ANNUAL REPORT

FISCAL YEAR 2002

U.S. FISH & WILDLIFE SERVICE
FISHERIES RESOURCES

PANAMA CITY FIELD OFFICE
PANAMA CITY, FLORIDA

Organizational Code: 41310

_____ _____

Project Leader Date

_____ _____

Assistant Regional Director Date

_____ _____

Regional Director Date

TABLE OF CONTENTS

INTRODUCTION

The Bureau of Sport Fisheries and Wildlife established a field office in Panama City, Florida in 1968. The office was shared by Fishery Research, Fishery Services, and Law Enforcement. The focus of the Fisheries Office was restoration of Gulf of Mexico anadromous fish stocks, especially Gulf strain striped bass. Other program priorities have been developed since the office was established. These currently include: providing technical assistance for the management of fishery resources on Federal lands in Florida and Georgia (1970s); restoration and recovery of Gulf sturgeon (1980s); ecosystem monitoring on Eglin Air Force Base (AFB) (1999); Partners for Fish and Wildlife (2000); and freshwater mussel restoration, recovery, and conservation (2002).

In January 1987, the Fisheries Resources Office (FR) was reorganized as a combined office with Ecological Services (ES) under one Project Leader at the Panama City Field Office (PCFO). Since that date, both programs have benefited by pooling the office's resources to implement the mission of the U.S. Fish and Wildlife Service (USFWS). Currently the fisheries staff consists of six biologists, one student conservation association intern (Table 1) and support staff is shared with Ecological Services (Figure 1).

PCFO moved during March 2001 and is currently located at 1601 Balboa Avenue, Panama City, Florida 32405 (Figure 2). Contact PCFO by phone at (850) 769–0552 or by fax at (850) 763–2177.

Table 1. Panama City Fisheries Resources Office Staff during FY 2002.

Staff Name	Status	Program Lead
Holly Blalock-Herod	FTE	Freshwater Mussel Recovery and Restoration
Gail Carmody	FTE*	Project Leader
Jason Dickey	SCA Intern	Technical Assistance–current
Michelle Giorgianni	SCA Intern	Technical Assistance–May 2001/02
Jeffrey Herod	4-yr Term	Eglin AFB, Ecosystem Monitoring Using Fishes
Bob Jarvis	FTE*	Technical Assistance
Laura Jenkins	FTE	Striped Bass Restoration
Chris Metcalf	FTE	Partners for Fish and Wildlife
Frank Parauka	FTE	Gulf Sturgeon Recovery
Barbara Stanley	FTE	Office Automation Assistant
Theresa Thom	SCEP	Eglin AFB, Ecosystem Monitoring Using Aquatic Insects

* Indicates Panama City Field Office staff shared with Ecological Services.

Figure 1. Panama City Field Office Staff. Top row, left to right: Gail Carmody (Project Leader), Bob Jarvis (ES/FR), Andrew Aloise (LE), Jon Hemming (ES), Theresa Thom (FR), Frank Parauka (FR), and Paul Lang (ES). Middle row: Michelle Giorgianni (FR). Bottom row, left to right: Hildreth Cooper (ES), Patty Kelly (ES), Jeff Herod (FR), Holly Blalock-Herod (FR), Barbara Stanley (FR), Mary Mittiga (ES), Lorna Patrick (ES), Laura Jenkins (FR), Bill Lynn (ES), Denise Hinegardner (ES), Connie Bowman (Contract), Wendy Gierhart (ES), Jerry Ziewitz (ES), and Chris Metcalf (FR). Not Pictured: Kathy Hoffmaster (ES), Mike Brim (ES), Stan Simpkins (ES), Peggy Whittaker (RO), Laura Kovatch (ES), and Jason Dickey (FR).

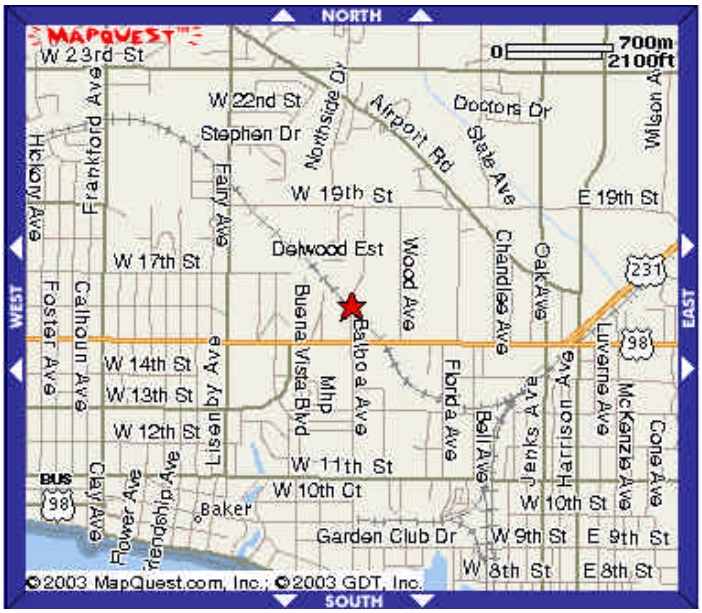

Figure 2. Red star indicates location of the Panama City Field Office (PCFO) at 1601 Balboa Avenue, Panama City, Florida 32405. The office moved to this location in March 2001. It is a GSA leased facility.

HIGHLIGHTS FOR FY 2002

1. United States Senator Bob Graham assisted with a Gulf sturgeon survey.
2. Completed 3-year Gulf sturgeon population study in the Choctawhatchee River drainage.
3. Completed Gulf sturgeon potential spawning habitat survey for Northwest Florida and Southeast Alabama river systems.
4. Initiated Gulf sturgeon marine habitat and food resources study.
5. Completed Gulf sturgeon sentinel fish study.
6. Coordinated and conducted tagging of over 110,000 Phase II striped bass at Welaka and Warm Springs National Fish Hatchery.
7. Completed Okefenokee National Wildlife Refuge fishery sampling.
8. Developed a manuscript regarding the fishery of Banks Lake NWR.
9. Initiated development of a fish Index of Biotic Integrity for Florida panhandle streams.
10. Coordinated Okaloosa darter workshop.
11. Continued examining insect communities on Eglin AFB.
12. Sponsored and coordinated stream restoration workshop.
13. Provided technical assistance via Partners for Fish and Wildlife for stream restoration within the Northeast Gulf Ecosystem.
14. Finalized regional curve development in the Northern Region of Florida and secured significant funds for FY03 to expand to other regions in Florida.
15. Initiated freshwater mussel conservation in the Northeastern Gulf Ecosystem.

PROGRAMMATIC OPERATIONS

I. Gulf Sturgeon Recovery

Gulf Sturgeon Population Survey in the Choctawhatchee River, Florida

The third and final year of a Gulf sturgeon population survey was completed in the Choctawhatchee River. The survey was conducted from 9 October through 8 November 2001 to coincide with the species fall migration from freshwater to the marine environment. Gulf sturgeon were captured from dawn to dusk using four sinking gill nets (8 ft to 20 ft deep; 140 to 250 ft long; 5 to 14 inch stretch mesh) set perpendicular to the river bank, covering about 75% of the river. All sturgeon captured were measured (fork and total lengths – TL), weighed, and tagged with Floy T-bar and anchor tags attached to both pectoral and pelvic fins. In addition, each fish was tagged with a Passive Integrated Transponder tag (PIT) injected into the tissue at the base of the dorsal fin. A total of 188 Gulf sturgeon were collected, tagged, and released during FY02 (Figure 3). Additionally, eleven fish were equipped with external sonic tags and four were also fitted with external pop-up archival tags.

Figure 3. Volunteers from Florida Fish and Wildlife Conservation Commission assisted with the Gulf sturgeon population survey in the Choctawhatchee River (Photo Credit: Frank Parauka).

The Gulf sturgeon collected during FY02 ranged from 21to 90 inches TL and weighed from 1 to 162 pounds. Sub-adults (<40 lbs) represented 44.1% of the sample, and large fish (>100 lbs) accounted for 8.1% of the catch. Approximately 18% of the fish captured in FY02 were juveniles (19 to 29 inches TL, ages 2 to 4), which was a large increase from 1.8% and 0.5% documented in 1999 and 2000, respectively. The population of Gulf sturgeon over 24 inches TL was estimated at

2,800 fish using the Peterson index. Mortality, immigration, emigration, and tag loss were estimated at 16%. Two mortalities occurred during the survey. Gulf sturgeon population estimates within the Choctawhatchee River have remained fairly constant for the duration of the 3-year study, and ranged from 2,000 to 3,000 fish.

Recommendations:

1. ***Finalize a peer-reviewed publication detailing Gulf sturgeon population dynamics within the Choctawhatchee River Drainage of Alabama and Florida.***
2. ***Seek ways to protect and enhance important Gulf sturgeon habitat.***

Gulf Sturgeon Investigations in the Escambia River System, Alabama and Florida

During June, July, and August 2002, Gulf sturgeon tagging events were conducted in the Escambia River system, Alabama and Florida, to establish a group of marked fish for an FY03 capture/recapture study to estimate a population size. One hundred and twenty-eight Gulf sturgeon were tagged from three summer resting sites. In Florida, the summer resting sites were located about 10 and 15 river miles (RM) upstream of Escambia Bay and were approximately 1 RM and 300 yards in length, respectively. Seventy-three Gulf sturgeon were tagged at the first site and the second site yielded sixteen Gulf sturgeon. In Alabama, 39 fish were tagged at a small resting area (~300 yds in length) about 50 RM upstream of Escambia Bay. Collectively, the total length and weight of the fish ranged from 25 to 86 inches and 2 to 190 pounds, respectively. Seven fish collected during these events were previously tagged (Yellow River, N = 2 and Choctawhatchee River, N = 5) from other river systems indicating some straying among rivers.

Recommendations:

1. ***Conduct a 3-year Gulf sturgeon population study in the Escambia River drainage.***

Gulf Sturgeon Marine Habitat Use

During October and November 2001, eight Gulf sturgeon were equipped with pop-up archival tags in an effort to document winter movement and habitat use. The pop-up tags were attached externally by drilling through the dorsal scutes and looping a 100-pound monofilament line through the tag connection and the drilled scute. The tags record water temperature, depth, and light penetration (to calculate geo-location) and were expected to release from the fish during the first week of February 2002. Upon release, tag data are transmitted to a satellite, which will download the archived data. In addition to the pop-up tag, each fish was equipped with an external sonic tag to verify the presence, and continue monitoring movement of the fish once the pop-up tag was

released (Figure 4). Tags were

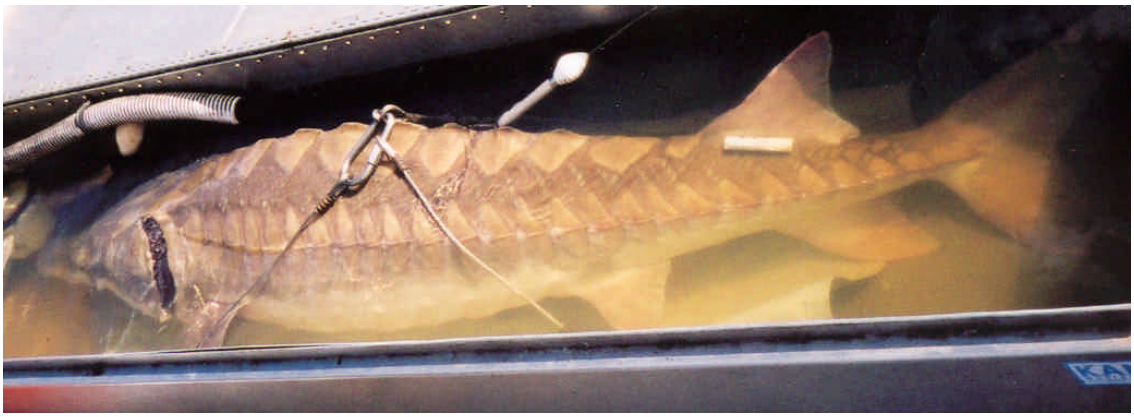

Figure 4. Gulf sturgeon with a pop-up archival tag (fourth scute anterior of the dorsal fin) and sonic tag (below dorsal fin) attached (Photo Credit: Frank Parauka).

placed on 8 Gulf sturgeon (100 to 162 lbs) from three river systems: Yellow (N=2), Brothers (N=2) and Choctawhatchee (N=4).

Only two of the eight pop-up tags linked up with a satellite as programmed and data were limited to the location where the tag popped up. One tag was retrieved from Choctawhatchee Bay (Hogtown Bayou), about 20 miles from the original capture and tagging site in the Choctawhatchee River, Florida. The other tag popped up in the Gulf of Mexico, about 1 mile offshore, near Mexico Beach, Florida, approximately 150 miles east of its original capture and tagging site in the Yellow River, Florida (Table 2). This tag was found by a tourist near Mexico Beach and was sent to the manufacturer for data retrieval since it was unable to download data to the satellite. The geo-location data from this tag was considered inaccurate since the data varied by as much as 20 degrees latitude (north and south) and 4 degrees longitude (east and west). However, archived water temperature data appeared accurate when compared to known temperatures for the Gulf of Mexico during winter, and depth data were indicative of the fish using habitats at 12 to 20 feet deep.

Table 2. Gulf sturgeon winter habitat data determined by presence of sonic tagged fish.

Original Tagging Site	Winter Location	Depth Range (ft)	Salinity (ppt)	Substrate

Choctawhatchee River, FL	Hogtown Bayou, Choctawhatchee Bay, FL	4 – 10	8 – 22	Mud and sand
Yellow River, FL	Gulf of Mexico	14 – 19	32	Sand

Estuarine and marine winter locations of the two fish with pop-up tag data were verified from their sonic signatures. Additional sonic tracking was conducted nearshore in the Gulf of Mexico, and three other (Choctawhatchee River, N = 2; Brothers River, N = 1) sonic tagged Gulf sturgeon were discovered within the area (0.25 to 1 mi offshore, 12 to 21 ft deep) (Figure 5). Not only does straying occur among river systems, but Gulf sturgeon from different river systems with differing genetic codes were found to be occupying marine habitats in the vicinity of each other.

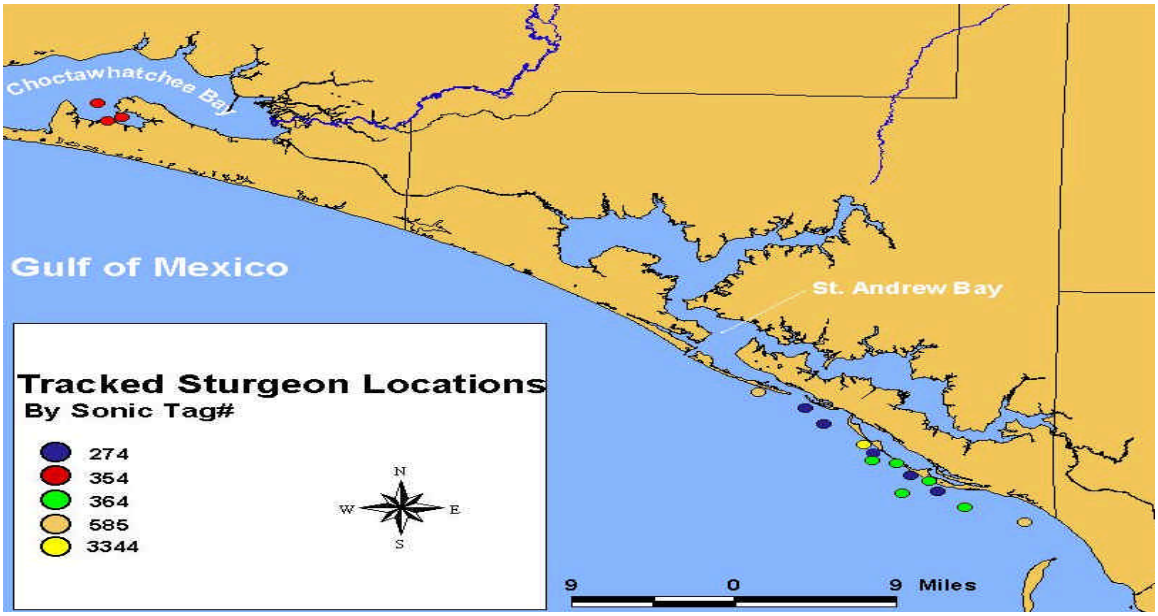

Figure 5. Winter FY02 location of sonic-tagged Gulf sturgeon (Map Credit: Jason Dickey).

During the summer resting period and fall of FY02, additional Gulf sturgeon were captured, tagged, and released in the Ochlockonee and Brothers Rivers in Florida to continue to document marine habitat use during the winter of FY03. Within the Ochlockonee River, 20 Gulf sturgeon (TL = 41 to 80 inches, 11 to 82 lbs) were tagged with Floy T-bar and PIT tags. In addition, 5 fish weighing from 42 to 82 pounds were equipped with sonic tags (18-month battery life) attached externally at the base of the dorsal fin. Interestingly, 3 of the 20 sturgeon examined from the Ochlockonee River basin had been Floy tagged previously (Suwannee River, N = 1; Brothers River, N = 2).

PCFO had a special volunteer assist with the capture and tagging of Gulf sturgeon from the

Brothers River. United States Senator Bob Graham spent a workday as a "Fisheries Biologist" and assisted in the collection of 22 Gulf sturgeon during a one-day period (Figure 6). This is among the highest number of Gulf sturgeon captured during a one-day survey. Senator Graham remarked that the high catch was a result of him being a "superior fisherman." A total of 48 Gulf sturgeon were captured and tagged in the Brothers River during the summer of FY02. The fish weighed from 3 to 112 pounds and ranged from 27 to 82 inches TL. One fish was equipped with pop-up tag and two Gulf sturgeon were equipped with 18-month sonic tags to continue examining marine migration routes in FY03.

Figure 6. United States Senator Bob Graham assisted Panama City Fisheries Resources Office by netting and tagging 22 Gulf sturgeon in one day! Front Left: U.S. Senator Bob Graham, Front Right: Frank Parauka, Back Left: Laura Jenkins, Back Right: Gail Carmody.

Recommendations:

1. ***Complete a peer-reviewed publication detailing preliminary results of Gulf sturgeon marine habitat use.***
2. ***Evaluate methods to better interpret the geo-location data obtained from the pop-up tags.***
3. ***Develop a study plan to evaluate and monitor Gulf sturgeon to determine marine movement patterns and characterize habitat use.***
4. ***Evaluate need to document Gulf sturgeon population dynamics in the Ochlockonee River drainage.***

5. ***Evaluate need to conduct a Gulf sturgeon population study in the Brothers and Apalachicola Rivers.***
6. ***Determine benthic food resources at the marine concentration sites.***

Gulf Sturgeon Diet Study

The majority of Gulf sturgeon feeding and growth occurs in the marine environment during the winter period. PCFO used gastric lavage techniques on 6 Gulf sturgeon (9 to 45 lbs) found in Alaqua Bayou, Choctawhatchee Bay, Florida, between March and April 2002. The gastric lavage method consists of inserting a 0.25-inch diameter flexible tube into the stomach of the fish and injecting water through the tube via a 2-gallon garden sprayer for approximately two minutes. During the procedure, the fish is kept dorsal side up with the head lower than the tail. A fine mesh sieve is positioned under the mouth of the fish to collect the stomach contents, which are then preserved in 4% buffered formalin. Only two of six fish produced stomach samples, which contained a small number of amphipods. All fish were released without any ill effects following the procedure.

At marine and estuarine locations known to support Gulf sturgeon during the winter, substrate samples were collected with a Petite ponar grab to identify potential food items. Lancelets and amphipods were identified from the grabs.

Recommendations:

1. ***Develop a study plan to continue to investigate preferred food items of Gulf sturgeon.***
2. ***Examine benthic invertebrate assemblages in areas known to support overwintering populations of Gulf sturgeon within the Gulf of Mexico and Choctawhatchee Bay to identify potential food resources.***

Gulf Sturgeon Sentinel Project

The U.S. Fish and Wildlife Service (USFWS) and the Georgia Department of Natural Resources (GDNR) initiated a cooperative study to evaluate the use of sterilized hatchery-reared Gulf sturgeon for documenting movement patterns and habitat use in the Apalachicola-Chattahoochee-Flint (ACF) River System. Eleven sentinel Gulf sturgeon (10 to 13 lbs) were raised at Welaka National Fish Hatchery (NFH), surgically sterilized, and implanted with radio transmitters, Floy T-bar tags, and PIT tags at Warm Springs Regional Fisheries Center (RFC). A total of eight sentinel fish were released above Jim Woodruff Lock and Dam (JWLD) in Lake Seminole and three fish were released below JWLD in the Apalachicola River. In addition, 5 wild fish (12 to 50 lbs) were collected below JWLD, implanted with radio transmitters, and then released. Telemetered fish were monitored from May through September 2002, by PCFO below JWLD, and by GDNR above JWLD. Once telemetered fish were located, coordinates were recorded using a handheld GPS unit; water chemistry, depth, and substrate composition were noted.

Six of the eight radio tagged fish released above the JWLD moved downstream through the lock or open floodgates within 8 to 83 days from their release. GDNR biologists documented that one fish moved back and forth between the reservoir and the tailwaters of the dam. Sentinel hatchery-reared Gulf sturgeon released below the JWLD behaved similarly to telemetered wild fish. Both groups exhibited downstream and upstream movement in the Apalachicola River below JWLD and occupied some of the same habitat. No fish released below JWLD were located above the dam. The telemetered fish in both Lake Seminole and the Apalachicola River were located over substrates of silt, sand, and rock. Gulf sturgeon in this study did not seek cool water refuges or appear to show any selection related to temperature or dissolved oxygen. The average depth occupied by tagged Gulf sturgeon throughout the study period was 21 feet. The results of this study show that sterilized hatchery-reared Gulf sturgeon occupied similar habitats and exhibited much the same movements as their wild counterparts. Additionally, fish released above JWLD can successfully pass downstream through the dam.

Recommendations:

1. ***Sterilized, hatchery-reared, Gulf sturgeon sentinel fish may be a viable management option for locating wild fish and their habitats.***
2. ***Continue discussions with Corps of Engineers and others on the need for fish passage at JWLD.***
3. ***Work with GDNR to publish the results of this study.***

Availability of Potential Gulf Sturgeon Spawning Habitat

PCFO personnel completed a survey sponsored by the Florida Fish and Wildlife Conservation Commission (FWC) documenting the availability of potential Gulf sturgeon spawning habitat in northwest Florida and southeast Alabama River systems. Potential spawning sites from six river systems (Ochlockonee, Apalachicola, Choctawhatchee and Pea, Yellow, and Escambia/Conecuh) were identified by visually characterizing habitats (e.g., limestone bluffs, walls, outcroppings, hard substrate) that appear similar to known Gulf sturgeon spawning areas in the Suwannee, Choctawhatchee, and Escambia River systems (Figure 7). Each river was floated downstream from the first obstruction that would (in normal water years) most likely be the upper reach for Gulf sturgeon distribution. Locations of each site were recorded with a GPS unit and photographed. Physical features (substrate, length of site, water depth, bluff, outcropping, etc.) were documented.

Figure 7. Limestone bluffs and limerock substrate were documented as potential Gulf sturgeon spawning habitat (Photo Credit: Frank Parauka).

One hundred and fifty-two sites, totaling 58 miles, were identified as having characteristics similar to documented Gulf sturgeon spawning habitat (report available upon request). Potential Gulf sturgeon spawning sites ranged from small individual sites (~150 ft in length) to numerous sites within a longer river reach (up to 4.5 mi) (Figure 8). Nearly 90% of the available Gulf sturgeon spawning habitat was located in Alabama (Figure 9). The Alabama portion (Conecuh River) of the Escambia River had the most potential Gulf sturgeon spawning habitat, with 24 miles followed by the Pea River (20 mi), Choctawhatchee River (8 mi), Apalachicola River (4 mi), Yellow River (1 mi) and Ochlockonee River (1 mi).

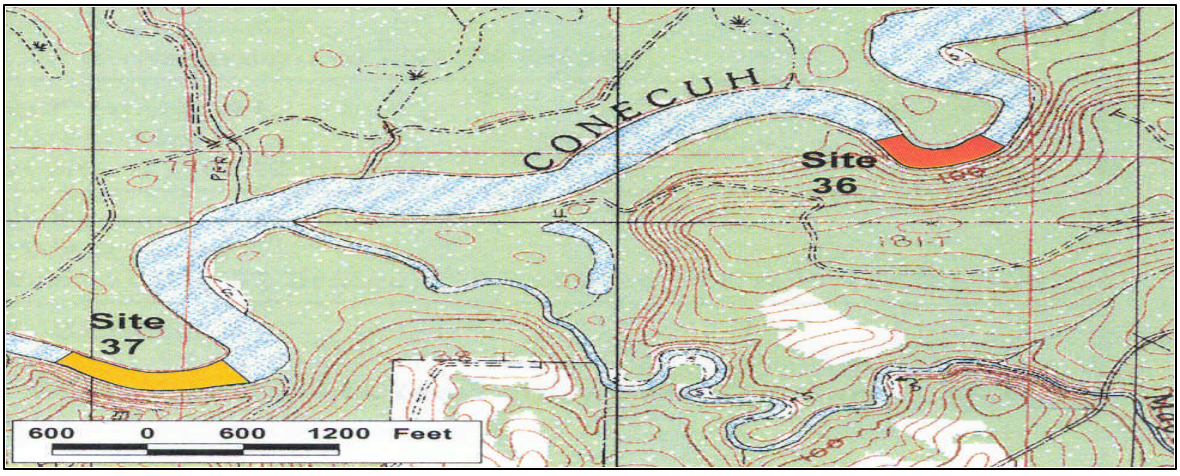

Figure 8. Documentation of potential Gulf sturgeon spawning habitat at two small sites on the

Conecuh River, Alabama (Map Credit: Michelle Giorgianni).

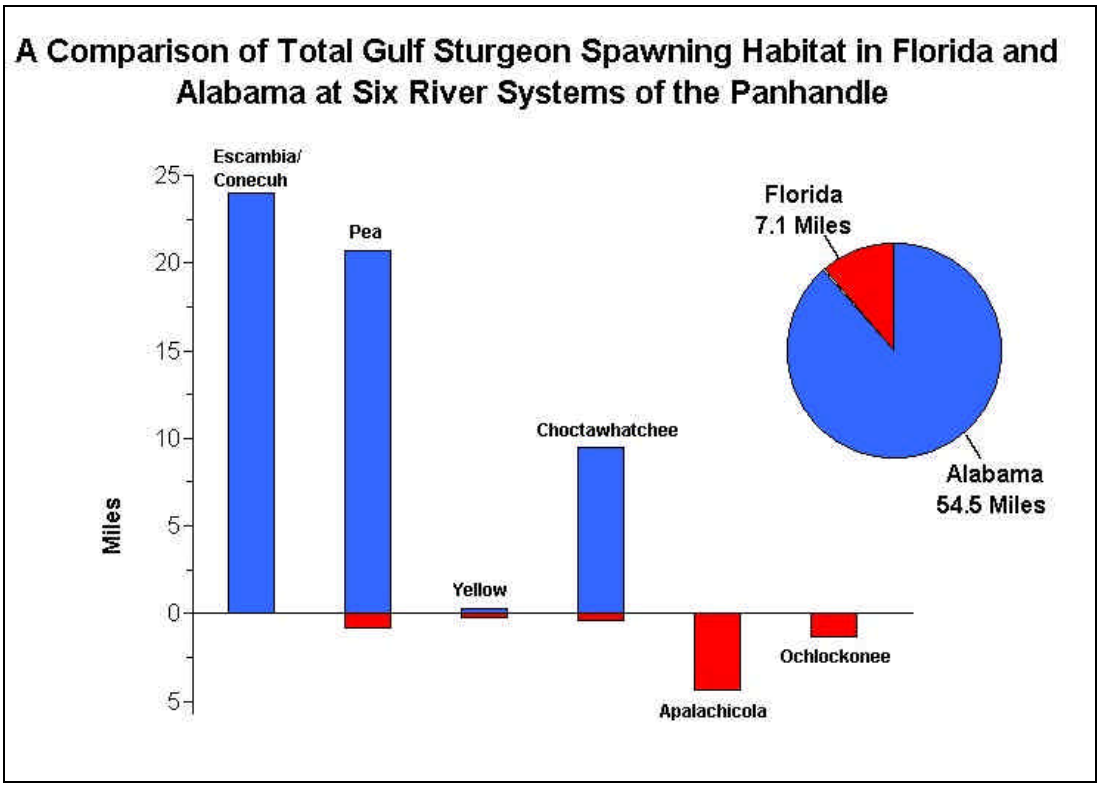

Figure 9. Potential Gulf sturgeon spawning habitat in Florida and Alabama. Amount of potential spawning habitat is represented by blue bars for Alabama and red bars for Florida.

PCFO personnel examined potential Gulf sturgeon spawning habitat in a number of other river systems. This work was done in addition to the Florida panhandle watersheds study. All spawning habitat characterizations support the USFWS proposed designation of critical habitat for the Gulf sturgeon (68 FR 13370). Potential spawning habitat was located in the Chickasawhay, Leaf, and Bouie Rivers in Mississippi and the Pearl and Bogue Chitto Rivers in Mississippi and Louisiana. PCFO also floated the Suwannee River, examining known spawning habitats and documenting potential habitats based on the criteria above. A report is available regarding the Suwannee River known and potential spawning habitat.

Recommendations:

1. ***Determine if the amount of potential spawning habitat within a river system is related to the number of Gulf sturgeon within the system.***
2. ***Develop study plan and document spawning at potential spawning habitats to further characterize and understand physical and chemical parameters related to Gulf sturgeon spawning sites.***

II. Striped Bass Restoration

Stocking Activities

PCFO and Welaka NFH coordinated the distribution of Gulf striped bass fry to Federal and State fish hatcheries that participate in the Gulf striped bass stocking program. In April 2002, Welaka NFH produced over 2.9 million fry from 7 females collected from the ACF River system, and the State of Alabama provided over 1 million Gulf striped bass fry for Gulf-wide restoration efforts as part of a 1999 Memorandum of Agreement. The Florida Fish and Wildlife Conservation Commission (FWC), Blackwater Fisheries Research and Development Center in Holt, Florida, also provided 460,000 fry from broodfish collected in Lake Talquin, Florida. Conditions in all watersheds continued to be dry as the area entered its fourth consecutive year of drought.

PCFO coordinated the stocking of Phase I and Phase II Gulf striped bass for the ACF River system and other Gulf coast river systems and impoundments. Though almost 822,000 Phase I striped bass were stocked in Gulf of Mexico river systems, the requested stocking number of 1.7 million was not achieved. Drought and low river flows made it difficult to collect the number of broodfish needed to produce the number of fry requested. In the ACF system, Lake Seminole, Florida and Georgia received half of the requested 400,000 Phase I fish, and Bartlett's Ferry, Georgia, did not receive any fish. Lake Blackshear, Georgia received the requested number and the Apalachicola River received over 73,000 Phase II fish of the 100,000 requested. Most of the areas outside of the ACF that requested Gulf striped bass received some fish. Ross Barnett Reservoir, Mississippi received 15,000 Phase II fish instead of their requested number of 150,000 Phase I fish. Ross Barnett Reservoir may be a future broodstock location. Stocking rates and locations were determined at the Annual *Morone* Workshop.

Recommendations:

1. Continue to coordinate Gulf striped bass broodfish, fry, and fingerling distribution and stocking.

Contribution of Hatchery and Naturally Produced Striped Bass to the Apalachicola River Fishery

Concern has been raised regarding the contribution of hatchery Phase I, hatchery Phase II, and naturally produced striped bass to the overall fishery in the Apalachicola River basin. A Draft study plan was developed in conjunction with Natchitoches NFH, Louisiana; Welaka NFH; Regional Office; and PCFO during FY02 that will assess the contribution of these fishes to the broodfish

population by utilizing a suitable long-term tag and marking method on all stocked fish. In addition, the best stocking locations based on habitat type and long-term survival will be evaluated. All fry from the 2001 year-class were immersed in an oxytetracycline (OTC) bath at Welaka NFH in order to mark otoliths for future evaluations. Any fish collected after this time period that exhibits an OTC mark on the otolith will be identified as a hatchery fish. All Phase II fish stocked in the Apalachicola River were marked with OTC and a decimal coded wire tag (DCWT) in order to evaluate stocking success and determine the best stocking locations (Figure 10). Tagging with DCWT was conducted at Warm Springs NFH in November 2001 and at Welaka NFH in January 2002, with almost 30,000 and 80,000 Phase II fish tagged, respectively. Fish were stocked at multiple locations in the Apalachicola River system. Fall electrofishing evaluations will begin in October 2002 (FY03).

Recommendations:

1. ***Complete study plan and evaluate the contribution of naturally produced, Phase I, and Phase II striped bass to the fishery.***
2. ***Continue marking all striped bass with OTC and all Phase II fish with a DCWT.***
3. ***Conduct fall electrofishing evaluations as outlined in the study plan.***

Figure 10. Tagging striped bass at Welaka National Fish Hatchery, January 2002 (Photo Credit: Laura Jenkins).

ACF Striped Bass Technical Committee

A Cooperative Agreement was signed in 1987 between Florida, Georgia, Alabama, and the USFWS to establish, by mutual consensus, the restoration of striped bass in the ACF river system. The Annual *Morone* Workshop is an opportunity for all interested parties to review management strategies and status of striped bass in the ACF river system, as well as other Gulf river systems. Gulf striped bass stocking goals and priorities for the ACF and other Gulf coast river systems are determined at the Annual *Morone* Workshop. A summary report of the annual workshop is available from PCFO. In the Cooperative Agreement, it specified that a Technical Committee develop and implement a striped bass restoration plan for the ACF River system and provide reports at the Annual *Morone* Workshop. This technical team, composed of a member from each signatory agency has been established. The technical team met in September 2002 to evaluate progress on the 5-year implementation plan and the need to update it.

Recommendations:

1. ***Continue to coordinate and participate in the ACF striped bass technical committee and Annual Morone Workshop.***
2. ***Update the 5-year implementation plan and coordinate goals and objectives with the Gulf States Marine Fisheries Commission.***

III. Fishery Assistance on Federal Lands – National Wildlife Refuges (NWR)

Okefenokee NWR, Georgia, 2002 Sampling

Okefenokee NWR was sampled during January 2002. Fish community composition consisted of 557 individual fish, from 14 species, representing 10 families. Community composition as catch per unit effort (CPUE) among species was not different between the prairie and canal habitats ($p = 0.8291$). Overall species composition was dominated by bowfin (57%). Fliers were the second most common species (16%). Relative Stock Density (RSD) indicated that 1% of the fliers were preferred/memorable/trophy size (>6 inches), 39% quality size (6 inches), 54% stock size (3 inches), and 6% juvenile size (<3 inches). Flier size categories were modified from size designations for bluegill. The sport fishery appears to currently be limited to fliers and warmouth. The composition of these fisheries should presently, and in subsequent years, yield quality fish. Analysis of data collected between 1993-2002 will provide insight concerning changes of biodiversity, community structure, and sport fishery dynamics within Okefenokee NWR. A summary of the 2002 sampling event is available upon request and was submitted to the Regional Office and the Refuge.

Banks Lake NWR, Georgia, Fishery

Banks Lake NWR is sampled every odd numbered year; therefore, it was not sampled during 2002. A manuscript is in review describing the fishery community over the last 10 years. The following is a summary from the manuscript.

Fishery data from Banks Lake NWR were collected from seven sampling periods during the late summer or fall from 1992 through 2001. Banks Lake NWR has supported over 21 species of fish from 12 families. Variation was relatively high within bluegill and largemouth bass mean TL and Proportional Stock Density (PSD) – significant changes in TL and PSD were detected for both species. Bluegill and largemouth bass CPUE remained fairly constant throughout the study. During the study period, 24% of the bluegill and 68% of the largemouth bass were of quality size or better (bluegill $\geq$ 6 inches; largemouth bass $\geq$ 12 inches).

Recommendations:

1. ***Complete peer-reviewed publication regarding Okefenokee NWR Fishery.***
2. ***Conduct a meeting with Okefenokee/Banks Lake NWR and U.S. Geological Survey (USGS) co-op unit at the University of Georgia to determine the Refuge's needs, outline objectives and achievable goals, and discuss future commitments on the part of PCFO, USGS, and the Refuge.***

IV. Fishery Assistance on Federal Lands – Eglin Air Force Base Ecosystem Monitoring

Index of Biotic Integrity

Development of an Index of Biotic Integrity (IBI) for streams on Eglin Air Force Base (AFB) was initiated in July 2002. A study plan (available upon request) was completed and peer reviewed for developing and implementing a stream assessment project on Eglin AFB using fishes (Figure 11). Sampling of fishes has resulted in measures of effort, linear distance, and number of fishes. Preliminary results (n=8 sites) indicate that a sample reach of 328 to 492 feet (100 to 150 m) will result in an asymptote on cumulative species curve. To date, a total of 8,200 feet (2,500 m) from 13 sites have been sampled in the Yellow River drainage. A preliminary count of fishes identified in the field resulted in a total of 11 families, 17 genera, 27 species, and 1,188 individuals. This project is ongoing and will result in testing several assessment tools as predictors of stream condition (e.g., Shannon-Weiner Diversity Index and stream morphology) to aid Eglin AFB natural resource managers in decision-making. Quarterly and annual reports are available upon request. Presentations regarding stream habitat assessment and the IBI were given to the Eglin Natural Resources Working Group (a panel of experts from around the U.S.) and to PCFO.

Recommendations:

1. ***Complete sampling and begin testing the Fish IBI for Eglin Air Force Base.***
2. ***Complete draft of Fish IBI for peer-reviewed publication.***

Figure 11. Volunteers assisting PCFO at Eglin AFB by seining streams to determine fish community composition for use in developing an Index of Biotic Integrity for the Florida panhandle (Photo Credit: Jeffrey Herod).

Okaloosa Darter Monitoring

The Okaloosa darter is a federally endangered stream fish species (Figure 12). A workshop was held in August 2002 to evaluate recovery effort for the Okaloosa darter. As a result of this workshop, a PCFO fishery biologist based at Eglin AFB will coordinate study plan development for future projects concerning Okaloosa darters. Additionally in FY03, PCFO at Eglin AFB will be responsible for sampling monitoring sites off Eglin AFB in November 2002 and will coordinate spring 2003 darter monitoring and workshop activities.

Recommendations:

1. ***Continue Okaloosa darter monitoring and coordination activities.***
2. ***Identify and seek means to resolve threats to Okaloosa darter habitats.***

Figure 12. Okaloosa darter (*Etheostoma okaloosae*). Distance between black lines equals 0.39 inches (1 cm) (Photo Credit: Jeffrey Herod).

Aquatic Insect Monitoring

Since the start of the aquatics program in 1999, 201 aquatic insect samples have been collected on Eglin AFB, totaling 32,964 feet (10,050 m) sampled in six main drainages. Preliminary counts of aquatic insects identified represent 11 Orders, 88 Families, 209 Genera, 358 species, and 21,956 individuals. To date, taxonomic analysis shows 51% of the insect taxa collected represent the three orders considered sensitive to environmental degradation: Ephemeroptera, Plecoptera, and Trichoptera. These collections include both larval and adult aquatic insects. Species counts do not reflect the recent reorganization of the mayfly family Baetidae. Species level taxonomic work has not yet been completed on the Chironomid midge larvae.

During 2002, a total of 50 aquatic insect samples were collected, covering roughly 8,200 feet (2,500 m). Several sites were sampled in conjunction with biologists from the Florida Department of Environmental Protection and Florida A&M University in order to maintain current QA/QC standards for data collection and analysis.

Recommendations:

1. ***Complete a study plan detailing benthic invertebrate monitoring on Eglin AFB.***
2. ***Complete benthic invertebrate monitoring on Eglin AFB.***

V. Partners For Fish and Wildlife

Habitat Restoration and Coordination Activities

The Partners for Fish and Wildlife (PFW) program funded five restoration projects in FY02 that focused on longleaf pine/wiregrass, natural channel design, coastal strand, exotic species removal, and two outreach events.

One longleaf pine/wiregrass project was funded for $14,500, of which, $7,250 was federally matched by the PFW program. The Anderson property focused on multi-use management. The primary objective was to provide responsible conservation stewardship by restoring and enhancing native wildlife habitat and aesthetics qualities, and stabilizing non-active rangeland. Thirty-four acres of upland habitat were restored with longleaf pine and native ground cover, and approximately five acres of bottomlands were enhanced with wildlife clearings and preferred vegetation plantings.

The PFW program funded $1,100 to the Bay County Conservancy at a 50/50 cost share to eradicate 60 acres of exotic plant species, mainly Chinese Tallow trees. Exotic species were removed mechanically and by using a concentrated herbicide. Removing exotic species is considered a high priority by the State of Florida.

Two stream restoration projects were funded at a total cost of $225,000, of which, $45,000 was federally matched by the PFW program. The Clear Creek Restoration Project is in the design phase and will stabilize 45 acres of an abandoned borrow pit that currently contributes mass quantities of sediment into Clear Creek, a tributary to Blackwater River and Bay, which was designated as critical habitat for Gulf sturgeon. The Wrights Creek Restoration Project is in the design phase and entails reducing and eliminating upland erosion and transportation of sediments and re-establishing the stream channel. Two sites will be restored; approximately 5 acres of streamside frontage on State Road (SR) 79 and about 4 acres and 0.13 miles of stream along SR 177A, Holmes County, Florida. The Wrights Creek Restoration Project will benefit the following mussel species that have been proposed as candidates for protection under Endangered Species Act: tapered pigtoe, Choctaw bean, and fuzzy pigtoe.

Technical support was provided for the Piney Woods Spring restoration project. The objective of this project was to restore the natural hydrologic regime and biological function to a spring within a highly diverse aquatic ecosystem: Holmes Creek, Washington County, Florida. Piney Woods Spring is one of 51 that have been identified within the watershed for restoration. This project potentially benefited fish, and rare mussels and snails within the spring, spring run, and Holmes Creek by ensuring sustainable water levels. The project was initiated by the Citizens Preservation Council of Washington County along with USFWS, Northwest Florida Water Management District, Washington County Commissioner, and volunteers from EnSafe Environmental Management Consultants. The project took approximately four days to complete and included removal of woody debris, silt and muck sediment, and foreign objects blocking the spring vent (Figure 13). After physical restoration of the spring vent was completed, native vegetation was added to the banks to stimulate natural succession (Figure 14).

Two outreach programs were funded at a total cost of $26,000, of which, $7,000 was federally

matched by the PFW program. The first project, in cooperation with Escambia County, is a pilot video for an environmental/natural resources television show which will be produced. It will lead into a series of six shows that focus on ecosystem restoration and

Figure 13. Piney Woods Spring, Washington County, Florida before habitat restoration.

Figure 14. Piney Woods Spring, Washington County, Florida after habitat restoration.

enhancement, stormwater, wetlands, and ozone issues. The show will be filmed at various locations throughout the county and experts within a particular field of discussion will be featured. This program will help inform citizens of their surrounding environments and hopefully foster a conservation ethic within the community. In addition, an environmental outreach and educational club will be formed for children called the "Resources Rangers Club." Children will sign a pledge to protect the environment.

The second outreach project, coordinated by PFW and Santa Rosa Sea Grant Extension with outside funding from the Escambia County Engineering Department, consisted of a two-day stream restoration workshop using natural channel design. This was an introductory course covering stream classification, stream dynamics, geomorphology, and restoration principles directed at engineers, biologists, and natural resource managers in the Northwest Florida Region.

Several partnerships were developed along the panhandle of Florida to enhance about 66 miles of coastal strand areas for sea turtle habitat protection. This was accomplished by installing sea turtle friendly lighting and window tinting at several private landowner beachfront sites, which should limit disorientation of sea turtles after nesting. Total project cost was $50,000, of which, $25,000 was federally matched by the PFW program.

Recommendations:

1. ***Develop study plans to evaluate the success of stream and terrestrial restorations completed using PFW funds.***
2. ***Complete Clear Creek and Wrights Creek stream habitat restoration projects and select a third stream for restoration.***
3. ***Complete three to five longleaf pine projects and/or exotic plant species removal projects.***
4. ***Continue to fund sea turtle lighting projects, environmental outreach, and stream restoration workshops in the Florida Panhandle counties.***

Regional Curve Development, Reference Reach Stream Assessments, and Natural Channel Design

Stream site assessments were completed for Florida's Northern hydro-physiographic region. PCFO secured $225,000 from the Florida Department of Transportation to gather data and finalize regional curves in the Northern and Central Highlands regions of Florida, which should be completed by FY04. Four stream assessments were completed in FY02 to represent reference reach criteria for stream restoration projects. This includes Big Coldwater Creek, East Bay River, Little Escambia Creek, and Bear Creek.

In cooperation with the U.S. Army Corps of Engineers, a stream restoration project was designed for Big Escambia Creek, Escambia County, Florida. Reference reach stream assessments and natural channel design has been completed. Examination of the fish community to evaluate the success of the restoration has begun (see below – Big Escambia Creek Fish Community Monitoring).

Recommendations:

1. ***Further develop regional curves at more sites with gauging stations and other areas within the Northeast Gulf Ecosystem (NEG) through FDOT funding.***
2. ***Conduct reference reach data on four additional NEG streams.***
3. ***Begin development of sediment discharge and bank erosion rates in the NEG.***
4. ***Begin watershed assessments in three NEG watersheds of concern.***

Big Escambia Creek Fish Community Monitoring

To assess the success of habitat restoration in Big Escambia Creek (BEC), a study plan was developed to monitor fish community structure (available upon request). Success of the restoration will be measured using a Florida Panhandle IBI for fishes that is currently under development by PCFO at Eglin AFB. One measure of habitat restoration success will be determined by evaluating IBI and diversity index scores. If scores remain stable or increase after restoration has been

completed, the project will be considered successful from a diversity standpoint. Annual samples in both BEC and the "control stream" Little Escambia Creek (LEC) were completed by PCFO during May 2002. At both sites, 1,968 feet (600 m) were backpack electrofished and 1,968 feet (600 m) were seined (Figure 15). Thirty-six species from 13 families were documented in BEC, including several species considered imperiled within the State of Florida. Analysis of LEC fishes has not been completed. Fish collections were field identified by PCFO with guidance from Dr. James D. Williams (USGS, Gainesville, Florida). Voucher specimens were retained from field collections for future reference.

Recommendations:

1. ***Complete an interim report detailing the fish fauna of BEC and LEC before habitat restoration.***
2. ***Complete second annual sample of BEC and LEC during May 2003.***

Figure 15. PFCO fishery biologists seining fish to assess community composition in Little Escambia Creek, Alabama (Photo Credit: Laura Jenkins).

Technical Assistance

PCFO provided technical assistance on approximately 10 miles of streams for the protection, restoration, and enhancement of the natural channel. Various Federal, State, and local agencies requested assistance on impacted and unimpacted reaches to determine future restoration and

protection needs. These streams included: Collins Mill Creek near Milton; several streams on Eglin AFB; Carpenters Creek, Pensacola; Deans Creek, Navarre; and Apalachicola River, near Wewahitchka, all in Florida.

Recommendations:

1. ***Continue to provide technical assistance through the PFW program for private landowners, local and State governments, and Federal agencies.***

VI. Native Freshwater Mussel Recovery and Restoration

Northeastern Gulf Ecoregion Native Mussel Conservation Strategy

In the winter months of 2002, a strategy (based on the National Strategy and locally/regionally specific issues; available upon request) was outlined to promote mussel conservation within Northeastern Gulf (NEG) rivers focusing on habitat restoration, monitoring, and life history and ecology. Four issues and goals were identified and objectives to meet these goals were outlined. Three flex fund proposals for implementation of the strategy were developed. The first proposal outlines methods to complete an updated status survey for the Ochlockonee moccasinshell, possibly the most endangered mussel within the NEG (see below regarding the first year of the status survey). The second proposal was written to obtain funds for Warm Springs NFH to begin propagation technology for various moccasinshell species, all of which are protected by the ESA or considered (by experts) imperiled or extinct. The third proposal was written to obtain funds to complete a freshwater mussel pamphlet (see below). PCFO, in conjunction with USFWS, Asheville, North Carolina, developed a proposal for USGS, Gainesville, Florida and University of New Orleans to complete a genetic analysis of Eastern Gulf Coast *Pleurobema* in order to identify cryptic diversity for management and future propagation needs. This project was funded by USFWS, Athens, Georgia.

Recommendations:

1. ***Refine NEG Native Mussel Conservation Strategy.***
2. ***Continue to develop proposals and seek funding to support Native Mussel Conservation Strategy in NEG.***
3. ***Develop partnerships with State and NGOs to support Native Mussel Conservation.***
4. ***Develop Standard Operating Procedures for freshwater mussel surveys.***
5. ***Develop a candidate elevation package for imperiled mussels in the Escambia, Yellow, and Choctawhatchee River drainages of Alabama and Florida.***
6. ***Develop and implement study plan to examine reproductive period in candidate mussel species.***

Mussel Status Surveys in NEG River Basins

The mussel strategy was implemented in two NEG basins by initiating surveys for monitoring purposes. A study plan is available upon request. The Ochlockonee River basin of Florida and Georgia was sampled between July and August 2002 (Figure 16). Seventeen sites that historically (late 1800s - 1993) supported listed species were examined. Shinyrayed pocketbooks (Endangered), oval pigtoes (Endangered), and purple bankclimbers (Threatened) were located at a total of three sites. Unfortunately, no Ochlockonee moccasinshells (Endangered) were found; however, efforts will continue in FY03. Sites supporting listed species were confined to a 25-mile river reach in the main channel of the Ochlockonee River basin. An interim report is available upon request.

Figure 16. Volunteer help from Warm Springs NFH staff was instrumental in conducting sampling for freshwater mussels in the Ochlockonee River basin during a drought (Photo Credit: Holly Blalock-Herod).

In Econfina Creek basin, five sites were sampled and three sites yielded Gulf moccasinshells (Endangered) and oval pigtoes. Once the surveys are complete, long-term monitoring sites will be established in both basins. Assistance for the survey work was provided by USFWS, Warm Springs NFH, PCFO at Eglin AFB, PCFO Ecological Services, and Apalachee Ecological Conservancy, Inc., Panacea, Florida.

Recommendations:

1. ***Complete status surveys in the Ochlockonee River basin.***
2. ***Identify threats to native mussels in the Ochlockonee River and Econfina Creek basins and solicit resources and partners to help eliminate threats.***

Mussel Sampling Site GIS Database

During the past two centuries, over 800 unique sites have been sampled for mussels from NEG Coastal drainages in Alabama, Georgia, and Florida. These data are available in published and unpublished manuscripts, field notes, and museum records, but have not been compiled in one uniform catalogue. In order to initiate freshwater mussel conservation actions in NEG aquatic systems, a consolidated approach was needed to track mussel sampling site locations. A GIS database was established to: 1) provide one system to combine records from various reports and published literature; 2) track ongoing survey sites; 3) identify locations of past and present communities that support(ed) federally listed or other species considered imperiled; 4) determine where data gaps exist; and 5) aid in the decision-making process concerning habitat restoration, long-term monitoring, and permitting/consultation issues. The database consists of linked tables that contain locality, collection, and species information. QA/QC procedures and database maintenance are performed by PCFO.

Recommendations:

1. ***Enter all existing mussel site data of the NEG to GIS database after QA/QC procedures have been completed.***
2. ***Identify areas that support listed, candidate, or imperiled species that are in need of habitat protection or restoration and begin soliciting appropriate resources to conserve these areas.***
3. ***Update GIS Mussel Tracking database as new data are obtained.***

Information Dissemination

A database of people conducting research within NEG has also been established. This database is to: 1) keep on hand the contact information for people currently conducting and interested in conducting research (of any kind regarding mussels) in NEG rivers; and 2) track current projects so that research efforts are not duplicated since funds are limited. Anyone wishing to be in this database can email his or her name, address, phone number, current project title (funds and funding source are optional), cooperators/partners, and comments to PCFO. The database is available to those who have submitted their information.

PCFO hosted a meeting with FWC to discuss potential partnerships. FWC is working cooperatively and has agreed to incorporate some of the mussel sampling sites from the Ochlockonee River survey as part of their ongoing fish community analysis. FWC's fish species list will provide insight to the life history of freshwater mussels by indicating which host fish are present at a site.

Recommendations:

1. ***Submit annual accomplishments to Ellipsaria, the newsletter of the Freshwater Mollusk Conservation Society.***
2. ***Present status survey results and GIS database at scientific meetings.***
3. ***Participate in a local outreach event to increase knowledge and understanding of freshwater mussels.***

Mussels and Clams in Florida's Freshwaters

In cooperation with FWC and USGS, a pamphlet is being developed for Law Enforcement and the general public to assist with understanding State and Federal regulations regarding freshwater mussels in Florida. The pamphlet contains general state distribution maps, a general discussion on why freshwater mussels are important, and explanations regarding Florida's regulations concerning take of native freshwater mussels and prevention of zebra mussels. Detailed original watercolor artwork will feature internal and external views of native and/or invasive species from all five families that occur in Florida's freshwaters. Additionally, all eight species given Federal protection will be highlighted to help the public protect these species.

Recommendations:

1. ***Obtain funds to complete artwork for pamphlet.***
2. ***Assist in completing text for pamphlet.***

OTHER PARTNERSHIPS

PCFO collected tissue samples of Gulf sturgeon for genetic analyses in a partnership with the University of Southern Mississippi, Hattiesburg; National Forensics Laboratory, Oregon; and USGS, Kearneysville, West Virginia.

During FY02, in conjunction with other USFWS offices and the Alabama Department of Conservation and Natural Resources, PCFO provided 315 hours of sample time in an effort to capture Alabama sturgeon for hatchery propagation. Over 100 fish, representing 11 different species, were collected. Unfortunately, no Alabama sturgeon were captured during the

investigation.

The PFW program worked with the Perdido River Partnership by providing management recommendations for the conservation easement along the river. PFW program also began development of four watershed partnerships: Pensacola Bay Clean Water Partnership, Holmes Creek Water Watch, Chipola River Friends, and Spring Creek Watershed Initiative.

A partnership among the Corps of Engineers (COE) and the three state fisheries agencies in the Apalachicola-Chattahoochee-Flint Rivers system was established. The partnership is led by PCFO and is to develop consensus recommendations on operating COE reservoirs to the benefit of both reservoir and riverine fishes.

PUBLIC OUTREACH

Earth Day

Theresa Thom, Jeff Herod, Holly Blalock-Herod, Frank Parauka, Bob Jarvis, and Kathy Hoffmaster (ES) participated in an Earth Day Celebration (April 21-23) at Eglin AFB. Over 20,000 students and families participated in the hands-on learning activities offered by over 200 exhibitors. PCFO organized two booths. The first displayed information concerning Gulf Sturgeon biology, tagging techniques, and equipment displays. Children were able to "track" Gulf sturgeon by listening for a sonic signal. The second booth displayed posters

Figure 17. Earth Day display at Eglin Air Force Base, Niceville, Florida.

depicting the balance in aquatic ecosystems including aquatic insects, fish, freshwater mussels, and plants (Figure 17). Children were allowed to touch aquatic plants and view preserved insects.

Bay Area Resource Council Symposium/Watershed Summit

Over 200 individuals from government, non-government, and the private sector attended the symposium. Chris Metcalf, Jon Hemming (ES) and Bill Lynn (ES) organized one booth, which focused on fisheries research, PFW program, and beach mouse research.

National Fishing Week

Frank Parauka, Bob Jarvis and Patty Kelly (PCFO, ES) participated in this year's National Fishing Week event at the Panama City Pier. The Florida Department of Environmental Protection sponsors a fishing clinic on Panama City Beach, and this year's event was attended by more than 450 kids. Twenty-eight sponsors helped provide a rod and reel to every participant in the event. Each child registered and proceeded to five different stations to learn about fish habitat, fishing ethics, casting, knot-tying, and fishing safety, and then received a free fishing pole and reel.

Pamphlets

The Gulf sturgeon pamphlet was revised and distributed.

MEETINGS AND PRESENTATIONS

Alabama Fisheries Association Meeting – Frank Parauka
Alabama Mollusk Meeting – Holly Blalock-Herod
Conducted Stream Restoration Workshops, Mobile, Alabama and Milton, Florida – Chris Metcalf
Conecuh/Sepulga Watershed Alliance Presentation – Frank Parauka
Dragonfly Society of the America's SE meeting – Organized by Theresa Thom
Eglin Ecological Monitoring Working Group presentation – Jeff Herod and Theresa Thom
Guest Lecturers at University of West Florida – Jeff Herod and Theresa Thom
Gulf Sturgeon Workshop – Frank Parauka and Gail Carmody
Morone Meeting – Laura Jenkins and Gail Carmody
Florida Chapter American Fisheries Society – Chris Metcalf

REPORTS AND PUBLICATIONS

Blalock-Herod, H.N., J.J. Herod, and J.D. Williams. 2002. Evaluation of conservation status,

distribution, and reproductive characteristics of an endemic Gulf Coast freshwater mussel, *Lampsilis australis* (Bivalvia: Unionidae). Biodiversity and Conservation. 11:1877-1887.

Blalock-Herod, H.N. 2002. Okefenokee National Wildlife Refuge 2002 Fish Community Summary. Technical Report to U.S. Fish and Wildlife Service, Okefenokee National Wildlife Refuge, Folkston, Georgia. 7 pp.

Blalock-Herod, H.N., L.G. Jenkins, S. Aicher, and D. Harrison. *In Review*. Fishery dynamics of Banks Lake National Wildlife Refuge.

Fox, D.W., J.E. Hightower, and F.M. Parauka. 2002. Estuarine and nearshore marine habitat use by Gulf sturgeon from the Choctawhatchee River System, Florida. Biology, management, and protection of North American sturgeon. W. Van Winkle, P.J. Anders, D.H. Secor and D.A. Dixon (Eds.). Am. Fish. Soc., Symp. 28, Bethesda, MD. Pp 111-126.

Hightower, J.E., K.P. Zehfuss, D.W. Fox, and F.M. Parauka. 2002. Summer habitat use by Gulf sturgeon in the Choctawhatchee River, Florida. J. Appl. Ichthyol. 18(2002), 595-600.

Parauka, F.M, S.K. Alam, and D.W. Fox. 2001. Movement and habitat use of subadult Gulf sturgeon in Choctawhatchee Bay, Florida. Proc. Annu. Conf. Southeast Assoc. Fish and Wildlife Agencies. 55:280-297.

Parauka, F.M. and M. Giorgianni. 2002. Availability of Gulf sturgeon spawning habitat in Northwest Florida and Southeast Alabama river systems. U.S. Fish and Wildlife Service, Panama City, FL. 77 pp.

TRAINING

Aquatic Coleoptera of Florida Taxonomy Workshop – Theresa Thom
BioRecon Techniques Certification – Theresa Thom
DOI Computer Security – Holly Blalock-Herod, Gail Carmody, Jeff Herod, Laura Jenkins, Chris Metcalf, Frank Parauka, Theresa Thom
Ecosystem Approach to Conservation – Jeff Herod and Theresa Thom
Employee Foundations – Holly Blalock-Herod
Ephemeroptera Taxonomy Workshop – Theresa Thom
Florida DEP Biocriteria Development – Theresa Thom
Freshwater Mussel Propagation Workshop – Holly Blalock-Herod
Gulf Sturgeon Capture-Recapture Workshop – Holly Blalock-Herod and Frank Parauka
Information Assurance Awareness – Jeff Herod and Theresa Thom
Introduction to ArcView GIS – Holly Blalock-Herod
Purchasing Authority – Jeff Herod
Statistical Workshop – Theresa Thom

Stream Restoration Workshop – Jeff Herod
Total Station Training – Jeff Herod and Theresa Thom

VOLUNTEER ACTIVITY

Little of the work documented in this annual report could have been completed without the help of multitudes of volunteers. Seventeen people contributed a total of 540 volunteer hours to the Gulf sturgeon recovery program. There was an additional 400 hours contributed from USFWS personnel outside of the PCFO. A total of 440 hours were provided by volunteers to tag striped bass for restoration efforts. Volunteers provided 24 hours sampling Big Escambia Creek and contributed 80 hours surveying for listed freshwater mussels in the Ochlockonee River and Econfina Creek. On Eglin AFB, volunteers and partners were vital in carrying out sampling plans for developing an Index of Biotic Integrity and monitoring for federally endangered Okaloosa darter and resulted in an additional effort of 470 person hours in 2002. Service personnel contributed 140 hours of assistance to PCFO at Eglin AFB. A total of 464 hours was donated by 29 volunteers who helped with aquatic insect sampling and taxonomy, stream morphology assessments, and water quality monitoring on Eglin AFB. All total, PCFO had 2,558 volunteer hours in FY02 or an equivalent of 1.3 FTEs!

STATION CYCLICAL MAINTENANCE/CONSTRUCTION

Equipment Purchased or Repaired

Item	Cost
1. Two computer systems	$ 5,877.00
2. ArcView GIS upgrade	$ 1,600.00
3. 65 Hp Jet Outboard Motor	$ 4,263.00

FUTURE OUTLOOK

PCFO will focus on addressing several aquatic ecosystem and organizational priorities for the next 5 years. These include the following.

1. **Bays and Estuaries**: Prevent any decline of existing health of these resources by conserving and restoring valuable habitats and the species and diversity they support with emphasis on endangered species, trust resources, and interjurisdictional fishes.

2. **Coastal Plain Rivers**: Restore and maintain healthy riverine ecosystems by protecting and restoring natural flow regimes and riparian habitats, increasing connectivity between riverine and floodplain habitats, providing for fish passage at all dams, restoring endemic species to their former range, and minimizing introduction on non-indigenous species.

3. **Outreach for Key Ecosystems**: Increase public awareness and stewardship of key ecosystems in Northwest Florida and the trust biological resources that depend on these ecosystems.

4. **Organization and Vitality**: Complete administrative requirements while maintaining and improving professional expertise and celebrating accomplishments.

PRIMARY ACTIVITIES FOR FY 2003

1. Conduct first-year population assessment for Gulf sturgeon in the Escambia River drainage.
2. Examine marine habitats used by Gulf sturgeon.
3. Complete data collection for assessment of Phase II striped bass stocking on the Apalachicola River.
4. Coordinate striped bass stocking evaluation and distribution of broodstock, fry, and Phase I and II fingerlings.
5. Initiate stream restoration partnership in the Escambia River basin.
6. Complete reference reach database for FY02/03 restoration projects: Clear Creek, Wrights Creek, and a Georgia stream.
7. Complete Draft Fish IBI testing status report for Eglin AFB.
8. Complete Annual Report for Eglin AFB aquatic monitoring program.
9. Complete aquatic invertebrate sampling on Eglin AFB.

10. Complete report detailing aquatic invertebrate community on Eglin AFB.
11. Revise and complete mussel surveys in the Ochlockonee River basin.
12. Complete candidate packages for freshwater mussels in the Escambia/Yellow/Choctawhatchee Rivers.