and Coastal Law Journal*). (H; United States Public Interest Research Group v. Stolt Sea Farm, Inc., 2002 U.S. Dist. LEXIS 2757, WL 240386 (D. Me. Feb. 19, 2002) (Recommended Decision on Plaintiffs' Motion for Summary Judgment and Defendant's Motion for Summary Judgment, Dist. File) [hereinafter Stolt].

26. NPDES permits are required when there is a discharge of a pollutant into U.S. waters from a point source. 33 U.S.C. § 1313.

27. Letter from Ken Moraff, EPA, to David Nicholas, National Environmental Law Center (June 23, 2000) (on file with the *Ocean and Coastal Law Journal).*

28. Listing Decision, 65 Fed. Reg. 69,459, 69,477 (Nov. 17, 2000).

fish; that is whether EPA can require inclusion of conditions necessary to prevent or mitigate impacts from the escape or release of farm-raised fish thereby protecting wild Atlantic salmon. Part II provides the statutory background of the ESA and CWA, explaining how the broad goals and statutory requirements of these Acts promote aquatic species protection via water quality standards. Part III analyzes how the Final Coordination MOA entered into by the EPA and the Services seeks to protect aquatic species in state NPDES permit programs. Part IV of this Article describes the unique threats to wild Atlantic salmon that led to its listing as an endangered species, emphasizing the threats posed by salmon fish farms. Part V of this Article reviews the Services' ESA § 4(A)(1) determination to list the wild Atlantic salmon.

Part VI analyzes the specific procedural safeguards to which the EPA and the Services agreed as a means to protect wild Atlantic salmon under the NPDES program in the State of Maine (MEPDES Program). These safeguards rely upon assurances provided by the EPA to the Services that the EPA will coordinate its review of state-issued NPDES permits (MEPDES Permits) with the Services and exercise its CWA oversight authority to object to any state-issued NPDES permit that does not contain conditions necessary to protect the wild Atlantic salmon.[29] This section argues that the CWA does provide the legal authority to EPA to require that MEPDES permits for salmon fish farms include conditions regulating the discharge of farm-raised fish because: 1) such regulation is necessary to protect water quality through the maintenance of existing uses of Maine waters, and wild Atlantic salmon are an existing use of Maine's waters, and 2) either farm-raised fish may be regulated directly because their discharge constitutes the addition of a pollutant under the Act, or the conditions are reasonably related to the discharge of other pollutants, thereby providing EPA with the legal authority to regulate the activity of salmon farming to include such conditions. This part also briefly considers the conditions included in the NPDES permit recently issued by the EPA to Acadia Aquaculture, a fish farm located in Blue Hill Bay, Maine. This is the only NPDES permit issued by the EPA to a salmon fish farm.

This Article concludes that the EPA's establishment of procedural safeguards applicable during Maine's administration of the MEPDES Program is an important effort to protect the wild Atlantic salmon and a valid exercise of the EPA's authority under the CWA. Moreover, because this approach relies upon water quality standards established to meet

29. Letter from Mindy S. Luber, *EPA*, to Dr. Mamie Parker, *FWS*, and Patricia Kurkul, *NMFS*, 2–3 (Dec. 4, 2000) (on file with the *Ocean and Coastal Law Journal*).

minimum CWA requirements, this approach could be applied in other states' NPDES programs to protect aquatic species.

## II. THE ENDANGERED SPECIES ACT AND THE CLEAN WATER ACT: COMMON OBJECTIVES FOR PROTECTING AQUATIC LIFE

The ESA and the CWA set complementary goals directed at the protection of aquatic ecosystems and the species they support. The ESA's purposes are to provide a means to conserve endangered and threatened species, and the ecosystems upon which they depend.[30] One way the ESA seeks to achieve these purposes is by requiring all federal agencies to use their authorities to further the purposes of the ESA and cooperate with state and local agencies "to resolve water resource issues in concert with conservation of endangered species."[31] Similarly, the objective of the CWA is to "restore and maintain the chemical, physical, and biological integrity of the Nation's waters."[32] One important indicator of biological integrity is the extent to which water quality "provides for the protection and propagation of fish, shellfish, and wildlife."[33] Conversely, water quality that is contributing to a species' risk of extinction is not fulfilling the objectives of either the CWA or the ESA.[34]

Although the ESA and the CWA have long shared complimentary goals directed at the protection of aquatic ecosystems and the species they support, until recently the Acts have been applied independently of each other when dealing with key issues related to protecting water quality under NPDES permitting programs. This Part examines how the CWA and the ESA independently address species protection and how these statutes have been applied when dealing with state-run NPDES programs.

### *A. The Endangered Species Act*

#### 1. General Provisions

Congress enacted the ESA in 1973 as a means to conserve endangered and threatened species and the ecosystems upon which they depend to the

30. Endangered Species Act, 16 U.S.C. § 1531(b) (1994).
31. *Id.* § 1531(c)(1)–(2).
32. 33 U.S.C. § 1251.
33. *Id.* § 1251 (a)(2).
34. 1999 Draft Coordination MOA, 66 Fed. Reg. 2742 (Jan. 15, 1999).

point where protection under the statute is no longer necessary.[35] The Supreme Court in 1978 recognized the Act's unparalleled protections for species on the brink of extinction characterizing the ESA as "the most comprehensive legislation for the preservation of endangered species ever enacted by any nation."[36] In enacting the ESA, Congress expressly declined to protect endangered species only "where practicable" as it had under earlier statutes and earlier drafts of the final Act, and instead chose to afford species conservation the highest priority regardless of cost.[37] The ESA directs the Secretaries of the Departments of the Interior and Commerce to promulgate regulations listing species as "endangered" or "threatened" (Listed Species)[38] and designating their critical habitat.[39] Critically, sections 7 and 9 of the ESA contain the substantive teeth of the ESA by prohibiting actions adversely affecting Listed Species.

2. Section 7 Consultations

Section 7 of the ESA imposes both substantive and procedural obligations on federal agencies, licensees and permitees.[40] Section 7(a)(1) of the ESA requires federal agencies, in consultation with and with the assistance of the Services, to utilize their authorities to further the purposes of the ESA by carrying out programs for the conservation of Listed Species.[41] Section 7(a)(2) of the ESA states that federal agencies shall, in consultation with, and with the assistance of the Services, insure that any agency action is not likely to jeopardize[42] the continued existence of any

35. 16 U.S.C. § 1531(b), 1532(3).

36. Tennesee Valley Authority v. Hill, 437 U.S. 153, 180 (1978).

37. Shannon Petersen, *Congress and Charismatic Megafauna: A Legislative History of the Endangered Species Act*, 29 ENVTL. L. 463, 471–491 (1999)(citing Endangered Species Preservation Act of 1966, Pub. L. No. 89-669, § 2(d), 80 Stat. 926, 928); *see also* DANIEL J. ROHLF, THE ENDANGERED SPECIES ACT: A GUIDE TO ITS PROTECTIONS AND IMPLEMENTATION 24 (1989)(the "where practicable" language was in an early version of the ESA bill but removed prior to passage); Tennessee Valley Authority v. Hill, 437 U.S. at 180–81.

38. Endangered species are species in danger of extinction throughout all or a significant portion of their range. 16 U.S.C. § 1532(6). Threatened species are species likely to become endangered within the foreseeable future throughout all or a significant part of their range. *Id.* § 1532(20).

39. *Id.* § 1532(15), 1533; Criteria for Designating Critical Habitat, 50 C.F.R. § 424.12 (1999).

40. 16 U.S.C. § 1536.

41. *Id.* § 1536(a)(1).

42. An action would cause jeopardy if it "reasonably would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of a listed species." 50 C.F.R. § 402.02 (2001).

Listed Species or result in the destruction or adverse modification of habitat that has been designated as critical for the species.[43] Section 7(a)(4) of the ESA also requires that federal agencies confer with the Services on any agency action that is likely to jeopardize the continued existence of any species proposed for listing, or result in the destruction or adverse modification of proposed critical habitat.[44]

The Services broadly construe the term "action" to mean "all activities or programs of any kind authorized, funded, or carried out, in whole or in part, by federal agencies in the United States or upon the high seas. Examples include, but are not limited to: . . . (c) the granting of licenses, contracts, leases, easements, rights-of-way, permits, or grants-in-aid; or (d) actions directly or indirectly causing modifications to the land, water or air."[45] This statutory duty to consult, however, applies only to federal "actions in which there is discretionary Federal involvement or control."[46]

3. Section 9 Take Prohibitions

The ESA also makes it unlawful for any person to "take" any Listed Species.[47] The statute broadly defines the term "take" to include "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct."[48] The Services define "harm" to include significant habitat modification or destruction that actually kills or injures wildlife by significantly impairing essential behavior patterns, including breeding, feeding, or sheltering.[49]

---

43. 16 U.S.C. § 1536(a)(2). During a formal consultation, the Services must issue a biological opinion based on the best scientific and commercial date available. *Id.* If the services conclude that a proposed action is likely to adversely affect a Listed Species or its critical habitat, they must render a "jeopardy opinion" and provide "reasonable and prudent alternatives" to the action. *Id.* § 1536(b)(3)(A); 50 C.F.R. § 402.02. If the Services determine that jeopardy is not likely, they typically issue a no-jeopardy opinion and the action proceeds. *Id.* §§ 402.13, 402.14(h)(3).

44. 16 U.S.C. § 1536(a)(4).

45. 50 C.F.R. § 402.02.

46 *Id.* § 402.03; *but see* Derek Walker, *Limiting the Scope of the Endangered Species Act: Discretionary Federal Involvement or Control Under Section 402.03*, 5 HASTINGS W.N.W. J. ENVTL. L. & POL'Y 309 (1999) (arguing that this regulation effectively redefines the scope of "agency action" subject to 7(a)(2)'s mandate to exclude nondiscretionary agency action. This nondiscretionary element does not appear in the statutory language of the ESA, its legislative history, or any judicial interpretations of the scope of 7(a)(2)).

47. 16 U.S.C. § 1538(a)(1)(B).

48. *Id.* § 1532(19).

49. 50 C.F.R. §§ 17.3, 222.102 (2001); The Supreme Court has upheld this regulatory definition. Babbitt v. Sweet Home Chapter of Communities for a Greater Or., 515 U.S. 687, 708 (1995).

Both § 7 and § 9 prohibitions allow certain actions that result in the incidental taking of Listed Species.[50] Under § 7, where agency actions might otherwise violate the taking prohibition of § 9, the Services can issue an incidental take statement with a biological opinion permitting the incidental taking of a Listed Species so long as the Services determine that 1) the taking is incidental to the central purpose of the action, and 2) reasonable and prudent alternatives will minimize taking and avoid jeopardy.[51] Each incidental take statement must include an estimated numerical impact of the incidental take on the species, reasonable and prudent alternatives to minimize the impact on the species, and any applicable terms and conditions (including reporting requirements).[52] This regulatory exemption is specifically tailored to meet the particular needs of species potentially affected by such federal action. Thus, when the EPA administers a federal CWA program itself, it should consult with the Services on individual permits that may affect Listed Species and may obtain incidental take statements, provided that the permits minimize harmful effects on aquatic species. Incidental take statements also extend protection from § 9 take liability to permittees.[53]

---

50. 16 U.S.C. §§ 1536(b)(4), 1539(a)(1)(B).

51. *Id.* § 1536(b)(4)(A), (B). Reasonable and prudent alternatives are alternatives that can be implemented in a manner consistent with the intended purpose of the action and within the scope, jurisdiction, and legal authority of the agency, that are economically and technically feasible, and that avoid jeopardizing the species or critical habitat. 50 C.F.R. § 402.02.

52. 16 U.S.C. §§ 1536(b)(4), 1536(o) (1994); 50 C.F.R. § 402.14(i) (2001).

53. Section 10 of the ESA also authorizes nonfederal parties to apply for incidental take permits. 16 U.S.C. §1539(a)(1994). To obtain a permit, an applicant must include a Habitat Conservation Plan (HCP) that identifies 1) the impact likely to result from the taking; 2) measures to minimize and mitigate such impacts; 3) available funding to implement these measures; 4) alternative actions to the taking; and 5) reasons why the applicant is not adopting the proposed alternatives and other measures as the Secretary may require. *Id.* § 1539(a)(2)(A)(i–iv); 50 C.F.R. § 17.22. After opportunity for public comment, the Secretary may issue an incidental take permit if 1) he determines that the proposed taking of an endangered species will be incidental to an otherwise lawful activity; 2) the permit applicant will, "to the maximum extent practicable," minimize and mitigate the effects of the taking; 3) the applicant has ensured adequate funding for implementation of the HCP; and 4) the taking of species "will not appreciably reduce the likelihood of the survival and recovery of the species in the wild." 16 U.S.C. § 1539(a)(2)(B); *see also* Friends of Endangered Species, Inc. v. Jantzen, 760 F.2d 976, 982–84 (9th Cir. 1985).

### *B. The Clean Water Act*

#### 1. General Provisions

To ensure satisfaction of the Clean Water Act's objective of restoring and maintaining the chemical, physical, and biological integrity of the Nation's waters,[54] the CWA sets several important goals and policies. Upon passage in 1972, the CWA made it national policy that the discharge of toxic pollutants in toxic amounts be prohibited,[55] and set out to eliminate all discharges of pollutants to navigable waters by 1985.[56] The Act also set the national goal that wherever attainable, water quality that provides for the protection and propagation of fish, shellfish and wildlife, and for recreation in and on the water, commonly referred to as the "fishable and swimmable" goals of the CWA, be achieved by July 1, 1983.[57] The CWA provides that "except as in compliance" with its provisions, "the discharge of any pollutant by any person shall be unlawful."[58] The principal exception to this broad prohibition is the NPDES Permit Program.

#### 2. The NPDES Permit Program

The CWA's primary mechanism for regulating the discharge of pollutants into navigable waters is the National Pollutant Discharge Elimination System (NPDES) permit program established in § 402 of the Act.[59] The NPDES program permits regulated discharges of pollutants, notwithstanding the Act's general prohibition, so long as the discharger complies with all applicable requirements.[60] Any person that discharges a pollutant into waters of the United States from a point source must obtain

---

54. Water Pollution Control Act, 33 U.S.C. § 1251(a) (1994).

55. *Id.* § 1251(a)(3).

56. *Id.* § 1251(a)(1); the discharge of a pollutant is defined to mean: any addition of any pollutant to waters of the United States, the contiguous zone, or the ocean "navigable waters" from any point source. 40 C.F.R. § 122.2 (2001).

57. 33 U.S.C. § 1251(a)(2).

58. *Id.* § 1311(a).

59. 33 U.S.C. § 1342(a).

60. *Id.* § 1342(a)(1).

a NPDES permit.[61] NPDES permits are issued by EPA unless a state or tribe has been approved by EPA to administer the NPDES program.[62]

Permits issued pursuant to the NPDES Program set limitations on pollutant discharges which are based on (1) technology-based requirements, which are set usually pursuant to Federal Effluent Guidelines (minimum treatment technology standards), that restrict the quantities, rates and concentrations of pollutants discharged from point sources; and (2) water quality-based requirements which are set to meet water quality standards promulgated by states establishing the desired condition of their waterways.[63]

3. Technology-Based Requirements

All NPDES permits must contain technology-based limitations representing the minimum level of control required under Sections 301(b)[64] and 402 of the CWA.[65] These end-of-pipe effluent limitations restrict the type and amount of pollutants that may be discharged into navigable waters based on the source's technological capabilities. Technology-based requirements are applied through best conventional control technology (BCT) for conventional pollutants,[66] and best available technology economically achievable (BAT) for toxic and non-conventional pollutants.[67] The factors to be considered in developing technology-based limits include, among other things, the age of existing facilities, engineering issues, process changes, non-water quality-related environmental impacts, and the costs of achieving required effluent pollutant reductions.[68]

In the absence of federally-promulgated technology-based effluent guidelines, NPDES permit writers are authorized to establish technology-based effluent limitations on a case-by-case basis using best professional

61. 33 U.S.C. § 1311(a); 33 U.S.C. § 1342(a). Section 402 does not apply to discharges of dredged or fill material. Dischargers of dredged or fill material must obtain a permit from the Army Corps of Engineers, or an authorized state, under § 404 of the CWA. 33 U.S.C. § 1344.

62. *See infra* notes 90–100 and accompanying text.

63. Arkansas v. Oklahoma, 503 U.S. 91, 101 (1992).

64. 33 U.S.C. § 1311(b)(1)–(3).

65. *Id.* § 1342; 40 C.F.R. § 125.3.

66. *Id.* § 1311(b)(2)(E).

67. *Id.* § 1311(b)(2)(A)–(D), (F).

68. 40 C.F.R. § 125.3(c), (d).

judgment (BPJ).[69] Federal Effluent Guidelines for fish farms have not yet been promulgated, however, EPA must issue such guidelines by 2004.[70]

4. Water Quality Standards

In cases where technology-based limitations are not enough to meet state water quality standards, permits must contain more stringent limitations necessary to ensure compliance with water quality standards.[71] The EPA's authority under the water quality standards program are contained in sections 303 and 304(a) of the CWA.[72] Under § 303(c), the development of water quality standards is primarily the responsibility of States[73] with the EPA exercising an oversight role. Water quality standards consist of three components: (1) the designated uses of waters, which must take into consideration the use and value of water for public water supplies, protection and propagation of fish and wildlife, and recreational, agricultural, industrial and other uses;[74] (2) water quality criteria, expressed in numeric or narrative form, reflecting the condition of the water body that is necessary to protect its designated use, [75] and (3) an antidegradation policy that, among other things, protects existing uses and a level of water quality necessary to protect those existing uses.[76] Existing instream water uses are defined as those uses which have actually occurred in the water body on or after November 28, 1975, whether or not they are included in the water quality standards.[77]

States are required to review their standards every three years and any revisions or new standards must be submitted to the EPA.[78] Section 303(c) contains time frames for the EPA to review and either approve or disapprove standards submitted by a state, and requires the EPA to promulgate

---

69. *Id.* § 1342(a)(1); 40 CFR § 125.3 (c)(2), (3).

70. Natural Resource Defense Council v. Browner (D.D.C. 89-2980, January 31, as modified). Note that this covers all aquaculture including concentrated aquatic animal production facilities under 40 C.F.R. § 122.24 and Appendix C (2001).

71. 33 U.S.C. § 1311(b)(1)(C).

72. 33 U.S.C. §§ 1313 and 1314(a). The EPA's regulations governing the administration of the NPDES program are found at 40 C.F.R. §§ 122, 124–125 (2001).

73. These provisions also apply to tribes qualified for treatment in the same manner as states under § 518(e) of the CWA. 33 U.S.C. § 1377(e).

74. 33 U.S.C. § 1313(c); 40 C.F.R. §§ 131.3(f), 131.10 (2001).

75. 33 U.S.C. § 1313(c). Water quality criteria may be expressed as numeric concentration limits or as narrative limits designed to protect designated uses. 40 C.F.R. § 131.3(b).

76. 33 U.S.C. § 1313(c)(2)(B); 40 C.F.R. §§131.3(e) and 131.12(a)(1).

77. 40 C.F.R. § 131.3(e).

78. 33 U.S.C. § 1313(c)(1).

federal standards to supersede disapproved state or tribal standards.[79] In addition, § 303(c) authorizes the EPA to promulgate federal standards whenever the Administrator determines that such standards are necessary to meet the requirements of the CWA.[80] The EPA has promulgated regulations implementing § 303(c).[81]

Under § 303(d), water bodies unable to meet water quality standards are considered "water quality limited segments," which states rank based on the severity of the pollution and the designated and existing uses of the water body.[82] States then establish total maximum daily loads (TMDLs) for each water quality limited segment by identifying the maximum amount of pollutants it can receive from all point and nonpoint sources over an identified time frame without violating numeric and narrative water quality standards.[83] TMDLs are then the baseline for allocating pollution control responsibilities among point and nonpoint source dischargers.[84] Section 303(d) contains time frames for the EPA to review and either approve or disapprove either water quality limited segment identifications or TMDLs submitted by a state, and upon disapproval requires the EPA to identify water quality limited segments and establish TMDLs determined necessary to meet water quality standards.[85]

Under § 304(a) of the CWA, the EPA from time to time publishes recommended water quality criteria that serve as scientific guidance for use by states in establishing and revising water quality standards.[86] These criteria are not enforceable requirements, but are recommended criteria levels that states may adopt as part of their legally enforceable water quality standards.[87] States may adopt other scientifically defensible criteria instead of the EPA's recommended criteria.[88]

---

79. *Id.* § 1313(c)(3), (4).
80. *Id.* § 1313(c)(4)(B).
81. 40 C.F.R. §§ 131.1–131.33.
82. 33 U.S.C. § 1313(d); 40 C.F.R. § 130.2(i), (j); the Act also requires that guidelines be established for determining degradation of waters of the territorial seas, the contiguous zone and the oceans. *Id.* at § 1343(c).
83. 33 U.S.C. § 1313(d)(1)(C); 40 C.F.R. § 130.7(c).
84. 33 U.S.C. § 1313(d).
85. *Id.*
86. *Id.* § 1314(a).
87. 40 C.F.R. § 131.11(b).
88. *Id.*

5. State Assumption of the NPDES Permit Program

The CWA authorizes states to administer the NPDES permit program provided they have the legal authority under state law to undertake and enforce the program consistent with the CWA's minimum requirements.[89] The EPA is required to approve state NPDES programs that meet nine enumerated conditions specified in § 402(b) of the CWA and EPA regulations.[90] Prior to Maine, forty-three States and the U.S. Virgin Islands received approval from the EPA to operate the NPDES program.[91] Authorized states are required to maintain their programs consistent with minimum statutory and regulatory requirements.[92]

When the EPA approves a state to administer a NPDES program, the EPA stops issuing federal permits. However, the EPA maintains oversight responsibility, including the authority to review, comment on, and, where a permit is "outside the guidelines and requirements" of the CWA, object to state draft permits.[93] If the EPA objects to a state permit and the state fails to revise the permit to satisfy the EPA's objection, the authority to issue the permit is transferred to the EPA.[94] In addition, the EPA retains the authority to institute enforcement actions on its own for state issued permits.[95] Section 402(c) of the CWA authorizes the EPA to withdraw the state's permitting authority if the EPA determines the program is not being administered in accordance with the Act.[96]

Approved states must ensure that newly issued permits comply with federal technology-based effluent limitations.[97] While federal effluent

89. 33 U.S.C. § 1342(b).

90. *Id.*; 40 C.F.R. § 123. The EPA regulations require that the state enter into a memorandum of agreement with the EPA that outlines policies, responsibilities, and procedures pursuant to the CWA. 40 C.F.R. § 123.24(a).

91. Final Coordination MOA, 66 Fed. Reg., 11,202, 11,203 (Feb. 22, 2001).

92. 33 U.S.C. § 1342(c)(2).

93. *Id.* § 1342(d)(2).

94. *Id.* § 1342(d)(4); 40 C.F.R. § 123.44(h).

95. 33 U.S.C. § 1342(i).

96. *Id.* § 1342(c). The EPA has never revoked a state's permitting authority. Such power is "so drastic" that the EPA cannot be expected to use it except in "egregious cases." Natural Res. Def. Council, Inc. v. Envtl. Prot. Agency, 859 F.2d 156, 181 (D.C. Cir. 1988); *but see* Erik R. Lehtinen, *Virginia as a Case Study: EPA Should be Willing to Withdraw NPDES Permitting Authority from Deficient States*, 23 WM. & MARY ENVTL. L. & POL'Y REV., 617, 637–45 (1999) (arguing the EPA should have withdrawn Virginia's permitting authority).

97. 33 U.S.C. § 1311(b)(1)(C).

limitations serve as a minimum, states can adopt more stringent standards.[98] Typically, as long as permittees abide by the effluent limitations and other requirements contained in these permits, they are considered to be in compliance with the Act.[99] Approved states must also insure that permits comply with other important requirements of the CWA, including that they meet state water quality standards.[100]

### *C. Regulatory Gaps Between the ESA and the CWA*

The common objectives of the ESA and the CWA cause them to intersect in ways that can provide significant protection to Listed Species. As noted, the broad water pollution control scheme of the CWA is designed to give "due regard . . . to the improvements which are necessary to conserve [navigable] waters for the protection and propagation of fish and aquatic life and wildlife . . ."[101] The Act accomplishes this goal through substantive provisions requiring qualitative water quality standards that consider the use and value of navigable waters for "propagation of fish and wildlife,"[102] and quantitative effluent discharge limits that in turn must meet these water quality standards.[103]

The CWA requires the EPA to develop water quality criteria based on "the latest scientific knowledge . . . on the kind and extent of all identifiable effects on . . . plankton, fish, shellfish, wildlife, [and] plant life . . . which may be expected from the presence of pollutants in any body of water."[104] States, in fulfilling their roles as the primary entity responsible for developing water quality standards, establish numeric criteria based on either the EPA's recommended aquatic life (and human health) criteria or other "scientifically defensible methods."[105] The EPA's role is to oversee state adoption and revision of standards to assure that such standards satisfy the CWA requirements, and may approve or disapprove new and revised state water quality standards.[106] The EPA's review of new or revised state

98. *Id.* §§ 1314(i)(2), 1311(b)(1)(C), 1370.

99. *Id.* § 1342(k); E.I. du Pont de Nemours & Co. v. Train, 430 U.S. 112, 137 (1977).

100. 33 U.S.C. § 1342(b)(1)(A).

101. *Id.* §§ 1252(a), 1251(a)(2).

102. *Id.*§ 1313(c)(2)(A); Water Quality Standards, 40 C.F.R. § 131.2 (2001).

103. 33 U.S.C. §§ 1311(b)(1)(C), 1311(g)(2)(C); 40 C.F.R. § 131.2.

104. 33 U.S.C. § 1314(a)(1).

105. 40 C.F.R. § 131.11(b)(1).

106. 33 U.S.C. §§ 1313, 1314(a); 40 C.F.R. § 131.5 (basing such a decision on enumerated criteria including whether the state has adopted water uses consistent with the requirements of the CWA); 40 C.F.R. § 131.6 (requiring states to include minimum elements in their water quality standards such as designated uses consistent with sections 101(a)(2) and 303(c)(2) of the CWA and an antidegradation policy consistent with 40 C.F.R. §

water quality standards is a "federal action" triggering ESA § 7 consultation.[107] Thus, review of state water quality standards, through the ESA § 7 consultation, requires that state water quality standards ensure the water quality necessary to protect Listed Species.[108]

In addition, NPDES permits, whether issued by the EPA or by states that assume the NPDES program, must include not only technology based effluent limitations, but also "any more stringent limitation[s]" necessary to meet water quality standards developed by the states.[109] Thus, in states that have adopted water quality standards explicitly protective of Listed Species, this requirement prevents point source discharges from causing, or contributing to, the failure of water bodies to protect Listed Species. The State of Oregon, for example, has water quality standards for the Willamette Basin that allow "no measurable surface water temperature increase resulting from anthropogenic activities . . . [i]n stream segments containing federally listed Threatened and Endangered species if the increase would impair the biological integrity of the Threatened and Endangered population."[110] Therefore, water quality standards can be powerful tools for species protection in the NPDES program because they set not only numeric goals for specific water bodies, but are also the foundation for water-quality-based effluent limitations in NPDES permits that may protect Listed Species.[111]

While water quality standards can provide significant protections for Listed Species, critical regulatory gaps exist, especially when states assume NPDES programs. First, although the EPA and the Services have increased efforts to integrate the CWA and the ESA programs through § 7 consultations on the EPA's approval of new or revised state and tribal water quality

---

131.12).

107. See 1999 Draft Coordination MOA, 64 Fed. Reg. 2742, 2752 (Jan. 15, 1999); EPA Review and Approval of State and Tribal Water Quality Standards, 64 Fed. Reg. 37,072, 37,078 (July 9, 1999). The EPA's view that review of new or revised water quality standards is a federal action requiring consultation relies upon its conclusion that approval of such standards requires "discretion," because the EPA must exercise its informed judgment as to whether the statutory criteria are met and whether the state has the legal authority to enforce CWA requirements. ESA Interagency Cooperation, 50 C.F.R. § 402.03 (2001); Brief for Respondent at 34, American Forest and Paper Ass'n v. Environmental Protection Agency, 137 F.3d 291 (5th Cir. 1998) [hereinafter AFPA I].

108. The Endangered Species Act of 1973, 16 U.S.C. § 1536 (1994).

109. 33 U.S.C. §§ 1311(b)(1)(C), 1342(a); EPA Administered Permit Programs, 40 C.F.R. § 122.44(d) (2001).

110. Or. Admin. R. § 340-041-0445(2)(b)(A)(vii) (1999). The standards also include designated beneficial uses including anadromous fish passage, salmonid fish rearing, salmonid fish spawning, resident fish, and aquatic life, *id.* § 340-041-0442 tbl.6, and narrative standards that are specific to aquatic life criteria. *Id.* § 340-041-0445(2)(I), (p).

111. 33 U.S.C. § 1311(b); 40 C.F.R. § 131.2.

standards and NPDES permitting programs, critical issues repeatedly arise that lead to gaps in Listed Species protection.[112] These issues include: the extent to which water quality criteria are protective of Listed Species;[113] the protection of non-aquatic wildlife and plants; the appropriate scope of reasonable and prudent measures for minimizing incidental take of Listed Species; and research needs to address areas of uncertainty.[114] Second, state and federal agencies have a relatively poor record of enforcing water quality standards; therefore, there is legitimate concern that any new protective standards will not be implemented and enforced.[115]

Finally, and perhaps most critically, when states assume the NPDES program, although the EPA retains oversight authority at both the individual permit and program levels, state assumption of the NPDES program minimizes federal regulatory involvement in water pollution permitting.[116] Specifically, although the EPA does interpret § 7 to apply when it initially approves a state NPDES permit program, the EPA does not interpret its oversight authority of state issued NPDES permits as triggering an ESA consultation.[117] The problems that arise due to this regulatory gap

---

112. 1999 Draft Coordination MOA, 64 Fed. Reg. at 2742.

113. For example, "water quality criteria and standards may not necessarily consider all the cumulative effects of pollution if a state has not designated the use of a particular water body for the protection of threatened or endangered species," or, even where such use has been designated, "water quality criteria may not adequately address all adverse effects on the water quality, such as sedimentation." Elizabeth Rosan, *EPA's Approach to Endangered Species Protection in State Clean Water Act Programs*, 30 ENVTL. L. 447, 463 (2000).

114. 1999 Draft Coordination MOA, 64 Fed. Reg. at 2742.

115. *See* Rosan, *supra* note 113, at 463–64; Nationally, there are 21,364 water segments listed in nonattainment for water quality standards. Of these, states have established 4179 TMDLs (19 percent), or plans, for bringing these waters back into compliance. In Maine, there are 228 water segments in nonattainment, and only 14, or 0.33 percent, approved TMDLs. *See* EPA, TOTAL MAXIMUM DAILY LOAD (TMDL) PROGRAM: NATIONAL SECTION 303(D) LIST FACT SHEET, *available at* http://oaspub.epa.gov/waters/national_rept.control (last visited Apr. 28, 2002).

116. 33 U.S.C. § 1342(b)–(d).

117. This is because, in EPA's view, there is no federal activity for purposes of § 7(a)(2). *See e.g.*, Water Pollution Control; Approval of Application by the State of Florida to Administer the National Pollutant Discharge Elimination System (NPDES) Program, 60 Fed. Reg. 25,718, 25,719 (May 12, 1995) (stating "[I]ssuance of a state NPDES permit and the EPA's review of a proposed permit does not trigger § 7 of the ESA."); State Program Requirements; Approval of Application by Oklahoma to Administer the National Pollutant Discharge Elimination System (NPDES) Program, 61 Fed. Reg. 65,047, 65,052 (Dec. 10, 1996) ("EPA's approval of the State permitting program under § 402 of the Clean Water Act is a federal undertaking subject to [the consultation] requirement, but the State's subsequent issuance of NPDES permits may not be."). In asserting that its oversight authority does not trigger ESA § 7 consultation, the EPA appears to be taking advantage of the fact that the CWA does not specifically address whether ESA procedures apply to state-authorized CWA programs. Specifically, the EPA asserts its interpretation is appropriate because state

are amplified in states with water quality standards that have not undergone § 7 consultation, or where a species is listed after such consultation has taken place.[118]

As it stands procedurally then, the CWA requires the state to provide public notice of all permit applications and submit copies to the EPA.[119] States also must submit draft permits to the Services, as well as other federal agencies with jurisdiction over fish, shellfish, and wildlife resources, and receive comments from the Services on state-issued permits.[120] Within ninety days of reviewing proposed state permits, the EPA can object to, or veto, the state permit.[121] The EPA can object when a permit fails to ensure compliance with state water quality standards, such as state narrative or numeric criteria for water quality which may in fact, as discussed *infra* in Parts III and VI, provide opportunities for Listed Species protection.[122] The EPA is not explicitly authorized, however, to object to state-issued permits on the grounds that they fail to protect fish or wildlife or Listed Species.[123]

Also causing consternation among states and the regulated community is the fact that, under state-assumed NPDES permit programs, an individual permit holder cannot obtain a § 7 incidental take pemit, because there is no federal action triggering an ESA consultation.[124] Instead, each permit holder must individually apply for an incidental take permit under § 10 of the ESA and submit a habitat conservation plan (HCP), a time-consuming and expensive process,[125] even if the permittee had complied with CWA requirements when obtaining the discharge permit. In other words, unlike a NPDES permit issued by the federal government after a § 7 consultation,

---

NPDES programs operate "in lieu of" the federal program. *See* Rosan, *supra* note 113, at 461–62; *but see* John W. Steiger, *The Consultation Provision of Section 7(a)(2) of the Endangered Species Act and Its Application to Delegable Federal Programs*, 21 ECOLOGY L.Q. 243, 326–27 (1994).

118. *Id.* Even in states that have completed a § 7 consultation on newly adopted or revised water quality standards, it may very well be that such standards would not be protective of the newly Listed Species.

119. 33 U.S.C. § 1342(b)(3)–(4).

120. Public Notice of Permit Actions and Public Comment Period, 40 C.F.R. § 124.10(c)(1)(iii), (iv) (2001).

121. 33 U.S.C. § 1342(d)(2).

122. EPA Administered Permit Programs: The National Pollutant Discharge Elimination System, 40 C.F.R. §§ 122.44(d)(1), 123.44(c)(1)–(9) (2001) [hereinafter NPDES Program].

123. 40 C.F.R. § 123.44 (c)(1)–(9).

124. *See* Rosan, *supra* note 113, at 461–62 (n. 117); 33 U.S.C. § 1371(c)(1).

125. The Endangered Species Act of 1973, 16 U.S.C. § 1539(a) (1994). An HCP application costs, on average, between $50,000 and $100,000 per year. Karin Sheldon, *Habitat Conservation Planning: Addressing the Achilles Heel of the Endangered Species Act*, 6 N.Y.U. ENVTL. L.J. 279, 304 (1998).

a state-issued NPDES permit offers no protection for a "take" of a Listed Species.

It was primarily these issues that led the EPA and the Services to enter negotiations at the national level in hopes of developing coordination procedures that could fill the gaps between the two Acts for protecting Listed Species.

## III. NATIONAL EFFORTS AT COORDINATING CWA AND ESA PROTECTIONS FOR ENDANGERED SPECIES

With significant issues limiting the success of the EPA's and the Services' efforts to achieve greater integration of the CWA and ESA programs through case-by-case § 7 consultations, and increasing concern about ESA liability for states and individual permittees,[126] the EPA and the Services spent a decade developing an interagency memorandum of agreement to help ensure protection of endangered species during the EPA's promulgation and approval of water quality standards and approval of state NPDES permitting programs.[127]

The initial draft of the agreement was signed in 1992 and focused on addressing endangered species concerns in water quality standards on a national level.[128] Specifically, the EPA agreed to conduct a national § 7 consultation for existing national water quality criteria under § 304(a) to ensure that aquatic life criteria for listed toxins adequately protected Listed Species.[129] Because this would be a national consultation, it would allow the EPA to avoid individual consultations when reviewing state water quality with identical or more stringent aquatic life criteria.[130] The MOA would also establish procedures to integrate the Services into the EPA's water quality standards review at an early stage to ensure that Listed

126. *See* Part II.C of this Article.

127. Final Coordination MOA, 66 Fed. Reg. 11,202, 11,202 (Feb. 22, 2001). For a comprehensive discussion of the evolution of the negotiations leading to the Final Coordination MOA, *see* Rosan, *supra* note 113, at 464–74.

128. *See* Coordination Between the Environmental Protection Agency, Fish and Wildlife Service and National Marine Fisheries Service Regarding Development of Water Quality Criteria and Water Quality Standards Under the Clean Water Act (July 27, 1992), *reprinted in* Environmental Protection Agency, Water Quality Standards Handbook app. F (2d ed. 1993) [hereinafter 1992 Draft Coordination MOA]. This effort was largely prompted by a lawsuit alleging that the Alabama Department of Environmental Management had violated the ESA by failing to consult with FWS on water quality standards. James Wright, *The Alabama Department of Environmental Management Takes on the EPA: Opening Skirmish in a National Battle*, 28 CUMB. L. REV. 663, 668–71 (1998).

129. 1992 Draft Coordination MOA, *supra* note 129, at 4.

130. *Id.* at 7–8

Species issues could be addressed efficiently.[131] Subsequent drafts of the Coordination MOA built on these base provisions of the 1992 Draft Coordination MOA.[132] The Agencies expanded their negotiations, seeking more comprehensive coordination procedures which would also ensure protection of Listed Species during the EPA's review of state NPDES permits.[133] The 1997 Draft Coordination MOA proposed a new national programmatic consultation examining the EPA's review of state water quality standards and NPDES permit programs.[134] The draft committed the EPA to initiating § 7 consultation when approving new or revised state water quality standards, and established coordination procedures between the EPA, the Services, and states to ensure that state-issued NPDES permits protected Listed Species.[135] The Services also drafted a programmatic biological opinion for the national consultation that would provide incidental take coverage to dischargers, states, and tribes provided that the EPA complied with the coordination procedures.[136] The 1997 Draft Coordination MOA also proposed a national EPA rulemaking to amend its national water quality standards and its NPDES permit regulations to ensure that all state water quality standards were not likely to jeopardize Listed Species.[137]

During this period, the EPA effectively tested the evolving coordination procedures by developing state-specific coordination procedures as part of three federal approvals of the state NPDES permit programs. Industry challenged the coordination procedures developed during the Louisiana and Oklahoma approvals, arguing that that the EPA had exceeded its statutory authority by requiring the Services' review of state-issued NPDES permits as part of state program approval.[138] In *American Forest and Paper Ass'n v. Environmental Protection Agency* (AFPA I),[139] the Fifth Circuit vacated procedures that (1) imposed a requirement on the State to consult with the Services regarding the impact of state permits on Listed Species, and (2) declared that the EPA would reject any proposed

131. *Id.* at 1.

132. *See* 1999 Draft Coordination MOA, 64 Fed. Reg., 2742, 2743 (Jan. 15, 1999). The EPA and the Services circulated a version of the draft MOA dated July 31, 1997 to the states, industry trade associations, environmental groups, and other parties requesting copies, and accepted comments from these parties. *Id.*

133. *Id.*

134. *See* Rosan, *supra* note 113, at 466.

135. *Id.* at 466–67.

136. *Id.* at 469. The Services characterized the level of incidental take as unquantified since it could not quantify the level with precision. *Id.*

137. *Id.* at 467.

138. *See infra* note 147.

139. AFPA I, 137 F.3d 291 (5th Cir. 1998).

permit to which the Services objected. [140] The court held that the EPA could not modify the "non-discretionary" list of enumerated criteria contained in 402(b)[141] to require state consultation with the Services regarding endangered species when approving the Louisiana NPDES permit program,[142] because such review was not specifically enumerated as a criterion and the ESA conferred no additional substantive powers beyond the underlying statutory authority granted to federal agencies.[143] In a second similar case involving the Oklahoma NPDES program approval[144] (AFPA II), the Tenth Circuit dismissed the case for lack of constitutional standing and ripeness without reaching its merits.[145]

Subsequent to the AFPA I and II cases, the EPA modified its approach to species protection when it approved the Texas NPDES program by emphasizing its CWA authority.[146] The Texas approval established virtually identical consultation procedures as those challenged in Lousiana and Oklahoma.[147] Different, however, was the EPA's efforts to distinguish the Texas approval by emphasizing its reliance upon its CWA authority under § 301(b)(1)(C), which requires NPDES permits to comply with any water quality based limitations more stringent than technology based effluent limitations.[148] The EPA committed to review state-issued permits to ensure they complied with state water quality standards protective of Listed Species.[149] Specifically, the EPA looked to Texas's state water quality standards protective of aquatic species: "water in the state shall be maintained to preclude adverse toxic effects on aquatic and terrestrial

140. *Id.* at 297–98.

141. Water Pollution Control Act, 33 U.S.C. § 1342(b)(1)–(9) (1997).

142. 137 F.3d at 297–98; *see also* 33 U.S.C. § 1342(b)(1)–(9).

143. 137 F. 3d at 297–98 n.5.

144. American Forest and Paper Ass'n v. Environmental Protection Agency, 154 F.3d 1155, 1157–58 (10th Cir. 1998) [hereinafter AFPA II].

145. *Id.* at 1158–60. The procedures at issue in the Oklahoma approval differed slightly from those in the Lousiana approval in that they were to be applied only to permits authorizing discharges to "sensitive water" which were defined to include those identified by the FWS as habitat for Listed Species. *Id.* at 1160 n.8.

146. *See* State Program Requirements; Approval of Application to Administer the National Pollutant Discharge Elimination System (NPDES); Texas, 63 Fed. Reg. 51,164 (Sept. 24, 1998) [hereinafter Texas].

147. *Id.* at 51,198.

148. NPDES Program, 40 C.F.R. § 122.44(d)(1) (2001); Water Pollution Control Act, 33 U.S.C. § 1311(b)(1)(C) (1997); *see also supra* note 70, and accompanying text.

149. *See* Texas, 63 Fed. Reg. at 51,198–99.

wildlife . . . resulting from contact, consumption of aquatic organisms, consumption of water, or any combination of the three."[150]

Then, on January 15, 1999, the EPA and the Services jointly published the 1999 Draft Coordination MOA for public comment.[151] The stated purpose of the MOA was to address how the Agencies intended to use their authorities in a coordinated manner to protect Listed Species, to address comments received from stakeholders on the previous draft, provide further opportunity for public comment, and to respond to judicial criticism of prior coordination agreements.[152] The Agencies expressed the need for a coordinated national approach to meet the goals of the CWA and ESA on a program-wide level, thereby ensuring "an appropriate level of protection for Listed Species and greater regulatory predictability for States, Tribes, and the public."[153] The EPA addressed the AFPA I decision, asserting that the agency "believe[d] that this case was wrongly decided" because the court incorrectly found that the EPA had required the State of Louisiana to consult with the Services as a condition of program approval.[154] The 1999 Draft Coordination MOA, unlike the MOA in Louisiana, was an agreement solely among federal agencies, and imposed no obligations on states or tribes and no conditions on program approval.[155] Moreover, the MOA made clear that the EPA would use existing CWA authority to implement the coordination procedures and that the EPA would retain ultimate authority in determining whether to object to a proposed discharge permit that would harm a Listed Species pursuant to its authority under the CWA — not the ESA.[156]

In January 2001, the Agencies signed the Final Coordination MOA setting out the coordination procedures the Agencies intend to follow when carrying out their respective responsibilities under the ESA and CWA to protect Listed Species.[157] Specifically, the Final Coordination MOA addresses the protection of Listed Species under the water quality standards and NPDES programs established pursuant to sections 303(c) and 402 of

---

150. *See* Rosan, *supra* note 113, at 481 (citing 30 TEX. ADMIN. CODE § 307.6(b)(4) (1998)).

151. *See* 1999 Draft Coordination MOA, 64 Fed. Reg. 2742 (Jan. 15, 1999).

152. *Id.* at 2742–43, 2746.

153 *Id.* at 2742. The coordination procedures also seek more efficient use of agency resources, noting that state water quality standards consultations have taken an average of eighteen months each. *See id.*

154. *Id.* at 2746.

155. *Id.*

156. *Id.*

157. Final Coordination MOA, 66 Fed Reg. 11,202 (Feb. 22, 2002).

the CWA, respectively.[158] The Agencies retained nearly all of the significant provisions from the 1999 Draft Coordination MOA.

First, the Final Coordination MOA includes interagency coordination and elevation provisions, which provide that regional and field offices of the EPA and Services meet regularly to coordinate activities involving water quality and Listed Species protection.[159] The MOA also includes specific procedures for elevating issues that arise between the Agencies' regional and field offices.[160]

Second, the MOA addresses national level activities between the Agencies, including a commitment by the EPA to undertake within twenty-four months a national rulemaking on species protection under its water quality standards regulations to provide that water quality shall not be likely to jeopardize the continued existence of Listed Species.[161] The Agencies assert that the rule would essentially "codify existing protection for endangered and threatened species under the CWA" since, in the EPA's judgment, water of such degraded quality that it will likely cause jeopardy to the continued existence of a species would generally not be consistent with protections provided by the CWA.[162] The MOA also proposes a national § 7 consultation on the EPA's recommended aquatic life criteria to determine the effect of the criteria on Listed Species and designated habitat.[163] The EPA will then consider the results for the consultation as it implements and refines its criteria program.[164]

Third, the Final Coordination MOA also commits the EPA to a § 7 consultation whenever approval of new or revised water quality standards may have an effect on a Listed Species.[165] The Agencies also agreed that where information indicates an existing standard is not adequate to avoid jeopardizing a Listed Species, the EPA will work with the state or tribe to obtain revision of the standard or, if necessary, revise the standards through

---

158. *Id.* at 11,207–217; *see also* Water Pollution Control Act, 33 U.S.C. §§ 1313(c), 1342 (1997).

159. Final Coordination MOA, 66 Fed. Reg. at 11,208.

160. *Id.* at 11,209.

161. *Id.* at 11,211.

162. *Id.* at 11,204–05.

163. *Id.* at 11,212.

164. *Id.* States, in turn, could adopt the EPA's water quality criteria as part of their water quality standards, thereby avoiding a separate consultation on such adopted criteria. The national consultation on aquatic life criteria would promote greater efficiency and ensure agency consistency in assessing the impacts of pollutants on aquatic endangered species and in developing protective standards. The MOA's national consultation would provide incidental take coverage for any state water quality criteria that are at least as stringent as the EPA's recommended § 304(a) criteria. *Id.*

165. *Id.* at 11,213.

promulgation of federal water quality standards under § 303(c)(4)(B) of the CWA.[166]

Fourth, the Agencies established procedures for coordination with regard to oversight of state and tribal NPDES permitting programs.[167] These coordination procedures are very similar to those developed in the recent state and 1999 Draft Coordination MOAs, essentially providing 1) opportunities for the Services to comment on state permits, 2) opportunities for the Services to contact the EPA if their comments were not adequately addressed by the state, and 3) for the EPA to object to state NPDES permits if they fail to meet the requirements of the CWA.[168] While the Agencies deleted a proposed provision for a national permits consultation, the EPA committed to continue consulting with the Services where approval of a state's or tribe's application to administer the NPDES program may affect federally Listed Species.[169] Following upon the approach taken in the Texas program approval and the 1999 Draft MOA, the Final Coordination MOA justified all NPDES permit program coordination procedures under existing CWA authority.[170] For example, in exercising its oversight authority, the EPA may only object to a state-issued permit likely to jeopardize Listed Species on the grounds that it is "outside the guidelines and requirements" of § 402(d)(2) of the CWA.[171] Further, in contrast to the pre-1999 MOAs which required states to submit permit applications to the Services, the Final Coordination MOA procedures clearly identified existing CWA regulations that require states to provide notice and copies of individual draft permits to the Services.[172]

---

166. *Id.* at 11,215. In response to comments suggesting that it is not appropriate for the EPA to reopen an existing water quality standard to avoid jeopardy because that threshold is not contained in the CWA, the Agencies emphasized again that water-dependent Listed Species are an important component of the aquatic environment the CWA is designed to protect, and steps to ensure such protection are well within the scope of the CWA. *Id.* at 11,206.

167. *Id.* at 11,215–16.

168. *Id.* at 11,216.

169. *Id.* at 11,205. The Agencies' deletion of a national permits consultation was because of questions regarding the appropriateness of granting incidental take coverage at the national level without considering site-specific circumstances. The Agencies were also concerned about the impact on existing state NPDES programs, and the desire by some that they not be "reopened" through the national consultation. When formal consultation is undertaken on a state-by-state basis during NPDES program approvals, or for new or revised water quality standards, incidental take coverage would be included in the biological opinion for such consultation. *Id.*

170. *Id.* at 11,215–16.

171. *Id.* at 11,216.

172. *Id.*

The emphasis in the Final Coordination MOA on water quality standards as the key to ensuring protection of endangered and threatened species is evident.[173] Moreover, the Final Coordination MOA recognizes that water quality standards enable the EPA to consider the effects of NPDES permit discharges on Listed Species under its oversight authority.[174] While the national effort at improved coordination between the EPA and the Services holds great promise for improving CWA protections for Listed Species, many of the same issues that led to the MOA are likely to remain. For example, even assuming timely rulemaking, and with improved coordination efforts on new or revised water quality standards, gaps in Listed Species protection are likely to remain when trying to assess whether specific water quality criteria will, in fact, protect Listed Species, especially from the cumulative impacts of pollution.[175] Unfortunately, it is also true that with so many waters out of attainment for water quality,[176] legitimate questions remain as to when, or if, state and federal governments will ever diligently enforce water quality standards effectively enough to protect Listed Species. In addition, the success of these coordination procedures is also going to depend upon the ability of those carrying out the procedures to be able to spot potential Listed Species issues given a set of unique facts and a relatively short period of time,[177] and also to understand and be able to apply specific water quality standards during the permit review process to effectively protect the species.

The EPA's recent approval of the state of Maine's application to administer the NPDES program not only tested the ability of the Final Coordination MOA to protect the listed wild Atlantic salmon, but demonstrates that on the ground (or rather, in the water) the key to species protection is the actual application of state water quality standards through

---

173. *See id.* at 11,164–70 and accompanying text.

174. *Id.*

175. For example, the Services stated in the recent biological opinion approving Texas's state permit program, that state water quality standards may not always protect endangered and threatened species. The FWS wrote that "research indicates that species in or near contaminated sediments may be adversely affected even if water-quality criteria are not exceeded." U.S. DEPT. OF THE INTERIOR, FISH AND WILDLIFE SERV., FWS BIOLOGICAL OPINION ON THE PROPOSED AUTHORIZATION BY THE EPA OF THE ASSUMPTION BY THE STATE OF TEXAS OF THE TEXAS POLLUTION DISCHARGE ELIMINATION SYSTEM (TPDES) 46–47 (1998)(on file with author). In addition, the current Texas state WQS for temperature cannot adequately protect reproduction and survival of the fountain darter. *Id.* at 52.

176. *See supra* note 115.

177. For example, the Final Coordination Procedures suggest that the EPA or Services contact the appropriate state or tribal agency to discuss identified concerns, preferably within 10 days of receipt of a notice of a draft permit. Final Coordination MOA, 66 Fed. Reg. at 11,216.

the NPDES permitting program. During the § 7 consultation on Maine NPDES program approval, protection of the wild Atlantic salmon was determined to be achievable only through imposition of conditions in NPDES permits for fish farms raising farm-raised Atlantic salmon which are directed at regulating the escape or release of farm-raised fish. As demonstrated in this unique case, because state water quality standards are required to contain certain existing minimum CWA requirements, the legal authority is likely to be present for NPDES permitting authorities to required conditions in NPDES permits necessary to protect Listed Species. Thus, the approach adopted in this case could be applied in other states' NPDES programs to protect Listed Species with, or without, the national rulemaking and § 7 consultations related to water quality standards provided for in the Final Coordination MOA.

## IV. THREATS TO THE GULF OF MAINE WILD ATLANTIC SALMON FROM SALMON FISH FARMS

In 1999, the Services completed a comprehensive status review[178] of the last remaining wild Atlantic salmon population in the United States,[179] and on November 17 of that year, proposed listing a Distinct Population Segment[180] of Anadromous Atlantic salmon (*salmo salar*) in the Gulf of Maine (wild Atlantic salmon) as an endangered species.[181] After reviewing additional information, including information submitted during the comment period on the proposed listing, and after considering the continuing low numbers of returning adults to Maine's salmon rivers, the lower than anticipated parr to smolt[182] survival, and "the serious and

178. Availability of a Status Review of the Atlantic Salmon in the Gulf of Maine Distinct Population Segment, 64 Fed. Reg. 56,297 (Oct. 19, 1999).

179. "[T]he Services determined that historic U.S. Atlantic salmon populations were comprised of at least three population segments: Long Island Sound, Central New England, and Gulf of Maine . . . [T]he Long Island Sound and the Central New England population segments have been extirpated." Listing Decision, 65 Fed. Reg. 69,459 (Nov. 17, 2000).

180. *See infra* note 196.

181. Endangered and Threatened Species; Proposed Endangered Status for a Distinct Population Segment of Anadromous Atlantic Salmon (*Salmo salar*) in the Gulf of Maine, 64 Fed. Reg. 62,627 (Nov. 17, 1999).

182. After hatching, Atlantic salmon go through several life stages. "[E]ggs deposited in the fall usually hatch during March or April. The *Alevins*, or sac-fry . . . are about one-half inch in length and have a large yolk sac" attached to their bellies. BAUM, *supra* note 1, at 12. When the yolk sac is almost completely absorbed after about six weeks, the young *fry* emerge from the gravel and begin feeding in the river. Studies show that only eight percent of eggs originally deposited make it to the fry stage. As growth continues, the small salmon are called *parr* because of the presence of eight to eleven pigmented, vertical bands termed "parr marks" which are thought to help camouflage the salmon. About seventy to ninety

continuing nature of threats to the species," the Services concluded that the wild Atlantic salmon warranted protection as an endangered species on November 17, 2000.[183]

The threats to the wild Atlantic salmon identified by the Services include disease, inadequate regulation of water withdrawals, disease and aquaculture,[184] current aquaculture practices, and low marine survival rates.[185] The population of wild Atlantic salmon listed include "all naturally reproducing remnant populations of Atlantic salmon from the Kennebec River downstream of the former Edwards Dam site, northward to the mouth of the St. Croix River."[186] The listing specifically includes at least eight Maine rivers including the Dennys, East Machias, Machias, Pleasant, Narraguagus, Ducktrap, Sheepscot, and Cove Brook (salmon rivers).[187] In the six years preceding its listing, the total documented adult wild Atlantic salmon returns to the salmon rivers decreased from an already low 83 in 1995 to only 22 in 2000.[188] While this represents the minimum number of salmon returns because not all of the salmon rivers have trapping facilities, counts of redds (egg nests) indicated that the total annual returns for all salmon rivers in recent years may have been between 100 and 500 adults.[189]

Section 4 of the ESA[190] sets forth the procedures for adding species to the federal list of endangered species. Section 4 requires that listing determinations be based solely on the best scientific and commercial data available, without consideration of possible economic or other impacts of

---

percent of the parr remain in freshwater rivers for two years, with some remaining for a third year. After two-to-three years, the parr undergo several changes, becoming thinner with elongated and more deeply forked tails, and the parr marks disappear and the fish turn silvery. Internally, drastic changes take place as they prepare for life at sea, including their kidneys becoming able to excrete salt rather than retain it, and the *smolt* migrates downstream to the ocean during April to June. *Id.* at 12–15.

183. Listing Decision, 65 Fed. Reg. at 69,459.

184. *Id.* at 69,475–78.

185. *Id.*

186. *Id.* at 69,459.

187. *Id.* Note that this also includes the segment of the Penobscot River and its tributaries, downstream from the Bangor dam. The DPS includes both the naturally reproducing populations and those river-specific hatchery populations cultured from them for the purposes of aiding in the recovery of the species. The Services also state that in the future, wild Atlantic salmon populations may be identified in additional rivers based on ongoing stream surveys and genetic analysis. *Id.* at 69,479.

188. Maine NPDES Biological Opinion, *supra* note 2, at 13–14.

189. *Id.*

190. 16 U.S.C. § 1533 (1994); 50 C.F.R. § 424 (2001).

such determinations.[191] A species may be determined endangered or threatened due to one or more of the five factors described in § 4(a)(1) of the ESA.[192] During its review of the wild Atlantic salmon, the Services concluded that listing was warranted because of the danger of extinction existing under three of the five § 4(a)(1) factors.[193] Under each of these three factors, the Services analysis pointed to the presence of Maine's salmon farms within the wild Atlantic salmon's range as directly contributing to their risk of extinction.[194]

This section briefly describes Maine salmon farms and then discusses the Services' analysis under § 4(a)(1) of the ESA, focusing on the threats to the wild Atlantic salmon from Maine's salmon farms identified by the Services under factors (C), (D) and (E) of ESA § 4(a)(1).[195]

### *A. Maine's Salmon Farms*

Throughout their listing decision, the Services' use of the term aquaculture refers to the floating systems of net pens and/or cages (also referred to as pens) used to culture Atlantic salmon. Both types of pens are designed to contain fish, exclude predators, and allow for the free flow of ocean water.[196] Net pens are made of plastic piping formed into circles from which hang an inner containment net designed to contain fish, and an outer "predator" net designed to exclude predators such as seals.[197] A bird

---

191. 16 U.S.C. 1533(b)(1)(A).

192. *Id.* at 1533(a)(1)(A)–(E).

193. *See* Listing Decision, 65 Fed. Reg. 69,459, 69,480 (Nov. 17, 2000).

194. *Id.* at 69,476–78.

195. The Services also required ESA analysis establishing the wild Atlantic salmon as a species under the Act. *See* Listing Decision, 65 Fed. Reg. at 69,459. The ESA defines a species as "any subspecies of fish or wildlife or plants, and any distinct population segment of any species of vertebrate fish or wildlife which interbreeds when mature." 16 U.S.C. § 1532(16). This definition allows for the recognition of distinct population segments [DPS's] as Listed Species at levels below taxonomically recognized species or subspecies based on consideration of three elements: "(1) the discreteness of the population segment in relation to the remainder of the species or subspecies to which it belongs; (2) the significance of the population segment to the species or subspecies to which it belongs; and (3) the conservation status of the population segment in relation to the ESA listing standards." *See* Listing Decision, 65 Fed. Reg. 69,459 *citing* Policy Regarding the Recognition of Distinct Vertebrate Population Segments Under the Endangered Species Act, 61 Fed. Reg. 4722 (Feb. 7, 1996).

196. *See ASM* 2002 U.S. Dist. LEXIS 2822, at *5, WL 242466 (D. Me. Feb. 19, 2002); *Heritage* 2002 U.S. Dist. LEXIS 2706 at *4–6, WL 987441 (D. Me. Aug. 28, 2001); *Stolt*, 2002 U.S. Dist. LEXIS 2757, at *4–6, WL 240386 (D. Me. Feb. 19, 2002).

197. *Id.*

net covers the top to prevent predation from birds.[198] Cages are square steel pens that have plastic floats filled with polystyrene, and the same system of containment, predator, and bird nets.[199] The depth of the net pens themselves is typically 5–10 meters.[200] A typical net pen may hold up to 35,000 salmon,[201] while a typical steel cage may hold up to 16,000 – 40,000 salmon.[202] Farm-raised salmon are often of either European strain, hybrid North American/European, or of North American origin but selectively bred for characteristics that make the fish grow fast and with traits that make them more marketable.[203]

A typical salmon farm consists of a number of pens lashed together into systems that are moored to the sea floor along with appurtenant walkways, a feed barge,[204] and other equipment.[205] A typical farm may ultimately hold from 200,000 to 700,000 market sized fish and cover from one and one half to three acres of leased ocean surface area.[206] The amount of leased sea bottom averages about seventeen acres but could be up to forty acres depending upon the depth of the water and the size of the pen system.[207] Salmon farmers seek locations for their farms in bays, near shore, or near

198. *Id.*

199. *Id; see e.g.*, U.S. Army Corps of Engineers, Public Notice, Lee. M. Harris Aquaculture Permit Application, File No. 199902199 (April 18, 2000).

200. *See* Acadia Aquaculture, Inc., Authorization to Discharge Under the National Pollutant Discharge Elimination System 3 (Feb. 21, 2002) [hereinafter Acadia Permit].

201. *Heritage*, 2002 U.S. Dist. LEXIS 2706 at *6, WL 987441 (D. Me. Feb. 19, 2002).

202. *Stolt*, 2002 U.S. Dist. LEXIS 2757, at *5, WL 240386 (D. Me. Feb. 19, 2002). *See e.g.*, Application for Net Pen Aquaculture Lease by NorWestFish, Inc. of Norway, Lewis Cove, Passamaquoddy Bay, North Perry, Washington County, Maine 4–5 (March 13, 2002) [hereinafter NorWestFish Application] (on file with author).

203. Listing Decision, 65 Fed. Reg. 69,459, 69,471, 69,478 (Nov. 17, 2000); Maine NPDES Biological Opinion, *supra* note 2, at 21.

204. A typical feed barge may be 60x90 feet supporting a small building that could house workers overnight, generators, feed and fuel storage, and other equipment. *See e.g.* NorWestFish Application, *supra* note 203, at 2–4.

205. *ASM*, 2002 U.S. Dist. LEXIS 2882, at *4, WL 242466; *Heritage*, 2002 U.S. Dist. LEXIS 2706, at *5, WL 987441; *Stolt*, 2002 U.S. Dist. Lexis 2757, at *4, WL 240386. *See also* Acadia Permit, *supra* note 201, at 3.

206. 2001 Department of Marine Resources, Lease Inventory Report (June 2001) [hereinafter DMR Lease Inventory]; *see e.g.* Acadia Permit, *supra* note 201; NorWestFish Application, *supra* note 203, at 4–5.

207. DMR Lease Inventory, *supra* note 207; Acadia Permit, *supra* note 201. The depth of water affects the size of the leased bottom area because the system mooring lines extend out at an angle from the pen system to the bottom moorings. Farmers may also lease more bottom than immediately necessary for mooring to allow for drift or to allow for shifting of the pens within the area.

coastal islands where the farms are sheltered from storms.[208] In addition, many areas in eastern Maine are ideally suited for salmon farming because of cool waters, strong currents, and high tides which supply oxygen, assure nutrients are well mixed and distributed, and flush away excess feed, salmon waste, and other pollutants.[209]

Fish farms grow salmon at freshwater hatcheries for about one year until the fish become smolts.[210] The fish are then transferred by boat to the farms where they are dumped, netted, sluiced, flumed, or pumped via plastic hose into the pens.[211] The salmon are then cultured in the pens for fifteen to twenty-seven months until fish weighing approximately eight to twelve pounds are harvested for market.[212] The salmon are fed various types of meal, some containing primarily ground-up fish such as herring and anchovetta, while others contain primarily waste products from the chicken processing industry such as feathers, blood, and carcasses combined with soybean meal, wheat, vitamins and minerals, and pharmaceutically manufactured pigments to color the flesh pink.[213] The feed is delivered to the salmon either by hand, by "blowers" which blow the feed into the cages, or it is sprayed into the cages by underwater pipes attached to the feed barge.[214]

At the time of listing, the Maine salmon farming industry was "composed of 12 companies, at 33 sites, with 773 cages covering 800

---

208. Inka Milewski, et. al., *After the Goldrush: Salmon Aquaculture in New Brunswick, in* MURKY WATERS: ENVIRONMENTAL EFFECTS OF AQUACULTURE IN THE U.S. 131 (Rebecca Goldburg, et. al., 1997).

209. *Id.* Fish farms discharge organic pollutants including uneaten fish food and raw sewage (salmon excrement) which settle and can have detrimental impacts on marine habitat. Chemical pollutants include antibiotics, pesticides, disinfectants and copper from cage anti-fouling paints. Farm-raised fish themselves also escape from salmon farms and increase the likelihood of disease causing pathogens in the ecosystem. Roger Fleming, *Aquaculture; An Important Coastal Industry but at What Cost to Marine Habitat*, New England Ocean News, *available at*, http://www.clf.org (last visited Dec. 2001); *ASM*, 2002 U.S. Dist. LEXIS 2882, at *7–9, WL 242466; *Heritage*, 2002 U.S. Dist. LEXIS 2706, at *22, WL 987441; *Stolt*, 2002 U.S. Dist. LEXIS 2757, at *9, WL 240386.

210. ASM, 2002 U.S. Dist. LEXIS 2882, at *7–9, 242466; *Heritage*, 2002 U.S. Dist. LEXIS 2706, at *22, 987441; *Stolt*, 2002 U.S. Dist. LEXIS 2757, at *9, WL 987441.

211. *ASM*, 2002 U.S. Dist. LEXIS 2882, at *7–9, 242466; *Heritage*, 2002 U.S. Dist. LEXIS 2706, at *22, 987441; *Stolt*, 2002 U.S. Dist. LEXIS 2757, at *9, WL 987441.

212. *ASM*, 2002 U.S. Dist. LEXIS 2882, at *7–9, 242466; *Heritage*, 2002 U.S. Dist. LEXIS 2706, at *22, 987441; *Stolt*, 2002 U.S. Dist. LEXIS 2757, at *9, WL 987441. 22.

213. *ASM*, 2002 U.S. Dist. LEXIS 2882, at *7–9, 242466; *Heritage*, 2002 U.S. Dist. LEXIS 2706, at *22, 987441; *Stolt*, 2002 U.S. Dist. LEXIS 2757, at *9, WL 987441.

214. *ASM*, 2002 U.S. Dist. LEXIS 2882, at *7–9, 242466; *Heritage*, 2002 U.S. Dist. LEXIS 2706, at *22, 987441; *Stolt*, 2002 U.S. Dist. LEXIS 2757, at *9, WL 987441. 9.

leased acres of water."[215] Maine's salmon farms are concentrated in Cobscook Bay near Eastport, Washington County.[216] Farms are, however, located as far south as the Sheepscot River, though that site does not presently culture salmon.[217] The Canadian industry is approximately twice the size of the industry in Maine and is concentrated in Passamaquoddy Bay and the Mouth of the Bay of Fundy, New Brunswick, just east of Washington County.[218] Because Passamaquoddy Bay and Cobscook Bay are adjacent to each other, in assessing the overall impact of the aquaculture industry on the marine ecosystem in this area, including the wild Atlantic salmon, the entire aquaculture industry in the region should be considered.[219] There are also two freshwater hatcheries located on Maine's salmon rivers.[220]

## V. THE SERVICE'S ESA § 4(A)(1) ANALYSIS

After examining whether the wild Atlantic salmon should be listing under the five factors of ESA § 4(a)(1), the Services concluded that under Factor (A) habitat impacts,[221] and under Factor (B) overexploitation of the

---

215. Listing Decision, 65 Fed. Reg. 69,459, 69,477 (Nov. 17, 2000).

216. *Id.* at 69,477; *see also* DMR Lease Inventory, *supra* note 207, at xiii. Cobscook Bay contains 26 of 44 leases covering 450 of 750 leased acres.

217. Listing Decision, 65 Fed. Reg. at 69,477.

218. Milewski, *supra* note 209, at 131.

219. *Id.*

220. Listing Decision, 65 Fed. Reg. at 69,477.

221. Specifically, Factor (A), requires the Services to examine "the present or threatened destruction, modification, or curtailment of habitat or range" of the species. Endangered Species Act, 16 U.S.C. § 1533(a)(1)(A) (1994). The Services concluded that demonstrated and potential impacts to Atlantic salmon habitat within the salmon river watersheds result from the following causes: "(1) water extraction; (2) sedimentation; (3) obstructions to passage including those caused by beaver and debris dams and poorly designed road crossings; (4) input of nutrients; (5) chronic exposure to insecticides, herbicides, fungicides, and pesticides (in particular, those used to control spruce budworm); (6) elevated water temperatures from processing water discharges; and (7) removal of vegetation along streambanks." The most obvious and immediate threat to the wild Atlantic salmon identified by the Services is posed by water extraction on some salmon rivers, as it has the potential to expose or reduce salmon habitat. Ultimately, however, the Services concluded that "there does not appear to be one particular habitat issue which poses a significant threat to the entire DPS itself." (Though, "because of their indirect relationship to habitat, agricultural water withdrawals were discussed separately in relation to listing factor (D)"). Thus, while the Services called for additional study to determine whether the individual and cumulative impacts from habitat degradation may reduce habitat quality and limit habitat quantity available to the wild Atlantic salmon at various stages in their life history, at present, the scientific and commercial data available do not show that loss of habitat is creating a danger of extinction to the wild Atlantic salmon. Listing Decision, 65 Fed. Reg. at 69,475.

species,[222] the scientific and commercial data currently available does not show that loss of habitat or overutilization are creating a risk of extinction to the wild Atlantic salmon.[223]

### *A. Factor (C): Disease or Predation*

The Services concluded that the threat of disease to the wild Atlantic salmon exists both because of the potential impact of disease on wild Atlantic salmon, and the threat disease poses to the health of the recovery effort's river-specific broodstock used in the existing hatchery program.[224] Fish diseases have always represented a source of mortality to wild Atlantic salmon, though when the public hears of major losses because of disease the loss is generally associated with salmon aquaculture.[225] The Services found that the level of threat from disease remained relatively static over time until three events prior to the listing decision increased the threat of disease to the wild Atlantic salmon:

> (1) The appearance of the Infectious Salmon Anemia (ISA) virus in 1996 in Canada within the range of possible exposure to migrant wild Atlantic salmon, the subsequent spreading of that disease closer to the Maine border, and the collection of aquaculture escapees and wild fish testing positive for the ISA virus; (2) the discovery in 1998 of the retrovirus SSSV within wild Atlantic

222. Specifically, Factor B requires the Services to examine "overutilization for commercial, recreational, scientific, or educational purposes." 16 U.S.C. § 1533(a)(1)(B). The Services concluded that in view of elimination of the directed Atlantic salmon fishery in Maine and changes in the high seas fishery, the existing commercial fishery off West Greenland, and bycatch in existing recreational fisheries in Maine, the best data presently available does not show that overutilization is creating a danger of extinction. Listing Decision, 65 Fed. Reg. at 69,476.

223. *Id.* at 69,475–76.

224. *Id.* at 69,477.

225. *Id.* at 69,476.

salmon;[226] and (3) new information available in 1999 on the potential impact of coldwater disease on salmon.[227]

The appearance and spread of the ISA virus is directly linked to salmon fish farming and is a threat to the survival of the wild Atlantic salmon.

The ISA virus represents a relatively new threat to Maine's wild Atlantic salmon.[228] Discovered in 1984, ISA was known only in Norway prior to 1996, when it was diagnosed in fish farms in New Brunswick, Canada.[229] ISA causes a lethal disease in maturing salmon held in salt water, but is not a threat to human health.[230] Monitoring in the Magaguadavic River in New Brunswick by the Atlantic Salmon Federation confirmed the presence of both infected aquaculture escapees in the Magaguadavic River and infected wild fish that had been exposed to infected aquaculture fish.[231] ISA has also been found in wild salmon in Scotland.[232] There is no known cure to ISA and no known way to control the disease except removal and destruction of fish held within five

---

226. Wild parr were taken from the Pleasant River in 1995 and held in isolation at the North Attleboro National Fish Hatchery (NANFH) and a private hatchery in Deblois, Maine for the purposes of rearing the fish to sexual maturity, spawning them, and returning progeny back to the Pleasant River. Mortalities associated with tumors in the viscera (particularly the swimbladder) began to appear in the salmon at the NANFH in 1997 and 1998. "Cornell University Scientists identified the cause as a retrovirus named SSSV that had never been previously documented except once in Scotland in the 1970s . . . Pleasant River fish at the Deblois Hatchery were also found to be positive for the virus, though no disease or mortality occurred. Further testing of wild salmon held as broodstock at the Cold Brook National Fish Hatchery (CBNFH) showed that the virus was present in a carrier state in eight individuals of over 500 tested. Some of these individuals had been in captivity for several years, and others were only recently captured and held in isolation. The implications are that the virus has been present at some level in wild populations for at least several years. However, its presence in a carrier state in two other hatcheries, some for several years, without any clinical indication of disease, and the lack of any observed symptoms in wild populations suggest that the threat of disease from SSSV is limited." *Id.* The Services concluded that until future research or experience provides additional information, the threat associated with this virus remains uncertain; however, since the virus caused lethal disease at one hatchery it must be considered a threat to the wild Atlantic salmon. *Id.*

227. Cold Water Disease caused by the bacterium *Flavobacterium psychrophilum* was recently found in Atlantic salmon in New England waters. "New information from ongoing studies by the Biological Resources Division of the United States Geological Service at their Leetown Science Center in West Virginia has shown that the pathogen induces pathology and subsequent mortality among juvenile Atlantic salmon. The pathogen is transmitted vertically from carrier sea-run adults to offspring via the eggs." *Id.*

228. *Id.* at 69,475.

229. *Id.* ISA was found in Scotland the following year, 1997.

230. *Id.* at 69,476.

231. *Id.* at 69,469, 69,476.

232. *Id.* at 69,469.

kilometers of an infected site.[233] At the time the wild Atlantic salmon was listed, an extensive survey of Maine aquaculture operations found no ISA virus present within the United States.[234] New Brunswick undertook extensive actions to control the spread of the virus, however, the Services believed the effectiveness of those actions was not assured.[235] With the affected Canadian aquaculture operations so near U.S. fish farms, the Services concluded the virus represented a serious threat to the wild Atlantic salmon because of its potential to spread to U.S. farms located near both salmon rivers and migration routes used by the wild Atlantic salmon.[236] The Service's fears were well founded, as an ISA outbreak in Cobscook Bay began in March 2001 leading to the destruction of the entire two to three million farm-raised fish held in that bay in an effort to control the spread of the virus.[237] To date, it is unknown whether the ISA virus has spread to Maine's wild Atlantic salmon.

### *B. Factor (D): Inadequacy of Existing Regulatory Mechanisms*

The Services concluded that inadequate regulation of disease, aquaculture impacts, and water withdrawals, combined with poor marine survival rates, also presents a major threat to the wild Atlantic salmon.[238] There are a variety of state and federal statutes and regulations that seek to address threats to wild Atlantic salmon, complemented by international actions under North Atlantic Salmon Conservation Organization (NASCO), many interagency agreements, and state-federal cooperative efforts.[239] The Services found that appropriate state and federal agencies have established coordination mechanisms and have joined with private industries and landowners in partnerships for the protection of wild Atlantic salmon.[240] While these partnerships are viewed as critical to the recovery of the species, the Services concluded that existing regulatory mechanisms either lack the capacity or have not been implemented adequately to decrease or

---

233. *Id.* at 69,469, 69,476.

234. *Id.* at 69,476.

235. *Id.*

236. *Id.*

237. Letter from Olympia J. Snowe, U.S. Senator, and Susan M. Collins, U.S. Senator, to Ann Veneman, Secretary, U.S. Dept. of Agriculture (September 18, 2001); John Richardson, *U.S. Aid Planned for Maine Salmon Farms*, PORTLAND PRESS HERALD, November 15, 2001. The federal government agreed to provide Maine's salmon farming industry over sixteen million dollars in emergency aid over two years to carry out the depopulation and destruction of the farm-raised salmon in Cobscook Bay. *Id.*

238. Listing Decision, 65 Fed. Reg. at 69,477.

239. *Id.*

240. *Id.*

remove the threats to wild Atlantic salmon.[241] Specifically, of the three areas of law identified by the Services as insufficient to deal with threats to the species, two involved the salmon farming industry.[242]

1. Disease

At the time of listing, the Services were concerned that the ISA virus had become established in Canadian farm-raised fish in proximity to the U.S. salmon farming industry and the wild Atlantic salmon rivers.[243] After reviewing existing state law and regulations, the Services concluded that Maine's fish health regulations did not fully ensure the testing, reporting, and depopulation of diseased farm-raised fish in the event of an ISA outbreak at U.S. salmon farms.[244] Several months after the initial outbreak of ISA in March 2001, the Maine Department of Marine Resources issued emergency regulations to ensure that such testing, reporting, and depopulation took place in order to deal with the Cobscook Bay ISA disaster.[245] Although, to date the spread of ISA to wild Atlantic salmon has not been

241. *Id.*

242. *Id.* While acknowledging that Maine has made substantial progress in addressing the issue of agricultural water withdrawals, the Services concluded that regulations and water use planning are neither complete nor implemented to provide sufficient protection to the wild Atlantic salmon. "The Maine Land and Water Resource Council and the Maine Land Use Regulatory Commission (LURC) must approve requests for withdrawals for irrigation, and can curtail withdrawals if water levels go below what is considered necessary for the well being of the species. Until such water use planning is complete, however, the allowable surplus above that needed for salmon will not have been quantified. In 1999, the LURC limited the amount of water that could be drawn from the Pleasant, Narraguagus, and Machias Rivers." *Id.* The Maine DEP is currently developing a rule to address withdrawals on a state-wide basis, however, to date water withdrawals in unorganized towns are not regulated. Thus, the Services concluded that the absence of completed water management plans for all salmon rivers subject to future agricultural water withdrawals, and of permanent protection for salmon flows, creates a danger of extinction for the wild Atlantic salmon. *Id.*

243. *Id.*

244. *Id.* The Services were also concerned that the state had also failed to specifically address through regulation the occurrence of the previously unknown retrovirus SSSV. To date, the state has still failed to address this threat through regulation. *Id.*

245. *See* Maine Department of Marine Resources, Special Salmonid Fish Health Inspection Regulations Relating to ISAV, Ch. 24.21(I) and Restriction on Vessel & Equipment Movement, Ch. 24.21(J) (Oct. 31, 2001); Salmonid Fish Health Inspection Regulation, Consequences/Action Plan, Exotic Diseases, Ch. 24.21(H)(1)(b) and (c) (Feb. 13, 2002). These regulations were later made final. *See* Special Salmonid Fish Health Inspection Regulations Relating to ISAV, Ch. 24.21(I) and Restriction on Vessel & Equipment Movement, Ch. 24.21(J) (Dec. 26, 2001); Salmonid Fish Health Inspection Regulation, Consequences/Action Plan, Exotic Diseases, Ch. 24.21(H)(1)(b) and (c) (Feb. 13, 2002). All of the above regulations are *available at* http://www.state.me.us/dmr/rulemaking/index.htm (last visited May 24, 2002).

documented, the Services concluded there remains an extremely serious possibility of the ISA disease spreading from aquaculture fish.[246] Thus, the Services concluded that inadequate regulation of disease vectors presented a serious threat to the wild Atlantic salmon.[247]

2. Aquaculture

In addition to the risk of disease fish farms present to the wild Atlantic salmon, the Services concluded that the known risks inherent in wild stocks interacting with aquaculture escapees (especially potential interactions with European strain, and hybrid farm-raised salmon (European/North American)) increased significantly in the years before listing.[248] The Services had believed that certain restrictions on the importation and use of foreign salmon stocks were in place and enforced. The Services learned, however, that while Maine law restricts importing fish and eggs, a loophole exists that fails to restrict importing European milt, thus enabling expansion of the use of hybrids between European and North American salmon in aquaculture.[249] Data available to the Services indicated that the percentage of European strain hybrid fish raised in aquaculture facilities increased during the three years prior to listing.[250] In addition, fish farmers have continued to use European strains or hybrids despite their commitment in applications for Army Corps of Engineers (ACOE) Permits under § 10 of the Rivers and Harbors Act[251] not to use European strains or hybrids in fish farms.[252] The ACOE has never taken action to remedy this deception despite the fact such permits were issued in reliance on these commitments.[253]

The Services also correctly pointed to the fact that the EPA had failed to issue NPDES permits to limit the discharge of pollutants from fish farms in Maine.[254] After the inception of Maine's salmon farming industry in the late 1980s some fish farmers filed applications for NPDES permits. The

246. Listing Decision, 65 Fed. Reg. at 69,477.

247. *Id.*

248. *Id.* The Services also were alarmed about the potential for future use of transgenic fish. Such fish contain introduced genetic material from a species different from the recipient, usually to make the fish grow faster or tolerate lower water temperature. They pose an unknown risk of genetic and ecological effects to wild Atlantic salmon. Maine NPDES Biological Opinion, *supra* note 2, at 23.

249. Listing Decision, 65 Fed. Reg. at 69,477. *See also* An Act Regarding Aquaculture, ch. 381, sec 2, § 6071, sub § 4, Pub. L. Me. 1991.

250. Listing Decision, 65 Fed. Reg. at 69,477.

251. 33 U.S.C. § 403 (1994).

252. Listing Decision, 65 Fed. Reg. at 69,477.

253. *Id.*

254. *Id.*

EPA never acted on those applications and fish farmers began operating and discharging pollutants from their facilities in violation of the CWA.[255] The Services were also concerned that after Maine assumed the NPDES program and NPDES permits were issued by the state, rather than by the EPA, the Services would lose their right to consult on the impacts of any individual NPDES permit on Listed Species.[256]

Thus, the Services concluded that at the time of listing the current regulatory mechanisms were not adequate to address the threat of farm-raised salmon, in particular non-native Atlantic salmon used in aquaculture facilities.[257] Given the extremely low numbers of adult returns, the Services concluded that the inadequate regulation of disease, aquaculture, and water withdrawals created the threat of extinction to the wild Atlantic salmon.[258]

### *C. Factor (E): Other Natural or Manmade Factors Affecting its Continued Existence*

The Services found that Atlantic salmon that escape from fish farms and hatcheries pose a threat to wild Atlantic salmon in Maine's salmon rivers.[259] Given the continued operation of farms and growth of the industry, the Services concluded that escapes and resulting interactions with wild Atlantic salmon were expected to increase.[260] The Services' research found substantial documentation of the threats posed by escaped farm-raised fish, noting that escaped farm-raised salmon disrupt redds of wild salmon, compete with wild salmon for food and habitat, interbreed with wild salmon, transfer disease or parasites to wild salmon, and/or degrade the benthic habitat.[261] In addition, there was concern over interactions between farm-raised salmon and wild salmon when wild adult

---

255. *Id.; see also supra* § II.B; *ASM*, 2002 U.S. Dist. LEXIS 2822, at *7–9, WL 242466 (D. Me. Feb. 19, 2002); *Heritage*, 2002 U.S. Dist. LEXIS 2706, at *22, WL 987441 (D. Me. Aug. 28, 2001); *Stolt*, 2002 U.S. Dist. LEXIS 2757, at *9, WL 240386 (D. Me. Feb. 19, 2002).

256. *See generally*, Maine NPDES Biological Opinion, *supra* note 2.

257. Listing Decision, 65 Fed. Reg. at 69,477.

258. *Id.*

259. *Id.*

260. *Id.*

261. *Id.* at 69,477–78. A comparative study in Canada revealed that survival of wild post-smolts moving from Passamaquoddy Bay to the Bay of Fundy was inversely related to the density of aquaculture cages. *Id.* at 69,478.

salmon migrate past closely spaced cages, and created the potential for behavioral interactions, disease transfer, or interactions with predators.[262]

Prior to listing, farm-raised Atlantic salmon which either escaped or were released from aquaculture facilities have been found in the St. Croix, Penobscot, Dennys, East Machias, and Narraguagus Rivers in the United States.[263] In 1994 and 1997, escaped farm-raised fish represented 89% and 100%, respectively, of the documented run for the Dennys River, and in 1995, 22 percent of the documented run for the Narraguagus River.[264] Escaped farm-raised fish are of great concern in Maine because even low numbers of escapes can represent a substantial portion of fish in some rivers, and wild Atlantic salmon populations at low levels are particularly vulnerable to genetic intrusion, or other disturbances caused by escapees.[265]

Given the threat of escape from fish farms under existing management practices, the Services has historically opposed the use of reproductively viable European strains (pure and hybrid) of farm-raised Atlantic salmon within North America and the continued importation of European gametes (milt).[266] This opposition is based on genetic studies demonstrating significant differences between North American and European Atlantic salmon,[267] and the advice from geneticists that interbreeding among genetically divergent populations negatively impacts wild Atlantic salmon populations.[268] Thus, the Services concluded that the introgression by non-North American Atlantic salmon stocks presents a substantial threat of disrupting the genetic integrity of North American stocks.[269]

Moreover, the Services concluded that comprehensive solutions to minimize the threat of interactions between wild and aquaculture salmon have not been implemented.[270] The industry voluntarily adopted and implemented a Code of Practice in October 1998. However, escapes

---

262. *Id.*

263. *Id.*

264. *Id.* Escaped farm-raised salmon have also been caught by recreational fishers, and observed in the Boyden, Hobart, and Pennamaquan Rivers. The first aquaculture escapee in the state of Maine was documented in 1990, and the first sexually mature escapee was documented in 1996. *Id.*

265. *Id.* Escapes also occur at hatcheries in Maine. Preliminary results from the 1999 wild smolt assessment project in the Pleasant River suggest that several migrating smolts were of hatchery origin based on fin condition. Of the 676 migrating smolts that were captured between April and May 1999, between five percent and 25 percent were estimated to be of hatchery origin. *Id.*

266. *Id.*

267. *Id.*

268. *Id.*

269. *Id.*

270. *Id.*

continued to be documented in salmon rivers in 1999 and 2000.[271] Although weirs help minimize the potential interaction between escapees and wild salmon, they are not present on all salmon rivers and where they are present, they are only in place seasonally.[272] In 1997 and 1998, the Services unsuccessfully worked with the industry and the State in an attempt to eliminate further importation of European stocks, remove pure European strain from marine cages, mark all fish prior to placement in marine cages so escapees could be traced back to problem farms, and phase out the holding of North American/European hybrids.[273] In July 1999, the Services initiated discussions directly with the Maine Department of Marine Resources;[274] however, these discussions failed because agreement on timing or specific measures was not reached.[275]

Complicating this situation is the fact that marine survival rates continue to be low for U.S. stocks of wild Atlantic salmon, and the subsequent low abundance of returning wild Atlantic salmon impedes recovery of the species.[276] Thus, the Services concluded existing aquaculture practices and low marine survival create a danger of extinction of the wild Atlantic salmon.[277]

Aquaculture facilities farming salmon pose a substantial threat to the continued survival of the wild Atlantic salmon. While the ESA's § 9 prohibition on taking a species could conceivably provide protection if it were effectively enforced, doing so can be difficult even with favorable fact patterns. Here, where the "take" could occur because of an interaction with an escaped farm fish disrupting habitat or causing genetic dilution of the species, relying on § 9 alone would not be ideal. Moreover, § 9 seeks to remedy violations after harm has already occurred to the Listed Species, while § 7 seeks to protect Listed Species from harm ever occurring, clearly a favorable option. This is especially critical with species such as the wild

---

271. *Id.*

272. *Id.*

273. *Id.*

274. *Id.*

275. *Id.*

276. *Id.* Scientists have attributed natural mortality in the marine environment to sources that include stress, predation, starvation, disease, parasites, and abiotic factors. In addition, scientific studies indicate that year-to-year variation in return rates of wild Atlantic salmon stocks is generally synchronous with other North Atlantic stocks, suggesting that the trend in return rates is, in part, the result of factors that occur when the stocks are in the North Atlantic, particularly the Labrador Sea. While some scientists have concluded that a significant portion of the variation in recruitment, or return rate, is attributed to post-smolt survival, the Services concluded that factors responsible for reduced post-smolt survival are not well understood. *Id.*

277. *Id.*

Atlantic salmon, where species abundance is extremely low. Because it is the potential interaction of wild Atlantic salmon with escaped farm-raised fish that pose the greatest risk, it stands to reason that keeping farm-raised fish in their pens would substantially reduce the threats to the wild Atlantic salmon.[278] In addition, a second layer of protection to limit the harm to the species in the event an escape does occur would improve things even more. Such conditions might include prohibiting the use of transgenic and non-North American stocks of farm-raised fish, escape recovery efforts to round up the escapees before they make it to the salmon rivers, and marking or tagging of farm-raised fish so that escapees can be traced back to the offending farm for remedial action. When the State of Maine filed its application to run the NPDES permit program, the Services immediately sought § 7 consultation with the EPA as an appropriate legal hook to ensure protection of the species. The first issue for the EPA, however, was establishing that the CWA, and specifically Maine's water quality standards, provided the adequate legal authority to include such conditions. The second issue then was to provide adequate assurances to the Services that the authority not only existed, but would be used by the EPA to ensure that NPDES permits issued by the State of Maine to salmon farms after program approval included those conditions.

## VI. THE EPA AND SERVICES' COORDINATION AND ASSURANCES PACKAGE IN THE STATE OF MAINE; APPLYING THE CWA TO PROTECT WILD ATLANTIC SALMON DURING MAINE'S ADMINISTRATION OF THE FEDERAL NPDES PROGRAM

On December 17, 1999, one month following the proposed listing of the wild Atlantic salmon as an endangered species, the state of Maine submitted to the EPA a complete application to run the federal NPDES program within its borders.[279] This application brought together several factors that the Services recognized as both cause for substantial concern for the future of the species, and a significant opportunity to help ensure its continued existence. First were the facts that the wild Atlantic salmon was

278. It is worth noting that farmers should share this goal because they have an economic interest in keeping their farm-raised fish from escaping in order to get their fish to market.

279. *See* State Program Requirements; Application to Administer the National Pollutant Discharge Elimination System (NPDES) Program; Maine, 64 Fed. Reg. 73,552, 73,552–53 (Dec. 30, 1999) [hereinafter Maine NPDES Application]; ME NPDES Biological Opinion, *supra* note 2, at 5.

on the brink of extinction,[280] and Maine's aquaculture industry was a significant threat to its continued survival.[281] Further, there were the historic regulatory failures of the EPA to issue NPDES permits to salmon fish farms in Maine,[282] and the imminent loss of the Services' ESA § 7 consultation on individual NPDES permits[283] should the EPA approve the program. While the Final Coordination MOA[284] was designed to help ensure protection of Listed Species after approval of state NPDES programs,[285] the combination of these factors caused the Services to seek additional assurances from the EPA during its ESA § 7 consultation for protection of the species beyond the procedural protections contained in the MOA.

Specifically, the Services asked that the EPA, through its oversight of the MEPDES Program, require conditions in salmon farm MEPDES permits that would avoid adverse impacts to the Atlantic salmon.[286] In the absence of such conditions, the EPA was asked to object to any proposed permit authorizing activities that would adversely affect the wild Atlantic salmon as being outside the guidelines and requirements of the CWA.[287] The conditions sought by the Services required the following: prohibition of the use of transgenic salmonids; phase-out of reproductively viable non-North American salmon stocks by January 1, 2002; implementation of loss control plans to prevent escape of farm-raised fish; facilities designed or modified to achieve zero escaped salmon in any Maine river;[288] and site-

280. *See generally supra* § V.

281. *See id.*

282. *See supra* notes 255–59 and accompanying text.

283. Maine NPDES Application, 64 Fed. Reg. at 73,555

284. At the time the State applied to run the NPDES program, the wild Atlantic salmon was still only proposed for listing, and the Final Coordination MOA had not yet been issued. The relevant provisions of the 1999 Draft Coordination MOA addressing coordination between the EPA and the Services during state administration of NPDES programs were unchanged in the Final Coordination MOA. Thus, to ease unnecessary confusion on this point, and since the Agencies were considering the same coordination procedures for Maine, I refer only to the Final Coordination MOA.

285. *See supra* note 128, and accompanying text.

286. *See* Letter from Mindy Luber, *supra* note 29, at 2.

287. *Id.* If an EPA objection is not adequately addressed by the state, the EPA would assume responsibility for issuing the permit and it would become a federal action subject to ESA § 7 consultation requirements. Water Pollution Control Act, 33 U.S.C. § 1342(d)(4) (1994); 40 C.F.R. § 123.44(h)(3) (2001).

288. The detection of escaped salmon in any river also triggers a response to "eliminate or minimize any lasting impact of that escape on wild Atlantic salmon." Suggested immediate actions to be undertaken by the aquaculture industry, state, or other appropriate parties include attempts to recapture the escaped salmon at the farm or tending weirs within the rivers. Freshwater hatcheries raising salmon were also required to be designed or modi-

specific marking of farm-raised salmon.[289] Absent the assurance from the EPA that these conditions or alternatives that would provide "an equivalent level of protection"[290] would be included in MEPDES permits issued to Maine's salmon farms, the Services would have been forced to conclude in its Maine Biological Opinion that the EPA's approval of the program would jeopardize the continued existence of the wild Atlantic salmon.[291] This would have left the EPA in the untenable position of either denying Maine's application, which would run counter to the policy goals of the CWA[292] and the requirements of § 402(b), or challenging the expert agencies' conclusion that program approval without the conditions would jeopardize the continued survival of the species.[293]

Naturally, in order for the EPA to provide the Services with the assurance that it would object to proposed MEPDES permits, unless they included protective conditions, the EPA had to have the legal authority under the CWA to do so. Broadly, the legal question presented was whether such conditions were necessary in order to meet or protect Maine's water quality standards. The character of the conditions the Services identified as necessary to protect the wild Atlantic salmon, however, including the conditions designed to prevent the escape or release of farm-raised salmon, prohibit the use of certain types of salmon, and require the marking of farm-raised salmon, require EPA to regulate the discharge of the farm-raised salmon. EPA had never before determined that the escape or release of live fish constituted the discharge of a pollutant. Thus, the critical legal question was narrower and required an examination of whether the CWA, in fact, provides the legal authority to require the

---

fied to achieve zero escapement. Maine NPDES Biological Opinion, *supra* note 2, at 9.

289. *Id.* at 8–9; Letter from Mindy Luber, *supra* note 29, at 2–3. The Services have since revised the deadline for completing the phaseout of reproductively viable north American salmon stocks (Jan 1, 2003), and the deadline for requiring site specific marking of farmed salmon (Jan. 1, 2004). Table from US Fish and Wildlife Service memo by Mike Bartlett, Apr. 9, 2002 (on file with the *Ocean and Coastal Law Journal*); see also letter from Michael J. Bartlett, FWS and Mary Colligan, NMFS (June 28, 2002) (on file with the *Ocean and Coastal Law Journal*).

290. *See* Maine NPDES Biological Opinion, *supra* note 2, at 18–19.

291. *See id.* at 24.

292. 33 U.S.C. § 1294(b) (It is the policy of Congress that the states implement the permit programs under § 1342 of the Act).

293. Endangered Species Act, 16 U.S.C. § 1536(a)(2) (1994) (Each federal agency shall insure that any action carried out by such agency is not likely to jeopardize the continued existence of a Listed Species). By ultimately receiving a "no-jeopardy" biological opinion from the Services, the EPA avoided addressing the conflict between this ESA requirement and the CWA requirement that the Administrator "shall approve" state NPDES programs meeting the nine enumerated conditions of CWA 402(b). 33 U.S.C. § 1342(b)(1)–(9).

specific permit conditions sought by the Services, even if such conditions are viewed as necessary to meet water quality standadards.[294]

The legal approach ultimately adopted by the EPA to protect the wild Atlantic salmon under Maine's administration of the NPDES program built upon the Final Coordination MOA. It also required, however, the additional assurance that the EPA will exercise vigilant oversight of the state of Maine's issuance of salmon farm NPDES permits to ensure that conditions protective of the wild Atlantic salmon are included in all issued permits. This section examines the EPA's specific legal approach in Maine. It concludes that the CWA, through proper application of state water quality standards, provides the legal authority necessary for the EPA to ensure that Listed Species, in particular the wild Atlantic salmon, receive the level of protection mandated by the ESA.

### *A. Maine's Salmon Farms Are Required to Have NPDES Permits*

As the EPA and Services entered § 7 consultation, there was little question within the Agencies that Maine's salmon farms are required by the CWA to have NPDES permits.[295] Nonetheless, the salmon farming industry contended that their fish farms fell outside the reach of the CWA's NPDES permit program.[296] Under the CWA, any person discharging a pollutant from a point source into waters of the United States must obtain an NPDES permit.[297] There is no question that salmon farms in Maine are located in waters of the United States,[298] and are designed to allow for the free flow of water through their facilities.[299] Thus, if fish farms are point sources and discharge pollutants, they are required to have NPDES permits.

---

294. Platte River Whooping Crane Trust v. FERC, 962 F.2d 27, 34 (D.C. Cir. 1992).

295. *See, e.g.*, Letter from Steve Silva, EPA, to Michael Bartlett, U.S. F.W.S., (requesting a conference regarding the effects of EPA's potential approval of the Maine NPDES Program on Atlantic Salmon); Maine NPDES Biological Opinion, *supra* note 2, at 5.

296. The salmon farming industry also pursued this argument in court when sued by the U.S.P.I.R.G. for discharging pollutants without NPDES permits. *See, e.g.*, *ASM*, 2002 U.S. Dist. LEXIS 2822, WL 242466 (D. Me. Feb. 19, 2002); *Heritage*, 2002 U.S. Dist. LEXIS 2706, WL 987441 (D. Me. Aug. 28, 2001); *Stolt*, 2002 U.S. Dist. LEXIS 2757, WL 240386 (D. Me. Feb. 19, 2002).

297. *See supra* note 62 and accompanying text.

298. *ASM*, 2002 U.S. Dist. LEXIS 2822, WL 242466 (D. Me. Feb. 19, 2002); *Heritage*, 2002 U.S. Dist. LEXIS 2706, WL 987441 (D. Me. Aug. 28, 2001); *Stolt*, 2002 U.S. Dist. LEXIS 2757, WL 240386 (D. Me. Feb. 19, 2002).

299. *See supra* § IV.A.

1. Salmon-Farms in Maine Are Point Sources

Fish farms meeting certain criteria are Concentrated Aquatic Animal Production (CAAP) facilities, and as such are defined by regulation to be point sources requiring NPDES permits under the CWA.[300] The EPA concluded that fish farms in Maine meeting certain size thresholds and which primarily raise salmon, are properly characterized as CAAP facilities.[301] A CAAP facility is defined as a hatchery, fish farm, or other facility which "contains, grows, or holds aquatic animals in either of the following categories: (a) Cold water fish species or other cold water aquatic animals in ponds, raceways, or other similar structures which discharge at least 30 days per year but does not include [facilities under certain size thresholds]. . . ."[302] Cold water aquatic animals are defined to include the *Salmonidae* family of fish.[303] Salmon fish farms use net pen structures to confine such fish in coastal waters and can "fairly be characterized as 'similar structures'[304] within the meaning of the [CAAP facility] definition."[305] Salmon fish farms also "discharge fish feces, uneaten food, and other pollutants more than thirty days per year (in fact, discharges likely occur every day since they are directly located in the waters of the

300. 40 C.F.R. § 122.24(b) and App. C (2001). The EPA or state may also designate a fish farm as a point source when determined that "it is a significant contributor of pollution to water of the United States." 40 C.F.R. § 122.24(c).

301. *See* Memorandum of Ann Williams, EPA to Maine NPDES Program File, Regulation of Fish Farms under the Clean Water Act (June 6, 2000) [hereinafter Ann Williams Memo]. The National Environmental Law Center (NELC), the legal arm of the U.S.P.I.R.G., for environmental matters, filed comments to the EPA on the Maine NPDES program application asserting that the existing fish farms located in Maine waters are "aquaculture projects" within the meaning of § 318 of the Clean Water Act and 40 CFR § 122.25. U.S.P.I.R.G. also made this assertion, and this assertion was rejected by the court, in its lawsuits against Maine's three largest fish farming companies. *See ASM*, 2002 U.S. Dist. LEXIS 2822, WL 242466 (D. Me. Feb. 19, 2002); *Heritage*, 2002 U.S. Dist. LEXIS 2706, WL 987441 (D. Me. Aug. 28, 2001); *Stolt*, 2002 U.S. Dist. LEXIS 2757, WL 240386 (D. Me. Feb. 19, 2002). Although the industry and the public generally refer to fish and shellfish farming as aquaculture, this term has a very narrow meaning under the CWA applying only to those facilities into which discharges of wastewater from industrial or municipal facilities are made for the purpose of growing an aquatic crop using the pollutants in such wastewaters. There are no such facilities operating in Maine at present. Ann Williams Memo, at 2.

302. 40 C.F.R. § 122 App. C.

303. *Id.*

304. "Raceways, for example, are structures which confine the fish and provide a continuous flow of water." Ann Williams Memo, *supra* note 302, at 1 (*citing* Form and Guidelines Regarding Agricultural and Silvicultural Activities, 38 Fed. Reg. 18,000, 18,001 (July 5, 1973)).

305. *Id.*

U.S.)."[306] Thus, as long as salmon fish farms meet the size thresholds or are designated as CAAP facilities pursuant to regulation on a case-by-case basis,[307] they are properly characterized as CAAP facilities.[308]

The EPA's recent conclusion that the salmon fish farms in Maine are properly considered CAAP facilities is also consistent with the historic position taken by the EPA in other contexts.[309] This conclusion was recently confirmed in the recommended decision by U.S. Magistrate Judge Margaret J. Kravchuk in three CWA cases brought against salmon farm companies in Maine by the United States Public Interest Research Group (U.S.P.I.R.G).[310] Thus, fish farms in Maine are CAAP facilities (to the extent that they meet the threshold criteria or are designated on a case-by-case basis) subject to regulation as point sources under the CWA.

2. Maine Salmon Farms Add Pollutants to United States Waters

For NPDES permits to be required, there must be a discharge or "addition" of pollutants to waters of the United States.[311] The CWA defines pollutant as, "dredged spoil, solid waste, incinerator residue, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand, cellar dirt and industrial, municipal, and agricultural waste

306. *Id.*

307. 40 C.F.R. §122.24(c).

308. Ann Williams Memo, *supra* note 302, at 1.

309. *Id.* at 4–5. "For example, in 1989, the Sierra Club Legal Defense Fund filed a notice of citizen suit against the EPA for failure to require the State of Washington to require NPDES permits for salmon net pens located off the coast of Washington." *Id.* In the EPA's response, the EPA concluded that certain of the salmon net pen facilities could be CAAP facilities if they met the criteria of the regulations in § 122.24 and Appendix C of Part 122, and thus would require NPDES permits. Region 1 took a similar position in response to a notice of citizen suit related to salmon net pen facilities in Maine. *Id.*

310. *See supra* note 297; *ASM*, 2002 U.S. Dist. LEXIS 2822, WL 242466 (D. Me. Feb. 19, 2002); *Heritage*, 2002 U.S. Dist. LEXIS 2706, WL 987441 (D. Me. Aug. 28, 2001); *Stolt*, 2002 U.S. Dist. LEXIS 2757, WL 240386 (D. Me. Feb. 19, 2002). Judge Kravchuk soundly rejected the companies' arguments that "offshore sea cages" were not intended to be covered because unlike "ponds, raceways, or other similar structures" they are not land based. Judge Kravchuk stated that "[r]equiring fish farms in ponds or raceways to obtain an NPDES permit based on their terrestrial location, while allowing other facilities located in a bay to discharge directly into the water without a permit would be counter to the purposes of the Act." *ASM*, 2002 U.S. Dist. LEXIS 2822, at *35, WL 242466 (D. Me. Feb. 19, 2002). Because the three U.S.P.I.R.G. cases are virtually identical, unless otherwise indicated, hereinafter only *ASM* will be cited when all three cases reach identical conclusions.

311. *See* Water Pollution Control Act, 33 U.S.C. § 1362(12) (1994); Nat'l Wildlife Fed. v. Consumer Powers Co., 862 F.2d 580, 583 (6th Cir. 1988).

discharged into water."[312] The CWA does not define the word "addition." However, courts have held that a pollutant is added when a point source introduces a pollutant that does not "naturally occur" in the water.[313]

In the EPA's recent NPDES permit for Acadia Aquaculture, the EPA permitted the discharge of the following pollutants: fish excrement, ammonia excretions, unconsumed fish feed and drugs approved by the Food and Drug Administration for treatment of salmonids.[314] The discharge of pollutants from salmon farms in Maine was also confirmed in the recent U.S.P.I.R.G. decisions in Maine, where Judge Kravchuk determined that the fish farms put pollutants including salmon feces and urine,[315] copper,[316] chemicals,[317] feed containing antibiotics,[318] and non-

312. 33 U.S.C. § 1362(6).

313. *See e.g.*, ASM at 12, 14; *see also* Catskill Mountains Chapter of Trout Unlimited v. City of N.Y., 273 F.3d 481, 491 (2d Cir. 2001) (stating that "[t]he EPA's position . . . is that for there to be an 'addition,' a point source must *introduce* the pollutant into navigable waters from the outside world.") (quoting Nat'l Wildlife Fed. v. Gorsuch, 693 F.2d 156, 165 (D.C. Cir. 1982)).

314. Acadia Permit, *supra* note 201, at 3, 19.

315. Judge Kravchuk found that the feces and urine are pollutants because they constitute "biological materials" or "agricultural wastes." (*citing* Higbee v. Starr, 598 F. Supp. 323, 330–31 (D. Ark. 1984), aff'd, 782 F.2d 1048 (8th Cir. 1985). *See e.g. ASM*, 2002 U.S. Dist. LEXIS 2822, WL 242466 (D. Me. Feb. 19, 2002).

316. Copper is specifically listed by the EPA as a toxic pollutant. 40 C.F.R. § 401.15(22) (2001). The court noted that fish farm nets are treated with copper, the nets are physically introduced into the water, and the copper is released from the nets into the waters. Thus, copper is added from the outside world into the waters at fish farms. *See e.g. ASM*, 2002 U.S. Dist. LEXIS 2822, WL 242466 (D. Me. Feb. 19, 2002).

317. These include cypermethrin, finquel (an anesthetic) and Parasite-S (a parasite treatment). Historically, after treating salmon for sea lice in a "bath" containing a chemical known as cypermethrin, companies would release tarpelins that had been placed around the pens to soak the fish in the chemical bath, thereby releasing cypermethrin through the net pens into the water. Companies also use other chemicals that are released into the water. These chemicals released into the water after their use fall within the category of "chemical wastes" and are also pollutants. *See, e.g., Id.*

318. This feed contains ground-up fish, pigments used to color the fish's flesh pink, and sometimes contains antibiotics. Excess or uneaten feed enters the water when it flows out of the pens or falls through the net pens to the ocean floor. The court noted it was not clear whether the fish parts contained in the feed, which would fall under the category of "biological materials" or "solid waste," come from the same waters, thus it did not make a determination as to whether the ground-up fish feed would constitute an "addition" to the waters. Because the companies mix pharmaceutical manufactured pigments and antibiotics into the feed, which when uneaten flow from the pens and become waste, they are subsumed in the category of "chemical wastes" and are therefore pollutants. *ASM*, 2002 U.S. Dist. LEXIS 2822, WL 242466 (D. Me. Feb. 19, 2002) (*citing* United States v. Schallom, 998 F.2d 196, 199 (4th Cir. 1993), *cert. denied*, 510 U.S. 902, (1993).

North American origin salmon[319] into waters of the United States.[320] Moreover, Judge Kravchuk found that as these items are put into the water as a part of their operation, they do not naturally occur in the bay and therefore are "additions" to the water.[321] Maine salmon farms are point sources that add pollutants to waters of the United States every day they operate, therefore, Maine salmon farms are required to have NPDES permits.

### *B. Ensuring Salmon Farm NPDES Permits Contain Conditions Protective of the Wild Atlantic Salmon*

Because Maine's application to run the NPDES program coincided with the proposed listing of the wild Atlantic salmon as an endangered species, the EPA engaged in a conference with the Services pursuant to § 7(a)(4) of the ESA regarding the effects of MEPDES program approval on the species.[322] Following the Services' final listing of the wild Atlantic salmon, the EPA and the Services converted that conference into a consultation under § 7(a)(2) of the ESA.[323] The EPA addressed issues raised during the conference and consultation by establishing coordination procedures between the EPA and the Services and by providing assurances to the Services that endangered species, and in particular the wild Atlantic salmon, will be protected.[324] After careful consideration, the Services concluded in the Maine Biological Opinion that approving the MEPDES program was not likely to jeopardize the continued existence of the wild Atlantic salmon.[325] The Services' conclusion was based on a number of

---

319. *See infra* § V.C.

320. *ASM* at 14–15. U.S.P.I.R.G. alleged that fish farms release pollutants such as salmon, salmon feces, salmon urine, fish feed, cypermethrin, copper, pathogens, parasites, and antibiotics, arguing that these substances fall under the Act's definition of "pollutants" because they are solid waste, chemical wastes, biological materials, or agricultural waste. *Id* at 11–12.

321. *ASM*, 2002 U.S. Dist. LEXIS 2822, WL 242466 (D. Me. Feb. 19, 2002). U.S.P.I.R.G. also claimed that farms also release parasites, pathogens, and disease, however, the judge did not find it necessary to determine whether these other items are "pollutants" that are "added" to the water at this time. *Id.* at 6.

322. Memorandum from Roger Fleming, EPA, to File 1 (Jan. 12, 2001) [on file with the *Ocean and Coastal Law Journal*].

323. *Id.*

324. *See* Letter from Mindy Luber, *supra* note 29 at 2–3.

325. Maine NPDES Biological Opinion, *supra* note 2 at 24. Critical habitat has not been designated for this species, therefore the Services stated that none would be affected. *Id.* The Services also concluded that approval of the MEPDES program is not likely to adversely affect any other Listed Species or critical habitat. *See* Letter from Michael J. Bartlett, U.S. FWS and Patricia Kurkal, NMFS, to Stephen Silva, EPA (Jan. 12, 2001).

factors including commitments made by the state of Maine to protect the wild Atlantic salmon, and assurances provided by the EPA to the Services that the EPA would coordinate its review of MEPDES permits with the Services and use its CWA oversight authority to ensure that the wild Atlantic salmon are protected by making sure state water quality standards are met.[326]

1. State Commitments and the EPA-Services Coordination

As part of its MEPDES program application, the State of Maine committed to ensuring the protection of Listed Species in accordance with CWA authority in the NPDES Memorandum of Agreement Between the EPA and the State.[327] There, the State committed to issuing MEPDES permits under a specified time frame[328] for salmon fish farms, and stated that the State "fully intends to carry out the NPDES program so as to protect endangered species (including [the wild] Atlantic salmon) in accordance with the requirements of the CWA."[329] In order to do so, the State agreed to provide the Services with notices of all permit applications and, if the Services advise the State in writing that specific conditions are necessary to avoid substantial impairment of fish, shellfish or wildlife resources, the State will include such conditions "to the extent they are determined to be necessary to carry out the provisions of the CWA."[330] Finally, the State also committed to protecting Listed Species by ensuring that State permits comply with State water quality standards that protect Listed Species.[331]

In lieu of the Final Coordination MOA which was still in draft form, the EPA and the Services began to negotiate a state-specific Coordination MOA, and although it was never signed, the EPA committed that it would coordinate its work with the Services under the procedures contained in

---

326. Maine NPDES Biological Opinion, supra note 2 at 24.

327. NPDES Memorandum of Agreement Between EPA Region I and the State of Maine, III.A.10 [hereinafter Maine NPDES MOA] (effective upon approval by the Regional Administrator).

328. Draft permits were to be issued by November 2001 with final permits to be issued within six months thereafter. *Id.*

329. *Id.; see also* Attorney General's Supplemental Statement of Legal Authority For Maine's NPDES, Andrew Ketterer, Attorney General of the State of Maine, 9–12 (June 2, 2000).

330. Maine NPDES MOA, *supra* note 326.

331. *Id.* The State also recognized that failure to ensure compliance with CWA requirements constitutes grounds for objection by the EPA to the permit. *See* Memorandum from Roger Fleming, EPA, *supra* note 323, at 2.

that document.[332] These procedures were modeled after those in the 1999 Draft Coordination MOA,[333] and thus also reflect the Final Coordination MOA, providing for exchanges of information from the EPA and the Services to the State and describing the circumstances when the EPA may exercise its authority to object to a State permit. For example, the procedures provide that "[w]here EPA determines that exercise of its objection authority is appropriate to protect Listed Species . . . the Agency will act pursuant to its existing authorities under the CWA, including by objecting to a permit that fails to meet State water quality standards or that is otherwise outside the guidelines and requirements of the Act."[334] The April 19 Draft Maine Coordination MOA also states that "EPA will use the full extent of its CWA authority to object to a State permit where EPA finds (taking into account all available information, including any analysis conducted by the Services) that a State permit is likely to jeopardize the continued existence of any federally Listed Species or result in the destruction or adverse modification of critical habitat."[335] Finally, the agreement provides that "EPA may make a formal objection, where consistent with its CWA authority, or take other appropriate action, where EPA finds that a State NPDES permit will likely have an adverse effect on federally Listed Species, critical habitat and/or [essential fish habitat]."[336] Despite these coordination procedures designed to protect Listed Species, which mirrored those being finalized at the national level in the Final Coordination MOA, the Services did not agree that they were sufficient to protect the wild Atlantic salmon from the threats posed by Maine's salmon farms and the Services sought additional assurance from the EPA to ensure protection of the wild Atlantic salmon from the specific threats posed by Maine's salmon farms.

2. Additional Assurances For the Protection of the Wild Atlantic Salmon

After further consultation, the EPA also explained how it intends to exercise its oversight specifically with regard to MEPDES permits for

332. Memorandum of Agreement Between EPA and the Services Describing Enhanced Coordination for NPDES Permits Issued by Maine (Apr. 19, 2000 Draft) [hereinafter April 19, 2000 Draft Maine Coordination MOA].

333. *See supra* notes 152–157 and accompanying text.

334. April 19, 2000 Draft Maine Coordination MOA, *supra* note 331, at § IV.

335. *Id.* at § IV.7.

336. *Id.*

salmon fish farms and hatcheries.[337] In a letter from the EPA Regional Administrator to the Services, the EPA provided the Services with assurances that it would use its CWA authority to oversee salmon farm MEPDES permits to ensure compliance with state water quality standards that provide protection for the wild Atlantic salmon. Specifically, the letter commits the EPA to object to any permit authorizing activities that the EPA finds would adversely affect the wild Atlantic salmon where such effects would cause or contribute to the failure of a water body to meet water quality standards, unless conditions are included that avoid those adverse effects.[338] The EPA's letter includes the specific conditions identified by the Services as necessary to protect the wild Atlantic salmon, and leaves the EPA discretion to require alternative permit conditions that would provide an equivalent level of protection.[339] The letter also states that the EPA will take into account the Services' expert opinion on the effect of proposed permits on the wild Atlantic salmon when making the final determination as to whether a particular MEPDES permit is consistent with the guidelines and requirements of the CWA.[340] If a disagreement arises between the EPA and the Services during the oversight process, the Agencies agreed to resolve the dispute through the elevation process contained in the Final Coordination MOA.[341] It was only after this final set of assurances from the EPA that the Services concluded in its biological opinion that the EPA's approval of Maine's MEPDES program was not likely to jeopardize the continued existence of the wild Atlantic salmon.

### *C. EPA's CWA Legal Bases for Including or Requiring the Conditions in Salmon Farm NPDES Permits Necessary to Protect the Wild Atlantic Salmon*

There are two layers of analysis necessary to understand the EPA's CWA authority to include or require conditions protective of wild Atlantic salmon in fish farm NPDES permits. First, as described by the EPA at the time of its MEPDES Program approval, the EPA's authority is based in Maine's water quality standards which include an anti-degradation policy requiring the protection of existing uses of Maine's waters, and wild Atlantic salmon are an existing use of Maine's salmon rivers. Second, the CWA must also contain the legal authority to include the specific condi-

337. Letter from Mindy S. Luber, EPA, *supra* note 29.
338 *Id.* at 2.
339. *Id.*
340. *Id.* at 3–4.
341. *Id.* at 4.

tions necessary to avoid the adverse impacts of escaped or released farm-raised salmon. The EPA did not explicitly address this layer of legal analysis, however, this Article argues that there are at least two legal bases for this second layer of needed CWA authority: (1) escaped or released farm-raised salmon constitute the discharge of a pollutant, and the EPA must include conditions regulating the discharge of pollutants necessary to meet Maine's water quality standards; and (2) farm-raised salmon are reasonably related to the discharge of other pollutants from Maine salmon farms, therefore the EPA may include or require conditions in NPDES permits regulating the farming activity necessary to meet water quality standards.

1. Conditions Protecting the Wild Atlantic Salmon Are Necessary to Meet Maine's Water Quality Standards Including Maine's Anti-Degradation Policy

All NPDES permits must contain limitations to reflect the application of available treatment technologies,[342] and in cases where technology-based limitations are not enough to meet state water quality standards, any more stringent limitations necessary to ensure compliance with water quality standards.[343] Water quality standards consist of three components: (1) the designated uses of waters, which can include use for public water supplies, propagation of fish and wildlife, recreational, agricultural, industrial and other uses;[344] (2) water quality criteria, expressed in numeric or narrative form, reflecting the condition of the water body that is necessary to protect its designated uses,[345] and (3) an antidegradation policy that, among other things, protects existing uses.[346] EPA regulations require that State water quality standards establish such designated uses reflecting the highest attainable uses for the water consistent with the "fishable, swimmable" goals of the CWA,[347] and provide for the maintenance and protection of both designated and existing uses and the water quality necessary to protect

342. Federal Effluent Guidelines (minimum treatment technology standards) for fish farms have not yet been promulgated. *See supra* n. 71 and accompanying text.

343. Water Pollution Control Act, 33 U.S.C. § 1311(b)(1)(c) (1994); *see supra* § II.B.1 and 2.

344. 33 U.S.C. § 1313(c); 40 C.F.R. §§ 131.3(f) and 131.10 (2001).

345. 33 U.S.C. § 1313(c). Water quality criteria may be expressed as numeric concentration limits or as narrative limits designed to protect designated uses. 40 C.F.R. 131.3(b).

346. 33 U.S.C. § 1313(c)(2)(B); 40 C.F.R. §§ 131.3(e), 131.12(a)(1).

347. 40 C.F.R. § 131.10(a).

those uses.[348] The EPA retains the authority under § 303(c) of the CWA to ensure that a state's water quality standards require the protection of designated and existing uses.[349] Any permit issued pursuant to the NPDES Program must ensure compliance with these water quality standards.[350]

Consistent with these requirements, the anti-degradation policy of Maine requires that existing in-stream water uses, and a level of water quality necessary to protect those uses, be maintained and protected.[351] The Maine DEP may only issue a MEPDES permit if it finds that the applicant has demonstrated that the "proposed activity"[352] would not have a significant impact on any existing use.[353] Existing in-stream water uses are defined as those uses which have actually occurred in the water body on or after November 28, 1975, whether or not they are designated uses included in the water quality standards.[354] The EPA concluded, as part of Maine's MEPDES program approval, that naturally reproducing wild Atlantic salmon are an existing use of Maine's salmon rivers, and that the discharge, either through escape or release of farm-raised salmon, is contributing to the risk of extinction to the species.[355] Any activity, including the discharge of farm-raised salmon, that would jeopardize the existence of an endangered species that is an existing in-stream water use also would have a "significant impact" on that existing use (*i.e.*, the same evidence would

348. *Id. at* §§ 131.10, 131.12.

349. 33 U.S.C. 1313(c).

350. 40 C.F.R. §§ 122.44(d)(1)(vii), 123.25(a)(15).

351. ME. REV. STAT. ANN. tit. 38, § 464(4)(F) (West 2001). Under Maine's water quality standards, the Maine DEP determines what constitutes an existing in-stream use on a case-by-case basis. Existing uses include the designated uses and: (a) aquatic and marine life present in the water body; (b) wildlife that uses the water body; (c) habitat "within a water body supporting existing populations of wildlife or aquatic, estuarine or marine life, or plant life that is maintained by the water body; . . . and (e) [a]ny other evidence that, for divisions (a), (b), and (c), demonstrates their ecological significance because of their role or importance in the functioning of the ecosystem or their rarity." *Id.* at § 464(4)(F)(1).

352. Arguably, this broad language provides a unique legal basis for placing conditions in NPDES permits for salmon farms beyond those related only to discharges of pollutants. In other words, the NPDES permit may only be issued if the applicant demonstrates the "activity" of salmon farming itself, not just any discharge of pollutants from the farm, would not have a significant impact on existing uses of the water body. However, as demonstrated *supra* in § VI.A.2, this broad reading is unnecessary.

353. ME. REV. STAT. ANN. tit. 38, § 464(4)(F)(1-A)(a) (2001); Attorney General's Supplemental Statement, *supra* note 328, at 11.

354. 40 C.F.R. § 131.3(e).

355. Memorandum from Eric Nelson, EPA Biologist, to File, (June 6, 2000) (on file with the *Ocean and Coastal Law Journal*).

support both findings).[356] Thus, because avoiding the adverse impacts from the discharge of farm-raised Atlantic salmon is necessary to prevent jeopardy to the wild salmon,[357] and thus also prevent a significant impact on an existing water use, MEPDES permits issued to fish farms must protect the wild Atlantic salmon.[358]

### 2. Legal Basis No. 1: The Escape or Release of Farm-Raised Atlantic Salmon is the Discharge of a Pollutant to U.S. Waters

The first legal basis supporting EPA's decision to require protective conditions regulating the discharge of farm-raised Atlantic salmon is simply that the escape or release of farm-raised Atlantic salmon meets the legal definition of the discharge of a pollutant under the CWA,[359] therefore, the EPA must include or require conditions regulating such discharges necessary to meet Maine's water quality standards. Prior to approval of Maine's NPDES program, however, the EPA had never recognized the discharge of live fish as an addition of a pollutant. While the EPA did not explicitly elect to do so at this time either, recognizing that the discharge of live farm-raised Atlantic salmon constitutes an addition of a pollutant is one of two possible underlying legal bases argued here that could support the EPA's assurances that conditions protective of the wild Atlantic salmon must be included in salmon farm NPDES permits issued in Maine.

Although not specifically listed as a pollutant under the CWA, escaped or released farm-raised fish may be regulated as a pollutant because farm-raised fish are "biological materials," and/or "agricultural" or "industrial waste." The list of pollutants defined in the CWA § 1362(6)[360] is "designed to be suggestive not exclusive."[361] Courts have interpreted the definition of pollutant "to encompass substances not specifically enumerated but subsumed under the broad generic terms" listed in § 1362(6).[362] Although the EPA would be given substantial deference in determining that a

---

356. *See* Memorandum from Jeffry Fowley, EPA, to File 10 (Jan. 12, 2001) (on file with the *Ocean and Coastal Law Journal*).

357. *See supra* notes 280–95 and accompanying text.

358. *Id.*

359. *See supra* note 56.

360. *See supra* note 313 and accompanying text.

361. Sierra Club v. Cedar Point Oil Co., 73 F.3d 546, 565 (5th Cir. 1996) (*citing* 2 William H. Rodgers, Jr., *Environmental Law: Air and Water* 144 (1986)).

362. *See, e.g.*, *ASM*, 2002 U.S. Dist. LEXIS 2822, WL 242466 (D. Me. Feb. 19, 2002) (*citing* Hudson River Fishermen's Ass'n v. City of New York, 751 F. Supp. 1088, 1101 (S.D.N.Y. 1990), *aff'd*, 940 F.2d 649 (2nd Cir. 1991)(citations omitted). Note also that at the time of Maine's NPDES program approval, the U.S.P.I.R.G. decisions cited herein had not been decided.

particular substance is a pollutant,[363] it is not relevant whether the EPA has, in fact, issued a permit or promulgated an effluent limitation to regulate a particular substance alleged to be a pollutant; a court can independently determine that a substance falls within one of the general terms of § 1362(6).[364] The CWA also does not require proof that a substance causes harm in order for it to be deemed a pollutant.[365]

In addition to the obviously inanimate substances included in the statutory definition of a pollutant, the CWA also recognizes certain living organisms, such as fecal coliform, as pollutants within the definition.[366] While the term "biological materials" is not specifically defined, courts have interpreted "biological materials" to include "live fish, dead fish and fish remains."[367] Escaped salmon may also be considered "agricultural or industrial waste." This is because aquaculture is considered to be a form of agriculture by state and federal governments,[368] and salmon farmers acknowledge that the escape of farm-raised Atlantic salmon is a commercial loss.[369]

---

363. *See* Sierra Club, Lone Star Chap. v. Cedar Point Oil Co., 73 F.3d 546, 566 (5th Cir. 1996), *cert. denied*, 519 U.S. 811 (1996); Hudson River Fishermen's Ass'n v. City of New York, 751 F.Supp. 1088, 1102 (S.D.N.Y. 1990).

364. *ASM*, 2002 U.S. Dist. LEXIS 2822, WL 242466 (D. Me. Feb. 19, 2002) (*citing Cedar Point Oil Co.*, 73 F.3d at 566–68 (stating that the definition of pollutant is meant to 'leave out very little' and discussing the courts' ability in citizen suits to determine whether a particular substance falls within the definition of 'pollutant' (citations ommitted)); Weinberger v. Romero-Barcelo, 456 U.S. 305, 309 (1982) (finding "the release of ordnance from aircraft or from ships into navigable waters is a discharge of pollutants, even though the EPA . . . had not promulgated any regulations setting effluent levels or providing for the issuance of an NPDES permit for this category of pollutants.")).

365. *See ASM*, 2002 U.S. Dist. LEXIS 2822, WL 242466 (D. Me. Feb. 19, 2002) (*citing* Long Island Soundkeeper Fund, Inc. v. New York Athletic Club, 1996 U.S. Dist. LEXIS 3383, 1996 WL 131863, *15 (S.D.N.Y. 1996)). In such case, the court's role is only to "apply the statutory definition . . . to determine if the substance in question is a pollutant." Cedar Point Oil Co., 73 F.3d at 567 (stating that "the determination of whether a substance is a pollutant does not require 'a complex balancing' of biological, technical, and economic factors, such as the EPA must undertake when promulgating effluent standards.").

366. Water Pollution Control Act, 33 U.S.C. § 1314(a)(4) (1994); 40 C.F.R. § 412.22 (2001).

367. National Wildlife Fed'n v. Consumers Power Co., 862 F.2d. 580, 583, 586 ("fish . . . constitute biological materials, and therefore clearly fall within the definition given in [the CWA]."); *ASM*, 2002 U.S. Dist. LEXIS 2822, WL 242466 (D. Me. Feb. 19, 2002).

368. Marine Envtl. Consortium v. Dep't of Ecology, PCHB No. 96-257, 1997 WA ENV LEXIS 158, at *11 (Wash. Pol. Control Bd. May 27, 1997).

369. Waste is a "gradual loss through careless of needless use, action, or practice; wastefulness." AMERICAN HERITAGE DICTIONARY 768 (Office ed. 1983).

Escape or release of farm-raised Atlantic salmon is also an "addition" of a pollutant that does not "naturally occur" in Maine waters.[370] As stated by Judge Kravchuk in her recommended decision in the U.S.P.I.R.G. lawsuits, it is undisputed that the discharge of farm-raised Atlantic salmon of non-North American origin into waters of the United States is the addition of pollutants because such fish do not naturally occur in Maine waters and fall within the term "biological material."[371] Judge Kravchuk did not, however, need to reach the question of whether farm-raised Atlantic salmon of North American origin, or more specifically from Maine's salmon rivers, would constitute an addition of a pollutant under the CWA.

In *Consumers Power*, the Sixth Circuit held that a hydro-electric facility's release of dead fish and fish parts did not violate the CWA.[372] In deferring to the EPA's interpretation, the Court held that because the fish never left the water, the plant did not add a pollutant when it entrained the water for its turbines, crushed the fish, and released the fish and water back into Lake Michigan.[373] In contrast, the EPA has issued effluent guidelines regulating seafood processors, which are considered to add pollutants to the water when they release dead fish and fish parts back into the water after processing.[374] The EPA explained that when the fish are removed from waters of the United States, and then returned in the form of fish wastes, an addition of pollutants occurs.[375] The distinction recognized by the Court, then, is that in the case of hydro-electric power generation, whether dead or alive, the fish "always remain within the waters of the United States, and hence cannot be added."[376]

The argument that *all* escaped or released farm-raised salmon in Maine constitute additions of pollutants to water of the United States is consistent with the Sixth Circuit's view and is the better reading of the CWA. Even those salmon whose genetic origins can be exclusively traced back to wild Atlantic salmon originally taken from Maine's salmon rivers are not

---

370. *See supra* note 314 and accompanying text.

371. *See e.g. ASM*, 2002 U.S. Dist. LEXIS 2822, WL 242466 (D. Me. Feb. 19, 2002); *see also* Dubois v. U.S. Dept. of Agriculture, 102 F.3d 1273, 1299 (1st Cir. 1996) (holding that the "transfer of organisms" in the water transferred from a river to a pond is an "addition" of a pollutant because the organisms were not "naturally occurring"). Similarly, transgenic salmon or farm-raised Atlantic salmon of Canadian origin also do not naturally occur in waters of the United States, and their placement in salmon farms and subsequent discharge would also be similarly considered an addition of a pollutant.

372. *Consumers Power*, 862 F.2d at 581.

373. *Id.* at 585.

374. *Id.*

375. *Id.*

376. *Id.* at 586.

"naturally occurring." Similar to the dead fish and fish waste regulated as pollutants under the EPA's effluent guidelines for fish processors, the genetic ancestors of Maine's farm-raised salmon have been removed from waters of the United States. Once removed, they and their progeny became part of an intensive selective breeding program at industry-owned hatcheries whose goal is to manipulate the fish's natural characteristics in favor of traits that make the fish a more profitable commodity, at the expense of traits that maximize fitness for survival in the wild.[377] Smolts that result from this manipulation are then transferred to fish farms where they are literally added from the "outside world" to salmon farms to be grown-out for market.[378] At maturity, it is clear such fish are different from the wild Atlantic salmon that naturally occur in Maine waters as such fish "can have shortened and eroded fins, a plumper body, and a smaller head to body ratio" than wild Atlantic salmon.[379]

Although the EPA has yet to explicitly recognize that escaped or released farm-raised fish are an addition of a pollutant, such fish are biological material, or may be considered agricultural or industrial waste, and in the case of farm-raised Atlantic salmon in Maine, at least, they represent an "addition" of pollutants to waters of the United States. The EPA, or states administering NPDES programs, have the CWA authority to regulate pollutants, and must ensure compliance with state water quality standards. Because escaped or released farm-raised Atlantic salmon in Maine are an addition of a pollutant, the EPA has the CWA authority to regulate the discharge of farm-raised salmon and ensure NPDES permits issued in Maine include the conditions necessary to meet water quality standards, and thus protect the wild Atlantic salmon.

### 3. Legal Basis No. 2: Farm-Raised Salmon Are Reasonably Related to the Discharge of Other Pollutants, and Therefore May Be Regulated

The second legal basis argued here that supports the EPA's decision to require the conditions necessary to protect the wild Atlantic salmon is that such conditions are necessary to meet water quality standards, including the State's anti-degradation policy, and are reasonably related to the discharge of other pollutants such as unconsumed fish feed, fish excrement, chemicals, and antibiotics. Because EPA has the legal jurisdiction to regulate those pollutants, which would not be present but for the farm

377. *See supra* note 9.

378. *See supra* note 314 and accompanying text.

379. *ASM*, 2002 U.S. Dist. LEXIS 2822, WL 242466 (D. Me. Feb. 19, 2002).

raised salmon, the EPA may regulate the salmon farming activity by including or requiring conditions in the permit necessary to meet water quality standards.

In *Natural Resource Defense Council, Inc. v U.S. Environmental Protection Agency,*[380] the court concluded "that neither the CWA nor NEPA authorizes the EPA's imposition of non-water quality permit conditions."[381] The *NRDC* case involved a challenge to the EPA regulations that would have allowed imposition of NEPA-based permit conditions unrelated to water quality, or the discharge of pollutants, in new source NPDES permits. The EPA argued that NEPA gave the agency "supplemental authority" beyond that expressly identified in the CWA to impose "any condition" necessary to account for the environmental effects of an entire new facility.[382] The court noted that any action taken by a federal agency "must fall within the agency's appropriate province under its organic statute(s),"[383] and that the EPA's jurisdiction under the CWA is limited to regulating the discharge of pollutants to waters of the United States.[384] "EPA can properly take only those actions authorized by the CWA—allowing, prohibiting, or conditioning the pollutant discharge."[385] "Thus," the court concluded, "just as EPA lacks authority to ban construction of new sources pending permit issuance, the agency is powerless to impose permit conditions *unrelated* to the discharge itself."[386] Unlike the *NRDC* case where the court ruled that the CWA does not support regulations allowing the imposition of "any condition the Administrator finds desirable,"[387] the conditions regulating the escape or release of farm-raised salmon are necessary to protect water quality and *are related* to the discharge of pollutants. To the extent that the D.C. Circuit Court went on to narrow its initial conclusion that simply stated that the CWA authorizes

---

380. Natural Resources Defense Council, Inc. v. U.S. Environmental Protection Agency, 859 F.2d 156 (D.C. Cir. 1988) [hereinafter NRDC].

381. *Id.* at 169.

382. *Id.*

383. *Id.*; *see also* Platte River Whooping Crane Trust v. F.E.R.C., 962 F.2d 27, 34 (D.C. Cir. 1992).

384. NRDC, 859 F.2d at 170. The court also noted that "the CWA authorizes the EPA to take certain other actions relating to the regulation of pollution discharges, such as promulgation of effluent limitations guidelines, 33 U.S.C. §§ 1311, 1316, and collection of pertinent information, [33 U.S.C.] § 1318." *Id.* at 170, n.8.

385. *Id.* at 169–70.

386. *Id.* at 170 (emphasis added). The EPA can, however, deny a permit altogether if it violates the ESA. TVA v. Hill, 437 U.S. 153 (1978).

387. NRDC, 859 F.2d at 170.

the EPA to impose "water quality based permit conditions,"[388] it did so with the NEPA-based conditions in mind, not other water quality based conditions related to the discharge of pollutants. Moreover, in doing so the court simply required that such conditions be related to the discharges of a pollutant, acknowledging that the EPA has the authority to "impose NEPA-inspired conditions on discharges that the agency determines to allow."[389] Similarly, ESA-inspired conditions are allowed so long as they are necessary to protect water quality and are related to the discharge of a pollutant.

The court's conclusion in *NRDC* that the EPA only has the authority to impose conditions in NPDES permits that are related to the discharge of a pollutant supports the EPA's authority to impose or require conditions in the NPDES permits that regulate the activity of salmon farming. Farm raised salmon are related to the discharge of other pollutants from the fish farms including unconsumed feed, fish excrement, and other pollutants. Thus, consistent with the D.C. Circuit Court's analysis, the EPA can regulate the salmon farming activity to regulate permit conditions protective of the wild Atlantic salmon because such conditions are necessary to protect water quality, (*i.e.*, the wild Atlantic salmon, which are an existing use of Maine's waters), and are related to the discharge of other pollutants that would not be present but for the farm-raised fish.

EPA recently addressed the scope of its permitting authority to impose NEPA and ESA-regulated conditions *In Re Dos Republicas Resources*,[390] an administrative appeal in which petitioners[391] sought review of the denial of their request for an evidentiary hearing on issuance of an NPDES permit by the EPA Region VI. The Petitioners challenged whether the Region had satisfied its obligations under NEPA and the ESA in its consideration of an NPDES permit for the Dos Republicas Resources Company for discharges of pollutants from a surface mining site to nearby Elm Creek.[392] Petitioners argued that certain conditions should be attached to the NPDES permit based on information developed during the NEPA process because the project would have a significant impact on two endangered species of cat.[393] The impact to the cats, however, would result from the removal of brush habitat *along* the Creek, not the discharges of pollutants into Elm

388. *Id.* at 169.

389. *Id.* at 170.

390. In Re Dos Republicas Resources Co., Inc., NPDES Appeal No. 96-1, at 643 (order denying review) (Dec 2, 1996) [hereinafter In Re Dos Republicas].

391. The National Parks and Conservation Association and The Lone Star Chapter of the Sierra Club. *Id.* at 644.

392. *Id.*

393. *Id.* at 664. The two species of cat were the ocelot and the jaguarundi. *Id.* at 645.

Creek.[394] In addition, petitioners asked the Agency to require that a trapping survey of the cats recommended in the Biological Opinion on the project be completed, although this survey was not directly related to the permitted discharges.[395] Citing to the D.C. Circuits' holding in *NRDC*, the Board denied review concluding that conditions to be included in NPDES permits must be related to the pollutant discharges.[396] The Board adopted the D.C. Circuit Court's approach in *NRDC*, stating that the Agency can only take "actions authorized by the CWA—allowing, prohibiting, or conditioning the pollutant discharge."[397] Based upon its NEPA and ESA reviews, the Board concluded that the Agency could deny an NPDES permit on NEPA or ESA grounds, or impose ESA or NEPA-inspired conditions on discharges that the agency determines to allow.[398] The Board also concluded, however, that "[n]othing in NEPA [or the ESA] gives the Region the power to put conditions into the NPDES permit here which have *nothing to do with* discharges to Elm Creek."[399] The Board also noted that the *NRDC* court used the term "discharge" without addressing how broad that term and related terms may be.[400] Citing to earlier case law upholding the EPA's very broad interpretation of the scope of its NPDES authority to impose effluent limitations, the Board concluded the D.C. Circuit Court's reference to discharge was intended to describe what is regulated under the NPDES program, and in no way was intended to limit the broad definition of what form such regulation might take.[401]

In *United States v. Mango*,[402] the Second Circuit held that under § 404 of the CWA,[403] conditions imposed on discharge permits must be reasonably related to the discharge, and the relationship may be either direct or indirect.[404] The court reasoned that while the CWA does not specify how closely conditions must relate to the discharge, "[w]here the [CWA] does not expressly speak to an issue, [the court] will defer to the interpretation of the agency charged with enforcing the statute, provided it is reasonable

394. *Id.* at 664 (emphasis added).
395. *Id.* at 672–73.
396. *Id.* at 664, 673.
397. *Id.* at 664.
398. *Id.* at 664–65.
399. *Id.* at 664 (emphasis added).
400. *Id.* at 664–65 n. 65.
401. *Id.*
402. 199 F.3d 85 (2nd Cir. 1999).
403. Water Pollution Control Act, 33 U.S.C. § 1344(a) (1994). This section authorizes the Secretary of the Army to "issue permits . . . for the discharge of dredged or fill material into navigable waters at specified disposal sites." *Id.*
404. *Mango*, 199 F.3d at 93.

and not in conflict with the expressed intent of Congress."[405] Under § 404, deference is owed to the reasonable interpretations of the Secretary of the Army and the Administrator of the EPA which promulgate regulations for this section jointly.[406] The regulations at issue indicated to the court that "permit conditions can be indirectly or directly related to the discharge as long as they are reasonably related to it."[407] Thus, the court concluded that as long as the conditions are reasonably related to the discharge, the permit conditions are acceptable.[408] While the discharge language at issue in *Mango* is found under § 404 of the CWA, which applies to the discharge of dredged or fill material, it is similar to the language permitting discharges under § 402 of the CWA, the NPDES discharge permit provisions. Agencies, as well as courts, may be expected to interpret similar language within the same CWA similarly. Thus, so long as the EPA is able to explain with specificity why NPDES permit conditions are reasonably related to the discharge of pollutants,[409] such conditions are permissible.

There are a number of pollutants discharged from fish farms, including unconsumed fish feed, fish excrement, chemicals, and antibiotics, that provide the EPA legal jurisdiction to regulate the activity of salmon farming. The permit conditions necessary to protect wild Atlantic salmon from escaped or released farm-raised Atlantic salmon are reasonably related to the discharge of these pollutants, that would not be present but for the presence of the farm-raised salmon. The EPA has the CWA authority to regulate the salmon farming activity to ensure that NPDES permits issued in Maine include the conditions necessary to meet water quality standards, and thus protect the wild Atlantic salmon.

### *D. Epilogue I: The EPA's Coordination and Assurances Package Does Not Violate The Legal Principals of AFPA I*

The commitments made by the state of Maine to protect Listed Species under the NPDES program, the coordination procedures established

---

405. *Id.* (*citing* United States v. Riverside Bayview Homes, Inc., 474 U.S. 121, 131 (1985)).

406. *Mango*, 199 F.3d at 93; 33 U.S.C. § 1344(b).

407. *Mango*, 199 F.3d at 93 (*citing* 40 C.F.R. § 230.1(c )) (Secretary must consider whether discharge will have an unacceptable impact either individually or in combination with other activities in the ecosystem); 40 C.F.R. 230.76(d) (2001) (suggesting minimizing adverse impact by following discharge procedures which avoid or minimize the disturbance of aesthetic features of an aquatic site or ecosystem); 40 C.F.R. § 230.74(b) (suggesting employing appropriate maintenance and operation of equipment or machinery).

408. *Id.*

409. *See Mango*, 199 F.3d at 93.

between the EPA and the Services, and the EPA assurances to the Services that it will use its CWA oversight authority to ensure that water quality standards are met in order to protect Listed Species, including the wild Atlantic salmon, are consistent with the Fifth Circuit's holding in *AFPA I*.[410] First, the procedures developed for Maine's program, unlike those in the Lousiana NPDES program approval, do not impose a requirement on the State to consult with the Services.[411] Rather, the procedures simply articulate Maine's existing procedural and substantive obligations under the CWA as they relate to the protection of Listed Species.[412] As in the Final Coordination MOA,[413] the State will, in accordance with existing CWA requirements, provide notice of state permits to the Services and consider the Services' comments in determining what permit conditions are needed to protect Listed Species to the extent necessary to carry out the requirements of the CWA.

---

410. *See supra* notes 140–144 and accompanying text. EPA Region 1 filed a memorandum to the record explaining that its approval of Maine's NPDES program was consistent with the *AFPA I* case. The agency noted that although the Fifth Circuit's decision in *AFPA I* is not controlling law in the First Circuit, the Agency believes that the procedures developed to ensure the protection of Listed Species in Maine in accordance with applicable CWA requirements is consistent with its CWA authority as construed in *AFPA I*. *See* Memorandum of Roger Fleming, EPA, *supra* note 323.

411. *AFPA I*, 137 F.3d at 299.

412. The State's commitment to issue permits to dischargers rearing salmon is consistent with the fundamental requirement of § 402(b) that states "issue permits" in accordance with the requirements of the Act. Water Pollution Control Act, 33 U.S.C. § 1342(b)(1)(A) (1994). Similarly, the State's commitment to provide notice of draft permits to the Services derives from express CWA regulatory requirements. 40 C.F.R. § 124.10(c)(1)(iv) and (e) (requiring States to provide notice of draft permits to the Services); 40 C.F.R § 123.25(a)(2-8) (requiring State programs to be administered in conformance with this notice requirement). While the State committed to consider the advice of the Services about permit conditions needed to protect fish, shellfish and wildlife resources consistent with the requirements of the CWA, the procedures do not dictate additional procedures for how the State will interact with the Services, nor the substantive outcome of any discussions. Serious consideration by a State of federal agency comments is integral to a state's responsibilities to existing CWA requirements. 40 C.F.R. § 122.49 (addressing consideration by the permitting authority of comments from federal agencies, including the Services). The State's commitment to issue permits that protect Listed Species by ensuring that permits comply with State water quality standards simply recognizes the State's obligations under the CWA. 33 U.S.C. § 1342(b)(1)(A) (requiring states to issue permits that ensure compliance with, among other provisions, § 301 of the Act); 33 U.S.C. § 1311(b)(1)(C) (requiring the imposition of effluent limitations more stringent than technology-based requirements "necessary to meet water quality standards"); 40 C.F.R. § 122.44(d)(1) (requiring imposition of limitations "necessary to achieve compliance with water quality standards"). Memorandum From Roger Fleming, EPA, *supra* note 323, at 2–3.

413. Final Coordination MOA, 66 Fed. Reg., 11,202, 11,216 (Feb. 22, 2001); *see also* Response to Comments, *Id.* at 11,206.

Second, the EPA did not commit to "reject any proposed permit to which the [Services] objects."[414] The EPA stated that it would work with the Services under procedures contained in the April 19, 2000, Draft Maine Coordination MOA.[415] Those procedures provide for an exchange of information from the EPA and the Services to the State, and describe the circumstances when the EPA may exercise its authority to object to a state permit. For example, the procedures state, "[w]here *EPA determines* that exercise of its objection authority is appropriate to protect Listed Species ... the Agency will act *pursuant to its existing authorities under the CWA*, including by objecting to a permit that fails to meet State water quality standards or that is otherwise outside the guidelines and requirements of the Act."[416] Thus, while the procedures ensure the EPA has the benefit of the Services' expertise on Listed Species issues, the EPA expressly retained the final determination of whether to object to a state permit, and will only do so where authorized under the CWA.[417]

While the EPA's letter of assurances includes certain conditions identified by the Services as necessary to protect the salmon, the EPA has retained the discretion to decide that alternate permit conditions would provide an equivalent level of protection.[418] The letter also states that the EPA will take into account the Services' expert opinion on the effect of proposed permits on the Atlantic salmon, but makes clear that the EPA will make the final determination as to whether a particular state permit is consistent with the guidelines and requirements of the CWA; taking into account all information available during the draft permit review process.[419] In addition, the EPA's use of the elevation process contained in the Final Coordination MOA, for disagreements between the EPA and the Services,

414. AFPA I. 137 F.3d at 299.

415. April 19, 2000 Draft Maine Coordination MOA, *supra* note 331. The State is not a party to the procedures, therefore, they do not express any commitments by the State.

416. *Id.* at § IV (emphasis added).

417. *Id.* "EPA will use the full extent of its CWA authority to object to a State permit *where EPA finds (taking into account all available information, including any analysis conducted by the Services)* that a State permit is likely to jeopardize the continued existence of any federally listed species or result in the destruction or adverse modification of critical habitat." *Id.* at § IV.7 (emphasis added). "EPA *may* make a formal objection, where consistent with its CWA authority, or take other appropriate action, *where EPA finds* that a State NPDES permit will likely have an adverse effect on federally listed species, critical habitat and/or [essential fish habitat]." *Id.* at § IV.6 (emphasis added).

418. *Id.* at 2.

419. *Id.* at 3–4.

does not cede any of the EPA's decision-making authority to the Services.[420]

Reading the comments made by Maine and the EPA during Maine's NPDES program approval, the State agreed to follow existing CWA procedures for notifying the Services of proposed permits and to consider their comments during the permitting process. The EPA, in effect, agreed to consider the Services' views in exercising its discretionary authority to object to a state permit that the EPA determines is outside the guidelines and requirements of the CWA. Neither of these commitments conflict with the Fifth Circuit's holding in *AFPA I.* To date, the EPA has not been sued on the Maine NPDES program approval, perhaps indicating that the EPA and the Services have developed the proper balance in coordinating their respective ESA and CWA authorities to protect Listed Species.[421]

### *E. Epilogue II: The EPA's Acadia Aquaculture, Inc. NPDES Permit: Implementing the Conditions Necessary to Protect Wild Salmon*

On February 21, 2002, the EPA issued its first NPDES permit for a salmon fish farm to Acadia Aquaculture, located in Blue Hill Bay, Maine.[422] Because this permit was already in the process of being issued by the EPA before approval of Maine's MEPDES program, the EPA and the State agreed that EPA would complete issuance of the permit after program approval. The Acadia Permit is an important first step toward assuring protection of the wild Atlantic salmon from the adverse impacts of salmon farms. Although the fish farm is not located directly at the mouth of any of the Salmon Rivers identified in the Services Listing Decision, the Agency found it to be clearly within the DPS range of the wild Atlantic salmon.[423] The Agency, therefore, initiated § 7 consultation with the Services, and included the specific permit conditions identified by the Services as necessary to protect the wild Atlantic salmon from the threats posed by Maine's salmon farms.[424]

---

420. 1999 Draft Coordination MOA, 64 Fed. Reg., 2742, 2748 (Jan. 15, 1999) ("Each agency retains its statutory and regulatory authority to make final decisions within its jurisdiction.") *Id.*

421. Because the January 12, 2001, approval was a partial approval (*see supra* note 23) there may be some question as to when the opportunity to challenge the approval has passed.

422. Acadia Permit, *supra* note 201.

423. *See* Fact Sheet, Acadia Aquaculture, Inc., Authorization to Discharge Under the National Pollutant Discharge Elimination System 3 (September 24, 2000) (Acadia Permit Fact Sheet).

424. Acadia Permit, *supra* note 201 at § J; *see also supra* notes 287–92 and accompanying text and *supra* note 338 and accompanying text. The Acadia Permit also included a comprehensive set of effluent limitations, monitoring requirements, narrative limitations, and

The Agency also clearly indicated that its source of authority for including such conditions was the CWA, and specifically in Maine's water quality standards. The Agency recognized the wild Atlantic salmon's existing use of Maine's waters,[425] including those waters within the bounds of the fish farm project area; they also recognized that salmon fish farms are activities that may have a significant impact on wild Atlantic salmon as a result of the escaped farm-raised salmon interbreeding with wild Atlantic salmon, competing for habitat, disrupting wild Atlantic salmon redds, and spreading disease. Therefore, the Agency concluded that these impacts to wild Atlantic salmon would generally be inconsistent with Maine's water quality standards.[426] In view of the substantial danger of extinction to the wild Atlantic salmon described by the Services, the EPA stated its view that activities which adversely affect wild Atlantic salmon would generally be inconsistent with the CWA and Maine's water quality standards. These standards provide for, among other things, the protection of aquatic, estuarine and marine life present in the water body, and prohibit the issuance of permits for any activity that would have a significant impact on an existing use.[427]

The specific conditions in the Acadia Permit mirror those contained in the assurances letter from the EPA to the Services and in the ultimate Maine Biological Opinion issued by the Services.[428] These conditions include the following: prohibition on the presence of transgenic salmonids and reproductively viable non-North American Atlantic salmon stocks; required marking of Atlantic salmon smolt and juveniles identifying them to the facility, prior to placement of any salmon in any pens; prohibition on the release of any live Atlantic salmon beyond the confines of the pens, and required employment of a fully functional marine containment system designed, constructed, and operated so that no fish from the facility escape to open water; maintenance of an integrated loss control plan for the facility including schedules for preventive maintenance and inspection of the containment system; and required record keeping, inventory tracking, and

---

other conditions designed to protect water quality. Acadia Permit, *supra* note 201.

425. The Agency noted that other evidence supporting that Atlantic salmon are an existing use of the waters within the bounds of the fish farm project area is the fact that essential fish habitat for juvenile and adult Atlantic salmon was designated there on March 3, 1999. Acadia Permit Fact Sheet, *supra* note 421.

426. *Id.*

427. *Id.*

428. *Compare* Letter from Mindy Luber, *supra* note 29, at 2–3, and Maine Biological Opinion, *supra* note 2 at 69459, *with* Acadia Permit, *supra* note 201, at § J.

reporting provisions.[429] After formal ESA § 7 consultation on the Acadia Permit, the Services concluded, in a biological opinion, that issuance of the permit, including all conditions specified therein, is not likely to jeopardize the continued existence of the wild Atlantic salmon.[430] This permit is currently being used as a model from which the Maine DEP is developing its own MEPDES permits, which may take the form of both a general permit and a limited number of individual permits.[431] Because the Acadia Permit contains the conditions currently identified by the Services as necessary to protect the wild Atlantic salmon, these developments bode well for the future of the wild Atlantic salmon vis-à-vis the threats from Maine's salmon farming industry.

## VII. CONCLUSION

The specific safeguards to which the EPA and the Services agreed as a means to ensure protection of the wild Atlantic salmon during Maine's administration of its MEPDES program are an important effort to protect the wild Atlantic salmon, and a valid exercise of the EPA's authority under the CWA. The approach in Maine relies upon the legal authority contained in the CWA's anti-degredation policy, the State of Maine's water quality standards, EPA-Services coordination under their respective statutory authorities, and vigilant EPA oversight to ensure that MEPDES permits contain conditions necessary to protect the wild Atlantic salmon. Because the EPA-Services' interagency coordination agreement and the EPA's assurances rely upon existing CWA authority to protect the species, this approach avoids the potential legal pitfalls of the *AFPA I* case. Moreover, because this approach relies upon water quality standards established to

---

429. The Agency noted the applicant's shared concern with the EPA in protecting existing uses of Maine's waters, including the wild Atlantic salmon, and agreed that those conditions should be included in the proposed permit. Acadia Permit, *supra* note 201.

430. *EPA, Response to Comments in Regard to Authorization to Discharge Under the NPDES, Acadia Aquaculture, Inc.*, 6 (February 21, 2002). The Agency also noted that effective August 9, 2001, the U.S. Army Corps of Engineers sought reinitiation of ESA § 7 consultation on existing permits issued by the Corps to the existing aquaculture industry under § 10 of the Rivers and Harbors Act of 1899. The EPA noted that this consultation is expected to result in industry-wide permit conditions similar to those contained in § J of the Acadia Permit. If necessary, the EPA stated it will consider modifying the Acadia Permit conditions to conform with industry-wide consultation, consistent with state water quality standards. Prior to making any such permit modifications, the EPA would seek public comment, as well as reinitiate the Acadia Permit § 7 consultation with the Services. *Id.*

431. Maine Department of Environmental Protection, Internal Working Draft — Finfish Aquaculture General Permit (April 1, 2002).

meet minimum CWA requirements, it could be applied to other states NPDES programs to protect aquatic species from impacts that occur as a result of point source discharges. In addition, the focus of this approach on the need to protect existing uses of our waters and to impose pollution controls necessary to meet water quality standards could breath life into increased efforts to improve non-point source protections necessary to safeguard Listed Species.

This Article concludes that the CWA does provide the legal authority to EPA to require that salmon farm MEPDES permits include the permit conditions necessary to protect the wild Atlantic salmon. First, such regulation is necessary to protect water quality through the maintenance of existing uses of Maine waters, and wild Atlantic salmon are an existing use of moving waters. Second, the discharge of the farm-raised fish may be regulated because either: 1) their escape or release constitutes the addition of a pollutant, thus the CWA provides for their regulation directly; or 2) the EPA may require the activity of salmon farming to require conditions that avoid the impacts from the escape or release of farm-raised salmon because such conditions are reasonably related to the discharge of other pollutants, that, but for the farm-raised fish, would not be present. The recently issued EPA NPDES permit for Acadia Aquaculture sets the standard for protecting wild Atlantic salmon from the adverse impacts of farm-raised Atlantic salmon for future salmon farm MEPDES permits to be issued in Maine.

Salmon aquaculture within the range of Maine's salmon rivers is simply a reality and cannot be ignored. The salmon farming industry and the State of Maine have invested substantial resources to develop aquaculture in Maine. Where presently centered, aquaculture provides jobs in local economies with few current prospects for significant economic expansion. Should federal and state agencies fulfill their responsibilities and ensure that salmon farm MEPDES permits contain conditions protective of the wild Atlantic salmon, there remains hope that the wild Atlantic salmon will recover and again return in force to Maine's salmon rivers. While even the current suite of conditions is limited, in that such conditions are unlikely to entirely eliminate interactions between farm-raised and wild Atlantic salmon, there is hope that new research will lead to improved technologies that will provide greater opportunities for reducing threats to wild Atlantic salmon posed by Maine's salmon farms. Biodiversity is our most valuable but least appreciated resource.[432] The potential loss of a species as magnificent and important as the wild Atlantic salmon is a sign that we humans are taking too heavy a toll on our fragile marine ecosystems in

---

432. E.O. WILSON, THE DIVERSITY OF LIFE, 281 (1992).

Maine. The question remains whether we will hear what Maine's wild Atlantic salmon are telling us.