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ABSTRACT

The conflict over water use in the Apalachicola-Chattahoochee-Flint Rivers system (ACF) has coalesced into a single, complex federal case, the Tri-State Water Rights Litigation. The 11th Circuit settled only one fundamental issue, ruling that the U.S. Army Corps of Engineers has authority to allocate water for consumptive use from Lake Lanier. The Corps is now developing a new Master Water Control Manual to govern the operation of federal dams in the basin. The operation of these structures and water withdrawals throughout the basin can adversely affect three aquatic species listed under the ESA whose critical habitat includes the Apalachicola River and whose survival depends on flows of the river. The effect of flow reductions on these species and resulting violations of ESA has the potential to become the focus of a new generation of litigation intended to secure water for downstream states. The issues that might be raised in this aspect of the conflict and how they might be resolved may be illuminated by reviewing the effect of the Endangered Species Act on other recent conflicts over water.

INTRODUCTION

Conflict over the use of water from the complex of aquifers, creeks, streams, and rivers that drain to the Apalachicola Bay in Florida has lasted over thirty years.[1] The three major river systems

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1. *See generally* INTERSTATE WATER ALLOCATION IN ALABAMA, FLORIDA, AND GEORGIA (Jeffrey L. Jordan & Aaron T. Wolf eds., 2006); Steven Leitman, *Apalachicola-Chattahoochee-Flint Basin: Tri-State Negotiations of a Water Allocation Formula*, *in* ADAPTIVE GOVERNANCE AND WATER CONFLICT 74 (John T. Scholz & Bruce Stiftel eds., 2005).

involved—the Apalachicola, the Chattahoochee, and the Flint—form a basin that has earned its own acronym, the ACF; the conflict is known as the Tri-State Water Rights Litigation[2] or the Tri-State Water Wars.[3] The three basin states—Alabama, Florida, and Georgia—have multiple interests at stake, with diverse, sometimes conflicting interests. Increasing withdrawals for consumptive use from the river system has fueled the growth of the Atlanta region.[4] A series of federal dams provide hydropower, water supply, pollutant dilution, waterfront property, and recreational opportunities.[5] Irrigated agriculture has expanded dramatically in the Flint Basin, where groundwater withdrawals have a direct, unquantified, effect on surface waters.[6] Florida's interest is in maintaining sufficient flow to sustain the ecosystems of the Apalachicola, the floodplain forests, and the estuary, upon which the culture and the economy of Florida's Gulf Coast depend. Oysters are the iconic species there, and they have suffered a precipitous decline caused, at least in part, by reduced freshwater inflows to the Bay.[7] Alabama seems primarily interested in protecting access to water for future economic development. Additionally, there are many groups whose interests transcend state borders. For example, the Upper Chattachoochee Riverkeeper, the Apalachicola Riverkeeper, and other conservation groups are close allies in seeking adequate instream flows for fish and wildlife.[8] And, the Tri-Rivers Waterway Development Association advocates for interstate commercial navigation.[9]

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2. *In re* MDL-1824 Tri-State Water Rights Litig., 644 F.3d 1160 (11th Cir. 2011) (per curiam), *cert. denied*, 133 S. Ct. 25 (2012).

3. *See* INTERSTATE WATER ALLOCATION IN ALABAMA, FLORIDA, AND GEORGIA, *supra* note 1, at 20.

4. *Id.*

5. *See generally* M. LYNNE CORN ET AL., CONG. RESEARCH SERV., RL34440, APALACHICOLA-CHATTAHOOCHEE-FLINT DROUGHT: SPECIES AND ECOSYSTEM MANAGEMENT (2008).

6. NICOLE T. CARTER ET AL., CONG. RESEARCH SERV., RL34326, APALACHICOLA-CHATTAHOOCHEE-FLINT (ACF) DROUGHT: FEDERAL WATER MANAGEMENT ISSUES 9 (2008).

7. *See* CORN ET AL., *supra* note 5, at 3–4.

8. U.S. ARMY CORPS OF ENG'RS, 2012 SCOPING REPORT app. M at 531 (2012), *available at* http://www.sam.usace.army.mil/Portals/46/docs/planning_environmental/acf/docs/appM.pdf.

9. H.R. 1317, 145th Gen. Assemb. (Ga. 2000) (commending the Association for advocating for commercial navigation).

I. THE AQUATIC SYSTEM

The ACF system drains almost 20,000 square miles, extending from the Appalachian Mountains to the Gulf of Mexico, and has an annual average discharge of 24,768 cubic feet per second (cfs).[10] The variation in flow, however, can be extreme, ranging from 3,900 to 291,000 cfs.[11] Low-flow conditions may become more frequent in the future. Droughts are predicted to intensify in the Southeast as temperatures increase and rainfall patterns shift.[12]

Federal projects to "improve" the river system for navigation, hydropower, and flood control were authorized in 1945 and 1946.[13] There are five federal dams in the system and many more nonfederal dams.[14] But there is only limited ability to store surface water, and it is primarily in four federal structures. Buford Dam (Lake Lanier), at the upper reaches of the Chattahoochee, provides 62% of the storage capacity but is filled by only 5% of the drainage basin.[15] Releases from Lake Lanier supply much of the water for the Atlanta area, dilute pollutants in the urban area, create navigation windows, and support minimum flows for wildlife as far downstream as the Apalachicola.[16] The Woodruff Dam, on the Apalachicola just below the confluence of the Chattahoochee and Flint Rivers, has only 6% of the federal storage capacity, but impounds water from 87% of the

10. Joann Mossa, *Surface Water*, *in* WATER RESOURCES ATLAS OF FLORIDA 64, 68, 70 (Edward A. Fernald & Elizabeth D. Purdum eds., 1998).

11. HELEN M. LIGHT, MELANIE R. DARST & J.W. GRUBBS, U.S. DEP'T OF THE INTERIOR, U.S. GEOLOGICAL SURVEY PROFESSIONAL PAPER 1594: AQUATIC HABITATS IN RELATION TO RIVER FLOW IN THE APALACHICOLA RIVER FLOODPLAIN, FLORIDA tb.1 (1998).

12. U.S. GLOBAL CHANGE RESEARCH PROGRAM, GLOBAL CLIMATE CHANGE IMPACTS IN THE UNITED STATES: 2009 REPORT 111–16 (2009), *available at* http://downloads.globalchange.gov/usimpacts/pdfs/climate-impacts-report.pdf.

13. Rivers and Harbors Act of 1946, ch. 595, 60 Stat. 634, 635 (1946); Rivers and Harbors Act of 1945, ch. 19, 59 Stat. 10 (1945).

14. Georgia has the highest density of dams in the Southeast, with 4,435 dams over six feet in height and an estimated total of 68,000 reservoirs. UGA RIVER BASIN SCI. & POLICY CTR., RESERVOIRS IN GEORGIA: MEETING WATER SUPPLY NEEDS WHILE MINIMIZING IMPACTS 1, 3 (Gail Cowie ed., 2002), *available at* http://www.rivercenter.uga.edu/publications/pdf/reservoir.pdf.

15. CARTER ET AL., *supra* note 6, at 4.

16. CORN ET AL., *supra* note 5.

basin.[17] The Flint River has no federal dams, but its flow is subject to extensive groundwater withdrawals for irrigated agriculture.[18]

The demand for water for municipal and industrial use in Georgia is projected to increase dramatically, from 2,047 mgd in 2010 to 3,236 mgd in 2050.[19] Demand in the Atlanta area alone is expected to increase from 718 mgd to 1,202 mgd during that same time period.[20] Statewide agriculture is expected to increase from 1,345 mgd to 1,541 mgd.[21] Much of Georgia's irrigated agriculture is located in the basin of the Flint River where, because of the karst geology, surface flows are particularly dependent on groundwater discharge to the river, and existing levels of groundwater extraction appear to be significantly lowering surface flows [22] and impacting aquatic species.[23]

Georgia is seeking to reduce demand through water conservation measures,[24] though advocates believe far more should be done to conserve water.[25] The state and local governments are also investing substantially in the development of new or expanded water storage facilities. Georgia Governor Nathan Deal has committed to spending $300 million over four years to expand surface water storage.[26] In 2012 the Georgia Environmental Finance Authority and the Georgia

17. CARTER ET AL., *supra* note 6, at 3.

18. *Id.* at 3, 13.

19. GA. ENVTL. PROT. DIV., GA. DEP'T OF NATURAL RES., GEORGIA'S WATER FUTURE IN FOCUS: HIGHLIGHTS OF REGIONAL WATER PLANNING 2009-2011, at 9 (2011), *available at* http://www.georgiawaterplanning.org/documents/Highlights_of_Regional_Water_Planning.pdf.

20. *Id.* at 10.

21. *Id.* at 11.

22. Kathleen Rugel et al., *Effects of Irrigation Withdrawals on Streamflows in a Karst Environment: Lower Flint River Basin, Georgia, USA*, 26 HYDROLOGICAL PROCESSES 523, 523–24 (2011).

23. PAULA M. JOHNSON ET AL., EFFECTS OF DROUGHT ON FRESHWATER MUSSELS AND INSTREAM HABITAT IN COASTAL PLAIN TRIBUTARIES OF THE FLINT RIVER, SOUTHWEST GEORGIA (JULY-OCTOBER, 2000), at 10–11 (2001).

24. S.B. 370, 150th Gen. Assemb., Reg. Sess. (Ga. 2010); ENVTL. PROT. DIV., GA. DEP'T OF NATURAL RES., GEORGIA'S WATER CONSERVATION IMPLEMENTATION PLAN (2010), *available at* http://www.conservewatergeorgia.net/resources/WCIPMarch2010FINAL.pdf.

25. GA. WATER COAL., 2010 REPORT: PROTECTING AND CARING FOR GEORGIA'S WATERS 2–3, *available at* http://www.garivers.org/gawater/pdf%20files/2010waterreportFINAL.pdf; LAURA HARTT, CHATTAHOOCHEE RIVERKEEPER, FILLING THE WATER GAP: CONSERVATION SUCCESSES AND MISSED OPPORTUNITIES IN METRO ATLANTA (2012), *available at* http://www.chattahoochee.org/enews/documents/FTWG12.pdf (identifying ways to save nearly 400 mgd).

26. Governor Nathan Deal, 2011 State of the State Address (Jan. 12, 2011), *available at* http://gov.georgia.gov/press-releases/2011-01-12/2011-state-state-address-governor-nathan-deal.

Department of Community Affairs committed almost $100 million to water supply projects, including $82 million in loans for the three reservoirs.[27] Although none of these projects are in the ACF basin, the proposed Glades Reservoir would be filled by withdrawing water from the Chattahoochee River.[28]

A. The Water Conflict

The conflict over water use began in the 1970s with disagreements about "improvements" to the federal navigation project extending upstream to Columbus, Georgia. Florida objected to a series of projects that would have blasted rock ledges, installed partial dams and deposited dredged spoil in the riverine floodplains of the Apalachicola to support waterborne commerce in Georgia and Alabama.[29] One of Florida's concerns was the effect of the projects on Gulf sturgeons, the floodplain forest, and the estuary.[30] During the course of negotiating these issues, the effect of federal dams on water levels and flows in the river became better understood. In 1983, the three states and the Corps of Engineers agreed to negotiate a water management system for the ACF basin.[31] Meanwhile, in 1989, Georgia water users secured the commitment by the Corps of additional water supplies from the system.[32] In response, Alabama and Florida sued to compel the Corps to prepare an Environmental

27. Dave Williams, *Georgia Announces First-Round Funding of Water Projects*, ATLANTA BUS. CHRON. (Aug. 1, 2012, 3:01 PM), http://www.bizjournals.com/atlanta/news/2012/08/01/georgia-announces-first-round-funding.html. The 1,400-acre Hard Labor Creek Reservoir received $32 million in loans, a 305-acre reservoir on Richland Creek received $29.1 million, and the Bear Creek Reservoir received $21 million; none of these projects are in the ACF basin. *Id.*

28. GLADES RESERVOIR ENVTL. IMPACT STATEMENT, http://www.gladesreservoir.com (last visited Mar. 11, 2013).

29. U.S. ARMY ENG'R DIST., MOBILE, ARMY CORPS OF ENG'RS, MOBILE, ALA., COORDINATION REPORT ON NAVIGATIONAL IMPROVEMENTS FOR APALACHICOLA RIVER BELOW JIM WOODRUFF DAM, FLORIDA (1978). Florida's concerns resulted in the denial of a state permit for the Corps to conduct navigational dredging of the Apalachicola in 2005. *See* Consolidated Notice of Denial Wetland Resource Permit Authorization to Use Sovereign Submerged Lands, Flakes, No. 0129424-005-DF (Fla. Dep't Envtl. Prot. Oct. 11, 2005).

30. Robert P. Fowler, Jeffrey H. Wood & Thomas L. Casey, III, *Maintaining the Navigability of America's Inland Waterways*, 21 NAT. RESOURCES & ENV'T 16, 18 (2006).

31. *See* INTERSTATE WATER ALLOCATION IN ALABAMA, FLORIDA, AND GEORGIA, *supra* note 1, at 20.

32. *See id.* at 21.

Impact Statement (EIS).[33] Attempting to settle the conflict, the three states joined with the Corps in conducting a comprehensive study from 1992 to 1997 and entered into an interstate compact in 1997 for management of the ACF Basin system.[34] Decisions on how to actually allocate water had not yet been reached, however, and the compact provided for automatic expiration unless the parties agreed on a water allocation formula by December 31, 1998.[35] After multiple extensions, the parties admitted failure, allowed the compact to expire on August 31, 2003, and renewed the litigation.[36]

With the failure of an interstate compact, such a fundamental conflict among three states might seem most appropriate for resolution by one of the other two superior authorities, Congress or the Supreme Court. Congress has the authority to allocate water among states but has never used it until after states come to an agreement.[37] In today's dysfunctional Congress, opposition by one of the states could effectively bar any consideration, much less resolution. The Supreme Court has resolved many interstate water conflicts,[38] but the jurisprudence is problematic for all of the parties. For Georgia, which has been steadily increasing withdrawals and vesting users with water rights, there is no incentive for an early equitable apportionment. Existing users are typically treated well in such adjudications.[39] Florida and Alabama face the preliminary hurdle of convincing the Court to take jurisdiction, which requires

33. *Id.* (referencing Alabama v. U.S. Army Corps of Eng'rs, No. CV-90-H-01331-E (N.D. Ala. June 29, 1990)).

34. Apalachicola-Chattahoochee-Flint River Basin Compact, Pub. L. No. 105-104, 111 Stat. 2219 (1997); *see also* INTERSTATE WATER ALLOCATION IN ALABAMA, FLORIDA, AND GEORGIA, *supra* note 1, at 22–23.

35. Apalachicola-Chattahoochee-Flint River Basin Compact, *supra* note 34, § 1, art. VIII(a)(3).

36. *See In re* MDL-1824 Tri-State Water Rights Litig., 644 F.3d 1160, 1175 (11th Cir. 2011) (per curiam), *cert. denied*, 133 S. Ct. 25 (2012) (noting that the compact expired August 31, 2003); INTERSTATE WATER ALLOCATION IN ALABAMA, FLORIDA, AND GEORGIA, *supra* note 1, at 27; Charles T. DuMars & David Seeley, *The Failure of the Apalachicola-Chattahoochee-Flint River Basin and Alabama-Coosa-Tallapoosa River Basin Compacts and a Guide to the Successful Establishment of Interstate Water Compacts*, 21 GA. ST. U. L. REV. 373, 379 (2004).

37. Barton H. Thompson, Jr., John D. Leshy & Robert H. Abrams, LEGAL CONTROL OF WATER RESOURCES 892–95 (5th ed. 2013).

38. *See id.* at 892.

39. *See* Reed D. Benson, *So Much Conflict, Yet So Much in Common: Considering the Similarities Between Western Water Law and the Endangered Species Act*, 44 NAT. RESOURCES J. 29, 51 (2004).

clear evidence of significant harm.[40] Furthermore, the legal standards governing equitable apportionment are so ambiguous and subjective that it is well-nigh impossible to predict the outcome. Unwilling to roll those dice, the affected states have turned to other federal law.

When the compact expired, there were multiple federal cases underway.[41] The original litigation in the Northern District of Alabama concerned claims that the Corps had violated NEPA in allocating water from both the ACF and Alabama-Coosa-Tallapoosa (ACT) systems.[42] In 2001, Georgia challenged the Corps in the Northern District of Georgia for denying an allocation of water from Lake Lanier.[43] Federal hydropower customers had already sued the Corps in the District of Columbia for allocating water for municipal water supply.[44] Florida sued the U.S. Fish and Wildlife Service in 2006 alleging violation of ESA in the management of the federal projects.[45] Georgia water users filed a second suit in the Northern District of Georgia challenging the authority of the Corps to make any water allocation from Lake Lanier,[46] and the cities of Columbus, Georgia and Apalachicola, Florida filed additional lawsuits.[47] Eventually all but one of these cases were transferred to the Middle District of Florida under the jurisdiction of Judge Paul Magnuson from the District of Minnesota.[48]

The allocation of water from Lake Lanier dominated the legal discussion until 2012. The D.C. Circuit had ruled, in a case that had

40. DuMars & Seeley, *supra* note 36, at 380.

41. For a summary of the litigation, see CARTER ET AL., *supra* note 6, at app. A.

42. Complaint, Alabama v. U.S. Army Corps of Eng'rs, No. CV-90-H-01331-E (N.D. Ala. June 29, 1990).

43. Complaint at 2, Georgia v. U.S. Army Corps of Eng'rs, No. 2:01-cv-0026 (N.D. Ga. Feb. 7, 2001).

44. Complaint, Se. Fed. Power Customers, Inc. v. Caldera, No. 1:00-cv-2975 (D.D.C. Dec. 12, 2000).

45. Complaint at 3, Florida v. U.S. Fish & Wildlife Serv., No. 4:06-410 (N.D. Fla. Sept. 6, 2006).

46. Complaint at 24, Georgia v. U.S. Army Corps of Engineers, No. 1:06-1473 (N.D. Ga. June 20, 2006).

47. Complaint, City of Apalachicola v. U.S. Army Corps of Eng'rs, No. 4:08-23 (N.D. Fla. Jan. 15, 2008); Complaint, City of Columbus v. U.S. Army Corps of Eng'rs, No. 4:07-125 (M.D. Ga. Aug. 13, 2007).

48. *In re* Tri-State Water Rights Litig., 481 F. Supp. 2d 1351, 1353 (J.P.M.L. 2007). Judge Magnuson had been involved with litigation regarding interstate water conflicts in the Missouri River. *Id.*

not yet been transferred, that the Corps lacked authority under the Water Supply Act to increase water supply releases.[49] Judge Magnuson ruled that it also lacked such authority under several other federal statutes and ordered most of the releases to cease in three years absent congressional authorization of water supply as a project purpose.[50] It certainly appeared that extensive withdrawals for the Atlanta region's water supply were unlikely unless some basin-wide settlement of the overall conflict could be negotiated. The Eleventh Circuit ended that possibility by reversing Judge Magnuson and remanding the case to the Corps for a determination of whether it had authority to make water supply releases.[51] Answering in the affirmative, the General Counsel for the Corps set the stage for decision making on whether water would be allocated in the context of developing a water control manual for all of the federal dams in the ACF.[52]

Litigation involving the Endangered Species Act was also decided by Judge Magnuson in Phase Two of the proceedings.[53] Florida challenged operation of the Jim Woodruff Dam and the consultation with the resource agencies regarding impacts to listed species in the Apalachicola.[54] Florida lost that case, but the underlying issues seem likely to recur and are discussed below.

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49. Se. Fed. Power Customers, Inc. v. Geren, 514 F.3d 1316, 1318 (D.C. Cir. 2008).

50. *In re* Tri-State Water Rights Litig., 639 F. Supp. 2d 1308, 1356 (M.D. Fla. 2009), *rev'd and vacated sub nom. In re* MDL-1824 Tri-State Water Rights Litig., 644 F.3d 1160, 1205 (11th Cir. 2011) (per curiam), *cert. denied*, 133 S. Ct. 25 (2012).

51. *In re MDL-1824*, 644 F.3d at 1205.

52. OFFICE OF THE CHIEF COUNSEL, U.S. ARMY CORPS OF ENG'RS, AUTHORITY TO PROVIDE FOR MUNICIPAL AND INDUSTRIAL WATER SUPPLY FROM THE BUFORD DAM/LAKE LANIER PROJECT, GEORGIA 2 (2012). The Corps is still engaged in developing a scope for the environmental review. It expects to publish a draft EIS for the Master Water Control Manual in the summer of 2014 and begin implementing the adopted Manual in the summer of 2015. Press Release, U.S. Army Corps of Eng'rs, U.S. Army Corps of Engineers Reopens Public Scoping for the Water Control Manual Update for the Apalachicola-Chattahoochee-Flint River Basin (Oct. 2012), *available at* http://www.sam.usace.army.mil/Portals/46/docs/planning_environmental/acf/docs/acf_newsletter_1012.pdf.

53. *In re* Tri-State Water Rights Litig., No. 3:07-md-01, 2010 U.S. Dist. LEXIS 108931, at *5 (M.D. Fla. July 21, 2010).

54. *Id.*

B. Endangered Species Act Basics

The Endangered Species Act (ESA) was enacted in 1973 to substantially strengthen federal protections for fish and wildlife species in danger of being driven to extinction by human activities.[55] The purpose of the Act is to conserve both the species and the ecosystems on which they depend, and all federal agencies are directed to use their authorities to further that purpose and otherwise "seek to conserve" listed species.[56] Given the definition of "conserve" as meaning the use of all methods necessary to bring a species to the point at which the protections of the Act are no longer necessary, it is clear the statutory policy is not just to maintain the status quo but to improve conditions for listed species.

Although all federal agencies are responsible for implementation of the ESA, the U.S. Fish and Wildlife Service (FWS), with jurisdiction over most upland and freshwater species, and the National Marine Fisheries Service (NMFS), with jurisdiction over most marine and anadromous species, share the most direct authority.[57]

1. Listing

The protections of the Endangered Species Act extend only to species that have been listed as endangered or threatened.[58] Although numerous aquatic species have been listed, many others are likely technically qualified for listing but have not been considered. The Center for Biological Diversity has been particularly active in advocating for additional listings in the Southeast.[59] In 2010 it petitioned for the listing of 404 Southeastern aquatic, riparian and

55. Endangered Species Act, 16 U.S.C. §§ 1531–1544 (2006).

56. *Id.* § 1531(b)–(c).

57. Most authority is delegated to "the Secretary," meaning either the Secretary of Interior or Commerce. *Id.* § 1533(a).

58. *Id.* § 1533(d).

59. *See, e.g.*, *The Southeast Freshwater Extinction Crisis*, CENTER FOR BIOLOGICAL DIVERSITY, http://www.biologicaldiversity.org/programs/biodiversity/1000_species/the_southeast_freshwater_extinction_crisis/index.html (last visited Mar. 11, 2013).

wetland species.[60] The effects of impoundments, diversions and withdrawals on these species are documented in the petition.[61] If the agencies fail to take timely action on such petitions, litigation may be a means of mandating consideration and action.[62] Decisions on listing can only be based on scientific and commercial data.[63]

2. Critical Habitat

In addition to listing species, the Secretary must also designate critical habitat "to the maximum extent prudent and determinable."[64] Critical habitat includes those areas occupied by the species on which "physical or biological features" are found that are "essential to the conservation of the species."[65] Critical habitat can also include unoccupied areas with features that are essential to the conservation of the species.[66] The definition of "conservation" is significant to understanding the scope of critical habitat. To conserve a species means to bring it to the point that the measures provided for in the ESA are no longer necessary.[67] If an expansion in the range of the species is necessary, then unoccupied areas may be designated as

60. CTR. FOR BIOLOGICAL DIVERSITY, PETITION TO LIST 404 AQUATIC, RIPARIAN AND WETLAND SPECIES FROM THE SOUTHEASTERN UNITED STATES AS THREATENED OR ENDANGERED UNDER THE ENDANGERED SPECIES ACT (2010), *available at* http://www.biologicaldiversity.org/programs/biodiversity/1000_species/the_southeast_freshwater_extinction_crisis/pdfs/SE_Petition.pdf.

61. CTR. FOR BIOLOGICAL DIVERSITY, *supra* note 60, at 7–11.

62. *See, e.g.*, Letter from Jaclyn Lopez, Staff Attorney, Ctr. for Biological Diversity, to Ken Salazar, Sec'y of the Interior, U.S. Dep't of the Interior (June 18, 2012), *available at* http://www.biologicaldiversity.org/programs/biodiversity/1000_species/the_southeast_freshwater_extinction_crisis/pdfs/FL_freshwater_NOI.pdf. Settlements between the Fish and Wildlife Services, the Center for Biological Diversity, and Wild Earth Guardians will require the agency to review almost 800 species over the next six years. *See* Pat Parenteau & Dan Niedzwiecki, *Landmark Settlement Under the Endangered Species Act*, VT. L. SCH., http://watchlist.vermontlaw.edu/esa-settlement/ (last visited Mar. 11, 2013).

63. 16 U.S.C. § 1533(b)(1)(A) (2006).

64. *Id.* § 1533(a)(3)(A).

65. *Id.* § 1532(5). Those features must also require special management considerations or protection.

66. *Id.* § 1532(5)(A).

67. *Id.* § 1532(3).

critical habitat.[68] Unlike listing decisions, the designation of critical habitat must include economic and social considerations.[69]

Critical habitat designations must normally include any known Primary Constituent Elements (PCE), "the principal biological or physical constituent elements within the defined area that are essential to the conservation of the species."[70] Water quantity is specifically listed as a potential PCE.[71] Those characteristics of a natural flow regime that are essential to the conservation of a listed species could thus be specifically identified and protected as part of the designation of critical habitat. In this way, the ESA could serve as the authority for allocating water for endangered and threatened species.

3. Consultation

All federal agencies are required to ensure that discretionary actions they carry out, authorize, or fund do not jeopardize listed species or adversely modify critical habitat.[72] Examples of federal actions affecting a river that may require consultation include building or operating impoundments and diversion facilities. Nonfederal agencies or private parties may be indirectly subject to consultation if a federal agency funds or permits a facility or activity.[73] Contracting to supply water from federal facilities may also be subject to consultation if the federal agency has discretion to condition the contracts to protect listed species.[74]

The consultation process first requires a determination of whether a listed species may be present in the area of the project.[75] If so, the agency conducting, funding, or licensing the activity—the action

68. *See, e.g.*, Miccosukee Tribe of Indians v. United States, 566 F.3d 1257, 1270 (11th Cir. 2009); Sierra Club v. U.S. Fish & Wildlife Serv., 245 F.3d 434, 444–45 (5th Cir. 2001) (requiring agencies to designate critical habitat for the Gulf sturgeon and consider unoccupied areas).

69. 16 U.S.C. § 1533(b)(2).

70. 50 C.F.R. § 424.12 (2012).

71. *Id.*

72. 16 U.S.C. § 1536(a)(2).

73. *Id.*

74. *Id.* § 1536(c).

75. *Id.* § 1536(a)(2).

agency—must determine if the species or critical habitat is likely to be adversely affected, typically documenting the conclusion in a Biological Assessment (BA).[76] If adverse effects are likely, then formal consultation with the wildlife agencies is required, culminating in the issuance of a Biological Opinion (BiOp).[77] Consultation may be initiated by the action agency or demanded by the wildlife agency. The BiOp documents the conclusion of the wildlife agency as to whether the action is likely to jeopardize the species or destroy or adversely modify critical habitat.[78] The BiOp will typically include Reasonable and Prudent Alternatives (RPA) that, if implemented, will allow the activity to proceed without violating the ESA.[79] Ultimately, the decision whether to accept the conclusions and recommendations of the BiOp is made by the action agency.[80] Approval by the wildlife agencies is not required, but a contrary BiOp is powerful evidence of noncompliance with the ESA. Conversely, it can be very difficult to prove a violation when the expert agency has concluded that an activity is not likely to violate the substantive provisions. Consultation must be reinitiated if new information reveals unanticipated adverse effects.[81]

4. Jeopardy and Critical Habitat

The statutory criteria that federal agencies must meet are to "insure that any action . . . is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of [critical] habitat . . . ."[82] There have been numerous cases involving agency compliance with these standards in the context of flow alteration.[83] The seminal U.S.

76. *Id.* § 1536(c).
77. *Id.* § 1536(b)(4)-(c).
78. 16 U.S.C. § 1536(b)(3)(A).
79. *Id.*
80. *Id.*
81. 50 C.F.R. § 402.16(b) (2012).
82. 16 U.S.C. § 1536(a)(2).
83. *See* Benson, *supra* note 39, at 30–33 (listing five examples from the West: the Klamath, the Carson-Truckee, the California Central Valley (Bay Delta), the Methow Valley and the Rio Grande). To this list, one might certainly add the Columbia, the Missouri and, in the East, the Everglades.

Supreme Court decision, *Tennessee Valley Authority v. Hill*, was just such a conflict. The Tennessee Valley Authority (TVA) was building a dam to obstruct flow on a stretch of the Little Tennessee River that was the only known habitat, and the designated critical habitat, of the endangered snail darter.[84] There was really no doubt that impounding the river would both jeopardize the species and destroy the critical habitat.[85] The significance of the case is that the Court enforced the statute and prevented closure of the dam to save a small, obscure fish.[86]

Most other cases involve less dramatic alterations of flow and more uncertainty about the effects. The ongoing conflict over how much flow is required for the listed species of fish in the San Francisco Bay Delta is illustrative of how technically complex such a dispute can become.[87] *National Wildlife Federation v. National Marine Fisheries Service*[88] is another recent decision assessing the validity of a BiOp for salmonids. In this case the federal action under review was operation of the Federal Columbia River Power System.[89] Although the court accepted the science underlying the "no jeopardy" finding, the BiOp was invalidated, beginning in 2014, for its reliance on habitat mitigation measures that were not "reasonably certain to occur."[90]

In addition to the prohibition on jeopardy, agencies are required to ensure that actions do not result in the destruction or adverse modification of critical habitat.[91] The wildlife agencies have taken

84. Tenn. Valley Auth. v. Hill, 437 U.S. 153, 162 (1978).

85. *Id.*

86. *Id.* at 194–95.

87. *E.g.*, The Consol. Delta Smelt Cases, 812 F. Supp. 2d 1133 (E.D. Cal. 2011) *vacated* No. 11-17143 (9th Cir. Aug. 23, 2012); *In re* Consol. Salmonid Cases, 791 F. Supp. 2d 802 (E.D. Cal. 2011); *see also* COMM. ON SUSTAINABLE WATER & ENVTL. MGMT. IN THE CAL. BAY-DELTA, NAT'L RESEARCH COUNCIL, A SCIENTIFIC ASSESSMENT OF ALTERNATIVES FOR REDUCING WATER MANAGEMENT EFFECTS ON THREATENED AND ENDANGERED FISHES IN CALIFORNIA'S BAY-DELTA (2010).

88. Nat'l Wildlife Fed'n v. Nat'l Marine Fisheries Serv., 839 F. Supp. 2d 1117 (D. Or. 2011).

89. *Id.* at 1128.

90. *Id.*; *see also Environmental Law—Endangered Species Act—District of Oregon Invalidates Biological Opinion for Federally Operated Dams on Columbia River.*—National Wildlife Federation v. National Marine Fisheries Service*, No. CV 01-00640-RE, 2011 WL 3322793 (D. Or. Aug. 2, 2011)*, 125 HARV. L. REV. 819, 821 (2012).

91. 16 U.S.C. § 1536(a)(2) (2006).

the position that there is little significant difference between the criteria for jeopardy and adverse modification. Both are defined in terms of adverse effects on "survival and recovery."[92] Two circuit courts have found a very significant difference.[93] Because critical habitat can include unoccupied areas essential to the recovery of a species, critical habitat can be adversely modified by actions that appreciably reduce the value of that habitat for recovery, even if they do not appreciably reduce the value for survival of the species.

5. Takings

Section 9 of the ESA prohibits the "take" of endangered species[94] by anyone, whether the action is federal, state, or private. The definition of take includes the term "harm,"[95] and the Supreme Court upheld[96] a regulatory definition of "harm" as "an act which actually kills or injures wildlife. Such act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering."[97]

If a flow modification in the ACF basin actually kills or injures listed wildlife by impairing essential behaviors and there is sufficient proof of causation and foreseeability, then it is a potential violation of the Section 9 prohibition on take.[98] Local governments and state

92. *Compare* 50 C.F.R. § 402.02 (2012) (defining "jeopardize" as engaging "in an action that reasonably would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species"), *with* 16 U.S.C. § 1536(a)(2) (limiting any action which "jeopardize[s] the continued existence of any endangered species or threatened species or result[s] in the destruction or adverse modification of [critical] habitat . . .").

93. Gifford Pinchot Task Force v. U.S. Fish & Wildlife Serv., 378 F.3d 1059 (9th Cir. 2004); Sierra Club v. U.S. Fish & Wildlife Serv., 245 F.3d 434 (5th Cir. 2001). The Eleventh Circuit took note of those decisions in reviewing the BiOp and Incidental Take Statement for an Everglades restoration project whose ultimate goal was recovery of all the affected species. Miccosukee Tribe of Indians of Fla. v. United States, 566 F.3d 1257, 1270 (11th Cir. 2009).

94. 16 U.S.C. § 1538(a)(1)(C). The prohibition also generally applies to threatened species through regulation. Other prohibited acts include the sale or possession of endangered species.

95. *Id.* § 1532(19).

96. Babbitt v. Sweet Home Chapter of Cmtys. for a Great Or., 515 U.S. 687 (1995).

97. 50 C.F.R. § 17.3 (2012).

98. Paul Boudreaux, *Understanding "Take" in the Endangered Species Act*, 34 ARIZ. ST. L.J. 733, 754 (2002); James R. Rasband, *Priority, Probability, and Proximate Cause: Lessons from Tort Law*

agencies can be liable for the authorization of activities through regulatory programs that result in a take.[99]

6. Incidental Take Permits and Habitat Conservation Plans

Because the potential for take is so widespread, Congress recognized the need to accommodate human activity that harms some listed species. Where the take is the incidental result of an otherwise lawful activity subject to consultation, it can be authorized through an Incidental Take Statement (ITS) in the Biological Opinion.[100] For projects with no federal involvement, potential Section 9 liability can only be avoided by the issuance of an Incidental Take Permit (ITP) under Section 10, supported by a Habitat Conservation Plan (HCP).[101] ITPs can be issued if the applicant will minimize and mitigate the impacts of the taking to the maximum extent practicable and ensure funding of the plan.[102] Under the statutory criteria, the taking must not "appreciably reduce the likelihood of the survival and recovery of the species in the wild."[103] The agencies, however, encourage applicants to develop plans that contribute to recovery of the species.[104] Because the issuance of an ITP is a federal action, it cannot jeopardize the species or adversely modify critical habitat.[105]

Habitat conservation plans can be very limited in scope, mitigating the effects of a single project. They can also be very broad, mitigating impacts over very large areas and covering not only currently listed species but also those that may be listed in the

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About Imposing ESA Responsibility for Wildlife Harm on Water Users and Other Joint Habitat Modifiers, 33 ENVTL. L. 595, 607 (2003).

99. Loggerhead Turtle v. Cnty. Council, 148 F.3d 1231, 1258 (11th Cir. 1998); Strahan v. Coxe, 127 F.3d 155, 165–66 (1st Cir. 1997).

100. 16 U.S.C. § 1536(b)(4)(B); *see also* FISH & WILDLIFE SERV., U.S. DEP'T OF THE INTERIOR & NAT'L MARINE FISHERIES SERV., U.S. DEP'T OF COMMERCE, HABITAT CONSERVATION PLANNING AND INCIDENTAL TAKE PERMIT PROCESSING HANDBOOK 4-45 to -57 (1996) [hereinafter FISH & WILDLIFE SERV., U.S. DEP'T OF THE INTERIOR], *available at* http://www.nmfs.noaa.gov/pr/pdfs/laws/hcp_handbook.pdf.

101. 16 U.S.C. § 1539(a)(1)(B); FISH & WILDLIFE SERV., U.S. DEP'T OF THE INTERIOR, *supra* note 100, at 1-1.

102. FISH & WILDLIFE SERV., U.S. DEP'T OF THE INTERIOR, *supra* note 100, at 3-10.

103. *Id.* at 3-15 (quoting 16 U.S.C. § 1539(a)(2)(B)(iv)) (internal quotation marks omitted).

104. *Id.* at 3-20.

105. *Id.* at 8-5.

future.[106] As an incentive for the development and implementation of habitat conservation plans, the wildlife agencies have adopted a "no surprises" policy, protecting the holders of ITPs from changes in regulatory policy, population declines, or other unexpected contingencies.[107]

C. The ESA And The Apalachicola

Running from the Blue Ridge Mountains to the Gulf of Mexico, the ACF is an important biological corridor spanning several ecoregions.[108] It provides habitat for a rich assemblage of species, including one hundred twenty-two fish, sixteen freshwater aquatic turtles, twenty-one salamanders, twenty-six frogs, thirty crayfish, and forty-five mussels.[109] Thirty-four species are federally listed as endangered or threatened.[110] Four of the currently listed species have been of particular concern regarding water management: the Gulf Sturgeon (*Acipenser oxyrinchus desotoi*) and 3 species of mussels, the Purple Bankclimber (*Elliptoideus sloatianus*), the Fat Threeridge (*Amblema neislerii*), and the Chipola Slabshell (*Elliptio chipolaensis*).[111] The Gulf sturgeon was listed as a threatened species in 1991,[112] with critical habitat designated in 2003.[113] The three

106. Announcement of Final Policy for Candidate Conservation Agreements with Assurances, 64 Fed. Reg. 32726, 32726 (June 17, 1999).

107. Habitat Conservation Plan Assurances ("No Surprises") Rule, 63 Fed. Reg. 8859, 8860 (Feb. 23, 1998) (to be codified at 50 C.F.R. pt. 17).

108. It includes parts of the Blue Ridge Mountains, Southeastern Plains, and Southern Coastal Plain Ecoregions. CAROL A. COUCH, EVELYN H. HOPKINS & P. SUZANNE HARDY, U.S. DEP'T OF THE INTERIOR, WATER RESOURCES INVESTIGATIONS REPORT 95-4278: INFLUENCES OF ENVIRONMENTAL SETTINGS ON AQUATIC ECOSYSTEMS IN THE APALACHICOLA-CHATTAHOOCHEE-FLINT RIVER BASIN 27 (1996), *available at* http://pubs.usgs.gov/wri/1995/4278/report.pdf.

109. *Id.* at 28, 37.

110. U.S. FISH & WILDLIFE SERV., BIOLOGICAL OPINION ON THE U.S. ARMY CORPS OF ENGINEERS, MOBILE DISTRICT, REVISED INTERIM OPERATING PLAN FOR JIM WOODRUFF DAM AND THE ASSOCIATED RELEASES TO THE APALACHICOLA RIVER 2 (2012), *available at* http://www.fws.gov/southeast/news/2012/pdf/woodruffBOFinal.pdf.

111. *See* CORN ET AL., *supra* note 5, at 5.

112. Endangered and Threatened Wildlife and Plants; Threatened Status for the Gulf Sturgeon, 56 Fed. Reg. 49653, 49653 (Sept. 30, 1991) (to be codified at 50 C.F.R. pt. 17); *see also Gulf Sturgeon (*Acipenser Oxyrinchus Desotoi*)*, NOAA FISHERIES, http://www.nmfs.noaa.gov/pr/species/fish/gulfsturgeon.htm#documents (last updated Feb. 27, 2013) (providing links to the listing rule, the recovery plan, and other relevant documents).

113. Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for the Gulf

mussels were listed in 1998[114] and critical habitat was designated in 2007.[115]

The Gulf sturgeon is anadromous, moving from marine waters into the Apalachicola in the spring for spawning along the deeper, rocky upstream areas of the river.[116] The Jim Woodruff Dam blocks the Gulf Sturgeon from accessing its historic upstream habitat.[117] It depends on adequate flows to maintain suitable temperatures, depth, and dissolved oxygen.[118] The listed mussels all depend on fish to serve as hosts for their larvae (glochidia).[119] Whatever habitat those fish require is thus essential to survival of the mussels. As burrowing filter feeders with limited mobility, they also depend on flow to maintain suitable depth and water quality over areas of suitable substrate.[120] The Fat Threeridge Mussels, which seem to prefer shallower water, are particularly vulnerable.[121] A reduction in flow can expose the animals to higher temperatures and lower dissolved

Sturgeon, 68 Fed. Reg. 13370, 13370 (Mar. 19, 2003) (to be codified at 50 C.F.R. pt. 17). A citizen suit forced the agencies to designate critical habitat. *See* Sierra Club v. U.S. Fish & Wildlife Serv., 245 F.3d 434, 444–45 (5th Cir. 2001).

114. Endangered and Threatened Wildlife and Plants; Determination of Endangered Status for Five Freshwater Mussels and Threatened Status for Two Freshwater Mussels From the Eastern Gulf Slope Drainages of Alabama, Florida, and Georgia, 63 Fed. Reg. 12664 (Mar. 16, 1998) (to be codified at 50 C.F.R. pt. 17); *see also Purple Bankclimber (Elliptoideus Sloatianus)*, U.S. FISH & WILDLIFE SERVICE, http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=F02E (providing links to relevant federal documents). The Fat Threeridge is endangered; the Purple Bankclimber, and Chipola Slabshell are threatened. Four other mussels were also listed at the same time. Endangered and Threatened Wildlife and Plants; Determination of Endangered Status for Five Freshwater Mussels and Threatened Status for Two Freshwater Mussels From the Eastern Gulf Slope Drainages of Alabama, Florida, and Georgia, 63 Fed. Reg. at 12665.

115. Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for Five Endangered and Two Threatened Mussels in Four Northeast Gulf of Mexico Drainages, 72 Fed. Reg. 64286 (Nov. 15, 2007) (to be codified at 50 C.F.R. pt. 17).

116. CORN ET AL., *supra* note 5, at 9.

117. *Id.* at 6.

118. *Id.* at 7.

119. Some mussels also depend on flow as part of an adaptation for attaching their larvae to the host fish. Eric Biber, Comment, *The Application of the Endangered Species Act to the Protection of Freshwater Mussels: A Case Study*, 32 ENVTL. L. 91, 96 (2002). When the mussel is ready to disperse larvae, it deploys an organ into the current consisting of a long filament with larvae in a capsule at the end. *Id.* at 112. This capsule functions as a lure. *Id.* at 96 n.13. When a fish attacks it, the larvae are released onto the gills of the fish, thus enabling their travel upstream. *Id.* The attractiveness of the lure may depend on its movement in an appropriate current. *Id.*

120. *Id.* at 95.

121. U.S. FISH & WILDLIFE SERV., *supra* note 110, at 68.

oxygen or even desiccation and predation.[122] Impoundments are a particular threat to the species, creating large areas of unsuitable habitat in the ACF, blocking movement by the host fish, and often reducing downstream flows.[123] The designation of critical habitat for the mussels specifically recognized "permanently flowing water" and "host fish" as PCEs of the critical habitat.[124] Although it recognized the necessity of maintaining or restoring a "natural flow paradigm" for the species and that the "magnitude, duration, frequency, and seasonality" of flow must be considered, the FWS did not attempt to specify the required parameters in the critical habitat, deferring instead to the consultation process.[125]

The Section 7 requirements for consultation and the prohibitions on jeopardy and adverse modification of critical habitat are clearly applicable to water control by the Corps.[126] Florida, Alabama, and other downstream litigants have contested the BiOPs, Incidental Take Statements, and operational protocols for the Woodruff Dam in several iterations of an operating manual.[127] These include the 1989 draft Water Control Plan, the 2006 Interim Operating Plan (IOP), the 2007 Exceptional Drought Operations (EDO), the 2008 Revised Interim Operating Plan (RIOP), and the 2012 Revised Interim Operating Plan (RIOP).[128] A challenge to the 2008 RIOP and associated consultation[129] was resolved in 2010 with an order upholding the decisions of the Corps and FWS.[130] Several issues

122. *Id.* at 50–52.

123. *Id.* at 42.

124. Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for Five Endangered and Two Threatened Mussels in Four Northeast Gulf of Mexico Drainages, 72 Fed. Reg. at 64299–64301.

125. *Id.* at 64299.

126. *See* 16 U.S.C. § 1536(a)(1)–(2) (2006) (requiring all federal agencies to consult with the Secretary of Interior if they are proposing an "action" that may affect listed species).

127. *See* U.S. FISH & WILDLIFE SERV., *supra* note 110, at 4–6 (listing consultation history).

128. *Id.*

129. *Id.* at 1.

130. *In re* Tri-State Water Rights Litig., No. 3:07-md-01, 2010 U.S. Dist. LEXIS 108931, at *40–41 (M.D. Fla. July 21, 2010) (Memorandum and Order in Phase 2). Once a Biological Opinion issued for the 2012 RIOP, Florida dismissed its appeal of the Phase 2 order and the Court vacated the Phase 2 order. Order Granting Motion Request for Vacatur, 639 F. Supp. 2d 1308, 1356 (M.D. Fla. 2009), *rev'd and vacated sub nom. In re* MDL-1824 Tri-State Water Rights Litig., 644 F.3d 1160, 1205 (11th Cir. 2011) (per curiam), *cert. denied*, 133 S. Ct. 25 (2012) (No. 3:07-md-0000I) (signed by Judge Magnuson

were raised in the challenge relating to the Gulf Sturgeon, the Fat Threeridge Mussel, and the Purple Bankclimber Mussel.[131] For each of these species, the Biological Opinion concluded the plan would not jeopardize the species or destroy or adversely modify critical habitat.[132] The Biological Opinion also concluded the operations would likely result in a take of the mussels but not the sturgeon, and the Corps accordingly issued Incidental Take Statements.[133]

Georgia parties challenged the determination that a take could occur if flows fall below 5,000 cfs, arguing that naturally occurring low flows cannot cause a take.[134] The court determined these parties had no standing to make the argument because they could not demonstrate injury from the Corps' determination; therefore the Court did not address the substantive argument.[135] Florida, however, argued that proving the Corps' operations were the sole cause of a take was unnecessary to show a Section 9 violation.[136]

The scope of the consultation was also challenged.[137] Although the Corps operated the system under various revisions of a 1989 draft Water Control Plan, there was never consultation regarding the effects of that federal action.[138] Nevertheless, the Corps only requested consultation on the effects of the current revision to the 2008 RIOP—the effects of the incremental change from current operations.[139] Florida argued the consultation was invalid for its failure to evaluate the aggregate impacts of current basin-wide operations on the affected species and their critical habitat.[140] The

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on January 24, 2013).

131. *In re Tri-State Water Rights Litig.*, 2010 U.S. Dist. LEXIS 108931, at *7.

132. U.S. FISH & WILDLIFE SERV., *supra* note 110, at 1.

133. *Id.* at 2.

134. *In re Tri-State Water Rights Litig.*, 2010 U.S. Dist. LEXIS 108931, at *22.

135. *Id.*

136. Response of the State of Florida and the City of Apalachicola to the Non-Federal Parties' Motions for Summary Judgment on Phase 2 Claims at 7, *In re* Tri-State Water Rights Litig., No. 3:07-MD-1-PAM/JRK, 2010 WL 1858105 (M.D. Fla. Feb. 10, 2010).

137. *In re Tri-State Water Rights Litig.*, 2010 U.S. Dist. LEXIS 108931, at *23–25.

138. *Id.* at *13–14.

139. Letter from Curtis M. Flakes, Chief, Planning & Envtl. Div., Mobile Dist., U.S. Army Corps of Eng'rs, to Gail Carmody, Field Supervisor, U.S. Fish & Wildlife Serv. (Apr. 15, 2008), *available at* http://www.fws.gov/southeast/drought/pdf/IOP_Mod_Reinitiation_Signed_Letter.pdf.

140. State of Florida and City of Apalachicola's Joint Motion and Memorandum in Support of Joint Motion for Summary Judgment on Phase 2 Claims at 40–42, *In re* Tri-State Water Rights Litig., 2010

District Court rejected that argument, holding that the FWS had in fact evaluated the effects of the actions "in light of the actions that came before."[141] By treating the existing impacts as part of the baseline, the Corps and the FWS were able to avoid analyzing whether current operations jeopardized the species, adversely modified critical habitat, or caused a take.[142]

Finally, there was a challenge to the ITSs, or lack thereof.[143] The Florida parties were concerned the FWS had decided not to issue an ITS for sturgeon impacts despite the potential for stranding of sturgeon eggs and harmful high salinities at low flows.[144] The Corps had agreed to reduce the rate of flow reductions to avoid taking eggs, and the FWS believed that estuarine conditions for juvenile sturgeon would actually be enhanced by the IOP when compared to existing conditions.[145] The court chose to defer to the agency's scientific determination that there would be no take.[146]

The result for challenges to the ITS for mussels was similar. The statement had determined that up to 21,000 Fat Threeridge Mussels and 200 Purple Bankclimbers could be exposed by low flows but concluded this was not sufficient to jeopardize the species.[147] The court found this was not arbitrary and capricious, again based on deference to the expertise of the agency and the record examining all relevant evidence.[148] It did so despite reiterating that a take can occur by reducing the likelihood of recovery, not just survival.[149]

All of these arguments are likely to be raised again, with new facts, additional studies, and several more years of experience. The 2008 Revised Interim Operating Plan has already been revised again in

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U.S. Dist. LEXIS 108931 (M.D. Fla. Dec. 9, 2009) (No. 3:07-MD-1-PAM/JRK).

141. *In re Tri-State Water Rights Litig.*, 2010 U.S. Dist. LEXIS 108931, at *25–26.

142. State of Florida and City of Apalachicola's Joint Motion and Memorandum in Support of Joint Motion for Summary Judgment on Phase 2 Claims, *supra* note 140, at 39.

143. *In re Tri-State Water Rights Litig.*, 2010 U.S. Dist. LEXIS 108931, at *26–32.

144. *Id.* at *27.

145. *Id.* at *27–28.

146. *Id.* at *28.

147. *Id.* at *29.

148. *Id.* at *31–32.

149. *In re Tri-State Water Rights Litig.*, 2010 U.S. Dist. LEXIS 108931, at *26 (quoting 50 C.F.R. § 402.02).

response to excessive mortality in 2010.[150] Meanwhile, the Corps is developing a Master Water Control Manual for all of the federal dams in the basin.[151] The 1989 draft has never been reviewed.[152] It is clear from the scoping comments that impacts to the listed species of the Apalachicola from operation of the federal projects in conjunction with upstream withdrawals remain major concerns of downstream interests.[153] When the consultation ends, further litigation will inevitably begin again. Two case studies of similar large-scale conflicts concerning the effects of water development and use on listed species may shed some light on the prospects for resolution.

1. The San Francisco Bay Delta

The Bay Delta, a complex and dynamic ecosystem created by the confluence of the Sacramento and San Joaquin rivers as they flow west toward the San Francisco Bay and the ocean, is the largest estuary on the West Coast and a critical water supply for several million acres of farmland and two-thirds of California's population.[154] Decades of human diversion of river water for agriculture and domestic use from the delta's over 700 miles of waterways have created a number of ecological problems, including land subsidence (necessitating levees to be built far inland) and the intrusion of salt water from the Pacific Ocean. This could have potentially devastating long-term consequences for one of the world's most productive farming areas and the more than 500 species

150. *See generally* U.S. FISH & WILDLIFE SERV., *supra* note 110.

151. Intent To Prepare Draft Environmental Impact Statement for Updated Water Control Manuals for the Apalachicola-Chattahoochee-Flint River Basin, 73 Fed. Reg. 9780 (Feb. 22, 2008). *See generally ACF Master Water Control Manual Update*, U.S. ARMY CORPS OF ENGINEERS, http://www.sam.usace.army.mil/Missions/PlanningEnvironmental/ACFMasterWaterControlManualUpdate.aspx (last visited Mar. 12, 2013) (publicizing the issuance of the Federal Register to update the Water Control Manual).

152. *In re Tri-State Water Rights Litig.*, 2010 U.S. Dist. LEXIS 108931, at *13–14.

153. *See generally, e.g.*, U.S. ARMY CORP OF ENG'RS, *supra* note 8, at app. M (containing letters from J. Brian Atkins, Director, Alabama Office of Water Resources and Dan Tonsmeire, Riverkeeper).

154. S.E. Ingebritsen & Marti E. Ikehara, *Sacramento-San Joaquin Delta: The Sinking Heart of the State*, *in* LAND SUBSIDENCE IN THE UNITED STATES 83, 84 (Devin L. Galloway, David R. Jones & S.E. Ingebritsen eds., 1999).

of plants and animals inhabiting the ecosystem.[155] One of the most notable species is the Delta smelt, a small endemic fish that has been pushed to the brink of extinction.[156] Several species of salmon and steelhead (salmonids) and green sturgeon have also been particularly affected.[157]

Central and southern California are arid and therefore rely primarily on water imports via two large-scale water storage and conveyance projects, the State Water Project and the Central Valley Water Project.[158] The State Water Project (SWP), operated by the California Department of Water Resources (DWR), is the United States' largest state-built water and power project.[159] It stretches across 600 miles and delivers irrigation supply to 750,000 acres of farmland and drinking water to twenty-five million people.[160] The federal Central Valley Project (CVP), which is operated through the U.S. Bureau of Reclamation (Reclamation), provides irrigation water to three million acres of farmland and drinking water to multiple counties in the Central Valley, and is the largest federal water project in the nation.[161] Both use massive pumping facilities to move water through the Delta.[162] The SWP and CVP systems are so powerful that the collective operation of their pumps causes flow reversal in two interior Delta rivers.[163] Despite technical measures in place to minimize fish entrainment within the system, operation of the projects' pumps continues to kill Delta smelt and other species listed

155. *Where Rivers Meet-The Sacramento-San Joaquin Delta*, CAL. DEP'T OF WATER RESOURCES, http://www.water.ca.gov/swp/delta.cfm (last modified July 18, 2008).

156. COMM. ON SUSTAINABLE WATER & ENVTL. MGMT. IN THE CAL. BAY-DELTA, NAT'L RESEARCH COUNCIL, *supra* note 87, at 1, 3.

157. *Id.*

158. *Where Rivers Meet-The Sacramento-San Joaquin Delta*, *supra* note 155.

159. *California State Water Project Overview*, CAL. DEP'T OF WATER RESOURCES, http://www.water.ca.gov/swp/ (last modified Aug. 11, 2010).

160. *Id.*

161. *California State Water Project and the Central Valley Project*, CAL. DEP'T OF WATER RESOURCES, http://www.water.ca.gov/swp/cvp.cfm (last modified Apr. 29, 2008).

162. Ingebritsen & Ikehara, *supra* note 154, at 84.

163. Mia S. Brown, *Little Fish, Big Problem: Endangered Fish Impacts Large-Scale Water Deliveries*, A.B.A. AGRIC. MGMT. COMMITTEE NEWSL., May 2011, at 11, 11.

under the ESA, including various salmonids, Green Sturgeon, and the Central Valley Steelhead.[164]

In 2004, Reclamation and DWR sought to make operational changes to project operations and, in compliance with the ESA Section 7 requirements, initiated consultation with the U.S. Fish and Wildlife Service (FWS) and the National Marine Fisheries Service (NMFS).[165] The purpose of these Section 7 consultations was to evaluate the impact of project operations on several ESA-listed species.[166] In 2004 and 2005, the agencies issued initial BiOps regarding the effects of project operations on Delta smelt and various salmonid species, concluding that the projects' current and projected operation would not jeopardize the species.[167] Environmental groups challenged both BiOps in federal suits, alleging that the projects' entrainment of fish would in fact jeopardize the species and unlawfully "take" Delta smelt and listed salmonids.[168] In 2007, U.S. District Court Judge Oliver Wanger found the BiOps arbitrary, capricious, and inadequate to protect the listed fish from extinction for failure to consider significant information regarding critical threats to the species' survival.[169] Judge Wanger directed the agencies to revise the BiOps and required temporary interim reductions in project water exports for the six-month period from January to June of that year when pumping would most adversely impact the Delta smelt.[170] The interim pumping restrictions were so significant that water contractors were informed that they should

164. *Id.*

165. EUGENE H. BUCK ET AL., CONG. RESEARCH SERV., R41608, THE ENDANGERED SPECIES ACT (ESA) IN THE 112TH CONGRESS: CONFLICTING VALUES AND DIFFICULT CHOICES 14 (2012).

166. *Id.*

167. *See* Pac. Coast Fed'n of Fishermen's Ass'ns v. Gutierrez, 606 F. Supp. 2d 1122, 1128 (E.D. Cal. 2008) (deciding a motion on summary judgment concerning a National Marine Fisheries Service biological opinion); Natural Res. Def. Council v. Kempthorne, 506 F. Supp. 2d 322, 328 (E.D. Cal. 2007) (deciding a motion for summary judgment regarding a United States Fish and Wildlife Service biological opinion).

168. *See generally Gutierrez*, 606 F. Supp. 2d 1122; *Kempthorne*, 506 F. Supp. 2d 322.

169. *Gutierrez*, 606 F. Supp. 2d at 1173 ("[T]he BiOp's conclusion that Project operations . . . will not jeopardize the CV steelhead survival and recovery is arbitrary, capricious, and not in accordance with the law . . . ."); *Kempthorne*, 506 F. Supp. 2d at 387 ("The Delta smelt is undisputedly in jeopardy as to its survival and recovery.").

170. Brown, *supra* note 163, at 11.

expect to receive only 35% of their expected 2008 water allocations.[171] The BiOps and resultant pumping restrictions garnered national media attention and sparked widespread controversy in California, where nearly 300,000 farmland acres went dry, agricultural unemployment soared, and residents posted signs throughout the Central Valley declaring that "Congress created [the] Dust Bowl."[172]

In accordance with Judge Wanger's ruling, FWS and NMFS issued their revised BiOps for Delta smelt and salmonid species in 2008 and 2009, respectively.[173] The revised BiOps found that ongoing project operations would jeopardize both species and adversely affect their critical habitat.[174] As required by the ESA whenever a finding of "jeopardy" or "adverse modification" occurs, the BiOps included "reasonable and prudent alternatives" (RPAs), which required many changes to project operations, including restrictions on the amount of water to be diverted from the delta or released from upstream reservoirs.[175] One such RPA required seasonal pumping reductions during specific times of the year coinciding with key stages in the species' life cycles.[176] If implemented, the pumping restrictions imposed under the new BiOps would reduce water deliveries to contractors by several thousand acre-feet per year.[177] In an effort to protect the new BiOps from expected challenges to their validity, FWS and NMFS subjected them to heightened scientific review by five independent panels before their release.[178]

In response to the revised BiOps, numerous interest groups, including farmers, public water agencies, water contractors, and even

171. *Id.*

172. Ian Fein, Comment, *Reassessing the Role of the National Research Council: Peer Review, Political Tool, or Science Court?*, 99 CAL. L. REV. 465, 508–10 (2011) (alteration in original).

173. COMM. ON SUSTAINABLE WATER & ENVTL. MGMT. IN THE CAL. BAY-DELTA, NAT'L RESEARCH COUNCIL, *supra* note 87.

174. Hanspeter Walter, *The Crossroads of NEPA and the ESA—A Four Way Stop for Federal Agencies*, A.B.A. ENVTL. IMPACT COMMITTEE NEWSL., Nov. 2010, at 12, 12.

175. *Id.*

176. Fein, *supra* note 172, at 509.

177. Brown, *supra* note 163, at 12.

178. Fein, *supra* note 172, at 509.

the California Department of Water Resources, filed multiple suits challenging the new BiOps.[179] The suits alleged violations of the ESA, the National Environmental Policy Act (NEPA), and the Administrative Procedure Act (APA), and were eventually consolidated into two collective cases: the *Consolidated Delta Smelt Cases* and the *Consolidated Salmonid Cases*.[180] The plaintiffs in both cases questioned the scientific validity of the BiOps. The plaintiffs contended that the agencies failed to use the best scientific and commercial data in forming the BiOps as required under the ESA and argued that the pumping limits were too restrictive because other factors, such as pollution and invasive species, represented a more significant threat to the listed species than ongoing project operations.[181] Available scientific data on these other factors, the plaintiffs argued, should have been quantitatively analyzed by the agencies in preparing their BiOps such that their effect on the listed species' populations could be compared with the effects of continued water exports.[182] According to the plaintiffs, the agencies' failure to do so resulted in an "improper jeopardy finding and invalid RPA."[183] The plaintiffs also contended that the agencies failed to adequately consider the economic and technological feasibility of implementing the pumping restrictions and the harm such restrictions would inflict on water contractors, as required under NEPA.[184]

Judge Wanger issued opinions for the *Consolidated Delta Smelt Cases* and the *Consolidated Salmonid Cases* in 2010 and 2011, respectively.[185] The Court found the underlying findings and resultant pumping restrictions imposed by the RPAs contained in the BiOps for both species to be "arbitrary, capricious, and unlawful" for

179. Brown, *supra* note 163, at 12; Fein, *supra* note 172, at 509.

180. Brown, *supra* note 163, at 12.

181. Brandon M. Middleton, *The Sacramento-San Joaquin Delta Litigation: A Brief Summary*, ENGAGE: J. FEDERALIST SOC'Y PRAC. GROUPS, Dec. 2010, at 39, 39.

182. *In re* Consol. Salmonid Cases, 791 F. Supp. 2d 802, 852 (E.D. Cal. 2011).

183. *Id.*

184. *Id.*

185. *Id.*; The Consol. Delta Smelt Cases, 717 F. Supp. 2d 1021 (E.D. Cal. 2010) *vacated* No. 11-17143 (9th Cir. Aug. 23, 2012). Because the legal issues in the two consolidated cases are very similar, the following discussion of the court's opinions refers to both cases interchangeably.

failure to use the best available science as required under the ESA.[186] Judge Wanger held that agencies' "reliance on analyses that utilize raw (as opposed to population-normalized) salvage data is an undeniable failure to use the best available scientific methodology"[187] and found that the agencies had "failed to adequately justify by generally recognized scientific principles the precise flow prescriptions imposed by [RPA Actions]." [188] Regarding the plaintiffs' contentions that the agencies should be required to quantitatively analyze the effect of factors other than pumping on the listed species, Judge Wanger held that a "quantitative, comparative fault type analysis" was not required to analyze the effects of ocean conditions and ocean harvest, stating: "If the species is in decline and one of the causes is Project operations, the agency has discretion to address and mitigate the resulting harm." [189] The agencies were required, however, to further analyze how the presence of invasive species impacts the listed species, with Judge Wanger directing the agencies to revise their BiOps to explain "the influence of Project operations on the continued presence of exotic species, and how this relates to indirect mortality to the Listed Species."[190] Judge Wanger's decisions upheld the basic conclusion that project water export operations adversely affect both listed species, but the agencies were once again directed to revise the BiOps to reflect both the best available science and consideration of the economic impacts of the imposed flow restrictions on water contractors as required under NEPA.[191]

In accordance with Judge Wanger's holdings in the consolidated cases, the Court entered an Amended Order remanding the BiOps to the agencies without vacatur for further consideration in late December 2010.[192] The Amended Order was subsequently modified

186. Brown, *supra* note 163, at 12 (quoting *In re Consol. Salmonid Cases*, 713 F. Supp. 2d at 959).
187. *The Consol. Delta Smelt Cases*, 717 F. Supp. 2d at 1044.
188. *Id.* at 1070.
189. *In re Consol. Salmonid Cases*, 791 F. Supp. 2d at 857.
190. *Id.* at 870.
191. Brown, *supra* note 163, at 12.
192. Amended Order on Cross-Motions for Summary Judgment, *The Consol. Delta Smelt Cases*, 717 F. Supp. 2d 1021 (No. 1:09-cv-407 OWW), *available at* http://www.gpo.gov:80/fdsys/pkg/USCOURTS

in early 2011, when the parties entered into a settlement agreement specifying operation requirements for the CVP and SWP in the interim period until the agencies issue their revised BiOps, originally required to occur by June 2011.[193] The parties have since agreed to extend the deadline for the reissued BiOps at least twice, with the most recent motion filed December 20, 2012, requesting a three-year extension on all previous deadlines.[194] As such, the conditions specified in the 2011 settlement agreement will remain in effect until such time as the agencies issue new revised BiOps for the listed species. The 2011 settlement agreement maintains pumping restrictions as necessary but also allows the agencies to experiment with flows at more restrictive rates than called for in the RPAs.[195] Implementation of these more restrictive flows has heretofore been unnecessary, however, as favorable hydrologic conditions during 2011 and 2012 have been sufficient to avoid restrictions on exports.[196]

Among the reasons given in support of the parties' 2013 motion to extend the agencies' deadlines to reissue the revised Delta smelt and salmonids BiOps was that an extension would allow agency staff to more effectively concentrate their efforts on completing the Bay-Delta Conservation Plan (BDCP), an ambitious habitat conservation plan currently being developed by state and federal agencies pursuant to Section 10 of the ESA.[197] The purpose of the BDCP is to develop long-term solutions to the water resource and ecosystem issues

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-caed-1_09-cv-00407/pdf/USCOURTS-caed-1_09-cv-00407-57.pdf.

193. Stipulation and [Proposed] Order for Interim Remedy Through June 30, 2011, *The Consol. Delta Smelt Cases*, 717 F. Supp. 2d 1021 (No. 1:09-cv-407 OWW), *available at* http://www.fws.gov/sfbaydelta/documents/FinalSettlementAgreement.pdf.

194. Joint Motion to Extend Remand Schedule and Memorandum in Support, *The Consol. Delta Smelt Cases*, 717 F. Supp. 2d 1021 (No. 1:09-cv-407 OWW), *available at* http://www.fws.gov/sfbaydelta/documents/dn_1080_smelt_joint_motion_to_extend_remand_schedule(1).pdf.

195. Baydelta, *Wanger Recap: Final Judgment for Delta Smelt, Salmon Dispute Cools Off* (April 6, 2011), BAY DELTA BLOG, http://baydelta.wordpress.com/2011/04/06/wanger-recap-final-judgment-for-delta-smelt-salmon-dispute-cools-off/.

196. *Id.*

197. Joint Motion to Extend Remand Schedule and Memorandum in Support, *supra* note 194; *see About the BDCP*, BAY DELTA CONSERVATION PLAN, http://baydeltaconservationplan.com/BDCP PlanningProcess/AboutTheBDCP.aspx (last visited May 20, 2013).

plaguing the Sacramento-San Joaquin Delta, including many of the issues identified by the agencies in the Delta smelt and salmonid litigation, to ensure a safe and reliable water supply for the state of California.[198] The plan is immense in geographic scope and covers sixty species, including eleven species of fish.[199] A draft of the plan proposes to implement it through new infrastructure, altering water management operations and consumptive use, the acquisition and management of natural areas, the management of invasive species, and numerous other actions by local, state, regional, and federal entities.[200] The planning and implementation horizon is fifty years, and the plan contains a comprehensive program for adaptive management.[201]

The BDCP's approach relies on building an alternate method of routing water supply from the Sacramento River to the CVP and SWP, rather than using the Delta as a primary conduit.[202] California Governor Jerry Brown announced at a press conference in July 2012 that the BDCP was considering either the construction of a pair of tunnels to move water beneath the Delta or the construction of a canal that would move water around the Delta.[203] A NMFS administrator present with the Governor at the press conference indicated that NMFS and its parent agency, NOAA, support these options.[204] A Public Draft of the BDCP is scheduled for release in October 2013.[205]

198. *Purpose and Approach*, BAY DELTA CONSERVATION PLAN, http://baydeltaconservationplan.com/BDCPPlanningProcess/AboutTheBDCP/PurposeandApproach.aspx (last visited May 20, 2013).

199. *What Species Will Be Addressed by BDCP?*, BAY DELTA CONSERVATION PLAN, http://baydeltaconservationplan.com/BDCPPlanningProcess/AboutTheBDCP/CoveredSpecies.aspx (last visited May 20, 2013).

200. *Plan Implementation*, BAY DELTA CONSERVATION PLAN (Feb. 2012), http://baydeltaconservationplan.com/Libraries/Dynamic_Document_Library/BDCP_Chapter_6_-_Plan_Implementation_2-29-12.sflb.ashx.

201. *Id.*

202. *Bay Delta Conservation Plan*, ST. WATER CONTRACTORS, http://www.swc.org/issues/bay-delta-conservation-plan (last visited Feb. 1, 2013).

203. Emily Green, *Tunneling Under California's Bay Delta Water Wars*, HIGH COUNTRY NEWS (Aug. 20, 2012), http://www.hcn.org/issues/44.14/tunneling-under-californias-bay-delta-water-wars.

204. *Id.*

205. *Draft Chapters Available for Review*, BAY DELTA CONSERVATION PLAN, http://baydeltaconservationplan.com/Library/DocumentsLandingPage.aspx (last visited May 10, 2013).

The ongoing saga of the Bay Delta illustrates several important points about the ESA and water management. When Judge Wanger issued an order limiting operation of project pumps to protect listed species, he demonstrated anew the potential power of the ESA as a legal instrument.[206] Significant economic impact resulted from the reduced access to water of agricultural and other users.[207] Nevertheless, those interests were forced to reduce their withdrawals for the benefit of aquatic species.[208] The ensuing flurry of litigation, with multiple challenges to the BiOps, illustrated another reality: these issues can become extraordinarily complicated. Even something that a layperson might think is relatively straightforward—determining the population of the affected species—is fraught with uncertainty, especially with small, fragile fish living in turbid waters. Add to that the difficulty of predicting population trends, the uncertainty of population viability determinations, the impossibility of predicting future climate and hydrology, and the influence of such other factors as ocean temperatures, fishing pressures, toxic chemicals, and predatory invasive species. Sorting through all of those variables and distinguishing the smokescreens from the smoking guns takes time and the commitment of scientific resources. Simple but fundamental questions—"How much water does x species require? How can the system be operated and still recover the species?"—seem virtually impossible to answer with finality and certainty. Finally, whatever solutions there might be, provisional as they are,[209] become increasingly complex and expensive to implement. The current attempt to devise a solution, the Bay Delta Conservation Plan,[210] is

206. The Consol. Delta Smelt Cases, 717 F. Supp. 2d 1021, 1071 (E.D. Cal. 2010) *vacated* No. 11-17143 (9th Cir. Aug. 23, 2012).

207. Fein, *supra* note 172, at 508–09.

208. *The Consol. Delta Smelt Cases*, 717 F. Supp. 2d at 1071.

209. The wildlife agencies, recognizing the provisional nature of their knowledge, require habitat conservation plans to include means for adaptive management. Notice of Availability of a Final Addendum to the Handbook for Habitat Conservation Planning and Incidental Take Permitting Process, 65 Fed. Reg. 35242, 35243 (June 1, 2000).

210. *See generally* BAY DELTA CONSERVATION PLAN, http://baydeltaconservationplan.com/Home.aspx (last visited May 20, 2013).

expected to cost anywhere from $23–$47 billion [211] and has engendered significant opposition.[212]

2. Edwards Aquifer, Texas

The Edwards Aquifer, underlying 8,000 square miles of central Texas, discharges to a series of springs that are habitat for five endangered and threatened species and supports surface flows to the Gulf of Mexico.[213] The aquifer is also the water supply for over one million people in the San Antonio area, industrial use, and extensive agricultural development.[214] Concerned that continuing and expanded withdrawals from the aquifer would diminish flows and levels in the springs, and thus adversely affect the listed species, the Sierra Club filed a complaint in 1991 alleging a violation of Section 9 by the U.S. Fish and Wildlife Service.[215] The court determined the FWS had developed a recovery plan but was not taking action to implement it.[216] Among other failures, it had not identified the minimum flows necessary to avoid a take of the species, and it had not worked with local authorities to develop a program for the regulation of groundwater pumping to protect those species.[217] Those failures, the

211. Assuming the tunnels cost $14 billion, the governor has estimated the cost at $23 billion. Dan Bacher, *Governor's Tunnels Expected to Cost $20–$47 Billion, Raise L.A. Water Rates*, INDY BAY (Aug. 7, 2012, 2:05 PM), http://www.indybay.org/newsitems/2012/08/07/18719087.php. Opponents of the plan have estimated the cost at $47 billion, not including $3–$5 billion for environmental restoration costs such as creating new salt marshes and backwater sloughs. *Id.*

212. *See, e.g.*, John Bass, *Scope + Environment + Economy = Sustainability*, DELTA NAT'L PARK BLOG (Aug. 21, 2012), http://www.deltanationalpark.org/blog/view/scope/; *Bay-Delta Conservation Plan: A License to Kill?*, CAL. WATER IMPACT NETWORK, http://www.c-win.org/bay-delta-conservation-plan-process-restoration-search-peripheral-canal.html (last visited Feb. 1, 2013); Cheyenne Cary, *Bay Delta Conservation Plan Could Tunnel California Funds*, INDEP. VOTER NETWORK (Sept. 24, 2012), http://ivn.us/2012/09/24/bay-delta-conservation-plan-could-tunnel-california-funds/; *The Sacramento San Joaquin Delta Crisis*, WATER 4 FISH, http://water4fish.org/delta-crisis/ (last visited Feb. 1, 2013).

213. *See* Matthew Carson Cottingham Miles, *Water Wars: A Discussion of the Edwards Aquifer Water Crisis*, 6 S.C. ENVTL. L.J. 213, 214 (1997); Todd H. Votteler, *The Little Fish that Roared: The Endangered Species Act, State Groundwater Law, and Private Property Rights Collide Over the Texas Edwards Aquifer*, 28 ENVTL. L. 845, 851 (1998).

214. Miles, *supra* note 213, at 216.

215. *See generally* Sierra Club v. Lujan, No. MO-91-CA-069, 1993 WL 151353 (W.D. Tex. Feb. 1, 1993).

216. *Id.* at *19.

217. *Id.* at *21, *32.

court held, constituted a take.[218] The remedies ordered included the identification of necessary stream flows and the implementation of groundwater regulation, preferably by the state.[219]

Texas initially responded by creating the Edwards Aquifer Authority (EAA) and empowering it to establish and enforce maximum groundwater pumping limits.[220] Although the effectiveness of the program has been hampered by continuing conflict over voting rights, federal authority, property rights in water, funding, and regional allocation,[221] it does appear to have begun the process of limiting groundwater withdrawals and, most importantly, has developed a habitat conservation plan and submitted it to the FWS for review and approval.[222] The approved plan covers eight listed species and three that have been petitioned for listing.[223] It includes restrictions and incentives to reduce pumping during droughts, water conservation programs, an Aquifer Storage and Recovery program to provide supplemental water, and habitat restoration and management measures.[224] Whether the EAA has all of the necessary authority to implement the plan, given recent legislative and judicial expansion of private property rights in water, is currently uncertain.[225]

The Section 9 prohibition on take has been asserted more recently in an effort to protect flows from central Texas to the Gulf Coast, where our most iconic endangered species, the whooping crane, winters in the Aransas National Wildlife Refuge.[226] Freshwater flows into the estuary, which are threatened by consumptive uses upstream,

218. *Id.* at *31.
219. *Id.* at *33–35.
220. Edwards Aquifer Authority Act, ch. 626, 1993 Tex. Gen. Laws 2350.
221. *See* Miles, *supra* note 213, at 217, 228; Votteler, *supra* note 213, at 846.
222. Final Environmental Impact Statement and Record of Decision on the Edwards Aquifer Recovery Implementation Program Habitat Conservation Plan for Incidental Take of 11 Species (8 Federally Listed) in 8 Texas Counties, 78 Fed. Reg. 11218 (Feb. 15, 2013); EDWARDS AQUIFER RECOVERY IMPLEMENTATION PROGRAM: HABITAT CONSERVATION PLAN (2012), *available at* http://www.edwardsaquifer.net/pdf/Final_HCP.pdf.
223. EDWARDS AQUIFER RECOVERY IMPLEMENTATION PROGRAM: HABITAT CONSERVATION PLAN, *supra* note 222.
224. *Id.*
225. Catherine Bennett, Note, *Groundwater Rights and the Endangered Species Act: Potential ESA Suits When S.B. 332 Is Implemented*, 42 TEX. ENVTL. L.J. 151, 159 (2012).
226. Complaint, Aransas Project v. Shaw, No. 2:10-cv-00075, 2010 WL 2003720 (S.D. Tex., Mar. 10, 2010).

support Blue crabs and wolfberries, important foods for the cranes.[227] The Aransas Project [228] sued the Texas Commission on Environmental Quality alleging that the commission has harmed cranes by authorizing withdrawals and diversions of surface water.[229] On March 3, 2013 the District Court ruled that the diversion of fresh water authorized by TCEQ had caused a take of whooping cranes.[230] As a remedy, the court ordered the agency to seek an incidental take permit from the U.S. Fish and Wildlife Service, which would require the development and implementation of a Habitat Conservation Plan covering the surface flows from much of central Texas.[231]

These conflicts over Texas water use demonstrate the potential for Section 9 liability to compel improved water management concerning activities that are not federal. State or local regulatory programs may be constrained, thus creating a powerful incentive to negotiate solutions that give more weight to aquatic wildlife habitat. The means for doing so in the case of the Edwards Aquifer, as in the Bay Delta, is a large-scale habitat conservation plan.

DOWNSTREAM: ISSUES AND OUTCOMES

Conflict over the application of the Endangered Species Act to water management activities in the ACF basin could easily extend another generation. When the Corps and the FWS finally complete the updated water control manual and associated biological opinion, it seems almost certain that one party or another will find fault with the results. Unless the Corps commits to providing significantly more water to the Apalachicola, the downstream interests are likely to argue that the obligation to recover listed species, and to provide for their recovery in the management of critical habitat, is not being met. If populations decline, which seems most possible in the case of

227. *Id.*
228. THE ARANSAS PROJECT, http://thearansasproject.org/ (last visited Feb. 1, 2013).
229. Complaint, *supra* note 226, at *1.
230. Aransas Project v. Shaw, No. 2:10-cv-00075, 2013 WL 943780, at *55 (S.D. Tex., Mar. 11, 2013) (Memorandum Order and Verdict of the Court).
231. *Id.* at *51.

some of the listed mussels, it will be difficult to argue that reductions in flow are not contributing to the jeopardy of the species.

In addition to the usual differences of opinion over population status, trends, and causation, the scope of review of the consultation is likely to be contested. Operation of the federal dams has never been comprehensively reviewed under ESA. Each of the consultations since 2006 has taken the existing conditions, including the operations manual in use at that time, as the baseline and evaluated the effects of revisions.[232] In a formal consultation, the FWS is required to evaluate the direct, indirect, and cumulative effects of the action, as well as any interdependent or interrelated activities, on the baseline conditions.[233] If the baseline condition is deemed to be the result of current operations[234] and any consultation is limited to the effects of changes to the baseline condition, the scope of consultation seems to be significantly narrower than the obligations of the Corps. Under the ESA, the Corps is required to ensure that actions it "carries out," for example, operating the ACF system, do not jeopardize listed species or destroy or adversely modify critical habitat.[235] Those obligations apply to all actions for which the Corps has discretion to make decisions consistent with the mandates of the ESA.[236] The scope of that discretion may be very broad. Given that the courts and the General Counsel have only recently determined that the Corps has discretion to supply water from Lake Lanier for consumptive use, it would seem to have

232. The environmental baseline is defined to include

> the past and present impacts of all Federal, State, or private actions and other human activities in the action area, the anticipated impacts of all proposed Federal projects in the action area that have already undergone formal or early Section 7 consultation, and the impact of State or private actions which are contemporaneous with the consultation in process.

50 C.F.R. § 402.02 (2012).

233. 50 C.F.R. §§ 402.02, 402.14(g)(3); *see also* U.S. FISH & WILDLIFE SERV. & NAT'L MARINE FISHERIES SERV., ENDANGERED SPECIES CONSULTATION HANDBOOK: PROCEDURES FOR CONDUCTING CONSULTATION AND CONFERENCE ACTIVITIES UNDER SECTION 7 OF THE ENDANGERED SPECIES ACT (1998).

234. *See* U.S. FISH & WILDLIFE SERV. & NAT'L MARINE FISHERIES SERV., *supra* note 233, at 4-28 to 4-29.

235. *See id.* at 4-19, B-42.

236. Nat'l Ass'n. of Home Builders v. Defenders of Wildlife, 551 U.S. 644, 646 (2007).

discretion to limit those releases as necessary to protect and recover the affected species.[237] The scope of Corps discretion to meet other authorized purposes should also be critically examined.

The scope of the Corps' duty to ensure recovery of listed species will also be debated. Although the ESA states that the purpose of the statute is to conserve species;[238] that all federal agencies are directed to utilize their authorities for conservation;[239] that critical habitat is supposed to provide for the conservation of species;[240] and that conservation is defined as bringing species to the point at which listing is no longer needed,[241] the federal agencies operate as though their mandate is to maintain the status quo. If current operations, diversions, and withdrawals have endangered the listed species and reduced their historic range to the currently designated critical habitat, it seems possible that a court will find that even a continuation of that pattern, much less a further reduction in flow, adversely modifies critical habitat.[242]

One difficult issue will be how to address all of the cumulative effects on flow. Although the Corps can control the discharge from the federal reservoirs, it cannot directly control the inflow, which can be reduced by upstream impoundments, diversions, and withdrawals. As Georgia users contemplate additional storage facilities, the shortstopping of flow could become a significant factor in whether the Corps can meet the needs of downstream species. As the Corps currently operates the system, it makes discharge decisions based on inflow, the stage of the reservoir or the composite storage of the system, and the season. If inflow decreases from any cause, including consumptive use, the rules dictate reductions in discharge, with potential adverse effects on the Apalachicola. Unless the Corps factors such reductions of inflow into the analysis of predicted

237. Similar issues have arisen regarding the operation of water supply projects by the Bureau of Reclamation. *See generally* Reed D. Benson, *Dams, Duties, and Discretion: Bureau of Reclamation Water Project Operations and the Endangered Species Act*, 33 COLUM. J. ENVTL. L. 1, 5–6 (2008).

238. 16 U.S.C. § 1531(b) (2006).

239. *Id.* § 1531(c)(1).

240. *Id.* § 1532(5).

241. *Id.* § 1532(3).

242. *See* cases *supra* note 93.

impacts, one might argue it has failed to consider the cumulative effects on flow.[243] Of course, some of the increased storage might be used to enhance flows during drought conditions, thus benefiting the Apalachicola, or the effects might be insignificant, but the Corps is arguably obligated to consider them and, if they are adverse, to use its discretionary authority to offset their impacts. If storage or inflow drop because of upstream uses, discharges to support downstream consumptive uses might be correspondingly reduced, or storage could be reallocated to support downstream flows.[244] Some of the reductions in inflow may be attributable to dams whose construction the Corps authorizes under regulatory authorities. In some of those cases, the Corps and the FWS would seem obligated to consider their combined effects as interrelated or interdependent actions.[245] Otherwise, the effects would go into the baseline or would be considered in a future consultation. Those consultations, in turn, would be subject to new legal challenges until, at some point, the listed species become so endangered that a finding of jeopardy or adverse modification is unavoidable. If environmental conditions continue to decline in the basin, it is possible that additional species will be listed[246] or allowable limits on take will be exceeded, necessitating a reinitiation of consultation.[247]

243. Cumulative effects are defined as "those effects of future State or private activities, not involving Federal activities, that are reasonably certain to occur within the action area . . . ." 50 C.F.R. § 402.02 (2012).

244. Steve Leitman, *An Evaluation of Equity in Reservoir Management in the ACF Basin*, FLA. WATERSHED J. (Fall 2011), at 1.

245. An interrelated action is one that is "part of a larger action" and dependent on the larger action for its justification. 50 C.F.R. § 402.02. An interdependent action is one that has "no independent utility." *Id.* As currently proposed, for example, the Glades Reservoir would discharge water to Lake Lanier to enhance the supply available for consumptive use from the downstream reservoir; it could not function without the operation of Lanier. *See* GLADES RESERVOIR ENVTL. IMPACT STATEMENT, *supra* note 28.

246. For example, the Apalachicola is habitat for the Barbour's Map Turtle. *See* Complaint, Ctr. for Biological Diversity v. Salazar, No. 1:12-cv-01514 (D.C.D.C. Sept. 13, 2012), *available at* http://www.blm.gov/pgdata/etc/medialib/blm/nv/groundwater_development/snwa/rod/attachment_h/cbd_letter.Par.31099.File.dat/Attachment_1_-_Dkt__1_Complaint-filed.pdf. The Center for Biological Diversity has sued the FWS for failure to take action on a listing petition two years after determining that listing was warranted. *See id.*

247. 50 C.F.R. § 402.16.

A broader conflict can result from projects that have no federal connection, such as groundwater withdrawals or the impoundment of headwater streams beyond the jurisdiction of the Clean Water Act. Downstream interests have a potential remedy, even where there is no federal action, through the enforcement of the prohibition in Section 9 of the ESA against taking listed species.[248] Actually proving a take would be difficult, especially if any harm would be the cumulative result of many actions, but it is possible. Bringing the action against a regulatory body with authority over multiple private actors is probably the most efficient path, as The Aransas Project is attempting to do to protect a whooping crane habitat in Texas.[249] The Edwards Aquifer case study demonstrates the potential of this kind of action to disrupt established patterns of water use to secure protection for listed species.

Whether litigation proceeds under Sections 7, 9, or both, it would be difficult, expensive, and time consuming for all the parties. The most undesirable result would be for the conservation status of listed species to deteriorate as the process grinds on, leading to greater disruption, expense, and risk for any remedies that might ultimately be required. Settlement of the conflict through some collaborative process seems in the interest of all.[250] Sadly, the incentives for negotiation at this stage in the conflict may be too weak. The ACF compact was ultimately abandoned because the parties could not agree and they have shown little inclination even to meet in recent years. Until something dramatic interferes with the current patterns of water management, serious negotiations seem unattainable.

The Endangered Species Act offers some hope of breaking the deadlock. Decisions by the Corps to use the full operational and regulatory authority of the agency to ensure conservation of the listed species in the ACF basin would likely spur negotiations, as would

248. 16 U.S.C. § 1538(a)(1)(C) (2006).

249. *See* THE ARANSAS PROJECT, *supra* note 228.

250. For a discussion of the costs and benefits of collaboration, see John Loomis & Jeffery Ballweber, *Policy Analysis of the Collaborative Upper Colorado River Basin Endangered Fish Recovery Program: Cost Savings or Cost Shifting?*, 52 NAT. RESOURCES J. 337 (2012); Jean R. Sternlight, *Introduction: Collaboration Good or Bad: How Is It Working On The Colorado River*, 8 NEV. L.J. 803 (2008).

more assertive consultation, listing, and enforcement actions by the U.S. Fish and Wildlife Service. Lawsuits by the State of Florida or other downstream interests could initiate another round of battles in the water wars and, depending on the facts and the positions of the federal agencies, could achieve positive results for listed species and, more importantly, could bring the parties to the negotiating table.

But what should be the objectives of negotiation? Settling a specific ESA-related issue regarding the adequacy of consultation, an incidental take statement, or some other particular action would not be sufficient. A broader, collaborative process addressing both human and environmental needs across the entire basin is what is needed. For example, a group of stakeholders representing commercial, agricultural, environmental, and local governmental interests throughout the basin, the ACF Stakeholders group (ACFS),[251] has been working since 2009 to forge a consensus for sustainable water management.[252] The Corps, the U.S. Fish and Wildlife Service, and the states are not currently part of this effort. Although little can be implemented without their participation, it seems equally clear that those governmental agencies could never achieve agreement without the active participation of the ACFS or a similar group of stakeholders. It also seems true that stakeholders will have to participate in the implementation of any agreement. Any comprehensive plan for water management in the ACF basin must be adaptable and subject to modification as conditions change and scientific knowledge grows. Stakeholder involvement is critical to adaptive management.[253]

The legal institutions that could potentially implement a sustainable water management plan are varied. To the extent that such a plan seeks to ensure compliance with the Endangered Species Act, a Habitat Conservation Plan (HCP) should be included. Both the

251. ACF STAKEHOLDERS, http://acfstakeholders.org (last visited May 20, 2013).

252. *Id.* The author has participated in a consortium of universities from Alabama, Georgia, and Florida, advising the ACFS. This article, however, does not represent the views of the ACFS or any other member of The Universities Consortium.

253. For example, one group of practitioners has even formed a Collaborative Adaptive Management Network. *See* COLLABORATIVE ADAPTIVE MANAGEMENT NETWORK, http://www.adaptivemanagement.net/about (last visited May 20, 2013).

Bay Delta and Edwards Aquifer case studies have resulted in proposed HCPs. Although HCPs have been criticized,[254] they are one of the few legal instruments available to establish and enforce, as a matter of federal law, a basin-wide water management plan that could potentially ensure adequate water supplies for upstream interests, while also providing sufficient water for the recovery of listed species. If a flow regime that fulfills those twin goals also ensures enough water to sustain the floodplain and estuaries of the Apalachicola, and such relatively common species as the oyster, shrimp, and crabs on which the economy of the region depends, then the ESA might indeed be said to have saved the Apalachicola.

254. Donald J. Barry, *Opportunity in the Face of Danger: The Pragmatic Development of Habitat Conservation Plans*, 4 HASTINGS W.-NW. J. ENVTL. L. & POL'Y 129 (1998); John Kostyack, *Reshaping Habitat Conservation Plans for Species Recovery: An Introduction to a Series of Articles on Habitat Conservation Plans*, 27 ENVTL. L. 755 (1997); Karin P. Sheldon, *Habitat Conservation Planning: Addressing the Achilles Heel of the Endangered Species Act*, 6 N.Y.U. ENVTL. L.J. 279 (1998); Robert D. Thornton, *Habitat Conservation Plans: Frayed Safety Nets or Creative Partnerships*, 16 NAT. RESOURCES & ENV'T 94 (2001); Jennifer Jester, Comment, *Habitat Conservation Plans Under Section 10 of the Endangered Species Act: The Alabama Beach Mouse and the Unfulfilled Mandate of Species Recovery*, 26 B.C. ENVTL. AFF. L. REV. 131 (1998).