

# D e x t e r N a t i o n a l F i s h H a t c h e r y a n d T e c h n o l o g y C e n t e r

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The waters of the Southwest have changed dramatically in the past 100 years. Rivers in this arid region have been dammed and diverted extensively to meet the demands of human settlement and development. In the process, scores of unique freshwater ecosystems were altered or destroyed, and many organisms dependent upon them have declined in both numbers and range. From the small, live-bearing fish of the family Poeciliidae to the 80-pound Colorado squawfish, North America's largest minnow, habitat destruction and the introduction of nonnative species has taken a heavy toll on many unique native fishes.

It became apparent from surveys conducted in the 1970s that the Southwest had a significant number of imperiled fishes that needed conservation attention. Of the 107 threatened or endangered fish species found in the United States, approximately one-third occurred in the Southwest. To address this critical issue, Dexter National Fish Hatchery began work on the recovery of listed fish species in 1978. This effort continues today.

Originally established to meet the demands for warm-water fish throughout the Southwest, the hatchery began operations in 1932. Since that time, Dexter's role in fishery science and management has changed dramatically from a hatchery that stocked nonnative game fish to a facility that is working to restore populations of native species (several of which could provide recreational fishing opportunities upon their recovery). Few other facilities in the world house as many rare and endangered fish. On-going research and recovery projects include establishing captive gene pools of imperiled species, developing techniques for

the cryopreservation (freezing) of fish sperm, refining spawning and culture methods, conducting diet studies, establishing broodstock populations, performing genetic fingerprinting of fish stocks, and producing imperiled fish for reintroduction into the wild.

Dexter National Fish Hatchery and Technology Center is located in the Pecos River Valley of southeastern New Mexico, on the northern fringe of the Chihuahuan Desert. Although Dexter is located within the Pecos River ecosystem, it also has biological and coordination responsibilities for four other ecosystems in the Fish and Wildlife Service's (FWS) Southwest Region: 1) the Upper/Middle Rio Grande; 2) the Lower Rio Grande; 3) the Gila, Salt, and Verde Rivers; and 4) the Lower Colorado River. These four ecosystems have shared watersheds and common endangered species concerns with México.

Currently, 15 listed species are held and cultured at Dexter (see table, page 12). The fish come from nine different American States (TX, NM, AZ, CA, NV, UT, CO, WY, and OR) and two Mexican States (Chihuahua and Sonora). For most of these species, conditions in the wild have degraded to the point that their survival is imperiled. Colorado River fishes, which evolved strange humped or ridged backs, winglike fins, and streamlined bodies to swim the once-muddy, turbulent waters, must now compete with over 100 nonnative species that are better adapted to the dammed reservoirs and connecting clear streams that have come to characterize the Colorado River. Fish species that evolved in desert springs are also losing habitat, as the pumping of ground water lowers water tables and often dries the springs. In the face of these and other

threats, captive fish populations have been established at Dexter to preserve these species and their genetic diversity. These genetic “refuges” are intended as short-term solutions until habitat restoration and the eradication of non-indigenous species make reintroduction into the wild possible.

For example, the Chihuahua chub was thought to be extirpated in the U.S. until biologists discovered a small remnant population in the Archulate/Moreno Springs of New Mexico. Through Dexter’s captive propagation and stocking efforts, another population of the fish has been reestablished nearby. Meanwhile, the extant population in Chihuahua, México, continues to decline due to habitat loss. Similarly, numerous populations of the desert pupfish and Gila topminnow have been reestablished successfully at sites in Arizona over the last 10 years using fish reared at Dexter. For recovery programs in Colorado and Utah, the FWS and the States have cooperatively established genetically diverse captive broodstocks of Colorado squawfish. Many of the individuals recently stocked into the San Juan River (NM, CO, UT) have successfully overwintered. Monitoring studies carried out by Utah Division of Wildlife Resources have shown greater survival than expected, with the fish eating and growing well. Such introductions hold much promise for the future of these and other imperiled fish species.

Dexter cooperates and coordinates endangered fish recovery with the FWS, other Federal agencies, the States, and, internationally, with the Mexican States of Chihuahua and Sonora. Other partners in recovery and habitat restoration include Tribal, university, and private sector partici-

pants. In one example of a cooperative recovery effort, private landowners, an oil company, a gas company, the Natural Resources Conservation Service, the Texas Parks and Wildlife Department, and the FWS worked together to construct an earthen dam around a headspring containing the last wild population of the Leon Springs pupfish. The dam was intended to protect this population, located in the middle of an active oil and gas production field, from oil spills. Dexter also established a refugia population to ensure the species’ survival in case something were to happen to the wild population in its limited habitat. In 1995, the wild population of Leon Springs pupfish was hybridized when someone illegally introduced the exotic sheepshead minnow (*Cyprinodon variegatus*). The Dexter facility now maintains the last remaining population of pure Leon Springs pupfish.

As human activities continue to have an enormous impact on the aquatic ecosystems of the Southwest, future success in the recovery of this region’s native fishes depends on attaining a balance between the human demands for water and the habitat needs of fish and wildlife. Through public outreach and partnerships, support is increasing for the work at Dexter. While the Southwest is the focus of the Dexter facility, this program has broad implications for endangered fishes management and recovery throughout the United States.

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*Dexter’s visitor center is open to the public. Tours can be arranged by calling the facility at (505) 734-5910.*

*This article originally appeared in the FWS’s Endangered Species Bulletin (May/June 1997), which is reprinted by the University of Michigan in its own publication, Endangered Species UPDATE. To subscribe, write: School of Natural Resources, University of Michigan, Ann Arbor, MI 48109-1115; or call (313) 763-3243.*

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| <p><b>The National Fish Hatchery System and the Recovery of Listed Fishes</b></p> <p>Many North American fishes are moving toward extinction. Over the past decade, the number of federally listed threatened or endangered aquatic species has nearly doubled. There are currently 107 threatened and endangered fish species listed under the Endangered Species Act (ESA), comprising nearly 30% of the total animal species listed within the continental U.S. If shellfish (i.e., clams and</p> | <p>mussels) are included, the overall percentage of aquatic species increases to 46%.</p> <p>As the number of listed and imperiled species has grown, so has the search for ways of reversing their decline and ensuring the long-term welfare of our Nation’s ecosystems. Fishery managers are increasingly being asked to protect and restore depleted fish stocks. The National Fish Hatchery System is working to provide innovative tools for conserving genetic diversity, and, ultimately, recovering listed fishes,</p> | <p>such as establishing refugia, captive propagation, and cryopreservation of fish sperm.</p> <p>The System consists of 65 Hatcheries, five Fish Technology Centers, and nine Fish Health Centers. Thirty-three of these facilities are working on coordinated restoration efforts for 39 imperiled species. These Centers play an important role in conservation by providing leadership and technical support to fish hatcheries and other Federal, State, and private sector participants in the recovery of listed fishes.</p> |
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## List and status of species held at Dexter National Fish Hatchery and Technology Center

| Family and species       | Scientific name                     | Federal status |
|--------------------------|-------------------------------------|----------------|
| Family Catostomidae      |                                     |                |
| razorback sucker         | <i>Xyrauchen texanus</i>            | Endangered     |
| Warner sucker            | <i>Catostomus warnerensis</i>       | Endangered     |
| Yaqui sucker             | <i>Catostomus bernardini</i>        | *,**           |
| Family Cyprinidae        |                                     |                |
| Colorado squawfish       | <i>Ptychocheilus lucius</i>         | Endangered     |
| bonytail chub            | <i>Gila elegans</i>                 | Endangered     |
| Chihuahua chub           | <i>Gila nigrescens</i>              | Threatened     |
| Pahrnagat roundtail chub | <i>Gila robusta jordani</i>         | Endangered     |
| Virgin River chub        | <i>Gila robusta seminuda</i>        | Endangered     |
| woundfin                 | <i>Plagopterus argentissimus</i>    | Endangered     |
| Guzman beautiful shiner  | <i>Cyprinella f. formosa</i>        | **             |
| Family Ictaluridae       |                                     |                |
| Yaqui catfish            | <i>Ictalurus pricei</i>             | Threatened **  |
| Family Cyprinodontidae   |                                     |                |
| Leon Springs pupfish     | <i>Cyprinodon bovinus</i>           | Endangered     |
| desert pupfish           | <i>Cyprinodon macularius</i>        | Endangered     |
| Family Poeciliidae       |                                     |                |
| Gila topminnow           | <i>Poeciliopsis o. occidentalis</i> | Endangered     |
| Big Bend gambusia        | <i>Gambusia gaigei</i>              | Endangered     |

\* = species of concern    \*\* = species extirpated from U.S.