

2001 Report of Region 1 - Northeast

That well-known deviant and voyeur, Bob Jenkins (Roanoke College), has been spending all of his free time in the past two springs observing sucker sex. In fact, he has been so consumed with it that I have little to report on his activities this past year. Hopefully, by next year he will have tired of it and be ready to enlighten us all.

Mike Pinder (Virginia Game and Inland Fisheries) reports that since 1998, his department's Wildlife Diversity Division has been developing techniques to propagate mussels for eventual release into the upper Tennessee River. The cultivation facility is located on the South Fork Holston River near Marion, VA. Presently, they are holding over 22 species (307 individuals). Fourteen have successfully spawned in hatchery raceways with low mortality for most species. In June biologists will survey a potential release site on the Clinch River. The wavyrayed lampmussel (*Lampsilis fasciola*) and the oyster mussel (*Epioblasma capsaeformis*) will be the first artificially propagated species released at this study site.

Eugene Murakis (Science Museum of Virginia) has been spending a considerable amount of time (4 year grant) studying freshwater fishes of Greece which is slightly outside the purview of SEFC but he still has managed to continue his work on southeastern fishes. In press is a comparison of spawning and non-spawning substrates in nests of *Nocomis* and *Exoglossum*. Along with Ray Katula and Bill Roston, he has submitted a manuscript on spawning in *Hemitremia flammea* and with a student (Will Gretes, Univ. Richmond) is completing a comparisons of myomere counts among larval *H. flammea* and populations of *Semotilus*. Finally, he is wrapping up nest attractant studies and spawning of *Nocomis effusus*.

Wayne Starnes (North Carolina State Museum of Natural Sciences) took the plunge off the cliff again and got married in January. According to various sources, he is still happily married. Congratulations, Wayne. The past two springs, he joined up with several agencies, including Carolina Power and Light Co., Duke Power Co., NC Wildlife Resources Commission, SC Department of Natural Resources, US Fish and Wildlife Service, NC State University and others in a massive electroshocking survey of the Pee Dee river in NC and NC in search of further specimens of the robust and undescribed "Carolina" redhorses. The effort in 2000 yielded only the second documented specimen of the robust redhorse from the Pee Dee basin since it's description by Cope in 1870. The "Carolina" redhorse, under study and description by Jenkins and Starnes, is known in the Pee Dee from but five specimens, the last collected in 1994. These are clearly two of the rarest fishes in the Pee Dee and probably have been largely extirpated from that river by a combination of predation by *Pylodictis olivaris* and other factors. The only currently strong population of the "Carolina" redhorse resides in the lower Deep River portion of the Cape Fear basin. It appears to be on the verge of extinction from the remainder of that basin. Surveys are being spearheaded by CP&L in conjunction with re-licensing of dams on the Pee Dee. This year's effort will be expanded upstream to include reaches of the river below Tillary reservoir in addition to revisiting reaches sampled last year from below Blewett Falls Lake, NC to Cheraw, SC. After four long days on the Pee Dee in April 2001 with a mega-flotilla (9) of

shocking boats, one 12 lb running ripe female robust redhorse was dip-netted by Wayne in a shoal area above Mill Creek. They worked the area from Blewett Falls to Cheraw and also between Tillary and Blewett. That is one rare fish. Additionally, another nuptial male "Carolina" redhorse was taken at High Falls in late April 2001.

The NCSM data base is now fully developed and operational (thanks to Gabriella Hogue and Jonathan Raine). Data entry of locality records is proceeding at a good clip with about 2500 records, most with GIS data, entered. These records support probably 15,000 or more lots and cataloging is complete on several hundred of these (only 80,000 more to go!). NCSM, in conjunction with researchers at the NCSU Vet School, is in the process of setting up a lab to conduct molecular investigations aimed at the systematics and conservation of fishes and mollusks. Morgan Raley, currently with the NCSM fishes unit, will be moving down the street to begin these tasks in June.

Fritz Rohde (NC Marine Fisheries), Rudy Arndt (Richard Stockton College), Jeff Foltz (Clemson University), and Joe Quattro (Univ. South Carolina) are still slowly working away on their SC fishes project. Foltz is currently computerizing all of the Clemson and Rohde and Arndt locality records.

The SC DNR research lab at Eastover is involved in three diversity/distribution studies. Jim Long is surveying fishes in rice fields in the lower Cooper River, Leo Rose is inventorying fishes in the Congaree Swamp National Monument, and Jason Bettinger is sampling the Broad River from above Columbia, SC to the NC/SC border.

F. Rohde

2001 Report of Region 2 - Southeast

Conservation Notes

In Chattanooga last January (2001), a new conservation entity committed to halting the accelerated decline of imperiled southeastern freshwater fishes was quietly formed. The meeting was the second of two intense workshops hosted by the U.S. Fish and Wildlife Service with the explicit goal of conserving and recovering southeastern imperiled fishes. The 60+ attendees, representing the business sector, conservation groups, governments (state and federal agencies), and academia participated in both workshops. The first workshop (held in October 1999) produced a remarkable consensus plan (*see below). Participants in the January meeting focused on implementing the plan and unanimously agreed to create a new (as of yet unnamed) conservation entity. A volunteer Steering Committee was formed and charged with creating a new, non-profit organization, obtaining initial funding, identifying a director, and coining an appropriate name. Wendy Smith, World Wildlife Fund, was nominated as is the committee chair based on her experience with successful conservation groups. Wendy may be contacted at: southernrivers@worldnet.att.net. Other Steering Committee members are: George Benz (Tennessee Aquarium), Kelly Bibb (U.S. Fish and Wildlife Service), Dick Biggins (USFWS), Jeff Duncan (National Park Service), Mark Hughes (International Paper), Rick Mayden (St. Louis University), Stephen Ross (University of Southern Mississippi), Bobby Reed (Louisiana Department of Wildlife and Fisheries), David Sligh (American Rivers), Brian Wagner (Arkansas Fish and Game Commission), Stephen Walsh (USGS), and Chris Williams (World Wildlife Fund).

The new organization differs from the Southeastern Fishes Council in that it focuses on implementing and pursuing conservation actions and ultimately recovery. The group will be modeled after non-profit conservation groups such as WWF or TNC. The SFC formally offered to serve as a host for the new group. It was determined, however, that the new group would likely function better as an independent entity, but would clearly benefit from strong ties to professional, academic societies such as the SFC, American Fisheries Society, and the American Society of Ichthyologists and Herpetologists. Members of the SFC will continue to make significant contributions to the new group. A name for the group, the "Southeastern Fish Conservancy," abbreviated SEFC, is hereby tendered for consideration.

The portent of this group and its future importance to conservation are evidenced by the affiliations of steering committee members: state governments, federal government, academia, conservation groups, and the private sector. The success of the group absolutely depends on its egalitarian composition. Additional members of the business community are welcome (and needed), as well as members of county commissions and city councils. Altogether strange bedfellows indeed, but like politics, many important conservation decisions and actions are local. The latter point is emphasized when considering the future environmental impacts of southeastern metropolises such as Atlanta. Northward growth of metropolitan Atlanta already impinges the upper Coosa Rivers system, and could engulf it in 50 years. Indeed, the fringes of Atlanta and Chattanooga may coalesce in the heart of persisting diversity and remarkable

endemism. Beyond obvious, potentially negative effects of urbanization, e.g., loss of arable land, water supply impoundments, polluted runoff, etc., loom fundamental transformations of the landscape, a process governed by local zoning decisions.

Resolving conservation conflicts at local levels is the critical basis underlying successes of many river conservation groups. Modern conservation and recovery efforts must shun the largely ineffective adversarial approach. Contemporary conservation requires diverse partners vested in the mutual belief that aquatic biodiversity can be preserved amongst burgeoning urbanism. Moreover, it is need right now. Fortunately, at the heart of every conservation enterprise are the insuperable, wide-eyed faithful with iican dola attitudes and specifically, the ethical grit to make a difference.

The consensus document: "Strategic Plan for the Conservation and Recovery of Southeastern Imperiled Fishes" may be viewed at this website:

http://www.sherpaguides.com/southeast/aquatic_fauna/strategy/index.html.

The Georgia Department of Natural Resources has produced an outstanding videotape on the conservation and recovery efforts underway for the robust redhorse. The video presents a balanced, informative narrative covering the rediscovery of the species to current recovery efforts for this impressive sucker. Emphasis is placed on the cooperative nature of activities between the federal government, states, and the private sector under the aegis of the Robust Redhorse Conservation Committee (RRCC). The USFWS agreed not to list the species *if* the members of the RRCC engaged in significant, cooperative efforts to conserve and recover the species. Although these conservation efforts are iroutsidelo the authority of the Endangered Species Act, the point is made that without the ESA, cooperators would not have been motivated to undertake conservation activities. The robust redhorse story is a model of modern conservation cooperation, and the videotape merits accolades for clearly telling the story. Gary Mefee, Managing Editor for the journal *Conservation Biology*, recently reviewed the videotape and gave it high marks for quality and content. The tape is certainly worth viewing, especially the scenes of explosive spawning bouts in gravel shallows. As Mefee exclaimed: "It is really a big sucker!" Katheryn Kohm, the editor of the relatively new journal, *Conservation Biology in Practice*, an offshoot of CB dedicated to iobridging the gap between conservation science, practice, and policy,l, is interested in the case of the robust redhorse and the work of the RRCC. The robust redhorse was considered likely extirpated in the Peedee River until its recent capture. Although Cope described it from the Peedee River, the only other itrecentld material was from the 1960s, exact site unknown. Additional information and links are found at:
<http://www.robustredhorse.com/>.

Affecting Alabama, Georgia, and Florida, the Tri-State Water Project at times seems lukewarm or is a topic of heated concern. The project proposes interbasin transfer of water from the Apalachicola, Chattahoochee, and Flint rivers (ACF) to the Alabama, Coosa, and Tallapoosa rivers (ACT), to ensure the future water supply for Atlanta (and some other unclear benefits). The concern of the downstream states, Alabama and Florida, are whether enough water will

remain to support natural resources and future growth demands. The agreements, or Tri-State compacts, are supposed to establish mutually-agreed water allocation formulas, a goal that seems elusive. Among the three states, the city-state of Atlanta appears to be the winner, having insured its future water supply. It is evident that we do not really understand the breadth or severity of potential biological impacts. One strategy is to request the maximum flows possible for river sections that harbor listed species. However, this allocation will result in low system variability. How that will affect the long-term fitness of biota is unknown. Of all the considerations in the Tri-State compact, biological issues appear to have received the least attention. Most recently, Floridians have expressed concern regarding dewatering of the ACF and the resulting effects on Apalachicola Bay relative to the harvestable resources (primarily oysters, shrimp, crabs, and stripped mullet). Perhaps humans would ultimately benefit the most from allocations that promoted the greatest protection of biodiversity (seeing how we don't understand it all yet).

Research Notes

Chris Skelton, Georgia Natural Heritage Program, recently published his dissertation in *Copeia*, (2001, Number 1: p.118-128.) in which he describes the Walden Ridge endemic, *Phoxinus saylori*, a patronym honoring Charlie Saylor, a TVA biologist, who was among the first to collect the species. Having just earned his PhD, Chris eclipsed Sutt in publishing his dissertation by 50.5 years, a record that can only be broken by Reeve Bailey. By virtue of the extraordinarily restricted range, *P. saylori* bears monitoring relative to population changes. Chris is the first aquatic zoologist to join the heritage program in Georgia.

Mary and Bud Freeman continue their Freemanesque-pace in working on Georgia fishes, including a recent marathon effort to finish the description of the Halloween darter. After photographing Halloween darters last spring, I was impressed with its resemblance to *P. palmaris* (but not *evides*), a point Mary has made for some time. The Halloween darter is endemic to the Apalachicola, Chattahoochee, and Flint rivers in Alabama, Georgia, and Florida.

Sutt (Royal D. Suttkus) and Scott (Maurice) Mettee published description of a new minnow with a limited distribution in the Choctawhatchee and Pea rivers, *Notropis (Pteronotropis) merlini*, with a diagnosis of the *N. hypselopterus*-complex: *N. euryzonus*, *N. grandipinnis*, *N. hypselopterus*, and *N. merlini* (Geological Survey of Alabama Bulletin 170, 2001). The monograph treats Gulf slope *N. hypselopterus*, sans peninsular Florida and southeast Atlantic slope, and constitutes publication of a portion of Sutt's 1951 dissertation. Considerable information is treated, including an entwined taxonomic history and synonymy, resurrection of *P. grandipinnis* (Jordan), and usual morphological diagnosis and description, distribution, and zoogeography. The authors present argument for retaining subgeneric status of *Pteronotropis*. Unfortunately, gratis reprints were few and are exhausted; cost of the bulletin is exorbitant (\$9 or \$11?)-bad news for students.

Dennis Haney and colleagues, Furman College, South Carolina, reports they are conducting an interdisciplinary examination of the Enoree and Saluda River watersheds. The goal is to examine

the interrelationships between land use, water chemistry and hydrology, and the biota of the streams. The ultimate goal is to provide baseline data in these drainages. In the Enoree and Saluda rivers, over 160 sites have been sampled in the past two years, with some interesting findings, including the discovery that the northern hog sucker, *Hypentelium nigricans* is established in the Saluda.

Jan Hoover reports the Fish Team at the Waterways Experiment Station (WES) in Vicksburg, Mississippi, which studies the effects of flood control, navigation, and habitat restoration projects on fish communities, was active in Region II. Full-time team members include Jack Killgore, Jan Hoover, Phil Kirk, Steven George, and Bradley Lewis. Adjunct members are Mississippi commercial fisherman Bill Lancaster, Tennessee Valley Authority (retired) larval fish taxonomist Bobby Wallus, and University of Louisiana professor emeritus Neil Douglas. Last summer, WES team members and Angie Haggard (now an instructor at Guilford Technical Community College in Jamestown, North Carolina) studied swimming performance of hatchery-reared juvenile Florida gar (*Lepisosteus platyrhincus*) in a laboratory swim tunnel. The 45-60 mm TL gar were weak (and sometimes erratic) swimmers, but sustained prolonged and burst speeds were measured, and a model of swimming endurance is in the works. The shortnose sturgeon (*Acipenser brevirostrum*), is being studied at Fort Stewart, Georgia. Pectoral spines collected by contractors are sectioned and read at WES and a model is under development for Army management of the Ogeechee River population. Other military work in this region consists of the final analyses of faunal survey data collected at Fort Gordon, Georgia. Fishes were collected by seine, and larval and juvenile fishes and invertebrates were collected in floating light-traps. The objective is to characterize quantitative relationships between aquatic animals and habitat features in this portion of the Savannah River.

The USGS group in Gainesville has had an active year. Leo Nico is involved in multiple studies of nonindigenous fishes: 1) Genetic characterization of multiple Asian swamp eel introductions (with Tim Collins and Joel Trexler of Florida International University). 2) Evaluation of ecosystem level effects and control methods for Asian swamp eels (with Bill Loftus and John Curnutt of USGS). 3) The influence of hydrology on life-history parameters of common freshwater fishes from south Florida (with Bill Loftus and Jeff Herod of USGS). 4) Reproduction of Asian swamp eels (Family: Synbranchidae, Genus: *Monopterus*): Relationships between blood steroid levels, gonad condition, and reproductive phenology in introduced populations (with Tim Gross and Jeff Herod of USGS). 5) Risk assessment of introduced black carp (*Mylopharyngodon piceus*) and Asian swamp eel (genus: *Monopterus*) (with Jim Williams and Jeff Herod of USGS). He also is working with others in documenting the distribution and ecology of other nonindigenous fishes found in Florida and other parts of the US (particular focus is on cichlids and South American catfishes).

It was recently determined that Gainesville, Florida is the capital of senescing ichthyologists. At this writing, there are 10 in this area, yielding an unheard of ratio of 1 per 20,000 ordinary people. If you are an ichthyologist and thinking about retiring, DON'T COME HERE. We don't need you. The police already watch us; our phones are tapped; we are followed; 68% have

unusual feelings about minnows and clupeids. Most recently, the AARC revoked Carter Gilbert's and Walt Courtney's cards for getting "butt naked" on a roadside after collecting. Notice: this facility will not lend waders anymore to elder ichthyologists or out-of-towners.

Howard Jelks and Frank Jordan (Loyola University of New Orleans) continue their visual survey monitoring program of the endangered *Etheostoma okaloosae*, now in its sixth year. They have included additional sites, some of which correspond to the recently initiated monitoring of immature aquatic insects. This summer they plan to compare quantitative seining with visual survey techniques. A sediment study conducted by Howard and myself (effects on suspended sediment on the reproductive successes of tricolor shiners, *C. trichroistia*) will appear in the September issue of Transactions of the American Fisheries Society. Carter Gilbert and Jim Williams continue the long term Florida fish book project. Steve Walsh and I are assisting Jim in completing the descriptions of the *Percina* sp. cf. *macrocephala* forms in the Coosa, Tallapoosa, and Black Warrior river systems. Additionally, Steve has received funding to survey for peripheral fishes (to Florida) in the Escambia River. Jim and Carter recently began revision of the Audubon Field Guide to the Fishes; this version omits marine mammals, which were curiously included in the first edition. However, why not have guides to the Mice and Minnows of Alabama, or darters, Dace, and Dugongs of Illinois? Steve Walsh, Howard Jelks, Jim Williams are among those spearheading a Suwannee River initiative, an effort to establish baseline data on one of the few un-impounded, large southeastern rivers. Given the increased interest in interbasin transfer as a solution to cities that have surpassed their immediate resources, the Suwannee River will only increase in attractiveness. Tampa has already considered such transfers.

We were fortunate to get USGS Species At Risk funding and support from the USFWS for survey work in the upper Coosa during summer 2000 for the study of putatively imperiled fishes. We made 148 focused collections in the area; these data should provide a comprehensive distributional snapshot of the study area. We discovered the introduced population of red shiners, *Cyprinella lutrensis*, in the upper Coosa River system has significantly spread since its discovery in the Etowah River in 1993. The insidious minnow had caused a hybrid swarm with the indigenous blacktail shiner, *C. venusta stigmatura*. Morphological investigation is underway of that hybrid and behavioral research (interactions among spawning adults) has been funded by the U.S. Fish and Wildlife Service. Most recently, Ryan Evans discovered *C. lutrensis* in Rock Creek (a Holly Creek tributary), the only remaining Conasauga River tributary still supporting a population of the threatened blue shiner, *C. caerulea*. More monitoring work will occur this summer for this nefarious exotic. There is legitimate concern it may threaten the largest population of blue shiners.

Note: I have endeavored to increase the contact list in Region II; anyone wishing to report research or conservation activities, or to have their name included on my email list, please contact me at noel_burkhead@usgs.gov.

Noel Burkhead

2001 Report of Region 3 - North-Central

Status surveys and other interesting finds

As we have reported previously, the French Broad river, below Douglas Dam has shown improvement in the fish community in recent years. Fishes like tangerine and bluebreast darters (*Percina aurantiaca*, and *Etheostoma camurum*) were collected there for the first time in 1999, and other fishes known from that stretch of river have become more abundant, including blue suckers (*Cycleptus elongatus*) and snail darters (*Percina tanasi*). Also, Jim Layzer (Tennessee Cooperative Fisheries Research Unit, formerly listed as Tennessee Tech) reported that he has a graduate student doing a larval survey of this stretch of the French Broad River.

In summer 2000, biologists from the Southeast Aquatic Research Center (SARI), TVA, Tennessee Wildlife Resources Agency (TWRA), U.S. Fish & Wildlife Service (FWS), and the Tennessee Cooperative Fisheries Research Unit again stocked lake sturgeon in the French Broad River below Douglas dam. Follow-up surveys in this stretch of river have resulted in the observation or collection of four individuals in tailwater samples.

There are four other reports of sturgeon (none are well-documented) from Tennessee. TVA fisheries biologists recently heard reports of two possible lake sturgeon catches in the Tennessee system. Charlie Saylor heard reports that crappie fishermen, fishing with minnow-tipped jigs, caught a lake sturgeon in Norris Reservoir (Anderson Co., TN). The fish was released, but was reportedly three to four feet long, and ~50 pounds. Although it can't be verified, the size of this animal indicates it could have resulted from 1993 stockings TVA made in the Clinch River upstream of Norris Reservoir. Donnie Lowery, a TVA fishery biologist, also heard a report of a recent catch of "a big fish with barbels, that wasn't a catfish" from Nickajack Reservoir on the Tennessee system (Marion Co., TN). Also, Rick Bivens (TWRA) received a report that a fisherman caught and released a 14 inch sturgeon in upper Watts Bar Reservoir (near the I-75 bridge, Loudon Co., TN). It seems possible that some of the individuals stocked upstream of Fort Loudoun reservoir (beginning in 1999) could have moved this far downstream in the Tennessee system. Also, according to Rob Todd of the TWRA, Mr. Thomas Cunningham, a commercial fisherman, reported the recent catch of a 12-14 pound sturgeon in Old Hickory Reservoir on the Cumberland River (Wilson/Sumner counties). The fish was taken from a 3-inch-mesh gill net, and released alive. Since Etnier & Starnes list no pallid or shovelnose sturgeon in the Cumberland River, at least since the locks were put in place, this is likely to be a lake sturgeon. The last reports of lake sturgeon from the Cumberland system were two individuals collected in 1977 and 1978.

TVA crews continue to sample approximately 200 sites across the watershed, annually, which often results in interesting fish finds. For example, another interesting collection includes a report from Amy Wales of a blotchside logperch, *P. burtoni*, in little Buffalo River (Lewis Co., TN). TVA biologists again collected blue suckers *Cycleptus elongatus* in the Nolichucky River, while gathering information for an Environmental Impact Statement on ways to address the effects of accumulated sand and silt in Nolichucky Reservoir. The recent (summer 2000) TVA

fish surveys basically confirmed the results of a TWRA survey in the Nolichucky River (Greene Co., TN) in 1999. At a TVA "fixed" IBI site on the Holston River upstream of Cherokee Reservoir (Surgoinsville, Hawkins Co., TN), Charlie Saylor reports regularly collecting one or two spotfin chubs, *Erimonax* (= *Cyprinella*) *monacha*. However, this year (2001) they found 16 juveniles, indicating continued improvement of this spotfin chub population.

Recent improvements in the water quality of the Pigeon River (French Broad watershed, Sevier Co., TN), prompted Tennessee Department of Environment & Conservation (TDEC) biologists (and many other cooperators) to begin a long-term project to restore native fishes to the Pigeon River. A committee of knowledgeable individuals (including Etnier, Saylor, etc. . .) put together a list of fishes known or likely to have inhabited the Pigeon River before they were extirpated by water quality problems related to paper company effluent upstream in NC. The committee decided to start with relatively common fishes that could be collected in large numbers elsewhere in the French Broad system. To date, several hundred elastomer-tagged adult blueside and gilt darters (*E. jessiae* and *Percina evides*) have been released at specific sites in the Pigeon River. University of Tennessee graduate students, and others will monitor the success of this project.

Once again, attempts by several survey crews (Univ. Alabama, Univ. of Tennessee, Conservation Fisheries, Inc., CFI) to find slender chubs (*Erimystax cahni*) at Frost Ford in the Clinch River, were unsuccessful. However, for the second consecutive year, two pygmy madtoms (*Noturus stanauli*) were collected there. These were kept live, and added to the captive population at CFI. Six pygmy madtoms that CFI had reared from a captive spawning of the pair collected in 2000 were released back into the Clinch River on that same date.

Tyler Sykes, of the Cookeville office of FWS, reported that Rick Mayden and his crew from the University of Alabama have been conducting a survey for the elusive "Chucky" madtom. This is another fish whose status is apparently extremely tenuous. Only one individual has been collected in the past several years, in spite of intensive surveys.

Tyler also reported that the FWS is supporting a graduate student from the Tennessee Cooperative Fisheries Research Unit (supervised by Jim Layzer) to perform a status survey of the bluemask darter [*E. (Doration)* sp.]. Presumably, this data will allow for an assessment of the current status of the species in comparison with data presented in Steve Layman's pre-listing surveys.

The creek didn't rise too much, and the Duckfest did take place, when on 3-4 June 2000, 32 biologists, representing at least ten different institutions or agencies converged on the lower end of the Duck River. They collected at least 78 species of fishes by various means. If you're interested in seeing how hard they worked, and exactly what species they collected, Jon Ambruster has created a nice website (<http://george.cosam.auburn.edu:591/Duckfest/duckfest.html>) containing information about this field trip.

Ben Keck, a U.T. graduate student is starting a project on the fishes of the Hatchie River system. He will be repeat surveying the sites that Wayne Starnes surveyed in the 1970's, and adding some others.

The updated 2 nd printing of the Fishes of Tennessee should be available by mid- or late summer. Etnier has permission from UT Press to reproduce the seven pages or so of addenda, and about four pages of corrections. He plans on having these printed for distribution (at cost-should be small).

Captive propagation, reintroduction, and other management activities

Pat Rakes and J. R. Shute (CFI) report that they still maintain captive populations of: *Erimonax monacha*; *Notropis mekistocholas*; *N. cahabae*; *Fundulus julisia*; *Noturus baileyi*; *N. flavipinnis*; *N. stanauli*; *N. stimosus* (Hatchie River form); *E. boehlkei*; *Etheostoma chienense*; *E. wapiti*; *E. percunurum*; *Percina copelandi*; *P. aurora*; and *P. aurolineata*. In addition to those reported previously, recent successful captive spawnings include *Noturus stanauli*, *N. bailey* and *N. stimosus*.

As previously reported, spotfin chubs, and smoky and yellowfin madtoms (*Erimonax monacha*, *N. baileyi*, and *N. flavipinnis*), were again captively propagated and reintroduced into Abrams Creek in the Great Smoky Mountains National Park, (Blount County, TN). No duskytail darters were stocked in 2000. Finally, reproduction was documented for all four of the reintroduced fishes in Abrams Creek, as several young-of-year spotfin chubs were observed, and individuals of all four reintroduced populations were observed on most monitoring surveys. Duskytail darters are regularly nesting in Abrams Creek and their numbers are increasing every year.

The status of *Fundulus julisia*, Barrens topminnow continues to be tenuous. In fact, for the second consecutive year (1999 and 2000) it became necessary to "rescue" Barrens topminnows remaining in the type locality pond (Summittville Mountain Spring, or as most folks know it, "Joe Banks' place", Coffee Co., TN) before the spring dried up. Topminnows were maintained at the CFI facility in Knoxville, and released back into the spring when water returned. Those released back into the spring in 2000 reproduced and all came through the winter of 2000- 2001. Tyler Sykes, of the FWS, reports several activities that will hopefully improve the status of this fish. A "Barrens Topminnow Memorandum of Understanding" has been circulated among the organizations and agencies interested in the conservation of the species. It outlines recommendations of the Barrens Topminnow Working Group. One of these activities is a cooperative effort (FWS, TWRA, CFI, the Natural Resources Conservation Service, The Nature Conservancy, and the Tennessee Cooperative Fisheries Research Unit, and several private landowners) to establish about a half dozen refugia populations for the topminnows. When a suitable area has been created or enhanced, captively produced topminnows will be reintroduced. In conjunction with this, Jim Layzer's graduate student, Andrea Johnson, will help by monitoring the success of these reintroduction efforts. Another part of the working group's efforts will be public education. To help with this, Joe Tomelleri has recently finished a Barrens Topminnow

illustrations (another one of his wonderful prints). Copies of this print will be provided to cooperating landowners.

J.R. Shute & Pat Rakes (CFI) released 290 captively propagated subadult and adult boulder darters, *Etheostoma wapiti*, at two sites on the Elk River (of the Tennessee system, Giles & Lincoln Cos., TN). While many of these were stocked at a site where a cooperative project (TWRA, FWS, TVA, CFI) had resulted in augmenting boulder habitat, the majority were stocked upstream of Harms Mill dam a few miles below Fayetteville, which J.R. and Pat had determined to be a significant barrier, after surveys in 1999. Before releasing the darters, Pat and J.R. snorkeled at the site of habitat augmentation (at the I-65 bridge, Giles Co., TN), and noted that the boulder darter population size has apparently increased here, probably as a result of the rocks that have been placed there the previous year. Tyler Sykes (FWS) reported that more of this habitat augmentation is planned for this summer (2001).

Tyler Sykes (FWS) reported that her office has a project to improve habitat in Bayou de Chien (Graves & Hickman Cos., KY), for relict darters (*E. chienense*). They are working with NRCS personnel and several landowners to implement agricultural Best Management Practices, and restore riparian vegetation.

As reported previously, there have been several proposals for reintroducing fish, snails, and mussels into appropriate habitats within the Tennessee system. Recently, (Federal Register 66:32250- 32264, June 14, 2001) the establishment of Nonessential Experimental Population Status was published for 16 freshwater mussels and one freshwater snail in the free-flowing reach of the Tennessee River below the Wilson Dam (Colbert and Lauderdale Cos., AL).

Also as we reported last year, spotfin chubs are one of four fish species proposed for reintroduction at several sites in the Tennessee system. However, to date, only one Nonessential Experimental Population status proposed rule has been published. This proposal (Federal Register 66:30853-30860, June 8, 2001) proposes to reintroduce duskytail darter, and smoky and yellowfin madtoms, in addition to the spotfin chub, into the Tellico River upstream of the Tellico Reservoir (Monroe Co., TN). Comments on this proposal are requested before August 7, 2001. If successful, these reintroductions could eventually lead to down-listing, or de-listing these fishes from the federal Endangered Species List.

Peggy W. Shute and David A. Etnier

2001 Report of Region 4 - South Central

Mel Warren at the Southern Research Station, USDA Forest Service in Oxford, Mississippi reports that he, Andy Sheldon (visiting research scientist), and Wendell Haag have initiated a yearlong study examining the colonization by small-stream fishes of wood bundles placed in two channelized and two unchannelized streams in north Mississippi. They are examining colonization in mid-channel and near the bank with depth and flow as covariates. Susie Adams is leading a study of fish recolonization of first through third-order streams in north Mississippi that dried up during the 2000 drought. She is also examining longitudinal changes in growth and fecundity of certain groups of darters and minnows in the Sipsey Fork and Brushy Creek in Bankhead National Forest, Alabama. Fish density and richness was much lower in spring 2001 than during 1994 sampling, possibly due to last summer's drought. Susie is also beginning a study with Steve Ross, University of Southern Mississippi, in examining the distribution and habitat use of *Acipenser oxyrinchus desotoi*, *Alosa alabamae*, and *Anguilla rostrata* in Black and Red creeks, De Soto National Forest, Mississippi. The Oxford crew is also conducting the third summer of fish and fish habitat surveys in Mississippi National Forests. To date, 148 sites have been sampled yielding about 110 species. On the mussel front, Wendell Haag is leading the third year of a study on the population size, age and size structure, size and age-specific fecundity, mortality, individual growth rates, and recruitment rate for about twelve species in the Sipsey River in Alabama, and the Little Tallahatchie and Buttahatchee rivers in Mississippi. The ultimate goal is to build population models that will evaluate how changes in these variables influence population growth rate and viability. Mel also reports that his group will be repeating a 1993 survey of mussel communities in Bankhead National Forest with a goal of deriving an accurate picture of the size structure of some populations. Research on Shoal Creek in Talladega National Forest, Alabama, will continue examining the headwater populations of mussels highly fragmented by a series of small dams, which includes two T & E species. Additional mussel studies include an attempt to identify fish hosts for several species from the Buttahatchee River, Mississippi. Along with Chuck Lydeard and Jen Buhay at the University of Alabama, the Oxford crew is continuing a study on patterns of host fish use and genetic variation across the range of *Villosa vanuxemensis*, *V. lienosa*, and *V. ortmanni*, which have shown some surprising patterns, especially in the upper Coosa River drainage. And finally, Andy Sheldon is finishing a yearlong comprehensive survey of stoneflies in two watersheds of the Ouachita Mountains at 38 stations. About 31 species have been identified; high species richness has been noted from seasonally dry streams, and several range extensions have been documented.

Jan Hoover reports that the Waterways Experiment Station (WES) Fish Team in Vicksburg, Mississippi continued field surveys of all three *Scaphirhynchus* species with varying degrees of success. Efforts to capture *S. suttkusi* for broodstock were part of a massive interagency effort. Despite setting numerous baited trotlines as well as one multi-organizational 24-hour fish-a-thon at the Claiborne Lock and Dam, none were collected. Sturgeon studies by WES in the lower Mississippi River were substantially more productive. From August to December 2000, hundreds of *S. platyrhynchus* were collected as well as six indisputable *S. albus*. For each sturgeon, data were recorded on geographic position, water quality, river morphometry, co-occurring fish

species, and any morphological anomalies. To date, approximately 5% of shovelnose sturgeon collected exhibited some kind of deformity including missing tails, reduced pectoral fins, missing eyes, and curved spinal columns. One sturgeon was missing a rostrum. Numerous sturgeon were encircled by rubber bands, either around the rostrum or around the pectoral girdle, causing varying degrees of injury or debilitation. Other research by WES includes sampling streams of the Yazoo River system in Mississippi to determine long-term effects of dredging and weirs on fish assemblages.

Mark Peterson at the Gulf Coast Research Lab in Ocean Springs, Mississippi has co-authored four papers on marine and estuary fishes. These studies have examined laboratory and field growth responses of juvenile *Mugil sp.* and *Cynoscion arenarius*, respectively, using various ambient conditions, as well as the effects of habitat alterations on habitat use by early life history stages of fishes and crustaceans. Four other papers are in review on additional estuarine fishes and their habitat, reproductive biology, and status. Mark will graduate two masters students and his first Ph.D. student this year.

J.R. Shute reports that Conservation Fisheries (CFI) of Knoxville, Tennessee has been successfully spawning *Percina aurolineata* again this year; they have collected more eggs than ever before. Work still needs to be done on survivorship of the hatchlings, specifically getting the pelagic larvae to feed properly. Three *P. aurora* (a male and two females) were obtained from the crew at the University of Alabama, who collected these specimens this spring from the Leaf River. Although it appeared these darters were almost done with their spawning season, CFI managed to collect a few fertilized eggs and hatch them out. The information gained from this trio should help lay the groundwork for future spawning activities. Lastly, CFI has been successfully spawning *Etheostoma chienense* with relative ease. This species spawns under the surface of ceramic tiles in the tank, and the larvae are relatively easy to rear as they feed well on brine shrimp nauplii.

Scott Mettee of the Geologic Survey of Alabama reports that the second printing (3,000 copies) of *Fishes of Alabama and the Mobile Basin*, including several important corrections, is available from the publication sales office at the Survey. Scott and Royal Suttkus have released a Survey Bulletin examining four species of *Notropis* within the subgenus *Pteronotropis*, with comments on relationships, origins, and dispersion. Pat O'Neil and Tom Shepard published two Survey reports last year, one on water-quality assessment of the lower Cahaba River watershed and another on application of the index of biotic integrity for assessing biological condition of wadeable streams in the Black Warrior River system. Tom and Pat are completing reports on a water-quality study in Locust Fork and a land use/biomonitoring study in Mulberry Fork, both of which will be published by the Survey. They will initiate a study on the status of *Notropis cahabae*, *Etheostoma douglasi*, and *Percina breviceuda* in Locust Fork this summer. Stuart McGregor published one paper last year on recent mussel records from the North River system. He also has two papers in press, one on the mussel fauna of the Muscle Shoals area co-authored with Jeff Garner (ADCNR) and another on the mussels in the Cahaba River with Malcolm Pierson and Pat O'Neil. Stuart and Jeff are also conducting mussel surveys in the upper

Tombigbee River proper and several of its major tributaries, and Stuart is continuing his Alabama cave shrimp monitoring project at Redstone Arsenal near Huntsville. The entire Survey crew will be involved in completing level 3 (IBI) fish bioassessments for TVA in north Alabama and will continue their biological sampling for EPA 319 projects in Lightwood Creek in south central Alabama and Choccolocco Creek in northeast Alabama. Finally, the sonic tracking work with *Cyprinella meridionalis* continues to produce some interesting data on fish movements in the Alabama River. The project was expanded last year to include sonic tagging of a few *Moxostoma carinatum* and *Ictiobus bubalus*, and Scott will continue tagging these species this year, as well as *Polyodon spathula*. One unexpected opportunity this year was the tagging of the first *M. carinatum* (a 515 mm SL female) ever collected downstream of Claiborne Lock and Dam.

Malcolm Pierson reports that Alabama Power Company is involved with divers using surface-supplied air to search for T & E mussels below all of the Coosa River hydro projects. These projects must be relicensed by 2007 if they are to continue operation. They are finding several species of mussels in these tailwater habitats, but to date, no T & E species have been observed. Malcolm also reports that Alabama Power has begun fish and mussel surveys in the original Coosa River channel below the Weiss diversion dam with assistance from the USGS Florida Caribbean Science Center and the Alabama Cooperative Fisheries and Wildlife Research Center. Preliminary reports should be available in late 2001.

Carl Couret of the USFWS in Daphne, Alabama reports that a collaborative effort between the his agency, World Wildlife Fund, Alabama Department of Conservation and Natural Resources, and the Corps of Engineers is underway to explore fish passage options at Claiborne Lock and Dam on the Alabama River. Options range from structural approaches (i.e., nature-like bypass channel, slotted/baffled "ladder", and fish lift) to more economic non-structural approaches (i.e., modified locking operations). Since these facilities are not passing a significant number of barges, Carl believes they could be operated to pass fish, at least during critical times of the year. A trial "passage" was recently performed, and gill netting of fishes leaving the upstream gates demonstrated low numbers of specimens but a respectable diversity. Species captured included typical big-river ichthyofauna, as well as two species of diadromous fishes, *Alosa alabamae* and *Morone saxatilis*. This trial operation demonstrated excellent potential for this project. Data on the movement of several fish species within the Alabama River are being gathered by the Geologic Survey of Alabama to assist in further development of this fish passage concept.

Frank Parauka of the U.S. Fish and Wildlife Service in Panama City, Florida reports that a survey of *Acipenser oxyrinchus desotoi* was conducted in the lower Choctawhatchee River during October and November 2000, to coincide with the species fall migration from freshwater to the marine environments. Sinking gill nets were set perpendicular to the riverbank and covered about 75 percent of the river. A total of 196 Gulf sturgeon were collected, weighed, measured, tagged (external Floy tags and injected PIT tags) and released. The fish ranged from 0.8 - 2.3 m total length and weighed from 2.2 - 66.7 kg. Sub adults (<18.1 kg) represented 38.8 percent of the sample and large fish (>45.4 kg) accounted for 11.7 percent of the catch. The two largest fish were equipped with external LTD (light, temperature, depth) archival tags, which are

able to fix the location of the specimen by calculating the angle of the sun. The fish must be recaptured in order to retrieve the tag and download the information. Frank's office is also conducting a survey to determine the availability of Gulf sturgeon spawning habitat in Florida panhandle river systems. The objective is to create a map identifying sites that have characteristics (steep bluffs, limestone outcroppings, hard substrate, etc.) similar to previously documented Gulf sturgeon spawning sites. Frank also reports that a 17 minute video describing the life history and biology of the Gulf sturgeon, as well as the recovery efforts underway to restore the species to a level that would ultimately result in its delisting, was completed in 2000. The video was produced by Earthwave Productions in cooperation with the Fish and Wildlife and the US Army Corps of Engineers. Frank's office also coordinated the distribution of 2 million Phase I *Morone saxatilis* raised at Federal and State hatcheries in FL, GA, AL, MS and LA. The fish were stocked in river systems and impoundments throughout the southeast. In addition, over 100,000 Phase II (150 - 200 mm) specimens were stocked in the lower Apalachicola River. Lastly, Frank reports that his office and offices in Daphne, AL, and Baton Rouge, LA expended 65 field days in an effort to capture *Scaphirhynchus suttkusi* in the Alabama River. Ninety- five percent of the sampling effort in the Alabama River was between River Mile 39 and 65.5, with the remainder at River Mile 22. Baited trotlines and sinking gill nets were used to collect over 1,900 fish representing 25 different species, but no Alabama sturgeon were collected.

Carter Gilbert at the University of Florida in Gainesville reports that he and Rick Mayden, along with Steve Powers, are actively pursuing descriptions within the eastern *Macrhybopsis aestivalis* complex. Three of the four eastern species are new, and Carter has written a taxonomic key, diagnoses, and descriptions for all four species; Rick and Steve are working on genetics and statistical analyses of morphometric data. Carter has been receiving a number of old collections dating back to the 1870's and 1880's from Butler University that were discovered just a few years ago. Included are a number of O. P. Hay collections from Mississippi and Kansas, the results of which were summarized in three publications (two in Proc. USNM and one in Bull. U.S. Fish Commission) between 1881 and 1887. Also included are a few lots from west Florida (published by Hay in Proc. USNM in 1885). In addition, there are substantial remnants of a number of late-1870's Jordan collections from Georgia and South Carolina, mostly from the Saluda River near Greenville. A few types are present, including some previously thought to have been destroyed in the Indiana University fire of 1883. Also present are some lots received on exchange from the USNM; a few types are also present in these materials. Jordan started the collection during the couple of years he spent at Butler, and curation was later done by Hay. Carter is cataloguing these into the University of Florida collection. When he is done, Carter plans to publish this information along with the history of the Butler collection. Lastly, Carter and Jim Williams are revising the Audubon fish field guide, originally published about 20 years ago. Jim is handling the freshwater fishes and Carter is tackling the marine species; they should complete this project this summer.

Steve Walsh at the U.S. Geological Survey in Gainesville, Florida reports that he is continuing his involvement in a USGS National Water-Quality Assessment project to examine land-use

patterns along a land-urban gradient in the Mobile Basin (Birmingham area) and the effects on water quality. Water quality will be assessed with hydrology, hydrochemistry, and biological conditions (fishes, benthic invertebrates, algae, and habitat). This work is in conjunction with the Alabama office of the USGS Water Resources Division; Humbert Zappia is the collaborating biologist involved in this study. Steve has targeted 30 sites in the limestone/dolomitic portion of the Valley and Ridge province along a southwest to northeast swath of the Cahaba and middle/upper Coosa rivers that encompasses a broad gradient of varying levels of urbanization. All streams are first or second-order and were seriously affected by drought last year. Within Florida, Steve expects funding from the state for a one-year survey of the Escambia River for *Moxostoma carinatum*, *Crystallaria asprella*, and *Hybognathus hayi*. Due to these species limited ranges and low abundance, all are of special concern in the state.

At the University of Alabama, the big news is that Rick Mayden will be leaving later this summer to chair the Department of Biology at Saint Louis University and to assume an endowed chair research position. The opportunity to take a leadership role in a department and to move back to his home area was too good for Rick to pass up. I will be staying on as Collections Manager to continue the operations at UAIC until another Curator can be hired next year. Rick and Herb Boschung have secured the Smithsonian Press as a publisher for *The Fishes of Alabama*, and the project is nearing completion. Rick and his students and staff continue research on the systematics, conservation, and ecology of all three *Scaphirhynchus* species, *Notropis cahabae*, *Catostomidae*, several *Noturus* species, *Lepomis megalotis*, all *Centrarchidae* species, *Etheostoma ditrema*, snubnose darters, and several logperch species.

Bernie Kuhajda

2001 Report of Region 5 - Northwest

Arkansas

Susan Rogers with Ecological Services Office (Conway, AR), U.S. Fish and Wildlife Service, reports that *Etheostoma moorei*, the yellow cheek darter, has been elevated to federal candidate species status, and it has been given a fairly high priority for listing. The species is endemic to the Little Red River (White River drainage), and its current distribution is restricted to four tributaries upstream of Greers Ferry Reservoir. Drought conditions over the past three years are thought to have reduced the available habitat for yellow cheeks to small sections of the four tributaries and population numbers are thought to have severely declined. Arkansas State University @ Jonesboro faculty and graduate students are investigating reproductive biology and the feasibility of captive propagation.

Henry Robison at Southern Arkansas University, reports that he is conducting status reviews for *Notropis ortenbergeri* (Kiamichi shiner) and *Notropis perpallidus* (salt and pepper shiner) that are funded by the Ouachita National Forest. Also, a second edition of the Fishes of Oklahoma is underway, and a planned revision to the Fishes of Arkansas with Tom Buchanan will be underway soon.

Richard Standage, Forest Fisheries Biologist with Ouachita National Forest, reports that Arkansas and Oklahoma biologists are continuing annual monitoring of leopard darter (*Percina pantherina*) populations. Also, Edie Marsh-Matthews and colleagues, University of Oklahoma, have completed leopard darter movement studies in the Glover River, OK and in laboratory settings. Finally, Arkansas Tech University students and faculty are being funded by Ouachita National Forest to examine fish passage at Forest road crossings as a function of stream order.

John L. Harris

2001 Report of Region 6 - Southwest

Henry W. Robison, Southern Arkansas University, is currently conducting a study of the distribution and status of the peppered shiner (*Notropis perpallidus*), in Oklahoma and Arkansas for the Ouachita National Forest. In addition, Rob is finishing up a report to the Forest Service on the status and distribution of the Kiamichi shiner (*Notropis ortenburgeri*). Rudy Miller (retired from Oklahoma State University) and Rob are now busy at work on a revision of their "Fishes of Oklahoma" book which is hoped to be completed in two years. The Fishes of Arkansas is also about to undergo a revision for a second edition by Rob and Tom Buchanan (Westark College). Much summer field work is planned to re-photograph many of the species and to document some poorly collected areas of Arkansas.

The Waterways Experiment Station Fish Team has several ongoing projects in Louisiana and southern Arkansas. A study of fish-habitat relationships in the Red River, Louisiana, and the possible impacts of lock-and-dams on fish communities, is nearing completion. Surveys of physical habitats and fish communities in the channel and floodplains of Bayou Meto are underway as part of an evaluation of the effects of water diversion in the Arkansas River system. Surveys of fishes and larval amphibians are also being conducted in small floodplain pools of the Ouachita River, Louisiana and Bayou Meto, Arkansas. On a recent field trip to Bayou Meto, young-of-year bowfin (*Amia calva*) were observed in an isolated floodplain puddle at the edge of a campground. As part of the ongoing effort by WES to document swimming performance of small, archaic fishes, a group was captured and taken to the laboratory as future participants in swim tunnel experiments.

Karen Kilpatrick, Natchitoches National Fish Hatchery, organized and breathed new life into the Pallid Sturgeon Lower Basin Work Group. A meeting held 20 March 2001 in Vicksburg, Mississippi was well-attended by individuals from the US Fish and Wildlife Service, US Army Corps of Engineers, Mississippi Museum of Natural Science, Arkansas Game and Fish Commission, and the Louisiana Department of Wildlife and Fisheries. Topics included the updated recovery plan, health issues and the possible threat of iridovirus, jeopardy opinions, and the activities of fish hatcheries. Bernie Kuhajda, University of Alabama, presented a lively and thorough synopsis of taxonomic and genetic issues surrounding identification of river sturgeons. The latter part of the meeting was devoted to issue identification in which research and management priorities were identified and assigned to group participants. The priorities included: evaluation and refinement of techniques for practical and reliable identification of sturgeon (e.g., character indices); location of rearing grounds for young-of-year (e.g., by trawling for very small fish); quantification of habitats and periods of greater activity and abundance (e.g. surveys of populations and physical habitats); and outreach (i.e., creation of a list server).

Jan Hoover