

Field Notes

News from the Panama City Field Office



Oil Aftermath: Service Biologists Committed to Clean-up

On April 20, 2010, the Deepwater Horizon drilling rig exploded forty-one miles off the coast of Louisiana. Eleven people lost their lives in the explosion, and life along the coast would change dramatically. As oil from the damaged well began flowing into the gulf, biologists were on high alert. The gulf coast region is a globally unique ecosystem, supporting a high number of beach-nesting birds, such as Sandwich terns, brown pelicans, and Wilson's plovers. At the time of the spill, these species were on the brink of nesting season, and oil would be detrimental to the birds. Nesting sea turtles were also in grave danger. The embattled species was at risk of losing an entire nesting season.

organizing teams, deploying boats and helicopters, and forming strategies on how to protect sensitive lands. "Every day, we had to watch the projections, and match those with the proper ground response. This took coordination from the Department of Interior, Region 4 of the Service, refuges, and field offices," explained Hemming. "From Secretary Salazar to Patrick Leonard in the region, and project leaders in the field, we all had to work together."

Panama City Field Office Project Leader Don Imm quickly realized this disaster was happening in his own back yard. Imm knew this incident would occupy most of his staff. "From recovery operations, to the administrative aspect, GIS, and the Natural Resources Damage Assessment and Recovery process, my staff was dedicated to assisting with the spill," explained Imm.

Imm also joined staff members as a part of the wildlife operations recovery team. Gayle Martin, Sandy Pursifull, Cameron Morris, Paul Lang, Jon Hemming, Matt Laschet, and Laura Jenkins all spent endless hours in the heat, looking for oiled wildlife. When calls came into the wildlife hotline, these folks were on stand-by, ready to take action. Jenkins said it gave local folks a sense of comfort, knowing Service biologists were scouring the beaches. "The people we talked to were grateful and happy. They were especially relieved that we were also working on the weekends."

Biologists were also deployed to the Natural Resources Damage Assessment and Recovery process. The NRDAR



At the height of tourist season, oil washes ashore in Gulf Shores, Alabama, credit USFWS/Denise Rowell.

team included Richard Zane, Harold Mitchell, Patty Kelly, Mary Mittiga, and Melody Ray-Culp. "We covered Bay County, starting at Panama City Beach and ending at Mexico Beach. My first two weeks were dealing with logistics, getting equipment like freezers, ATV's, and a trailer," explained Zane.

Not that the work was easy. Biologists walked miles of beach, working twelve-to-seventeen hour days. "There were hot days, some over 100 degrees. We drank water throughout the day to stay hydrated," said Jenkins.

Besides saving wildlife, one of the most rewarding things was meeting people from all over the country, who came to northwest Florida to lend a hand. "From Alaska, to Washington....even North Dakota, it was neat meeting the dedicated workers. Service firefighters also committed their time to the oil spill," said Jenkins.

In the end, Panama City biologists had reason to be thankful. The pristine beaches received minimal oiling. But Panama City biologists aren't quite ready to let their guards down. "We were very blessed," said Imm. "But our work will not stop until we know oil is absolutely no longer a threat."



Contaminants biologist Jon Hemming was one of the first Panama City Field Office biologists to be deployed to the oil spill, credit USFWS.

While oil was still far from land, Panama City contaminants biologist Jon Hemming was already in response mode. He was in contact with another contaminants biologist, Pete Tuttle, who was stationed in Daphne, Alabama. Together, the two acted as first responders to the region. "We immediately began to coordinate, discussing the needs in Alabama and the Florida panhandle," said Hemming.

Biologists only had days to figure out how to protect the wildlife, and minimize the exposure of oil. This meant quickly

Meet the New Project Leader

Dr. Donald Imm is the new Project Leader for the Panama City Ecological Services Field Office. He replaces Gail Carmody, who retired in the Spring. Imm received his biology degree from State University of New York at Fredonia before attending graduate school at the University of Georgia. There, he received his doctorate in ecology.

Before joining the U.S. Fish and Wildlife Service, Imm worked with the Savannah River Ecology Lab, U.S. Forest Service, and the University of Georgia. As project leader of the Panama City Ecological Services Field Office and Fisheries Resource Office, Imm will oversee 31 employees who are responsible for protecting 40 endangered and threatened species, anadromous fish and their habitats in northwest Florida. Here are some Q and A's to help you get acclimated with our new friend.

Your background is academia. How will this help you in your transition to field supervisor for a federal agency?

A background in academia is beneficial because it has allowed me to develop skills in communicating to various types of audiences, utilizing a variety of mediums and approaches. Academia is also heavily focused on merging ideas to find consensus and integrating concepts and theories across disciplines, as well as developing logically-ordered questions to address prioritized natural resource issues.

What kind of role do you see the Panama City Field Office playing when it comes to conservation in the state of Florida?

The Panama City Field Office has the unique opportunity of integrating the ecological services and fish & wildlife conservation programs with shared initiatives of the NOAA/National Marine Fisheries Office and the state Natural Resource agencies and commissions as well as other federal partners such as the USFS, DOD, COE, NPS, and others. Because the Panhandle is still relatively undeveloped many partnerships to support conservation at and near the Gulf of Mexico still exist, and are being enthusiastically pursued by many GOV and NGO partners. Lastly, our entire Service area has close adjacency and opportunity to work with other ES and FRS Field Offices.



Dr. Donald Imm is the new Project Leader for the PCFO, credit USFWS/Denise Rowell.

What do you look forward to most as field supervisor? Watching our staff grow and develop as they follow their career paths, and following up on all of the great initiatives and partnerships that this office has established in the past.

What will be your biggest challenge?

My biggest challenge will be keeping up with the wide variety of projects and opportunities that our office has been involved with as well as maintaining the inertia and energy going toward finding and developing new conservation opportunities.

Right after you were hired, the oil spill occurred. How did you handle that?

I relied heavily on a extremely well-trained staff, other leaders in field offices and the regional office, and state colleagues to provide advice on the best course of action relative to each decision, then learned from my mistakes and adjusted as new information came forward. I think the key was regular communication with all parties, and keeping an open mind to new ideas or formulated ideas.

What do you want your partners, NGO's, and the public to know about the PCFO?

The PCFO serves conservation and the public with one voice that supports one Service, and one Government. Our staff strives to be science-focused, and takes a fair stance in assessing conservation issues through effective utilization of the best available information. We behave in a transparent, accountable, and dependable manner, and always look for opportunities to become more efficient and effective in addressing the current and future challenges that we face.

Is there anything else you'd like to say that I didn't ask?

Our office is located in a great place that has great weather and great outdoor setting that support a wide variety of recreational opportunities. We all are "Living the dream."

Keeping Your Water Clean and Healthy

Healthy water means a healthy environment. Not only do we consume water; we also use it for industry, recreation, and for the well-being of our plants, animals and fish.

That's why the Environmental Protection Agency wants to make Florida's water as clean as possible, and the EPA has called on the Panama City Field Office to help make this happen.

The EPA has proposed numeric nutrient standards for all Florida lakes and flowing waters, with the exception of flowing waters in South Florida. The EPA's development of water quality standards is a precedent-setting proposal...one designed to keep our waters safe and healthy. The EPA coordinated with the Service's Florida Field Stations, Regional Office, and Washington Office to assess possible effects to listed species habitat. A biological evaluation concluded that the water quality standards were not likely to adversely affect the habitat of listed species. The Service will continue to meet with the Florida Department of Environmental Protection and the EPA to consult on how the new standards will be implemented.



Healthy water is crucial for the survival of our protected species, such as the Okaloosa Darter; credit USFWS.

In the meantime, the work for clean water is far from over. Next year, the EPA will develop a similar rule for estuaries and coastal waters.

Helping Hatchlings

When oil first began spewing into the Gulf of Mexico, sea turtle biologists had to think quickly. Sea turtle nesting season was only weeks away, and oil would be detrimental to nesting females and their hatchlings. If any oil were to drop on the eggs, the fragile nest could be ruined. If hatchlings were to emerge from the nest, the oil could greatly reduce their chance of survival, putting these threatened and endangered creatures in great peril.

So, biologists came up with an aggressive plan for the worst case scenario...to move the eggs during late incubation, and translocate them to the east coast of Florida. In June, that's exactly what biologists and trained volunteers did.

The U.S. Fish and Wildlife Service joined forces with the National Marine Fisheries Service, Florida Fish and Wildlife Conservation Commission, Federal Express, Kennedy Space Center, military bases, National and Florida Parks, Ecological Associates, Inc. and the volunteer Turtle Watch groups to help move the sea turtle eggs out of harm's way. Under the direction of National Sea Turtle Coordinator Sandy Macpherson, wildlife biologist Lorna Patrick led the way for the Panama City Field Office. "While it was a risky decision to move the eggs, we knew it could have resulted in certain death for the turtles if we did not," said Patrick.



Loggerhead sea turtle hatchling, credit Roger Reetz.

The project would be no easy task. Sea turtle eggs are fragile. Simply turning the egg upside down could render it non-viable. Removing the eggs from the sand, and transporting them safely across the state 400 miles would be risky. After careful thought and consideration, biologists decided the benefits greatly outweighed those risks. So in June, the translocation began.



Tom Strickland, Assistant Secretary for Fish, Wildlife, and Parks, looks on as biologists excavate a sea turtle nest, credit USFWS/Denise Rowell.

Biologists would have to plan their days according to the sun. Too much heat would be harmful to the eggs. So, partners met before dawn or after sunset to carefully remove the eggs from the nest. FedEx donated a special van to safely transport the precious cargo, travelling more than 25,000 miles with the fragile eggs. The eggs were taken in coolers nestled in their native beach sand to a climate-controlled building at Kennedy Space Center, where they remained until hatching. Then, the hatchlings were released into the waters of the Florida east coast. Altogether, biologists excavated 262 Florida nests. More than 15,000 hatchlings made it successfully into the Atlantic.

Once the well was capped in August, biologists decided it was time to suspend the unprecedented undertaking. The news was welcomed. The Panama City Field Office and its partners had achieved their goal...to give these majestic creatures a chance for survival.

"We all agreed that this was a drastic measure to take, but knowing the risk of hatchlings crawling into potentially oily waters, we had to take it," said Patrick.



Fish and Wildlife Biologist Lorna Patrick carefully removes eggs from a sea turtle nest in an effort to save them from possible oiling, credit USFWS/Denise Rowell.

Endangered Mouse Gets Extraordinary Opportunity

This year, biologists across Florida and Alabama embarked on an ambitious project to reintroduce a captive endangered species into the wild. A partnership of Alabama Department of Natural Resources and Conservation, Florida Fish and Wildlife Conservation Commission, U.S. Fish and Wildlife Service, the Brevard Zoo, the Palm Beach Zoo, and Santa Fe College had been studying the feasibility of using Perdido Key beach mice born and raised in the zoos to re-establish a population at Gulf State Park as early as spring of 2010.

“We were extremely fortunate to have our partners on board with the reintroduction,” said Panama City Field Office ecologist Ben Frater.

The Perdido Key Beach Mouse (PKBM) is listed as endangered by the states of Alabama and Florida, and under the federal Endangered Species Act.

It lives only in the dunes of Perdido Key and is considered to be the most endangered of the five Gulf coast beach mouse subspecies. Gulf State Park once hosted the only population of PKBM in existence, but has been unoccupied for a decade.

Today, PKBM are only known to live at Gulf Islands National Seashore, Perdido Key State Park and a smattering of private lands. The number of PKBM in the wild remains very low throughout its range. Biologists hoped releasing a captive population of 48 beach mice could better inform future re-introduction efforts, and if all went well, bring new hope to the Perdido Key beach mouse population.

The captive mice were born and raised in the Brevard and Palm Beach zoos, where the techniques of rearing beach mice are being refined. Like other wild animals, PKBM did not initially breed well in captivity, but new techniques have improved birth rates and survival. Biologists were uncertain how well captive-reared beach mice would survive in the wild.



The Perdido Key Beach Mouse, credit USFWS/Ben Frater

After the mice were released in late March, biologists closely monitored the population to determine individuals' behavior and survival rates. In October, biologists performed trapping surveys to check on the new population. Frater had good news to report: “The mouse population is booming. We only trapped three nights, but the captures went up each night.”

Frater says the entire southern portion of Gulf State Park is occupied by the PKBM, with up to 100 mice living in the area. “On the final night of trapping, we caught about 50 mice and all age classes were represented. It appears to be a very healthy population. We are very happy with the results.”

The ultimate goal of efforts like this is to recover the PKBM in the wild, and one day, remove it from the Endangered Species list. The Panama City Field Office still has a long way to go to make that happen. But partnerships are proving to be a great starting point when it comes to protecting the environment.



Tracy Frampton with the Brevard Zoo and Dan Greene with the Florida Fish and Wildlife Commission help PCFO biologists collect data on the Perdido Key Beach Mouse, credit USFWS/Ben Frater.

A Hidden Partner?

*Investigating the symbiotic association of fungi and the root system of *Torreya taxifolia**

by Dr. Vivian Negron-Ortiz, Botanist

Torreya taxifolia (Florida torreyya or stinky yew) is one of the most endangered conifer species in the country. Prior to 1950's, *T. taxifolia* was estimated to be the seventh most abundant tree species within Apalachicola Bluff regions, but at present, the Florida torreyya population is estimated to be less than a 1,000 individuals. Seed-bearing trees are rare; most of the wild population persists as stump sprouts. The main threat for this species' decline is still not well understood, even though considerable research and management activities have been and are presently conducted on this species. Failure to identify and address the cause of this species' decline will result in extinction of the species in the wild.

One of the recovery actions in the Recovery Plan of 1986 proposes the investigation of mycorrhizae (association of a fungus and the roots of a vascular plant) as part of controlling the *T. taxifolia*'s decline. The association of



Dr. Melissa McCormick with a Torreya plant, Torreya State Park, Florida, credit Dr. Vivian Negron-Ortiz

mycorrhizal fungi is one of the most important mutualisms on earth, involving an estimated 95% of all plants. These fungi contribute to plant resistance to pathogens and acquisition of water and nutrients while utilizing the plant as a carbon source. Thus, information on mycorrhizal fungi associated with *Torreya* may be helpful in propagation, resistance against root pathogens, establishment of young trees in the wild, and in maintaining mature trees.

The Service contracted Dr. Melissa McCormick, a plant ecologist at the Smithsonian Environmental Research

Center (SERC) in Maryland, to investigate the type of mycorrhizal association formed by *T. taxifolia*, identify the fungi forming the association, and quantify the degree of colonization.

On September 2010, Dr. McCormick and collaborators spent several days collecting soil and root samples from near *Torreya* trees on ravines slopes on the eastern bank of the Apalachicola River in northern Florida and in Georgia, as well as in *ex-situ* plantings (e.g., The Atlanta Botanical Garden, Georgia, and North Carolina). By comparing *in-situ* populations to *ex-situ* plantings they will be able to draw conclusions about the degree of colonization and species composition of mycorrhizal fungi associated with the native population. At present, they are conducting microscopic and molecular analyses at the Plant Ecology Laboratory at SERC.

Biologists Welcome Youth Ambassador

By Laura Jenkins, Biologist

The PCFO was selected to participate in a new media pilot project conducted by External Affairs to promote the Service through new media technology.

Chris Beard, a Senior from Mosely High School, Panama City, Florida was selected to be student ambassador for the PCFO. His role is to use new media such as Facebook, Twitter, and YouTube to promote activities at our field station, and the conservation message of the USFWS. Chris will have the opportunity to become actively involved with staff and the work they are doing, and promote our work to the public targeting, in particular, the younger generations. What a great way to reach out to the next generations of conservation leaders utilizing new media and advanced communication.



Brainstorming at the Torreya State Park ravines, credit Dr. Vivian Negron-Ortiz

Connecting Kids with Nature

The Panama City Field Office has long recognized the importance of teaching kids the value of the great outdoors. Our office is in charge of some of the most unique and diverse resources in the country, and one day, young people will be in charge of taking care of these trust resources. That's why our biologists are committed to exposing children to plants, animals, and fish. One way we've reached out to children is by teaming up with the Panama City Junior Museum. Fisheries biologist Laura Jenkins assisted with two special exhibits at the museum. Thanks to a lot of planning and hard work, children can now learn about threatened sea turtles and eastern indigo snakes.

The sea turtle exhibit shows a cross section of a sea turtle nest that is in the process of hatching. The display is complete with baby loggerhead sea turtles, headed to the Gulf of Mexico. Nesting black skimmers are also sharing the beach. "We hope to enlighten visitors to the awesome life history of the threatened loggerhead that nests on our beaches," explained Jenkins.

In honor of Endangered Species Day, Jenkins also joined forces with the Junior Museum by lending a live eastern indigo snake to a special display. The eastern indigo snake is a lustrous, glossy, black-and-blue-colored snake that is non-venomous. Historically, the snake lived throughout Florida, the coastal plain of southern Georgia, extreme south Alabama and extreme southeast Mississippi. Today, the snake survives in peninsular Florida and southeastern Georgia. It also persists in the Florida panhandle, but in low numbers.

The PCFO also gave kids a lesson on our feathered friends by co-sponsoring the first ever 2010 Northwest Florida Birding Festival. This time, our office teamed up with the St. Joe Company, Panama City Chamber of Commerce, Florida Fish and Wildlife Conservation Commission, and the University of Florida Bay County Extension-IFAS. The festival offered a myriad of bird-related activities, including bird identification with binoculars, bird calls and help from expert birders. Kids learned how to make craft bird feeders and houses, habitats, and even bird baths. The highlight of the festival was the presentation of a live bald eagle.



Fisheries biologist Laura Jenkins teaches kids about saltwater aquatics, credit Ronnie Hallman.



Above: a loggerhead sea turtle exhibit at the Junior Museum in Panama City, credit USFWS/Laura Jenkins.



Left: the Eastern Indigo Snake is listed as "threatened" in parts of Florida, credit Alabama Natural Heritage Program/Jim Godwin.

Gulf Coast Recovery Act Project Halted by Oil Spill Resumes at Florida's Topsail Hill Preserve State Park

Written by Philip Kloer and Kim Betton

In October, the U.S. Fish and Wildlife Service marked the resumption of an important habitat restoration project at Topsail Hill Preserve State Park near Destin, Florida funded by the American Recovery and Reinvestment Act (ARRA). The project, which was temporarily delayed by the response to the oil spill in the Gulf of Mexico, is a joint effort with the Florida Department of Environmental Protection (DEP), Division of Recreation and Parks, and Three Rivers Resource Conservation and Development Council.

“The continuation of the Topsail Hill Preserve project is creating environmental and economic benefits for Florida’s Gulf Coast region,” said Acting Fish and Wildlife Service Director Rowan Gould. “This Recovery Act project is part of a long-range plan to restore Topsail Hill Preserve State Park to its natural state, restore the proper flow of water, and encourage plants to return and flourish,” said Gould. “Our partnerships with multiple agencies on projects such as this are helping the Service to make a tremendous difference in the health of local communities across the nation, while making important contributions to the future of America’s wildlife and wild places.”

Located in Santa Rosa Beach, 10 miles east of Destin, Topsail Hill Preserve State Park encompasses 14 different natural communities, including wet prairie, scrub, beach dune and rare coastal dune lake habitat. It is also part of the dwindling habitat of the endangered Choctawhatchee beach mouse and endangered flatwoods salamander. The restoration work funded by ARRA will help reestablish the flow of surface and subsurface water, which is essential to the health of both upland and wetland natural communities within the Preserve.

Conservation and Development Council of Milton, Florida, to restore and enhance portions of Topsail Hill Preserve State Park. Three Rivers, in turn, awarded a contract to Middle Creek Contracting Co., a small construction company based in nearby Defuniak Springs, Florida.

The project began in the summer of 2010, but was abruptly halted a short time later when Incident Command teams responding to the Deepwater Horizon oil spill needed to use Topsail Hill Road as an access road for beach clean-up



From left to right: FWS Acting Director Rowan Gould, FWS Ecologist Harold Mitchell, Travis Davis of Three Rivers Conservation and Development Council, FWS Panama City Field Office Project Leader Dr. Donald Imm, FWS Biologist Melody Ray-Culp, credit USFWS/Denise Rowell.

“Restoration of the natural surface hydrology is essential to enhancing the wetlands and uplands in the watershed of two rare coastal dune lakes at Topsail Hill Preserve State Park,” said DEP Deputy Secretary Bob Ballard. “This state park provides a direct economic impact of more than \$7 million to the local community. This project will further enhance the valuable natural resources at Topsail Hill that attract Florida residents and visitors to the Santa Rosa Beach area.”

In 2009, the U.S. Fish and Wildlife Service awarded \$400,000 in ARRA funding to the Three Rivers Resource

and assessment teams. The project was on hold for several weeks and recently resumed.

“The Three Rivers Resource Conservation and Development Council is pleased to be participating in this ARRA-funded project that will help restore habitat at Topsail Hill Preserve State Park,” said Travis Davis, project leader for the Council. “This project greatly contributes to our mission of conserving the natural resources and improving the economic condition of citizens in Northwest Florida.”

Teens Get Hands Dirty for the Environment

By Frank Parauka, Fisheries biologist

Every year, eager teens put their biology skills to the test through the Youth Conservation Corps, a summer work program employed by agencies within the Department of Interior. The Panama City Field Office has long appreciated the mutual benefits of YCC, and this year, participants were able to really get their hands dirty.

Enrollees Aerial Payne and David Mertes spent the summer assisting PCFO biologists in day to day operations. A great deal of time was involved assisting biologists with Gulf sturgeon investigations. The investigations involved capturing Gulf sturgeon in four Florida panhandle rivers systems using gill nets. All fish were measured, weighed and marked with tags for future identification. Over 200 Gulf sturgeons, weighing from ½ lb to 140 pounds were collected during the survey. In addition, Aerial and David became very proficient in testing the water quality using analytical equipment during each survey.

The Gulf sturgeon surveys did have a downside, which involved the repair of the damaged gill nets prior to each outing; both Aerial and David became quite skilled in straightening and mending nets in short order. They assisted the Army Corps of Engineers in a study using a trawl to collect newly hatched Gulf sturgeon in the Apalachicola River system. They also assisted with outreach activities, plant surveys, data entry and equipment maintenance.

Aerial and David became celebrities on a local outdoor television show when they went out in the field and demonstrated their Gulf sturgeon investigated skills for the show's host. One of the high points of their tenure was assisting biologists dealing with sea turtle issues resulting from the Deepwater Horizon oil spill. The Panama City Field Office was designated as the operations center to administer the sea turtle program for the Florida panhandle. Over 1500 styrofoam coolers were prepared to transport sea turtle eggs and hatchlings and thousands of stakes were painted to mark the sea turtle nests which were located during the beach surveys. Some of the work during this summer would have not been completed had it not been for Aerial and David providing that extra hand.



Aerial Payne, YCC enrollee, with juvenile Gulf sturgeon collected in the Brothers River, FL, Frank Parauka, PCFO, boat operator; credit Matt Laschet, FWS-PCFO)



David Mertes, YCC enrollee, holding a 50 pound Gulf sturgeon collected in the Yellow River, Florida, credit Frank Parauka, FWS-PCFO.

Sharing Water: The U.S. Fish and Wildlife Service Makes Recommendations

By Karen Herrington, biologist

For over 25 years the States of Alabama, Florida, and Georgia have debated with the Corps of Engineers the purposes of the ACF reservoir systems, their operations, and alterations to historic flows.

The Corps' large multi-purpose reservoirs provide most of the existing surface water storage capacity in the Apalachicola-Chattahoochee-Flint River Basin (ACF). As consumptive water use has steadily increased in these basins, reliance upon the Corps' reservoirs during low-flow periods for maintaining water quality, navigation, municipal and industrial water supplies, and in-stream habitat also has increased. Maintaining flows for endangered species (Gulf sturgeon and three mussels) is part of the conflict over limited water resource between upstream and downstream interests.

The Corps is currently updating its Water Control Manual (WCM) for the ACF and has initiated an Environmental Impact Statement (EIS). In July, 2009, U.S. District Court Judge Magnuson found that the Corps lacks congressional authorization to operate Lake Lanier, the largest and upstream-most reservoir in the ACF, for the water supply needs of metropolitan Atlanta. The court ordered

that most of the existing direct withdrawals from Lake Lanier, and all of the releases that specifically support water supply, cease by July 2012. Until a new WCM is adopted, the Corps' Revised Interim Operating Plan (RIOP) governs releases from Woodruff Dam, the downstream-most ACF reservoir.

The Panama City Field Office and the Georgia Ecological Services Office have been working together to help the Corps meet its

responsibilities under the Endangered Species Act (ESA) and Fish and Wildlife Coordination Act (FWCA).

The Corps' RIOP has undergone consultation under the ESA and was the subject of litigation. Judge Magnuson dismissed all claims against the Service's Biological Opinion of the RIOP. Based on new information about the distribution and mortality of listed mussels, the Corps recently requested a reinitiation of consultation for the RIOP. We are revisiting this biological opinion because it may alter our conclusions about



impacts to mussels. For the WCM update, we provided Planning Aid Letters in the spring of 2010, and will provide a draft FWCA Report for inclusion with the draft EIS in the spring of 2011. A final biological opinion on the proposed operations would precede a final EIS in early 2012.

The Service has considerably advanced the understanding of flow-dependent habitat requirements of fish and wildlife resources in the ACF in recent years. We will continue to work cooperatively with all stakeholders. The ultimate goal is to come up with an equitable water sharing solution that ensures the ACF Basin is a sustainable resource for current and future generations.



A sample of mussels, including endangered fat threeridge, from the Apalachicola River, Florida, credit USFWS.

How Old is that Mussel?

Basic biological data are the foundation on which all population assessments are built. These include parameters such as age structure, growth rates, mortality, and maturation, but these parameters can only be calculated if age information is known. Like many trees and animals, freshwater mussels form annual rings in hard structures in response to decreased growth in winter.

Mussels are aged by cutting thin sections of their shell, mounting sections to a microscope slide, and examining the thin sections under a dissecting microscope. The rings are then examined and counted, assuming each ring represents one year of growth.



The endangered fat threeridge mussel, credit USFWS/Nicole Rankin.

The Panama City Field Office (PCFO) has been working collaboratively with the Warm Springs Fish Technology Center (WSFTC) on the age and growth of the endangered fat threeridge mussel. Laura Jenkins (PCFO) and Karen Herrington (PCFO) trained Nicole Rankin (WSFTC) to section and age mussels in order to get a better understanding of fat threeridge population status. Nicole is leading the aging project and refining the technique for WSFTC. To date, she and Greg Moyer (WSFTC) have aged over 168 fat threeridge mussels. Ages range from 1 to 24 years old, and a length-at-age relationship has been developed.

In addition, Nicole and Karen are also working on two separate methods to validate the age data and the assumption that these mussels form one growth ring per year. The first method is a field-based study where we collected about 100 fat threeridge from the Apalachicola River, notched them using a triangular file, and tagged them with numbered



A thin section of a fat threeridge mussel, credit USFWS/Karen Herrington.

and passive integrated transponder tags. Mussels were replaced at the site and will be recovered one-year later to determine and validate age. The notch was used to create a known reference mark for validation. If a single growth ring is examined beyond the notch mark, annual ring deposition will be considered validated.

The second method involves a chemical analysis of the shell called stable oxygen isotope analysis. Stable oxygen isotope ratios in freshwater mussel shells can be measured to make climate inferences. Mussels that grow throughout the year will record the intra-annual temperature variability within their shells, and by measuring the isotopic signature in the shells, the number of cycles of higher and lower temperatures should reflect the number of years the animal has lived. We contracted the University of Florida's Department of Geology to measure the isotopic signature in fat threeridge shells to test the age estimates generated independently by counting internal growth rings.

If these validation methods are successful, we will have known age information for the fat threeridge mussel for use in population assessment models.



Gail Carmody, retired PCFO Project Leader, and Steve Seiber, Natural Resources Program manager at Jackson Guard, celebrate a conservation victory, credit USFWS/Denise Rowell.

Carmody Retires from Panama City Field Office

Last Spring, the Panama City Field Office bid a fond farewell to their Project Leader of nineteen years, Gail Carmody. Carmody decided to hang up her Fish and Wildlife uniform for good, and retire to spend more time with her family. Carmody left quite an impact on northwest Florida. The PCFO is one of the most diverse field offices in Region 4. In order to achieve her goals of conservation, Carmody's leadership style included running the office strategically. With such a myriad of resources, Carmody decided to divide her biologists into eco-teams, and each team has specific goals and annual implementation actions tied to performance plans.

Carmody always liked to use the rock metaphor to describe her office's top priorities: when you fill up your buckets, put the big rocks in first. Don't get bogged down with too many pebbles. "You have to keep your eye on the conservation goal," explained Carmody. "If you're not careful, you get caught up in all sorts of things that a year from now won't matter."

During her tenure, Carmody also quickly realized the importance of working with partners. Carmody's last big accomplishments came after teaming up with biologists at Jackson Guard, a division of Eglin Air Force Base. The PCFO joined Eglin biologists to help improve the population of Red-cockaded woodpeckers (RCW's) on lands overseen

by the Department of Defense. By improving habitat through prescribed burns, the number of breeding pairs of RCW's surpassed the goal of 350.

Carmody and her staff also teamed up with Eglin to implement the Okaloosa Darter Recovery Plan....a plan that boosted the darter population to 300,000 fish. As a result, the Service has recently proposed to reclassify the Okaloosa darter from endangered to threatened.

Carmody plans to continue conservation work in her retirement. She will be greatly missed by the Panama City Field Office.

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