THE FLOODING OF AN AMERICAN CANAAN: THE ENDANGERED SPECIES ACT AND THE VALUE OF WILDLIFE

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In November of 1979, the Tennessee Valley Authority (TVA) lowered the floodgates of its Tellico Dam, thereby converting a substantial portion of the Little Tennessee River into a lake.[1] Although the closure itself took less than one hour,[2] the TVA,[3] a wholly-owned public corporation of the United States, began construction of the Tellico Dam and Reservior Project in 1967.[4] The project's twelve-year construction period was attributed to several reasons. One of the main reasons for this delay was the discovery, in the summer of 1973, of a previously unknown species of perch—the snail darter.[5]

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1. The Little Tennessee River originates in the mountains of northern Georgia and flows through North Carolina into Tennessee, until it joins the Big Tennessee River near Knoxville. Closure of the Tellico Dam would change the lower 33 miles of the Little Tennessee into a 16,000 acre lake. For a description of the lower segment of the Little Tennessee prior to closure, see Environmental Defense Fund v. TVA, 339 F. Supp. 806, 808 (E.D. Tenn. 1972).

2. [1979] 10 ENVIR. REP. (BNA) 1604. According to a TVA spokesperson, it would take three to four weeks for the reservoir behind the dam to reach its winter depth of approximately 807 feet. *Id.*

3. The Tennessee Valley Authority Act of 1933 established the TVA. 16 U.S.C. §§ 831-831dd (1976).

4. Congress appropriated initial funds for the project in the Public Works Appropriations Act of 1967, Pub. L. No. 89-689, 80 Stat. 1002, 1014 (1966).

5. The discoverer, Dr. David Etnier, a University of Tennessee ichthyologist, scientifically describes the snail darter, *Percina (Imostoma) Tanasi*, in the 88 PROCEEDINGS OF THE BIOLOGICAL SOCIETY OF WASHINGTON, 469-88 (Jan. 22, 1976). The

This three-inch, tannish-colored fish, whose total population was estimated to be in the range 10,000 to 15,000, attracted the attention and support of environmentalists, national conservation groups, and local citizens. Under the aegis of the Endangered Species Act of 1973[6] (ESA), concerned persons initiated a suit and ultimately convinced the United States Supreme Court to enjoin the project.[7] In response, TVA supporters in Congress[8] quickly proposed and gained passage of legislation[9] which increased the flexibility in the ESA. These 1978 amendments[10] allowed for case-by-case exemptions from the ESA by a cabinet-level Endangered Species Committee (ESC).[11] Nevertheless, members of the ESC voted unanimously to deny an exemption to the Tellico Dam.[12] Tellico supporters then immediately introduced legislation in Congress to abolish the ESC and to exempt Tellico from the ESA.[13] President Carter further aided the Tellico's

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snail darter is a sub-species of the approximately 130 known species of darters. In Tennessee alone, 85 to 90 species of darters exist. Scientists are discovering and classifying new species of darters at the rate of about one per year. *See* TVA v. Hill, 437 U.S. 153, 159 & n.7 (1978).

6. 16 U.S.C. §§ 1531-1543 (1976) (amended 1978).

7. TVA v. Hill, 437 U.S. 153 (1978).

8. Notably, Sen. Baker (R.-Tenn.) and Sen. Culver (D.-Iowa).

9. Senators Baker and Culver proposed an amendment that passed by a 94-3 margin on July 19, 1978. S.2899, 95th Cong., 2d Sess., 124 CONG. REC. S11158-60 (daily ed. July 19, 1978). A similar bill passed the House of Representatives by a margin of 384-12. H.R. 14104, 95th Cong., 2d Sess., 124 CONG. REC. H12877-80 (daily ed. Oct. 14, 1978). For a full discussion of these bills, see Note, *Endangered Species Act Amendments of 1978: A Congressional Response to Tennessee Valley Authority v. Hill*, 5 COLUM. J. ENV. L. 283 (1979).

10. Endangered Species Act Amendments of 1978, Pub. L. No. 96-632, 92 Stat. 3751-3767 (amending 16 U.S.C. §§ 1531-1543 (1976)).

11. 16 U.S.C. § 1536(g)(7) (Supp. II 1978).

12. *See* Wall St. J., Jan. 24, 1979, at 2, col. 3. In denying the exemption, one of the committee members (Council of Economic Advisors Chairman) Charles Schultze said, "[t]he project is 95% complete, and if one takes just the cost of finishing it against the benefits, and does it properly, it doesn't pay, which says something about the original design." [1979] 9 ENVIR. REP. (BNA) 1776. In August of 1978, TVA published a report containing cost-benefit analyses for the originally designed Tellico Project as well as various alternative schemes. *See* TENNESSEE VALLEY AUTHORITY, ALTERNATIVES FOR COMPLETING THE TELLICO PROJECT (1978) [hereinafter cited as ALTERNATIVES]. It should be noted that the ESC based its decision on the calculations contained in the TVA report. The Senate Committee On Environment and Public Works has subsequently approved the ESC's decision. *See* S. REP. No. 151, 96th Cong., 1st Sess. 8 (1979).

13. Sen. Baker, who was particularly upset by the ESC's denial of exemption, stated: "If that's all the good the committee process can do, to put us right back where

cause by signing a huge energy and water development appropriations act.[14] A rider to the Act authorized the TVA to complete Tellico notwithstanding the ESA or any other law.[15]

President Carter's reluctance to veto an entire energy appropriations measure for the sake of a "useless minnow" is perhaps politically excusable.[16] What is somewhat more difficult to justify is the unfortunate fact that, despite sound decisions by both the Supreme Court and the ESC, the darter's future is now uncertain. This Note will trace the judicial and legislative history of the ESA along with its relation to Tellico and the snail darter. Part I examines the 1973 Act and its accompanying litigation. Part II explores TVA's attempt to justify completion of the Tellico Project and examines two critical studies—one by the General Accounting Office (GAO) and one by the University of Tennessee. Part III discusses congressional reaction to *TVA v. Hill*, some crucial changes brought about by the 1978 and 1979 ESA amendments, and recent judicial interpretations of those amendments. The Note will conclude with an assessment of the future for both the snail darter and the ESA.

I. THE ENDANGERED SPECIES ACT OF 1973 AND ACCOMPANYING LITIGATION

A. *The Endangered Species Act of 1973*

The turn of the century marked the beginning of federal efforts to prevent the extinction of wildlife caused by human encroachment on the natural environment. Congressional concern over the extermination of the passenger pigeon[17] led to the passage of the Lacey Act[18] in

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we started from, we might as well save the time and expense. I will introduce legislation to abolish the [C]ommittee and exempt the Tellico Dam from the provisions of the Act." [1979] 9 ENVIR. REP. (BNA) 1777. Baker went on to introduce two bills, S.242 & S.243, 96th Cong., 1st Sess. (1979). Sen. Sasser (D.-Tenn.) also introduced a bill to exempt Tellico. S.298, 96th Cong., 1st Sess. (1979).

14. Energy and Water Development Appropriation Act, 1980, Pub. L. No. 96-69, 43 Stat. 437-51, (Sept. 25, 1979).

15. Rep. Duncan (R.-Tenn.) introduced the rider as H.R. 4388, 96th Cong., 2d Sess. (1979).

16. Coupled with the fact that an election was approaching, the President possibly may have refrained from vetoing the appropriations measure in return for congressional reauthorization of the ESA through fiscal year 1982.

17. *See* 33 CONG. REC. 4871 (1900) (remarks of Rep. Lacey).

18. 16 U.S.C. §§ 701-715s (1976) (affords protection to insectivorous birds and various species of migratory game).

1900. Many of the federal wildlife laws which followed the Lacey Act, however, were limited in terms of the nature of the protection afforded and the range of species protected.[19] Congress first attempted to provide comprehensive protection for endangered species in the Endangered Species Conservation Act of 1966.[20] This act addressed the problem of habitat destruction within the National Wildlife Refuge System by providing a program for the conservation of selected native fish and wildlife species threatened with extinction.[21] The 1966 Act, however, excluded plant species from its protection and provided no plan for international cooperation.[22] Moreover, it did not regulate interstate commerce in endangered species and placed no restriction on their taking.[23] Three years later, Congress passed the Endangered Species Conservation Act of 1969.[24] The 1969 Act authorized the Secretary of the Interior to formulate and maintain a list of species threatened with worldwide extinction.[25] The Act also prohibited importation of endangered species into this country, except for certain limited purposes.[26] Like its 1966 predecessor, however, it failed to provide protection to plant species. In addition, it allowed the taking of endangered species in areas not ac-

19. *See, e.g.*, Migratory Bird Conservation Act of 1929, 16 U.S.C. §§ 715 *et seq.* (1976); Bald and Golden Eagle Protection Act, *id.* §§ 668-668ii (1976); *id.* §§ 1157-1187 (1976) (fur seals and sea otters); *id.* §§ 1331-1340 (1976) (protects wild burros and horses from capture and killing). For a fine study of federal wildlife legislation, see M. BEAN, THE EVOLUTION OF NATIONAL WILDLIFE LAW (1977). *See also* Palmer, *Endangered Species Protection: A History of Congressional Action*, 4 ENVT'L L. AFF. 255 (1975); Comment, *Vanishing Wildlife and Federal Protective Efforts*, 1 ECOLOGY L.Q. 520 (1971).

20. Act of October 15, 1966, Pub. L. No. 89-669, 80 Stat. 926 (1966) (repealed by Pub. L. No. 93-205, 87 Stat. 903 (1973)).

21. *Id.* § 2(a). The 1966 Act authorized the Secretary of the Interior to determine and designate those species threatened with extinction and to utilize his authority under existing laws to protect those species. *See* M. BEAN, *supra* note 19, at 371-74.

22. *See* Palmer, *supra* note 19.

23. *See* M. BEAN, *supra* note 19, at 374 & n.12.

24. Pub. L. No. 91-135, 83 Stat. 275 (1969) (codified at 16 U.S.C. § 668cc-1 to cc-5 (1970)) (repealed 1973).

25. *Id.* § 3(a).

26. *Id.* § 2. The exceptions are contained in *id.* § 3(b) ("to minimize undue economic hardship," the Secretary could authorize a contract to continue for up to one year, which imported "appropriate" quantities of endangered species prior to the determination that the species were endangered.); *id.* § 3(c) (the Secretary could permit importation of endangered species for zoological, educational, scientific, and preservation purposes).

quired by the Secretary of the Interior.[27] Despite the advances made by the 1966 and 1969 Acts, by 1972 it became apparent that extant legislation did not provide the management tools necessary to act early enough to save a vanishing species.[28]

The acknowledgment that previous laws provided too little protection, too late, was an implicit recognition of a reversibility problem.[29] Many species cannot be saved if their total population drops below a certain critical number or if other environmental factors exceed certain limits. The point of irreversibility varies among species and depends upon such factors as genetic vulnerability, area characteristics, and the nature of competing species.[30] The numerical population of a species is not *per se* a reliable criterion of endangerment.[31] A key factor, though, is the vulnerability of a particular species.[32] In 1975,

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27. Section 12(c) of the 1969 Act expanded the acquisition powers that the 1966 Act had initially conferred upon the Secretary of the Interior.

28. *The President's 1972 Environmental Program*, 8 WEEKLY COMP. OF PRES. DOC. 218, 223-24 (Feb. 8, 1972).

29. For a discussion of the problem of reversibility, *see* Ramsay, *Priorities in Species Preservation*, 5 ENVL'T AFF. 595 (1976).

30. *Id.* at 603-04. A species' population does indeed renew itself as long as conditions within its "ecosystem" (a community of living organisms and the physical environment with which they interact) remain suitable for its reproduction and growth. If conditions become unsuitable as a result of pollution, habitat destruction, or activities of other species, the renewability of a population may be lost. Dassman, *Wildlife Ecosystems*, in WILDLIFE AND AMERICA 23 (H. Brokaw ed. 1978) [hereinafter cited as *Ecosystems*].

31. *See* Ramsay, *supra* note 29, at 598. For example, the spotted bat (*Euderma Maculatum*) is rare, but is in no danger of extinction. It may always have been rare, and may survive indefinitely. *See* U.S. DEPT. OF THE INTERIOR, FISH AND WILDLIFE SERVICE, THREATENED WILDLIFE OF THE UNITED STATES 215 (1973). On the other hand, the sperm whale and the brown pelican, while numerous, face sufficient danger from pollution of their habitats and so may be threatened. *Id.* at V. The Northern Elephant Seal is a particularly telling example of this phenomenon. The species, exploited to the brink of extinction earlier this century, has made a rapid recovery under federal protection. Nevertheless, recent research raises an ominous possibility. This species' population declined to such a level that present stocks may be "genetically homogeneous" and may lack the resilience necessary to face environmental change. *See* Norris, *Marine Mammals and Man*, in WILDLIFE AND AMERICA 322 (H. Brokaw ed. 1978) (*citing* Bonnel and Selander, *Elephant Seals: Genetic Variation and Near Extinction*, 184 SCIENCE 908-909 (1974)). *See also* Ripley & Lovejoy, *Threatened and Endangered Species*, in WILDLIFE AND AMERICA 368 (H. Brokaw ed. (1978) [hereinafter cited as *Threatened and Endangered Species*] (although the current population of Northern Elephant Seals is about 30,000, the seals are said to have the genetic variability and environmental flexibility of a population numbering only twenty).

32. The problem of estimating vulnerability is rather complicated because preservation efforts often begin "after the fact." A species may simply fail to recover. For

the Council on Environmental Quality (CEQ) predicted that extinction would threaten as many as ten percent of all existing plant and animal species within the next generation.[33] The CEQ has recently stated that by the year 2000, the figure may increase to fifteen to twenty percent.[34]

Congressional hearings[35] and reports[36] which preceded the passage of the ESA[37] indicate that Congress was well aware of the importance of species protection and preservation. Section 2(b) of the ESA

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genetic reasons, species tend to become *more* vulnerable as their numbers diminish. For example, as its population dwindles, a species' gene pool (the aggregate of genes possessed by the entire population) becomes less diverse. One consequence is that survival traits may yield to harmful "recessive" traits existing within the gene pool. Another consequence is "hybridization", the interbreeding of two distinct species. This phenomenon increases as populations become smaller and the number of genes controlling hybrid-suppression mechanisms diminish. These hybrid-suppression mechanisms are usually manifested behaviorally in large populations by discriminatory treatment during times of breeding. Normally, members of a large population will refuse to breed with hybrids because the latter invariably exhibit different response patterns or timing. If the population of the "pure" species decreases significantly, hybrids may take advantage of the scarcity of mates in the "pure" population and so bypass the hybrid-suppression mechanism. *See* Ramsey, *supra*, note 29, at 598-99 & n.25. Recently, the Secretary of the Interior has classified the Leon Springs Pupfish as endangered. 45 Fed. Reg. 54678 (1980). The population of the pupfish has declined because of hybridization with a closely related species. *Id.*

33. *See* COUNCIL ON ENVT'L QUALITY, ENVIRONMENTAL QUALITY—1975, 408 (1975).

34. *See* COUNCIL ON ENVT'L QUALITY, THE GLOBAL 2000 REPORT TO THE PRESIDENT: ENTERING THE TWENTY-FIRST CENTURY 37 (1980). An estimate prepared for this Study suggests that between 500,000 and 2,000,000 species could be extinguished by the year 2000 mainly because of habitat destruction. *Id.* at 328-31. Although most of the projected extinctions will result from clearing and degrading tropical forests, approximately 274 freshwater vertebrate species are threatened because of the profound effects of damming and channelization on freshwater ecosystems. *Id.* at 328-31, 344. In addition, some of the most important losses will involve species, subspecies, and varieties of cereal grains. *Id.* at 38.

35. *See, e.g.*, *Hearings on Endangered Species Conservation Act of 1972* before a Subcommittee of the Senate Committee on Commerce, 92nd Cong., 2d Sess. 124 (1972) (statement of Sen. Cranston).

36. *See, e.g.*, H.R. REP. No. 412, 93rd Cong., 1st Sess. 4, 5 (1973); S. REP. No. 307, 93rd Cong., 1st Sess. 2 (1973); *reprinted in* [1973] U.S. CODE CONG. & AD. NEWS 2989. *See also Ecosystems*, *supra* note 30, at 26 (each species is a storehouse of irreplaceable genetic material whose loss we cannot afford); *Threatened and Endangered Species*, *supra* note 31, at 367 (we are far too ignorant of the biology of our planet to state which species may ultimately have great practical value and which not).

37. Pub. L. No. 93-205, 87 Stat. 884 (1973) (current version at 16 U.S.C. §§ 1531-1542 (Supp. III 1979).

distilled these concerns by stating the purposes of the Act. These purposes are: providing a means whereby the ecosystems upon which endangered and threatened species depend may be conserved; and providing a program for the conservation of such endangered and threatened species.[38] Moreover, Section 2(c) issued a strong endangered species preservation mandate to all federal agencies, not limited to those traditionally associated with wildlife management.[39]

Section 7 of the ESA[40] provided the substantive basis for imple-

38. 16 U.S.C. § 1531(b) (Supp. III 1979) (the 1978 or 1979 amendments did not affect the ESA of 1973's statement of purposes).

39. The policy statement of the ESA (also unaffected by the 1978 and 1979 amendments) provides that "all Federal departments and agencies shall seek to conserve endangered species and threatened species and shall utilize their authorities in furtherance of the purposes of this Act." 16 U.S.C. § 1531(c) (Supp. III 1979). Significantly, this policy statement is much stronger than that of the 1969 Act. The 1969 Act declared that congressional policy is "to protect species of native fish and wildlife . . . that are threatened with extinction, and, *insofar as is practicable and consistent* with the primary purposes of such bureaus, agencies, and services." 16 U.S.C. § 668aa(b) (repealed 1973) (emphasis added). Federal agencies tended to interpret "insofar as is practicable" as a congressional directive merely to *consider* the protection of endangered species. *See* Wood, *Section 7 of the Endangered Species Act of 1973: A Significant Restriction for All Federal Activities*, [1975] 5 ENVIR. L. REP. (E.L.J.) 50189.

The policy statement of the ESA is further strengthened by the Act's definition of the term "conserve:" "to use . . . all methods and procedures which are necessary to bring any endangered species or threatened species to the point at which the measures provided pursuant to this act are no longer necessary." 16 U.S.C. § 1532(3) (Supp. III 1979). An "endangered species" is "any species which is in danger of extinction throughout all or a significant portion of its range." *Id.* § 1532(b). A "threatened species" is "any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range. . . ." *Id.* § 1532(20). Unlike its predecessors, the ESA (and its current amended version) protects both plant and animal species. For a section-by-section analysis of the ESA, see Coggins, *Conserving Wildlife Resources: An Overview of the Endangered Species Act of 1973*, 51 N. DAK. L. REV. 315 (1974-75).

40. 16 U.S.C. § 1536 (1976) (amended 1978, 1980). The text of the 1976 version was as follows:

> All federal departments and agencies shall, in consultation with and with the assistance of the Secretary, utilize their authorities in furtherance of the purposes of this chapter by carrying out programs for the conservation of endangered species and threatened species . . . and by taking such action necessary to insure that actions authorized, funded, or carried out by them do not jeopardize the continued existence of such endangered species and threatened species or result in the destruction or modification of habitat of such species which is determined by the Secretary after consultation as appropriate with the affected States, to be critical.

Id. The ESA of 1973 (as well as the current version) is administered by the Secretaries of the Interior (who conducts consultations with regard to land-dwelling species)

menting this mandate. Section 7 required all federal agencies and departments to consult with the Secretary of the Interior to insure that their programs did not jeopardize, endanger, or threaten any species. Three important aspects comprise this section. First, no provision exists for balancing the interests of the federal agency against the species: federal actions cannot jeopardize the existence of an endangered or threatened species.[41] Second, all federal agencies must consult with the appropriate Secretary[42] concerning the effects of agency actions or projects upon a species' critical habitat. Third, the Secretary of the Interior is responsible for designating a species' critical habitat.[43]

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and Commerce (who conducts consultations with regard to marine species). Furthermore, the Secretary of the Interior must compile, publish, and maintain a list, in the Code of Federal Regulations, of all species receiving the "endangered" or "threatened" classifications. For the most recent list, *see* 50 C.F.R. § 17.11(h) (1980).

Section 7 has attracted a great deal of scholarly attention. Discussions concerning the tensions between § 7 and federal agency actions include: Note, *The Affirmative Duty of Federal Dep'ts and Agencies to Restore Endangered and Threatened Species*, 6 HOFSTRA L. REV. 1067 (1978) (argues that § 7 requires federal agencies to preserve, protect, and restore endangered species until the species are no longer endangered or threatened); Note, *Obligations of Federal Agencies Under Section 7 of the Endangered Species Act of 1973*, 28 STAN. L. REV. 1247 (1976). *See also* Wood, *supra* note 39. For an excellent discussion of potential problems under the tenth amendment, see Note, *Endangered Species Act: Constitutional Tensions and Regulatory Discord*, 4 COLUM. J. OF ENVT'L L. 97 (1977-78).

41. Moreover, under § 7, federal agencies must provide for the conservation of endangered and threatened species. Conservation is defined in § 4(3) of the ESA of 1973 as "the use of all methods and procedures which are necessary to bring any endangered species or threatened species to the point at which the measures provided pursuant to this chapter are no longer necessary." 16 U.S.C. § 1532(3) (Supp. III 1979). Arguably then, federal agencies must restore a species to a point where removal from the endangered or threatened list might be reasonable. *See* Note, *The Affirmative Duty of Federal Dep'ts and Agencies to Restore Endangered and Threatened Species*, 6 HOFSTRA L. REV. 1067 (1978).

42. *See* note 40 *supra*.

43. The ESA did not define the term "critical habitat;" however, the Secretary of the Interior interpreted it as follows:

> 'Critical habitat' means any air, land, or water area (exclusive of those existing man-made structures or settlements which are not necessary to the survival and recovery of a listed species) and constituent elements thereof, the loss of which would appreciably decrease the likelihood of the survival and recovery of a listed species or a distinct segment of its population. The constituent elements of critical habitat include, but are not limited to: physical structures and topography, biota, climate, human activity, and the quality and chemical content of land, water, and air. Critical habitat may represent any portion of the present habitat of a listed species and may include additional areas for reasonable population expansion.

Part of the mandatory language of Section 7[44] provides for a consultation process[45] whereby federal agencies must confer with the Department of the Interior (through the Fish and Wildlife Service), or with the Department of Commerce (through the National Marine Fisheries Service). The fact that only three of 4,500 federal projects which conflicted with the ESA resulted in litigation points to the success of the consultation process.[46] *TVA v. Hill*,[47] the most important

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50 C.F.R. § 402.02 (1978). The 1978 Amendments to the ESA define critical habitat as:

(i) the specific areas within the geographical area occupied by the species, at the time it is listed [by the Secretary], on which are found those physical or biological features (I) essential to the conservation of the species and (II) which may require special management considerations or protection; and

(ii) specific areas outside the geographical area occupied by the species at the time it is listed [by the Secretary] upon a determination by the Secretary that such areas are essential for the conservation of the species.

16 U.S.C. § 1532(5)(A) (Supp. III 1979). Thus, it appears that if a species' critical habitat is to include "additional areas for reasonable population expansion," the Secretary must determine that such areas are "essential for the conservation" of that species.

44. The strength of the language of § 7 becomes clear when contrasted with other environmental statutes. For example, the environmental impact statement (EIS) requirement under the National Environmental Policy Act (NEPA), 42 U.S.C. § 4332(2)(C) (1976), imposes a duty on federal agencies to include environmental considerations in their decisions. But NEPA only requires that the EIS be prepared "to the fullest extent possible." *Id.* § 4332 (1976). Section 4(f) of the Department of Transportation Act, 49 U.S.C. § 1653(f) (1976), prohibits the use of public parks, recreational areas, or wildlife refuges for highway projects unless "there is no feasible and prudent alternative" and the project includes "all possible planning to minimize harm" to these areas. This language is substantially less strict than that found in § 7 of the ESA.

45. *See* 50 C.F.R. § 402 (1980). Initially, federal agencies must review their programs for any possible effect on listed species and their critical habitat. Should such an effect be anticipated, the agency must request consultation with FWS or NMFS (although FWS and NMFS may themselves request consultation). FWS and NMFS engage in a threshold examination and issue a biological opinion within 60 days as to whether a § 7 conflict exists. If the answer is negative, the consultation process is over. If the answer is affirmative, FWS or NMFS may make recommendations for modifying the project. Regardless of the consulting agency's opinion as to the project's effects, the action agency has the final decision whether to proceed with its project. If the action agency chooses to proceed in the face of an adverse determination by FWS or NMFS, the Departments of the Interior or Commerce may bring suit to enforce the ESA. 16 U.S.C. § 1540(e)(1) (Supp. III 1979). Alternatively, the ESA authorizes a citizen suit against the action agency to enforce § 7. *Id.* at § 1540(g).

46. In the first of these cases, Sierra Club v. Froehlke, 534 F.2d 1289 (8th Cir. 1976), *affirming* 392 F. Supp 130 (E.D. Mo. 1975), plaintiffs argued that construction by the U.S. Army Corps of Engineers of the Meramec Park Lake Dam would jeopardize the endangered Indiana Bat by destroying its habitat. The Secretary of the

of these conflict cases, pitted the endangered snail darter against a partially completed federal water resource project.

Interior had not yet made a definitive determination of the bat's critical habitat. The Secretary had urged, however, a moratorium on the project. *Id.* at 1305. Pursuant to this recommendation, the Corps conducted a survey of the bat population in the project area and conceded that the project could adversely affect the species. Nevertheless, the Corps decided to proceed with the project. *See* Wood, *supra* note 39, at 50194. Although plaintiff's expert witness testified to the contrary, 392 F. Supp. at 144, the district court found no evidence that the project would jeopardize the bat's existence. The court of appeals affirmed, holding that § 7 of the ESA required only consultation with the Secretary, not acquiescence in his decision. 534 F.2d at 1303. For a critique of *Froehlke*, see Note, *The Endangered Species Act of 1973: Is the Statute Itself Endangered?* 6 ENVT'L AFF. 511, 520-23 (1977) (Eighth Circuit employed a NEPA-like balancing test not authorized by Section 7 of the ESA).

The second of these cases was National Wildlife Fed'n v. Coleman, 400 F. Supp. 705 (S.D. Miss. 1975), *rev'd*, 529 F.2d 359 (5th Cir. 1976), *cert. denied sub nom.*, Boteler v. National Wildlife Fed'n, 429 U.S. 979 (1976). In *Coleman*, a conservation group sought to enjoin the construction of a section of interstate highway which would traverse the habitat of the Mississippi Sandhill Crane. The crane was listed as an endangered species, and its total population (approximately 40 birds) lived within the proposed highway site. Although the Department of the Interior had officially requested modifications, federal highway officials approved the project without alteration. *Id.* at 707. The district court dismissed the complaint, holding that the Secretary of Transportation had "adequately considered" the danger to the cranes. *Id.* at 711-12. The Fifth Circuit reversed, declaring that the district court had misconstrued the mandate of § 7. 529 F.2d at 373. The court of appeals found that the federal agency had failed to comply with its duty under § 7 to insure that its actions would not jeopardize the existence of the species or destroy its critical habitat. *Id.* at 371. The court then enjoined construction of the project pending further consultation between the project agency and the Secretary of the Interior. Pursuant to these consultations, the highway was ultimately rerouted to avoid the crane's habitat. For more detailed discussions of *Froehlke* and *Coleman*, see Note, *The Endangered Species Act of 1973: Is the Statute Itself Endangered?*, 6 ENVT'L AFF. 511 (1977); Comment, *Implementing § 7 of the Endangered Species Act of 1973: First Notices from the Courts*, [1976] 6 ENVIR. L. REP. (E.L.I.) 10120.

Although *Froehlke* and *Coleman* present an apparent conflict in judicial enforcement of § 7, their resolution ultimately turns on the presence or absence of an official determination of an endangered species' critical habitat. In *Froehlke*, the Secretary of the Interior had not determined the critical habitat for the Indiana Bat. Without such a determination, the Secretary's opposition to the project was taken to be somewhat speculative. In *Coleman*, on the other hand, the Fifth Circuit was able to afford more weight to the Secretary's opposition to the project simply because that opposition was based on a prior determination of critical habitat. 529 F.2d 359, 366-67.

The Secretary's judgment as to whether a project will violate § 7 may be determinative in suits to enforce the ESA. Nevertheless, the ultimate decision-making power rests with the project agency to proceed with the project, even in the face of the Secretary's opposition. *See* National Wildlife Fed'n. v. Coleman, 529 F.2d 359, 371 (5th Cir. 1976), *cert. denied sub nom.*, Boteler v. National Wildlife Fed'n, 429 U.S. 979 (1976); Sierra Club v. Froehlke, 534 F.2d 1289, 1303 (8th Cir. 1976). The Secretary's regulations concur. *See* note 45 *supra*. The Supreme Court and the Congress have

B. TVA v. Hill

Initiated in 1967, the TVA's Tellico Project was a multipurpose regional development project designed primarily to stimulate shoreline development, generate electricity,[48] provide flatwater recreation and flood control, and improve economic conditions.[49] The crucial aspect of the project, though not the most costly,[50] was a concrete and earthen dam on the Little Tennessee River. When fully operational, the dam would impound water covering approximately 16,500 acres, thereby converting the river's shallow, swift-flowing waters into a deep reservoir over thirty miles in length. Opposition to the project centered primarily on the dam and emphasized the potential loss of the valley's rich farmland, river resources, and several Cherokee Indian archaeological sites.[51] After unsuccessful attempts to urge the

placed important constraints on such a decision to proceed. *See* notes 44-46 and accompanying text, *supra*, and note 47 and accompanying text *infra*. *See also* notes 111-65 and accompanying text *infra*.

47. 437 U.S. 153 (1978).

48. The Tellico Dam and Reservoir Project contains no electric generators; however, an interreservoir canal connecting Tellico reservoir with a nearby generating plant augments the latter's capactiy. *See* Brief for Respondent at 5, TVA v. Hill, 437 U.S. 153 (1978). Using TVA's figures, the canal flowage could produce 22 megawatts of power capacity. As of 1978, the entire TVA system (68 dams throughout the Tennessee Valley—22 within 60 miles of Tellico) was capable of producing 28,223 megawatts. *See Endangered Species Act Oversight: Hearings Before the Subcommittee on Resource Protection of the Senate Committee.on Environment and Public Works*, 95th Cong., 1st Sess., 869, 872-73 (material supplied to witnesses by TVA) [hereinafter cited as *ESA Oversight*].

49. *See Hearings on Public Works for Power and Energy Research Appropriation Bill, 1977, Before a Subcommittee of the House Committee on Appropriations*, 94th Cong., 2d Sess., pt. 5, 261 (1976) (statement of TVA representative). TVA, unlike other federal agencies, is self-authorizing in its projects; it can undertake such actions without specific congressional approval, provided that the funds are included in its yearly lump sum grant. *See* Tennessee Valley Authority Act of 1933, 16 U.S.C. §§ 831(c), (Z) (1976). This represents a crucial factor in the subsequent litigation involving the ESA. The consequence of TVA's special situation is obvious: congressional decision-making with respect to the construction and progress of particular TVA projects is largely confined to the *appropriations* process. *See* Brief for Petitioner at n.l, TVA v. Hill, 437 U.S. 153 (1978).

50. *See* Brief for Respondents at 5-6, TVA v. Hill, 437 U.S. 153 (1978). The dam itself was scheduled to be completed in January, 1977. As of March 31, 1976, the project's total estimated cost was $100 million; $17.4 million was allocated to the main dam, spillway, and auxiliary dams. Twenty-six million dollars were allocated for land acquisition, and $35 million for "reservior adjustments, clearing, and rim treatment." *See* Appendix 499, TVA v. Hill, 437 U.S. 153 (1973).

51. *See* Brief for Respondent at 7, TVA v. Hill, 437 U.S. 153 (1978). In 1971,

TVA to consider non-impoundment alternatives, local citizens and national conservation groups brought suit. They claimed that TVA had failed to comply with the environmental impact statement (EIS) requirement of the National Environmental Policy Act (NEPA). The district court enjoined the dam's completion pending the filing of an EIS.[52] The injunction remained in effect for some twenty-one months until the district court concluded in 1973 that TVA's final EIS for Tellico complied with NEPA.[53]

In August, 1973 (a few months prior to the district court's dissolution of the NEPA injunction), Dr. David A. Etnier, a University of Tennessee scientist, discovered the snail darter in the area around Coytee Springs, about seven miles from the mouth of the Little Tennessee.[54] Dr. Etnier's work in the area led to a proposal for a TVA-funded research on the snail darter.[55] Soon thereafter, Congress enacted the ESA,[56] and TVA entered into a contract with the University of Tennessee to study the snail darter's life history and habitat. The purpose of the study was to investigate the possibility of transplanting that species into other rivers.[57] In October, 1975, the Secretary of the Interior formally listed the snail darter as an endangered species.[58]

Tennessee Governor Winfield Dunn officially requested the TVA to modify the project for river-based development in order to avoid loss of the farmland. The TVA rejected Governor Dunn's request. *Id.* at 7 & n.9.

52. Environmental Defense Fund v. TVA, 339 F. Supp. 806 (E.D. Tenn. N.D. 1972), *aff'd*, 468 F.2d 1164 (6th Cir. 1972).

53. Environmental Defense Fund v. TVA, 371 F. Supp. 1004 (E.D. Tenn. 1973), *aff'd*, 492 F.2d 466 (6th Cir. 1974).

54. Coytee Springs is approximately six miles upriver from the site of the Tellico Dam, thus well within the area which would be flooded by the reservoir.

55. *See* Brief for Respondents at 10 and n.11, TVA v. Hill, 437 U.S. 153 (1978).

56. Pub. L. No. 93-205, 87 Stat. 884 (current version at 16 U.S.C. § 1531 *et seq.* (1976).

57. *See* Letter from Thomas H. Ripley, Director of TVA's Division of Forestry, Fisheries, and Wildlife Development to Kenneth Black, Regional Director of FWS, *reproduced in* Appendix 540, at 547, TVA v. Hill, 437 U.S. 153 (1978). The objective of the study was "to conserve and afford opportunities for the perpetuation of the snail darter." *Id.* The program would involve six major activities: determination of life history and ecology, population estimates, habitat description, transplantation to new habitats, evaluation of transplants, and range and distribution studies. *Id.* Mr. Ripley went on to say: "[T]o achieve the program objective, TVA considers an attempt to establish the snail darter in other waters through transplantation *to be the most reasonable course of action for conservation of the species*." *Id.* at 548 (emphasis added). Throughout the history of the *Hill* litigation, the TVA continued to adhere to this position as a basis for arguing that it complied with § 7 of the ESA.

58. 40 Fed. Reg. 47505-06 (1975). *See* 50 C.F.R. § 17.11(i) (1978).

The Secretary determined that the snail darter apparently lived only in that portion of the Little Tennessee River which the Tellico Dam and Reservoir Project would flood.[59] Subsequently, the Secretary declared the area affected by the Tellico Dam as the snail darter's critical habitat.[60] The Secretary further declared that, pursuant to Section 7 of the ESA, all federal agencies must act to insure that their activities would not destroy or modify this critical habitat.[61]

Meanwhile, TVA and Fish and Wildlife Service had begun a consultation process with a view toward informally settling the issue. These negotiations proved fruitless because TVA consistently maintained that the only reasonable means of conserving the snail darter was to attempt to transplant it to another river.[62] These consultations

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59. 40 Fed. Reg. 47506 (1975). The Secretary further declared:

> [T]he snail darter occurs only in the swifter portions of shoals over clean gravel substrate in cool, low-turbidity water. Food of the snail darter is almost exclusively snails which require a clean gravel substrate for their survival. The proposed impoundment of water behind the proposed Tellico Dam would result in total destruction of the snail darter's habitat.

Id.

As of the time of *Hill*, actual searches by the TVA in more than 50 watercourses had failed to find additional populations of the snail darter. *See* Exhibit 46, Appendix 410-412, TVA v. Hill, 437 U.S. 153 (1978). In addition, the Secretary of the Interior noted that "more than 1,000 collections in recent years and additional earlier collections from central and east Tennessee have not revealed the presence of the snail darter outside the Little Tennessee River." 40 Fed. Reg. 47505 (1975). The snail darter's prior range, however, likely extended throughout the upper Big Tennessee River and the lower reaches of its main tributaries above Chattanooga (the Hiwassee [a major site of TVA's efforts to transplant the darter], Little Tennessee, Clinch, Holston, and French Broad Rivers) all now covered by impoundments. *See ESA Oversight supra* note 48, at 291; *Hearings on Public Works for Water and Power Development and Energy Research Appropriations Bill, 1978, Before a Subcommittee of the House Committee on Appropriations*, 95th Cong., 1st Sess., pt. 4, at 240-41 (1977) (statement of witness for TVA).

In November, 1980, Dr. Etnier discovered a new population of snail darter in a 10-15 mile stretch of South Chickamauga Creek straddling the Tennessee-Georgia border. According to Dr. Etnier, it is "extremely unlikely" that the newly-found darters are migrants from TVA's Hiwassee River transplant site, located some 80 miles downstream. The Chickamauga darters appear to be an undetected natural population despite TVA's rather exhaustive searches throughout the Tennessee Valley. *See* U.S. Fish and Wildlife Service, Endangered Species Technical Bulletin (1980). *See also* [1980] 11 ENVIR. REP. (BNA) (Current Developments) 1023.

60. 41 Fed. Reg. 13926-28 (1976).

61. *Id.* at 13928.

62. *See* note 57 and accompanying text *supra*. During the summer and early fall of 1975, TVA transplanted 410 snail darters to the Hiwassee River. *See* Appendix at 548, TVA v. Hill, 437 U.S. 153 (1978). The Secretary, however, was not satisfied with

did not include consideration of non-impoundment modifications to the project which would permit the survival of the species.[63] The ESA discourages the use of artificial programs in those instances when the species' *natural* habitat may be preserved.[64] A reason for the ESA's firm stance is that it represents a broad commitment to the preservation of the earth's genetic diversity. One stated purpose is to provide a means whereby the ecosystems upon which endangered

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the results of these efforts, finding that TVA had not studied the Hiwassee with sufficient care. 40 Fed. Reg. 47506 (1975). The Secretary noted "[T]hat the snail darter does not already inhabit the Hiwassee River, despite the fact that the fish has had access to it in the past, is a strong indication that there may be biological and other factors in this river that negate a successful transplant." *Id.*

For a detailed explanation of TVA's transplantation program, see Tennessee Valley Authority, Program to Conserve the Snail Darter: Progress Report through February 14, 1976, *reproduced in* Appendix 505-28, TVA v. Hill, 437 U.S. 153 (1978). In referring to the 1975 transplant into the Hiwassee River, the TVA stated:

> [W]e felt an immediate transplant was desirable prior to a detailed examination of the candidate sites. This was based on our opinion that a lengthy period of acclimatization for the transplanted population would enhance the chances of a natural spawn in the early spring. Additionally, it would allow a full year of study on the population in the new habitat to be conducted concurrently with one on the natural population.

Id. at 517. The TVA concluded that the Hiwassee River was a prime candidate for transplantation based on extant studies of the two rivers. These studies, however, related to management of trout fisheries in the area. TVA's transplantation effort in 1975 thus appears to be absurdly naive in at least two respects. First, the extant studies concerned an entirely different species of fish. Second, those studies contained a great amount of data which had been compiled in 1960-62, and as of 1975, TVA had not updated much of the information. Thus, TVA's opinion that "a lengthy period of acclimatization" would "enhance the chances for a natural spawn" could not rationally justify the decision to transplant prior to a detailed study of the candidate sites. Without a detailed study, little basis would exist for concluding that the transplanted species' "period of acclimatization" would be at all lengthy. Indeed, scientists do not yet know whether the Hiwassee transplant will be a long-term success. *See* 5 *U.S. Fish and Wildlife Service, Endangered Species Technical Bulletin* (1980).

63. *ESA Oversight*, *supra* note 48, at 69, 378-79, 890.

64. Note that § 7 of the ESA directs all federal agencies to carry out programs for the conservation of endangered and threatened species. 16 U.S.C. § 1536 (Supp. III 1979). Moreover, the ESA defines "conservation" as

> . . . the use of *all* methods and procedures which are *necessary* to bring any endangered species or threatened species to the point at which the measures provided pursuant to this chapter are no longer necessary. Such methods and procedures include, *but are not limited to*, all activities associated with scientific resources management such as research, census, law enforcement, habitat acquisition and maintenance, propagation, live trapping, and transplantation. . . .

16 U.S.C. § 1532(3) (Supp. III 1979) (emphasis added).

and threatened species depend may be conserved.[65]

Congress, however, continued to appropriate funds for the Tellico Project, relying on TVA's assurances of successful transplantation efforts. TVA also asserted that the ESA did not apply to a substantially completed project that had been under construction before the ESA's passage.[66] Pursuant to Section 11(g) of the ESA,[67] citizen groups filed suit against TVA in federal court, seeking to enjoin completion of the Tellico Project on grounds that it would violate the ESA by directly causing the extinction of the snail darter.[68] The district court refused to enjoin the project although it found that closure of the Tellico Dam and the impoundment of the Tellico Reservoir would result in the adverse modification, if not complete destruction, of the snail darter's critical habitat.[69] The court emphasized that the project was approximately eighty percent complete and that, given the evidence, no alternatives to impoundment were available short of scrapping the entire project.[70] Within a month of the district court's

65. 16 U.S.C. § 1531(b) (Supp. III 1979). A report prepared under the authority of § 12 of the ESA, 16 U.S.C. § 1541 (Supp. III 1979) concluded that preservation of endangered and threatened species of plants in their native habitats is the best method of ensuring their survival. Other methods, such as transplantation and artificial propagation, should be used only as a last resort: when extinction appears certain, and with the goal of re-establishing the species in its natural habitat. *See* SMITHSONIAN INSTITUTION, REPORT ON ENDANGERED AND THREATENED PLANT SPECIES OF THE UNITED STATES, H.R. DOC. NO. 51, 94th Cong., 1st Sess. (1975). In this context, plant and animal species differ very little.

66. *See Hearings on Public Works for Water and Power Development and Energy Research Appropriation Bill, 1976, Before a Subcommittee of the House Committee on Appropriations*, 94th Cong., 1st Sess., pt. 7, 466-67 (1975); *Hearings on H.R. 8122, Public Works for Water and Power Development and Energy Research Appropriations for Fiscal Year 1976, before a Subcommittee of the Senate Committee on Appropriations*, 94th Cong., 1st Sess., pt. 4, 3775-77 (1975). The House Committee on Appropriations recommended that an additional $29 million be appropriated for Tellico during 1976. H.R. REP. NO. 319, 94th Cong., 1st Sess., 76 (1975). Congress approved TVA's general budget for fiscal year 1976, which contained funds for continued Tellico construction. In December, 1975 (two months after the Secretary of the Interior had declared the snail darter to be an endangered species, *see* note 58 and accompanying text *supra*), the President signed the bill (H.R. 8122) into law. Public Works for Water and Power Development and Energy Research Appropriation Act, Pub. L. No. 94-180, 89 Stat. 1035 (1976).

67. 16 U.S.C. § 1540(g) (Supp. III 1979).

68. Hill v. TVA, 419 F. Supp. 753 (E.D. Tenn. 1976), *rev'd*, 549 F.2d 1064 (6th Cir. 1977), *aff'd*, 437 U.S. 153 (1978).

69. *Id.* at 757.

70. *Id.* at 758. At the time of the district court's decision, TVA had spent about $78 million on the project. The district court found that if Tellico were permanently

decision, the Senate and House Appropriations Committees recommended TVA's full budget request for continued work on Tellico.[71]

On appeal to the Sixth Circuit, Tellico's opponents argued that the district court had abused its discretion by failing to issue an injunction in the face of a clear ESA violation.[72] The court of appeals reversed and remanded with instructions to issue a permanent injunction halting all activities incident to the Tellico Project that may destroy or modify the snail darter's critical habitat.[73] The court ordered that the injunction remain in effect until Congress exempted Tellico from compliance with the Act, the Secretary of the Interior deleted the snail darter from the endangered species list, or the Secretary materially redefined the darter's critical habitat.[74]

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enjoined, "some $53 million would be lost in nonrecoverable obligations." *Id.* at 759. The court also noted that the ESA was enacted about seven years after commencement of the Tellico Project and that Congress, even though aware of the snail darter problem, had continued to approve funding for Tellico. The district court concluded that "[A]t some point in time a federal project becomes so near completion and so incapable of modification that a court of equity should not apply a statute enacted long after inception of the project to produce an unreasonable result. . . ." *Id.* at 760.

71. *See* S. REP. No. 960, 94th Cong., 2d Sess. 96 (1976) and H.R. REP. No. 1223, 94th Cong., 2d Sess. 83 (1976). Congress passed TVA's general budget for the fiscal year ending Sept. 30, 1977. *See* Public Works for Water and Power Development and Energy Research Appropriation Act, 1977, Pub. L. No. 94-355, 90 Stat. 889, 899 (1976).

72. Hill v. TVA, 549 F.2d 1064, 1069 (6th Cir. 1977), *aff'd*, 437 U.S. 153 (1978).

73. *Id.* at 1075.

74. *Id.* The Sixth Circuit accepted the district court's finding that closure of the Tellico Dam would cause a significant reduction, if not complete eradication, of the known population of the snail darter. *Id.* at 1069. Since the record revealed a *prima facie* violation of § 7 of the ESA (*i.e.*, TVA had failed to take action necessary to insure that its actions did not jeopardize the darter or its critical habitat), the court of appeals rejected TVA's major argument that the word "actions" in § 7 was not intended to encompass the final phases of ongoing projects. The court was unable to find any positive reinforcement for TVA's position in the ESA's legislative history. Moreover, TVA's interpretation of the word "actions" was inimical to the ESA's objectives. *Id.* at 1071. The court stated:

> Current project status cannot be translated into a workable standard of judicial review. Whether a dam is 50% or 90% completed is irrelevant in calculating the social and scientific costs attributable to the disappearance of a unique form of life. Courts are ill-equipped to calculate how many dollars must be invested before the value of a dam exceeds that of the endangered species. Our responsibility under [Section 11(g)(1)(A)] is merely to preserve the status quo where endangered species are threatened, thereby guaranteeing the legislative or executive branches sufficient opportunity to grapple with the alternatives.

Id. at 1071. It made no difference to the court that Congress had repeatedly appropri-

Following the decision of the Sixth Circuit, members of TVA's Board of Directors again testified at congressional hearings in support of continued appropriations for Tellico. Reporting on various aspects of the snail darter problem, including the Sixth Circuit's decision, TVA stated that transplanted snail darters were "doing well" and the Tellico Dam stood ready to fill the reservoir.[75] Both appropriations committees recommended the full amount TVA requested for completion of the Tellico project.[76]

TVA v. Hill was appealed to the United States Supreme Court.[77] Chief Justice Burger's majority opinion found the case to present two major issues: whether completion of the Tellico Dam and Reservoir would violate the ESA and, if so, what remedy would be appropriate. The Court ultimately concluded that the ESA prohibited the Tellico Project impoundment of the Little Tennessee River. It also found that the Sixth Circuit had not erred in enjoining the completion of the Tellico Dam.

The Court had little difficulty in rejecting TVA's argument that the ESA should not apply to a substantially completed project such as Tellico. The Court argued that the plain language of Section 7 made no exception for ongoing projects.[78] Moreover, the ESA's legislative

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ated funds for Tellico; such legislative approval was merely an "advisory opinion" concerning the proper application of the ESA. The only relevant legislation was the ESA itself, whose meaning and spirit were clear. *Id.* at 1072.

75. *See Hearings on Public Works for Water and Power Development and Energy Research Appropriation Bill, 1978, before a Subcommittee of the House Committee on Appropriations*, 95th Cong., 1st Sess., pt. 4, 234-35, 261-62 (1977).

76. *See* H.R. REP. No. 379, 95th Cong., 1st Sess. 104 (1977). The House Appropriations Committee recommended that TVA should cooperate fully with the Secretary of the Interior to relocate the snail darter to another suitable habitat "so as to permit the project to proceed as rapidly as possible." *Id.* at 11. The House Committee then recommended a special two million dollar appropriation to facilitate relocation. *Id.* The Senate Appropriations Committee concurred. *See* S. REP. No. 301, 95th Cong., 1st Sess. 99 (1977). Congress approved TVA's budget for fiscal year 1978 and the President signed the measure into law. *See* Public Works for Water and Power Development and Energy Research Appropriations Act, 197, Pub. L. No 95-96, 91 Stat. 797 (1977).

77. 437 U.S. 153 (1978).

78. *Id.* at 173. The majority rejected as inapplicable an analogy asserted in Justice Powell's dissent between the ESA and NEPA (the latter was not to be applied retroactively). Chief Justice Burger argued that the two statutes served different purposes: NEPA imposes an essentially procedural duty to consider the environmental effects of federal actions, whereas the ESA is substantive in effect and designed to prevent the loss of any endangered species, regardless of the cost. NEPA's procedural directive would be meaningless once a project progressed to the point where the alter-

history clearly shows that regardless of cost, Congress intended to halt and reverse the trend toward species extinction.[79] Indeed, the majority found legislative history language indicating Congress foresaw that Section 7, on occasion, would require the alteration of ongoing projects to fulfill the goals of the ESA.[80]

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native environmental benefits outweighed the cost of abandoning or modifying already completed work. Section 7 of the ESA, on the other hand, requires not only consideration of a project's effects, but also the implementation of necessary steps to insure that species are not "extirpated" because of federal agency actions. *Id.* at 188 n.34. In addition, the Department of the Interior's regulations that govern the consultation process make no exception for projects in progress at the time of the ESA's enactment. *See* 50 C.F.R. § 402.03 (1978) (Section 7 applies to all activities/programs where remaining federal involvement, in itself, could jeopardize an endangered or a threatened species). These regulations also require a halt to any significant project work during the consultation process. *Id.* § 402.04(a)(3). The Secretary had announced substantially similar "guidelines" as early as 1975. *See* 40 Fed. Reg. 17764-65 (1975).

79. 437 U.S. at 174. The Court reviewed previous federal endangered species legislation, such as the Endangered Species Act of 1966, Pub. L. No. 89-669, 80 Stat. 926 (1966) (repealed 1973) and the Endangered Species Conservation Act of 1969, Pub. L. No. 91-135, 83 Stat. 275 (1969) (repealed 1973). These precursors to the ESA directed federal agencies to protect endangered species habitats only "insofar as is practicable and consistent with [the agencies'] primary purposes." *See* Endangered Species Act of 1966, Pub. L. No. 89-669, § 1(b), 80 Stat. 926 (repealed 1973). The obvious omission of this type of qualifying language in the ESA of 1973 revealed a conscious congressional intent to afford endangered species priority over the "primary missions" of federal agencies. 437 U.S. at 185. Moreover, many initial versions of the 1973 ESA had contained language similar to the 1966 and 1969 Acts. This language, however, was ultimately rejected in the final version of the 1973 Act. *See* 437 U.S. at 176-84 for a general discussion of the proposed legislation that eventually gave way to the 1973 ESA.

80. 437 U.S. at 186. Justice Powell's dissent, however, charged that the majority's holding gave retroactive effect to the ESA. *See id.* at 202-10 (Powell, J., dissenting). Consequently, the major controversy between the majority and the dissent involved interpretation of the critical word "actions" in § 7.

The dissent argued that in terms of planning and executing various activities, "actions" did not include all agency activity, but rather only those actions which the agency decided to "authorize, fund, or carry out." In essence, "actions" refers only to *prospective* actions, those "actions with respect to which the agency has reasonable decision-making alternatives still available, actions *not yet* carried out." *Id.* at 205 (emphasis added). Since the Tellico Dam was "completed" or "virtually completed" when the lawsuit was instituted, "under a prospective reading of § 7, the action already had been 'carried out' in terms of any remaining reasonable decision-making power." *Id.* Coupling this interpretation with an analogy to NEPA, Justice Powell concluded that a point always exists at which a federal agency no longer has a reasonable choice to *abandon* the project. *Id.* at 206 (emphasis added).

Justice Powell apparently adopted the position of both the TVA and the district court that "[t]he *nature of the project* is such that there are no alternatives to impound-

The Court devoted more attention to TVA's argument that continued congressional appropriations for Tellico constituted an implied repeal of Section 7, at least with respect to this particular project. The majority argued that although Appropriations Committee report statements tended to support TVA's position, no language existed in the appropriations acts themselves indicating that Tellico be completed regardless of the ESA.[81] Moreover, an appropriations com-

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ment of the reservoir, short of scrapping the entire project." Hill v. TVA, 419 F. Supp. 753, 758 (E.D. Tenn. 1976) (emphasis added). Indeed, the TVA had argued:

> *The Tellico project is and has always been a dam and reservoir project.* Any 'modification' of the project that does not entail a dam and a reservoir is either an abandonment of the project or an initiation of some other project, or both. . . .

Reply Brief for Petitioner at 8, TVA v. Hill, 437 U.S. 153 (1978) (footnote omitted and emphasis added). TVA also noted:

> [T]he legislative history abundantly demonstrates that *the essence of the project is the proposed reservoir*. The principal benefits for which the project was designed . . . require a reservoir. The various modifications suggested by respondents (e.g., agricultural development, tourism geared to historical sites, recreation on the river in its natural state) would be objectives of some other project.

Reply Brief for Petitioner at 9 n.9, TVA v. Hill, 437 U.S. 153 (1978) (emphasis added).

This argument, and that of Justice Powell, deserve additional comment. TVA's assertion that any modification of the virtually complete Tellico Project would result either in its abandonment or in adoption of some new project altogether confuses a project's purpose or goal with the means initially selected to realize that purpose or goal. It is absurd to argue that the purpose of the Tellico Project was to build a dam and reservoir. Rather, the purposes of the Tellico Project were to stimulate shoreline development, to produce electricity, to provide flatwater recreation, and to improve economic conditions. *See* notes 48-49 and accompanying text *supra*. Moreover, TVA's claim that the Tellico Dam was "the essence" of the Tellico Project is an overstatement. Simply put, abandonment of the dam and reservoir would not *require* abandonment of the *project's* purpose. Given the multiple purposes of the Tellico Project, it might be possible to attain those purposes to a certain extent without the dam and reservoir. This is, of course, precisely what opponents to Tellico had maintained.

Thus, to the extent that Justice Powell's argument assumes that the only alternatives available to TVA were scrapping the project or saving the snail darter, it is simply wrong. Many of the proposed benefits of the project were arguably still available under a non-impoundment scheme. *See* notes 96-109 and accompanying text *infra*.

81. 437 U.S. at 189-93. The majority stated that "[t]he doctrine disfavoring repeals by implication 'applies with full vigor when . . . the subsequent legislation is an *appropriations* measure.'" *Id.* at 190, *citing* Committee for Nuclear Responsibility v. Seaborg, 463 F.2d 783, 785 (D.C. Cir. 1971). Further, the Court noted that when voting on appropriations measures, legislators are entitled to assume that the funds will be used for lawful purposes. 437 U.S. at 190. A contrary policy would violate the express internal rules of both Houses of Congress, which provide that appropriations measures may not change extant substantive law. *Id.* at 190-91.

mittee expression does not operate to repeal or modify substantive legislation.[82]

The Court invoked the doctrine of separation of powers to determine the appropriate remedy. Congress clearly intended to accord endangered species the highest priority. The majority argued that since Congress properly exercised its legislative power, the judiciary's duty was to enforce this legislative intent.[83]

II. ALTERNATIVE TO TELLICO: THE GAO AND HANSON STUDIES

Hill contained little discussion of Tellico Project alternatives because neither the ESA nor its regulations required TVA to seriously consider alternative plans.[84] Following the Sixth Circuit's decision,[85] however, members of the House Committee on Merchant Marine and Fisheries[86] and its Subcommittee on Fisheries and Wildlife Conservation and the Environment requested the GAO and the University of Tennessee's Department of Architecture to undertake studies of the Tellico Project. After presenting preliminary findings,[87] the study groups released final reports[88] which raised serious doubts

82. *Id.* at 191-93. The majority first found that the Appropriations Committees had no jurisdiction over the subject of endangered species; nor did they conduct the type of extensive hearings which preceded passage of the ESA. *Id.* at 191. Next, absent any relevant language in the appropriations acts, Congress as a whole presumably was unaware of TVA's position. *Id.* at 192. Thus, considered in the proper context, the statements of the appropriations committees represent only the personal views of their members. *Id.* at 193.

83. *Id.* at 193-94.

84. The TVA has, of course, argued that no alternatives were available to Tellico short of scrapping it. The district court apparently agreed with TVA's position, though no evidence concerning alternatives was presented at trial. *See* Brief for Respondent at 14, TVA v. Hill, 437 U.S. 153 (1978). Chief Justice Burger expressly declared that consideration of such alternatives, while properly addressed to the Executive and Congress, was irrelevant to an enforcement action under the ESA of 1973. *Id.* at 174, n.19 (1978).

85. 549 F.2d 1064 (6th Cir. 1977).

86. This House Committee and the Senate Committee on Environment and Public Works have jurisdiction over the ESA.

87. *See ESA Oversight*, *supra* note 48, at 178, 195.

88. *See* GENERAL ACCOUNTING OFFICE, THE TENNESSEE VALLEY AUTHORITY'S TELLICO DAM PROJECT—COSTS, ALTERNATIVES, AND BENEFITS (Oct. 14, 1977) [hereinafter cited as GAO Report]. The University of Tennessee report is summarized in *Endangered Species Authorization: Hearings Before the Subcommittee on Fisheries and Wildlife Conservation and the Environment of the House Committee on Merchant Marine and Fisheries*, 95th Cong., 2d Sess. at 534-44 (1978) (testimony of Donald Hanson) [hereinafter cited as *Endangered Species Authorization*].

about the Tellico Project.

A. *The Hanson Study—University of Tennessee*

After investigating various social and economic factors in the Little Tennessee River Valley, the Hanson study asserted that at least two viable alternatives to the impoundment-based Tellico Project existed. The first alternative involved a "dry dam" proposal which, in essence, would allow the Little Tennessee to remain in its natural state.[89] The second involved a combination of the "dry dam" concept and selective impoundment of the Little Tennessee's tributaries.[90] Based on a comparative economic analysis, the Hanson Study indicated that TVA's original impoundment scheme might not be the most economically viable option available.[91] The Hanson Study based this conclusion on the following factors. First, only one benefit applicable to the impoundment scheme would be sacrificed under either of the alternatives—the canal-based energy supplement to an adjacent generating facility.[92] On the other hand, the reservoir, if completed, would preclude many beneficial alternatives, some of which promised significant economic potential.[93] Second, the reservoir-based project would not create local employment opportunities, as TVA had originally thought.[94] Agricultural development, however, would provide many employment opportunities more characteristic of the skills of the local region.[95]

89. *Id.* at 535.

90. *Id.*

91. *Id.*

92. *Id.* at 536. This conclusion appears to ignore navigational and flood protection benefits, both of which would be maximized under TVA's original scheme.

93. *Id.* The major tradeoff, in the absence of a reservoir, would be the value of electricity which would be produced by the reservoir facilities (approximately three million dollars annually, calculated in 1978 dollars) for the annual yield of the high-grade farmland on the valley floor (approximately $6.4 million, calculated in 1973 dollars). Another benefit lost, if TVA flooded the valley, would be the Cherokee archaeological and historical sites. The Hanson Report concluded that the development of these sites would reap considerable revenues from tourism. *Id.* at 541.

94. *Id.* at 543-44. The Hanson Study based this conclusion on the fact that Tellico would supply additional water to currently existing power generating facilities. Apparently, these latter facilities would not require significant additional manpower to handle the extra water from Tellico. Even assuming this to be true, however, it completely ignores substantial employment benefits that could result from planned industrial development at the proposed reservoir site.

95. *Id.* at 543.

B. *The GAO Report*

The GAO Report answers the following questions:

1) What portion of the dam project already completed would provide benefits if the project was not completed, and what costs are involved?
2) Can the Tellico reservoir operate in ways that would not harm the snail darter?
3) What benefits would result if the dam and reservoir were completed?[96]

1. Benefits Without Completion

As of February 1977,[97] TVA had spent about $103 million on the Tellico Project and estimated that it would need an additional thirteen to nineteen million dollars to complete the project.[98] TVA also estimated that approximately $25.65 million of its total expenditures would provide benefits if the project was not complete.[99] The Tennessee Endangered Species Committee (TESC), however, placed the figure at eighty million dollars.[100] For its part, GAO estimated that about $56.3 million of the project costs (primarily land, roads, and

96. *See* GAO Report, *supra* note 88, at 1.

97. The effective date of the Sixth Circuit's injunction.

98. The additional sums would be spent on roads, recreation centers, and reservoir clearing. *See* GAO Report, *supra* note 88, at 5. Of the total $103 million, TVA had spent $25.5 million on land acquisition (purchase price, improvements, surveying and mapping, and other related factors). *Id.* at 6. In addition, the agency spent $63 million on construction features ($22.5 million for dams, $35.7 million for roads, bridges, and reservoir clearing) and $14.7 million on engineering, general, and administrative expenses. *Id.* at 7-8. Approximately $24.7 million of the construction costs were applied to direct labor costs. *Id.* at 7.

99. *Id.* at 10. TVA's estimate was limited to the current value of the land. The agency concluded that any increase in property values since acquisition had been offset by administrative and clearing costs. *Id.* at 11. Both the Tennessee Endangered Species Committee, *see* note 100 *infra*, and the GAO, concluded that TVA would be able to recover all of its $25.5 million investment in land acquisition. GAO Report, *supra* note 88, at 10. In a subsequent report, TVA indicated that liquidation of the project (removal of earth dam plus sale of all acquired land) would produce between $30 and $50 million, depending on whether the land was sold in small parcels ($30 million) or large tracts ($50 million). *See* ALTERNATIVES, *supra* note 12, at 37.

100. TESC is an area organization which is knowledgeable about the Little Tennessee River Valley. TESC's estimate assumed that virtually all construction costs (other than the dam, which would need to be dismantled to ensure the darter's continued survival) were recoverable. In addition, TESC concluded that $15 million in salaries and wages would provide benefits. *See* GAO Report, *supra* note 88, at 13.

bridges) could provide some benefit without completing the project.[101] Any benefits, however, would be offset by the necessary cost of removing all or part of the dam to guarantee the snail darter's survival.[102]

2. Project Alternatives

Both TVA and its opponents agreed that even a modified dam and reservoir at the Tellico site would jeopardize the snail darter's continued existence.[103] Five years after construction began on the Tellico Project, TVA included an evaluation of six project alternatives in its EIS to comply with NEPA. Four of these alternatives involved low and intermediate dam designs, one involved "scenic stream" development, and one involved "no further action."[104] GAO concluded that of these six alternatives, only the "scenic stream" proposal remained viable.[105] Although various interested parties had previously

101. GAO argued that since direct benefits created by wages had already been realized and that indirect benefits would be realized regardless of whether the project was completed, salaries and wages should not be included as "benefits" without completion of the project. *Id.*

In addition, GAO felt that only about 42% (*i.e.*, the cost of roads and bridges) of the total construction costs were recoverable. Because bridges were built higher and longer than normal to accommodate the reservoir, and because many roads were built to replace areas to be inundated, benefits derived from these sources would be disproportionate to their costs. *See* GAO Report, *supra* note 88, at 12.

102. Life cycle studies of the snail darter indicated that the Tellico Dam, even with its floodgates open, would limit the upstream spawning migration of the darter and threaten its continued existence as a species. *See* GAO Report, *supra* note 88, at 9. In a subsequent draft of a "Snail Darter Recovery Plan," TVA conceded that the absence of juvenile darters above the dam (prior to impoundment) proved that the dam created a barrier to upstream migration. *See* ALTERNATIVES, *supra* note 12, at 89.

103. GAO Report, *supra* note 88, at 3, 9. *See* ALTERNATIVES, *supra* note 12, at 89. *See also* note 102, *supra*.

104. GAO Report, *supra* note 88, at 16. Prior to 1978, TVA did not update its analysis for any of the alternatives. It claimed that the relative economic benefits from the project and alternatives had not changed and that the reservoir was still the best method to develop the area. *Id.* at 17. In 1978 TVA did, however, provide a major revision in which it considered four options: project as originally conceived; tributary impoundment (*i.e.*, river development on the Little Tennessee, impoundment on the Tellico River); river development with dam left in place for flood control; and river development with dam removed. *See* ALTERNATIVES, *supra* note 12, at 13. In that revision TVA did not view the tributary impoundment alternative as economically feasible and so did not seriously consider it. *Id.* at 26.

105. Low and intermediate dams would not be compatible with preserving either the snail darter or its critical habitat. *See* GAO Report, *supra* note 88, at 17.

proposed alternatives to Tellico,[106] GAO concluded that neither the Tellico Project nor any of its alternatives were supported by *current* benefit and cost estimates. Thus, resolution of the Tellico question would ultimately require updated information.[107]

3. Benefits With Completion

Although project costs increased 115% between 1968 and 1977, TVA did not update its 1968 cost-benefit projections[108] until 1978.[109]

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106. *Id.* at 17-26. The alternatives, which had first been proposed as early as 1964, included: river-based recreational development programs; restoration and development of Cherokee and other historical sites; and agricultural development. TVA's initial consideration of a "scenic stream" alternative apparently excluded these development programs.

107. *Id.* at 26. TVA supplied the updated information. The ESC proceeded to deny an ESA exemption based on that information. *See* note 12 and accompanying text *supra*.

108. In 1968, TVA calculated direct annual benefits of $3.76 million, with a benefit-cost ratio of 1.7 to 1. The agency calculated secondary annual benefits of $3.65 million with a *total* benefit-cost ratio of 3 to 1. *See* GAO Report, *supra* note 88, at 27. Secondary benefits were based on additional job opportunities which would result from industrial development. TVA did not update its 1968 benefit projections because it was the agency's policy not to do so once a project was funded and underway. *Id.*

GAO found that some of these projections were invalid. For example, TVA had projected annual benefits from "shoreline development" to be $710,000. These benefits would arise from the conversion of agricultural land into higher industrial, residential, and commercial lands. In projecting these benefits, TVA assumed that 16,500 acres of the total 38,000 acres acquired would be sold to end users and developers within 12 years of project completion. GAO's analysis also indicated that benefits derived from approximately 1,000 acres of Tellico land were claimed under two separate benefit categories (shoreline and recreation). TVA's estimate of recreation benefits assumed this land would be used as a state park; the shoreline development benefit calculation assumed the same parcel would be sold for development. Although the TVA had initially deleted the parcel from the shoreline benefit estimate, the land was apparently reincorporated into the shoreline category when all benefit categories were consolidated. This duplication caused shoreline development benefits to be overstated by about $27,000. *Id.* at 30.

GAO found additional evidence of duplication between navigation and shoreline development benefits. Navigation benefits were transportation savings which would accrue to industries purchasing sites at Tellico. GAO argued that because factors that would make Tellico sites more desirable to industry would already be reflected in land prices, no need existed for a separate category dealing with navigation benefits. *Id.* at 30, 32.

In other instances, GAO contended that the methodology used in the 1968 projections did not conform to federal guidelines. At the time TVA first estimated the Tellico benefits, these guidelines appeared in THE PRESIDENT'S WATER RESOURCES COUNCIL, POLICIES, STANDARDS, AND PROCEDURES IN THE FORMULATION, EVALUA-

Unfortunately, although these projections were more current, they

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TION, AND REVIEW OF PLANS FOR USE AND DEVELOPMENT OF WATER AND RELATED LAND RESOURCES, SEN. DOC. NO. 97, 87th Cong., 2d Sess. (1962) [hereinafter cited as WATER RESOURCE COUNCIL]. The guidelines defined "recreation benefits" as the value of net increases in the quantity and quality of various outdoor activities resulting from a project. TVA projected annual recreation benefits of $1.55 million over the expected 100-year life of the project. However, TVA failed to consider the availability and attractiveness of other recreation opportunities near the Tellico Project area. TVA had based its recreation benefit projections on the total number of visits at existing reserviors in the TVA system (20 within 100 miles of Tellico). It did not consider, though, the possibility that visits at the Tellico reservoir might represent transfers from other areas. These "transfer visits" would not represent a true benefit, since a corresponding loss of visitation at other areas would occur. *See* GAO Report, *supra* note 88, at 29.

Senate Document 97 specifically recognized three objectives in water resource planning: national economic development; preservation of natural resources; and the well-being of the people. WATER RESOURCE COUNCIL, *supra*, at 1, 2. Planning was to be "multi-purpose," considering all significant resource uses and purposes. *Id.* at 3. Significantly, the document stressed consideration of alternatives, stating that all relevant means (non-structural as well as structural) should be considered. *Id.* The document did not, however, define "non-structural" means.

In 1965, Congress passed the Water Resources Planning Act, Pub. L. No. 89-80, 79 Stat. 244 (1965) (codified at 42 U.S.C. §§ 1962-1962d-3) (1976). This statute established the Water Resources Council (WRC), 42 U.S.C. § 1962a (1976) (current members of the WRC are the Secretaries of Agriculture, Army, Commerce, Energy, HUD, the Interior, and Transportation, and the Administrator of the EPA. The Attorney General, the Director of the OMB, and the Chairman of the CEQ and TVA all sit as observers). In 1973, the WRC published *Principles and Standards for Planning Water and Related Land Resources (P & S)*, 38 Fed. Reg. 24,778 (1973). The *P & S* superseded Senate Document 97. *Id.* at 24778, 24863. The *P & S* state that the overall purpose of water and land resource planning is "to promote the quality of life, by reflecting society's preferences" for attaining the following objectives: 1) to enhance "national economic development" (NED); and 2) to enhance environmental quality (EQ) "by the management, conservation, preservation, creation, restoration or improvement of the quality of certain natural and cultural resources and ecological systems. . . ." *Id.* at 24794-95. The *P & S* declare that the EQ objective is responsive to man's spiritual, psychological, recreational and material needs, and "reflects man's abiding concern with the quality of the natural physical-biological system in which all life is sustained." *Id.* at 24795. Among the components of the EQ objective are the following:

a) management, protection, enhancement, or creation of areas of natural beauty and human enjoyment;

b) management, preservation, or enhancement of especially valuable archaeological, historical, biological (including fish and wildlife habitat) resources and ecological systems; and

c) avoidance of irreversible commitments of resources to future uses. Given our currently imperfect understanding of the potential effects of human action on ecosystems, these planning standards emphasize the need for a cautionary approach in meeting development and use objectives in order to

may have been biased.[110]

III. CONGRESSIONAL RESPONSE TO *TVA V. HILL*

A. *The 1978 Amendments*

The expiration of the ESA's authorization[111] in 1978, together with

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minimize or preclude the possibility of undesirable and . . . irreversible changes in the natural environment. . . .

Id.

Moreover, the *P & S* state that the EQ objective "embraces the concept and appreciation of the values inherent in preservation of ecological systems *per se*. *Id.* at 24814. Among the beneficial effects expected to result from such preservation are:

i) the maintenance of a natural environment in a state of equilibrium as an intrinsic value to society;
ii) development of a 'land ethic' or 'environmental conscience;' and
iii) scientific understanding which will contribute to the conservation of natural resources in general.

Id.

The *P & S* also establish a detailed planning process. *Id.* at 24785, 24866. Two of the required steps in the process are: 1) formulation of alternative plans, at least one of which must be responsive to the EQ objective; and 2) analysis of all alternative plans, so that tradeoffs among the alternatives will be displayed as fully as possible. *Id.* at 24786, 24866.

Finally, the WRC declared that the *P & S* conform fully with the intent and spirit of NEPA "by providing for full and systematic evaluation and display of environmental effects for all alternative plans." *Id.* at 24868. For an excellent discussion of Senate Document 97 and the *P & S*, see Jaffe, *Benefit-Cost Analysis and Multi-Objective Evaluation of Federal Water Projects*, 4 HARV. ENVT'L L. REV. 58, 67-72 (1980). Jaffe argues, *inter alia*, that the *P & S*, if enforced *via* independent review and litigation, "are likely to be more effective than NEPA as a tool for insuring consideration of environmental values." *Id.* at 82-84. Needless to say, it would be fruitful to request similar consideration of the *P & S*, either through enforcing the ESA against a federal water project or an ESC exemption for such a project.

109. In 1978, TVA revised its cost-benefit ratios. *See* ALTERNATIVES, *supra* note 12, at 43 (reproduced as Appendix I *infra*). TVA's revision acknowledged that the principal criteria then governing the planning of federal water projects "recognize that value apart from dollar costs and benefits must be meaningfully incorporated into planning and decision-making." *Id.* at 4. Although this may be a response to the *P & S*, two facts militate against such an interpretation. First, there is no mention of an alternative proposal tailored specifically to the EQ objective of the *P & S*. Second, it is to date unclear whether the *P & S* actually have the force and effect of law. *See* Jaffe, *Benefit-Cost Analysis and Multi-Objective Evaluation of Federal Water Projects*, 4 HARV. ENVT'L L. REV. 58, at nn.122 & 154 and accompanying text (1980).

110. *See* GENERAL ACCOUNTING OFFICE, AN OVERVIEW OF BENEFIT-COST ANALYSES FOR WATER RESOURCES PROJECTS: IMPROVEMENTS STILL NEEDED 33 (1978) (citing TVA's disapproval of GAO's recommendation that an independent agency perform or review all benefit-cost analyses for federal water resource projects).

111. 16 U.S.C. § 1542 (Supp. II 1978) (amended 1979).

the Supreme Court's *Hill* decision, triggered a rather protracted reappraisal of Section 7.[112] Congress eventually passed a series of compromise amendments which the President signed into law.[113] Among other changes,[114] the amendments provide case-by-case exemptions from a Section 7 mandate by a newly created cabinet-level Endangered Species Committee (ESC).

Federal agencies must still consult with the Department of the Interior or the Department of Commerce concerning possible impacts on endangered species. The new consultation procedure is, however, more structured than that under the ESA. Under Section 7(a), the agency must insure that its action will not jeopardize any endangered species.[115] To implement this mandate, the agency must request a "biological assessment" from either the Secretary of Commerce or the Secretary of the Interior to determine if any endangered species

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112. Sen. Stennis (D.-Miss.) offered an amendment which reinstated the "insofar as is practicable" language into § 7. Stennis' amendment won approval of almost a quarter of the Senate. *See* 124 CONG. REC. S10971 (1978). During the ensuing debate, Sen. Baker (R.-Tenn) stated:

> I am absolutely convinced that after the decision of the Supreme Court in the Tellico case, if we did not build more common sense into the [ESA], if we did not create some flexibility, if we did not create some way to relieve the tensions created by situations like Tellico, if we did not affect the realism that the law requires in the long term, the [ESA] would expire; that there would be so much opposition to it that the act would be put in jeopardy.

Id. at S11029 (remarks by Sen. Baker on July 18, 1978). For a discussion of the various proposed amendments, see Note, *Congressional Reaction to TVA v. Hill: The 1978 Amendments to the Endangered Species Act*, 13 U. RICHMOND L. REV. 557 (1979).

113. Endangered Species Act Amendments of 1978, Pub. L. No. 95-632, 92 Stat. 3751-3767 (codified at 16 U.S.C. § 1531-1542 (1978)) (amended 1979).

114. This Note is limited to those amendments affecting § 7 of the ESA of 1973. It should be observed, however, that the amendments make some key definitional changes in the ESA. First, "alternative course of action" as used in § 3(l) includes all alternatives to an agency action, and is not limited to the original objectives of the federal action or project. 16 U.S.C. § 1532(l) (Supp. III 1979). Suffice it to say that this alone would have prevented TVA and Justice Powell from arguing, as they did in *Hill*, that any modification of the Tellico project would require its "abandonment." *See* note 80 *supra*.

Second, the 1978 amendments incorporate a definition of "critical habitat" into the ESA. A critical habitat is an area within the geographical area occupied by the species at the time it is listed that is essential to the species' conservation and requires special management consideration. 16 U.S.C. § 1532(5)(a) (Supp. III 1979). *See* note 43 *supra*. For an explanation of all the amendments, *see* H.R. REP. NO. 1804, 95th Cong., 2d Sess. (1978). *See also* H.R. REP. NO. 1625, 95th Cong., 2d Sess. (1978) and S. REP. NO. 874, 95th Cong., 2d Sess. (1978).

115. 16 U.S.C. § 1536(a) (Supp. II 1978) (amended 1979).

exist in the project area.[116] If none are present, the project may proceed. If any endangered species are present, Section 7(b) requires the agency to begin consultation with the appropriate Secretary to determine if the project will jeopardize the species.[117] Section 7(b) also requires the Secretary to formulate a written "biological opinion," explaining the effect of the project on the endangered species. Suggestions of reasonable and prudent alternatives which would avoid jeopardizing the species or its critical habitat[118] are also required. Section 7(d) requires that after consultation commences, the agency may not make any irreversible or irretrievable commitments of resources which preclude the adoption of alternatives consistent with species preservation.[119] If any jeopardy to the species is found to exist during consultation, the project may proceed only if the agency obtains an exemption under Sections 7(g)[120] and 7(h).[121]

A three-member review board[122] initially considers an exemption application. The board must first determine that an irresolvable conflict exists between agency action and the endangered species or its critical habitat.[123] Second, the board must determine that the applicant has carried out the consultation in good faith and has considered modifications or alternatives which avoid jeopardy to the species or its critical habitat.[124] Third, the board must find that the applicant has conducted biological assessments.[125] Finally, the board must conclude that the applicant has refrained from making any irretrievable or irreversible commitments of resources.[126] Upon these findings the board submits a report[127] to the ESC.[128]

116. *Id.* at § 1536(c).

117. *Id.* at § 1536(b).

118. *Id.*

119. *Id.* at § 1536(d). *See* H.R. REP. No. 1804, 95th Cong., 2d Sess. 19 (1978).

120. 16 U.S.C. § 1536(g) (Supp. II 1978) (amended 1979).

121. *Id.* at § 1536(h).

122. The review board consists of an administrative law judge, an appointee of the Secretary of the Interior, and a Presidential appointee from the state in which the federal project is or will be carried out. 16 U.S.C. § 1536(g)(3)(A) (Supp. III 1979).

123. *Id.* at § 1536(g)(5)(a) (Supp. II 1978) (amended 1979).

124. *Id.* at § 1536(g)(B)(i).

125. *Id.* at § 1536(g)(5)(B)(ii).

126. *Id.* at § 1536(g)(5) (Supp. II 1978) (amended 1979).

127. The board's report to the ESC must discuss the availability of "reasonable and prudent alternatives" to the agency action which are consistent with conserving the endangered species or its critical habitat. *Id.* at § 1536(g)(7)(A) (Supp. III 1979).

The ESC is required to grant the exemption if, by a vote of at least five of its seven members, it determines: (1) no reasonable alternatives are available; (2) the benefits of the agency's action clearly outweigh the benefits of the alternative project; and (3) the agency's action has regional or national significance.[129] The ESC cannot review an exemption application unless the review board has previously determined that the applicant has made a good faith consultation effort.[130] Congress, however, included a special provision in the amendments allowing for an expedited review of Tellico by the ESC, omitting prior involvement of the review board.[131] Thus, the ESC found no need to decide whether TVA had engaged in a good faith consultation effort. Moreover, the ESC based its decision on only two of the three criteria normally applicable to its determinations.[132] It was unnecessary, in this case, to find that action involving the Tellico Dam was of national or regional significance.

When the ESC considered the Tellico matter, it contemplated only two alternatives: completion of the originally planned project or conversion of the project to establish a river-based development program.[133] The ESC concluded that the latter presented a reasonable

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Based on the evidence, the report must also state whether the agency action is in the public interest and of national or regional significance. *Id.* at § 1536(g)(7)(B). Finally, the report must discuss appropriate reasonable "mitigation and enhancement measures" that the ESC should consider. *Id.* at § 1536(g)(7)(C).

128. The Secretary of the Interior chairs the ESC. The other members of the ESC are the Secretaries of Agriculture and the Army, the Chairman of the Council on Economic Advisors, the Administrators of the EPA and National Oceanic and Atmospheric Administration, and a Presidential appointee from the affected State. *Id.* at § 1536(e)(3) (Supp. III 1979).

129. *Id.* at § 1536(h)(1)(A) (Supp. III 1979). Moreover, in granting an exemption, the ESC must establish and require the agency to adopt "such reasonable mitigation and enhancement measures including, but not limited to, live propagation, transplantation, and habitat acquisition and improvement as are necessary and appropriate to minimize the adverse effects" of the project on the species or its critical habitat. *Id.* at § 1536(h)(1)(B).

130. *See* 124 CONG. REC. S10896 (daily ed. July 17, 1978) (remarks of Sen. Culver).

131. 16 U.S.C. § 1539(i) (Supp. III 1979).

132. That is, the ESC needed to consider only (i) whether any reasonable and prudent alternatives in fact existed and (ii) whether the benefits of the Tellico Project clearly outweighed the benefits of alternative courses of action (such as those urged by Tellico's opponents in *Hill*). *See id.* at § 1536(h)(1)(i)-(ii) (Supp. III 1979).

133. *See* Comment, *The 1978 Amendments to the Endangered Species Act: Evaluating the New Exemption Process Under Section 7*, [1979] 9 ENVIR. L. REP. (E.L.I.) 10031, 10033, & n.22 [hereinafter cited as *Endangered Species*].

and prudent alternative. The river-based development would utilize a significant portion of the federal investment in Tellico, while preserving the snail darter's critical habitat.[134] Moreover, the ESC declared that it was unable to find that the benefits to be derived from completion of the original project clearly outweighed the benefits to result from the alternative project.[135] Consequently, the ESC unanimously denied the exemption application for the Tellico Project.[136]

The exemption procedure allows the completion of certain federal projects despite almost certain harm to an endangered species or its critical habitat. Upon signing the amendments into law, President Carter expressed a fundamental doubt about the need for an exemption procedure, given the apparent success of the previous consultation process.[137] To the extent that TVA failed to carry out a good faith consultation process, *Hill* may have been a proper basis for congressional concern over the alleged "inflexibility" of the ESA.[138] On

134. *Id.* at 10033 & n.23.

135. *Id.*

136. *Id.* The denial ultimately led to the passage of H.R. 4388 (exempting Tellico from the ESA and all other laws which might prohibit its completion) which President Carter signed into law on September 25, 1979.

137. *See* note 46 and accompanying text *supra*. The President believed that this new exemption process was not necessary, and asked that the ESC cautiously consider exemptions. *See* 14 WEEKLY COMP., OF PRES. DOC. 2002 (Nov. 13, 1978). The ESC's decision on the Tellico Project indicates that it heeded the President's warning. For a general discussion of the ESC's activities in relation to specific federal projects, see ENDANGERED SPECIES, *supra* note 133, at 10033-35.

138. For example, allegations have been made that after discovery of the snail darter, TVA accelerated its work schedule in order to allow the project to be "virtually complete" at the time of the beginning of the *Hill* case in district court. *See* [1978] 9 ENVIR. REP. (BNA) CURR. DEV. 1992. *See also* Brief for Respondents at 13, TVA v. Hill, 437 U.S. 153 (1978).

TVA maintained that the Tellico Project could not be modified without abandoning it. Prior to the Supreme Court's decision in *Hill*, however, TVA Chairman S. David Freeman (President Carter's first appointee to the TVA Board of Directors) informed the Secretary of the Interior that alternatives existed to the Tellico Project other than complete abandonment. One option would be to use the nearly completed dam as a "dry dam." Mr. Freeman expressed his belief that this alternative would: provide more flood control protection than the existing project; provide agricultural benefits exceeding the hydropower benefits of the reservoir-based project; maintain free-flowing river for recreation; preserve the ancestral homes of the Cherokee; and "provide industrial sites and jobs comparable to the existing project." Letter from S. David Freeman to Cecil D. Andrus (April 6, 1978), *reproduced in* Reply Brief for Petitioner, App. B, 9A-11A, TVA v. Hill, 437 U.S. 153 (1978). Mr. Freeman further stated that, "contrary to the TVA position (articulated prior to his appointment to the Board), forming a permanent lake is not vital to the Tellico project and may not even be the

the other hand, the 1978 Amendments require a three-member review board to initially determine if the project agency engaged in good faith consultation efforts.[139] Moreover, both the review board and the ESC must use economic as well as biological criteria to evaluate the agency action benefits and alternative courses of action.[140] Thus, only well-planned agency actions stand a chance of exemption. Unfortunately, exemption may no longer be the sole means to avoid the ESA duties.

B. *The 1979 Amendments*

The ESA 1979 amendments[141] alter the critical language of Section 7. The section previously required federal agencies to insure that their actions did not jeopardize the continued existence of any endangered species.[142] The statute now requires the agencies to insure that their actions are not "likely to jeopardize" endangered species.[143]

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option with the greatest public benefits." *Id.* at 11A. He concluded: "[T]he choice is not the snail darter or the dam. The industrialization and other benefits to the economy can take place with or without another lake. . . ." *Id.* at 10A. After the Court decided *Hill*, Mr. Freeman reiterated his position and stated that the Court's decision may have been for the best because the project, as originally planned, may not have been justified. *See* Washington Post, June 24, 1978 § A, at 2, col. 3.

139. *See* 16 U.S.C § 1536(g)(5)(A) (Supp. II 1978) (amended 1979).

140. *Id.* at § 1536(h)(1)(9A) (Supp. II 1978) (amended 1979). The economic considerations include:

1) cost impact on consumers, business markets, and Federal, State and local governments;
2) effect on productivity of wage earners, business, and government;
3) effect on competition;
4) effect on supply of goods and services;
5) effect on employment; and
6) effect on energy supply and demand.

See H.R. REP. NO. 1804, 95th Cong., 2d Sess. 20 (1978). The ESC must also consider the national interest and the aesthetic, ecological, educational, historical, recreational, and scientific value of any endangered species or threatened species. *Id.* In addition, the ESC may not balance the benefits of the proposed agency action against the value of the listed species. Rather, it must balance the benefits of the agency action against the benefits of those "alternative courses of action" which are consistent with preservation of the species. *Id.*

141. Pub. L. No. 96-159, 93 Stat. 1225-31 (1979) (codified in 16 U.S.C. 1531-1536 (Supp. III 1979)) (amending 16 U.S.C. §§ 1531-1536 (Supp. II 1978).

142. 16 U.S.C. § 1536(a) (Supp. II 1978) (amended 1979).

143. Pub. L. No. 96-159, § 4, 93 Stat. 1226 (1979) (codified in 16 U.S.C. § 1536 (Supp. III 1979) (amending 16 U.S.C. § 1536(a) (Supp. II 1978)). The new language appears at 16 U.S.C. § 1536(a)(2) (Supp. III 1979).

Legislative history of these amendments, however, indicates that Congress intended only to *clarify* the language of Section 7 by conforming to then-existing judicial interpretations.[144] Thus, *TVA v. Hill*[145] must stand as the controlling interpretation of Section 7.[146] Arguably, the new language of Section 7 reflects congressional desire to avoid repeating *Hill's* factual situation (discovering jeopardy to an endangered species after a project is well under construction).[147] Indeed, instead of rejecting *Hill's* view of Section 7, Congress amended the section to include a limitation on agency resource commitments[148] and a rigorous exemption procedure.[149] Despite such amending, recent judicial decisions have tested the limits of the ESA and particularly Section 7.

In *Conservation Law Foundation v. Andrus*,[150] appellants saw fit to enjoin an Outer Continental Shelf (OCS) lease sale because it constituted an irreversible or irretrievable resource commitment prohibited by Section 7(d).[151] Although the consultation process mandated by Section 7 was in progress at the time of the lease sale, the appellants

144. *See* H.R. CONF. REP. No. 697, 96th Cong., 1st Sess. 12 (1979). The report also states that the ESA continues to give the species the benefit of the doubt, and continues to place the burden of demonstrating compliance on the federal "action agency." *Id.*

145. 437 U.S. 153 (1978). The Court does not appear to have limited its interpretation of the ESA to the factual setting in *Hill*. *Id.* at 173. The Court argued that Congress intended to reverse the trend toward species extinction, regardless of the cost. *Id.* at 184. Congress apparently accepted that interpretation. *See* note 146 *infra*.

146. The conference report also noted that the Supreme Court in *Hill* had made it abundantly clear that the prohibitions of § 7 apply regardless of the project's state of completion. *See* H.R. CONF. REP. No. 697, 96th Cong., 1st Sess. 13 (1979).

147. *See* 124 CONG. REC. S10896 (daily ed. July 17, 1978) (remarks of Sen. Culver). The 1979 amendment apparently acknowledged the frequent impossibility of a conclusive determination that jeopardy will not occur., Nevertheless, Congressional acceptance of *Hill*, together with the other changes in § 7, should discourage thoughts that the ESA has somehow been weakened. *See* notes 148-49 and accompanying text *infra*.

148. 16 U.S.C. § 1536(d) (Supp. III 1979).

149. *Id.* at § 1536(g)-(h) (Supp. III 1979).

150. 623 F.2d 712 (1st Cir. 1979), *aff'g* Massachusetts v. Andrus, 481 F. Supp. 685 (D. Mass. 1979).

151. *Id.* at 714-15. The ESA issue arose because the area of the sale—the Georges Bank—is a feeding ground in the migratory patterns of two endangered species of whales, the right (*Eubalaena Glaciales*) and the humpback (*Megaptera novaeangliae*). Massachusetts v. Andrus, 481 F. Supp. at 691.

argued that should the sale take place, the Secretary of Commerce[152] would only be able to cancel the leases under the standards of the Outer Continental Shelf Lands Act (OCSLA).[153] Because OCSLA standards differ from those of the ESA, appellants argued that the species would receive less protection than the ESA would otherwise provide.[154] The First Circuit rejected this claim, however, stating that the Secretary of the Interior would sell the leases, subject to an implied condition that the enforcement of the ESA would continue.[155] Accordingly, the court refused to enjoin the lease sale under Section 7(d). It is arguable, however, that the lease sale (as the first in a series of steps toward obtaining oil and gas) is precisely the point of a congressional-favored moratorium at least until Congress can determine the endangered species jeopardy question.[156]

In *North Slope Borough v. Andrus*,[157] plaintiffs sought to enjoin an offshore lease sale in the Beaufort Sea on the ground that the sale would jeopardize the endangered Bowhead whale.[158] Although the District Court for the District of Columbia noted that the cost of pre-

152. The Department of Commerce has jurisdiction over whales. *See* 50 C.F.R. § 222.23(a) (1980).

153. 43 U.S.C. §§ 1331-1356 (1976 & Supp. III 1979).

154. 623 F.2d at 714-15 & n.2. Section 5(a)(2)(A) of the OCSLA provides *inter alia* that the Secretary may cancel a lease if he/she determines that activity pursuant to such lease would probably cause serious harm or damage to life. 43 U.S.C. § 1334(a)(2)(A)(i) (Supp. III 1979). Under the ESA, of course, the agency and the lessee are prohibited from making irretrievable or irreversible commitments of resources which foreclose any reasonable or prudent alternative measures consistent with the § 7(a)(2) mandate. 16 U.S.C. §§ 1536(a)(2)-1536(d) (Supp. III 1979).

155. The court concluded that this holding simply constituted a basic rule of contract law. The courts generally will not interpret contracts so as to render them illegal. 623 F.2d at 715. *See* RESTATEMENT OF CONTRACTS § 512 (1932); J. CALAMARI & J. PERILLO, THE LAW OF CONTRACTS § 22-1 (2d ed. 1977).

156. Note that since Congress amended the ESA after TVA v. Hill, it, in effect, approved the Court's argument that § 7 should apply regardless of the project's completion state. See note 146 *supra*. Moreover, § 7 is precautionary in that it requires the determination of the jeopardy question at the beginning of the consultation process. The § 7(d) limitation on resource commitments constitutes the recognition that the earlier a jeopardy is discovered, the easier it will be to design alternatives which comply with the statute. *See* 124 CONG. REC. S10896 (daily ed. July 17, 1978) (statement of Sen. Culver). *See also* H.R. CONF. REP. NO. 697, 96th Cong., 1st Sess. 13, reprinted in [1979] U.S. CODE CONG. & AD. NEWS 4776, 4781.

157. 486 F. Supp. 332 (D.D.C. 1980), *aff'd in part, rev'd in part*, 642 F.2d 589 (D.C. Cir. 1980).

158. The Bowhead is listed as an endangered species at 50 C.F.R. § 17.11 (1980). It has been the subject of federal protection since 1946. 486 F. Supp. 332, 339.

exploration activities was significant,[159] it refused to hold that the lease sale violated Section 7(d)'s proscription against irretrievable commitment of resources.[160] The court ultimately enjoined the sale, however, because the consultation process had not produced a satisfactory biological opinion.[161] Therefore, consultation must continue at least until sufficient information is available to support a proper biological opinion.[162] Unfortunately, the court of appeals has recently lifted the district court's injunction,[163] and has authorized future lease engagements in all preliminary activities, including

159. The cost of these activities was estimated to be $157 million. *Id.* at 357.

160. *Id.* The court reasoned that the money invested in pre-exploration research was a useful device in deciding whether to proceed with exploration. Moreover, this cost must be considered a normal consequence of the high risks generally present in the industry. *Id.*

The court acknowledged that § 7(d) was designed to prevent an agency from "steamrolling" a project to secure its completion. Otherwise, an agency would be tempted to commit resources to the project and then argue for completion, even in the face of a *Hill* situation. *Id.* at 356. By its terms, § 7(d) forbids the commitment of irretrievable resources that would foreclose any reasonable alternatives which would not jeopardize an endangered species. *See* 16 U.S.C. § 1536(d) (Supp. III 1979). In holding, however, that no § 7(d) violation existed in this case, the district court appears to have opened the door for a possible *Hill* situation as massive pre-exploration investments may very well lead to a steamrolling effect.

Conservation Law Foundation v. Andrus, as well as *North Slope*, may have opened the door to a possible *Hill* situation. Both permitted lease sales despite the prohibitions of § 7(d). This action has weakened the ESA's consultation process which may result in a reincarnation of a *Hill* situation. At the very least, these cases suggest that the courts will enforce § 7 on an industry-by-industry basis. In "high risk" industries such an energy exploration, project proponents will be allowed to commit more resources at an earlier stage. Unfortunately, these "high risk" enterprises hold the highest risk for endangered species.

161. 486 F. Supp. 354. Section 7(b) of the ESA requires the Secretary to file a written "biological opinion," at the end of the consultation process, which details the effects of the agency action on the endangered species or its critical habitat. 16 U.S.C. § 1536(b) (Supp. III 1979). In *North Slope*, the Secretary had determined that insufficient information existed concerning the Bowhead Whale to support a proper biological opinion. 386 F. Supp. at 352. Agreeing with the Secretary, the district court held that under § 7(a)(2), the federal "action agency" could not insure that its actions would not jeopardize the whales or their critical habitat.

162. 486 F. Supp. at 352-54. If the biological opinion indicates that jeopardy is unlikely, the lease sale may proceed. On the other hand, if the biological opinion reveals that jeopardy is likely, the sale may proceed only if covered by an exemption from the ESA. *See* 16 U.S.C. § 1536(h) (Supp. III 1979).

163. *See* [1980] 11 ENV. REP. (BNA) (Curr. Div.) 422. The court of appeals has yet to reveal its rationale for lifting the injunction, but has promised a full opinion in the near future. *Id.*

geological surveys.[164] This result is particularly deplorable because the range of permissible activities is extended regarding potential jeopardy to endangered species.[165]

IV. CONCLUSION

The closing of the Tellico Dam will probably extinguish the Little Tennessee River's snail darter population. Despite TVA's recent claim that darters transplanted from the Little Tennessee to the nearby Hiwassee River are surviving and reproducing,[166] the darter's future is uncertain at best.[167] Moreover, both FWS and Dr. Etnier

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164. *Id.*

165. At the very least, the court of appeals in *North Slope* should clearly establish that the Secretary has a continuing duty to formulate a § 7(h) biological opinion and to enforce the mandates of §§ 7(a) and 7(d) if the opinion indicates that jeopardy is likely to exist.

166. *See* ALTERNATIVES, *supra* note 12, at 4-5. In 1975, TVA transplanted 410 darters to the Hiwassee. *See* note 62 *supra*. As of August 1978, 411 darters had been captured, marked, and returned in seven sampling areas of the Hiwassee. Extrapolating from these results, TVA estimated the total population in the Hiwassee to be 1,936. ALTERNATIVES, *supra* note 12, at 5, n.2. Using similar techniques, TVA estimated the total population of darters in the Little Tennessee to be 237, and noted that this indicated "a major and significant decrease" in numbers observed in recent years. *Id.* The latter result should have come as no surprise because the dam, even prior to closure, created a barrier to upstream migration for spawning. *Id.* at 89. TVA concluded that even absent impoundment of the reservoir, the Little Tennessee population would likely die out within one or two years. *Id.*

167. The Secretary of the Interior established a seven-member Snail Darter Recovery Team (two persons from TVA, two from the Tennessee Wildlife Resources Agency, two from the University of Tennessee, and one from FWS). *Id.* at 82, n.1. In light of the probable demise of the darter population in the Little Tennessee, the Recovery Team removed several hundred darters to the nearby Holston River when TVA closed the Tellico Dam. *See* [1980] 11 ENVIR. REP. (BNA) (Curr. Dev.) 1023.

Scientists do not know yet whether the Holston and Hiwassee transplants will be long-term successes. *See* 5 U.S. FISH AND WILDLIFE SERVICE, ENDANGERED SPECIES TECHNICAL BULLETIN, (1980). Among the potential factors which might influence the Hiwassee population, the Recovery Team noted that agricultural land use would have a detrimental effect if proper soil conservation techniques were not used to prevent excessive siltation of the river. The Recovery Team also expressed concern that industrial land use created a significant potential for danger. Since 1971, eight separate incidents have occurred in which tank cars, carrying sulfuric acid from a local copper mine, have derailed near the Hiwassee. Although only one derailment resulted in a fish kill, the Recovery Team noted that a large spill could decimate the darter population in the Hiwassee. *Id.* at 85.

Although a new, apparently natural population of snail darters has recently been discovered, *see* note 59 *supra*, the future of the species is still in doubt. Chickamauga Creek is itself plagued by population from industrial and sewage wastes resulting in

have stated that it requires five to fifteen years to determine whether the darter can successfully survive in its new environment.[168]

In its most recent analysis of the project, TVA noted that although benefits exceeded remaining costs for the reservoir and river-based alternatives, commencement of the project in any form today would not be economically feasible.[169] In addition, TVA stated that many resources of substantial human and environmental value, which would be destroyed or severely altered by the reservoir option, could not be reflected in its benefit-cost analysis.[170] Although TVA admitted that the project's environmental impacts favored a river-based alternative,[171] it failed to mention all of the adverse environmental effects produced by the dam.[172] These adverse effects may eventually decrease the recreational benefits predicted for the reservoir.

A most significant trend in the development of federal wildlife law is the requirement that the appropriate agency must consider wildlife values when planning federal water resource projects.[173] The process of broadening the wildlife value concept culminated in the ESA which declares that endangered species of plants and wildlife are of aesthetic, ecological, educational, historical, recreational, and scien-

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fish kills. *See* 5 *U.S. Fish and Wildlife Service, Endangered Species Technical Bulletin* (1980). Because the closure of the Tellico Dam destroyed a previously designated critical habitat for the snail dater, the FWS will determine whether Chickamauga Creek is suitable as a new critical habitat. *Id.* TVA apparently has no plans for future projects on Chickamauga Creek. *Id.*

168. *See* GAO Report, *supra* note 88, at 80.

169. *See* ALTERNATIVES, *supra* note 12, at 3, 36. The primary reason for this conclusion is the approximate doubling of the interest rate since the project was originally evaluated in 1971. *Id.* at 111-113.

170. *Id.* at 3. Indeed, TVA conceded that its benefit-cost analysis would not conform to the mandate of the ESA, which expressly recognizes the important "intangible" values at issue here. *Id.*

171. *Id.* at 35, 39-41.

172. The adverse effects which TVA failed to mention are: altered temperature regime of the surrounding land and water; increased evaporative loss from large surface area of the reservoir; accumulation of toxic materials due to a general slowing of water currents; and interference with the flow of detritus (nonliving, primarily organic material). Needless to say, these factors would have an adverse impact on much of the wildlife surrounding the dam and reservoir, as well as downstream. *See* Cairns, *The Modification of Inland Waters* in WILDLIFE AND AMERICA 151 (H. Brokaw ed. 1978).

173. *See* Bean, *Federal Wildlife Law* in WILDLIFE AND AMERICA 284 (H. Brokaw ed. 1978).

tific value to the nation and its people.[174] Faced with TVA's less-than-straightforward attempts to circumvent the ESA, Congress wisely moved to inject a measure of integrity into the Section 7 consultation process *via* the 1978 Amendments. Nevertheless, the eventual closing of Tellico's floodgates casts an ironic shadow on this integrity of the legislative process.

174. 16 U.S.C. § 1531(a)(3) (1976 & Supp. III 1979).

Appendix 1 (*Source*: ALTERNATIVES, *supra* note 12 at 43.)

TABLE 4a

ECONOMIC BENEFIT AND COST COMPARISON OF TELLICO ALTERNATIVES

	RESERVOIR DEVELOPMENT	TRIBUTARY IMPOUNDMENT	RIVER DEVELOPMENT	
	Tellico Reservoir (as originally planned)	(assumes dam at mile 3.7 of Tellico River)	With Flood Control	With Earth Dam Removed
Capital Costs ($ millions)				
TVA	$18.80	$36.00	$17.30	$22.00
Other - Recreation	1.90	0.50	0.50	0.50
Total Capital Costs	$20.70	$36.50	$17.80	$22.50
Annual Costs ($ millions)				
Interest Plus Amortization Operation and Maintenance and Replacement	$ 1.43	$ 2.49	$ 1.20	$ 1.53
TVA - Dam and reservation	0.10	0.12	0.11	0.01
- Management of lands	0.07	0.10	0.10	0.10
- Recreation and cultural	0.38	0.37	0.37	0.37
- Power	0.01	0.02	—	—
- Agricultural program	—	0.17	0.17	0.18
Others - Recreation	0.19	0.05	0.05	0.05
- Highways	—	0.02	0.02	0.02
Total Annual Costs	$ 2.18	$ 3.34	$ 2.02	$ 2.26
Annual Benefits ($ millions)				
Flood control	$ 1.04	$ 0.13	$ 1.15	$ —
Navigation	0.54-0.62	—	—	—
Power	2.70	0.44	—	—
Recreation, cultural, fish, and wildlife	0.45-1.18	0.29-0.67	0.22-0.49	0.22-0.49
Cultural (educational visitation only)	0.06	0.14-0.21	0.14-0.21	0.14-0.21
Water supply	0.05	—	—	—
Agriculture and forestry	0.11	1.72-2.81	1.80-2.90	1.93-3.07
Total Annual Benefits	$4.95-5.76	$2.72-4.26	$3.31-4.75	$2.29-3.77
Net Annual Benefits ($ millions)	$2.77-3.58	$(−)0.62-0.92	$1.29-2.73	$0.03-1.51
Benefit Cost Ratio	2.3-2.6	0.8-1.3	1.6-2.4	1.0-1.7