

# Fish Technology Centers

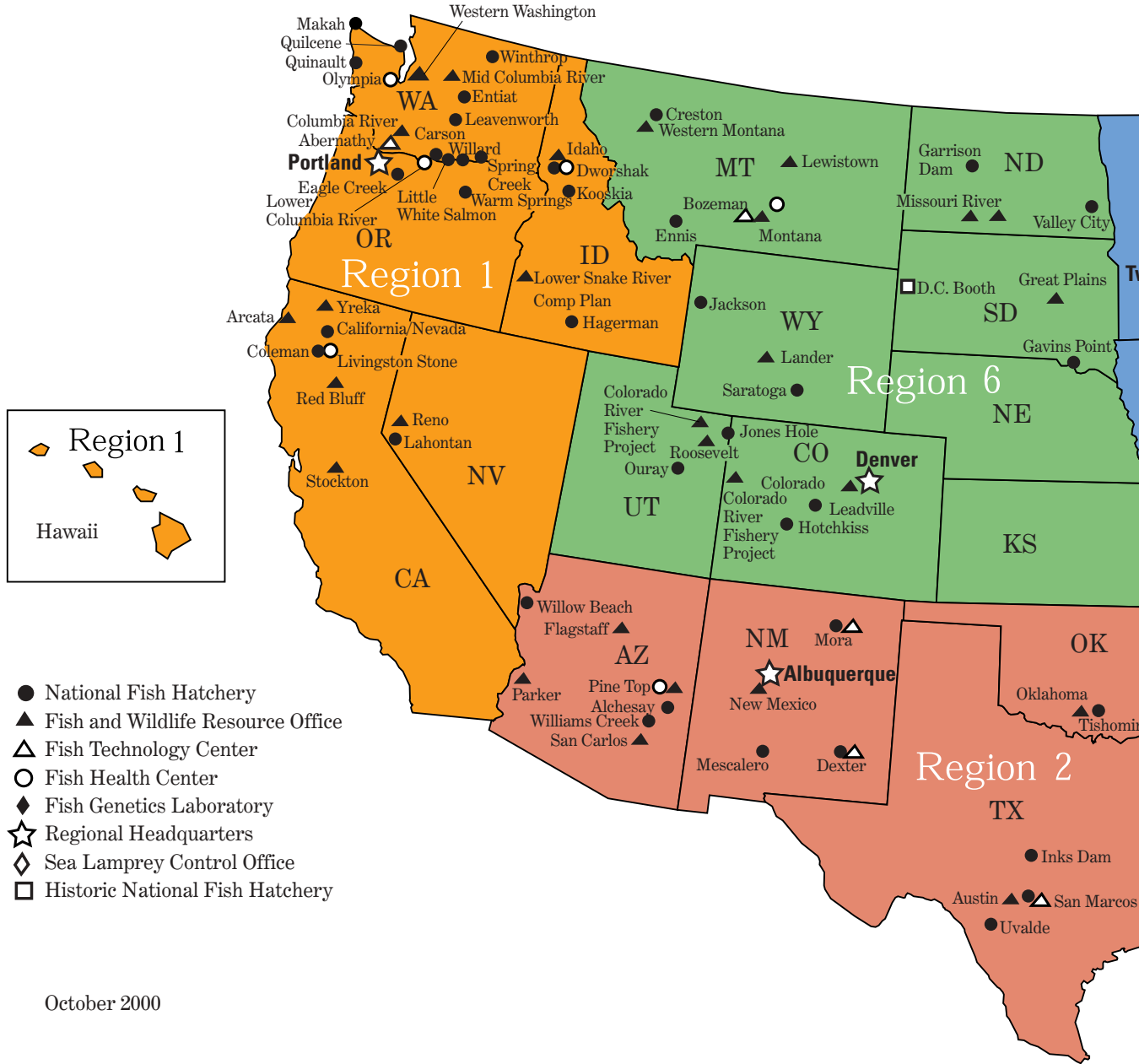
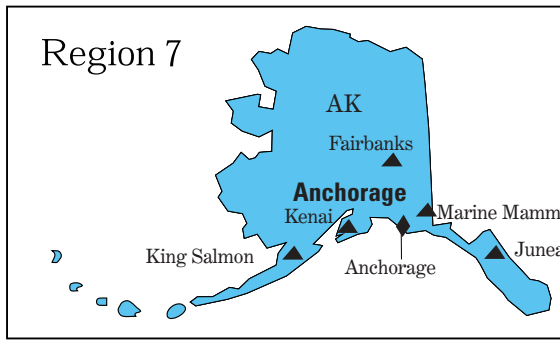
*Directory*



# Fish Technology Centers

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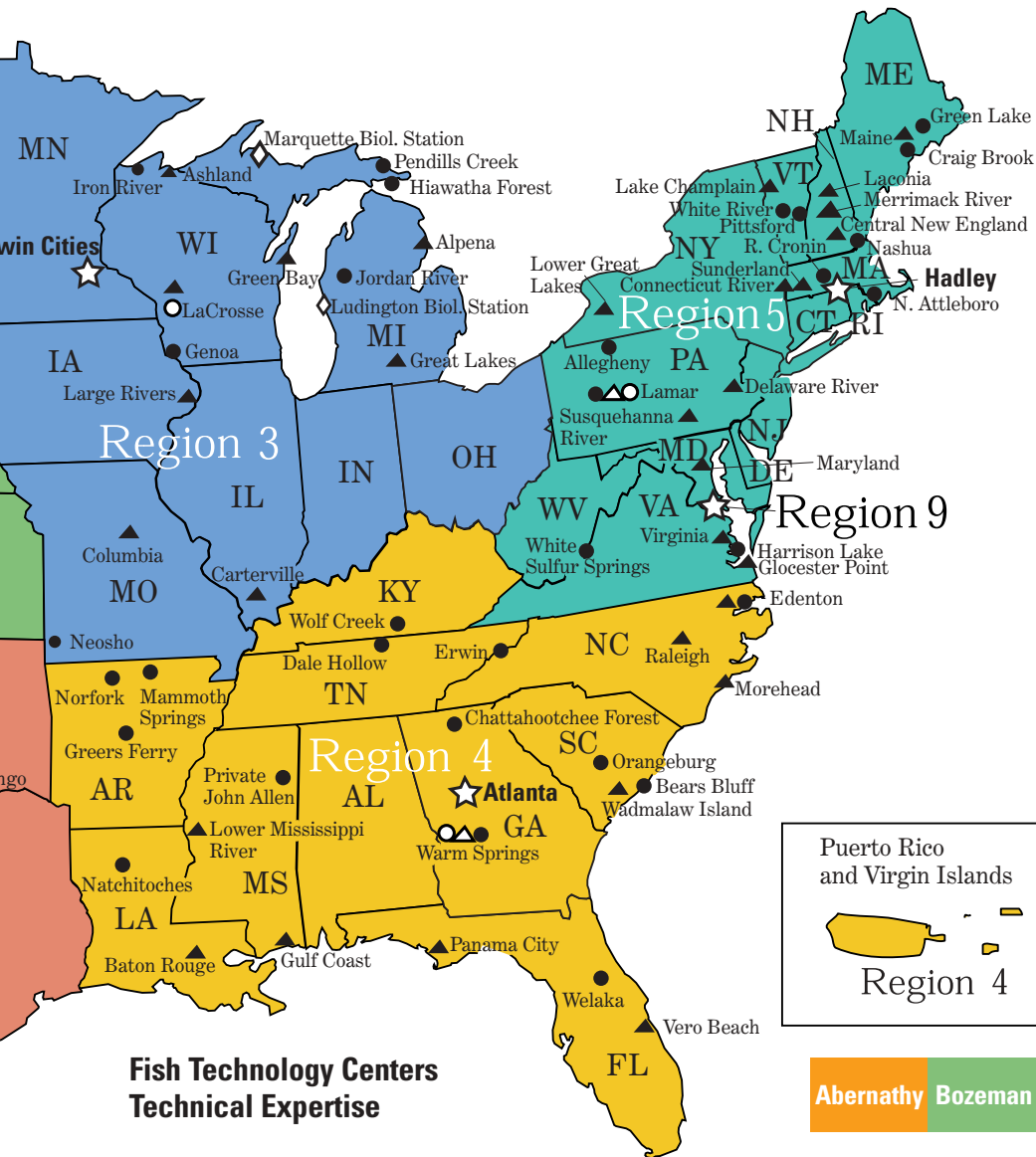
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- National Fish Hatchery
- ▲ Fish and Wildlife Resource Office
- △ Fish Technology Center
- Fish Health Center
- ◆ Fish Genetics Laboratory
- ☆ Regional Headquarters
- ◇ Sea Lamprey Control Office
- Historic National Fish Hatchery

October 2000

# U.S. Fish and Wildlife Service Fisheries Program Facilities



## Fish Technology Centers Technical Expertise

	Abernathy	Bozeman	Dexter	Lamar	Mora	San Marcos	Warm Springs
Aquatic Species Culture	△	△	△	△	△	△	△
Aquatic Species Health	△	△		△			△
Aquatic Species Nutrition	△	△					
Genetic Conservation and Management	△	△	△	△	△	△	
Fishery Management and Evaluation	△	△		△			△
Threatened and Endangered Species Recovery	△	△	△	△	△	△	△
Ecosystem Management	△		△	△			△
Fishery Technology Transfer	△	△		△	△		△
Water Reuse		△	△	△	△		
Education and Outreach		△	△	△		△	△
Rearing System Design		△	△	△		△	△
Aquatic Species Refugia		△	△			△	△
Plant Management						△	
Invasive Species Management/Control		△				△	△

# Background

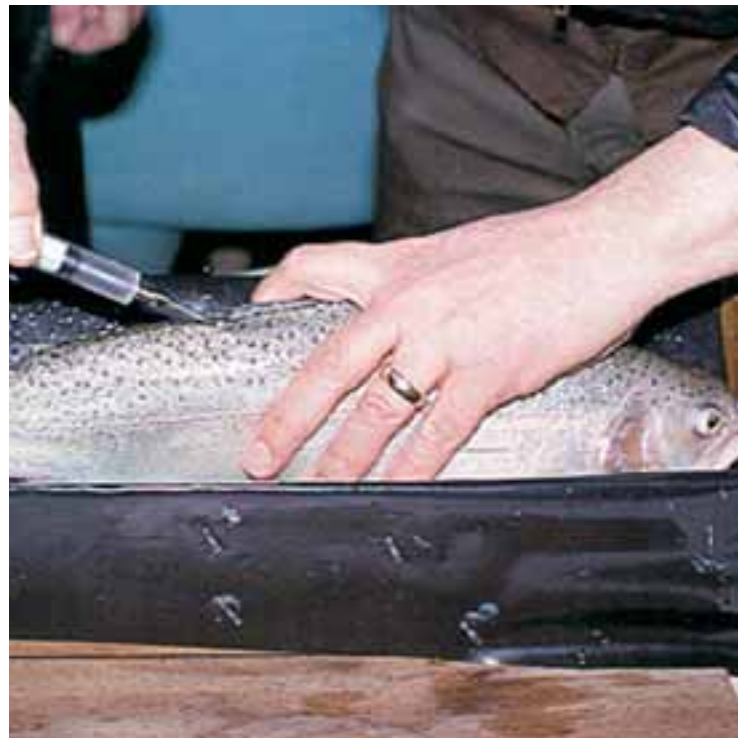
In 1965, the Fish and Wildlife Service established seven Fish Technology Centers nationwide to provide leadership and technology guidance to the National Fish Hatchery System and fish culture community. Fish Technology Centers originally focused on fish culture issues such as reducing costs, enhancing fish quality, and improving overall fish culture operations. Today, as fishery managers respond to increasing needs to aid in the restoration of native fish and other aquatic species and to produce healthy, genetically diverse organisms to assist in that effort, the importance of Fish Technology Centers in providing sound science and technology support is greater than ever.

The roles and responsibilities of Fish Technology Centers include technical support for captive propagation of imperiled aquatic species, for interjurisdictional restoration programs, for control of invasive aquatic species, and for sound genetic management of aquatic populations. Fish Technology Center activities range from developing diets and propagation techniques for rare species, never before held in captivity, to developing new marking and evaluation techniques, to genetic stock identification, to providing assistance in study design.

To accomplish their work, Fish Technology Centers maintain expertise in a number of disciplines, including physiology, genetics, and biometrics. Functioning as a cohesive system, each Technology Center strengthens the others with complementary expertise, taking full advantage of various geographic differences to ensure that study results will successfully support a broad range of users and management objectives. Through their partnership with other Service programs and Federal agencies, States, Tribes, and the private sector, Fish Technology Centers provide a vital link in the Service's commitment to the conservation of our nation's aquatic resources.



# *Abernathy Fish Technology Center*



*Top left: Tule Fall Chinook spawning in Abernathy Creek, Longview, WA. Photo: Joe Zydlewski, volunteer.  
Top right: Ann Gannam, Nutritionist, analyzing feed with bomb calorimeter.  
Bottom left: Collecting juvenile wild Steelhead to rear as wild broodstock.  
Bottom right: PIT tagging adult trout to monitor genetic families.  
All photos USFWS*

# Abernathy Fish Technology Center

## Areas of Specialization

### Fishery Evaluation

- Evaluation of natural rearing practices
- Characteristics of smoltification and juvenile migration
- Hatchery evaluation and monitoring

### Aquatic Species Culture

- Use of native broodstock to restore declining populations
- Specialized culture techniques and methodology

### Aquatic Species Nutrition

- Quality assurance of hatchery feeds
- Life-stage specific diet development
- Diets for captive broodstock programs

### Genetic Conservation and Management

- Technical assistance in Endangered Species Act determinations
- Genetic analyses and monitoring
- Genetic protocols and policies

### Aquatic Species Health

- Innovative techniques to detect and treat diseases and pathogens
- Immunology
- Disease treatments protocols



# *Abernathy Fish Technology Center*

## **Objectives**

- To conduct applied research for recovery and restoration of Pacific salmon, sturgeon, cutthroat trout, rainbow trout/steelhead, and lamprey
- To provide technical expertise in genetics, fish propagation techniques, nutrition, pathology, and behavioral physiology to benefit culture of declining, threatened and endangered species
- To develop new and innovative fish culture technologies to produce quality fish for conservation and management programs
- To provide leadership in the management of fishery resources through the assessment and evaluation of hatchery products
- To work with various Federal and State agencies, tribal, sport, and conservation groups to provide fishery resources for the present and the future

## **Address**

Street Address: U.S. Fish and Wildlife Service  
Abernathy Fish Technology Center  
1440 Abernathy Creek Road  
Longview, WA 98632

Mailing Address: U.S. Fish and Wildlife Service  
Abernathy Fish Technology Center  
1440 Abernathy Creek Road  
Longview, WA 98632

Telephone: 360/425 6072  
Fax: 360/636 1855  
Web Address: [www.r1.fws.gov/aftc](http://www.r1.fws.gov/aftc)  
Email: [lisa\\_wilson@fws.gov](mailto:lisa_wilson@fws.gov)



*Gayle Zydlowski, Behavioral Physiologist, collecting ATPase data.*



# *Abernathy Fish Technology Center*

## **Technical Staff and Expertise**

### **Center Director**

- Program management/development
- Hatchery/wild salmon studies and evaluations
- Genetic considerations in aquaculture
- Adaptations, behavior, and life history theory

### **Assistant Center Director**

- Program management/development
- Personnel management and development
- Statistical applications and consultations

### **Geneticist**

- Population genetics
- Conservation of genetic resources
- Genetic monitoring and evaluations
- Genetic management of fishery resources

### **Biostatistician**

- Experimental and sampling design
- Statistical applications and consultations
- Data analyses

### **Nutritionist**

- Fish nutrition
- Diet development
- Biochemistry
- Fish feed contaminants

### **Behavioral Physiologist**

- Fish physiology
- Olfactory cues for migration
- Physiological traits of smoltification
- Hatchery/wild salmon studies

### **Microbiologist**

- Fish diseases/immunology
- Microbiology
- Investigational New Animal Drug Coordinator

### **Chemist**

- Water quality/chemistry
- Fish feed and tissue analyses
- Regional Environmental Compliance Inspection Team

### **Fishery Biologist**

- Sturgeon culture
- Salmonid culture
- Wild broodstock propagation technology development

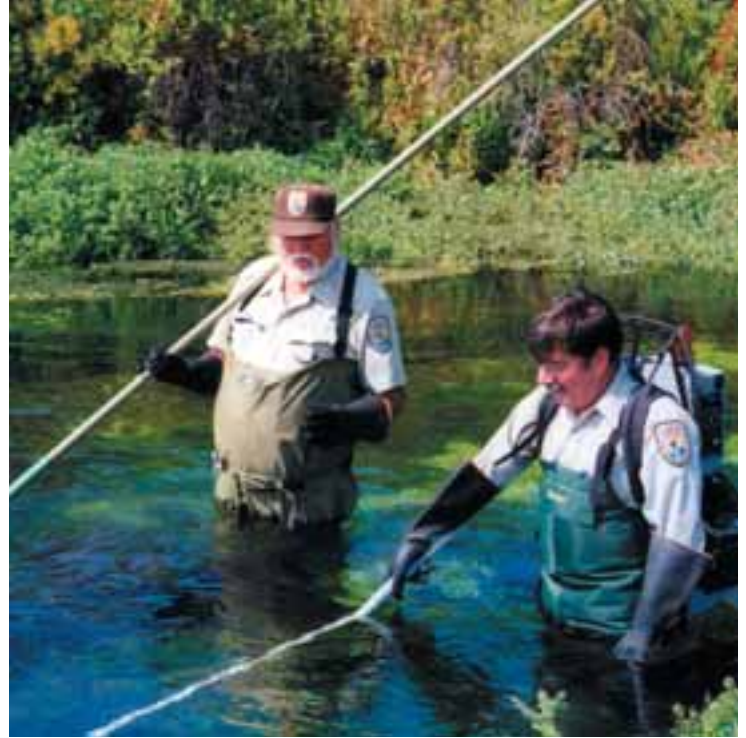
### **Extruder Operator**

- Fish feed production
- Fish culture
- Operation and maintenance of fish feed extruder

### **Computer Assistant**

- Hardware/software technical support
- Network operation and maintenance
- Website and Internet access maintenance

# Bozeman Fish Technology Center



*Top left: Jim Bowker, INAD group, mixing chemicals.  
Top right: Pat Dwyer (foreground) electrofishing.  
Bottom left: Rick Barrows and feed making equipment.  
Bottom right: Bob Koby using the spectrophotometer to measure minerals in diets and tissue.  
All photos USFWS*

# Bozeman Fish Technology Center

## Areas of Specialization

### Aquatic Species Culture

- Culture of imperiled species
- Cost effectiveness of hatcheries
- Development of captive broodstocks
- Fish hatchery design
- Water quality management
- Water disinfection technology

### Fishery Evaluation

- Fishery management techniques
- Behavioral interactions between species
- Fish growth and survival
- Marking and tagging methods
- Deterrents for invasive species

### Aquatic Species Nutrition

- Development of fish feeds for imperiled species
- Fish food manufacturing technology and quality assurance
- Diet testing
- Pollution reduction and special larval feeds
- Feed coatings with stimulants or attractants

### Aquatic Species Health

- Histopathology
- Diseases of wild and hatchery fish
- National Investigational New Animal Drug (INAD) Office
- Aquaculture drug registration
- Drug delivery methods



**Region 6**

# Bozeman Fish Technology Center

## Objectives

- To conduct applied research for recovery of listed species and restoration of species of special concern
- To deliver scientific support for U.S. Fish and Wildlife Service operational programs in areas of Center expertise
- To implement diet testing, feed development, feed quality control, histopathology, fish health, and fish culture for imperiled fish species
- To develop maintenance and/or propagation techniques and system for imperiled species
- To develop techniques to ensure genetic diversity and maintain quality of propagated fish species
- To house the Fish and Wildlife Service's National Investigational New Animal Drug (INAD) field office. Evaluate efficacy and target animal safety of therapeutic drugs. The INAD laboratory is compliant with Good Laboratory Practices procedures
- To strive to register chemotherapeutants, anesthetics, and spawning hormones for use in hatcheries and wild fish
- To develop a national network with Federal, State, tribal, and private agencies for use of drugs and chemicals in fish hatcheries, and host an annual INAD Workshop
- To provide technical assistance to pallid sturgeon, bull trout and Arctic grayling Recovery Teams and restoration efforts and for conservation plans related to species of special concern
- To test effects of pathogens and parasites on wild fish populations
- To disseminate technical information to Federal and State agencies and the private sector through scientific journals, Bozeman Information Leaflets, and presentations at professional meetings and workshops

## Address

Street Address: Bozeman Fish Technology Center  
4050 Bridger Canyon Road  
Bozeman, MT 59715

Mailing Address: Bozeman Fish Technology Center  
4050 Bridger Canyon Road  
Bozeman, MT 59715

Telephone: 406/587 9265  
Fax: 406/586 5942  
Web Address: [www.r6.fws.gov/fisheries/mt/bozemanftc.htm](http://www.r6.fws.gov/fisheries/mt/bozemanftc.htm)  
Email: [sue\\_osborne@fws.gov](mailto:sue_osborne@fws.gov)



# Bozeman Fish Technology Center

## **Technical Staff and Expertise**

### **Center Director**

- Administration and program development
- Station outreach
- Hatchery operations
- Stress and reproductive physiology

### **Assistant Center Director**

- Administration, maintenance and outreach
- Intensive production fish culture
- Hatchery water management, oxygen supplementation, water reuse
- Hatchery design and development
- Use of ultrasound for delivery of compounds to fish

### **Nutritionist**

- Diet development and testing
- Feed manufacturing/technology
- Low pollution feeds
- Larval fish culture and nutrition
- Effects of metals in diets

### **Fish Culture Manager**

- Fishery management
- Fish culture and health
- Recovery and restoration of imperiled species
- Techniques for removal of non-indigenous species

### **Hatchery Manager**

- Intensive and extensive culture techniques
- Larval culture
- Water reuse systems
- Public outreach
- Maintenance and facility management

### **National Investigational New Animal Drug (INAD) Coordinator**

- FDA liaison
- Coordinate FWS and national INAD program activities
- INAD procedures
- Reproductive physiology

### **Assistant Investigational New Animal Drug (INAD) Coordinator**

- INAD principal regional coordinator, Region 6
- Aquaculture drug registration data collection

### **Fishery Biologist, Investigational New Animal Drug Office**

- Statistical analyses and experimental design
- Aquaculture drug registration data collection

### **General Biologist**

- Water quality management
- Effluent management
- Feed analyses and quality control

### **Fishery Biologist, Investigational New Animal Drug Office**

- INAD database coordinator

# *Dexter Fish Technology Center*



*Top left: Bonytail chubs.*

*Top right: Larvae rearing tanks and associated recirculating water system.*

*Bottom left: Dave Hampton and Phillip Sosa harvesting bonytail chub broodfish for genetic testing.*

*Bottom right: Phillip Sosa examines captured juvenile bonytail for external parasites and overall condition.*

*All photos USFWS*

# Dexter Fish Technology Center

## Areas of Specialization

### Aquatic Species Culture

- New propagation strategies, systems, practices, methods, and technologies
- New applications of existing methods and technologies
- Identify factors limiting performance and improve culture environments
- Identify critical ecological and life history requirements
- Diet testing
- Gamete storage and cryopreservation
- Product and performance testing and evaluation
- Fish marking and tagging
- Water conservation and reuse

### Threatened and Endangered Species Recovery

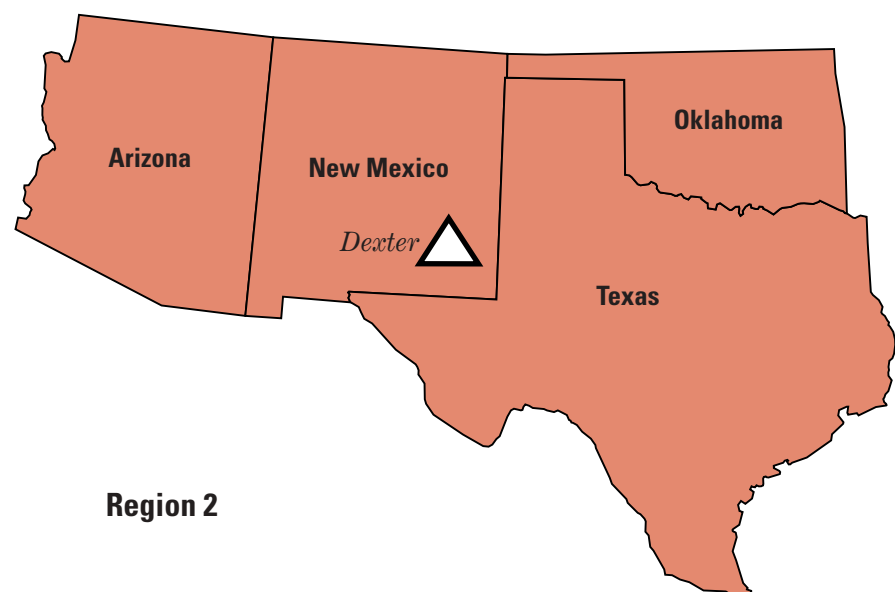
- Refugia program management
- Genetics conservation program management
- Controlled fish propagation and reintroduction program management
- Recovery planning, implementation, and evaluation
- Recovery-directed studies and experiments
- Public education and outreach
- Information and technology transfer and training

### Ecosystem Management

- Upper/Middle Rio Grande
- Lower Rio Grande
- Pecos River
- Upper and Lower Colorado River
- San Juan River
- Gila/Salt/Verde Rivers

### Genetic Conservation and Management

- Gene pool maintenance program
- Genetic analyses—stock identification, characterization, monitoring, and evaluation
- Genetic status and trend assessments
- Artificial genetic refuge populations
- Production broodstock
- Breeding, rearing, maintenance, and reintroduction strategies
- Genetic hazard and risk assessments
- Short-term and long-term gamete storage
- Genetic studies—effects of inbreeding, outbreeding, drift, selection, hybridization, and domestication on genetic resources
- Performance testing
- Develop, implement, and evaluate genetic conservation plans, strategies, practices, methods, protocols, and technologies



**Region 2**

# *Dexter Fish Technology Center*

## **Objectives**

- To prevent imminent extinction of imperiled aquatic species
- To genetically identify and characterize imperiled native fishes of the Southwest
- To develop and maintain artificial genetic refuge populations and captive broodstocks for threatened, endangered, and otherwise imperiled native fishes of the Southwest
- To develop and maintain Regional Imperiled Fish Genetic Resources Database
- To plan, implement, and evaluate broodstock management plans for all species maintained at Dexter
- To develop propagation strategies that promote genetic conservation, improve performance, and minimize genetic and ecological risks associated with controlled propagation activities
- To develop, test, evaluate and apply principles, practices, methods, protocols, and technologies that conserve unique genetic resources and promote successful implementation of controlled propagation strategies
- To inform and educate the public of the value and threats to their natural wildlife and fisheries resources

## **Address**

Street Address: Dexter National Fish Hatchery & Technology Center  
7116 Hatchery Road off of State Hwy 190  
Dexter, NM 88230

Mailing Address: Dexter National Fish Hatchery & Technology Center  
P.O. Box 219  
Dexter, NM 88230

Telephone: 505/734 5910  
Fax: 505/734 6130  
Web Address: <http://fisheries.fws.gov/ftc/ftcdexter.htm>  
Email: [r2ffa\\_dx@mail.fws.gov](mailto:r2ffa_dx@mail.fws.gov)





# *Dexter Fish Technology Center*

## **Technical Staff and Expertise**

### **Center Director**

- Administration and program development
- Station outreach
- Hatchery operations

### **Assistant Center Director**

- Warmwater, coldwater, and endangered fishes
- Endangered fish culture and propagation
- Hormonal spawning of fishes
- Use of therapeutants for controlling diseases

### **Research Leader, Geneticist/Fish Culturist**

- Genetic conservation and management of natural and captive threatened, endangered and otherwise imperiled native fish populations including genetic refuge populations, broodstocks, and fish propagated for specific restoration and recovery purposes
- Genetic management in propagation and reintroduction program planning, implementation, evaluation, and coordination
- Integrated propagation management systems design
- Developing, testing, evaluating, and applying new propagation systems, strategies, practices, protocols, and technologies to improve performance of hatchery produced fish in recovery, conservation, and management programs

### **Molecular Ecology Lab Manager, Fishery Biologist/Geneticist**

- Genetic conservation and management of threatened, endangered, and otherwise imperiled native fish populations
- Genetic analyses of natural and wild fish populations
- Develop, evaluate, test, and apply new genetic technologies to identify, characterize, evaluate, and understand genetic diversity in natural and hatchery fish populations
- Monitor, evaluate, and manage genetic impact of hatchery fish introductions
- Develop genetic profiles and data bases for individual broodfish, broodfish populations, and progeny

### **Fishery Biologist/Culturist**

- Hatchery and broodstock management
- Develop and apply new fish culture methods and technologies for genetics conservation and propagation purposes
- Spawn, rear, and maintain threatened, endangered, and otherwise imperiled native fishes
- Water quality and reuse systems design and operations
- Fish health management

# Lamar Fish Technology Center



Top left: *Extracting milt from Atlantic sturgeon in Hudson River.*  
Top right: *American eel elver marked with calcein.*  
Bottom left: *Outreach at a sportsman's show.*  
Bottom right: *Atlantic sturgeon juveniles.*  
All photos USFWS

# Lamar Fish Technology Center

## Areas of Specialization

### Aquatic Species Culture

- Threatened and endangered species
- Compatible with wild populations
- Coldwater, coolwater, warmwater
- Saltwater recirculation
- Broodstock management
- Investigational New Animal Drug applications, investigations, monitoring

### Fishery Evaluation

- Experimental design
- Statistical analysis
- Hatchery product evaluation
- Marking and tagging
- Population dynamics

### Fishery Technology Transfer

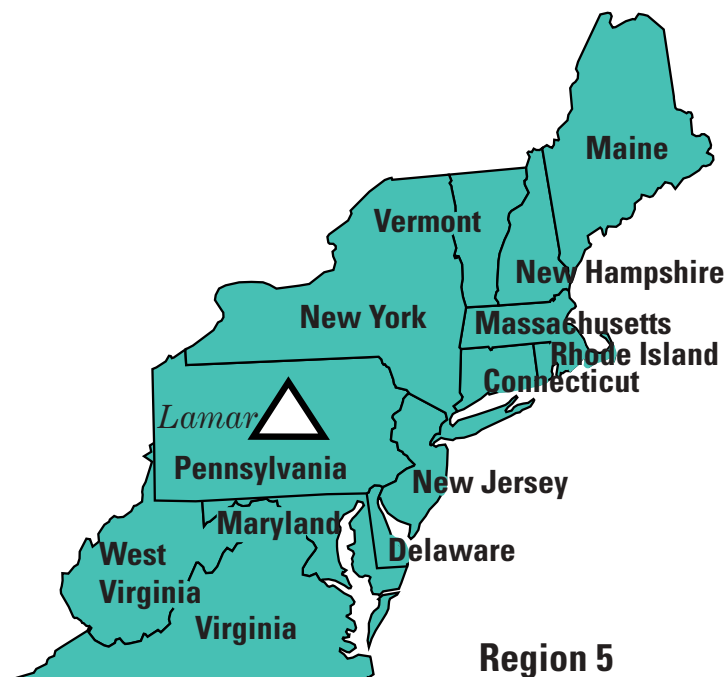
- Problem solving
- Applied research

### Aquatic Species Health

- Hatchery technical assistance
- Hatchery troubleshooting

### Genetic Conservation and Management

- Gene pool maintenance program
- Genetic analysis—stock identification, characterization, monitoring and evaluation
- Broodstock genetic management
- Breeding, rearing, maintenance, and reintroduction strategies
- Genetic hazard and risk assessments
- Genetic studies—effects of inbreeding, outbreeding, drift, selection, hybridization, and domestication on genetic resources



# Lamar Fish Technology Center\*

## Objectives

- To provide culture and management techniques for threatened, endangered, and other imperiled aquatic species to ensure functional and genetic compatibility of propagated species with existing wild populations
- To provide technical assistance for implementation of approved management plans for interjurisdictional fisheries, including developing methods to evaluate hatchery products
- To present scientific findings to the fisheries community in scientific journals, special Center publications, workshops, scientific meetings, trade shows, and Service training schools
- To provide population assessment for interjurisdictional aquatic species
- To provide fish culture technical assistance to aquaculturists in the Federal, State, tribal, and private sectors
- To evaluate alternative, cost effective methods of water use and reuse that will conserve water resources and are compatible with propagation of threatened, endangered, and imperiled aquatic species
- To assist Federal Fish Hatcheries in the Northeast Region by collaborating with the Regional Fish Health Center in providing technical assistance on solving fish health related problems
- To apply genetic methods and theory to enhance the fish restoration programs, including aspects of artificial propagation and stocking, and management of captive broodstock and interjurisdictional fishery resources

## Address

Street Address: Northeast Fishery Center  
308 Washington Avenue  
Lamar, PA 16848

Mailing Address: Lamar Fish Technology Center  
P.O. Box 75  
Lamar, PA 16848

Telephone: 570/726 4247  
Fax: 570/726 7247  
Web Address: <http://fisheries.fws.gov/ftc/ftcne.htm>  
Email: [tina\\_stamper@fws.gov](mailto:tina_stamper@fws.gov)

*\*Note:* The Lamar FTC is part of the Northeast Fishery Center complex, which also includes a Fish Health Center and National Fish Hatchery.



# Lamar Fish Technology Center

## **Technical Staff & Expertise**

### **Center Director**

- Atlantic salmon culture
- Program administration/development
- Hatchery operations

### **Fishery Biologist (Section Chief)**

- Warmwater fish culture
- Coolwater fish culture
- Coldwater fish culture
- Saltwater recirculation

### **Fishery Biologist**

- Sturgeon culture
- Water chemistry
- Saltwater recirculation
- Wetland development

### **Ecologist (Section Chief)**

- Experimental design
- Statistical analyses
- Population dynamics
- Impacts on wild populations
- Aquatic species interactions

### **Fishery Biologist**

- Investigational New Animal Drug applications, field investigations, and monitoring
- Coldwater fish culture
- Coolwater fish culture
- Interpretive programs

# *Mora Fish Technology Center*



*Top left: Trout broodstock.  
Top right: Recirculating system water filter.  
Bottom left: Quarantine tanks.  
Bottom right: Rearing tanks.  
All photos USFWS*

# Mora Fish Technology Center

## Areas of Specialization

### Aquatic Species Culture

- Growth and production in warmwater and coldwater
- Broodfish development
- Transport and handling
- Quarantine and health management

### Water Reuse

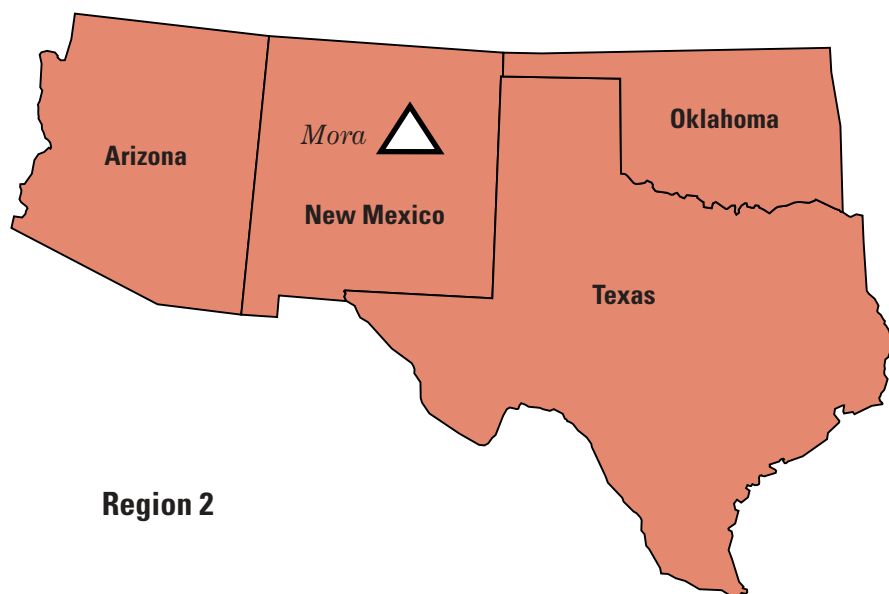
- Environment and bioengineering
- Physiology, toxicology and water quality
- Performance tests
- Disease treatment protocols
- Aeration and oxygenation

### Threatened and Endangered Species Recovery

- Production for population restoration
- Specialized and modified culture techniques
- Fitness and performance tests
- Broodfish management
- Diets for larval fishes

### Fishery Technology Transfer

- Technical assistance for hatchery modifications
- Water reuse system modifications
- Genetic analyses and monitoring
- Genetic protocols and policies



# *Mora Fish Technology Center*

## **Objectives**

- To provide national and international fish culture, aquaculture technology, and propagation evaluation
- To conserve genetic resources through genetic initiatives, management guidelines, and protocols
- To provide national and international water conservation technology and high density fish production with limited water
- To provide applied research and development for recovery and restoration of Rio Grande cutthroat trout, Gila trout, razorback sucker, bonytail, and other species
- To provide technical expertise in genetics, fish propagation techniques, water conservation and reuse technology to benefit fish culture of native and threatened and endangered species
- To develop new and innovative fish culture technologies to produce quality fish for conservation and management programs
- To provide leadership in the management of fishery resources through the assessment and evaluation of hatchery products
- To work with various Federal and State agencies, tribal, sport, and conservation groups to provide fishery resources for the present and the future

## **Address**

Street Address: U.S. Fish and Wildlife Service  
Mora Fish Technology Center  
2 miles north of NM518 on NM434  
Mora, NM 87732

Mailing Address: U.S. Fish and Wildlife Service  
Mora Fish Technology Center  
P.O. Box 689  
Mora, New Mexico 87732

Telephone: 505/387 6022  
Fax: 505/387 9030  
Email: FW2\_FR\_Mora@fws.gov  
Web address: <http://fisheries.fws.gov/FTC/FTCmora.htm>





# *Mora Fish Technology Center*

## **Technical Staff & Expertise**

### **Center Director**

- Genetics and fish culture of sport, threatened, and endangered fishes
- Physiology, transport, handling, and stress reduction of fishes
- Hatchery product evaluation, performance testing, and integrated fisheries management
- Water reuse and conservation technologies

### **Assistant Center Director**

- Program management and development
- Personnel management and development
- Performance and fitness testing
- Water reuse technology development

### **Water Quality Chemist**

- Water chemistry
- Disinfection and sterilization
- Water recirculation
- Water conservation

### **Biostatistician**

- Experimental and sampling design
- Statistical applications
- Data analyses
- Technical hatchery outreach

### **Fishery Biologist**

- Rio Grande cutthroat trout culture
- Bonytail culture
- Gila trout culture
- Water management

### **Fish Culturist**

- Rio Grande cutthroat trout culture
- Bonytail culture
- Gila trout culture
- Water management

### **Bioengineer**

- System design and development
- Stress mitigation
- Water conservation

### **Fisheries Health Specialist**

- Disease diagnostics and treatment
- Wild population surveys
- Disease prevention technologies

### **Fish Culturist**

- Fish quarantine
- Fish culture development
- Fish culture

### **Maintenance Supervisor**

- Electrical system development
- Systems modifications
- Water systems analyses

# *San Marcos Fish Technology Center*



*Top left: Texas wildrice with wind-pollinated flowers.*

*Top right: Zooplankton harvester developed by San Marcos Technology Center staff members.*

*Bottom left: Texas blind salamander.*

*Bottom right: Southwest Texas State University Biology Department undergraduate students, part of San Marcos diversity program, observing endangered fountain darters in aquarium.*

*All photos USFWS*

# San Marcos Fish Technology Center

## Areas of Specialization

### Aquatic Species Refugia

- Fishes, salamanders, aquatic plants, aquatic invertebrates

### Aquatic Species Culture

- Broodstock development
- Spawning methodology
- Specialized egg incubation techniques
- Life history
- Live food production

### Plant Management

- Aquatic plant culture
- Aquatic plant restoration
- Aquatic plant control
- Native plant culture
- Prairie restoration

### Rearing System Design

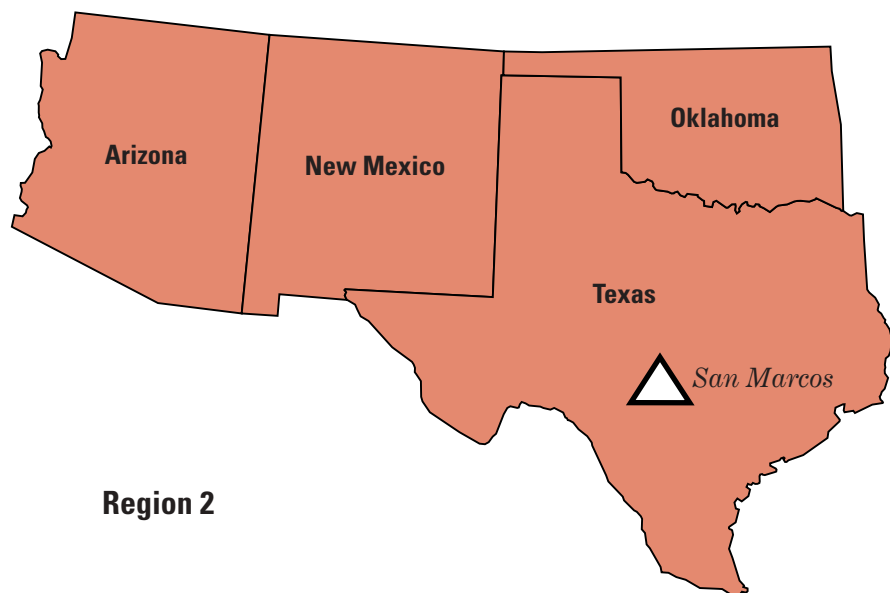
- Small-scale reuse
- Manipulation of dissolved gases
- Non-traditional biofiltration
- Artificial habitat development

### Education and Outreach

- Graduate student training and research
- Community partnership development
- Nuisance species awareness

### Threatened and Endangered Species Recovery

- Recovery planning
- Habitat-related research
- Emergency response planning



# San Marcos Fish Technology Center

## Objectives

- To collect, maintain, and propagate Texas wildrice, salamanders, fish and invertebrates as outlined in the USFWS San Marcos/Comal/Edwards Aquifer Rare, Threatened, and Endangered Species Contingency Plan
- To conduct research on life history, ecological requirements, genetics, and culture
- To conduct research on restocking refugium species
- To collect biological information on the region's aquatic biological resources
- To troubleshoot problems at other hatcheries
- To train hatchery personnel, graduate students, and community groups
- To present research findings to aquatic community through peer reviewed publications

## Address

Street Address: U.S. Fish and Wildlife Service  
National Fish Hatchery & Technology Center  
500 East McCarty Lane  
San Marcos, TX 78666

Mailing Address: U.S. Fish and Wildlife Service  
National Fish Hatchery & Technology Center  
500 East McCarty Lane  
San Marcos, TX 78666

Telephone: 512/353 0011  
Fax: 512/353 0856  
Web Address: <http://fisheries.fws.gov/FTC/FTCsanmrs.htm>  
Email: [fw2\\_fr\\_sanmarcos@fws.gov](mailto:fw2_fr_sanmarcos@fws.gov)



# *San Marcos Fish Technology Center*

## **Technical Staff and Expertise**

### **Center Director**

- Program management and development
- Fish feeds and nutrition
- Darter life history and culture
- Fish reproduction manipulation
- Centrarchid culture

### **Fishery Biologist**

- Invertebrate culture
- Salamander culture
- Fish culture
- Experimental design/statistics
- Computer technical support

### **Biological Technician**

- Stream ecology
- Invertebrate biology
- Reuse system modification

### **Plant Ecologist**

- Native terrestrial plant culture
- Aquatic plant culture
- Aquatic habitat restoration
- Prairie restoration
- Plant collections
- Outreach programs and partnerships

# Warm Springs Fish Technology Center



Top left: Sturgeon egg staging.  
Top right: Removing eggs.  
Bottom left: Paddlefish.  
Bottom right: Checking blood sample.  
All photos USFWS

# Warm Springs Fish Technology Center

## Areas of Specialization

### Aquatic Species Culture

- Propagation and refugia
- Water treatment and reuse
- Survival and performance
- Broodstock management transport and handling

### Fishery Technology Transfer

- Techniques for threatened and endangered species
- Cryopreservation of gametes
- Reproductive physiology
- Genetic management
- Population management

### Aquatic Species Health

- Wild fish populations
- Alternatives to drugs
- Improved diagnostics
- Fish nutrition and health
- Contaminants

### Fishery Evaluation

- Recovery and restoration
- Life history requirements
- Investigational New Animal Drug monitoring and application
- Hatchery product evaluation
- Experimental design



# Warm Springs Fish Technology Center\*

## Objectives

- To develop fish management and culture methods for depleted native fishes, and other aquatic species, with particular focus on interjurisdictional freshwater and estuarine species
- To develop methods for evaluating and improving the survival and performance of hatchery reared species
- To determine abundance, distribution, life history, and environmental impediments for assessing depleted fish populations, as part of a management plan for restoring aquatic species, including important recreational fisheries
- To develop innocuous alternatives to traditional fishery drugs and chemicals
- To evaluate water treatment technologies with emphasis on water conservation and physiological requirements of fish
- To develop and apply cryogenic techniques used for reproductive biology, as applied to recovery and restoration of depleted fish populations
- To develop improved culture techniques for captive refugia, as well as new methods for assessment and enhancement of post-stocking survival of native threatened or endangered aquatic species
- To develop new non-lethal diagnostic sampling techniques to assess the health of fish and fish populations, as part of a national initiative to characterize the health status of our native fishes in the wild
- To establish a gene-bank for retaining important genetic material as needed for the continued protection of valued aquatic biological resources in the southeast
- To present scientific findings to aquatic resource community, through publication in scientific journals, FWS documents, and presentations at technical workshops, and institutions of higher education

## Address

Street Address: Warm Springs Regional Fisheries Center  
5308 Spring Street  
Warm Springs, GA 31830

Mailing Address: Warm Springs Regional Fisheries Center  
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Telephone: 706/655 3382  
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\*Note: The Warm Springs FTC is part of the Warm Springs Regional Fisheries Center, which also includes a Fish Health Center and two National Fish Hatcheries (Warm Springs and Bear's Bluff.)





# *Warm Springs Fish Technology Center*

## **Technical Staff & Expertise**

### **Center Director**

- Fishery biology
- Water quality
- Bioengineering

### **Fishery Biologist**

- Fish Culture—warm and coldwater species
- Broodstock development
- Fish transport and handling

### **Genetics Specialist**

- Regional fishery support
- Population genetics
- Genetic techniques

### **Fishery Biologist**

- Reproductive biology
- Cryogenic techniques
- Gene-banking

### **Fishery Biologist**

- Quality assurance/quality control
- Water quality
- Water treatment systems

**U.S. Department of the Interior**  
**U.S. Fish & Wildlife Service**  
**1 800/344 WILD**  
**[www.fws.gov](http://www.fws.gov)**

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