



United States
General Accounting Office
Washington, D.C. 20548

**Resources, Community, and
Economic Development Division**

B-270461

December 21, 1995

The Honorable Don Young
Chairman, Committee on Resources
House of Representatives

Dear Mr. Chairman:

A major goal of the Endangered Species Act is to achieve the recovery of species so that they no longer require protection. Consistent with this goal, the act calls for the Department of the Interior's U.S. Fish and Wildlife Service (FWS) and the Department of Commerce's National Marine Fisheries Service (NMFS), the two agencies with primary responsibility for carrying out the act, to prepare plans identifying the actions needed to achieve species recovery goals and to estimate the costs associated with such actions. As part of your Committee's oversight of the act and its reauthorization, you asked that we provide information concerning species protected under the act. Specifically, we are reporting on (1) estimates of the costs and time the responsible parties will need to recover selected species, including the costs of taking the most important recovery actions, and (2) FWS' and NMFS' perspective on the recovery cost estimates contained in species recovery plans.

The enclosure to this report provides the information you requested for 88 species protected under the act. We compiled the information from our review of 58 approved recovery plans that list and describe the various actions,¹ and their estimated costs, that are to support the recovery of these species. We also interviewed FWS and NMFS officials who are responsible for preparing, issuing, and implementing recovery plans to obtain their views on the reasonableness of the recovery cost estimates contained in the plans. According to these officials, the cost estimates contained in recovery plans are highly subjective, based usually on the "best guesses" of the plans' authors and not on rigorous analyses. As a result,

¹Some plans address the recovery of more than one species.

such cost estimates should be used with a great deal of caution.

ESTIMATED COSTS AND SPECIES RECOVERY GOALS

Overall, 34 of the 58 plans that we reviewed contained a total cost estimate for carrying out the recovery actions identified in the plans.² The total cost estimates in these plans³ ranged from a 1994 cost of \$145,000 for the White River Spinedace (a fish) to a 1991 cost of \$153.8 million for the green sea turtle.⁴ Of the remaining 24 plans, 23 contained costs only for the initial years of the species' recovery period. The initial 3-year costs in these plans ranged from a 1990 cost of \$57,000 for the Florida scrub jay (a bird) to a 1991 cost of \$49.1 million for the black-capped vireo (also a bird). The remaining plan that we reviewed, for the watercress darter (a fish), provided a 1993 cost estimate of \$16,000 for only 1 of the 12 identified recovery tasks included in the plan.

The plans also provided a wide range of estimated costs to carry out the most important recovery actions, referred to by FWS and NMFS as "high-priority" actions.⁵ For example, the 1990 recovery plan for the Florida scrub jay estimated a \$5,000 cost for high-priority recovery actions in the

²The types of cost information contained in the recovery plans that we reviewed varied. Some plans contained cost estimates for all recovery actions for the entire period projected for achieving the species recovery. Other plans provided cost estimates for recovery actions for only an initial 3- to 5-year period. Still others estimated costs for some recovery actions and not for others.

³Cost estimates included throughout this report are taken from species recovery plans and represent dollar values in the year that the plans were approved. If these values were expressed in current year (1995) dollars to make them more readily comparable, they would be somewhat higher. The differences among the estimates would remain largely the same.

⁴A substantial portion of the estimated recovery costs for the green sea turtle are shared with the loggerhead sea turtle.

⁵These actions are considered to be high priority because they are needed, among other reasons, to prevent species extinction.

initial 3-year period of recovery. In contrast, the 1991 cost for high-priority recovery actions for the green sea turtle in the initial 3-year period was estimated at over \$60 million and included the estimated cost for acquiring habitat.

Species recovery goals, in most cases, were not projected to be achieved before the year 2000, with the most future goal projected to be achieved in the year 2040--for the pallid sturgeon (a fish). For 16 of the plans we reviewed, no estimate was made for when the recovery goals would be achieved. The plan for one species, the northern right whale, which NMFS considers to be one of the most endangered animals, indicated that under the best conditions more than 100 years would be needed for a recovery rate to become apparent.

Entities identified in the plans as parties that would undertake recovery actions and thus share in the costs of species recovery always included FWS and/or NMFS and, for most plans, also included other federal agencies, state and local governmental agencies, and other parties. Other federal agencies, such as Interior's Bureau of Land Management, were identified in 45 plans; state and local governments were identified in 49 plans; and other parties, such as universities and private organizations, were identified in 47 plans.

PERSPECTIVE ON ESTIMATING SPECIES RECOVERY COSTS

FWS and NMFS officials told us that recovery cost estimates contained in species recovery plans provide a means to alert various governmental and private entities, which usually participate in carrying out recovery actions, to the possible range of costs and tasks associated with stabilizing and/or recovering individual species. The Director of FWS, FWS field biologists, and NMFS officials who are responsible for preparing and implementing recovery plans cautioned, however, that cost estimates for recovering species are highly subjective. Therefore, according to these officials, recovery cost estimates should be viewed in the context of certain caveats, including the following:

- Cost estimates in recovery plans represent only the best guesses of the plans' authors and are not developed from rigorous analyses. For example, authors cannot usually predict such things as (1) species' responses to planned recovery actions, (2) other agencies' willingness to participate in the

actions, (3) future land and water costs, and (4) the availability of resources to achieve tasks.

- Identifying individual recovery actions and their estimated costs does not obligate funding to carry out those actions.
- Not all of the actions listed in individual recovery plans need to be accomplished to achieve species recovery goals. According to FWS and NMFS officials, recovery plans attempt to list all tasks that could reasonably support the conservation and recovery of the species. As a plan is implemented, certain planned actions can be discarded because anticipated accomplishments are achieved through other actions. This is especially true when recovery plans recommend detailed research tasks.

FWS and NMFS officials noted that greater expenditures will likely be required to halt and reverse the decline of the high-priority species we selected for review than of lower-priority species. Therefore, these officials believe that the estimated costs contained in the 58 plans are not representative of the cost estimates contained in all approved recovery plans.

AGENCY COMMENTS

We provided a draft of this report to FWS and NMFS officials for their review and comment. The Acting Director, FWS, commented that the species recovery cost estimates contained in enclosure I provide an account of the cost estimates included in species recovery plans. The Acting Director also reiterated that the dollar figures taken alone and out of context could be very misleading. The Acting Director also provided a detailed explanation of the cost estimates. (Enc. II contains FWS' written comments.)

The Director, Office of Protected Species, NMFS, commented that the dollar amounts included in enclosure I for species that are NMFS' responsibility correctly quote estimates contained in the species recovery plans. However, the Director expressed concern that the amounts, taken by themselves and without careful analysis and explanation, do not represent the costs of recovering species protected by the Endangered Species Act. (Enc. III contains NMFS' written comments.)

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B-270461

The information contained in this report was based on our review of 58 out of approximately 400 approved recovery plans. The 58 plans that we selected for review were based on the following two criteria:

- The recovery plans had been approved by FWS and NMFS as initial or revised plans between May 1990 and May 1995. This time period was selected because (1) the 1988 amendments to the act, which called for recovery cost estimates to be included in recovery plans, were implemented in 1990 and (2) our review was initiated in June 1995.
- The recovery plans were for species considered by FWS to be facing a high degree of threat and to have a high potential for recovery.

Because some recovery plans discuss the conservation and recovery of more than one species, the plans that we reviewed discussed recovery actions for a total of 88 species, 70 of which were considered by FWS to be facing a high degree of threat and to have a high potential for recovery.

We performed our work from June through November 1995 in accordance with generally accepted government auditing standards. Should you or your staff have any questions about this report, please contact me at (202) 512-3841.

Sincerely yours,



Victor S. Rezendes
Director, Energy Resources,
and Science Issues

Enclosures - 3

ESTIMATED COSTS FOR RECOVERING SELECTED HIGH-PRIORITY SPECIES AS CONTAINED IN APPROVED SPECIES RECOVERY PLANS

Species name	Type	Status (E/T)	Date plan approved (R=revised plan)	Estimated recovery costs (Dollars in thousands)			Parties with recovery responsibilities				Habitat acquisition ^d	Year of recovery goal ^e
				Total	3-Year ^a	High-priority tasks ^b (3-Year)	FWS/NMFS	Other federal	State/local	Other ^c		
FWS Species												
Avens, spreading	Plant	E	93-04-28	not provided	\$212.5 ^f	\$45.0	✓			✓	✓	not provided
Bat, Mariana fruit ^g	Mammal	E	90-11-02	\$8,426.0	\$2,459.5	\$1,694.5	✓	✓		✓	✓	2000
Bat, Ozark big-eared	Mammal	E	95-03-28R	\$3,191.0 ^h	\$1,694.0	\$912.0	✓	✓		✓	✓	2005
Bear, grizzly	Mammal	T	93-09-10R	\$26,000.0	\$12,178.0	\$5,845.0	✓	✓		✓	✓	varies by region
Blue-star, Kearney's	Plant	E	93-05-24	\$771.0	\$345.5	\$201.0	✓	✓		✓	✓	2003
Bulrush, northeastern	Plant	E	93-08-25	\$589.0	\$282.0	\$110.0	✓	✓		✓	✓	2004
Caribou, woodland	Mammal	E	94-03-04R	\$2,554.0 ⁱ	\$1,404.0	\$677.0 ^j	✓	✓		✓	✓	2003
Cavefish, Alabama	Fish	E	90-10-25R	not provided	\$469.0	\$205.0	✓	✓		✓	✓	not provided
Chamaecrista glandulosa	Plant	E	94-05-12	not provided	\$114.5 ^k	\$43.5 ^l	✓			✓	✓	2025
Chub, Humpback	Fish	E	90-09-19R	\$53,000.0 ^m	\$2,865.0	\$525.0	✓	✓		✓	✓	2003 ⁿ
Chub, Virgin River, Woundfin	Fish	E	95-04-19R	not provided	\$1,195.0 ^o	\$1,070.0 ^p	✓	✓		✓	✓	2015
Crane, whooping	Bird	E	94-02-11R	\$48,120.0	\$7,108.0	\$940.0	✓	✓		✓	✓	2020
Crow, Mariana; Kingfisher, Guam; Micronesian; Raul, Guam ^q	Bird	E	90-09-28	\$16,738.0 ^r	\$2,810.0	\$1,862.0	✓	✓		✓	✓	2015

**ESTIMATED COSTS FOR RECOVERING SELECTED HIGH-PRIORITY SPECIES
AS CONTAINED IN APPROVED SPECIES RECOVERY PLANS**

Species name	Type	Status (F/T)	Date plan approved (R=revised plan)	Estimated recovery costs (Dollars in thousands)			Parties with recovery responsibilities				Habitat acquisition ^d	Year of recovery goal ^e
				Total	3-Year ^e	High-priority tasks ^b (3-Year)	FWS/NMFS	Other federal	State/local	Other ^f		
Cui-ti	Fish	E	92-05-15R	\$13,959.0 ^g	\$2,553.0	\$901.0 ^g	✓	✓	✓	✓	✓	2016
Darter, watercress	Fish	E	93-03-29R	not provided ^h	not provided	\$16.0	✓	✓	✓	✓	✓	not provided
Enrhubio	Plant	E	92-07-09	not provided	\$182.5	\$134.5	✓	✓	✓	✓	✓	2015
Falcon, northern aplomado	Bird	E	90-06-08	not provided	\$567.0	\$270.0	✓	✓	✓	✓	✓	not provided
Cardenia, Hawaiian	Plant	E	93-09-30R	\$9,385.5	\$714.0	\$281.0	✓	✓	✓	✓	✓	2010
Invertebrates, karst ^h	Insect (3) Arachnid (4)	E	94-08-25	\$7,320.0	\$1,360.0	\$875.0	✓	✓	✓	✓	✓	2014 ^h
Irisette, white	Plant	E	95-04-10	not provided	\$250.5 ⁱ	\$83.0	✓	✓	✓	✓	✓	not provided
Jay, Florida scrub	Bird	T	90-05-09	not provided	\$57.0 ^g	\$5.0 ^h	✓	✓	✓	✓	✓	not provided ^h
Meadowruc, Conley's	Plant	E	94-04-21	not provided	\$295.5	\$19.0	✓	✓	✓	✓	✓	not provided
Naucorid, Ash Meadows ^g	Insect	T	90-09-28	\$7,345.0	\$1,747.0	\$69.0	✓	✓	✓	✓	✓	2005
Phlox, Texas trailing	Plant	E	95-03-28	\$1,043.0	\$572.0	\$284.0	✓	✓	✓	✓	✓	2005
Pitcher-plant, mountain sweet	Plant	E	90-08-13	not provided	\$212.5 ⁱ	\$19.0	✓	✓	✓	✓	✓	not provided
Poppy, Sacramento prickly	Plant	E	94-08-31	not provided	\$804.5	\$331.5	✓	✓	✓	✓	✓	2004 or later
Prairie-chicken, Attwater's greater	Bird	E	93-02-08R	\$60,038.0	\$45,401.0	\$43,955.0	✓	✓	✓	✓	✓	2000

ESTIMATED COSTS FOR RECOVERING SELECTED HIGH-PRIORITY SPECIES AS CONTAINED IN APPROVED SPECIES RECOVERY PLANS

Species name	Type	Status (I/T)	Date plan approved (R=revised plan)	Estimated recovery costs (Dollars in thousands)			Parties with recovery responsibilities				Habitat acquisition ^d	Year of recovery goal ^e
				Total	3-Year ^a	High-priority tasks ^b (3-Year)	FWS/NMFS	Other federal	State/local	Other ^c		
Pronghorn, Sonoran	Mammal	E	94-08-30R	not provided	\$3,540.0	\$0.0	✓	✓	✓	✓	2002	
Rosemary, Etonia	Plant	E	94-09-27	not provided	\$90.0	\$26.0 ^f	✓	✓	✓	✓	not provided	
Sand-verbena, large-fruited	Plant	E	92-09-30	\$831.9	\$331.0	\$138.0	✓	✓	✓	✓	2015	
Schiedea, Diamond Head	Plant	E	94-02-02	\$384.5	\$209.5	\$128.5	✓	✓	✓	✓	2011	
Shiner, beautiful; Topminnow, Yaqui ^g	Fish	T	95-03-29	\$3,570.0	\$2,106.0 ^h	\$91.5 ^t	✓	✓	✓	✓	2005	
Shiner, Cahaba	Fish	E	92-04-23	not provided	\$405.0 ^{cc}	\$300.0 ^{dd}	✓	✓	✓	✓	not provided	
Shiner, Pecos bluntnose	Fish	T	92-09-30	\$2,263.5	\$1,122.5 ^{ee}	\$168.5 ^{ff}	✓	✓	✓	✓	2002	
Skullcap, Florida; Spurge, telephus ^{gg}	Plant	T	94-06-22	not provided	\$127.0 ^g	\$32.0	✓	✓	✓	✓	not provided	
Spinedace, White River	Fish	E	94-03-28	\$145.0 ^{hh}	\$86.0	\$86.0 ⁱ	✓	✓	✓	✓	2007	
Squawfish, Colorado	Fish	E	91-08-06R	\$53,000.0 ⁱⁱ	\$3,212.0	\$1,748.0	✓	✓	✓	✓	2003 ^{kk}	
Sturgeon, pallid	Fish	E	93-11-07	not provided	\$9,750.0 ^{ll}	\$7,975.0 ^{mm}	✓	✓	✓	✓	2040	
Sucker, Lost River; Sucker, shortnose	Fish	E	93-03-17	\$7,705.6 ⁿⁿ	\$6,255.6	\$6,020.6 ^{oo}	✓	✓	✓	✓	2012	
Sumac, Michaux's	Plant	E	93-04-30	not provided	\$280.5	\$19.0	✓	✓	✓	✓	not provided	
Tern, least (interior)	Bird	E	90-09-19	\$1,720.0-\$2,000.0	\$1,720.0	\$555.0	✓	✓	✓	✓	2005	

GAO/RCED-96-34R, Estimated Costs To Recover Protected Species

ESTIMATED COSTS FOR RECOVERING SELECTED HIGH-PRIORITY SPECIES AS CONTAINED IN APPROVED SPECIES RECOVERY PLANS

Species name	Type	Status (E/T)	Date plan approved (R=revised plan)	Estimated recovery costs (Dollars in thousands)			Parties with recovery responsibilities				Habitat acquisition ^d	Year of recovery goal ^e
				Total	3-Year ^a	High-priority tasks ^b (3-Year)	FWS/NMFS	Other federal	State/local	Other		
Thistle, Sacramento Mountains	Plant	T	93-09-27	\$1,195.0	\$699.0	\$227.0	✓	✓	✓	✓	✓	2002
Toad, Puerto Rican crested	Amphibian	T	92-08-07	not provided	\$214.2	\$13.5	✓				✓	not provided
Toad, Wyoming	Amphibian	E	91-09-11	\$1,594.0	\$985.5	\$764.5	✓	✓	✓	✓	✓	2000
Trout, Gila	Fish	E	93-12-08R	\$816.0	\$285.0 ^m	\$30.0	✓	✓	✓	✓		2000
Vireo, black-capped	Bird	E	91-09-30	not provided	\$49,117.0 ⁱ	\$1,815.0	✓	✓	✓	✓	✓	2020
Vole, Hualapai Mexican	Mammal	E	91-08-19	\$1,117.0	\$736.0	\$301.0	✓	✓	✓	✓	✓	1996
Warbler, golden-cheeked	Bird	E	92-09-30	\$11,889.0	\$8,316.0	\$4,468.0	✓	✓	✓	✓	✓	2008
Warren, clasping	Plant	E	93-02-17	not provided	\$156.5 ^h	\$24.5	✓		✓	✓	✓	2003
Wire-lettuce, Malheur	Plant	E	91-03-21	\$622.3 ^m	\$112.8	\$12.0	✓	✓	✓	✓	✓	2003
NMFS SPECIES												
Sea-lion, Steller	Mammal	T	92-12-00 ^g	not provided	\$7,810.0 ⁿ	\$2,975.0 ⁿ	✓	✓	✓	✓	✓	not provided
Whale, humpback	Mammal	E	91-11-00 ⁿ	not provided	\$15,560.0 ⁿ	\$0.0	✓	✓	✓	✓	✓	not provided

**ESTIMATED COSTS FOR RECOVERING SELECTED HIGH-PRIORITY SPECIES
AS CONTAINED IN APPROVED SPECIES RECOVERY PLANS**

Species name	Type	Status (E/T)	Date plan approved (R=revised plan)	Estimated recovery costs (Dollars in thousands)			Parties with recovery responsibilities				Habitat acquisition ^d	Year of recovery goal ^e
				Total	3-Year ^c	High-priority tasks ^b (3-Year)	FWS/NMFS	Other federal	State/local	Other ^f		
Whale, northern right	Mammal	E	91-12-00 ^g	not provided	\$10,740.0	\$1,710.0	✓	✓		✓		not provided ^h
FWS/NMFS SPECIES												
Turtle, green sea (Atlantic)	Reptile	E/T ^g	91-10-29R	\$153,800.0 ^g	\$65,235.0	\$63,090.0 ^g	✓	✓	✓	✓	✓	2015
Turtle, hawksbill sea (Atlantic)	Reptile	E	93-12-15R	\$12,850.0	\$1,590.0 ⁱ	\$770.0	✓	✓	✓	✓		2020
Turtle, Kemp's ridley sea	Reptile	E	92-08-21R	\$60,000.0 ^g	\$11,617.0	\$5,605.0	✓	✓	✓	✓		2020
Turtle, leatherback sea (Atlantic)	Reptile	E	92-04-06R	\$6,740.0	\$1,155.0	\$465.0	✓	✓	✓	✓	✓	2015
Turtle, loggerhead sea (Atlantic)	Reptile	T	91-12-26R	\$151,700.0 ^g	\$64,854.0	\$62,430.0 ^g	✓	✓	✓	✓	✓	2015

Source: Fish and Wildlife Service and National Marine Fisheries Service approved species recovery plans.

Note: Cost estimates for individual species represent dollar values in the year that the recovery plans were approved. Total cost estimates for individual species include the estimated costs for all actions that could reasonably support the recovery of the species. FWS cautioned that since not all identified recovery actions need to be accomplished to achieve species recovery, the total cost estimates should not be viewed as an estimate of what the actual cost of recovery might be.

Note: Endangered (E), Threatened (T).

^gRecovery plans typically contain cost information in both an executive summary and a recovery task implementation schedule, the latter providing costs itemized by recovery task. In recovery plans that we reviewed for some species, we found discrepancies between cost information in the executive summary and cost information itemized by recovery task. Unless noted otherwise, the cost information included in the column labeled "3-Year" is a total of the estimated costs itemized by recovery task.

¹FWS and NMFS, the agencies responsible for overseeing the development of species recovery plans, assign individual recovery tasks a priority number from one to three, depending on the relative contribution the task can make to species recovery. Priority one tasks are actions that must be taken to prevent extinction, to prevent the species from declining irreversibly, or to identify actions necessary to avoid extinction. Priority two tasks must be taken to prevent a significant decline in the species' population numbers or habitat quality. Priority three tasks are all other actions necessary to provide full recovery. The cost estimates in the column labeled "High-priority tasks" are the total of the 3-year cost estimates for priority one tasks.

²Examples of other parties with recovery responsibilities include universities; conservation organizations; private organizations and individuals; botanical gardens; Native American tribes; and agencies from Canada, Puerto Rico, Guam, and the Commonwealth of the Northern Mariana Islands.

³The check marks indicate that the recovery plan identified the acquisition of species habitat as a recovery task that is or may be required. Acquiring species habitat can involve the acquisition, through purchase of title or conservation easement, of water rights as well as land.

⁴The year of recovery goal is the year the recovery objective for the species is projected to be achieved. For most of the recovery plans that we reviewed, the objective was either to "downlist" (reclassify the species from endangered to threatened) or to "delist" (remove the species from the protection of the act). Other plans established recovery goals such as stabilizing species populations or increasing the size of existing species populations.

⁵The cost of one recovery task is unknown.

⁶The recovery plan covers an additional listed species - the little Mariana fruit bat. The costs reported here are for both species.

⁷This figure includes the costs of tasks designed to both downlist and delist the species.

⁸Fifteen of 63 recovery tasks have costs that are to be determined. Also, according to the plan, some tasks are already in place and therefore do not require additional funding.

⁹Nine of 31 high-priority tasks have costs that are to be determined.

¹⁰The cost of one high-priority task is unknown.

¹¹This figure includes the estimated cost to recover three additional listed species - the honytail chub, Colorado squawfish, and razorback sucker.

¹²This recovery date applies to populations in the Upper Colorado River Basin, excluding the San Juan River.

¹³Sixteen of 40 recovery tasks have unknown costs.

¹⁴Four of 15 high-priority tasks have unknown costs.

¹⁵The recovery plan covers two additional listed species -- the Guam broadbill and the bridled white-eye. The costs reported here are for all five species.

¹⁶This figure covers recovery costs for the period 1985-2015.

ENCLOSURE J

¹Seventeen of 44 recovery tasks have unknown costs.

²Six of 15 high-priority tasks have unknown costs.

³The recovery plan provides a cost estimate for only one out of a total of 12 recovery tasks.

⁴The recovery plan covers seven listed species -- the Ice Creek Cave harvestman, Bone Cave harvestman, Coffin Cave mold beetle, Kretschmarr Cave mold beetle, Tooth Cave pseudoscorpion, Tooth Cave ground beetle, and Tooth Cave spider. The costs reported here cover all of these species.

⁵The date the recovery goal will be achieved may vary depending on the species.

⁶This total does not include the cost of land acquisition. Also, the cost of one recovery task is unknown.

⁷The recovery plan indicates that this species may always require a threatened classification for its conservation.

⁸The recovery plan for this species covers a total of 12 federally listed species and additional candidates. The costs reported here are for all of these species.

⁹This total does not include the cost of land acquisition.

¹⁰The recovery plan covers two additional listed species-- the Yaqui catfish and Yaqui chub. The costs reported are for all four species.

¹¹This total comes from the executive summary which reports higher costs than the implementation schedule.

¹²This figure does not include the cost of the most expensive task, which will likely involve the development of new waste water treatment technology.

¹³This figure does not include the cost of one out of a total of two high-priority tasks. This is the most expensive task in the recovery plan.

¹⁴This total comes from the executive summary, which reports higher costs than the implementation schedule. Also, the cost of one recovery task is unknown.

¹⁵FWS costs only.

¹⁶The recovery plan covers two additional threatened plants-- the white birds-in-a-nest and Godfrey's butterwort. The costs reported here are for all four species.

¹⁷Six of 19 recovery tasks have costs that are to be determined.

¹⁸Three of 12 high-priority tasks have costs that are to be determined.

¹⁹This figure includes the estimated cost to recover three additional listed species -- the humphack chub, bonytail chub, and razorback sucker.

¹¹ This recovery date applies to the Green River/Upper Colorado River subbasins

¹² Nine of 56 recovery tasks have unknown costs

¹³ Eight of 43 high-priority tasks have unknown costs.

¹⁴ Eighteen of 85 recovery tasks have costs that are to be determined.

¹⁵ Eleven of 76 high-priority tasks have costs that are to be determined

¹⁶ This total includes the cost of recovery tasks begun as early as 1985

¹⁷ This recovery plan was approved in December 1992. We could not determine the exact date of approval.

¹⁸ NMFS costs only

¹⁹ This recovery plan was approved in November 1991. We could not determine the exact date of approval.

²⁰ Five of 70 recovery tasks have costs that could not be determined.

²¹ This recovery plan was approved in December 1991. We could not determine the exact date of approval.

²² The recovery plan states that even under the best of conditions, it will take more than 100 years for the northern right whale population to reach pre-exploitation levels.

²³ Populations off Florida and the Pacific coast of Mexico are endangered while all others are threatened.

²⁴ The green and loggerhead sea turtle recovery plans share \$145,700,000 in costs.

²⁵ All but \$1,010,000 of these costs are also associated with the loggerhead turtle recovery plan.

²⁶ Much of this cost is shared with actions in recovery plans for other sea turtles.

²⁷ All but \$670,000 of these costs are also associated with green sea turtle recovery plan tasks.



United States Department of the Interior

FISH AND WILDLIFE SERVICE
Washington, D.C. 20240

IN REPLY REFER TO

In Reply Refer To:
FWS/TE

December 5, 1995

Mr. Barry T. Hill
Associate Director
Natural Resources Management Issues
U.S. General Accounting Office
441 G Street NW
Washington, D.C. 20548

Dear Mr. Hill:

Thank you for the opportunity to review and comment on the General Accounting Office's November 29, 1995, draft letter to Representative Don Young, Chairman, House Resources Committee responding to his request for recovery task cost estimates provided in endangered and threatened species recovery plans. The tables enclosed with that letter provide an account of those dollar amounts. Although we did not proof the plan-by-plan dollar estimates, we assume the figures were correctly quoted from the 58 recovery plans selected for the study.

As we discussed previously, the dollar figures, taken alone and out of the context of their purpose, can be very misleading, and may tempt some to paint an inaccurate and highly inflated picture of actual recovery costs. We appreciate your noting this fact in the draft. Specifically, that:

- not all of the actions listed in an individual recovery plan need to be accomplished to achieve recovery goals;
- cost estimates are highly subjective, and are not the product of rigorous economic analysis;
- recovery cost estimates represent only "best guesses;"
- estimates do not obligate any funding; and,
- the high-priority species selected for the report will likely require greater expenditures to reach recovery goals than lower priority species (the 58 plans selected for the review are not representative of the over 500 existing final recovery plans).

Although these points are in the text of the letter, it may prove helpful to include them as footnotes to the table as well. Should the table and the letter become separated, the information would stay "physically attached" to the numbers.

While the statements in your letter help in providing some perspective to the dollar estimates, we recognize that the major focus of your letter is to convey the numbers requested by the House Resources Committee with only a minimum of discussion and analysis; interpretation is left largely to the reader. We'd like the opportunity here to expand the discussion, to give greater depth to what those figures do and do not represent.

1. Not all tasks listed in a recovery plan and, subsequently, not all estimated expenditures, need to be accomplished to reach recovery goals.

Recovery plans' implementation schedules attempt to list tasks that support the goals of conservation and recovery of listed species. This list provides a comprehensive "menu" of tasks from which agencies directly charged with recovery (the Service and the National Marine Fisheries Service) can plan overall recovery strategies, and from which other agencies and involved private parties can identify tasks they can undertake that will aid progress toward recovery (such as when Federal agencies evaluate proposals for funding conservation projects).

As some tasks are accomplished, it may become evident that other tasks need not be undertaken and can be abandoned. This is especially true where research tasks and land acquisition are recommended. For example, the Recovery Plan For the Hawaiian Gardenia lists, as a task, "develop methods to control introduced insects," and \$30,000 is estimated as the cost of this work. Non-native insects are a significant State-wide agricultural problem in Hawaii, and insect control research is ongoing for many purposes unrelated to the Hawaiian gardenia. Should the State, federal Department of Agriculture, or other researcher develop an effective control program, there may be no need to spend recovery funds for this work. Likewise, weed control is listed 17 times in the implementation schedule for this endangered plant with a total estimated expenditure of over \$100,000. Development of an effective weed control agent would greatly reduce the need (and expense) of this task.

Another example is provided by numerous recovery plans for listed mussel species throughout the north-central, east, and southeast United States. All either are, or foreseeably will be, threatened by competition from the exotic zebra mussel, and these recovery plans recommend various research and management actions (and estimate recovery costs for those actions) regarding zebra mussels. Research under the banner of any one mussel recovery plan will be applicable to other endangered mussel species, and if each implementation plan recommends the same action, estimated dollar figures should not be totalled; the task will only be accomplished once. Also using the example of zebra mussels, considerable resources are being spent on research by many entities adversely affected by their presence, including municipal power generating facilities, shipping companies, irrigation facilities, and others. Research dollars spent by them would tend to significantly reduce the need to spend recovery funds. Should an effective control be developed, endangered mussel recovery funds would no longer be required.

Recommended land purchases must be listed in a recovery plan's implementation schedule to be considered for any future acquisition. Land acquisition actions are cited in 43 of the 58 plans reviewed in the GAO letter. For some individual species, land acquisition estimates are significant (e.g., \$21-million for land acquisition for Attwater's prairie chicken and \$90-million for green sea turtle and loggerhead sea turtle). The figures can be misleading in that the Service requires that prior to any acquisition of lands for endangered species, that task must be specifically identified in an approved recovery plan. As a result, all remotely anticipated land acquisitions are included in recovery plans to allow future acquisition if such land (1) is found to be critical to the success of recovery, (2) becomes available for purchase by a willing seller, and (3) if money is available to fund the purchase.

Importantly, by identifying specific parcels as important to recovery in the implementation schedule, the Service and other participating agencies can seek out opportunities to meet the biological and/or management needs of the listed species in question without in-fee acquisition. The Service places a strong emphasis on developing alternatives such as cooperative agreements with land owners, negotiated easements, partnerships with private organizations such as The Nature Conservancy or private land owners (such as timber companies), and by other means. Given the shrinking availability of land-acquisition funds, these alternatives are both cost-effective and, in many cases, more desirable than purchase.

2. Section 4(f) of the Endangered Species Act requires that recovery plans provide a description of site-specific management actions that can be undertaken to achieve the goal of conservation; the federal, State, and/or private agencies or parties who may undertake those tasks; and estimates of the time and costs required to carry out those measures. Included may be costs associated with research, management, and land acquisition.

It is important to note that the Service's annual recovery budget largely determines how much will be available to spend on all recovery tasks, including personnel, administrative costs, and actual implementation of recovery actions, including land acquisition. This amount is often reduced by earmarked spending actions. This "off the top" obligation recommended by Congress is often significant. For example, in Fiscal Year 1993, over \$11-million (over 50% of the appropriations for the Recovery Program) was earmarked by Congress for specific species, including:

\$ 77,000	Kirtland's warbler	\$ 805,000	Rocky Mountain wolf
450,000	Grizzly bear	680,000	Puerto Rican parrot
377,000	Peregrine falcon	144,000	Cui-ui
848,000	California condor	340,000	Whooping crane
256,000	Sea turtles	2,685,000	Northern spotted owl
339,000	Southern sea otter	665,000	Red wolf
384,000	Hawaiian birds	297,000	Pacific Island species

In Fiscal Year 1994, of the total recovery appropriation of \$30-million, \$10-million was "earmarked."

Such directed funding decreases the Service's ability to adhere to species-by-species, biologically driven priorities established in recovery plans. Additionally, earmarks dramatically decrease the accuracy of the yearly total cost estimates provided in implementation schedules. In some cases, the amount earmarked by Congress to be spent on a specific species exceeds the recovery plan's estimate.

3. All of these factors reinforce the fact that while occasionally useful for planning purposes, the dollar figures provided in these plans do not reflect the reality of actual expenditures. The important figures that are missing are the actual funding levels provided and the actual dollars spent. Rarely do the actual funds spent match the recovery plan implementation schedule's estimates for any specific year. For example, for FY 1993, the recovery plan for the Lost River sucker estimates an expenditure of \$2,950,600; \$ 953,600 was actually spent; for FY 1992, the recovery plan for the black-capped vireo estimates an expenditure of \$16,274,000; \$1,087,000 was actually spent. Enclosed are fact sheets on two listed species (Ozark big-eared bat and green pitcher plant) representative of those that are seeing exceptional progress toward recovery with actual recovery expenditures significantly less than those estimated in their respective recovery plans.

4. The estimated costs included in the tables should never be used in a "cost per individual" type of analysis. Although GAO's letter does not make such an analysis, there may be a strong temptation for anyone using the tables to take the total dollar figures for any one recovery plan and divide it by the number of existing individuals of that species. Such a calculation would be very misleading. The following should be considered:

-Allocations spent for any specific species usually produce effects beneficial for other trust resources as well. For example, managing a large parcel of wetland habitat for the recovery of an endangered frog will likely also benefit other aquatic species there. Often, especially with aquatic species, the threats that have triggered the need to list the frog are also threatening other species that share that habitat, and habitat conservation will benefit a range of species regardless of their listed status; actions will likely serve to make future listings of species in that area unnecessary. These benefits are not recognized in an analysis of funding for one specific species.

-The total estimated cost in a recovery plan should be reduced by the cost of not-yet-accomplished tasks that may not be needed to reach recovery goals.

-The more imperiled a species is (as represented by its very low population), the more dire the need and, frequently, the more expensive the emergency tasks required to prevent extinction. In those cases where larger dollar amounts are spent on a few individuals, it is logical that the expenditures are of a high priority and are warranted.

-The costs are associated with tasks that may be needed to reach a recovered population (as defined, in part, by a number of individuals or other groupings), not costs needed to maintain the present, depleted number.

-Land acquisition costs should be individually evaluated. With Attwater's prairie chicken, for example, \$21-million of the \$60-million estimate is for land acquisition. These lands would not suddenly lose their worth if acquired, the same way that the value of a piece of property does not lose its value if acquired as a National Park, military base, or federal highway. Real property acquired for listed species never loses all its value for other uses (e.g., recreation, education, research, water quality maintenance, timber production, and flood control).

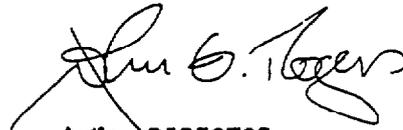
Regardless of recovery plans' dollar estimates, recovery is a challenging undertaking critical to both environmental and economic health. For more than 25 years, Congress has represented the public by expressing its desire to recover endangered species. Recovery is among the most important tasks delegated to the Fish and Wildlife Service; it is also one of the most challenging. Declines of many plants and animals at the brink of extinction are frequently the result of up to two centuries of decreasing habitat quality and quantity, and the message that fact delivers regarding the quality of human life is serious. By the time many species are listed, they are critically close to being lost forever; the average numbers of individuals left when their species is listed is about 1,000 for animals and only 100 for plants. Considering the obstacles imposed by such long-term environmental and biological factors, the recovery program has been quite successful. Over 99% of all species listed since the Endangered Species Act was signed in 1973 are still extant, and 58% have been provided a life-line that has stabilized or improved their condition.

While the earlier years of the Endangered Species Act focussed almost entirely on a purely biological approach to recovery, experience has taught that the scope of recovery must be broadened if effective and efficient solutions are to be gained with regularity. Our biggest challenge today is reversing long-term declines while defining innovative conservation and management actions that serve to both benefit the species and accommodate society's other goals, including economic growth. We have learned that achieving one facilitates the other; the goals are directly linked. It has been shown that sustaining economic growth in areas suffering chronic environmental decline is impossible, and conversely, we recognize that without a strong economy, a healthy environment and the benefits it provides will be lost. Accordingly, dollars spent on recovery return more than just the survival of a specific species of insect or bird, and an analysis of the "cost" of recovery should describe the full range of benefits derived.

We have also enclosed both the Service's recent Report to Congress on the Recovery Program and a fact sheet titled Recovery: Success and Cost. These provide additional detail about the overall recovery program and related expenses.

Again, thank you for the opportunity to comment. If we can be of any additional assistance, please let me know. We would appreciate receiving a copy of the final letter as soon as possible after release to the Committee; our Division of Endangered Species' fax number is (703) 358-1735.

Sincerely,



Acting DIRECTOR

Enclosures



DEC 14 1995

Mr. Barry T. Hill
 Associate Director
 Natural Resources Management Issues
 U.S. General Accounting Office
 441 G Street NW
 Washington, D.C. 20548

Dear Mr. Hill:

Thank you for the opportunity to review and comment on the General Accounting Office's draft letter (November 29, 1995) to Representative Don Young, Chairman, House Resources Committee concerning the Chairman's request for costs estimates of recovery tasks that are included in recovery plans for endangered and threatened species.

Although the figures correctly quote estimates from the recovery plans for the species that are NMFS' responsibility, we are concerned that these figures, taken by themselves and without careful analysis and explanation, do not represent the cost of recovering species that are afforded protection by the Endangered Species Act. As you say, these cost estimates should be used with a great deal of caution.

First, the recovery plans selected for review are for high priority species, and do not represent the vast majority of species with recovery plans. High priority species, those with a high degree of threat and a high potential for recovery, are likely to require more expensive steps to halt decline and begin recovery.

Second, the cost estimates for recovering species are just that...estimates. They are not subject to strict economic analysis, and they do not take into account circumstances such as a recovery task in one plan may also contribute to the recovery of another species (i.e., similar recovery tasks for humpback whales and right whales). Therefore, not all tasks listed in each recovery plan may need to be funded separately to accomplish recovery goals.

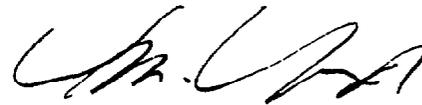
Third, costs estimates for recovery tasks usually are significantly different from actual expenditures. These costs estimates may be useful for planning purposes, but they do not reflect actual expenditures. For example, the recovery plan for the green sea turtle (completed in 1991) identifies over \$63



million for high priority tasks over a 3-year period; however, between 1992 and 1995, the actual expenditures for recovery were only a fraction of the estimated costs identified in the plan. The actual spending levels also confirm that identifying recovery tasks in a plan does not obligate funding by anyone in the private sector or government.

The most serious concern that we have regarding this report will be the use of dollar figures out of context. This will be misleading, and emphasizes the need for the report to include a table or a column listing actual expenditures along with estimated recovery costs. Again, thank you for the opportunity to comment. Please let us know if we can offer any additional assistance.

Sincerely,



William W. Fox, Jr., Ph.D.

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