

PROJECT E5 WORK PLAN, SEGMENT 20
JULY 1, 2008 - JUNE 30, 2009

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Nongame and Endangered Wildlife Program
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Final June 19, 2008



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*Fiscal Section 6
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May 31, 2008

Mr. Steve Spangle
 Field Supervisor
 2321 West Royal Palm Road, Suite 103
 Phoenix, AZ 85021-2513

Dear Mr. Spangle:

The Arizona Game and Fish Department (Department) is in receipt of your letter dated May 15, 2008, in which \$253,000 in federal section 6 funds are made available to the state to support conservation programs for threatened and endangered fish and wildlife species. I accept your offer of \$253,000 in project funding and will apply it to threatened and endangered programs within Arizona. As in the past, the Department has a significant financial commitment to the ongoing Mexican wolf recovery program. It is therefore anticipated that the full allotment of these section 6 funds will be allocated to that program.

The offer letter provides a list of several species that the USFWS Arizona Ecological Services Field Office (ESFO) suggests would benefit from the use of section 6 funds and requests an opportunity to engage in a collaborative effort regarding the development of priorities and funding proposals. The Department will commit significant resources (e.g. Heritage IIAPM and State Wildlife Grants funds) on all of the species listed in the letter (as well as many others). However, for our own budgeting and reporting purposes, there is little value in dividing up the section 6 funds among multiple species. Mr. Eric Gardner, Chief of the Nongame and Endangered Wildlife Program, presented budgeting information to your office on August 6, 2007.

In cooperation with USFWS staff in Albuquerque and Phoenix, Eric Gardner and his staff will complete the Section 6 Segment 20 Job Statement. The Job Statement will cover all of the listed species work conducted by the Department (except intentional take covered by permit) and funding amounts will be indicated for those species for which funding is allocated. Any section 6 funds allocated to additional species will be documented in the Job Statement. As always, we appreciate the Service's continuing support of our Nongame and Endangered Wildlife Program through section 6 funds.

Sincerely,

Larry Voyles
 Director

LV:esg

Job 22. Mexican wolf conservation: Cost Code 06592

Job Funding	
New USFWS Sec 6 (75%):	253,000
New State Match (25%):	84,333
Amend-E33USFWS (75%):	0
Amend-E33 State Match (25%):	0
Additional State (100%):	0
Amended Section 6 (90%)	50000
New State Match (10%)	5556
Federal Contract	125,000
Total	517,889

Other project funds: USFWS \$125,000 (contract).

Estimated funding needs other than for habitat acquisition: planning \$150,000; survey \$25,000; monitoring \$175,000; research \$500,000; habitat enhancement \$10,000; other management activities \$50,000; outreach and publications \$150,000. Total funding needs \$1,060,000.

Species: Mexican wolf (*Canis lupus baileyi*)

Five-Year Goals, Objectives, and Approaches: Under project direction from the Service's Mexican Wolf Recovery Coordinator, capture; handle; provide medical treatment and immunizations to; propagate; conduct Service-approved research activities on; obtain and preserve blood, tissue, semen, and ova and other samples from; transport between approved captive management facilities; and carry out any other Service-approved husbandry practices or management actions within the states of Arizona and New Mexico.

For scientific research and recovery purposes related directly to the conservation and protection of reintroduced nonessential experimental populations of Mexican wolves in Arizona and New Mexico, carry out any management or research activity authorized by the current Mexican Wolf Nonessential Experimental Population Rule (50 CFR 17.84(k), or any current Service-approved management plan or special management measure adopted by the Service pursuant to provisions of 50 CFR 17.84(k) (3) (ix).

Current Year Procedures:

1. Continue to release, monitor, and manage Mexican wolves in accordance with relevant agreements, annual plans, other documents, and the Mexican Wolf Adaptive Management Oversight Committee.
2. Photodocument Job activities and results.
3. Develop and implement recommendations and guidelines for management (including survey, monitoring, research, etc.) of the species and its habitats.
4. Submit all site-specific locality information to the Heritage Data Management System for entry and subsequent use in NEPA and Section 7 consultations.
5. Prepare a performance or completion report (as appropriate to the Job segment). See above (Section A, paragraphs 3 and 4), for relevant information.

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Nongame and Endangered Wildlife Program

Project E5 Work Plan, Segment 20

July 1, 2008 - June 30, 2009

Final: June 1, 2008

A. Jobs

This work plan provides information on jobs that will be conducted by the Arizona Game and Fish Department (hereafter Department, or AGFD) to accomplish objectives in the Department's Section 6 Agreement with the U.S. Fish and Wildlife Service (hereafter Service, or USFWS). These jobs address conservation needs of threatened, endangered, and candidate species, as well as other species of concern. Activities to be carried out include survey, monitoring, research, and other site and species management functions, as well as administrative, planning, and evaluation functions.

Administrative and planning functions for this annual work plan will proceed in full compliance with the National Environmental Policy Act (NEPA), and where appropriate, the Endangered Species Act (ESA). Documentation under NEPA, and consultation under ESA, will be completed for each planned action, where appropriate, prior to implementation.

For each Job that is not in its final segment, AGFD will prepare a performance report:

- a. summarizing all procedures performed; and
- b. presenting interim data sets, and analysis thereof.

For each Job that is in its final segment, AGFD will prepare a completion report detailing:

- a. the results of activities over all Job segments;
- b. final data sets, and analysis thereof; and
- c. recommendations for survey, monitoring, research, and other conservation or management activities, as appropriate to the Job objectives and results.

Jobs that lack sufficient funding directly pursuant to the E5 project will be carried out as funding from other sources permits. Other known and potential sources of funding for work under this Project include but are not limited to: Game and Fish license revenues; voluntary Nongame Wildlife Checkoff contributions; Arizona Heritage Funds (State Lottery revenues); State Wildlife Grants, Federal Aid in Sportfish and Wildlife Restoration funds (primarily Federal Aid Projects); Wildlife Conservation Fund, Partnerships for Wildlife Program; contracts and other agreements with state agencies, federal agencies, and private partners (e.g. conservation organizations, private industry); and voluntary private donations.

GENERAL

Job 01. Conservation planning: Cost Code 06xxx

Job Funding	
New USFWS Match (75%):	0
New State Match (25%):	0
Amend-forward USFWS (75%):	0
Amend-forward State (75%):	0
Additional State (100%):	0
Total	0

Other project funds: none.

Estimated funding needs other than for habitat acquisition: planning \$1,500,000; outreach and publications \$250,000. Total funding needs \$1,750,000.

Species: Any species of wildlife native to Arizona identified in the State's Wildlife of Greatest Conservation Need (WGCN) and Comprehensive Wildlife Conservation Strategies Species of Greatest Conservation Need (SGCN) lists, including but not limited to the following:

Crustaceans and Mollusks: Kanab Ambersnail (Working Group); Mollusks of Greatest Conservation Need (Working Group)

Fishes: Apache Trout (Recovery Team); Colorado River Fishes (Recovery Team); Native Fishes (Conservation Team); Gila Trout (Recovery Team); Little Colorado Spinedace (Recovery Team); Virgin River Fishes (Recovery Team); Virgin Spinedace (Conservation Team); and other desert fish conservation teams

Amphibians and Reptiles: Sonoran Tiger Salamander (Recovery Implementation Team); Ramsey Canyon Leopard Frog (Conservation Team); Relict leopard frog (Conservation Team); Tarahumara Frog (Conservation Team); Southwestern Amphibians and Reptiles (Technical Advisory Team); Desert Tortoise (Management Oversight Group and Technical Advisory Team); Sonoyta Mud Turtle (Conservation Team); Flat-tailed Horned Lizard (Conservation Team); New Mexican Ridgenose Rattlesnake (Recovery Team)

Birds: Bald Eagle (Management Committee); Cactus Ferruginous Pygmy-Owl (Recovery Team; Conservation Planning Team); Masked Bobwhite (Recovery

Team); Mexican Spotted Owl (Recovery Team and Recovery Implementation Groups); Northern Goshawk (Status Review Team); Peregrine Falcon (Working Group); Southwestern Willow Flycatcher (Recovery Team and Working Group); Yuma clapper rail; Arizona Bird Conservation Initiative

Mammals: Black-footed Ferret (Recovery Implementation Team); Prairie Dogs (Conservation Team and Arizona Working Group); Endangered Cats (Ocelot Recovery Team); Jaguar Conservation Team; Hualapai Mexican Vole (Working Group); Lesser Long-nosed Bat (Working Group); Mexican Wolf (Recovery Team and Adaptive Management Oversight Committee); Mount Graham Red Squirrel (Recovery Team, Management Oversight Group, and Scientific Advisory Committee); Sonoran Pronghorn (Recovery Implementation Team and Working Group); North American Bat Conservation Partnership; Southwestern Carnivore Committee; and Western Bat Working Group.

Five-Year Goals, Objectives, and Approaches: Develop and implement conservation programs mutually acceptable to USFWS and AGFD for federally-listed and potentially-listable species of wildlife in Arizona, through a comprehensive Section 6 Conservation Program. Various Department employees will participate in Conservation/Recovery Teams and other entities as members, technical advisors, or consultants. Participation may include writing or revising recovery plans, recovery plans addendums, participating and conducting status surveys; carrying out or providing management oversight for implementation of recovery actions, etc.

Current Year Procedures:

1. Participate in recovery teams, recovery implementation teams, advisory teams, habitat conservation planning teams, conservation teams, management oversight groups, technical advisory committees, and other entities convened to address conservation of federally-listed and other species of concern to Arizona.
 - a. Participate in meetings.
 - b. Write or revise recovery plans, recovery plan addendums, etc.
 - c. Implement, or provide management oversight for, recovery actions, etc.
2. Develop and implement Conservation Strategies, Assessments, and Agreements to address the needs of un-listed species of concern so effectively that the need for federal listing is minimized or eliminated.
3. Develop and implement strategies and mechanisms for public involvement in planning and carrying out actions pursuant to the Department's Section 6 program, and for conflict resolution with interested and affected parties.
4. Participate in and conduct status reviews and project evaluations.
5. Photodocument Job activities and results.
6. Prepare a performance or completion report (as appropriate to the Job segment). See above (Section A, paragraphs 3 and 4), for relevant information.

Job 02. Rehabilitation of federally-listed wildlife: Cost Code 06xxx

Job Funding	
New USFWS Match (75%):	0
New State Match (25%):	0
Amend-forward USFWS (75%):	0
Amend-forward State (75%):	0
Additional State (100%):	0
Total	0

Other project funds: none.

Estimated funding needs other than for habitat acquisition: planning \$1,000; other management activities \$10,000; outreach and publications \$5,000. Total funding needs \$16,000.

Species: Various

Five-Year Goals, Objectives, and Approaches: Provide veterinary and rehabilitative care for debilitated federally-listed species and where possible release them back to the wild.

Current Year Procedures:

1. Coordinate rehabilitation activities and provide care through the Department's Adobe Mountain Wildlife Center.
2. Release rehabilitated individuals back to the wild in appropriate occupied habitats.
3. Place non-releasable live individuals (threatened species only) with public educational institutions.
4. Place non-releasable live individuals (endangered species only) as determined with USFWS on a case-by-case basis.
5. Dispose of mortalities and euthanized non-releasable animals to public educational institutions, and through USFWS programs to meet Native American religious needs.
6. Maintain biological specimens (preserved, taxidermy, etc.) for scientific analysis.
7. Photodocument Job activities and results.
8. Prepare a performance or completion report (as appropriate to the Job segment). See above (Section A, paragraphs 3 and 4), for relevant information.

Job 04. Research: Cost Code 06xxx

Job Funding	
New USFWS Match (75%):	0
New State Match (25%):	0
Amend-forward USFWS (75%):	0
Amend-forward State (75%):	0
Additional State (100%):	0
Total	0

Other project funds: USBR \$284,750; Central Arizona Project Funds-Transfer Program (CAP)—for Gila Basin native fish activities only. USGS \$400,000; Grand Canyon Monitoring and Research Center—for Colorado River mainstem and tributary native fish activities only.

Estimated funding needs other than for habitat acquisition: research \$1,500,000; outreach and publications \$25,000. Total funding needs \$1,525,000.

Species: Various, including: beautiful shiner (*Cyprinella formosa*), Quitobaquito pupfish (*Cyprinodon macularius eremus*), desert pupfish (*Cyprinodon m. macularius*), humpback chub (*Gila cypha*), Sonora chub (*Gila ditaenia*), bonytail chub (*Gila elegans*), Yaqui chub (*Gila purpurea*), Virgin River chub (*Gila seminuda*), Yaqui catfish (*Ictalurus pricei*), Little Colorado spinedace (*Lepidomeda vittata*), spikedace (*Meda fulgida*), Apache trout (*Oncorhynchus apache*), Gila trout (*Oncorhynchus gilae*), woundfin (*Plagopterus argentissimus*), Gila topminnow (*Poeciliopsis occidentalis occidentalis*), Yaqui topminnow (*Poeciliopsis o. sonoriensis*), Colorado pikeminnow (*Ptychocheilus lucius*), loach minnow (*Tiaroga cobitis*), flannelmouth sucker (*Catostomus latipinnis*), bluehead sucker (*Catostomus discobolus*), speckled dace (*Rhinichthys osculus*), longfin dace (*Agosia chrysogaster*), desert sucker (*Catostomus clarki*), Sonora sucker (*Catostomus insignis*), and razorback sucker (*Xyrauchen texanus*).

Five-Year Goals, Objectives, and Approaches: For scientific and recovery purposes, conduct research related directly to conservation of federally-listed species and other species of special concern to the U.S. Fish and Wildlife Service and the State of Arizona.

Razorback sucker, Colorado pikeminnow, bonytail chub, roundtail chub, headwater chub, Gila chub, loach minnow, spikedace, Gila topminnow, desert pupfish, Sonora sucker, desert sucker, longfin dace, speckled dace, woundfin, and humpback chub. Conduct research on various native fishes to improve stream flow conditioning prior to repatriation, non-native predator avoidance

conditioning, understanding species spawning conditions and environmental cues, improving propagation techniques, and improving disease/pathogen treatment and quarantine methods.

Current Year Procedures:

1. Maintain available stocks of various native fishes in captive holding tanks (at Bubbling Ponds Fish Hatchery).
2. Conduct controlled experimental tests on captive fish to: improve stream flow conditioning prior to repatriation, non-native predator avoidance conditioning, understanding species spawning conditions and environmental cues, improving propagation techniques, and improving disease/pathogen treatment and quarantine methods.
3. Identify and document factors related to the experimental tests on native fish conditioning, survival, reproduction, and recruitment.
4. Photodocument Job activities and results.
5. Develop and implement recommendations and guidelines for management relating to research described above.
6. Prepare a performance or completion report (as appropriate to the Job segment). See above (Section A, paragraphs 3 and 4), for relevant information.

Flannelmouth sucker, bluehead sucker, speckled dace, and humpback chub. Conduct research on population dynamics and predator removal efforts on various native fishes in the mainchannel and tributaries of the Colorado River. Specific monitoring methods are described in Job 40.

Current Year Procedures:

1. Monitor native fish species in the mainchannel and tributaries of the Colorado River.
2. Conduct controlled experimental tests on non-native fish removal and its effects on native fish populations.
3. Identify and document factors related to the experimental tests described in procedure #2 on native fish survival, reproduction, and recruitment.
4. Photodocument Job activities and results.
5. Develop and implement recommendations and guidelines for management relating to research described above.
6. Prepare a performance or completion report (as appropriate to the Job segment). See above (Section A, paragraphs 3 and 4), for relevant information.

Job 71. Habitat acquisition: Cost Code 06xxx

Job Funding	
New USFWS Match (75%):	0
New State Match (25%):	0
Amend-forward USFWS (75%):	0
Amend-forward State (75%):	0
Additional State (100%):	0
Total	0

Other project funds: Projects funded via the Habitat Conservation Planning and Recovery Land Acquisition Programs.

Estimated funding needs: project planning: \$1,500,000; outreach and publications \$150,000; implementation \$20,000,000. Total funding needs \$21,650,000.

Species: Various, including all federally-listed and candidate species, and selected species of special concern or greatest conservation need.

Five-Year Goals, Objectives, and Approaches: For recovery and proactive conservation purposes, acquire land and waters from willing sellers for federally-listed species and other “at-risk” species.

Current Year Procedures:

1. Evaluate sensitive habitats for possible easements or acquisition that contributes to conserving species of concern and of greatest conservation need.
2. Develop management practices for acquisitions that enhance habitats needed for species of concern and greatest conservation need.
3. Photodocument Job activities and results.
4. Develop and implement recommendations and guidelines for management (including survey, monitoring, research, etc.) of the species and its habitats.
5. Submit all site-specific locality information to the Heritage Data Management System for entry and subsequent use in NEPA and Section 7 consultations.
6. Prepare a performance or completion report (as appropriate to the Job segment). See above (Section A, paragraphs 3 and 4), for relevant information.

Job 72. Habitat enhancement: Cost Code 06xxx

Job Funding	
New USFWS Match (75%):	0
New State Match (25%):	0
Amend-forward USFWS (75%):	0
Amend-forward State (75%):	0
Additional State (100%):	0
Total	0

Other project funds: Projects funded via the Landowner Incentive Program.

Estimated funding needs: project planning: \$500,000; outreach and publications \$25,000; implementation \$1,500,000. Total funding needs \$1,525,000.

Species: Various, including all federally-listed and candidate species, and selected species of special concern or greatest conservation need.

Five-Year Goals, Objectives, and Approaches: For recovery and proactive conservation purposes, identify habitat needs for federally-listed species and other “at-risk” species, and plan and implement appropriate habitat enhancement projects in cooperation with private property owners.

The objective of the federally funded Landowner Incentive Program is to administer the program by working collaboratively with private landowners to maintain, enhance, and restore sensitive wildlife habitats on private lands throughout Arizona. Private lands habitat enhancement and conservation projects contribute to the recovery of endangered and threatened species, complementing robust conservation efforts on public and other lands statewide. Implementation of this project is linked to and supports Wildlife 2012, AGFD Operational Plans 2007-2009, and the Arizona Comprehensive Wildlife Conservation Strategy 2005-2015 (= State Wildlife Action Plan).

Current Year Procedures:

1. Create and restore habitats that contribute to conserving species of concern and species of greatest conservation need.
2. Develop management practices that enhance habitats needed for species of concern and greatest conservation need.
3. Photodocument Job activities and results.
4. Develop and implement recommendations and guidelines for management (including survey, monitoring, research, etc.) of the species and its habitats.

5. Submit all site-specific locality information to the Heritage Data Management System for entry and subsequent use in NEPA and Section 7 consultations.
6. Prepare a performance or completion report (as appropriate to the Job segment). See above (Section A, paragraphs 3 and 4), for relevant information.

CRUSTACEANS AND MOLLUSKS

Job 33. Kanab ambersnail conservation: Cost Code 06414

Job Funding	
New USFWS Match (75%):	0
New State Match (25%):	0
Amend-forward USFWS (75%):	0
Amend-forward State (75%):	0
Additional State (100%):	0
Total	0

Other project funds: State Wildlife Grants; and USGS Grand Canyon Monitoring and Research Center.

Estimated funding needs other than for habitat acquisition: planning \$4,500; survey \$7,500; monitoring \$15,000; research \$10,000; other management activities \$2,500; outreach and publications \$1,000. Total funding needs \$40,500.

Species: Kanab ambersnail (*Oxyloma haydeni kanabensis*)

Five-Year Goals, Objectives, and Approaches: This is a continuing recovery effort, involving survey, monitoring, and periodic stocking. Develop and implement a conservation program to meet the long-term recovery and maintenance needs of the Kanab ambersnail. Conduct necessary fieldwork (survey, monitoring, etc.), augment established population at Elves Chasm as needed, and constructively interact with other stakeholders in the Grand Canyon to meet Kanab ambersnail conservation needs. This project will be accomplished as an interagency effort with contributions from AGFD, Bureau of Reclamation (USBR), Grand Canyon Monitoring and Research Center (GCMRC), and other cooperators. Ambersnail habitat will be characterized by dominant vegetation species. Counts of live mollusks will be documented from multiple plot sampling and other methods.

Current Year Procedures:

1. Conduct field investigations, population monitoring, management, and habitat surveys in the Grand Canyon region, in cooperation with other agencies involved in the Kanab Ambersnail Workgroup. GCMRC will provide logistical support for river travel and backpack trips to Vaseys Paradise. NPS will provide logistical support for river travel to Upper Elves Chasm.
2. Monitor translocated Kanab ambersnails and their habitat.

3. Assist USFWS and other cooperators in taxonomic/genetic analyses of ambersnail populations, and in developing a de-listing proposal for Kanab ambersnail.
4. Photodocument Job activities and results.
5. Develop and implement recommendations and guidelines for management (including survey, monitoring, research, etc.) of the species and its habitat, including conspecifics of the American Southwest.
6. Submit all site-specific locality information to the Heritage Data Management System for entry and subsequent use in NEPA and Section 7 consultations.
7. Prepare a performance or completion report (as appropriate to the Job segment). See above (Section A, paragraphs 3 and 4), for relevant information.

Job 67. Page springsnail conservation: Cost Code 06xxx

Job Funding	
New USFWS Match (75%):	0
New State Match (25%):	0
Amend-forward USFWS (75%):	0
Amend-forward State (75%):	0
Additional State (100%):	0
Total	0

Other project funds: State Wildlife Grants.

Estimated funding needs other than for habitat acquisition: planning \$25,000; survey \$25,000; monitoring \$25,000; research \$50,000; habitat enhancement \$100,000; other management activities \$5,000; outreach and publications \$2,500. Total funding needs \$232,500.

Species: Page springsnail (*Pyrgulopsis morrisoni*)

Five-Year Goals, Objectives, and Approaches: Develop and implement a Conservation Agreement, to reduce or eliminate threats to the species. This project will be accomplished as an interagency effort with the USFWS, and other partners as necessary.

Current Year Procedures:

1. Develop, execute, and implement a Conservation Agreement for the species.
2. Conduct field investigations of occupied habitat, monitor known populations, evaluate habitat restoration (and renovation) opportunities, and evaluate potential sites of occurrence or translocation (reestablishment).
3. Collect and maintain in aquaria, up to 500 individuals for captive research and/or refuge establishment.
4. Photodocument Job activities and results.
5. Develop and implement recommendations and guidelines for management (including survey, monitoring, renovation, research, etc.) of the species and its habitats.
6. Submit all site-specific locality information to the Heritage Data Management System for entry and subsequent use in NEPA and Section 7 consultations.
7. Prepare a performance or completion report (as appropriate to the Job segment). See above (Section A, paragraphs 3 and 4), for relevant information.

Job 68. San Xavier talussnail conservation: Cost Code 06xxx

Job Funding	
New USFWS Match (75%):	0
New State Match (25%):	0
Amend-forward USFWS (75%):	0
Amend-forward State (75%):	0
Additional State (100%):	0
Total	0

Other project funds: State Wildlife Grants.

Estimated funding needs other than for habitat acquisition: planning \$15,000; survey \$5,000; monitoring \$25,000; research \$25,000; habitat enhancement \$10,000; other management activities \$5,000; outreach and publications \$1,000. Total funding needs \$86,000.

Species: San Xavier talussnail (*Sonorella eremita*)

Five-Year Goals, Objectives, and Approaches: Continue implementing a Conservation Agreement through which the cooperators will reduce or eliminate threats to the species.

Current Year Procedures:

1. Implement the Conservation Agreement, to promote protection and recovery of the species at a state level and mitigate the need for federal protection.
2. Conduct field investigations of occupied habitat and surveys of potential habitat in the region.
3. Collect and maintain in terraria, up to 50 individuals for captive research and/or establishment of a refuge population at the Arizona Sonoran Desert Museum or other sites.
4. Photodocument Job activities and results.
5. Develop and implement recommendations and guidelines for management (including survey, monitoring, research, etc.) of the species and its habitats.
6. Submit all site-specific locality information to the Heritage Data Management System for entry and subsequent use in NEPA and Section 7 consultations.
7. Prepare a performance or completion report (as appropriate to the Job segment). See above (Section A, paragraphs 3 and 4), for relevant information.

Job 73. Mollusks - Species of Greatest Conservation Need (multiple species) conservation:
 Cost Code 06xxx

Job Funding	
New USFWS Match (75%):	0
New State Match (25%):	0
Amend-forward USFWS (75%):	0
Amend-forward State (75%):	0
Additional State (100%):	0
Total	0

Other project funds: State Wildlife Grants.

Estimated funding needs other than for habitat acquisition: planning \$45,000; survey \$45,000; monitoring \$100,000; research \$50,000; habitat enhancement \$75,000; other management activities \$10,000; outreach and publications \$5,000. Total funding needs \$330,000.

Species: Wet Canyon talussnail (*Sonorella macrophallus*); Pinaleno talussnail (*Sonorella grahamensis*); Mimic talussnail (*Sonorella imitator*); Clark Peak talussnail (*Sonorella christenseni*); Pinaleno mountainsnail (*Oreohelix grahamensis*); Garden Canyon talussnail (*Sonorella dalli*); Niobrara ambersnail (*Oxyloma haydeni*); California floater (*Anodonta californiensis*); Kingman springsnail (*Pyrgulopsis conica*); Grand Wash springsnail (*Pyrgulopsis bacchus*); Fossil springsnail (*Pyrgulopsis simplex*); Desert springsnail (*Pyrgulopsis deserta*); San Bernardino springsnail (*Pyrgulopsis bernardina*); Verde Rim springsnail (*Pyrgulopsis glandulosa*); Montezuma Well springsnail (*Pyrgulopsis montezumensis*); Huachuca springsnail (*Pyrgulopsis thompsoni*); Three Forks springsnail (*Pyrgulopsis trivialis*); Quitobaquito tryonia (*Tryonia quitobaquiae*).

Five-Year Goals, Objectives, and Approaches: Develop and implement individual or multi-species Conservation Agreements through which the cooperators will reduce or eliminate threats to each species.

Current Year Procedures:

1. Develop and implement Conservation Agreements, to promote protection and recovery of the species at a state level and mitigate the need for federal protection.
2. Conduct field investigations of occupied habitat and surveys of potential habitat in each species nearby region.

3. Collect and maintain in terraria, up to 50 talussnail individuals (per species) and up to 500 springsnail individuals (per species) for captive research and/or establishment of refugium populations at the Arizona Sonoran Desert Museum, The Phoenix Zoo, or other sites.
4. Photodocument Job activities and results.
5. Develop and implement recommendations and guidelines for management (including survey, monitoring, research, etc.) of each species and their habitats.
6. Submit all site-specific locality information to the Heritage Data Management System for entry and subsequent use in NEPA and Section 7 consultations.
7. Prepare a performance or completion report (as appropriate to the Job segment). See above (Section A, paragraphs 3 and 4), for relevant information.

NATIVE FISHES

Job 03. Hatchery propagation and rearing: Cost Code 06xxx

Job Funding	
New USFWS Match (75%):	0
New State Match (25%):	0
Amend-forward USFWS (75%):	0
Amend-forward State (75%):	0
Additional State (100%):	0
Total	0

Other project funds: CAP \$34,000.

Estimated funding needs other than for habitat acquisition: planning \$8,000,000; survey \$0; monitoring \$0; research \$250,000; habitat enhancement \$500,000; other management activities \$0; outreach and publications \$50,000. Total funding needs \$8,800,000.

Species: Beautiful shiner (*Cyprinella formosa*), Quitobaquito pupfish (*Cyprinodon macularius eremus*), Desert pupfish (*Cyprinodon m. macularius*), Humpback chub (*Gila cypha*), Sonora chub (*Gila ditaenia*), Bonytail chub (*Gila elegans*), Gila chub (*Gila intermedia*), Yaqui chub (*Gila purpurea*), Roundtail chub (*Gila robusta*), Virgin River chub (*Gila seminuda*), Yaqui catfish (*Ictalurus pricei*), Little Colorado spinedace (*Lepidomeda vittata*), Spikedace (*Meda fulgida*), Apache trout (*Oncorhynchus apache*), Gila trout (*Oncorhynchus gilae*), Woundfin (*Plagopterus argentissimus*), Gila topminnow (*Poeciliopsis occidentalis occidentalis*), Yaqui topminnow (*Poeciliopsis o. sonoriensis*), Colorado pikeminnow (*Ptychocheilus lucius*), Loach minnow (*Tiaroga cobitis*), and Razorback sucker (*Xyrauchen texanus*)

Five-Year Goals, Objectives, and Approaches: For scientific research and recovery purposes related directly to conservation of Arizona's native fishes, propagate and rear native fishes for stocking pursuant to other Jobs identified in this Work Plan. Provide fish transport and on-site laboratory facilities to support the E-5 Project as needed and available.

Current Year Procedures:

1. Propagate, rear, transport, and stock fishes as necessary to support this Work Plan.
2. Develop and implement recommendations and guidelines for propagation, husbandry, and stocking the species maintained in State hatcheries.
3. Prepare a performance or completion report (as appropriate to the Job segment). See above (Section A, paragraphs 3 and 4), for relevant information.

Job 09. Topminnow and desert pupfish conservation: Cost Code 06109

Job Funding	
New USFWS Match (75%):	
New State Match (25%):	
Amend-forward USFWS (75%):	
Amend-forward State (75%):	
Additional State (100%):	
Total	

Other project funds: USFWS; BLM \$25,000; CAP; and State Wildlife Grants.

Estimated funding needs other than for habitat acquisition: planning \$60,000; survey \$60,000; monitoring \$60,000; research \$60,000; habitat enhancement \$100,000; other management activities \$100,000; outreach and publications \$50,000. Total funding needs \$490,000.

Species: Sonoran topminnow (*Poeciliopsis occidentalis*), desert pupfish (*Cyprinodon macularius*) -- latter includes Quitobaquito pupfish (*C. m. eremus*)

Five-Year Goals, Objectives, and Approaches: This is a continuing recovery effort, involving survey, monitoring, and stocking. Monitor all extant natural and reintroduction sites annually. Prepare provisional extirpation reports for reintroduction sites meeting extirpation criteria. Monitor failed reintroduction sites not yet declared extirpated and restock if warranted or prepare extirpation reports according to criteria. Perform habitat evaluations for potential transplant sites. Stock suitable sites, in accordance with directives given to AGFD by the Arizona Game and Fish Commission in 2007 and approval of the appropriate land management entity.

Performance reports for this project will include:

1. survey dates for each site monitored;
2. category of each site monitored;
3. numbers of each fish species found for each site monitored;
4. documentation of voucher specimens; and
5. copies of all provisional extirpation reports for this Job segment.

The completion report for this Job will be similar to earlier reports on monitoring of Gila topminnows and desert pupfish (Simons 1987, Bagley et al. 1990, Brown and Abarca 1992). It will address all monitoring, site evaluation, and reintroduction activities over the five-year project period, and will include the following:

1. Survey date, site description, and results for each site monitored.
2. Category assignment for each site monitored.

3. Summary of extirpation reports.
4. Summary of reintroduction site evaluations.
5. Summary of stockings and the follow-up monitoring.
6. Summary of any other known surveys of these sites in the five year period.
7. Analysis of basis of success or failure of reintroductions.

Current Year Procedures:

1. Using trained biologists, monitor all extant natural sites, extant reintroduced sites, selected failed natural and reintroduced sites within Arizona. Monitoring of natural sites in Sonora, Mexico may also be included, as appropriate.
 - a. Survey at least once all natural sites (n=14) and all extant reintroduced sites (n=21). Survey failed sites to determine management need (prepare provisional extirpation report or restock, as determined).
 - b. Conduct surveys during times of the year that maximize the probability of finding Gila topminnows or desert pupfish (i.e. no earlier in the spring than April and no later in the fall than November) or when habitat conditions or breeding season are conducive to detection and capture of target species.
 - c. Conduct monitoring by using fine-mesh dip nets or seines or other mutually agreed upon methods.
 - d. Take voucher specimens (or photo vouchers as appropriate) of all poeciliid species present at all sites. Deposit specimens in the Collection of Fishes at Arizona State University.
 - e. Photodocument Job activities and results.
 - f. Data collected will include:
 - (1) identification of all fish species present;
 - (2) qualitative estimates of gross abundance of all poeciliid species;
 - (3) description of the site and thoroughness of survey including amount of habitat present versus amount sampled;
 - (4) legal description or GPS coordinates of the site location;
 - (5) categorization of the site using the 4-category system from earlier AGFD monitoring reports;
 - (6) human activities occurring at the site and any apparent change in such activities;
 - (7) qualitative description of the condition of the aquatic and riparian communities;
 - (8) apparent threats to the Gila topminnow or desert pupfish population;
 - (9) recommendations for management actions or changes, if any; and
 - (10) other appropriate information.
2. Identify and survey new sites in Arizona for suitability for reintroduction of Gila topminnow and/or desert pupfish.
 - a. Data collected will include:
 - (11) identification of all fish species and fish predators present;
 - (12) general description of the site, with sketch map if appropriate
 - (13) legal description or GPS coordinates of the site location;
 - (14) gradient of the stream sites calculated from 7.5 minute topo map;

- (15) vulnerability to flooding (characterized by evidence of previous floods and qualitative estimates;
 - (16) size (width, depth and/or length) of perennial and intermittent water
 - (17) elevation;
 - (18) land ownership;
 - (19) human activities occurring at the site and any apparent change in such activities;
 - (20) qualitative description of the condition of the aquatic and riparian communities;
 - (21) potential threats to Gila topminnow or desert pupfish;
 - (22) recommendations for management actions or changes to improve habitat for Gila topminnow or desert pupfish, if any; and
 - (23) other appropriate information
 - b. Photodocument Job activities and results.
3. Subject to necessary approvals, stock and maintain Gila topminnows and desert pupfish into suitable captive and wild sites in Arizona.
- a. Complete a report of the site data and suitability prior to stocking.
 - b. Contact the landowner and obtain appropriate permission.
 - c. Conduct and coordinate appropriate NEPA and ESA compliance.
 - d. Prepare a report of the stocking, and include the following:
 - (1) date of stocking;
 - (2) genetic origin of the stock;
 - (3) physical location of the stock source;
 - (4) number of fish stocked;
 - (5) personnel involved in the transport and stocking;
 - (6) any fish mortalities observed during transport or stocking;
 - (7) observations of fish behavior following stocking; and
 - (8) stocking location (legal description, GPS coordinates, and map).
 - e. Furnish a copy of the above stocking report to USFWS.
 - f. Monitor the stocked site at least one month after stocking, 6 months after stocking, and 11 to 13 months after stocking. Following that, place the site into the annual monitoring program.
4. Prepare documentation of extirpation for sites meeting recovery plan criteria for declaration of extirpation.
- a. For those sites that qualify for declaration of extirpation between July 2001 and June 2002, prepare extirpation reports that include the following:
 - (1) dates of surveys when no Gila topminnow or desert pupfish were found;
 - (2) Name and affiliation of all surveyors;
 - (3) survey methods;
 - (4) amount of habitat covered by each survey and total amount of habitat available;
 - (5) estimate of the thoroughness of each survey;
 - (6) contiguous areas of perennial, intermittent, or ephemeral waters existing and amount of that area searched;
 - (7) documentation of voucher specimens if other poeciliids are present; and
 - (8) probable causes for extirpation.

- b. Prepare provisional extirpation reports including the same information as in 4 (a), where available, for all sites that qualified for declaration during this job segment.
5. Identify and implement management recommendations for extant and potential reintroduction sites.
6. Submit all site-specific locality information to the Heritage Data Management System for entry and subsequent use in NEPA and Section 7 consultations.
7. Prepare a performance or completion report (as appropriate to the Job segment). See above (Section A, paragraphs 3 and 4), for relevant information.

Job 36a. Razorback sucker conservation: Cost Code 06107

Job Funding	
New USFWS Match (75%):	0
New State Match (25%):	0
Amend-forward USFWS (75%):	0
Amend-forward State (75%):	0
Additional State (100%):	0
Total	0

Other project funds: F7M \$26,000; CAP; and State Wildlife Grants.

Estimated funding needs other than for habitat acquisition: planning \$125,000; survey \$50,000; monitoring \$100,000; research \$100,000; habitat enhancement \$250,000; other management activities \$100,000; outreach and publications \$50,000. Total funding needs \$775,000.

Species: Razorback sucker (*Xyrauchen texanus*)

Five-Year Goals, Objectives, and Approaches: This is a continuing recovery effort, involving stocking and monitoring. All stocked fish will be group-marked using tetracycline, PIT tags, nose tags, and/or fin clips, to allow positive identification of future recaptures. Where possible, fish will be stocked in small groups to minimize stocking and post-stocking stress. Monitoring will be conducted a minimum of once per year throughout the stocked areas.

Data analysis will be purely descriptive, including computation of mean lengths of species collected, CPUE, summary of effort. In addition, flow will be graphically presented, and recommendations for future efforts and management will be included.

Monitoring Protocol.--The Verde River will be surveyed once annually at three discreet reaches, due to logistical constraints: Perkinsville to Clarkdale; Beasley Flat to Childs; and Childs to Horseshoe Lake. Verde surveys will be conducted in Spring after runoff subsides, before late summer monsoons, or in autumn, depending on flows. Salt River surveys will be conducted in Spring, after subsidence of snow-melt runoff, with flows targeted at 600 to 1000 cfs measured at Salt River Canyon.

All surveys will use a combination of the following methods, as appropriate and consistent with previous surveys: raft and or canoe mounted electrofisher; gill and trammel nets; a variety of seines; and backpack shockers. Record area sampled, electrofishing seconds, and net dimensions and net set times to allow computation of catch per unit effort (CPUE). Representative sub-samples of fish greater than 150 mm TL will be measured to the nearest millimeter (mm). A

random subsample of 30 individuals from each sample location will be similarly measured. All razorback captures will be measured (nearest mm TL), weighed (nearest 20 g), and tagged with a Floy external or passive integrated transponder (PIT) tag, to allow individual identification.

Collection of habitat information will include sample site measurement of average width, average depth, length; substrate type using a modified Wentworth scale; water temperature (°C); pH and conductivity using Hanna handheld combo-testers. Estimated habitat data include aquatic vegetation type and percentage; cover type and percentage; estimated velocity; and anthropogenic impacts.

Current Year Procedures:

1. Stock a total of 2000 large (>300 mm) razorback suckers into the upper Verde (Perkinsville to Childs).
2. Stock razorback suckers, as available from Department or Service hatcheries, into other suitable waters in the drainages of the Colorado, Salt, and Verde rivers.
3. Monitor stocked razorback suckers in accordance with the above protocol.
4. Collect data on physical and biological parameters to address habitat preference and seasonal use, as described above.
5. Collect data on nonnative fishes in stocking areas of the Colorado, Verde, and Salt rivers.
6. Collect preserved specimens for museum and laboratory analysis.
7. Photodocument Job activities and results.
8. Develop and implement recommendations and guidelines for management (including survey, monitoring, research, etc.) of the species and its habitats.
9. Submit all site-specific locality information to the Heritage Data Management System for entry and subsequent use in NEPA and Section 7 consultations.
10. Prepare a performance or completion report (as appropriate to the Job segment). See above (Section A, paragraphs 3 and 4), for relevant information.

Job 36b. Colorado pikeminnow conservation: Cost Code 06107

Job Funding	
New USFWS Match (75%):	0
New State Match (25%):	0
Amend-forward USFWS (75%):	0
Amend-forward State (75%):	0
Additional State (100%):	0
Total	0

Other project funds: F7M \$26,000; and State Wildlife Grants.

Estimated funding needs other than for habitat acquisition: planning \$125,000; survey \$50,000; monitoring \$100,000; research \$100,000; habitat enhancement \$250,000; other management activities \$100,000; outreach and publications \$50,000. Total funding needs \$775,000.

Species: Colorado pikeminnow (*Ptychocheilus lucius*)

Five-Year Goals, Objectives, and Approaches: This is a continuing recovery effort, involving stocking and monitoring. All stocked fish will be group-marked using tetracycline, PIT tags, nose tags, and/or fin clips, to allow positive identification of future recaptures. Where possible, fish will be stocked in small groups to minimize stocking and post-stocking stress. Monitoring will be conducted a minimum of once per year throughout the stocked areas.

Data analysis will be purely descriptive, including computation of mean lengths of species collected, CPUE, summary of effort. In addition, flow will be graphically presented, and recommendations for future efforts and management will be included.

Monitoring Protocol.--The Verde River will be surveyed once annually at three discreet reaches, due to logistical constraints: Perkinsville to Clarkdale; Beasley Flat to Childs; and Childs to Horseshoe Lake. Verde surveys will be conducted in Spring after runoff subsides, before late summer monsoons, or in autumn, depending on flows. Salt River surveys will be conducted in Spring, after subsidence of snow-melt runoff, with flows targeted at 600 to 1000 cfs measured at Salt River Canyon.

All surveys will use a combination of the following methods, as appropriate and consistent with previous surveys: raft and or canoe mounted electrofisher; gill and trammel nets; a variety of seines; and backpack shockers. Record area sampled, electrofishing seconds, and net dimensions and net set times to allow computation of catch per unit effort (CPUE). Representative sub-samples of fish greater than 150 mm TL will be measured to the nearest millimeter (mm). A

random subsample of 30 individuals from each sample location will be similarly measured. All pikeminnow captures will be measured (nearest mm TL), weighed (nearest 20 g), and tagged with a Floy external or passive integrated transponder (PIT) tag, to allow individual identification.

Collection of habitat information will include sample site measurement of average width, average depth, length; substrate type using a modified Wentworth scale; water temperature (°C); pH and conductivity using Hanna handheld combo-testers. Estimated habitat data include aquatic vegetation type and percentage; cover type and percentage; estimated velocity; and anthropogenic impacts.

Current Year Procedures:

1. Stock a total of 2000 large (>300 mm) pikeminnow into the upper Verde (Perkinsville to Childs).
2. Stock Colorado pikeminnow, as available from Department or Service hatcheries, into other suitable waters in the drainages of the, Colorado, Salt, and Verde rivers.
3. Monitor stocked Colorado pikeminnow in accordance with the above protocol.
4. Collect data on physical and biological parameters to address habitat preference and seasonal use, as described above.
5. Collect data on predatory fishes in stocking areas of the Colorado, Verde, and Salt rivers.
6. Collect preserved specimens for museum and laboratory analysis.
7. Photodocument Job activities and results.
8. Develop and implement recommendations and guidelines for management (including survey, monitoring, research, etc.) of the two species and their habitats.
9. Submit all site-specific locality information to the Heritage Data Management System for entry and subsequent use in NEPA and Section 7 consultations.
10. Prepare a performance or completion report (as appropriate to the Job segment). See above (Section A, paragraphs 3 and 4), for relevant information.

Job 38. Apache trout conservation: Cost Code 06xxx

Job Funding	
New USFWS Match (75%):	0
New State Match (25%):	0
Amend-forward USFWS (75%):	0
Amend-forward State (75%):	0
Additional State (100%):	0
Total	0

Other project funds: F7M \$40,000; USFWS; and State Wildlife Grants.

Estimated funding needs other than for habitat acquisition: planning \$150,000; survey \$50,000; monitoring \$100,000; research \$150,000; habitat enhancement \$1,800,000; other management activities \$100,000; outreach and publications \$150,000. Total funding needs \$2,500,000.

Species: Apache trout (*Oncorhynchus apache*)

Five-Year Goals, Objectives, and Approaches: This is a continuing recovery effort, involving surveys, monitoring, renovations, and stocking. Conduct surveys, monitor populations and habitats, and identify management potential for specific sites. Collect a limited number of specimens from historical and newly identified locations for taxonomic and genetic analysis. Identify essential habitats, the need for a status review, research needs, and other management recommendations. Implement management activities, including habitat improvements, as appropriate.

Current Year Procedures:

1. Continue to coordinate with USFS in integrating habitat needs in grazing allotments planning and ID Team Processes.
2. Renovate suitable habitat and reintroduce Apache trout in waters identified in the Recovery Implementation Plan.
3. Monitor all extant and reintroduced populations.
4. Coordinate construction, repair and/or maintenance of fish barriers as outlined in the Recovery Implementation Plan.
5. Photodocument Job activities and results.
6. Investigate angling effects in regards to the 4d Special Rule for take (managed sport harvest).
7. Develop and implement recommendations and guidelines for management (including survey, monitoring, research, etc.) of the species and its habitats.

8. Submit all site-specific locality information to the Heritage Data Management System for entry and subsequent use in NEPA and Section 7 consultations.
9. Prepare a performance or completion report (as appropriate to the Job segment). See above (Section A, paragraphs 3 and 4), for relevant information.

Job 39. Gila trout conservation: Cost Code 06xxx

Job Funding	
New USFWS Match (75%):	0
New State Match (25%):	0
Amend-forward USFWS (75%):	0
Amend-forward State (75%):	0
Additional State (100%):	0
Total	0

Other project funds: F7M \$25,000; USFWS; CAP; and State Wildlife Grants.

Estimated funding needs other than for habitat acquisition: planning \$100,000; survey \$25,000; monitoring \$25,000; research \$50,000; habitat enhancement \$50,000; other management activities \$150,000; outreach and publications \$50,000. Total funding needs \$450,000.

Species: Gila trout (*Oncorhynchus gilae*)

Five-Year Goals, Objectives, and Approaches: This is a continuing recovery effort, involving surveys, monitoring, renovations, and stocking. Conduct surveys, monitor populations and habitats, and identify management potential for specific sites. Collect, transport, and stock into approved reestablishment sites. Collect a limited number of specimens from historical, newly identified, and recently established locations for taxonomic analysis. Identify essential habitats, research needs, and management recommendations. Implement management activities, including habitat improvements.

Current Year Procedures:

1. Propose and implement reestablishments of new wild populations, in accordance with directives given to AGFD by the Arizona Game and Fish Commission in 2007 and approval of the appropriate land management entity.
2. Monitor all reintroduced wild populations (e.g. Dude Creek, Raspberry Creek).
3. Renovate suitable habitat and reintroduce Gila trout in waters approved for stocking by AGFD in cooperation with land manager and the USFWS.
4. Investigate angling effects in regards to the 4d Special Rule for take (managed sport harvest).
5. Photodocument Job activities and results.
6. Develop and implement recommendations and guidelines for management (including survey, monitoring, research, etc.) of the species and its habitats.
7. Submit all site-specific locality information to the Heritage Data Management System for entry and subsequent use in NEPA and Section 7 consultations.

8. Prepare a performance or completion report (as appropriate to the Job segment). See above (Section A, paragraphs 3 and 4), for relevant information.

Job 40. Humpback chub conservation: Cost Code 06xxx

Job Funding	
New USFWS Match (75%):	0
New State Match (25%):	0
Amend-forward USFWS (75%):	0
Amend-forward State (75%):	0
Additional State (100%):	0
Total	0

Other project funds: USGS \$400,000; and State Wildlife Grants.

Estimated funding needs other than for habitat acquisition: planning \$125,000; survey \$50,000; monitoring \$100,000; research \$100,000; habitat enhancement \$250,000; other management activities \$100,000; outreach and publications \$50,000. Total funding needs \$775,000.

Species: Humpback chub (*Gila cypha*)

Five-Year Goals, Objectives, and Approaches: Annually survey mainstem Colorado and Little Colorado rivers to monitor abundance, growth, movement, reproductive periodicity, and recruitment. Surveys will be conducted with use of trammel nets, hoop nets, dip nets, seines, and minnow traps and other nonlethal methods as appropriate. All individuals greater than 150 mm total length will be individually marked using PIT tags. Population indices will be provided for young-of-year and juvenile to adult life stages. Occurrence and location of humpbacks will be measured at standard sampling sites occupied during the reproductive period since 1987, including the lower reach of the Little Colorado River and mainstem rearing habitats.

Current Year Procedures:

1. Survey and measure occurrence in mainstem Colorado and Little Colorado rivers to monitor abundance, growth, movement, reproductive periodicity, and recruitment.
2. Mark all individuals > 150 mm total length using PIT tags.
3. Calculate population indices for young-of-year and juvenile to adult life stages.
4. Conduct investigations of mechanical removal of non-natives to benefit humpback chub.
5. Photodocument Job activities and results.
6. Develop and implement recommendations and guidelines for management (including survey, monitoring, research, etc.) of the species and its habitats.
7. Submit all site-specific locality information to the Heritage Data Management System for entry and subsequent use in NEPA and Section 7 consultations.
8. Prepare a performance or completion report (as appropriate to the Job segment). See above (Section A, paragraphs 3 and 4), for relevant information.

Job 41. Sonora chub conservation: Cost Code 06xxx

Job Funding	
New USFWS Match (75%):	0
New State Match (25%):	0
Amend-forward USFWS (75%):	0
Amend-forward State (75%):	0
Additional State (100%):	0
Total	0

Other project funds: State Wildlife Grants.

Estimated funding needs other than for habitat acquisition: planning \$25,000; survey \$50,000; monitoring \$25,000; research \$50,000; habitat enhancement \$25,000; other management activities \$25,000; outreach and publications \$10,000. Total funding needs \$210,000.

Species: Sonora chub (*Gila ditaenia*)

Five-Year Goals, Objectives, and Approaches: Survey streams using standardized sampling techniques (dipnet, seine, electroshocking, nets or traps) to determine fish abundance, age/size class structure, reproduction, recruitment, and associated habitat parameters every other year. Take voucher specimens from thriving populations, and as necessary to document new locations of occurrence, predation, disease, or other important biological factors.

Current Year Procedures:

1. Identify long-term monitoring sites range-wide in Arizona and Sonora, Mexico.
2. Develop a monitoring protocol for all long-term monitoring sites, identifying the most appropriate methods for each site as determined by habitat conditions.
3. Plan and implement monitoring protocol on a bi-annual basis.
4. Photodocument Job activities and results.
5. Develop and implement recommendations and guidelines for management (including survey, monitoring, research, etc.) of the species and its habitats.
6. Submit all site-specific locality information to the Heritage Data Management System for entry and subsequent use in NEPA and Section 7 consultations.
7. Prepare a performance or completion report (as appropriate to the Job segment). See above (Section A, paragraphs 3 and 4), for relevant information.

Job 42. Bonytail chub conservation: Cost Code 06xxx

Job Funding	
New USFWS Match (75%):	0
New State Match (25%):	0
Amend-forward USFWS (75%):	0
Amend-forward State (75%):	0
Additional State (100%):	0
Total	0

Other project funds: State Wildlife Grants.

Estimated funding needs other than for habitat acquisition: planning \$125,000; survey \$50,000; monitoring \$100,000; research \$100,000; habitat enhancement \$250,000; other management activities \$100,000; outreach and publications \$50,000. Total funding needs \$775,000.

Species: Bonytail chub (*Gila elegans*)

Five-Year Goals, Objectives, and Approaches: Conduct surveys, monitor populations and habitats, and identify management potential for specific sites. Collect specimens from historical and newly identified locations for taxonomic analysis and as needed for hatchery broodstock development. Identify essential habitats, the need for a status review, research needs, and other management recommendations. Implement management activities as appropriate.

Current Year Procedures:

1. Reintroduce into historical habitat: Lake Mohave (coordinate with AESO on this before committing to any actions), Lake Havasu, and other sites as available and approved through NEPA compliance.
2. Monitor populations in Lake Mohave and in refuge populations established elsewhere.
3. Photodocument Job activities and results.
4. Develop and implement recommendations and guidelines for management (including survey, monitoring, research, etc.) of the species and its habitats.
5. Submit all site-specific locality information to the Heritage Data Management System for entry and subsequent use in NEPA and Section 7 consultations.
6. Prepare a performance or completion report (as appropriate to the Job segment). See above (Section A, paragraphs 3 and 4), for relevant information.

Job 43. Yaqui River fishes conservation: Cost Code 06xxx

Job Funding	
New USFWS Match (75%):	0
New State Match (25%):	0
Amend-forward USFWS (75%):	0
Amend-forward State (75%):	0
Additional State (100%):	0
Total	0

Other project funds: State Wildlife Grants.

Estimated funding needs other than for habitat acquisition: planning \$25,000; survey \$25,000; monitoring \$25,000; research \$10,000; habitat enhancement \$175,000; other management activities \$50,000; outreach and publications \$10,000. Total funding needs \$320,000.

Species: Yaqui sucker (*Catostomus bernardini*), Beautiful shiner (*Cyprinella formosa*), Yaqui chub (*Gila purpurea*), Yaqui catfish (*Ictalurus pricei*), Mexican stoneroller (*Compostoma ornatum*)

Five-Year Goals, Objectives, and Approaches: Conduct surveys, monitor populations and habitats, and identify management potential for specific sites. Collect specimens from historical and newly identified locations for taxonomic analysis. Identify essential habitats, research needs, and other management recommendations. Implement management activities as appropriate.

Current Year Procedures:

1. Survey and monitor populations in the United States and Mexico (Río Yaqui drainage, including San Bernardino National Wildlife Refuge, Turkey and Leslie creeks).
2. Draft reestablishment plans, in accordance with directives given to AGFD by the Arizona Game and Fish Commission in 2007 and approval of the appropriate land management entity.
3. Acquire Yaqui suckers and Yaqui catfish from México, and, if reestablishment plans are approved, reestablish them at approved sites in historical habitat in the United States.
4. Establish additional populations of Mexican stoneroller, Yaqui chub, beautiful shiner, and Yaqui lineage of longfin dace and speckled dace.
5. Photodocument Job activities and results.
6. Develop and implement recommendations and guidelines for management (including survey, monitoring, research, etc.) of the species and its habitats.
7. Submit all site-specific locality information to the Heritage Data Management System for entry and subsequent use in NEPA and Section 7 consultations.

8. Prepare a performance or completion report (as appropriate to the Job segment). See above (Section A, paragraphs 3 and 4), for relevant information.

Job 44. Virgin River fishes conservation: Cost Code 06xxx

<u>Job Funding</u>	
New USFWS Match (75%):	0
New State Match (25%):	0
Amend-forward USFWS (75%):	0
Amend-forward State (75%):	0
Additional State (100%):	0
Total	0

Other project funds: CAP; and State Wildlife Grants.

Estimated funding needs other than for habitat acquisition: planning \$25,000; survey \$15,000; monitoring \$25,000; research \$10,000; habitat enhancement \$50,000; other management activities \$50,000; outreach and publications \$10,000. Total funding needs \$185,000.

Species: Virgin River chub (*Gila seminuda*), Virgin River spinedace (*Lepidomeda mollispinis mollispinis*), woundfin (*Plagopterus argentissimus*)

Five-Year Goals, Objectives, and Approaches: Conduct surveys, monitor populations and habitats, and identify management potential for specific sites. Collect a limited number of specimens from historical and newly identified locations for taxonomic analysis. Identify essential habitats, the need for a status review, research needs, and other management recommendations. Implement management activities as appropriate.

Current Year Procedures:

1. Continue biannual monitoring of the Virgin River and Beaver Dam Wash, in cooperation with the Lower Virgin River Recovery Implementation Team and the Virgin Spinedace Conservation Team.
2. Develop and implement management activities in the Virgin River drainage, in cooperation with the Lower Virgin River Recovery Implementation Team and the Virgin Spinedace Conservation Team.
3. In accordance with directives given to AGFD by the Arizona Game and Fish Commission in 2007 and approval of the appropriate land management entity, draft reestablishment plans for the Virgin River chub, Virgin River spinedace, and woundfin.
4. Implement reestablishment plans for approved sites in historical range, and initiate monitoring programs to evaluate post-reestablishment movements, habitat use, reproduction, and survival.

5. Develop and implement recommendations and guidelines for management (including survey, monitoring, research, etc.) of the woundfin and its habitats outside the Virgin River drainage.
6. Photodocument Job activities and results.
7. Submit all site-specific locality information to the Heritage Data Management System for entry and subsequent use in NEPA and Section 7 consultations.
8. Prepare a performance or completion report (as appropriate to the Job segment). See above (Section A, paragraphs 3 and 4), for relevant information.

Job 45. Little Colorado spinedace conservation: Cost Code 06xxx

Job Funding	
New USFWS Match (75%):	0
New State Match (25%):	0
Amend-forward USFWS (75%):	0
Amend-forward State (75%):	0
Additional State (100%):	0
Total	0

Other project funds: State Wildlife Grants.

Estimated funding needs other than for habitat acquisition: planning \$25,000; survey \$25,000; monitoring \$50,000; research \$25,000; habitat enhancement \$50,000; other management activities \$50,000; outreach and publications \$25,000. Total funding needs \$250,000.

Species: Little Colorado spinedace (*Lepidomeda vittata*)

Five-Year Goals, Objectives, and Approaches: Conduct surveys, monitor populations and habitats, and identify management potential for specific sites. Collect a limited number of specimens from historical and newly identified locations for taxonomic analysis. Identify essential habitats, the need for a status review, research needs, and other management recommendations. Implement management activities as appropriate.

Current Year Procedures:

1. Survey sites of known and historical occurrence, and continue 23 long-term monitoring stations in the Little Colorado River drainage.
2. Evaluate and establish refuge sites for each metapopulation.
3. Initiate 12-step procedures for range-wide evaluation of reestablishment potential, and implement reestablishment at approved sites.
4. Continue translocations in accordance with the East Clear Creek Management Plan, and monitor all translocation sites to evaluate success and the need for supplemental stockings.
5. Photodocument Job activities and results.
6. Develop and implement recommendations and guidelines for management (including survey, monitoring, research, etc.) of the species and its habitats.
6. Submit all site-specific locality information to the Heritage Data Management System for entry and subsequent use in NEPA and Section 7 consultations.
7. Prepare a performance or completion report (as appropriate to the Job segment). See above (Section A, paragraphs 3 and 4), for relevant information.

Job 61. Spikedace conservation: Cost Code 06xxx

Job Funding	
New USFWS Match (75%):	0
New State Match (25%):	0
Amend-forward USFWS (75%):	0
Amend-forward State (75%):	0
Additional State (100%):	0
Total	0

Other project funds: F7M \$5000; CAP; and State Wildlife Grants.

Estimated funding needs other than for habitat acquisition: planning \$25,000; survey \$25,000; monitoring \$25,000; research \$50,000; habitat enhancement \$50,000; other management activities \$50,000; outreach and publications \$10,000. Total funding needs \$235,000.

Species: Spikedace (*Meda fulgida*)

Five-Year Goals, Objectives, and Approaches: Conduct surveys, monitor populations and habitats, and identify management potential for specific sites. Collect a limited number of specimens from historical and newly identified locations for taxonomic analysis and/or propagation. Identify essential habitats, the need for a status review, research needs, and other management recommendations. Implement management activities as appropriate.

Current Year Procedures:

1. Conduct surveys, monitor populations and habitats, and identify management potential for specific sites.
2. Identify essential habitats, the need for a status review, research needs, and other management recommendations.
3. Implement management activities as appropriate, including repatriation of populations.
4. Photodocument Job activities and results.
5. Develop and implement recommendations and guidelines for management (including survey, monitoring, research, etc.) of the species and its habitats.
6. Submit all site-specific locality information to the Heritage Data Management System for entry and subsequent use in NEPA and Section 7 consultations.
7. Prepare a performance or completion report (as appropriate to the Job segment). See above (Section A, paragraphs 3 and 4), for relevant information.

Job 62. Loach minnow conservation: Cost Code 06xxx

Job Funding	
New USFWS Match (75%):	0
New State Match (25%):	0
Amend-forward USFWS (75%):	0
Amend-forward State (75%):	0
Additional State (100%):	0
Total	0

Other project funds: BLM; CAP; and State Wildlife Grants.

Estimated funding needs other than for habitat acquisition: planning \$25,000; survey \$25,000; monitoring \$25,000; research \$50,000; habitat enhancement \$50,000; other management activities \$50,000; outreach and publications \$10,000. Total funding needs \$235,000.

Species: Loach minnow (*Tiaroga cobitis*)

Five-Year Goals, Objectives, and Approaches: Conduct surveys, monitor populations and habitats, and identify management potential for specific sites. Collect a limited number of specimens from historical and newly identified locations for taxonomic analysis and/or propagation. Identify essential habitats, the need for a status review, research needs, and other management recommendations. Implement management activities as appropriate.

Current Year Procedures:

1. Conduct surveys, monitor populations and habitats, and identify management potential for specific sites.
2. Identify essential habitats, the need for a status review, research needs, and other management recommendations.
3. Implement management activities as appropriate.
4. Photodocument Job activities and results.
5. Develop and implement recommendations and guidelines for management (including survey, monitoring, research, etc.) of the species and its habitats.
6. Submit all site-specific locality information to the Heritage Data Management System for entry and subsequent use in NEPA and Section 7 consultations.
7. Prepare a performance or completion report (as appropriate to the Job segment). See above (Section A, paragraphs 3 and 4), for relevant information.

Job 63. Roundtail and headwater chub conservation: Cost Code 06xxx

Job Funding	
New USFWS Match (75%):	0
New State Match (25%):	0
Amend-forward USFWS (75%):	0
Amend-forward State (75%):	0
Additional State (100%):	0
Total	0

Other project funds: SRP; BLM; CAP; and State Wildlife Grants.

Estimated funding needs other than for habitat acquisition: planning \$75,000; survey \$25,000; monitoring \$50,000; research \$75,000; habitat enhancement \$25,000; other management activities \$25,000; outreach and publications \$25,000. Total funding needs \$300,000.

Species: Roundtail chub (*Gila robusta*) and headwater chub (*Gila nigra*)

Five-Year Goals, Objectives, and Approaches: An intensive assessment to determine status of roundtail and headwater chub in the lower Colorado River Basin will be conducted by AGFD personnel and cooperators and will include: records search for historical collections; identification of status information gaps; determine threats to populations; survey streams in the Gila River Basin using standardized sampling techniques (dipnet, seine, electroshocking, nets or traps, snorkel/visual) to determine status of extant populations; determine and assess threats to each identifiable metapopulation; compile a complete review and bibliography of published and gray literature; summarize all existing information on the biology, ecology, life history, habitat, distribution, and taxonomy; analyze past distribution and status information to describe trends, or lack thereof, in the species, its habitat, and distribution; summarize general land and water ownership and uses in the areas of known populations; and prepare 7.5 or 15 minute distribution maps or other suitable scale. Take habitat photographs of all localities of occurrence. Take voucher specimens from thriving populations, and as necessary to document new locations of occurrence, predation, disease, or other important biological factors. Collect live specimens for research and propagation. Compile survey data and submit them to the Heritage Data Management System for entry and subsequent use in consultations with USFWS.

Current Year Procedures:

1. Reestablish into historical habitats and suitable captive sites, as approved through NEPA compliance.
2. Collect live specimens for research and propagation.
3. Monitor extant and reestablished populations.

4. Survey/inventory all streams of known or suspected occurrence.
 - a. sample habitats by hand, dipnet, seine, electroshocking, nets or traps, snorkel/visual;
 - (1) take and archive habitat photographs for all new localities of occurrence; and
 - (2) take voucher specimens from thriving populations, and as necessary to document new locations of occurrence, predation, disease, or other important biological factors. Archive specimens in collections at Arizona State University.
5. Photodocument Job activities and results.
6. Develop and implement recommendations and guidelines for management (including survey, monitoring, research, etc.) of the species and its habitats.
7. Submit all site-specific locality information to the Heritage Data Management System for entry and subsequent use in NEPA and Section 7 consultations.
8. Prepare a performance or completion report (as appropriate to the Job segment). See above (Section A, paragraphs 3 and 4), for relevant information.

Job 69. Gila chub conservation: Cost Code 06xxx

Job Funding	
New USFWS Match (75%):	0
New State Match (25%):	0
Amend-forward USFWS (75%):	0
Amend-forward State (75%):	0
Additional State (100%):	0
Total	0

Other project funds: BLM; CAP; and State Wildlife Grants.

Estimated funding needs other than for habitat acquisition: planning \$75,000; survey \$25,000; monitoring \$50,000; research \$75,000; habitat enhancement \$25,000; other management activities \$25,000; outreach and publications \$25,000. Total funding needs \$300,000.

Species: Gila chub (*Gila intermedia*)

Five-Year Goals, Objectives, and Approaches: Conduct surveys, monitor populations and habitats, and identify management potential for specific sites. Collect a limited number of specimens from historical and newly identified locations for taxonomic analysis and/or propagation. Identify essential habitats, the need for a status review, research needs, and other management recommendations. Implement management activities as appropriate.

Current Year Procedures:

1. Reestablish into historical habitat and suitable captive sites, as approved through NEPA compliance.
2. Monitor extant and reestablished populations.
3. Photodocument Job activities and results.
4. Develop and implement recommendations and guidelines for management (including survey, monitoring, research, etc.) of the species and its habitats.
5. Submit all site-specific locality information to the Heritage Data Management System for entry and subsequent use in NEPA and Section 7 consultations.
6. Prepare a performance or completion report (as appropriate to the Job segment). See above (Section A, paragraphs 3 and 4), for relevant information.

Job 74. Native Fishes - Species of Greatest Conservation Need (multiple species)
conservation: Cost Code 06xxx

Job Funding	
New USFWS Match (75%):	0
New State Match (25%):	0
Amend-forward USFWS (75%):	0
Amend-forward State (75%):	0
Additional State (100%):	0
Total	0

Other project funds: USFWS; BLM; CAP: and State Wildlife Grants.

Estimated funding needs other than for habitat acquisition: planning \$75,000; survey \$25,000; monitoring \$50,000; research \$75,000; habitat enhancement \$25,000; other management activities \$25,000; outreach and publications \$25,000. Total funding needs \$300,000.

Species: Bluehead sucker (*Catostomus discobolus*); Zuni bluehead sucker (*Catostomus discobolus yarrowi*); flannelmouth sucker (*Catostomus latipinnis*); Little Colorado sucker (*Catostomus* sp.); Sonora sucker (*Catostomus insignis*); and unique populations of speckled dace (*Rhinichthy osculus*) and longfin dace (*Agosia chrysogaster*).

Five-Year Goals, Objectives, and Approaches: Conduct surveys, monitor populations and habitats, and identify management potential for specific sites. Collect a limited number of specimens from historical and newly identified locations for taxonomic analysis. Identify essential habitats, the need for a status review, research needs, and other management recommendations. Implement management activities as appropriate.

Current Year Procedures:

1. Reestablish into historical habitat, as approved through NEPA compliance.
2. Monitor extant and reestablished populations.
3. Photodocument Job activities and results.
4. Develop and implement recommendations and guidelines for management (including survey, monitoring, research, etc.) of the species and its habitats.
5. Submit all site-specific locality information to the Heritage Data Management System for entry and subsequent use in NEPA and Section 7 consultations.
6. Prepare a performance or completion report (as appropriate to the Job segment). See above (Section A, paragraphs 3 and 4), for relevant information.

AMPHIBIANS

Job 26. Ranid frogs conservation: Cost Code 06xxx

Job Funding	
New USFWS Match (75%):	
New State Match (25%):	
Amend-forward USFWS (75%):	
Amend-forward State (75%):	
Additional State (100%):	
Total	

Other project funds: USFWS; CAP (for Chiricahua leopard frog only); and State Wildlife Grants.

Estimated funding needs other than for habitat acquisition: planning \$50,000; survey \$75,000; monitoring \$125,000; research \$200,000; habitat enhancement \$75,000; other management activities \$25,000; outreach and publications \$25,000. Total funding needs \$575,000.

Species: Plains leopard frog (*Rana blairi*), Chiricahua leopard frog (*R. chiricahuensis*), northern leopard frog (*R. pipiens*), lowland leopard frog (*R. yavapaiensis*), relict leopard frog (*R. onca*), Tarahumara frog (*R. tarahumarae*), and Ramsey Canyon leopard frog (*R. subaquavocalis*)

Five-Year Goals, Objectives, and Approaches: Document the current status of native ranids by gathering information on historical and present distributions, population and metapopulation dynamics, proximate and ultimate causes of declines, and general natural history and autecology. Using this information, develop and implement recommendations on land-use practices and policies to halt, slow or reverse population declines. Implement management strategies, such as translocations or reintroductions, to bolster extant metapopulations and, as appropriate, to restore species to portions of their historical range that are now uninhabited. Implement recovery actions and activities as described in the Chiricahua Leopard Frog Recovery Plan, the Safe Harbor Agreement for the Chiricahua Leopard Frog in Arizona, the Ramsey Canyon Leopard Frog Candidate Conservation Agreement, the Relict Leopard Frog Candidate Conservation Agreement, and the 12-Step Re-establishment Procedure for the Tarahumara Frog.

Activities: Conduct literature and museum searches for historical localities of leopard and Tarahumara frogs statewide; conduct field surveys and monitoring at sites of known and potential occurrence to record information on presence and absence, relative abundance, reproductive activity, presence/absence of disease, habitat characteristics, and weather at each site; collect voucher specimens to verify occurrence and for disease monitoring; submit all locality

information to the Heritage Data Management System for entry and subsequent use in project evaluation and Section 7 consultations; combine results for all species into one report for each field season; use color photographs of frogs and habitat in scientific and management presentations and in educational programs; and use the information gathered to manage for long term persistence of these species as a part of Arizona's fauna through translocations, captive rearing and release, habitat enhancement and renovation, removal of non-native predators and competitors, or other appropriate conservation actions.

Current Year Procedures:

1. Conduct literature and museum searches for historical localities of leopard and Tarahumara frogs statewide.
2. Monitor frog populations at known localities and conduct surveys of other appropriate habitat in key areas for conservation (Clarkson and Rorabaugh 1989, Platz and Frost 1984). Survey perennial reaches of streams and other aquatic habitats and sample frogs and/or tadpoles visually, by hand, dipnet, seine, or trap (Sredl et al. 1993). Record information on presence and absence, relative abundance, reproductive activity, habitat characteristics, and weather at each site.
3. Take digital or 35 mm color slide photo-vouchers of frogs and habitats for all new localities, for use in scientific and management presentations and in educational programs. Take voucher specimens from thriving populations.
4. Continue to test and evaluate implementation of management strategies such as translocation, captive breeding and release, control of non-native predators or competitors, and habitat renovation.
5. Note all vertebrates observed, especially potential predators. Indicate relative abundance of fishes. Record present and recent weather conditions.
6. Collect frogs exhibiting disease symptoms for examination. Collect water and substrate samples for analysis along with the ailing frog. Analyze ailing animals for disease factors. Take extreme caution not to transfer disease factors among frogs or populations (see "take" provisions in Section B, below).
7. Photodocument Job activities and results.
8. Develop and implement recommendations and guidelines for management (including survey, monitoring, research, etc.) of the species and their habitats.
9. Submit all site-specific locality information to the Heritage Data Management System for entry and subsequent use in project evaluations, NEPA and Section 7 consultations.
10. For the Chiricahua leopard frog, notify the AESO project liaison of: (a) discovery of any new populations; (b) discovery of any die-offs; (c) discovery of no live frogs at a site occupied during a previous visit; and/or (d) confirmation of diseased or deformed individuals in a wild population.
11. Prepare a performance or completion report (as appropriate to the Job segment). See above (Section A, paragraphs 3 and 4), for relevant information.
12. Implement management strategies including, habitat enhancement and renovation, and removal of non-native predators and competitors.

Job 60. Sonoran tiger salamander conservation: Cost Code 06xxx

Job Funding	
New USFWS Match (75%):	0
New State Match (25%):	0
Amend-forward USFWS (75%):	0
Amend-forward State (75%):	0
Additional State (100%):	0
Total	0

Other project funds: USFWS; State Wildlife Grants.

Estimated funding needs other than for habitat acquisition: planning \$10,000; survey \$25,000; monitoring \$25,000; research \$50,000; habitat enhancement \$50,000; other management activities \$25,000; outreach and publications \$10,000. Total funding needs \$195,000.

Species: Sonoran tiger salamander (*Ambystoma tigrinum stebbinsi*)

Five-Year Goals, Objectives, and Approaches: Monitor extant and potential breeding sites to document occurrence and reproductive success (including metamorphosis), and to identify presence of disease. Determine distribution, population status, and dispersal through surveys of known and potential habitat, and mark-recapture studies. Identify habitat requirements for successful breeding and larval development to maturity. Identify and implement management recommendations and habitat enhancements in cooperation with private landowners, federal agency partners, and other willing cooperators. Implement recovery actions and activities as described in the Sonoran Tiger Salamander Recovery Plan.

Current Year Procedures:

1. Monitor known and potential breeding sites for salamander persistence, reproductive success, presence of disease or epidemic, and to determine habitat characteristics for successful breeding and maturation.
2. Continue PIT tagging metamorphosed and branchiate adult salamanders to evaluate movements and population size.
3. Collect salamanders exhibiting disease symptoms for examination. Collect water and substrate samples for analysis. Analyze ailing animals for disease factors. Use caution not to transfer pathogens among sites or populations (see "take" provisions in Section B, below).
4. Collect dead and moribund individuals for voucher specimens and laboratory analysis.
5. Notify the AESO project liaison of: (a) discovery of any new populations; (b) discovery of any die-offs; (c) finding no live salamanders at a site occupied during the previous year; and (4) confirmation of diseased or deformed individuals in a wild population.

6. Test and evaluate implementation of management strategies such as translocation, captive breeding and release.
7. Implement management strategies including, habitat enhancement and renovation, and removal of non-native predators and competitors.
8. Implement or assist outside cooperators in studies of conservation genetics, disease, distribution, natural history, etc.
9. Develop and implement management and recovery recommendations and guidelines (e.g. survey, monitoring, habitat enhancement or renovation, research) in cooperation with private landowners and federal land-management agencies.
10. Photodocument Job activities and results.
11. Submit all site-specific locality information to the Heritage Data Management System for entry and subsequent use in project evaluations, NEPA and Section 7 consultations.
12. Prepare a performance or completion report (as appropriate to the Job segment). See above (Section A, paragraphs 3 and 4), for relevant information.

REPTILES

Job 21a. Mojave desert tortoise conservation: Cost Code 06xxx

Job Funding	
New USFWS Match (75%):	0
New State Match (25%):	0
Amend-forward USFWS (75%):	0
Amend-forward State (75%):	0
Additional State (100%):	0
Total	0

Other project funds: State Wildlife Grants.

Estimated funding needs other than for habitat acquisition: planning \$25,000; survey \$100,000; monitoring \$125,000; research \$200,000; habitat enhancement \$50,000; other management activities \$50,000; outreach and publications \$25,000. Total funding needs \$575,000.

Species: Mojave population of the desert tortoise (*Gopherus agassizii*)

Five-Year Goals, Objectives, and Approaches: Establish a set of long-term monitoring plots providing geographically and ecologically broad coverage of the Mojave population of the desert tortoise in Arizona. Monitor these plots on a rotating basis, so each one is revisited at a biologically meaningful time interval (ca. 3-5 years) to determine population trends while developing demographic models. Collect information that will allow powerful assessment of status and provide insight on the cause(s) of any decline that is observed. Participate in planning, implementation and monitoring of mitigation-related projects. Implement recovery actions as described in the Desert Tortoise (Mojave Population) Recovery Plan.

Each year, census one of the following plots in accordance with accepted procedures for 60-day plots in Mojave Desert habitats: Beaver Dam Slope; Littlefield; Pakoon Basin; Virgin Slope; or establish new plots as needed and appropriate. Gather information on demography, morphometrics, habitat, climate, and health (e.g. evaluation for signs of respiratory disease). Estimate survivorship or mortality rates, recruitment rates, growth rates, and other parameters. Track marked individuals through time and compare size-class frequency distributions with those from previous surveys to provide an indication of population trends. Take standardized 35 mm color slides (or digital photos) of individual tortoises at each plot and add them to the Nongame Branch reference library to facilitate identification, health monitoring, and aging of tortoises by counting growth rings. Use these and habitat slides in presentations at scientific and management

meetings and in educational programs. Submit all locality data to the Heritage Data Management System for entry and subsequent use in consultations with USFWS.

Current Year Procedures:

1. Complete a repeat survey of one or more monitoring sites, in accordance with accepted procedures for 60-day study plots in Mojave Desert habitats (e.g. Goodlett et al. 1996).
2. In addition to collecting demographic, morphometric, climatological, and habitat information usually recorded on 60-day desert tortoise study plots, evaluate each tortoise encountered for signs of Upper Respiratory Tract Disease (URTD), shell disease, and other health problems (Goodlett et al. 1996).
3. Participate in planning, implementation and monitoring of mitigation-related projects, including translocations.
4. Take digital or 35 mm color slides to document each individual tortoise encountered on the plot, and to provide representative coverage of on-site habitats and all field and laboratory activities.
5. Compare the mark-recapture results (survivorship, etc.), numbers, and size-class distributions of tortoises found on the proposed surveys to those found in previous surveys, to estimate population trends.
6. Identify any necessary changes in methods and sampling intervals for the long-term Mojave desert tortoise monitoring program in Arizona.
7. Initiate distance sampling for Mojave population tortoises in conjunction with range-wide monitoring and recovery efforts within the Northeast Mojave Recovery Unit.
8. Collect life history (e.g. reproductive output, survival, etc.) and habitat selection data through radio-telemetry studies at one or more sites for use in population viability and occupancy analyses.
9. Collect blood from tortoises at multiple sites, including monitoring plots, for genetic analysis, and to analyze it for *Mycoplasma* (URTD) exposure and for other potential pathogens.
10. Necropsy dead, moribund, or symptomatic tortoises for contagious pathogens and to determine cause(s) of death or impairment.
11. Photodocument Job activities and results.
12. Develop and implement recommendations and guidelines for management (including survey, monitoring, research, etc.) of the species and its habitats.
13. Submit all site-specific locality information to the Heritage Data Management System for entry and subsequent use in NEPA and Section 7 consultations.
14. Prepare a performance or completion report (as appropriate to the Job segment). See above (Section A, paragraphs 3 and 4), for relevant information.

Job 21b. Sonoran desert tortoise conservation: Cost Code 06xxx

Job Funding	
New USFWS Match (75%):	0
New State Match (25%):	0
Amend-forward USFWS (75%):	0
Amend-forward State (75%):	0
Additional State (100%):	0
Total	0

Other project funds: State Wildlife Grants.

Estimated funding needs other than for habitat acquisition: planning \$75,000; survey \$125,000; monitoring \$125,000; research \$250,000; habitat enhancement \$250,000; other management activities \$125,000; outreach and publications \$50,000. Total funding needs \$1,000,000.

Species: Sonoran population of the desert tortoise (*Gopherus agassizii*)

Five-Year Goals, Objectives, and Approaches: Establish a set of ca. 15-20 long-term monitoring plots providing geographically and ecologically broad coverage of the Sonoran Desert population of the desert tortoise in Arizona. Monitor these sites on a rotating basis, so each site is revisited at a biologically meaningful time interval (ca. 3-5 years) to allow determination of population trends at specific sites and across the State. Collect information that will allow powerful assessment of status and provide insight on the cause(s) of any decline that is observed.

Each year, census one of the following plots in accordance with accepted procedures for 35-day or 60-day plots in Sonoran Desert habitats: Bonanza, East Bajada, Four Peaks, Granite Hills, Hualapai Foothills, Little Shipp Wash, San Pedro, and the Eagletail, Harcuvar, Harquahala, Maricopa, New Water, Santan, Tortilla, West Silverbell, Wickenburg, and Arrastra (Poachie) mountains. Gather information on demography, morphometrics, habitat, climate, and health (e.g. evaluation for signs of respiratory disease). Estimate survivorship or mortality rates, recruitment rates, growth rates, and other parameters. Track marked individuals through time and compare size-class frequency distributions with those from previous surveys to provide an indication of population trends. Take standardized 35 mm color slides (or digital photos) of individual tortoises at each plot and add them to the Nongame Branch reference library to facilitate identification, health monitoring, and aging of tortoises by counting growth rings. Use these and habitat slides in presentations at scientific and management meetings and in educational programs. Submit all locality data to the Heritage Data Management System for entry and subsequent use in consultations with USFWS.

Results from all plots will be combined into one report.

Current Year Procedures:

1. Complete coverage of one or more monitoring sites, in accordance with accepted procedures for 35-day or 60-day study plots in Sonoran Desert habitats (Averill-Murray 2000). Collect demographic, morphometric, climatological, habitat, and other information for each plot monitored. Evaluate each tortoise encountered for signs of Upper Respiratory Tract Disease (URTD), shell disease, and other health problems. Take digital or 35 mm color slide photos to document each individual tortoise encountered on the plot, and to provide representative coverage of on-site habitats and all field and laboratory activities. Compare mark-recapture results (survivorship, etc.), numbers and size-class distributions of tortoises found on these surveys to those of tortoises found in previous surveys, to estimate population trends.
2. Identify any necessary changes in methods and sampling intervals for the long-term Sonoran desert tortoise monitoring program in Arizona, and coordinate changes through AIDTT.
3. Collect life history (e.g. reproductive output, survival, etc.) and habitat selection data through radio-telemetry studies at one or more sites for use in population viability and occupancy analyses.
4. Collect blood from tortoises at multiple sites, including monitoring plots, for genetic analysis, and to analyze it for *Mycoplasma* (URTD) exposure and for other potential pathogens.
5. Necropsy dead, moribund, or symptomatic tortoises for contagious pathogens and to determine cause(s) of death or impairment.
6. Photodocument Job activities and results.
7. Develop and implement recommendations and guidelines for management (including survey, monitoring, research, etc.) of the species and its habitats.
8. Submit all site-specific locality information to the Heritage Data Management System for entry and subsequent use in NEPA and Section 7 consultations.
9. Prepare a performance or completion report (as appropriate to the Job segment). See above (Section A, paragraphs 3 and 4), for relevant information.

Job 47. Flat-tailed horned lizard conservation: Cost Code 06xxx

Job Funding	
New USFWS Match (75%):	0
New State Match (25%):	0
Amend-forward USFWS (75%):	0
Amend-forward State (75%):	0
Additional State (100%):	0
Total	0

Note: the Conservation Strategy for this species identifies a total need of \$750,000 for OHV enforcement.

Other project funds: State Wildlife Grants.

Estimated funding needs other than for habitat acquisition: planning \$25,000; survey \$125,000; monitoring \$175,000; research \$150,000; habitat enhancement \$200,000; other management activities \$50,000; outreach and publications \$25,000. Total funding needs \$750,000.

Species: Flat-tailed horned lizard (*Phrynosoma mcallii*)

Five-Year Goals, Objectives, and Approaches: Cooperate with other agencies signatory to the Flat-Tailed Horned Lizard Conservation Agreement, to ensure that actions identified in the agreement, and the Conservation Strategy on which it is based, are implemented in the United States and Mexico. These actions include: minimizing habitat loss or degradation, habitat renovation, protection of habitat corridors, interagency coordination of field and management activities in the United States and Mexico, law enforcement, public outreach, research, secure funding sources, population monitoring, and renewal or termination of the Conservation Agreement.

Current Year Procedures:

1. Participate in the FTHL Management Oversight Group to provide management-level leadership, coordination, and oversight in implementing the FTHL Conservation Agreement.
2. Participate in the FTHL Interagency Coordinating Committee to exchange information on research results, proposals, and technical and management issues.
3. Coordinate with Yuma County's "Growing Smarter Initiative" to ensure that State Trust lands occupied by FTHLs are identified and considered for conservation.
4. Assist in, or initiate, field surveys (e.g. transect surveys) regarding status, distribution, and habitat use.

5. Assist in evaluating trapping webs to monitor FTHL populations and to determine regional population densities.
6. Collect life history, movement, demographic and habitat selection data through radio-telemetry studies and/or standard mark-recapture techniques at one or more sites for use in population viability and occupancy analyses.
7. Conduct genetic analysis of populations from throughout their distribution.
8. Conduct OHV patrols in the Yuma Desert FTHL Management Area.
9. Assist with placement of boundary signs for the Yuma Desert FTHL Management Area.
10. Photodocument Job activities and results.
11. Develop and implement recommendations and guidelines for management (including survey, monitoring, research, etc.) of the species and its habitats.
12. Submit all site-specific locality information to the Heritage Data Management System for entry and subsequent use in project evaluation, NEPA and Section 7 consultations.
13. Prepare a performance or completion report (as appropriate to the Job segment). See above (Section A, paragraphs 3 and 4), for relevant information.

Job 48. Mexican Gartersnake conservation: Cost Code 06xxx

Job Funding	
New USFWS Match (75%):	0
New State Match (25%):	0
Amend-forward USFWS (75%):	0
Amend-forward State (75%):	0
Additional State (100%):	0
Total	0

Other project funds: State Wildlife Grants.

Estimated funding needs other than for habitat acquisition: planning \$5,000; survey \$25,000; monitoring \$5,000; research \$20,000; habitat enhancement \$50,000; other management activities \$10,000; outreach and publications \$5,000. Total funding needs \$120,000.

Species: Mexican Gartersnake (*Thamnophis eques megalops*)

Five-Year Goals, Objectives, and Approaches: Review literature and museum collections, describe genetic variability, and conduct field surveys to determine relative or absolute abundance, distribution, population status, mechanisms to reduce abundance of exotics, and management needs.

Current Year Procedures:

1. Review literature and museum collections.
2. Conduct genetic analysis of populations from throughout their distribution.
3. Conduct detailed population study at one or more sites.
4. Conduct studies to compare areas of apparent decline with apparently more stable populations, to investigate likely mechanisms of decline.
5. Investigate mechanisms for eliminating exotic predators/competitors (i.e., bullfrogs, crayfish).
6. Test and evaluate implementation of management strategies such as translocation, captive breeding and release.
7. Photodocument Job activities and results.
8. Develop and implement recommendations and guidelines for management (including survey, monitoring, research, etc.) of the species and its habitats.
9. Submit all site-specific locality information to the Heritage Data Management System for entry and subsequent use in project evaluation, NEPA and Section 7 consultations.

10. Prepare a performance or completion report (as appropriate to the Job segment). See above (Section A, paragraphs 3 and 4), for relevant information.

Job 75. Narrow-headed Gartersnake conservation: Cost Code 06xxx

Job Funding	
New USFWS Match (75%):	0
New State Match (25%):	0
Amend-forward USFWS (75%):	0
Amend-forward State (75%):	0
Additional State (100%):	0
Total	0

Other project funds: State Wildlife Grants.

Estimated funding needs other than for habitat acquisition: planning \$5,000; survey \$25,000; monitoring \$5,000; research \$20,000; habitat enhancement \$50,000; other management activities \$10,000; outreach and publications \$5,000. Total funding needs \$120,000.

Species: Narrow-headed Gartersnake (*Thamnophis rufipunctatus*)

Five-Year Goals, Objectives, and Approaches: Review literature and museum collections, describe genetic variability, and conduct field surveys to determine relative or absolute abundance, distribution, population status, mechanisms to reduce abundance of exotics, and management needs.

Current Year Procedures:

1. Review literature and museum collections.
2. Conduct genetic analysis of populations from throughout their distribution.
3. Conduct detailed population study at one or more sites.
4. Conduct studies to compare areas of apparent decline with apparently more stable populations, to investigate likely mechanisms of decline.
5. Investigate mechanisms for eliminating exotic predators/competitors (i.e., bullfrogs, crayfish).
6. Test and evaluate implementation of management strategies such as translocation, captive breeding and release.
7. Photodocument Job activities and results.
8. Develop and implement recommendations and guidelines for management (including survey, monitoring, research, etc.) of the species and its habitats.
9. Submit all site-specific locality information to the Heritage Data Management System for entry and subsequent use in project evaluation, NEPA and Section 7 consultations.

10. Prepare a performance or completion report (as appropriate to the Job segment). See above (Section A, paragraphs 3 and 4), for relevant information.

Job 76. Tucson shovel-nosed snake conservation : Cost Code 06xxx

Job Funding	
New USFWS Match (75%):	0
New State Match (25%):	0
Amend-forward USFWS (75%):	0
Amend-forward State (75%):	0
Additional State (100%):	0
Total	0

Other project funds: State Wildlife Grants.

Estimated funding needs other than for habitat acquisition: planning \$5,000; survey \$25,000; monitoring \$5,000; research \$0; habitat enhancement \$0; other management activities \$10,000; outreach and publications \$5,000. Total funding needs \$50,000.

Species: Tucson shovel-nosed snake (*Chionactis occipitalis klauberi*)

Five-Year Goals, Objectives, and Approaches: Review literature and museum collections, describe genetic variability, and conduct field surveys to determine relative or absolute abundance, distribution, population status, and management needs.

Current Year Procedures:

1. Review literature and museum collections.
2. Conduct genetic analysis of populations from throughout the species' distribution.
3. Conduct detailed population study at one or more sites, using standard mark-recapture techniques.
4. Conduct studies to compare areas of apparent decline with apparently more stable populations, to investigate likely mechanisms of decline.
5. Photodocument Job activities and results.
6. Develop and implement recommendations and guidelines for management (including survey, monitoring, research, etc.) of the species and its habitats.
7. Submit all site-specific locality information to the Heritage Data Management System for entry and subsequent use in project evaluation, NEPA and Section 7 consultations.
8. Prepare a performance or completion report (as appropriate to the Job segment). See above (Section A, paragraphs 3 and 4), for relevant information.

Job 59. New Mexico ridgenose rattlesnake conservation: Cost Code 06xxx

Job Funding	
New USFWS Match (75%):	0
New State Match (25%):	0
Amend-forward USFWS (75%):	0
Amend-forward State (75%):	0
Additional State (100%):	0
Total	0

Other project funds: State Wildlife Grants.

Estimated funding needs other than for habitat acquisition: planning \$25,000; survey \$50,000; monitoring \$0; research \$25,000; habitat enhancement \$25,000; other management activities \$10,000; outreach and publications \$10,000. Total funding needs \$145,000.

Species: New Mexico ridgenose rattlesnake (*Crotalus willardi obscurus*)

Five-Year Goals, Objectives, and Approaches: Investigate the distribution, natural history, and habitat requirements of *Crotalus willardi obscurus* in New Mexico and Arizona (and Mexico), using standardized and widely accepted herpetological sampling methods. The results will provide information on the status of this subspecies in Arizona, and provide a better foundation for management decisions. Collaborate with government agencies, private landowners, permittees, and other stakeholders to revise and more effectively implement the Recovery Plan.

Current Year Procedures:

1. Monitor known populations, and conduct surveys of occupied and potential habitat.
2. Cooperate with the New Mexico Game and Fish Department, USFWS, and other stakeholders to revise the Recovery Plan.
3. Photodocument Job activities and results.
4. Develop and implement recommendations and guidelines for management (including survey, monitoring, research, etc.) of the species and its habitats.
5. Submit all site-specific locality information to the Heritage Data Management System for entry and subsequent use in NEPA and Section 7 consultations.
6. Prepare a performance or completion report (as appropriate to the Job segment). See above (Section A, paragraphs 3 and 4), for relevant information.

BIRDS

Job 27. Southwestern willow flycatcher conservation: Cost Code 06355

Job Funding	
New USFWS Match (75%):	0
New State Match (25%):	0
Amend-forward USFWS (75%):	0
Amend-forward State (75%):	0
Additional State (100%):	0
Total	0

Other project funds: State Wildlife Grants

Estimated funding needs other than for habitat acquisition: planning \$50,000; survey \$100,000; monitoring \$100,000; research \$100,000; habitat enhancement \$500,000; other management activities \$250,000; outreach and publications \$50,000. Total funding needs \$1,150,000.

Species: Southwestern willow flycatcher (*Empidonax traillii extimus*)

Five-Year Goals, Objectives, and Approaches: Using established survey protocol, survey known and potential breeding areas, including the watersheds of the lower Colorado, Bill Williams, and Gila rivers to ascertain present distribution, population, and productivity in Arizona. Conduct all surveys from mid May through mid July. Visit each occupied site three times to document breeding status. Develop general and site-specific management recommendations for land managers. Submit breeding location information to the Heritage Data Management System for entry and subsequent use in consultations with USFWS.

This project is part of a larger interagency effort. Partners include the BLM, USFS, NPS, USGS-BRD, USBR, The Arizona Nature Conservancy, Native American Tribes, Salt River Project, and several consulting firms. These partners collect data and send completed forms to AGFD to enter into a database and compile into a final report.

Current Year Procedures:

1. From mid May through mid July, use the USFWS-AGFD sanctioned protocol to survey known and potential breeding areas including watersheds of the lower Colorado, Bill Williams, and Gila rivers to ascertain present distribution, population, and productivity in Arizona.
2. In cooperation with various agencies and organizations, including New Mexico Game and Fish Department, assist in providing training and copies of the survey protocol, data forms and playback tapes to cooperators.
3. Photodocument Job activities and results.
4. Develop and implement recommendations and guidelines for management (including survey, monitoring, research, etc.) of the species and its habitats.
5. In cooperation with the USFWS, assist in updating and maintaining the willow flycatcher interagency (AGFD, USBR, USFWS, USGS) database with survey and nest data.
6. Identify, create, and maintain native lowland riparian woodlands.
7. In cooperation with the USFWS, submit all site-specific locality information to the Heritage Data Management System for entry and subsequent use in NEPA and Section 7 consultations.
8. Prepare a performance or completion report (as appropriate to the Job segment). See above (Section A, paragraphs 3 and 4), for relevant information.

Job 30. Northern aplomado falcon conservation: Cost Code 06xxx

Job Funding	
New USFWS Match (75%):	0
New State Match (25%):	0
Amend-forward USFWS (75%):	0
Amend-forward State (75%):	0
Additional State (100%):	0
Total	0

Other project funds: State Wildlife Grants.

Estimated funding needs other than for habitat acquisition: planning \$10,000; survey \$10,000; monitoring \$10,000; research \$5,000; habitat enhancement \$25,000; other management activities \$10,000; outreach and publications \$5,000. Total funding needs \$75,000.

Species: Northern aplomado falcon (*Falco femoralis septentrionalis*)

Five-Year Goals, Objectives, and Approaches: Allow recolonization in Arizona to occur passively, as a consequence of population expansion from reintroduction efforts in New Mexico and/or natural expansion from México (Chihuahua and Sonora). Participate in Recovery Team Meetings to assess when surveys in Arizona will be necessary to document range expansion from the reintroduction efforts in New Mexico.

Current Year Procedures:

1. Ensure that appropriate public and private partnerships are in place to provide for recolonization.
2. Participate, develop and implement recommendations and guidelines for management (including survey, monitoring, research, etc.) of the species and its habitats.
3. Submit all site-specific locality information to the Heritage Data Management System for entry and subsequent use in NEPA and Section 7 consultations.
4. Prepare a performance or completion report (as appropriate to the Job segment). See above (Section A, paragraphs 3 and 4), for relevant information.

Job 32. Cactus ferruginous pygmy-owl conservation: Cost Code 06xxx

Job Funding	
New USFWS Match (75%):	0
New State Match (25%):	0
Amend-forward USFWS (75%):	0
Amend-forward State (75%):	0
Additional State (100%):	0
Total	0

Other project funds: State Wildlife Grants.

Estimated funding needs other than for habitat acquisition: planning \$200,000; survey \$150,000; monitoring \$150,000; research \$150,000; habitat enhancement \$500,000; other management activities \$100,000; outreach and publications \$50,000. Total funding needs \$1,300,000.

Species: Cactus ferruginous pygmy-owl (*Glaucidium brasilianum cactorum*)

Five-Year Goals, Objectives, and Approaches: Conduct annual surveys during the courtship and breeding season (January through June) focusing on areas of historical and recent occurrence and areas identified as potential habitat based on ongoing habitat analysis. Locate and monitor nests using surveys, resident nest monitoring programs, radio-telemetry and other appropriate methods. Identify habitat use and requirements using field sampling, surveys, and radio-telemetry. Pursue opportunities for habitat conservation by working with land owners, conservation entities, and government agencies. Develop and implement a captive breeding program for repatriation of the species throughout its historical range. Hold annual coordination meetings with cooperators to discuss work accomplishments, develop annual work schedules and activities and discuss other pertinent and timely issues.

Current Year Procedures:

1. Conduct nesting surveys in cooperation with various agencies and organizations, in areas of previous pygmy-owl locations, in areas of suitable habitat previously identified as appropriate, and investigate sightings from other agencies and members of the public.
2. Conduct monitoring in cooperation with various agencies and organizations of any nest sites located to determine nesting chronology and behavior, and of artificial nest boxes in suitable habitat.
3. Conduct demographic studies to determine the health of the population which include banding of offspring and adults for monitoring and identification purposes; placement of transmitters to track individuals to determine habitat use, territory size, dispersal distances

- and patterns, territory fidelity, and other life history and behavioral characteristics; collect tissue samples for genetics analyses in Arizona and Mexico.
4. Conduct habitat sampling at recent sites of occurrence and at random sites within known, suspected, and potential habitats of occurrence.
 5. Establish artificial nest boxes in suitable habitat, in cooperation with private property owners and government agencies.
 6. Develop and implement a captive breeding program using owls captured in southern Arizona and Mexico, develop a habitat model to identify potential release areas for hacking captive bred offspring.
 7. Photodocument Job activities and results.
 8. Develop and implement recommendations and guidelines for management (including survey, monitoring, research, etc.) of the species and its habitats.
 9. Submit all site-specific locality information to the Heritage Data Management System for entry and subsequent use in NEPA and Section 7 consultations.
 10. Prepare a performance or completion report (as appropriate to the Job segment). See above (Section A, paragraphs 3 and 4), for relevant information.

Job 34. Bald eagle conservation: Cost Code 06413

Job Funding	
New USFWS Match (75%):	0
New State Match (25%):	0
Amend-forward USFWS (75%):	0
Amend-forward State (75%):	0
Additional State (100%):	0
Total	0

Other project funds: APS \$1000; BLM \$15000; LAFB \$5,000; SRP \$15,000; SRPMIC \$8,000; USBR \$40,000; USFS \$6000 (Prescott NF); USFS \$20,000 (Tonto NF); Verde Canyon Railroad \$5,000; and State Wildlife Grants.

Estimated funding needs other than for habitat acquisition: planning \$150,000; survey \$50,000; monitoring \$150,000; research \$250,000; habitat enhancement \$150,000; other management activities \$150,000; outreach and publications \$150,000. Total funding needs \$1,150,000.

Species: Bald eagle (*Haliaeetus leucocephalus*)

Five-Year Goals, Objectives, and Approaches: Conduct appropriate management and monitoring activities, including mid-winter surveys, annual nest searches, the Arizona Bald Eagle Nestwatch Program, monthly occupancy-reproductive assessment flights, and coordination of the Southwestern Bald Eagle Management Committee. Coordinate site closures. Integrate inventory, monitoring and management efforts with those of cooperators. Develop cost-sharing agreements with other agencies and organizations. Train Department personnel and cooperators in inventory, monitoring, and management techniques. Meet in July and January with project cooperators to discuss progress, modify field and data protocols, and set work schedules for the following field season. Provide project information to other agencies and the public through technical and popular publications, presentations, websites, and other media.

Arizona Current Year Procedures:

1. Conduct appropriate management and monitoring activities including eagle rescue, rehabilitation, nest rebuilding, pest control, and cross fostering, the Arizona Bald Eagle Nestwatch Program, nest search, demography studies including trapping, transmitting, banding, and blood sampling and analyses to determine population genetics and to assess contaminants levels, winter count, and occupancy-recruitment assessment flights.
2. Coordinate breeding area closures.
3. Meet in July and January with the Southwestern Bald Eagle Management Committee and project cooperators to discuss progress, modify field and data protocols, set work schedules

- for the following field season, develop and implement recommendations and guidelines for management (including survey, monitoring, research, etc.) of the species and its habitats..
4. Salvage/collect addled eggs, eggshells, carcasses, bone, feathers, and other parts, for contaminants analyses and subsequent transfer to the National Eagle Repository.
 5. Collect native and non-native fish for contaminants analyses.
 6. Photo document Job activities and results.
 7. Implement public relations and outreach techniques including internet cameras, and media events and documentaries at selected nest sites under the supervision of a permitted biologists.
 8. Permit members of other agencies, media, and public accompanying biologists to the banding trips to handle bald eagles in order to collect necessary demographic information and for outreach as long as it is done under the supervision of a permitted biologist.
 9. Submit all site-specific locality information to the Heritage Data Management System for entry and subsequent use in NEPA and Section 7 consultations.
 10. Prepare a performance or completion report (as appropriate to the Job segment). See above (Section A, paragraphs 3 and 4), for relevant information.

California Current Year Procedures

1. Conduct appropriate management and monitoring activities, including eagle rescue, rehabilitation, cross fostering, nest rebuilding, pest control, nest search, and demography studies (including adult identification, trapping, transmitting, banding, and blood sampling and analyses to determine population genetics and to assess contaminants levels).
2. Salvage/collect addled eggs, eggshells, carcasses, bone, feathers, and other parts, for contaminants analyses and subsequent transfer to the National Eagle Repository.
3. Photo document Job activities and results.
4. Permit members of other agencies, media, and public accompanying biologists to the banding trips to handle bald eagles in order to collect necessary demographic information and for outreach as long as it is done under the supervision of a permitted biologist.
5. Prepare a performance or completion report (as appropriate to the Job segment). See above (Section A, paragraphs 3 and 4), for relevant information.

Job 37. California condor conservation: Cost Code 06411

Job Funding	
New USFWS Match (75%):	0
New State Match (25%):	0
Amend-forward USFWS (75%):	0
Amend-forward State (75%):	0
Additional State (100%):	0
Total	0

Other project funds: State Wildlife Grants, and Heritage Funds.

Estimated funding needs other than for habitat acquisition: planning \$10,000; survey \$0; monitoring \$90,000; research \$150,000; habitat enhancement \$120,000; other management activities \$90,000; outreach and publications \$20,000. Total funding needs \$480,000.

Species: California condor (*Gymnogyps californianus*)

Five-Year Goals, Objectives, and Approaches: Continue voluntary lead reduction program in an effort to reduce lead exposure in the condor population. Continue coordination of California Condor reintroduction project with cooperating agencies, organizations and affected individuals. Participate in field monitoring, feeding, and management of released condors. Continue public education outreach to disseminate recovery information. Conduct project evaluations.

Current Year Procedures:

1. Evaluate project management proposals to enhance condor reintroduction such as lead reduction.
2. Effectively implement Recovery Team and Working Group recommendations.
3. Participate as a member of the field team in monitoring, feeding, and management of released condors and additional release efforts.
4. Communicate project information to public and cooperating partners through popular and technical publications, media news releases, and personal presentations at scientific conferences, workshops, and public events.
5. Photodocument job activities and results.
6. Develop and implement recommendations and guidelines for management (including survey, monitoring, research, etc.) of the species and its habitats.
7. Submit all site-specific locality information to the Heritage Data Management System for entry and subsequent use in NEPA and Section 7 consultations.
8. Prepare a performance or completion report (as appropriate to the Job segment). See above (Section A, paragraphs 3 and 4), for relevant information.

Job 49. Yuma clapper rail conservation: Cost Code 06xxx

Job Funding	
New USFWS Match (75%):	0
New State Match (25%):	0
Amend-forward USFWS (75%):	0
Amend-forward State (75%):	0
Additional State (100%):	0
Total	0

Other project funds: State Wildlife Grants.

Estimated funding needs other than for habitat acquisition: planning \$20,000; survey \$50,000; monitoring \$50,000; research \$40,000; habitat enhancement \$150,000; other management activities \$50,000; outreach and publications \$10,000. Total funding needs \$360,000.

Species: Yuma clapper rail (*Rallus longirostris yumanensis*)

Five-Year Goals, Objectives, and Approaches: Conduct surveys and inventory potential habitat to determine occupied habitat and population trends, and to evaluate areas that appear to have suitable physical parameters, such as depth of water and gradient of shoreline, for establishment of emergent cover but which have been changed by land management practices. Develop and implement management and habitat restoration guidelines.

Current Year Procedures:

1. Conduct, coordinate, or otherwise participate in surveys and monitoring and habitat assessments, using established protocols (i.e. Standardized North American Marsh Bird Monitoring Protocols) documenting multiple marsh bird species.
2. Survey areas subject to channel maintenance during the breeding season, to document occupancy and to monitor changes associated with river management activities.
3. Photodocument Job activities and results.
4. Participate in the Yuma Clapper Rail Implementation and other working groups to develop and implement recommendations and guidelines for management (including survey, monitoring, research, etc.) of the species and its habitats.
5. Submit all site-specific locality information to the Heritage Data Management System for entry and subsequent use in NEPA and Section 7 consultations.
6. Prepare a performance or completion report (as appropriate to the Job segment). See above (Section A, paragraphs 3 and 4), for relevant information.

Job 67. California black rail conservation: Cost Code 06xxx

Job Funding	
New USFWS Match (75%):	0
New State Match (25%):	0
Amend-forward USFWS (75%):	0
Amend-forward State (75%):	0
Additional State (100%):	0
Total	0

Other project funds: State Wildlife Grants.

Estimated funding needs other than for habitat acquisition: planning \$10,000; survey \$50,000; monitoring \$50,000; research \$40,000; habitat enhancement \$150,000; other management activities \$20,000; outreach and publications \$5,000. Total funding needs \$325,000.

Species: California black rail (*Laterallus jamaicensis coturniculus*)

Five-Year Goals, Objectives, and Approaches: Conduct surveys and inventory potential habitat to determine occupied habitat and population trends.

Current Year Procedures:

1. Conduct, coordinate, or otherwise participate in surveys and monitoring and habitat assessments, using established protocols (i.e. Standardized North American Marsh Bird Monitoring Protocols) documenting multiple marsh bird species.
2. Survey areas subject to channel maintenance during the breeding season, to document nesting and to monitor changes associated with river management activities.
3. Photodocument Job activities and results.
4. Participate in working groups to develop and implement recommendations and guidelines for management (including survey, monitoring, research, etc.) of the species and its habitats.
5. Submit all site-specific locality information to the Heritage Data Management System for entry and subsequent use in NEPA and Section 7 consultations.
6. Prepare a performance or completion report (as appropriate to the Job segment). See above (Section A, paragraphs 3 and 4), for relevant information.

Job 50. Peregrine falcon conservation: Cost Code 06xxx

Job Funding	
New USFWS Match (75%):	0
New State Match (25%):	0
Amend-forward USFWS (75%):	0
Amend-forward State (75%):	0
Additional State (100%):	0
Total	0

Other project funds: State Wildlife Grants and Heritage Funds.

Estimated funding needs other than for habitat acquisition: planning \$25,000; survey \$0; monitoring \$50,000; research \$25,000; habitat enhancement \$0; other management activities \$25,000; outreach and publications \$25,000. Total funding needs \$150,000.

Species: Peregrine falcon (*Falco peregrinus*)

Five-Year Goals, Objectives, and Approaches: Monitor populations and habitats, and identify management potential for specific sites. Identify essential habitats, develop management recommendations, and address 5-year post-delisting monitoring issues. Implement management activities as appropriate.

Current Year Procedures:

1. Implement a 5-year post-delisting monitoring protocol for the statewide non-urban breeding population.
2. Monitor urban population trends in metropolitan areas including banding nestlings to determine site-fidelity and natal dispersal distances.
3. Analyze eggshell contaminants from selected eyries.
4. Develop and implement recommendations and guidelines for management including survey, monitoring, research, etc. of the species and its habitats.
5. Implement a public relations and outreach program by placing artificial nest boxes with internet cameras on high rise buildings in downtown Phoenix.
6. Submit all site-specific locality information to the Heritage Data Management System for entry and subsequent use in NEPA and Section 7 consultations.
7. Prepare a performance or completion report (as appropriate to the Job segment). See above (Section A, paragraphs 3 and 4), for relevant information.

Job 51. Masked bobwhite conservation: Cost Code 06xxx

Job Funding	
New USFWS Match (75%):	0
New State Match (25%):	0
Amend-forward USFWS (75%):	0
Amend-forward State (75%):	0
Additional State (100%):	0
Total	0

Other project funds: State Wildlife Grants.

Estimated funding needs other than for habitat acquisition: planning \$10,000; survey \$15,000; monitoring \$25,000; research \$50,000; habitat enhancement \$100,000; other management activities \$25,000; outreach and publications \$25,000. Total funding needs \$250,000.

Species: Masked bobwhite (*Colinus virginianus ridgwayi*)

Five-Year Goals, Objectives, and Approaches: Conduct surveys, monitor populations and habitats, and identify management potential for specific sites. Identify essential habitats, the need for a status review, research needs, and other management recommendations. Implement management activities as appropriate.

Current Year Procedures:

1. Cooperate in Buenos Aires National Wildlife Refuge surveys.
2. Cooperate in Sonoran surveys conducted by México.
3. Participate in evaluations to determine the potential for translocation efforts in México and/or the United States.
4. Photodocument Job activities and results.
5. Develop and implement recommendations and guidelines for management (including survey, monitoring, research, etc.) of the species and its habitats.
6. Submit all site-specific locality information to the Heritage Data Management System for entry and subsequent use in NEPA and Section 7 consultations.
7. Prepare a performance or completion report (as appropriate to the Job segment). See above (Section A, paragraphs 3 and 4), for relevant information.

Job 52. Thick-billed parrot conservation: Cost Code 06xxx

Job Funding	
New USFWS Match (75%):	0
New State Match (25%):	0
Amend-forward USFWS (75%):	0
Amend-forward State (75%):	0
Additional State (100%):	0
Total	0

Other project funds: State Wildlife Grants.

Estimated funding needs other than for habitat acquisition: planning \$20,000; survey \$25,000; monitoring \$25,000; research \$25,000; habitat enhancement \$25,000; other management activities \$10,000; outreach and publications \$10,000. Total funding needs \$140,000.

Species: Thick-billed parrot (*Rhynchopsitta pachyrhyncha*)

Five-Year Goals, Objectives, and Approaches: Conduct surveys, monitor populations and habitats, and identify management potential for specific sites. Collect a limited number of specimens from historical and newly identified locations for taxonomic analysis. Identify essential habitats, the need for a status review, research needs, and other management recommendations. Implement management activities as appropriate.

Cooperate with NGOs (Pronatura) and universities (ITESM) and government agencies in México, and USFWS in status surveys and monitoring. Coordinate and implement a 5-year translocation program in the U.S. in cooperation with Mexico, various Federal agencies, and private organizations.

Current Year Procedures:

1. For the thick-billed parrot, the cooperators will initiate efforts to:
 - a. Determine occurrence and habitat requirements through field surveys in northern México;
 - b. Assess the impacts of habitat changes occurring within the occupied range;
 - c. Evaluate known or suspected sites of occurrence for comparison with reintroduction sites in the United States;
 - d. Document breeding and foraging biology;
 - e. Assess the current effects of bird trade;
 - f. Develop an understanding of cultural importance (e.g. human attitudes toward the species, and the potential for environmental education and ecotourism);

- g. Develop short and long-term conservation recommendations for occupied and potentially reoccupied historical range;
- h. Evaluate feasibility of reintroduction throughout historic range;
- i. Cooperate with translocation efforts in Mexico and Arizona.

Job 53. Yellow-billed cuckoo conservation: Cost Code 06xxx

Job Funding	
New USFWS Match (75%):	0
New State Match (25%):	0
Amend-forward USFWS (75%):	0
Amend-forward State (75%):	0
Additional State (100%):	0
Total	0

Other project funds: State Wildlife Grants.

Estimated funding needs other than for habitat acquisition: planning \$50,000; survey \$50,000; monitoring \$50,000; research \$50,000; habitat enhancement \$100,000; other management activities \$100,000; outreach and publications \$50,000. Total funding needs \$450,000.

Species: Yellow-billed cuckoo (*Coccyzus americanus occidentalis*)

Five-Year Goals, Objectives, and Approaches: Use results of surveys in central and southern Arizona riparian gallery forests to refine information on status. Develop management and habitat restoration recommendations.

Current Year Procedures:

1. Use established survey protocols to determine survey priorities.
2. Identify habitats and areas important for conservation
3. Develop and implement recommendations and guidelines for management (including survey, monitoring, research, etc.) of the species and its habitats.
4. Submit all site-specific locality information to the Heritage Data Management System for entry and subsequent use in NEPA and Section 7 consultations.
5. Prepare a performance or completion report (as appropriate to the Job segment). See above (Section A, paragraphs 3 and 4), for relevant information.

Job 65. Brown pelican conservation: Cost Code 06xxx

Job Funding	
New USFWS Match (75%):	0
New State Match (25%):	0
Amend-forward USFWS (75%):	0
Amend-forward State (75%):	0
Additional State (100%):	0
Total	0

Other project funds: State Wildlife Grants.

Estimated funding needs other than for habitat acquisition: planning \$0; survey \$0; monitoring \$0; research \$0; habitat enhancement \$0; other management activities \$0; outreach and publications \$1500. Total funding needs \$1500.

Species: Brown pelican (*Pelecanus occidentalis*)

Five-Year Goals, Objectives, and Approaches: Maintain a program for rehabilitation of debilitated brown pelicans (see also Job 02).

Current Year Procedures:

1. Coordinate rehabilitation and disposal, release, or other placement through the Department's Adobe Mountain Wildlife Center (see Job 02).
2. Prepare a performance or completion report (as appropriate to the Job segment). See above (Section A, paragraphs 3 and 4), for relevant information.

Job 66. Mexican spotted owl conservation: Cost Code 06xxx

Job Funding	
New USFWS Match (75%):	0
New State Match (25%):	0
Amend-forward USFWS (75%):	0
Amend-forward State (75%):	0
Additional State (100%):	0
Total	0

Other project funds: State Wildlife Grants.

Estimated funding needs other than for habitat acquisition: planning \$50,000; survey \$250,000; monitoring \$500,000; research \$500,000; habitat enhancement \$100,000; other management activities \$150,000; outreach and publications \$25,000. Total funding needs \$2,075,000.

Species: Mexican spotted owl (*Strix occidentalis lucida*)

Five-Year Goals, Objectives, and Approaches: Participate in and cooperate with the Mexican Spotted Owl Recovery Team and its Working Groups to implement the Mexican Spotted Owl Recovery Plan.

Current Year Procedures:

1. Participate in Recovery Team and Working Group meetings, develop management recommendations, and implement management actions as appropriate.
2. Conduct or otherwise participate in interagency surveys, nest searches, habitat and population monitoring, and other field studies using approved protocols.
3. Photodocument Job activities and results.
4. Develop and implement recommendations and guidelines for management (including survey, monitoring, research, etc.) of the species and its habitats.
5. Submit all site-specific locality information to the Heritage Data Management System for entry and subsequent use in NEPA and Section 7 consultations.
6. Prepare a performance or completion report (as appropriate to the Job segment). See above (Section A, paragraphs 3 and 4), for relevant information.

MAMMALS

Job 05. Mexican vole conservation: Cost Code 06105

Job Funding	
New USFWS Match (75%):	0
New State Match (25%):	0
Amend-forward USFWS (75%):	0
Amend-forward State (75%):	0
Additional State (100%):	0
Total	0

Other project funds: USFS \$15,000; USFWS \$25,000; and State Wildlife Grants.

Estimated funding needs other than for habitat acquisition: planning \$50,000; survey \$25,000; monitoring \$25,000; research \$50,000; habitat enhancement \$25,000; other management activities \$50,000; outreach and publications \$25,000. Total funding needs \$250,000.

Species: Mexican vole (*Microtus montanus*, including *M.m. hualpaiensis*)

Five-Year Goals, Objectives, and Approaches: Monitor vole habitat and populations, sample populations, and identify management potential. Collect a limited number of specimens from historical and newly identified locations for taxonomic analysis. Taxonomic revision may support revision of essential habitat and status review.

Current Year Procedures:

1. Monitor and sample (as necessary) populations from Navajo Mountain, Aubrey Cliffs, Bradshaw Mountains, Juniper Mountains, Music Mountains, Cerbat Mountains, Mount Floyd, Sierra Prieta Mountains, Prescott Basin, Prospect Valley, and Hualapai Mountains (Hoffmeister 1986, Kime et al. 1995). [Note: see federal permit for take limits for specimens].
2. Freeze tissues and prepare skulls and museum study skins from dead specimens, as necessary.
3. Evaluate the taxonomic relationships of the populations investigated (Hafner et al. 1981). Initiate a status review and delisting petition.
4. Conduct these activities in consultation and cooperation with other entities working on various aspects of Mexican vole taxonomy and distribution.
5. Photodocument Job activities and results.
6. Develop and implement recommendations and guidelines for management (including survey, monitoring, research, etc.) of the species and its habitats.

7. Submit all site-specific locality information to the Heritage Data Management System for entry and subsequent use in NEPA and Section 7 consultations.
8. Prepare a performance or completion report (as appropriate to the Job segment). See above (Section A, paragraphs 3 and 4), for relevant information.

Job 06. Endangered cats of the Southwest conservation: Cost Code 06xxx

Job Funding	
New USFWS Match (75%):	0
New State Match (25%):	0
Amend-forward USFWS (75%):	0
Amend-forward State (75%):	0
Additional State (100%):	0
Total	0

Other project funds: USFWS \$25,000; and State Wildlife Grants.

Estimated funding needs other than for habitat acquisition: planning \$50,000; survey \$150,000; monitoring \$50,000; research \$100,000; habitat enhancement \$100,000; other management activities \$25,000; outreach and publications \$50,000. Total funding needs \$525,000.

Species: Jaguar (*Panthera onca*), ocelot (*Leopardus pardalis*), jaguarundi (*L. yagouaroundi*)

Five-Year Goals, Objectives, and Approaches: Determine management (recovery) potential in Arizona for the "Endangered Cats of the Southwest." Survey and map potential habitat for reoccupancy. Use standard scientific techniques to monitor movements of any cats occurring in Arizona. Cooperate with local interests toward management and recovery.

Current Year Procedures:

1. Participate in the "Endangered Cats of the Southwest" Recovery Team in developing and implementing recovery actions for ocelot.
2. Identify, survey and evaluate potential habitat, focusing initially on areas from which most ocelot and jaguar sightings have been reported.
3. Follow up on ocelot and jaguar sightings reported.
4. For the jaguarundi:
 - a. . Conduct follow up interviews and field investigations on reported sightings
5. For the ocelot:
 - a. Develop and implement the Recovery plan and its associated conservation strategies for Arizona and Sonora, Mexico.
6. For the jaguar:
 - a. Implement the Jaguar Conservation Framework and its associated conservation strategies for Arizona and New Mexico.
 - b. Continue coordinating with Mexico as they establish conservation goals for the northern jaguar population.

7. Photodocument Job activities and results.
8. Develop and implement recommendations and guidelines for management (including survey, monitoring, research, etc.) of the species and its habitats.
9. Submit all site-specific locality information to the Heritage Data Management System for entry and subsequent use in NEPA and Section 7 consultations.
10. Prepare a performance or completion report (as appropriate to the Job segment). See above (Section A, paragraphs 3 and 4), for relevant information.

Job 22. Mexican wolf conservation: Cost Code 06592

Job Funding	
New USFWS Sec 6 (75%):	253,000
New State Match (25%):	84,333
Amend-E33USFWS (75%):	0
Amend-E33 State Match (25%):	0
Additional State (100%):	0
Amended Section 6 (90%)	50000
New State Match (10%)	5556
Federal Contract	125,000
Total	517,889

Other project funds: USFWS \$125,000 (contract).

Estimated funding needs other than for habitat acquisition: planning \$150,000; survey \$25,000; monitoring \$175,000; research \$500,000; habitat enhancement \$10,000; other management activities \$50,000; outreach and publications \$150,000. Total funding needs \$1,060,000.

Species: Mexican wolf (*Canis lupus baileyi*)

Five-Year Goals, Objectives, and Approaches: Under project direction from the Service's Mexican Wolf Recovery Coordinator, capture; handle; provide medical treatment and immunizations to; propagate; conduct Service-approved research activities on; obtain and preserve blood, tissue, semen, and ova and other samples from; transport between approved captive management facilities; and carry out any other Service-approved husbandry practices or management actions within the states of Arizona and New Mexico.

For scientific research and recovery purposes related directly to the conservation and protection of reintroduced nonessential experimental populations of Mexican wolves in Arizona and New Mexico, carry out any management or research activity authorized by the current Mexican Wolf Nonessential Experimental Population Rule (50 CFR 17.84(k), or any current Service-approved management plan or special management measure adopted by the Service pursuant to provisions of 50 CFR 17.84(k) (3) (ix).

Current Year Procedures:

1. Continue to release, monitor, and manage Mexican wolves in accordance with relevant agreements, annual plans, other documents, and the Mexican Wolf Adaptive Management Oversight Committee.
2. Photodocument Job activities and results.
3. Develop and implement recommendations and guidelines for management (including survey, monitoring, research, etc.) of the species and its habitats.
4. Submit all site-specific locality information to the Heritage Data Management System for entry and subsequent use in NEPA and Section 7 consultations.
5. Prepare a performance or completion report (as appropriate to the Job segment). See above (Section A, paragraphs 3 and 4), for relevant information.

Job 29. Black-footed ferret conservation: Cost Code 06112

Job Funding	
New USFWS Match (75%):	0
New State Match (25%):	0
Amend-forward USFWS (75%):	0
Amend-forward State (75%):	0
Additional State (100%):	0
Total	0

Other project funds: State Wildlife Grants.

Estimated funding needs other than for habitat acquisition: planning \$50,000; survey \$150,000; monitoring \$125,000; research \$150,000; habitat enhancement \$100,000; other management activities \$25,000; outreach and publications \$100,000. Total funding needs \$700,000.

Species: Black-footed ferret (*Mustela nigripes*)

Five-Year Goals, Objectives, and Approaches: Aubrey Valley (Coconino County, Arizona).-- Monitor the reintroduction site for (a) prairie dog densities and (b) epidemiology of plague and distemper in free-ranging carnivores and other wildlife. Evaluate ferret prey base adequacy. Implement the reintroduction plan to establish a free-ranging, reproducing population of ferrets. Monitor released ferrets. Conduct prairie dog and ferret surveys elsewhere as necessary to identify additional potential reintroduction sites and to assist USFWS and Wildlife Services in Section 7 consultations.

Current Year Procedures:

1. Aubrey Valley reintroduction site:
 - a. Map prairie dog (*Cynomys gunnisoni*) colonies and determine their density from the numbers of active burrows on transects (Yarchin et al. 1988, Belitsky 1994, Van Pelt 1995).
 - b. Monitor and manage the site for diseases, using methods described by Williams et al. (1991) and other projects endorsed by BFFRIT.
 - c. In accordance with the reintroduction plan (Belitsky et al. 1994), release protocol (Van Pelt 1996), and the USFWS-approved annual allocation proposal, propagate, release, monitor, and manage ferrets on site.
2. In cooperation with other agencies, examine additional sites in Apache, Coconino, Navajo, and Yavapai counties for evidence of ferrets. Choose areas for intensive survey as described by Yarchin et al. (1988), based on burrow density of more than 25 per acre, colony greater than 125 acres, and the association of colonies totaling more than 250 acres within a 4.5

- mile radius (Clark et al. 1984, Forrest et al. 1985, USFWS 1986). Spotlight and search for bones and tracks as described by Clark et al. (1984) and USFWS (1986), as modified for Arizona conditions by Yarchin et al. (1988). Handle ferret sightings according to protocol (AGFD 1988).
3. Identify potential reintroduction sites on the basis of prairie dog colony area, colony juxtaposition, total area of colony complexes, burrow density and land use and ownership (Forrest et al. 1985, Houston et al. 1986, Biggins et al. 1993, and the ongoing work of the Conservation Subcommittee of the Black-footed Ferret Interstate Coordinating Committee).
 4. Identify prairie dog colonies that do not meet minimum requirements for supporting black-footed ferrets, on the basis of the occupied area of individual colonies, juxtaposition and combined area of complexes of colonies, and absence of a history of ferret reports in a given area (USFWS 1986).
 5. If necessary, provide Gunnison's prairie dog carcasses to captive-bred facilities, e.g. The Phoenix Zoo, for pre-release conditioning of ferrets to be released in Aubrey Valley.
 6. Participate in the USFWS Black-footed Ferret Recovery Implementation Team (BFFRIT), and other ferret management groups.
 7. Photodocument Job activities and results.
 8. Develop and implement recommendations and guidelines for management (including survey, monitoring, research, etc.) of the species and its habitats.
 9. Submit all site-specific locality information to the Heritage Data Management System for entry and subsequent use in NEPA and Section 7 consultations.
 10. Prepare a performance or completion report (as appropriate to the Job segment). See above (Section A, paragraphs 3 and 4), for relevant information.

Job 54. Mount Graham red squirrel conservation: Cost Code 06xxx

Job Funding	
New USFWS Match (75%):	0
New State Match (25%):	0
Amend-forward USFWS (75%):	0
Amend-forward State (75%):	0
Additional State (100%):	0
Total	0

Other project funds: State Wildlife Grants.

Estimated funding needs other than for habitat acquisition: planning \$50,000; survey \$100,000; monitoring \$150,000; research \$150,000; habitat enhancement \$200,000; other management activities \$50,000; outreach and publications \$50,000. Total funding needs \$750,000.

Species: Mount Graham red squirrel (*Tamiasciurus hudsonicus grahamensis*)

Five-Year Goals, Objectives, and Approaches: Conduct surveys, monitor populations and habitats, and identify management potential for specific sites. Collect a limited number of specimens from historical and newly identified locations for taxonomic analysis. Identify essential habitats, the need for a status review, research needs, and other management recommendations. Implement management activities as appropriate.

Current Year Procedures:

1. Implement management and conservation activities identified in Recovery Plan.
2. Coordinate the semiannual Midden Count, in accordance with established protocol.
3. Evaluate the Midden Count protocol and make recommendations for improvement.
4. Monitor construction and research activities associated with the Steward Observatory Astrophysical Project.
5. Participate in the Mount Graham Red Squirrel Study Committee and Recovery Team.
6. Conduct other management activities as necessary.
7. Develop and implement recommendations and guidelines for management (including survey, monitoring, research, etc.) of the species and its habitats.
8. Photodocument Job activities and results.
9. Submit all site-specific locality information to the Heritage Data Management System for entry and subsequent use in NEPA and Section 7 consultations.
10. Prepare a performance or completion report (as appropriate to the Job segment). See above (Section A, paragraphs 3 and 4), for relevant information.

Job 55. Sonoran pronghorn conservation: Cost Code 06xxx

Job Funding	
New USFWS Match (75%):	0
New State Match (25%):	0
Amend-forward USFWS (75%):	0
Amend-forward State (75%):	0
Additional State (100%):	0
Total	0

Other project funds: DOD \$219,900; NPS \$68,000; USAF \$25,000; USFWS \$85,000; and State Wildlife Grants.

Estimated funding needs other than for habitat acquisition: planning \$50,000; survey \$50,000; monitoring \$100,000; research \$100,000; habitat enhancement \$100,000; other management activities \$50,000; outreach and publications \$50,000. Total funding needs \$500,000.

Species: Sonoran pronghorn (*Antilocapra americana sonorensis*)

Five-Year Goals, Objectives, and Approaches: Conduct surveys, monitor populations and habitats, and identify management potential for specific sites. Collect a limited number of specimens from historical and newly identified locations for taxonomic analysis. Identify essential habitats, the need for a status review, research needs, and other management recommendations. Implement management activities as appropriate.

Detailed Methods:

Continue radio-telemetry flights and ground tracking and monitoring of the previously radio- and satellite-collared Sonoran pronghorns (*Antilocapra americana sonoriensis*) within the State of Arizona. Coordinate the tracking dates with the Refuge Manager, Cabeza Prieta National Wildlife Refuge.

1. Appropriate AGFD and USFWS personnel: AESO and Refuge Staff,; NPS personnel; and experienced veterinarians, pilots, and handlers will capture (using the standard, accepted scientific techniques listed below); radio-collar; conduct population surveys; monitor populations for productivity, recruitment, and distribution information; and release unharmed at the capture site no more than 10 Sonoran pronghorn.

The pronghorn shall be captured using a helicopter for wildlife capture and a net fired from a CODA gun by experienced personnel only.

2. Captures on the Tactical Ranges involving bait and trap nets may occur from November 1 through January 31. Net gun captures will occur only during December 12-31 and January 1-18.
3. If drought conditions occur (i.e. if it has not rained in 3 months, the environment starts to display drought stress, and creosote bushes start turning brown) in the months preceding and including December and January, the scheduled operation will be canceled.
4. The number of Sonoran pronghorn to be captured will not exceed the number necessary to bring the total number of collared animals to 10 percent of the population estimate derived from range-wide surveys in the most recent survey. Currently, 2 collared animals remain from the 1994 capture. No more than 10 pronghorn (6 for the ongoing recruitment study and 4 for the Tactical Range monitoring study) will be captured.
5. Only adults (at least 12 months of age) are to be captured to emplace new radios, but other animals may be recaptured as necessary to replace dead radios.
6. Animals will be pursued uphill where possible to limit chase speeds. Captures in extremely rocky broken terrain, or where injury to an animal is likely, will not be undertaken. If fawns are separated from a group during the chase, the chase will be aborted.
7. No capture will be initiated when ambient temperatures are over 75 F.
8. No pronghorn shall be chased for more than 5 minutes. Chase time will begin when pronghorn are continuously running from the helicopter or fixed-wing aircraft. A group of pronghorn may not be chased more than once every 7 days.
9. All capture team members and handlers will be well versed in wildlife capture and handling. Noise will be minimized during the handling of the animals in order to minimize stress.
10. A veterinarian with experience in treatment of stress and trauma problems in large animals will be present at every capture. The veterinarian may ride in the second support helicopter but shall be on the scene immediately after the capture and prior to radio-collaring.
11. A USFWS Refuge Manager and/or Ecologist shall be present at every capture and have the authority to call off all or any part of the operation at any time.
12. Total time of restraint will not exceed 20 minutes, unless authorized by the veterinarian to administer medical aid. To prevent overheating and excessive stress, pronghorn will be given a saline solution intravenously and oxygen administered through a mask. The following will be collected from each animal to the extent possible without jeopardizing the animal.

- a. Temperature of the animal, and;
- b. A 20 cc blood sample;

The blood sample will be centrifuged and refrigerated immediately. Samples will be analyzed at the National Fish and Wildlife Forensic Laboratory, Division of Law Enforcement, USFWS, Ashland, Oregon.

13. In the event that a Sonoran pronghorn is injured to the point that its chance of survival in the wild is reduced, the animal is not to be released. It will be moved to a predetermined facility for treatment and rehabilitation. After recuperation, and prior to releasing the animal back into the wild, release activities must be coordinated, in writing, with the AESO and Cabeza Prieta National Wildlife Refuge at the addresses listed above.
14. In the event that one Sonoran pronghorn mortality occurs during these activities, we will immediately cease all pronghorn capture activities and within 24 hours contact the AESO, at (602) 640-2720, and the Cabeza Prieta National Wildlife Refuge, at (520) 387-6483. Field necropsy will be performed by the on-site veterinarian. Necropsy procedures will maintain the specimen's suitability for museum curation. Disposition instructions for any further necropsy will be provided by the AESO and/or the Cabeza Prieta National Wildlife Refuge, and final disposition instructions will be provided after necropsy.
15. Other conditions listed in the Sonoran Pronghorn Collaring Implementation Plan (below) will be followed in accordance with these activities.
16. Continue on-going radio-telemetry flights, ground tracking, and monitoring of radio-collared Sonoran pronghorn within the State of Arizona and Mexico. Coordinate weekly telemetry reports and tracking dates and locations with the Refuge Manager, Cabeza Prieta National Wildlife Refuge.
17. This pronghorn collaring project will be reviewed after each mortality.

Sonoran Pronghorn Collaring Implementation Plan

Net gun capture operations will be divided into two groups, a capture and support crew, and a fixed-wing survey crew. The capture crew will consist of qualified AGFD biologists and a pilot. AGFD biologists will serve as the mugger/observer, alternating this duty as practical. The support crew will consist of the veterinarian, two support personnel, and the pilot. The fixed-wing crew will consist of a pilot and two observers for each aircraft.

Equipment required for the capture and processing of pronghorn is as follows: travel trailer with working freezer, water, ice, centrifuge, generator, gas can, vet supplies, oxygen, regulator/mask, radio-collars, 2 receivers, antenna, spin wrench, hobbles, blindfolds, net gun and associated

supplies, weight scale, transport box, flight bag, and wildlife handling forms. AGFD will supply each item listed above. USFWS will supply materials necessary to ship samples to the lab.

Apple mash or other baits and drop nets may be used for some captures in the vicinity of the North and South Tactical Ranges of the Barry H. Goldwater Air Force Range. Personnel and equipment for these operations will be the same as those described above.

Training and equipment familiarization

All members of the ground support crew and capture crew will be thoroughly briefed as to specific assignments/protocols relative to the safe and efficient handling of captured pronghorn. These include use of low voices, proper amount of restraint force, methods to calm the animal, and assurance that an escape route is available to the released animal. The designated mugger/observer on the capture helicopter will have a thorough knowledge of handling procedures of net-immobilized animals.

Capture method and related handling/processing procedures

Ten or fewer adult pronghorn will be captured and radio-collared, including as many as 4 by drop nets. Two helicopters will be used during any attempt to net gun pronghorn. One helicopter will be dedicated to the actual pursuit and capture of individual pronghorn. The second helicopter will be used to transport the support crew and equipment associated with the ground crew. The second helicopter will follow the first, but at a safe distance, causing no interference with the capture operation.

During net gun captures, individual pronghorn will be immobilized by firing a net from a Coda net gun over the animal. Individual or groups of pronghorn will not be chased over five minutes. Individual pronghorn will be netted only when it is safe to do so. Each pronghorn will be netted in a manner that minimizes the risk of injury. For example, animals can be netted over a sandy substrate, or running uphill, or with only the leading edge of the net. Nets will be fired at heights from 5-200 feet above the animal.

Each member of the capture and support crew will have specific assignments in order to maximize the safe and efficient handling of captured pronghorn. The observer will initially restrain each pronghorn, placing a blindfold over the animal as soon as possible. The gunner will assist the observer as soon as the initial restraint is completed. The capture crew will remove each pronghorn from the net. The support crew will assist the veterinarian with medical supplies and support materials. Restraint time may not exceed 20 minutes unless necessary to administer medical aid. Body temperature will be monitored and oxygen and fluids administered as necessary to prevent overheating. Specific sample collection assignments will be determined after coordination with the veterinarian. Assignments will be determined after coordination with the veterinarian the evening before each capture operation.

In the event a pronghorn is injured and the veterinarian determines it should be transported for treatment, the animal will be placed in a transport box and driven to The Phoenix Zoo. A flight bag and sling cable will be used to transport the animal back to the staging area.

Timetable of events

Capture operations are planned to afford an adequate amount of time to properly sample from the population. The tentative schedule is for net gun captures to occur during December 1-20, contingent upon airspace availability. If the capture is not completed during these dates, additional dates will be scheduled until the objective of 10 pronghorn is reached. No captures will occur after January 18.

Testing of pronghorn attractiveness to apple mash bait and willingness to walk under drop nets may occur as soon as November 1. Scheduling of subsequent drop net captures will be dependent upon these results, but will not occur after January 31.

Prior to each operation, the capture and support teams will meet the afternoon before the scheduled capture date. The first staging area for net gun captures may be "Point of the Pintas" just north of the refuge boundary. Each subsequent staging area will be dependent on the success of the previous operation. In general, we will capture pronghorn in the western portion of the range, specifically the Mohawk Valley, Tule Desert, and San Cristobal Valley. Activities will proceed eastward until all pronghorn are sampled.

Disease screening, biological samples and mitochondrial DNA analyses

All samples will be collected, processed, stored and shipped under the supervision of a Cabeza Prieta Refuge biologist. Blood samples will be sent to USFWS Forensics Lab, Ashland, OR, and/or contracted geneticists.

Current Year Procedures:

1. Coordinate and conduct field inventories and monitoring activities in Arizona and Mexico.
2. Coordinate and conduct other management activities, such as habitat manipulations and captive breeding for release of animals to increase wild populations.
3. Photodocument Job activities and results.
4. Develop and implement recommendations and guidelines for management (including survey, monitoring, research, design, and construction of on-site captive breeding pens, etc.) of the species and its habitats.
5. Submit all site-specific locality information to the Heritage Data Management System for entry and subsequent use in NEPA and Section 7 consultations.
6. Prepare a performance or completion report (as appropriate to the Job segment). See above (Section A, paragraphs 3 and 4), for relevant information.

Job 58. Seven bats conservation: Cost Code 06114

Job Funding	
New USFWS Match (75%):	0
New State Match (25%):	0
Amend-forward USFWS (75%):	0
Amend-forward State (75%):	0
Additional State (100%):	0
Total	0

Other project funds: State Wildlife Grants.

Estimated funding needs other than for habitat acquisition: planning \$100,000; survey \$350,000; monitoring \$250,000; research \$100,000; habitat enhancement \$250,000; other management activities \$100,000; outreach and publications \$150,000. Total funding needs \$1,300,000.

Species: Lesser long-nosed bat (*Leptonycteris curasoae yerbabuena*), Mexican long-tongued bat (*Choeronycteris mexicana*), California leaf-nosed bat (*Macrotus californicus*), Townsend's big-eared bat (*Corynorhinus townsendii pallescens*), Spotted bat (*Euderma maculatum*), Western Red Bat (*Lasiurus blossevillii*), Allen's lappet-browed bat (*Idionycteris phyllotis*)

Five-Year Goals, Objectives, and Approaches: Work with external partners to implement Arizona Bat Conservation Strategic Plan. Document and monitor significant roost sites in mines, bridges, buildings, trees and caves. Design a management strategy for the lesser long-nosed bat and site-specific management plans for newly discovered roost sites. Using standard scientific techniques (e.g. mist netting, exit counts, radio telemetry, acoustic monitoring), continue monitoring the seven bat species and develop specific recommendations for their management. As appropriate to survey results, propose Candidate species for listing or Conservation Agreements.

Note: the Arizona State Mine Inspector's Office estimates there are 100,000 abandoned mines in Arizona. This estimate includes prospects and surface mines, which generally are not suitable as bat roosts. Arizona Game and Fish estimates that at least 33,000 of the abandoned mines are likely to provide bat roosting habitat. As of 1999, the Department has surveyed just 3300 of these mines. Of the 3300 surveyed mines, about 35-40 percent show evidence of use by bats and about 10 percent show evidence of significant recent use by, or actually have, large colonies resident during at least part of the year.

Current Year Procedures:

1. Continue to work with external partners towards a more coordinated bat monitoring effort; evaluate the effects of management actions.
2. Survey or monitor at least 50 potential and known roosting locations in Arizona.
3. Coordinate with other states and Latin American countries to exchange roost and other information; Coordination with other states will be done by participation in Western Bat Working Group meetings, conference calls and committees; take a leadership role in revitalizing national bat conservation efforts.
4. Identify and tabulate roost characteristics and bat species composition for all sites occupied by one or more of the seven species being surveyed.
5. Estimate colony size by species and identify potential threats and management needs at each roost site.
6. Maintain database for internal and external cooperators.
7. Photo-document Job activities and results.
8. Develop and implement recommendations and guidelines for management (including survey, monitoring, research, etc.) of the species and its habitats.
9. Submit all site-specific locality information to the Heritage Data Management System for entry and subsequent use in NEPA and Section 7 consultations.
10. Prepare a performance or completion report (as appropriate to the Job segment). See above (Section A, paragraphs 3 and 4), for relevant information.

Job 70. Prairie dog conservation: Cost Code 06xxx

Job Funding	
New USFWS Match (75%):	0
New State Match (25%):	0
Amend-forward USFWS (75%):	0
Amend-forward State (75%):	0
Additional State (100%):	0
Total	0

Other project funds: State Wildlife Grants.

Estimated funding needs other than for habitat acquisition: planning \$50,000; survey \$25,000; monitoring \$0; research \$50,000; habitat enhancement \$0; other management activities \$0; outreach and publications \$25,000. Total funding needs \$150,000.

Species: Black-tailed and Gunnison's prairie dog (*Cynomys ludovicianus and gunnisoni*)

Five-Year Goals, Objectives, and Approaches: Develop statewide management plan in support of WAFWA sponsored Conservation Agreements; evaluate reintroduction potential; identify and implement conservation actions sufficient to meet species needs without federal listing.

Current Year Procedures:

1. Develop and implement statewide management plan.
2. Continue support of interstate conservation effort which includes reintroduction of black-tailed prairie dogs.
3. Photodocument Job activities and results.
4. Develop and implement recommendations and guidelines for management (including survey, monitoring, research, etc.) of the species and its habitats.
5. Submit all site-specific locality information to the Heritage Data Management System for entry and subsequent use in NEPA and Section 7 consultations.
6. Prepare a performance or completion report (as appropriate to the Job segment). See above (Section A, paragraphs 3 and 4), for relevant information.

Totals:

Job Funding	
New USFWS Match (75%):	210,707
New State Match (25%):	70,235
Amend-forward USFWS (75%):	0
Amend-forward State (75%):	0
Additional State (100%):	0
New Mexico Reversion (90%)	125,000
New State Match (10%)	13,888
Total	419,830

B. Take

[Please note that the language below (except item "c") is based on the Section 6 Agreement between USFWS and AGFD. All subsection references in this section and the term Conservation Agreement as used herein refer to the Section 6 Agreement.]

Nonlethal Take: The species and activities for which take is authorized pursuant to the Section 6 Conservation Agreement between the USFWS and AGFD are identified in this annual work plan, which is on file with the USFWS, Albuquerque Regional Office.

- a. Pursuant to the Section 6 Agreement between the Service and the Department (subsection 2, parts b, c, and d):
 - (b) Any employee or agent of the AGFD who is designated by that Agency for such purposes, may, when acting in the course of his official duties, take any federally listed endangered fish or wildlife for conservation purposes that are consistent with the purposes of the Act and this Conservation Agreement, or any Project Agreement attached thereto, provided that such taking is not reasonably anticipated to result in:
 - (1) the death or permanent disabling of the specimen;
 - (2) the removal of the specimen from the State of Arizona;
 - (3) the introduction of the specimen or any of its progeny into an area beyond the historical range of the species; or
 - (4) the holding of the specimen in captivity for a period of more than 45 consecutive days.
 - (c) Any employee or agent of the AGFD who is designated by that Agency for such purposes, may, when acting in the course of his official duties, take any federally listed threatened fish or wildlife for conservation purposes that are consistent with the purposes of the Act and this Conservation Agreement, or any Project Agreement attached thereto.
 - (d) Any employee or agent of the AGFD who is designated by that Agency for such purposes, may, when acting in the course of his official duties, take federally-listed endangered or threatened fish or wildlife without a permit if such action is necessary to:
 - (1) aid a sick, injured, or orphaned specimen; or
 - (2) dispose of a dead specimen; or

- (3) salvage a dead specimen which may be useful for scientific study; or
- (4) remove specimens which constitute a demonstrable, but non-immediate threat to human safety, provided that the taking is done in a humane manner; the taking may involve killing or injuring only if it has not been reasonably possible to eliminate such threat by live capturing and releasing the specimen unharmed, in a remote area; or
- (5) defend his own life or the lives of others.

Note: Any taking pursuant to subsection 2(d) above must be reported in writing within 5 business days to the Regional Director, USFWS. The specimen may only be retained, disposed of, or salvaged in accordance with directions from the USFWS.

b. Nonlethal take activities may include but are not limited to:

- (1) Fishes: pursuant to this work plan, use electrofishing, nets, minnow traps, snorkeling, and other standard, accepted scientific techniques to conduct surveys, monitor populations, capture, handle, weigh, measure, photograph, mark and immediately release unharmed at the capture site or transport, and maintain, and to propagate at State of Arizona hatcheries for stocking and research purposes, unlimited numbers of all sex and age classes of the fish species listed above that occur in the State of Arizona waters.
- (2) Amphibians: pursuant to this work plan, use pitfalls, drift fences, hand-held implements, nets, minnow traps, radiotelemetry, videotape, infrared and digital cameras, vocalization tape playback, pit-tags, and other standard, accepted scientific techniques to conduct population surveys, monitor populations, capture, weigh, measure, photograph, map locality and distribution information, and mark and immediately release at the capture site unlimited numbers of all sex and age classes of amphibians.
- (3) Reptiles: pursuant to this work plan, use pitfalls, drift fences, live traps, hand-held implements, radiotelemetry, pit-tags, videotape, infrared and digital cameras, and other standard, accepted scientific techniques to conduct population surveys, monitor populations, capture, weigh, measure, photograph, map locality and distribution information, and mark and immediately release unharmed at the capture site unlimited numbers of all sex and age classes of reptiles. Desert tortoise activities will be conducted in accordance with standard, accepted survey and capture protocols. Antiseptic protocols will be used when capturing and handling desert tortoises.

- (4) Birds: pursuant to this work plan, use live traps (e.g. using noosed pigeons, dho-gazas, and/or phai traps), mistnets, hand-held implements, radiotelemetry, videotape, infrared and digital cameras, vocalization tape playback, pit-tags, and other standard, accepted scientific techniques to conduct population surveys, monitor populations, capture, weigh, measure, photograph, map locality and distribution information, and mark, band, and/or color band and immediately release unharmed at the capture site unlimited numbers of all sex and age classes of birds. Yuma clapper rail, peregrine falcon, Mexican spotted owl, and southwestern willow flycatcher activities will be conducted in accordance with standard, accepted survey and capture protocols. For the southwestern willow flycatcher, only individuals who have received training conducted by USFWS or the Department will conduct survey activities.
 - (5) Mammals: pursuant to this work plan, use live traps, pitfalls, mistnets, hand-held implements, radiotelemetry, videotape, infrared and digital cameras, vocalization tape playback, pit-tags, and other standard, accepted scientific techniques to conduct population surveys, monitor populations, capture, weigh, measure, photograph, map locality and distribution information, and mark and immediately release unharmed at the capture site unlimited numbers of all sex and age classes of mammals.
- c. All personnel acting pursuant to this Work Plan and the Department's Endangered Species Permit (TE821577-0) shall take appropriate precautions to ensure that they do not spread, or become ill from, diseases among wild or captive populations of species addressed in this Work Plan.

To prevent spreading amphibian diseases, before sampling an aquatic site all project personnel shall rinse all field sampling equipment, such as nets, waders, etc., and their hands, with a dilute (1:10) bleach:water solution or quaternary ammonia solution.

Lethal Take: Intentional or likely lethal take of federally-listed endangered or threatened species by the Department is authorized by USFWS in a separate permit from the Office of Endangered Species (Region 2, Albuquerque, New Mexico), pursuant to Section 10(a)(1)(A) of the Endangered Species Act. A copy of that permit is on file with the Department's Nongame Branch, and all employees or agents of the Department must carry a copy on their person while acting pursuant to it.

C. Geographic Location of Project

Fieldwork will be conducted statewide, including Native American lands, and as necessary in other states and México. Field surveys may occur on State, Federal, and private lands. Surveys on private lands will be conducted only with prior approval from the landowner. Administrative work will be carried out at the Arizona Game and Fish Department, Nongame Branch, 5000 W. Carefree Hwy., Phoenix, Arizona 85086.

D. Related Federal Projects

State Wildlife Grants.

E. Project Personnel

Project Leader: Nongame Branch Chief

Asst. Proj. Leaders: Amphibians and Reptiles and Support Program Manager
Native Fish and Mollusk Program Manager
Nongame Birds and Mammal Program Manager

Project Assistants: Regional Fisheries Program Managers, Specialists, and Assistants
Regional Habitat Program Managers, Specialists, and Assistants
Regional Wildlife Program Managers, Specialists, and Assistants
Other Department personnel, agency cooperators, contractors, and trained volunteers as necessary

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