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CONSERVATION AGREEMENT
FOR THE
PECOS PUFFISH
BETWEEN AND AMONG
TEXAS PARKS AND WILDLIFE DEPARTMENT
NEW MEXICO DEPARTMENT OF GAME AND FISH
NEW MEXICO STATE PARKS
U.S. BUREAU OF LAND MANAGEMENT
AND
U.S. FISH AND WILDLIFE SERVICE

I. Purpose

This Conservation Agreement is formulated to affirm the mutual goal of the signatories of securing and protecting the Pecos pupfish (Cyprinodon pecosensis) within its currently occupied and known historic range in the States of New Mexico and Texas. To attain this goal, these parties further agree to implement the measures outlined below to conserve this species and its habitat in the Pecos River Basin.

II. Authorities

Fish and Wildlife Coordination Act (as amended) 16 U.S.C. 16 et seq.

Endangered Species Act of 1973 (as amended) 16 U.S.C. 1531 et seq. (32 Stat. 388)

New Mexico Wildlife Conservation Act (17-2-37 to 17-2-46 NMSA 1978)

New Mexico State Parks (16-2-1 to 16-2-32 NMSA 1978)

Texas Parks and Wildlife Code, 1994, Section 12.0011

Bureau of Land Management - Federal Land Policy and Management Act of 1976
43 U.S.C. 1711 et seq. (90 Stat. 2743)

III. Background

In both the December 30, 1982, Review of Vertebrate Wildlife, Notice of Review (47 FR 58454); and the September 18, 1985, Review of Vertebrate Wildlife, Notice of Review (50 FR 37958), the Pecos pupfish was included as a category 2 species. Category 2 comprises taxa for which the available biological information in possession of the Service is insufficient to support listing the species as endangered or threatened. However, new information from recent surveys has provided a substantial basis for a proposed determination of endangered status; accordingly, the January 6, 1989, Animal Notice of Review (54 FR 554) and the November 21, 1991, Animal Notice of Review (56 FR 225) included the Pecos pupfish as a Category 1 species, indicating that the Service had enough information to list the species. Subsequent (December 5, 1996) revisions to the Notice of Review (61 FR 64481) discontinued the use of category 1 and 2 species. The lists of species that are candidates for listing were modified to reflect those revisions. The Pecos pupfish remained as a candidate for listing, with a listing priority number of 2. On January 30, 1998, the Service proposed to list the Pecos pupfish as an endangered species, without critical habitat. Within the year between the proposal of a species for listing and the required final determination by the Service to either list or withdraw the proposal, the Service is committed to working with all public and private interests to implement all measures that would remove or alleviate the identified threats to that species. This Conservation Agreement, if successfully implemented to the degree that identified threats to the species are removed or significantly alleviated, will be utilized in the final determination made by the Service as to whether or not a final rule listing the Pecos pupfish is necessary and appropriate.

IV. Status and Distribution of the Pecos Puofish

The historic range of the Pecos pupfish included the Pecos River from about Bitter Lake National Wildlife Refuge and Bottomless Lakes State Park near Roswell, New Mexico, downstream approximately 650 km (404 miles) to the mouth of Independence Creek, southeast of Sheffield, Terrell County, Texas (Wilde and Echelle 1992). It was also found in gypsum sinkholes and saline springs on Bitter Lake National Wildlife Refuge (including Salt Creek Wilderness Area), sinkholes, springs, and spring runs on Bottomless Lakes State Park, Chaves County, New Mexico (Brooks and Woods 1988), and in Salt Creek, Reeves County, Texas. In Texas, genetically pure populations of the Pecos pupfish are now known only from the upper reaches of Salt Creek, Culberson and Reeves counties, Texas (Wilde and Echelle 1992); recent investigations, undertaken as a requirement of this Cooperative Agreement, have found that the Pecos pupfish from two water-filled

gravel pits owned by the Phipps Gravel Company, located in Pecos County 10.8 km (6.7 miles) west of Grandfalls, Texas are not genetically pure. In New Mexico, the species still occurs irregularly in the Pecos River from north of Loving upstream to Bitter Lake National Wildlife Refuge. It continues to survive in the Salt Creek Wilderness Area of Bitter Lake National Wildlife Refuge, where it is found in a few sinkholes, springs and Salt Creek (Brooks and Woods 1988, Sublette et al. 1990). It is also found at Bottomless Lakes State Park and has been collected from shallow, wetland habitat and interconnecting channels of the Bureau of Land Management's Overflow Wetlands Wildlife Habitat Area adjacent to the State Park. This range reduction represents a loss of more than half the species' former range (Echelle and Connor 1989).

The primary cause for the recent (post 1980) range reduction of Pecos pupfish has been the introduction of the sheepshead minnow (*C. variegatus*), a species once confined to shallow, brackish, coastal waters of the Gulf and Atlantic coasts of the continental United States. The two *Cyprinodon* species appear to have little in the way of premating isolating mechanisms and readily hybridize (Cokendolpher 1980). The sheepshead minnow was introduced into the Pecos River probably in the vicinity of Pecos, Texas, sometime between 1980 and 1984, and sheepshead minnow hybrids have moved upstream and downstream at a relatively rapid pace despite the presence of six irrigation diversion dams. The spread of hybrids occurred both naturally and presumably through "bait bucket" introductions. By 1984, surveys at four sites along the Pecos River below Red Bluff Reservoir, Texas, revealed evidence of hybridization between the Pecos pupfish and sheepshead minnow (Echelle 1985). In the vicinity of Pecos, Texas, the Pecos pupfish has been entirely replaced by Pecos pupfish x sheepshead minnow hybrids. At sites ranging from 50 km (31 miles) further upstream to 250 km (156 miles) downstream, the influence of sheepshead minnow was still apparent, though less pronounced (Echelle and Connor 1989).

The species was declining prior to the introduction of the sheepshead minnow. This decline was the result of habitat degradation and destruction caused by damming and dewatering of the Pecos River and excessive pumping of groundwater that caused springs to cease flowing and sinkholes to dry (Minckley et al. 1991).

V. Conservation Needs

The majority of the pupfish's habitat within the mainstem Pecos River (all of the river within Texas) is likely untenable by the species at this time; sheepshead minnow and the hybrid Pecos pupfish x sheepshead swarm have usurped the riverine habitat from the Pecos pupfish. Wherever possible within the Pecos River

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in New Mexico, areas of localized sheepshead minnow or hybrid occurrence should be identified and eradicated before distribution of the hybrids is as ubiquitous in New Mexico as in Texas.

Reintroduction of the Pecos pupfish within stretches of the Pecos River where either the sheepshead minnow or the hybrids are present would be futile and counterproductive to the conservation of the Pecos pupfish. However, current sheepshead minnow or hybrid dominance within the historic range of the Pecos pupfish may undergo dramatic changes, providing the opportunity to reintroduce the Pecos pupfish into the mainstem habitat. Large-scale fish kills caused by algal blooms occurred in the Pecos River, Texas, in 1985 and 1986 (Rhodes and Hubbs 1992). Such massive fish kills may occur in the future, naturally depleting existing populations, and providing the opportunity to reintroduce the Pecos pupfish to reaches of the Pecos River depopulated of sheepshead minnow and the hybrids.

Additionally, State regulations concerning the capture, sale, and distribution of bait fish within the Pecos River Basin are needed to ensure that further encroachment through bait fish transfer of the sheepshead minnow into range of the Pecos pupfish is eliminated. Such regulations would accomplish little to eradicate the sheepshead minnow or the hybrids from their occupied areas of the Pecos River, but would aid in protecting remaining mainstem Pecos pupfish habitat and would decrease the risk to populations on Bottomless Lakes State Park and the Bureau of Land Management's Overflow Wetlands Management Habitat Area.

Secure off-channel habitats, both those existing and known to support Pecos pupfish, and additional habitats in which to establish pupfish, are needed. These managed populations would not only ensure the survival of the species through protection from hybridization now threatening the mainstem population, but also would serve as sources for reintroduction to historic habitats, should the opportunity arise that would render such reintroductions feasible. Three off-channel habitats are known to support Pecos pupfish in New Mexico: Bitter Lake National Wildlife Refuge, Bottomless Lakes State Park, and Laguna Grande. Two off-channel habitats are thought to support Pecos pupfish in Texas: Phipps Gravel Pits, and Salt Creek. Field assessment of the viability of these populations is needed, as are additional habitats, secure from the potential threat of hybridization, throughout the range of the pupfish.

Because much of the ability to maintain populations of the Pecos pupfish will rely on information concerning natural history not now available, additional work on the species is needed.

The conservation needs and the commitment to address those needs are on two temporal scales. Immediate action is needed to address the eminent threats to the

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species - hybridization with sheepshead minnow and loss of small and isolated populations. Long term commitment is equally required by the agencies to address conservation management of the species - refugia populations managed to ensure that adequate numbers of Pecos pupfish are available should opportunities arise to re-establish the pupfish in the Pecos River or suitable off-channel habitats; and commitment of expertise and resources to long term habitat rehabilitation through conversion of stands of invasive salt cedar to native vegetation within the Pecos River basin.

In order to address these conservation needs of the Pecos pupfish, the signatories hereby agree that:

A. Fish and Wildlife Service will:

1. Provide funding through section 6 of the Endangered Species Act to support life history research on the Pecos pupfish; and
2. Incorporate the management and protection of the Pecos pupfish in the Bitter Lake National Wildlife Refuge Management Plan through the following actions:
 - A. Provide study sites in support of No. 1 above,
 - B. Enforce the current fishing prohibition in refuge waters,
 - C. Construct an adequate concrete fish barrier at the South Weir of the refuge by September 30, 1998,
 - D. Monitor populations of pupfish in six impoundments during the late summer/early fall on an annual basis to check for invasion by sheepshead minnow,
 - E. Assess the suitability of introducing Pecos pupfish into Sinkhole W3 by September 30, 1998; if feasible initiate introduction efforts at this sinkhole by May 1, 1999, and continue evaluating other isolated refuge wetlands as potential refugia; and
3. Assess the feasibility of utilizing, with modifications if necessary, constructed wetlands at the Dexter National Fish

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Hatchery and Technical Center, as a refugium population site for the Pecos pupfish; and

4. Incorporate a fish barrier consisting of an earthen berm and concrete water control structure at the eastern boundary of Dexter National Fish Hatchery and Technical Center's managed wetland. This barrier will have an approximate one meter elevational drop and be equipped with screen to prevent upstream and downstream movement of fish and will be located ½ mile upstream from the Pecos River on the ditch draining the constructed wetlands. Construction will commence by September 30, 1998; and
5. Act as lead coordinating agency in disseminating information regarding the Pecos pupfish to the other participating signatories.

B. The New Mexico Department of Game and Fish will:

1. Assume lead responsibility for reviewing bait harvest programs in the reach of the Pecos River from Santa Rosa Dam downstream to the New Mexico/Texas State line, providing to the New Mexico Game Commission no later than October 30, 1998, recommendations to promulgate regulations limiting live bait fish use to only fathead minnow (Pimephales promelas) and red shiner (Cyprinella lutrensis) within the historic range of the Pecos pupfish; and prohibiting the use of live bait on the Bitter Lake National Wildlife Refuge, and the Bottomless Lakes State Park.
2. Conduct the life history investigations described in the attached scope of work.
3. With Service assistance, monitor the status of all proposed off-channel reintroduction and introduction sites within New Mexico.

C. The New Mexico Bottomless Lakes State Park will:

1. Incorporate the management and protection of the Pecos pupfish in the State Park Management Plan; and

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2. In cooperation with the New Mexico Department of Game and Fish, and U.S. Fish and Wildlife Service, conduct aquatic faunal surveys of Cottonwood, Inkwell, and Pasture lakes and adjacent wetlands; and
3. In cooperation with the New Mexico Department of Game and Fish and U.S. Fish and Wildlife Service, develop protocols for removal of undesirable aquatic species (e.g., green sunfish, Lepomis cyanellus) and conservation of nontarget species; and
4. In cooperation New Mexico Department of Game and Fish and U.S. Fish and Wildlife Service, repatriate Pecos pupfish to Cottonwood, Inkwell, and Pasture lakes; and
5. Allow only winter rainbow trout fishing in Cottonwood, Inkwell, and Pasture lakes.

D. The Texas Parks and Wildlife Department will:

1. Assess the viability, existence, and purity of Pecos pupfish in the Phipps Gravel Pits by September 30, 1998 and in the upper reaches of Salt Creek by December 30, 1998, and determine actions needed to assure security of populations found to be genetically pure by June 30 1999; and
2. Establish at least four additional off-channel secure populations of the Pecos pupfish within the known historic range of the species that will support populations greater than 500 individuals in each location; and
3. Assume the lead in the State of Texas in reviewing bait harvest programs in the Pecos River and associated waters downstream from the New Mexico/Texas State line and in the promulgation of regulations limiting live bait fish use to only fathead minnow (Pimeohales promelas), common carp (Cvorinus carpio), gizzard shad (Dorosoma cepedianum) threadfin shad (D. petenense), sunfish (Leomis sp.), golden shiner (Notemigonus crysoleucas), and goldfish (Carassius auratus). The submission of such regulations to the Commission will occur no later than November 10, 1998.

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4. Monitor the status of all known populations of Pecos pupfish within Texas.
5. In 1998, initiate eradication of fish from Lake Balmorhea and begin efforts to restock with native species to eliminate one of the primary sources of sheepshead minnow introductions..

E. The Bureau of Land Management will:

1. Incorporate the management and protection of the Pecos pupfish in the Overflow Wetlands Wildlife Habitat Management Plan; and
2. Work with the New Mexico Department of Game and Fish in the protection of existing populations of the Pecos pupfish; and
5. Monitor populations of Pecos pupfish at the Overflow Wetlands Wildlife Habitat Area during the late summer/early fall on an annual basis to check for invasion by sheepshead minnow; and
6. In cooperation with the New Mexico Department of Game and Fish and Fish and Wildlife Service, identify off-channel sites for potential introduction of Pecos pupfish; and
7. Implement the Overflow Wetlands Area of Critical Environmental Concern management prescriptions found in the Roswell Approved Resource Management Plan (page 65), which include:
 - a. Application of No Surface Occupancy restrictions to future oil and gas leases within the buffer area around the wetlands and escarpment,
 - b. Application of Surface Use and Occupancy Requirements to other future oil and gas leases,
 - c. Closure of 1,040 acres to the disposal of salable minerals and to the leasing of solid minerals, withdraw the area from entry under the land laws (including the 1972 Mining Law),
 - d. Exclusion of major rights-of-way on approximately



DRAFT

3,000 acres,

- e. Acquisition of about 1,700 acres of State land and 1,600 acres of private land with riparian/wetland values when opportunities arise,
- f. Adjustment of public grazing leases or permits on Allotments 65060, 65062, and 65069, cancellation of grazing lease on Allotment 65041,
- g. Designation of Off-Highway Vehicle closures on 1,040 acres, limitation of OHVs to designated roads and trails on 2,100 acres,
- h. Recommendation to the New Mexico Department of Game and Fish for "No Minnow Seining Area",

Implementation of habitat improvement projects as found in the Overflow Wetlands Habitat Management Plan.

- 6. Provide study sites in support of life history research on the Pecos pupfish.

F. All signatory parties will:

- 1. Provide appropriate representation to the Pecos Pupfish Conservation Team, established by this Cooperative Agreement,
- 2. Participate in all necessary meetings to discuss progress toward meeting the conservation goals for the Pecos pupfish and the resulting status of the species with respect to the threats outlined in the January 30, 1998, proposal to list the species; and
- 3. Provide in-kind contributions of personnel, field equipment, supplies, etc., to assist in the investigations and re-establishment efforts; and
- 4. Monitor the status of nonnative fish species, particularly the sheepshead minnow and pupfish x sheepshead minnow

DRAFT

hybrids, in the mainstem Pecos River and take immediate action to reintroduce the Pecos pupfish in the river where and when appropriate; and

5. As appropriate, meet with county and other governmental entities to review vector control activities and the potential for the use of Pecos pupfish in mosquito abatement efforts; and
6. Support, through expertise and available resources, efforts to replace invasive salt cedar habitats with native vegetation; and
7. Support monitoring and research efforts to accurately document occurrence of Pecos pupfish and sheepshead minnow; determine management options to assess feasibility of localized eradication efforts within the Pecos River; and
8. If the measures and actions delineated herein or otherwise agreed to by the signatory agencies are not sufficient to remove the threats to the Pecos pupfish, the Service will take appropriate listing action under section 4 of the Endangered Species Act. Should such action be necessary, the signatory entities will support listing of the species.
9. Annually review the written report of the Pecos Pupfish Conservation Team documenting the status of accomplishments under the Conservation Agreement. This assessment will determine the effectiveness of the Agreement and whether revisions are warranted and will be provided to the Service by the Conservation Team. The Service will then distribute the report to all signatory entities.

IV. Other Provisions

- A. Responsible officials of the Fish and Wildlife Service, New Mexico Department of Game and Fish, New Mexico State Parks, and Texas Parks and Wildlife will strive to anticipate and avoid conflicts and seek to resolve conflicts in as expeditious manner as possible.
- B. The parties acknowledge that Federal funding will be provided subject to availability as provided by Congress in each appropriation year; and this Conservation Agreement does not commit any State agency to spend resources beyond its jurisdiction.

V. Duration and Amendment of Agreement

The initial term of this Agreement shall be five (5) years. This Agreement shall be extended for an additional five (5) years upon agreement by the parties. Any party may withdraw from this Agreement upon sixty (60) days written notice to the other parties. Changes to the Agreement may be made upon agreement in writing of all the signatories.

VI. National Environmental Policy Act (NEPA) Compliance

Signing of this Agreement is covered under authorities outlined in section II above. We anticipate that any survey, collection, or research activities for implementation and maintenance of the Agreement will not entail significant Federal action under NEPA and will be given a categorical exclusion designation. All other actions will be evaluated prior to implementation and will comply with NEPA regulations.

VII. Signatories

The parties identified herein have caused this Conservation Agreement to be executed as of the date of the last signature shown.

NEW MEXICO DEPARTMENT OF GAME AND FISH

By: _____ Date _____
Director

TEXAS PARKS AND WILDLIFE DEPARTMENT

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By: _____
Director Date

NEW MEXICO STATE PARKS

By: _____
Director Date

U.S. BUREAU OF LAND MANAGEMENT

By: _____
State Director Date

U.S. FISH AND WILDLIFE SERVICE

By: _____
Regional Director Date