

1999 Report of Region 1 - Northeast

Bob (AKA The Big Sucker) Jenkins continues to "pound" (his word, not mine) on sucker specimens, and this spring and early summer, Mark Clements and he will finish field-observing and videoing reproductive behavior of redhorse and jumprock suckers. For all you perverts, it should appear on the Spice Channel sometime later. Bob and Wayne Starnes (NCSM) continue to pursue further distributional and biological information on the recently discovered and undescribed "Carolina" redhorse known from the upper Cape Fear and middle Pee Dee drainages. Pee Dee populations appear to be essentially extirpated and Cape Fear populations are virtually restricted to a reach of the lower Deep River. Current distribution strongly suggests negative impacts from the introduced flathead, and perhaps blue, catfishes. Additional surveys for the robust redhorse in the Pee Dee River of NC and SC and in the Broad-Green system of NC have met with no success. Bob and Bud Freeman (UGA) continue studies of the undescribed "sicklefin" redhorse in tributaries to the Tennessee River in western NC

For those of you haven't heard, Bill Woolcott (Univ. Richmond) died on 18 April 1998. In honor of Bill, an endowment has been established to support university students presenting papers in the Natural History and Biodiversity Section of the Virginia Academy of Science.

Gene Maurakis (Science Museum of Virginia) continues his work with Bill on behavioral studies in nest-building *Nocomis platyrhynchus* and *N. raneyi*. He was fortunate last spring in getting the information and a manuscript has been submitted for publication. One of Gene's graduate students, Marie Newman, Longwood College, completed her work on breeding behaviors of *Notropis alborus*, published in *Virginia Journal of Science* in fall of 1998. Gene has also published breeding behaviors on *Nocomis asper*, and a paper on heterogenetic spawning between male *Campostoma anomalum* and female *Nocomis leptocephalus*. (They appear to be about as selective as some ichthyologists! - FR comment). Species recognition for *Percina nevisense* was published in fall of 1998. Mark Sabaj and Gene have submitted a paper on spawning in *Nocomis leptocephalus* and *N. micropogon*, with descriptions of newly observed reproductive behaviors. Because of uncooperative weather, field work on attraction of nest associates to nests of pebble nest-building minnows has been slow.

Mark Kopeney (UVA) is working on determining the native range of *Noturus gilberti*. Preliminary work with mitochondrial DNA indicates that the James River population is an introduction from the Roanoke population. A student (Aubrey Gilbert) is analyzing the spotted form of *Noturus insignis* from the upper Dan River.

Wayne Starnes (NCSM) reports that on Sunday, Nov. 15, 1998, the North Carolina State Museum of Natural Sciences celebrated the grand opening of its Research Lab, a satellite museum facility. This was momentous because for the first time in many years, the museum will now house all of its alcohol stored collections in a single location. The lab is located at 4301 Reedy Creek Rd in west Raleigh. Collections are stored in separate ranges and arranged systematically. When fully sorted and reshelved, it is estimated that the current holdings will

comprise approximately 80,000 lots. Cataloging on an Access based data structure and GIS linking are to begin soon and there are plans for website accessibility. The current holdings represent the combined collections of the UNC - Institute of Marine Sciences (through the generosity of Frank Schwartz), Duke University, NCSU, Mars Hill College, the original NCSM collection, a large collection donated by Wayne, and the voucher materials for the NC Wildlife Resources Commission's massive early 60' surveys. Voucher collections for current surveys of the NC Division of Water Quality, US Army Corps of Engineers, etc. are also housed. Emphasis is on NC, the southeastern US and adjacent Atlantic, but there is surprising representations from across North America and other parts of the world. The permanent staff of the Fishes unit now number three: curator--Wayne Starnes; collection manager--Gabriela Mottes; and technician--Lynn Fullbright. Meanwhile, construction on the NCSM's new main museum in downtown Raleigh proceeds with opening now scheduled for early April 2000. It will be the largest natural science museum in the Southeast. It will have a major gallery devoted to all major habitat types from the Blue Ridge to the lower Coastal Plain and another treating marine habitats from the salt marshes, sounds, and barrier islands, to offshore habitats, such as the continental shelf, slope, and Sargasso Sea. There will also be a paleo gallery as well as one devoted to tropical connections and general biodiversity. Wayne and Alvin Braswell have been heavily involved with these projects. "Y'all come see us, yah hear?"

Mary Moser (UNCW) is investigating the incidence of parasites in *Anguilla rostrata* and documenting the spawning habitat for Atlantic sturgeon. She is also studying the impacts of culverts on herring migration.

Fritz Rohde (NC Marine Fisheries), Rudy Arndt (Richard Stockton College), and Jeff Foltz (Clemson Univ) are still poking away on their studies of South Carolina's freshwater fishes. Rohde is collaborating with Joe Quattro (Univ. South Carolina) and students on various studies of the genetics of southeastern freshwater fishes, particularly speciation in the bay lakes. Sampling by them, Starnes, and the Shutes show that *Labidesthes sicculus* is firmly established in Lake Waccamaw.

F. Rohde

1999 Report of Region 2 - Southeast

Georgia

In 1998, the Georgia Legislature passed a bill funding nongame wildlife research through purchases of speciality car tags (quail tags). The tags cost \$15 more than standard tags and \$14 goes to the program fund. In the first year, 9 to 10 million dollars were generated, making the Georgia Nongame Program one of the best funded in the country.

Cecil Jennings, University of Georgia Coop Unit, is a beneficiary of the nongame funding program: he received \$250K for a five-year aquaculture study to determine optimal nutrition, water quality, and culture system for rearing the robust redhorse. Regarding the conservation status of *Moxostoma robustum*, two populations persist: one in the Oconee River (Altamaha River drainage) and one in the Savannah River. Essentially all that is known about the latter is that it is still extant. The Oconee River population is composed of essentially age-6 to age-13 or older adults. The hypothesis that this population is experiencing repeated recruitment failure is supported by research of several graduate students working with Cecil.

Carl Ruetz examined swimming performance of larval robust redhorse. The water velocity at which larval suckers fail to hold position is quite slow: 7 cm/sec. The Oconee population of *M. robustum* is subject to hydropeaking discharges from Sinclair Dam, which in turn affects the availability of backwater habitats, which are known to be important larval refugia. Robust redhorse suckers spawn in medium to small, loose gravel substrates. Erik Dilts conducted an interesting experiment demonstrating that increasing proportions of fine sediments (coarse to fine sands) reduce reproductive success. Between concentrations 0 and 25% fine sediment, survival dropped from 60 to 8%. Further examination of this range determined that the magnitude drop in survival was between 10 and 15% fine sediment composition. Based on the paucity of loose gravel substrates (at the appropriate depth and velocity), Erik and Cecil estimate that recruitment is 8% or less in the Oconee River.

To date, the greatest number of robust redhorse larvae collected in drift nets is only 32 per 1000 cubic meters. What is particularly puzzling is that other suckers, e.g. the silver redhorse *M. anisurum*, do not have the recruitment failure problem. Drift samples find the larvae of other catostomid species to be common, so the apparent failure in *M. robustum* has to do with some peculiarity of that species.

Several biologists (Jack Killgore, Jan Hoover, Phil Kirk, Stephen George, and Bradley Lewis) from the Army Corps Waterways Experiment Station, Vicksburg, have been sampling the upper Savannah River on Fort Gordon. They have discovered additional populations of the bluebarred pygmy sunfish, *Elassoma okatie* (formerly known from only one population in Georgia). Phil is also beginning a study of population estimates and movement of *Acipenser brevirostrum*, using radio telemetry, in the Ogeechee River system draining Fort Stewart. The U.S. Fish and Wildlife Service expressed serious concerns about dewatering of streams in the Tri-State Water Project

(involving the Mobile and Apalachicola river drainages). This project is essentially long term planning for getting water to Atlanta. At one point, it was suggested that reservoirs be drawn down below 7Q10 discharges for extended periods. The 7Q10 discharge is the lowest flow recorded during a week in a decade. The effects of this would clearly be catastrophic for fishes and other aquatic species, particularly mussels. The fact that this "plan" was even considered illustrates gross ignorance or lack of concern about the impact of the project on lotic systems. Planning of the project, specifically the timing of biological studies and reporting deadlines, were not sufficient to address many critical biological concerns.

Florida

The Florida Museum of Natural History is interviewing candidates for Carter Gilbert's old position (or old Carter Gilbert's position?). Initially, applications were remarkably few when the unfounded rumor was circulated that the candidates would be required to shave their heads or to actually be bald. However, since then, Carter stopped spreading this rumor and the numbers of qualified applicants increased precipitously. The position will likely be filled this coming fall. Carter said he did not want any of his activities reported on because there was "nothing funny about them."

Gary Meffe, formerly of Savannah River Ecology Laboratory, has moved to Gainesville, where he is an associate of the UF Wildlife and Conservation Department. Gary is the managing editor for Conservation Biology. Gary was the least famous biologist on a multi-authored letter, to Secretary Babbitt, which was critical of proposed work and noting that in fact there has been no restoration of the Everglades, just reallocation of water. This story went out on the AP wire and made the Gainesville Sun, our hometown newspaper.

Folks at the Gainesville USGS laboratory (Florida Caribbean Science Center) have had a productive year. Ken Sulak and Jim Clugston published a paper in Transactions of the American Fisheries Society on spawning grounds utilized by the threatened Gulf Sturgeon *Acipenser oxyrinchus desotoi* in the Suwannee River. Adults travel considerable distances upriver (215 rkm) to the Central Ridge area in Florida, and insofar as known, only spawn at a few sites. Jim Williams and George Burgess (Florida Museum of Natural History) have submitted a manuscript describing the shoal bass to the Bulletin of the Florida Museum of Natural History. The well-known shoal bass was first discovered by Carl Hubbs, later studied by John Ramsey (Auburn University), and is at last pending formal recognition. Its description should clarify sport fishing records incorrectly attributed to *Micropterus coosae*. Pam Fuller, Leo Nico, Jim Williams, and Charles Boydston have completed a book on nonindigenous fishes of the United States. This book is being published by the American Fisheries Society (Special Publication 27). Leo Nico has been intensively sampling canals in south Florida to determine the distributional limits of the Asian swamp eel (*Monopterus albus*). The discovery of the south Florida population garnered national press interest, in which Jim Williams was quoted as saying, "The best way to get rid of them is to club them to death." Perhaps Jim has been working on mussels too long, which is the segue to announcing that Jayne Brim-Box and Jim have a monograph in press in the Bulletin of

the Alabama Museum of Natural History on the mussels of the Apalachicola, Chattahoochee, and Flint Rivers. Denouement??

Steve Walsh (with Mike Meador, USGS) published a report entitled "Guidelines for Quality Assurance and Quality Control of Fish Taxonomic Data Collected as Part of the National Water-Quality Assessment Program." This paper is a good reference for beginning students of fishes. It also has much useful information such as summarized collection permit requirements for all states, and sources of collecting gear (nets, jars, waders, label paper, etc.). Steve's email address is: Steve_Walsh@USGS.gov. Howard Jelks and myself recently completed a report to the U.S. Fish and Wildlife Service on the effects of suspended sediment on the reproductive success of the tricolor shiner, an experimental surrogate for the threatened blue shiner. Suspended sediment significantly curtailed reproductive success, but not as anticipated. Instead of high egg mortality, fishes spawned less or failed to spawn with increasing suspended sediment concentrations. This report is being condensed for journal publication. Howard Jelks and Frank Jordan (Loyola University, New Orleans) have completed five years of monitoring of Okaloosa darters on Eglin Air Force Base, northwestern Florida. The remarkable finding is the populations of this endangered darter are very stable. Howard is also in the second year of an aquatic faunal surveys of Eglin AFB in areas extralimital to Okaloosa darters. These findings will be published as a handbook of the fishes of Eglin AFB.

Of general interest, a symposium will be held in Chicago on 6 - 8 December 1999 on removing dams. Yes, the time really has come to start figuring out how to take down large dams without wiping out the river system below the dam. May be this millennia thing is real. Those wishing more information may contact Paul Kanehl, 608/221-6332; FAX 608/221-6353; email Kanehp@dnr.state.wi.us. Interest in this symposium seems very high and it may be a genuine opportunity to get our fields of expertise at the table when initial exploration of the topic is being considered. Also, the Asheville Office, U.S. Fish and Wildlife Service is hosting a symposium on restoration of North Carolina streams on 18 - 19 August 1999. For more information, contact Dick Biggins at 828/258-3939, ex 228, FAX 828/258-5330; email Richard_Biggins@fws.gov. Clearly, momentum is gathering on river restoration, dam removal, and on addressing river and southeastern faunal conservation issues. I encourage SFC members to alert the general membership when such topics are announced.

Noel Burkhead

1999 Report of Region 3 - North-Central

Status surveys and other interesting finds

John Fridell (U.S. Fish & Wildlife Service) reported that the Service will be proposing to elevate one fish and two mussels to candidate status. These include the Cumberland johnny darter (*Etheostoma susanae*), the slabside pearl mussel (*Lexingtonia dolabelloides*), and fluted kidneyshell (*Ptychobranchus subtentum*). At present, these species have no official federal status. The Cumberland johnny darter and slabside pearl mussel were formerly category 2 Candidates, which no longer exist; the fluted kidneyshell has never had federal candidate status. The current elevation package will recommend all three as "Candidates", equivalent to the former Category 1 candidate for federal protection. These were taxa for which enough information existed to list as endangered or threatened. The elevation package will be submitted to the Atlanta regional office of FWS in early March.

Ed Scott (TVA) reported snail darter (*Percina tanasi*) distribution and abundance is apparently keeping up with the continued improvement of the Douglas and Cherokee tailwaters in the lower French Broad and Holston rivers. In addition, snail darters, presumably from the Hiwassee River population, have also been found in the lower end of the Ocoee River. Charlie Saylor (TVA) has a few additions to the lower Pigeon River fish fauna that support the continued improvement of that area: *Phenacobius crassilabrum* and *E. swannanoa*. The *E. swannanoa* populations probably recruited from local tributaries. Also, in 1997, *Nocomis micropogon* and *E. zonale* (both present in the adjacent French Broad River) were new fish records for the Pigeon.

Brooks Burr (Southern Illinois University) reported finding five duskytail darter (*E. percunurum*) nests, in the Big South Fork in May 1998. This is the first time nesting has been observed in this population. Burr and students have also been surveying fishes in the Little South Fork, with particular emphasis on ecology of palezone shiner, *Notropis albizonatus*.

J. R. Shute, Pat Rakes, Bo Baxter (CFI), and Peggy Shute (TVA) surveyed the historical yellowfin madtom (*Noturus flavipinnis*) locality at Buchanan Ford on the Powell River in fall 1998, and uncovered three young-of-year madtoms. This is the first time the species has been reported from the Powell River since fall 1983, when one young of year yellowfin was also observed at Buchanan Ford.

Bernie Kuhajda (University of Alabama) reported that Rick Mayden's lab will be surveying caves with aquatic habitat in the area surrounding Key Cave (Tennessee River drainage) for new populations of Alabama cavefish, *Speoplatyrhinus poulsoni*.

Kevin Hamed, of Tennessee State Parks, reported a robust population of Tennessee dace (*Phoxinus tennesseensis*) in the Beaver Creek system (of the Holston) within Steele Creek Park. He and a local high school student are initiating a project to study this population in more detail.

Etnier's Regional Faunas class collected some additional species in the rip-rap areas with fast current in the Tennessee portion of the Mississippi River. These include: *Elassoma zonatum*, *Gambusia affinis*, *Lepomis cyanellus*, *L. megalotis*, and *Percina sciera*.

Scott Mettee, Geological Survey of Alabama (GSA), reported that GSA will be doing all of the level one fish bioassessments in the Alabama part of the Tennessee system in 1999 and 2000. A complete report on the fish of the Alabama section of the Tennessee River should be published by the GSA Fall 1999. The database for this report includes information from 1,188 samples collected at 761 stations between 1954 and 1998. GSA are also planning to release a new color poster on Alabama fishes in early March.

Exotic species

Steve Fraley (American Aquatics) and Charlie Saylor (TVA) reported a large adult grass carp (*Ctenopharygodon idella*) from Melton Hill Reservoir (Clinch system) in fall 1998, and that pumpkinseeds (*Lepomis gibbosus*) have moved downstream of Boone Reservoir (Holston system); they were collected in Horse Creek (South Fork Holston tributary in Sullivan Co., TN).

Al Brown (TVA) reported that blueback herring (*Alosa aestivalis*) were documented in the upper reaches of Melton Hill reservoir (high numbers) by TVA reservoir sampling crews in Fall 1998. Reproducing populations are being tracked in both Chatuge and Nottely reservoirs and their tailwaters. Multi-age classes were sampled in Fall 1998 by biologists from Georgia Department of Natural Resources and North Carolina Wildlife Resources Division. Brown says we have little knowledge concerning the effect of this introduction on native fish populations, but the GDNR biologists suspect a negative impact on resident largemouth bass and yellow perch in Nottely. Bluebacks are considered riverine spawners but have apparently adapted to reservoir spawning conditions. They prefer cooler oxygenated refuge areas in the reservoirs but apparently do very well in dam tailwaters. At this point we have no idea, if, or how quickly they will distribute themselves further down the TVA system. State biologists have been alerted and, at this point, identification is the major problem. We intend to distribute lab specimens to district fishery biologists to help with this problem.

Gerry Dinkins (3D-Environmental) turned up a population of *Gambusia holbrooki* from the Holly Creek portion of the Conasauga system in northern Georgia.

Mussels

J.R. Shute and Pat Rakes (Conservation Fisheries, Inc.) found an apparently very old muskrat midden with 22 mussel taxa (identifications verified by Dr. Paul Parmalee and Steve Ahlstedt), several of which are now federally endangered and a few extinct. This find will help provide documentation of historical French Broad River mussel fauna, which is important for mussel reintroductions that are currently being considered for this river reach.

Steve Fraley (American Aquatics) and Steve Ahlstedt (USGS), were contracted by FWS to survey Copper Creek (Clinch River tributary) for mussels. Twenty sites within a 50 mile reach were surveyed. Nine of 19 mussel species collected in 1980 were not found in 1998, including the federally endangered oyster mussel (*Epioblasma capsaeformis*) and rough rabbit's foot (*Quadrula cylindrica strigillata*). Densities of remaining mussel species (10) were low.

Fraley and Ahlstedt were contracted by TVA to survey Tellico River (Little Tennessee system) for mussels. Two sites in the Nar's Ford area were surveyed in 1998. Only four of 13 species collected in 1983-84 were found. Densities were very low (8 individuals compared to 1125 in 1983-84).

Ron Cicerello of the Kentucky State Nature Preserves Commission, reported that KSNPC has completed a study of freshwater mussels in the Green River from Mammoth Cave National Park (MCNP) upstream to Green River Lake Dam under contract with FWS Asheville office. Thirty-four species were found alive and 10 others were found only as old shells. When combined wi

1999 Report of Region 4 - South Central

Jan Hoover at the Corps of Engineers Waterways Experiment Station in Vicksburg, Mississippi reports that fellow staff members Jack Killgore, Steven George, and Bradley Lewis are studying the colonization of a constructed gravel bar by fishes in a diversion canal receiving water from the Tenn-Tom Waterway in Mississippi (Tombigbee River drainage). The gravel bar was created 10 years ago and was rapidly colonized by minnows and darters; including a single *Crystallaria asprella*. Today, crystal darters are present in substantially high numbers. Jan and Jack are conducting baseline studies of east Mississippi streams to forecast fishery benefits of planned habitat restoration projects. Lake George, a backwater of the Big Sunflower River (Yazoo River drainage) is an important spawning area for fishes, but is dewatered during low river stages in the summer. Models relating river stage to larval fish densities indicated that substantial benefits would result from a fixed-crest weir that would pool water during this critical period. They also are examining dewatering in the upper Little Tallahatchie River (Yazoo River drainage) along with staff from the USDA Forest Service in Oxford (see below for details). Swimming performance studies of several fishes in laboratory streams were conducted this summer by Jan, Jack, and former University of Mississippi student Reid Adams (now at SIUC). Swimming endurance models were developed and station-holding behaviors described for the endangered *Scaphirhynchus albus* and the Eurasian round goby, *Neogobius melanostomus*. Studies provided insights into microhabitats likely to be inhabited by pallid sturgeon and the possible containment of round goby dispersal (low water velocities provided nearly 100% short-term containment of the goby). In a recently completed study, Steven described ontogenetic variation in rostrum dimensions of paddlefish from the Big Sunflower River (Yazoo River drainage). Steven is also examining ontogenetic and interspecific variation in lower Mississippi River Basin shovelnose and pallid sturgeons. Recent acquisition of some juvenile pallid sturgeons from Upper Missouri-Yellowstone, Lower Missouri, and Lower Mississippi-Achafalaya hatcheries will allow some evaluation of intraspecific variation among populations. Lastly, Jan wanted to credit Neil Douglas of Northeast Louisiana University for participation in fieldwork with the team and cataloging and curating all specimens collected (NLU Museum of Zoology).

Mel Warren and Wendell Haag at the USDA Forest Service, Southern Research Station in Oxford, Mississippi, conducted a survey of a 21 mile segment of the old channel of the Little Tallahatchie River (above Sardis Reservoir) and an adjacent drainage canal this fall in north-central Mississippi. The old channel is being considered for a flow restoration project by the Corps, which would return flow to the channel from a tributary stream. The upper reaches of this segment of the old channel consist of small isolated pools in the summer; downstream the channel retains water all year but ceases to flow by mid-summer. Mel and Wendell found remnants of a bottomland river and wetland fish fauna still hanging on in the old channel. They took four large *Hybognathus hayi* in a gillnet, but failed to capture any other specimens using seines or backpack electroshockers. With Jan Hoover's Waterways Experiment Station crew, they took a single specimen of *Notropis maculatus* in an isolated pool in the old channel. This find represents a considerable upstream range extension for this species in the Yazoo River basin. They also collected *Elassoma zonatum* and *Fundulus crysotus*. Despite years without

sustained flow, the old channel generally maintains a more diverse fish fauna (about 26 species/collection) than the drainage canal (about 23 species). They will return to the field this spring or early summer to re-sample both the canal and old channel (a bantam sunfish lurks out there somewhere). Mel and Wendell also report work in press on a study documenting the effectiveness of freshwater mussel mantle displays in eliciting attacks from fishes (bass and darters). They are also working on a manuscript looking at diurnal and nocturnal displays of gravid female mussels and their response to the presence of fishes. Additionally, Mel and Brooks Burr at Southern Illinois University at Carbondale are completing a manuscript entitled "A history of ichthyology in Kentucky" and hope to submit that soon for publication.

Brooks Burr continues to get young of the year bighead carp, silver carp, and grass carp from the lower Ohio and Mississippi Rivers and their tributaries. All three species appear to be established in this region. Brooks, along with Ken Cook, David Eisenhour, Donovan Henry, James Ladonski, and Jeff Stewart had a successful snorkeling trip in the Big South Fork during May 1998 and found nests of *Etheostoma percnurum* at two separate sites in the Kentucky portion of Big South Fork. Their only concern was the high incidence of black-spot disease that was present on every individual observed. Donovan Henry, a masters student at SIUC, completed a study of the nesting and reproductive biology of *Nocomis effusus* in Little South Fork, Kentucky, and obtained data on nest density throughout the entire stream system.

Todd Slack was recently hired by the Mississippi Museum of Natural Science in Jackson as a non-game research biologist. His primary responsibilities are to curate the state ichthyological collection and to conduct research on the ecology, conservation and management of non-game fishes and their communities. The ichthyology collection, presently 23,005 catalogued lots, has received minimal attention during the past decade. Efforts are being devoted to verifying identifications and databasing all catalogued lots and working through an enormous amount of backlogged material. Additionally, all Museum staff are preparing for the move to their new museum facility (scheduled for April 1999) located along the Pearl River at LeFleur Bluff State Park, approximately three miles north of the present museum. The new 73,500 square foot facility will include three separate collection ranges (paleontology, wet (fishes, herps) and dry (mussels, birds, mammals, herbarium)) and associated laboratories, an aquarium system containing 70,000 gallons of water, a 200 seat auditorium, and classrooms. The outside facilities will include a bird watching area, 2.5 miles of nature trails, pathways with interpretive stations, and 300 acres of cypress swamps, sandy creek bottoms, native gardens, and steep wooded bluffs. Additionally, Todd is still involved with the Gulf sturgeon project that he worked on as a post-doc at USM (see below). You may contact Todd at the Museum via e-mail (todd.slack@mmns.state.ms.us) or phone (601-354-7303).

Stephen T. Ross at the University of Southern Mississippi in Hattiesburg reports that he, along with Ryan Heise, Mollie Cashner, and Todd Slack, are studying movement and habitat use of *Acipenser oxyrinchus desotoi* in the Pascagoula River drainage. The US Fish and Wildlife Service and the Mississippi Department of Wildlife, Fisheries and Parks are funding the project. In April 1998, seven Gulf sturgeon were captured near a potential spawning area in the Bouie

River near Hattiesburg. Sturgeon were equipped with external dangle or floy tags, PIT tags, and external radio transmitters. Downstream migration began at the end of April and ended at a summering area in the vicinity of Big Black Creek in the lower Pascagoula River, about 56 km upstream from the Gulf of Mexico. Additional summer sampling in these areas yielded 23 additional Gulf sturgeon ranging from 116 to 204 cm FL. All fish were equipped with external and PIT tags, and nine were equipped with external radio tags. Radio tagged individuals move extensively along Big Black Creek from the confluence of Red and Black creeks downstream to its confluence with the Pascagoula. Movement also occurs in the main channel of the Pascagoula, mostly from the area of Big Black Creek downstream 1.5 km to the vicinity of Brewton Lake. By 10 November, all fish in the lower Pascagoula-Black Creek area had moved downstream into the estuary. Work this year includes monitoring tagged sturgeon moving into the Pascagoula River during the spring migration and efforts to verify spawning sites by deploying egg samplers in the presumed spawning areas. Gill nets will be used to capture additional sturgeon as they enter the Pascagoula River and at holding sites later in the year. Captured sturgeon will be equipped with both external radio and sonic tags to track sturgeon in salt and freshwater. A point for concern is that a proposed dam threatens the presumed spawning habitat on the Bouie River. Stephen also reports that he and Pam Schofield are using artificial streams to study meso- and micro-habitat selection of *Percina aurora* and *P. copelandi*. The distribution of *P. aurora* historically included both the Pearl and Pascagoula drainages. However, the Pearl darter is now thought to be extirpated from the Pearl River and is very rare in the Pascagoula River drainage. Because of its rarity, they have used channel darters as a surrogate species to investigate habitat selection. Larval rearing techniques for both species are being developed by Patrick Rakes at Conservation Fisheries, Inc. Other ongoing research at the USM includes ecological studies of blennioid fishes on offshore petroleum platforms in the northern Gulf of Mexico by Tommy Rauch; completion of dissertation research on use of fringing floodplains by fishes of a southeastern blackwater stream by Martin O'Connell; dissertation research on the comparative ecology and behavior of two gobioid species in Florida Bay, Florida by Pamela Schofield; completion of a masters thesis on habitat use and demographics of the bisexual and unisexual silversides (*Menidia*) on Horn Island, Mississippi by John Ewing; and a masters thesis on the functional significance of alarm substances in cypriniform fishes by Mollie Cashner. Lastly, Stephen and Stuart Poss of the Gulf Coast Research Lab in Ocean Springs, Mississippi have received NSF support for the combined ichthyological collections at the University of Southern Mississippi. These include the fish collection at Gulf Coast Research Lab and the fish museum on the main campus in Hattiesburg. Funding is for three years and provides support for processing backlogged collections. These backlogged collections include large larval holdings from the Gulf of Mexico, as well as various freshwater and marine collections of juvenile and adult fishes. Two doctoral research assistantships are included in the project.

Mark Peterson at the Gulf Coast Research Lab in Ocean Springs, Mississippi has some US Fish & Wildlife and Nature Conservancy funds to survey for *Fundulus jenkinsi* in coastal Mississippi and Alabama from the Pascagoula River to Mobile Bay this summer. Mark and others are also continuing their MS-AL Sea Grant project on recruitment variability in estuarine fishes and have

some new funds to address Essential Fish Habitat along an anthropogenic gradient in the Pascagoula River. Mark, along with others, has five papers in press: the affect of salinity on growth in juvenile Atlantic croaker, *Micropogonias undulatus*; life history of a peripheral population of bluespotted sunfish, *Enneacanthus gloriosus*, with comments on geographic variation; comparison of Breder traps and seines used to sample marsh nekton; growth, spawning preparedness and diet of the southeastern blue sucker, *Cycleptus* sp. cf. *elongatus*; and laboratory growth responses of juvenile *Mugil* sp. to temperature and salinity, delineating optimal field growth conditions.

Daniel J. Drennen recently joined the staff at the US Fish and Wildlife Service field office in Jackson, Mississippi. Daniel announced the 90-day finding (Substantial) for a petition to list the vermilion darter, *Etheostoma chermocki*, from Jefferson County, Alabama as Endangered. The finding was published in the Federal Register on Tuesday, 26 January 1999. Additionally, the Pearl darter, *Percina aurora*, is being considered for elevation to candidate status. Anyone with additional information about this species can contact Daniel at USFWS, 6578 Dogwood View Parkway, Jackson, Mississippi, 39157, (601) 965-4900, ext. 27.

Hank Bart at Tulane University reports continued work on the conservation status of *Percina aurora* and *P. brevicauda*, as well as the undescribed rush darter, *Etheostoma* sp. cf. *parvipinne*. Working with students Kyle Piller, Jason Tipton, and Nakia Jackson, and Steve Ross and students from University of Southern Mississippi, Hank resurveyed parts of the Leaf River and Bouie and Okatoma creeks in 1998 looking for Pearl darters. Specimens (very few, in breeding condition) were taken only in the Leaf River. Hank and Kyle surveyed sites on the Blackburn Fork of the Little Warrior River and the Cahaba River in Alabama in September 1998, looking for *Percina brevicauda*. A single specimen was taken from Blackburn Fork. More status work is planned in 1999 for this species as well. Now that the manuscript describing the rush darter is in review, Hank is planning to start assessing the status of known populations of this species. The aim of this work will be to confirm the continued presence of the species in the two areas where it has been recently collected (spring-fed streams in Bankhead National Forest and Pinson AL), and to try to locate additional populations. This species is also being recommended for Federal Candidate Status.

Jonathan W. Armbruster is the new Curator of Fishes at the Auburn University Museum Fish Collection, which has extensive holdings of fishes from throughout the southeastern United States and the Gulf of Mexico. For loans and locality records, please contact Jon at armbrjw@mail.auburn.edu or (334) 844-9261.

Carol Johnston at the Department of Fisheries and Allied Aquacultures, Auburn University, is currently working on the behavioral ecology of *Cottus pygmaeus*, development of habitat models for *Cyprinella caerulea*, and continues with her work on sound production in fishes. Carol's student, Bryan Phillips, is conducting a survey of fishes and mussels of Bear Creek (Tennessee River drainage). Bryan will compare his data to Ben Wall's 1968 survey, which was done before most of the reservoirs on the system were in place.

Jim Godwin of the Alabama Natural Heritage Program in Montgomery, Alabama reports that he just finished an examination of two springs on the Fort McClellan Military Reservation for the feasibility of transplanting specimens of *Cottus pygmaeus* from Coldwater Spring. Based on numerous factors, including aquatic vegetation and aquatic invertebrate fauna present in these springs relative to Coldwater Spring, Jim concluded that these springs were inadequate to support pygmy sculpins.

Malcolm Pierson at Alabama Power Company reports that he will begin a status survey of *Etheostoma chuckwachatte* in the Tallapoosa River system in Alabama and Georgia. He requests that anyone with recent records of the lipstick darter contact him. Malcolm will also be searching the Tallapoosa River system for the muscadine darter. Additionally, Malcolm reports the rediscovery of populations of two federally Endangered mussels, *Pleurobema decisum* and *P. perovatum*, in July 1998 in a section of the original Coosa River channel that had been cut off by the Weiss Reservoir diversion dam. Natural flows in the old river channel have been greatly reduced and are affected by reverse flows during hydroelectric operations. The density and total range of these mussel populations are not yet known.

Greg Lein with the State Lands Division of the Alabama Department of Conservation and Natural Resources Natural Heritage Section reports the recent acquisition of several tracts of land through Alabama's Forever Wild Program, which will assist in the conservation of some of the state's aquatic resources. These include the 60 acre Blowing Spring Cave Nature Preserve within the interior low plateau, which comprises cave, field, forest and riparian habitats adjacent to Second Creek in Lauderdale County. This aquatic cave may support several rare species, in addition to a maternity colony of gray bats. Another acquisition is the 3,924 acre Doug Ghee Nature Preserve and Recreation Area, consisting of wooded terrain at Coldwater Mountain, located between Oxford and Anniston. This area secures a natural landscape which comprises the majority of the recharge basin for Coldwater Spring, which contains the only populations of *Cottus pygmaeus* and a genetically distinct population of *Etheostoma ditrema*. Greg also reports the planned acquisition of the Sipsey River Swamp Nature Preserve and Recreation Area, a 2,998 acre expanse of mostly bottomland hardwood swamp and riverine habitats in Tuscaloosa County (Tombigbee River drainage). The swamp contains excellent habitat for waterfowl and neotropical migrants, while the river historically supported six federally listed mussel species, four of which are extant. The river also supports spring runs of the genetically distinct southern walleye. This acquisition is intended to be the first of several projects targeting the conservation of this system's aquatic fauna and flora.

Scott Mettee of the Geological Survey of Alabama in Tuscaloosa reports that a recent study in the Locust Fork of the Black Warrior River by Tom Shepard, Pat O'Neil, Scott, and Stuart McGregor uncovered a heretofore unknown population of *Notropis cahabae*. The Cahaba shiner is presently known to occupy 64 miles of the Locust Fork main channel and its abundance at some localities appears greater than found in recent Cahaba River surveys. Ranges for *Percina brevicauda* and *Etheostoma douglasi* were also expanded throughout the Locust Fork drainage.

Etheostoma nigripinne, a Tennessee River drainage endemic, was also discovered for the first time in the Mobile Basin, from Graves Creek, located in the extreme upper reaches of the Locust Fork. Likewise, *Ichthyomyzon castaneus* and *Strongylura marina* were collected at several locations in Locust Fork for the first time. Scott is continuing studies on population size, spawning activity, and post-spawning movements of blue suckers in the lower Alabama River. Results of last year's sonic tracking efforts confirmed that following spawning, blue suckers move from 70 to 156 miles downstream into the lower Alabama and Mobile River systems where they spend the summer months. At least four sonic-tagged fish have moved upstream into the Claiborne pool and Millers Ferry tailwater area in the spring, presumably to spawn, and then they returned to their same individual downstream habitats, even to the same treetop, for two successive summers. In May 1998, Scott and Pat collected a single, healthy *Alosa alabamae* at the base of Selden Lock and Dam in Greene County. This is the first known record of an Alabama shad taken from the Black Warrior River system this century.

William Nichols of the Marion State Fish Hatchery in Alabama reports the capture of a third Alabama sturgeon (*Scaphirhynchus suttkusi*), a male in non-reproductive condition, in November of 1998. This fish joins the male and female that were captured in 1997; the female was surgically examined in December 1998 and appears to be developing eggs. Modifications to the existing hatchery facilities and the construction of a new sturgeon holding and culture facility was initiated in 1998 and is continuing. These facilities will be utilized to increase brood stock holding capacity and to provide space for future sturgeon fingerling culture.

Frank Parauka of the US Fish and Wildlife Service, Panama City, Florida reports that his office has been studying the movement and habitat use of sub-adult *Acipenser oxyrinchus desotoi* overwintering in Choctawhatchee Bay, Florida. Twenty fish, weighing from 2 to 19 kg, were equipped with external ultrasonic tags in 1996-97. A total of 263 observations were recorded for sub-adults from November 1996 through May 1998. Ninety-one percent of the sub-adults tagged remained in Choctawhatchee Bay the entire winter or ventured into Santa Rosa Sound. Sub-adults showed a preference to shoreline habitats (100 m to 2.0 km from shore) with sandy substrates and water depths less than 4 m. Frank also reports that Gulf sturgeon were collected in 1998 in the Apalachicola River below the Jim Woodruff Lock and Dam and were compared to population size and year class distribution data from the last survey conducted in 1993. The 1998 Gulf sturgeon population estimate at 95% CI was 270 fish (135-1719) compared to 95 fish (75-196) in 1993. Sub-adults represented 69.5% of the sample in 1998 and 59.0% in 1993. Fish in excess of 45.0 kg decreased in occurrence, from 24.0% in 1993 to 6.5% in 1998. The study is to be duplicated in 1999. Lastly, Frank reports that the lower Apalachicola River was stocked with 111,000 Phase II *Morone saxatilis*. This was the first year that the goal of 100,000 Phase II fish had been achieved. The program is part of a cooperative agreement between the US Fish and Wildlife Service and the states of Florida, Georgia and Alabama to restore striped bass in the Apalachicola-Chattahoochee-Flint river system.

Rick Mayden and Herb Boschung at the University of Alabama continue to work on the Freshwater Fishes of Alabama. Rick reports that his lab is working on several status surveys,

including *Etheostoma ditrema* throughout its range in the Coosa River drainage in Alabama, Georgia, and Tennessee; *Etheostoma trisella* in the Coosa drainage in Alabama; the undescribed blueface darter, *Etheostoma* sp. cf. *zonistium*, in the upper Sipsey Fork of the Black Warrior River and Bear Creek in the Tennessee River drainage; and *Speoplatyrhinus poulsoni* in the Tennessee drainage. Rick also reports that graduate student Cesar Blanco is completing a study on using habitat variables to predict abundance and presence/absence of *Etheostoma chermocki* in Turkey Creek, Jefferson County, Alabama, and student Dave Neely is examining several undescribed species of *Cottus* in the Mobile Basin, as well as looking at variation in *Noturus munitus*.

Bernie Kuhajda

1999 Report of Region 5 - Northwest

Arkansas

The White River Navigation Project was reauthorized by the Water Resources Development Act of 1996 and proposes to construct and maintain a 200 foot wide by nine foot deep navigation channel from the mouth upstream to Batesville, AR (approximately 255 river miles). A notice of intent to prepare a Supplemental Environmental Impact Statement was published by the Corps of Engineers in the Federal Register (Volume 64, No. 5, p. 1181) on January 8, 1999. Corps Waterways Experiment Station personnel spent several weeks in the field in late 1998 gathering data to assess the possible impacts of the navigation project on littoral and demersal fishes, including paddlefish and sturgeon. A preliminary report regarding this field work is expected in the near future. In October 1998, a group of regional biologists was hosted by the Arkansas office of The Nature Conservancy at a working session to review the proposed navigation project, outline concerns, and formulate research needed to adequately address the impacts of the proposed navigation project.

1999 Report of Region 6 - Southwest

The Fish Team at the Waterways Experiment Station - Jack Killgore, Jan Hoover, Phil Kirk, Steven George, and Bradley Lewis have been active as usual. Neil Douglas, Northeast Louisiana University, conducts fieldwork with the team, and catalogs and curates all specimens collected (NLU Museum of Zoology). Two student team members, Reid Adams and Jim Morrow, recently graduated from the University of Mississippi. Reid is now studying at Southern Illinois University and Jim has started his own consulting firm. Experimental habitat restoration techniques are under study by Jack, Steven, and Bradley. At Cypress Bayou, TX (Red River Drainage), effects of controlled water releases on spawning are being evaluated. Spring-summer hydrographs are varied each year; abundance, diversity, and chronology of larval fishes are documented so that water releases providing maximum benefits to fishes may be identified. Swimming performance studies of several fishes in laboratory streams were conducted this summer by Reid, Jan, and Jack. These included the endangered pallid sturgeon (*Scaphirhynchus albus*) and the Eurasian round goby (*Neogobius melanostomus*). Swimming endurance models were developed, and station-holding behaviors described, for both species. Studies provided insights into microhabitats likely to be inhabited by pallid sturgeon and of the possible containment of round goby dispersal. Model hydraulic barriers were created and installed in a circular laboratory racetrack by Bradley, and effects on containment of goby monitored by videography. Results indicated that low water velocities provided nearly 100% short-term containment of the goby. Morphological variation in chondrosteans is being studied by Steven. Ontogenetic variation in rostrum dimensions of paddlefish from the Big Sunflower River (Yazoo River Drainage) is described in a recently completed study. Ontogenetic and interspecific variation in morphometrics are being evaluated for lower Mississippi River Basin shovelnose and pallid sturgeons. Recent acquisition of some juvenile pallid sturgeons from Upper Missouri-Yellowstone, Lower Missouri, and Lower Mississippi-Atchafalaya hatcheries will allow some evaluation of intraspecific variation among populations.

Christine Davis (Northeast Louisiana University) is studying age, growth and reproduction of the scaly sand darter, *Etheostoma vivax* in a Gulf coastal plain watershed. Brian Hooper (NLU) is examining proportional stock density of largemouth bass *Micropterus salmoides* in Black Bayou Lake, an urban NWR. Continuing studies on gobioid fishes at NLU are fast making it the Sleeper Center of the Southeast. Taking a cue from his student, Bryan Cage, who is finishing his thesis reviewing *Eleotris* from the eastern Pacific, F. Pezold is pushing his work on the Atlantic *Eleotris* to completion, typing the final draft of a revision of *Gobionellus* that includes a key to all the species being removed to *Ctenogobius* (most of them), finishing a revision of *Oxyurichthys* this summer with visiting scholar and gobiologist, Helen Larson of the Northern Territory Museum, Australia (one species occurs in marine waters off the SE US- *Oxyurichthys stigmalophius*) and starting a revision of *Dormitator* with Mike Taylor of Tulane.

Frank Pezold