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Abstract

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Minutes, Business Meeting, 22nd Annual Meeting, Southeastern Fishes Council

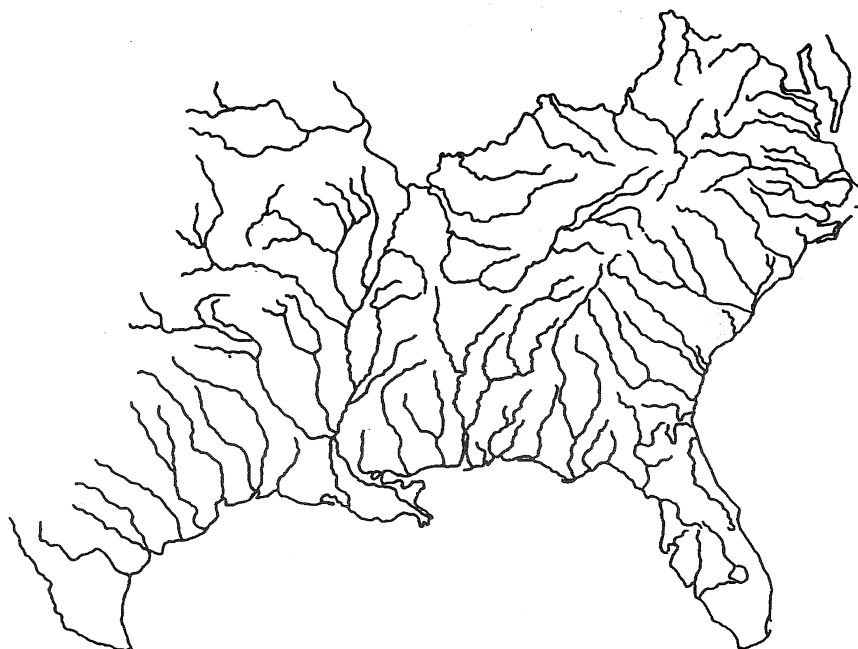
Regional Southeastern Fishes Council Reports

Keywords

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Southeastern Fishes Council **PROCEEDINGS**

DEDICATED TO THE CONSERVATION OF SOUTHEASTERN FISHES



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Notice

The SFC now maintains a web site, which contains information about the SFC and its activities. The web site may be accessed at the following URL:

<http://www.flmnh.ufl.edu/fish/sfc/sfchomepage.htm>

Members and interested persons are encouraged to submit relevant news items for posting on the web. We are especially interested in obtaining information about proposed or ongoing projects, fish and habitat photographs (including pre- and post-disturbance), environmental threats to southeastern habitats, announcements of forthcoming meetings and workshops, and suggestions for web page improvements. Send information to:

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Observational Notes on the Spawning Behavior of the Blue Shiner (*Cyprinella caerulea*) and the Holiday Darter (*Etheostoma brevirostrum*), Two Rare Fishes of the Conasauga River, Georgia and Tennessee

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The Conasauga River (Mobile Bay drainage), Georgia and Tennessee, harbors a diverse aquatic fauna which includes several federally listed species of fishes (e.g., Conasauga logperch, *Percina jenkinsi* - endangered; amber darter, *Percina antesella* - endangered; blue shiner, *Cyprinella caerulea* - threatened), as well as several species that are candidates for federal listing (e.g., holiday darter, *Etheostoma brevirostrum*; coldwater darter, *Etheostoma ditrema*; trispot darter, *Etheostoma trisella*; lined chub, *Notropis lineapunctatus*; frecklebelly madtom, *Noturus munitus* and freckled darter, *Percina lenticula*). Sixty-three species of fishes were collected from just a two county area by Stiles and Etnier (1971). The river is unimpounded, and retains good water quality and an extensive riparian zone, primarily as a result of running much of its course through National Forest lands devoted to recreational use. Due to the high quality of habitat in the Conasauga River, it is the last refuge of several aquatic species that have been extirpated in other parts of their range.

The objective of this paper is to describe the previously unknown spawning behavior of two rare fishes found in the Conasauga River, the blue shiner (*C. caerulea*) and the holiday darter (*E. brevirostrum*). Observations were made 23 May and 1 June 1996 by snorkeling appropriate habitats. Water temperature was 19 C. Spawning behavior was recorded using an 8 mm video recorder equipped with an underwater housing.

BLUE SHINER

Historically, the range of the blue shiner (*C. caerulea*) included medium to large streams with clear, cool water in the Cahaba and Coosa rivers (Alabama River drainage) in Georgia, Tennessee and Alabama. Unfortunately, the species may be extirpated from the Cahaba River (Ramsey, 1984). The only study of the biology of the blue shiner is that of Krotzer (1990) which examined the reproductive dynamics of blue shiners via inspection of gonads. The study suggested a spawning season in the Conasauga River that peaked in late May and early June (Krotzer, 1990). Our goal was to determine the spawning behavior and habitat use of blue shiners in the Conasauga River.

Data from our long-term monitoring program describes the habitat of adult blue shiners as relatively shallow water (31-67 cm deep) with silt/sand substrate and low water velocity (0.003-0.017 m/sec.). Two groups of spawning blue shiners were observed on 1 June 1996 from 1130-1630 in the Conasauga River, 0.75 mi. upstream of the confluence with Jack's Fork. Both groups of fish were in relatively deep water (39-60 cm) with moderate flow (0.07 m/sec.) and gravel substrate, and were associated with woody debris. This habitat is markedly different from that of non-spawning adult blue shiners. Over 30 spawning episodes were observed.

Both groups of blue shiners displayed crevice spawning behavior similar to that of the tricolor shiner (*Cyprinella trichroistia*) witnessed by the authors in 1995 at the same locality and in the same habitat. Tricolor shiners spawn in small groups of one male and several females in the crevices of bark or grooves in woody debris. In both spawning aggregations of blue shiners observed, a single male defended a territory, chasing conspecific males and individuals of other species from the area. Intrusion by conspecific males was rare. In one case the territory was a crevice in a submerged log, while in the other the male defended a submerged birch tree branch that still had intact bark. In both cases, groups of two to four females waited in the vicinity of the crevice for opportunities to spawn. When ready to spawn, females approached the crevice, and the pair passed over the crevice, presumably releasing gametes. At the conclusion of the spawning act, the female was usually in a vertical position. Individual females usually spawned several times before leaving the area, either in succession, or in turn after the male spawned with another female. Males usually made passes over the crevice after the females left. Males also made passes over or near the crevices as a display to females.

The spawning behavior and habitat used for spawning by *C. caerulea* is very similar to that of *C. trichroistia*, but both differ from that of Alabama shiners (*Cyprinella callistia*), another species of *Cyprinella* found in the Conasauga River, in the number of males (more in *C. callistia*) competing for territories and in aspects of spawning habitat. Spawning of *C. callistia* was observed in the Conasauga River on 24 May 1996.

An aggregation of 8-12 male *C. callistia* and several females was observed in an area of very swift water velocity and bedrock/cobble substrate. A single male defended a crevice formed by a piece of cobble laying over bedrock. The male was continuously challenged by other male *C. callistia*, which he chased from the area. When females came in to spawn, the pair passed over the crevice, presumably releasing gametes into the crevice. After the nest was disturbed, another male took over the territory, displaying to females and chasing challengers from the area. Other males simultaneously defended territories in similar crevices, and one spawned numerous times with a succession of females.

Among eastern North American minnows, crevice spawning is unique to fishes in the genus *Cyprinella* (Johnston and Page, 1992). All species of *Cyprinella* for which spawning behaviors are known use this strategy (refs. in Johnston and Page, 1992; Ferguson, 1989), and it is not surprising that *C. caerulea* is included in this group. Spawning eggs in crevices rather than broadcasting them over the substrate probably acts to hide the eggs, and reduces predation (Johnston and Page, 1992).

HOLIDAY DARTER

The recently described holiday darter (*E. brevirostrum*) is known from only four rivers or creeks in the upper Coosa River system, Alabama, Georgia and Tennessee (Suttkus and Etnier, 1991). No information is available on the biology of the species.

Data from our long-term monitoring program describes the habitat of adult holiday darters as relatively shallow water (22-34 cm deep) with cobble/boulder/gravel substrate and high water velocity (0.54-0.81 m/sec.). Boulders in this type of habitat are often covered with moss. One pair of spawning *E. brevirostrum* was observed on 23 May 1996 at the head of the first riffle downstream of the Jack's Fork/Conasauga River confluence. The spawning habitat was typical of the habitat adult holiday darters are usually found in, e.g., there was no apparent habitat shift for spawning.

The pair of holiday darters observed displayed the typical egg-attaching behavior found in other darters of the snubnose group. The male followed the female as she moved over the substrate searching for spawning sites. Often the male positioned himself over or to the side of the female as they moved over the substrate. During the spawning act, the pair, with the male on top of, or to the side of the female, vibrated, presumably releasing gametes. The pair usually selected a spawning site on a boulder or cobble, or in a crevice, near the substrate. Approximately 12 spawning episodes were observed, all in the same pair of darters. On one occasion, another male holiday darter attempted to intrude on the spawning pair and was promptly chased away by the spawning male. No other fishes attempted to interrupt the spawning bout. No territoriality or parental care was observed.

The egg-attaching behavior of holiday darters is similar to

that observed in Coosa darters (*Etheostoma coosae*), another species of snubnose darter, in the Conasauga River on the same day. Coosa darters are typically found in shallow water at the head of riffles with cobble and gravel substrate. The water depth and flow are less than that of typical holiday darter habitat, and the average substrate size is smaller, due to the absence of boulders. Spawning was similar to that of holiday darters, with males following females as they searched for objects to attach eggs to. Aggression or territoriality was not observed in Coosa darters, but no other males were observed challenging the spawning male.

Of the 20 species of snubnose darters, all for which spawning behaviors have been described are egg-attachers (Page, 1985). Typically, egg-attachers produce small eggs which are laid over a wide area and do not receive parental care (Page, 1983). This strategy may reduce predation; small, cryptic eggs may be difficult for predators to locate.

ACKNOWLEDGMENTS

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Fish Species Composition and Associations in a Section of Morganfork Creek, Southwestern Mississippi

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INTRODUCTION

Morganfork Creek is a small tributary of the Homochitto River, which drains a substantial portion of southwestern Mississippi (ca. 3108 km², Newcome and Thomson, 1970). Ichthyological surveys of the Homochitto River drainage indicate a relatively diverse fish assemblage comprising approximately 105 species (Cook, 1959; Baker, 1984; Ebert et al., 1985). Cook (1959) and Baker (1984) provided information concerning species distributions within portions of the main channel of the Homochitto River. Ebert et al. (1985) incorporated records of fishes collected from tributaries to compile a more comprehensive list of species within the drainage. However, no quantitative data on fish assemblages within the drainage have been published. The purpose of this paper is to provide a species list and a brief description of fish assemblage composition within a section of Morganfork Creek; results are based on collections made over a six-year period (1989-1995).

STUDY SITE AND METHODS

Morganfork Creek, a third-order stream, originates in southern Jefferson County, Mississippi, flows southward into Franklin County, and eventually drains into Middlefork Creek, near Meadville. I sampled fishes from a ca. 600 m section of stream 6.5 km north of Hwy 84 near Kirby. Habitat within the site was comprised of both erosional (riffle and run) and depositional (glide/transitional and pool) areas, although deep pools were uncommon. High flow events often resulted in the formation of large sand/gravel dunes and shifting of instream habitat. However, relative abundances of habitat types was generally consistent throughout the study period (M. Farr, *pers. obs.*). Possible sources of instream cover consisted of woody debris, root wads, undercut banks, and associated debris piles. Similar to many other streams within the drainage (Hartfield, 1993), Morganfork Creek has a wide channel (ca. 40 m) of sand and gravel, but wetted width at normal flow ranged from ca. 3-8 m. At normal flow, stream depth typically ranged from ca. 0.05-1.2 m.

Twenty-three collections of fishes were made from April 1989-October 1991 and August 1994-March 1995. All collections were made during normal flow periods (at least four days following the most recent rain event). All specimens were collected with a 3 m x 4.8 mm mesh seine, preserved in 10% formaldehyde, and later stored in 50% isopropyl alcohol. Voucher specimens for each species were deposited in the ichthyological collection at Northeast Louisiana University.

RESULTS AND DISCUSSION

A total of 8203 specimens representing 45 species in nine families was collected from Morganfork Creek (Table 1). Number of species present in individual collections ranged from 6-32. Erosional habitats and more depositional glide habitats were abundant, but pools were usually limited in number and size. Thus, species generally associated with pool habitats (sunfishes, poeciliids, atherinids) were collected less frequently than species typically associated with areas of higher flow (cyprinids and percids) (Tables 1 & 2).

Cyprinids were the most numerically dominant group in the assemblage (Table 2). Representatives of 14 cyprinid species comprised 82.9% of all specimens collected. Although ten species of darters were collected, they represented only 3.3% of all sampled individuals. Conversely, only three species of topminnows were collected, but they comprised 11.3% of all fishes collected. All other groups comprised only 2.5% of sampled fishes.

Overall relative abundances of species indicated that *Cyprinella camura*, the bluntface shiner, was the most common species (42.90%) in the Morganfork Creek assemblage (Table 1). *Cyprinella venusta* (blacktail shiner 14.66%), *Notropis longirostris* (longnose shiner 14.26%), and *Fundulus catenatus* (northern studfish 10.82%) were the only other species with relative abundances greater than 3.0%. Bluntface shiners were commonly collected in erosional habitats, whereas blacktail shiners, longnose shiners, and northern studfish were more generally distributed among habitat types. Warren et al. (1994) indicated that these same four species, along with *Hybognathus nuchalis* (Mississippi silvery minnow), were the most abundant taxa at low-order sites in the Buffalo River, another tributary of the Mississippi River that drains a portion of southwestern Mississippi.

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Table 1. Species, number of specimens (No.), overall relative abundance (ORA), and percent occurrence in all samples (PO) of fishes collected from Morganfork Creek.

Family	Species	No.	ORA	PO	Family	Species	No.	ORA	PO
Clupeidae					Cyprinodontidae				
	<i>Dorosoma cepedianum</i>	2	0.02	4.3		<i>Fundulus catenatus</i>	886	10.82	100.0
Cyprinidae						<i>Fundulus notatus</i>	23	0.28	30.4
	<i>Cyprinella camura</i>	3511	42.90	100.0		<i>Fundulus olivaceus</i>	15	0.18	26.1
	<i>Cyprinella lutrensis</i>	108	1.32	60.9	Poeciliidae				
	<i>Cyprinella venusta</i>	1200	14.66	100.0		<i>Gambusia affinis</i>	14	0.17	13.0
	<i>Hybognathus nuchalis</i>	217	2.65	43.5	Atherinidae				
	<i>Hybopsis wincheli</i>	12	0.15	17.4		<i>Labidesthes sicculus</i>	24	0.29	30.4
	<i>Luxilus chrysocephalus</i>	243	2.97	73.9	Centrarchidae				
	<i>Lythrurus fumeus</i>	1	0.01	4.3		<i>Lepomis cyanellus</i>	2	0.02	8.7
	<i>Lythrurus umbratilis</i>	17	0.21	17.4		<i>Lepomis macrochirus</i>	71	0.87	52.2
	<i>Nocomis leptcephalus</i>	187	2.28	73.9		<i>Lepomis megalotis</i>	39	0.48	39.1
	<i>Notemigonus crysoleucas</i>	3	0.04	4.3		<i>Lepomis microlophus</i>	1	0.01	4.3
	<i>Notropis longirostris</i>	1185	14.45	100.0		<i>Micropterus punctulatus</i>	4	0.05	13.0
	<i>Pimephales notatus</i>	81	0.99	56.5		<i>Micropterus salmoides</i>	5	0.06	8.7
	<i>Pimephales vigilax</i>	35	0.43	34.8	Percidae				
	<i>Semotilus atromaculatus</i>	4	0.05	13.0		<i>Ammocrypta beani</i>	1	0.01	4.3
Catostomidae						<i>Etheostoma asprigene</i>	1	0.01	4.3
	<i>Erimyzon oblongus</i>	5	0.06	8.7		<i>Etheostoma caeruleum</i>	93	1.14	69.6
	<i>Hypentelium nigricans</i>	13	0.16	26.1		<i>Etheostoma chlorosomum</i>	1	0.01	4.3
	<i>Moxostoma poecilurum</i>	2	0.02	8.7		<i>Etheostoma lynceum</i>	13	0.16	30.4
Ictaluridae						<i>Etheostoma parvipinne</i>	5	0.06	4.3
	<i>Ameiurus natalis</i>	6	0.07	8.7		<i>Etheostoma swaini</i>	5	0.06	4.3
	<i>Ictalurus punctatus</i>	2	0.02	4.3		<i>Etheostoma whipplei</i>	50	0.61	52.2
	<i>Noturus hildebrandi</i>	2	0.02	8.7		<i>Percina sciera</i>	52	0.64	47.8
	<i>Noturus miurus</i>	12	0.15	21.7		<i>Percina vigil</i>	47	0.57	30.4
	<i>Noturus nocturnus</i>	2	0.02	8.7					
	<i>Noturus phaeus</i>	1	0.01	4.3					

Table 2. Number of species (No. spp.), number of individuals (No. ind.), and overall relative abundance (ORA) of common families collected from Morganfork Creek.

	No. spp.	No. ind.	ORA
Cyprinids	14	6804	82.9
Topminnows	3	924	11.3
Darters	10	268	3.3
Sunfishes	6	122	1.5
Catfishes	6	25	0.3
Suckers	3	20	0.2
Others	3	40	0.5
Total	45	8203	

Bluntnose shiners, blacktail shiners, longnose shiners, and northern studfish were the only taxa present in all 23 Morganfork Creek collections (100 percent occurrence; Table 1). Among the other taxa, percent occurrence exceeded 30% for 15 species and 40% for nine species. Despite the relatively large number of species collected from Morganfork Creek, 11 species were collected only once, and seven species were only present in two collections. These results are probably reflective of temporal variability in both collection effort and the distributional patterns of less common species.

The most common sucker in Morganfork Creek was *Hypentelium nigricans* (northern hogsucker 0.16%) (Table 1). Although most northern hogsuckers were collected in erosional habitats, a large school of approximately 30-40 individuals was observed during summer 1993 foraging for over an hour along the bottom of a shallow pool. *Noturus miurus* (brindled madtom 0.15%) was the most abundant madtom; like other

madtom species, it was usually associated with submerged banks and debris piles. *Lepomis macrochirus* (bluegill 0.87%) and *L. megalotis* (longear sunfish 0.48%) were primarily collected in pools or eddies behind submerged debris. *Etheostoma caeruleum* (rainbow darter 1.14%), *E. whipplei* (redfin darter 0.61%), *Percina sciera* (dusky darter 0.64%), and *P. vigil* (saddleback darter 0.57%) were the most common percids. All four species were collected in erosional habitats, but only rainbow darters were consistently taken over open gravel. Other percids were often associated with small debris piles.

Morganfork Creek has a rich fish assemblage, although many species were only collected once or twice from 1989-1994. Other authors have addressed the complex distributional patterns of fishes in major drainages of southwestern Mississippi and the Florida Parishes of Louisiana (e.g. Guillory and Conner, 1973; Suttkus and Clemmer, 1977; Guillory, 1978; Bart and Cashner, 1980; Conner and Suttkus, 1986). Suttkus and Clemmer (1977) and Hartfield (1993) discussed the potential negative effects of habitat degradation within regional tributaries of the Mississippi River. There are many potential sources of stream degradation within the Homochitto River drainage (e.g. timber harvesting, agricultural practices, gravel mining, road construction, recreational and residential development, drilling and maintenance of oil wells, etc.). For this reason, more quantitative descriptions of local fish assemblages are needed. Data from such studies might prove valuable if evaluating or monitoring distributions of ecologically sensitive species becomes necessary in the future.

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MINUTES

Business Meeting 22nd Annual Meeting Southeastern Fishes Council

The 22nd annual meeting of the Southeastern Fishes Council was held at the Intercontinental Hotel in New Orleans on 14 June 1996, site of the 1996 meeting of the American Society of Ichthyologists and Herpetologists. Executive Committee members attending were Steve Walsh (President), Mary Freeman (Treasurer), and Gerry Dinkins (Secretary). Steve Walsh called the meeting to order at 5:10 PM. Steve introduced Mary Freeman and Gerry Dinkins as the newly elected treasurer and secretary, respectively. Steve explained that the offices of treasurer and secretary were formerly combined, but had been split into separate positions following the recent constitutional revision. Copies of the 1995 SFC meeting minutes were then distributed, and Steve noted that in previous years the minutes were traditionally read by the secretary and then accepted by voice vote into the record. In the interest of time, Steve suggested that it would be a better use of the brief annual meeting to forego with the reading of the minutes since they were published in the last Proceedings. The meeting attendees were given an opportunity to review the 1995 SFC meeting minutes, then, following motions and a voice vote, the 1995 SFC meeting minutes were approved.

The Treasurer's Report was read by Mary Freeman and approved (see below). Mary concluded by summarizing total assets of the SFC and urged attending members to pay their annual dues quickly or risk sending their checks to a recently renamed road in rural Georgia.

The meeting moved on to the Executive Committee report. Steve Walsh discussed the Fish and Wildlife Diversity Funding Initiative, a program being promoted to add a tax to certain outdoor recreational merchandise with resulting revenues intended to fund fish and wildlife protection and habitat enhancement. Discussion of the initiative occurred at the 1995 meeting and SFC members present in Knoxville voted to support it. Steve stated that he had received several newsletters and other correspondence, and that proponents of the initiative (International Association of Fish and Wildlife Agencies) were still lobbying for congressional approval. The next item discussed was a resolution that was drafted and approved by the Executive Committee, opposing plans by the North Carolina Department of Transportation (NCDOT) for major road construction along the Little Tennessee River. The resolution was sent to the NCDOT, but no response was received. All other SFC committees were inactive in the last year.

The meeting then moved on to old business. Steve noted that Hank Bart (former Secretary/Treasurer) was absent, and had planned to present a report on the ongoing issue of tax exemption status for the SFC. Hank remained dedicated to resolving the problem with the Internal Revenue Service. No additional old business was discussed.

Continuing on to regional reports, Steve asked that each

regional reporter give a brief synopsis of their report and other recent news, since the regional reports had been published in their entirety in the recent Proceedings. Fritz Rohde began by summarizing his report for Region 1 (Northeast Region), and noting that Bob Jenkins of Roanoke College was continuing his work with redhorses. Fritz discussed Mary Moser's work with carsuckers and with blue and flathead catfish in the Cape Fear River, and congratulated Wayne Starnes (formerly of the National Museum of Natural History) on his recent appointment at the North Carolina Museum of Natural History and welcomed Wayne back to the southeast.

Noel Burkhead reported for the Southeast Region (Region 2). Noel's main points were that the federal moratorium on listing threatened and endangered species had been lifted, and that the SFC should draw its attention to the U. S. Fish and Wildlife's decision to drop Category 1 and 2 (C1/C2) species from the Federal Notices of Review process. Noel discussed the political implications of dropping C1/C2 species, suggesting that the USFWS was orphaning from federal stewardship many species that are becoming rare.

For Region 3 (North-Central Region), Dave Etnier reported that the Tennessee Valley Authority put lake sturgeon in the Clinch River three years ago, and that Charlie Saylor of TVA had recently collected one from the upper Norris Reservoir. Dave also reported that the Tennessee Aquarium in Chattanooga had expressed an interest in raising lake sturgeon to the 7-10 inch range to further ensure stocking success, and that snail darters were becoming more widespread, apparently due to recent improvements in discharge schedules below several TVA dams.

For Region 4 (South-Central Region), Bernard Kuhajda discussed the status of *Scaphirhynchus suttkusi* in the Mobile basin, and passed around pictures of an Alabama sturgeon captured in April 1996 by a paper mill employee in a hoop net 50 ft below a buoy in the Claiborne Pool downstream of Millers Ferry Dam, 0.25 mi N of Dixon Creek. The fish was released alive, but no tissue was taken for DNA analysis. Previously, three Alabama sturgeon have been captured this decade (one in 1993, and two in 1995, all below Claiborne Lock and Dam in the Alabama River). Tissues for DNA analyses were taken from all three. The 1993 specimen died at the Marion Fish Hatchery, and the second sturgeon captured in 1995 was released and subsequently died following entrapment in a gill net. Both of these specimens are in the University of Alabama Ichthyological Collection. The first Alabama Sturgeon collected in 1995 was released and, presumably, is still swimming around. Bernie also reported that Mel Warren and Wendell Haag had finished a manuscript on freshwater mussel community structure in the upper Sipsey River, and that Mel and Brooks Burr's palezone recovery plan was out. Scott

ological Survey discussed blue in the Alabama River by noting gaged several hundred fish, one of miles downstream. Bob Jenkins ned several dozen *Moxostoma* in . All previously identified *M. M. carinatum*, and he requested data or specimens of *Moxostoma* please see him after the meeting.

Pezold were not present to give or southwest regional reports. ports, Steve Walsh initiated a y announcing the upcoming (1997) an University in Greenville, South th the Association of Southeastern ed that anyone with suggestions for ontact Dennis Haney. Steve then ad received a letter from the U.S. (USFWS) requesting comments on ent for fisheries in the southeast hasized the future directions of the and fisheries programs in the ing the key points of the document, for discussion. Noel Burkhead his opinion that it was important for /SFWS letter. Noel volunteered to ehalf of the SFC. Steve asked if it d individually or as a group. Mary up response from the SFC, but she to read the Vision Statement and to port of the document. Royal Suttikus ed to know how the document would the question to Jim Williams, who he thought the regional office of the reorganization and was seeking to focus for southeastern fisheries issues. ncern over U.S. Army Corps of ns for water usage. Steve asked for ding the USFWS Vision Statement. the discussion moved on to a proposed River at Choctaw Bluffs. Steve ahajda's knowledge of the project and e group a summary. Bernie began by dam will be below Claiborne Lock and the most downstream impoundment on er than the Alabama sturgeon collected ee sturgeon have all been collected ne Lock and Dam. Mary Freeman nderstanding that the project had been omeone expressed the sentiment that ver "officially" dead, and that the main s to have been terminated is because of andowners. Royal gave a brief history e the lake will be built, and talked about vner in 1964 who was very willing to al research conducted on his property.

Royal also suggested that, instead of building another dam on the lower Alabama, the USACE should consider removing Claiborne and Millers Ferry Lock and Dams, thereby restoring continuity upstream past the mouth of the Cahaba. Steve Walsh then spoke about SFC's options for responding to the Choctaw Bluffs dam project. These options included sending a letter to the USACE stating opposition to the project, or preparing the SFC to quickly respond in the event of future reactivation of the project. Noel Burkhead urged the group to respond with a letter. Steve asked for a motion to refer this subject to the Resolution Committee, and asked David Etnier if he would be responsible for coordinating the issue with the committee. Dave agreed, a motion was provided and seconded, and passed on a voice vote. Royal Suttikus asked if perhaps the SFC should request a five-year moratorium on any activity related to the proposed Choctaw Bluffs dam. Jim Williams stated that in his opinion the SFC should unequivocally express opposition to the project. Steve asked Jim to draft a resolution for review by the Executive Committee. Steve Layman commented that it was an appropriate linkage with the USFWS Vision Statement to protect riverine habitats.

Steve Walsh then read a letter given to him by Noel Burkhead regarding plans by the U.S. Forest Service (USFS) to stock redeye bass (*Micropterus coosae*) from headwater sources in the Coosa drainage to streams in the Chattahoochee/Oconee National Forest (upper Savannah drainage). Several undesirable aspects of this project were then discussed by meeting participants, such as disregard for the possible implications of mixing unique genetic or chromatic forms of *M. coosae*. Bob Jenkins compared the situation to the Roanoke River where the Virginia Department of Game and Inland Fisheries and the USFWS stocked *Ambloplites rupestris* in the range of *A. cavifrons*, resulting in the eventual elimination of *A. cavifrons* from the upper Roanoke River. A general discussion about how to respond to the USFS plan ensued. Bud Freeman gave a history of how the USFS came to decide upon stocking non-indigenous stocks of Coosa bass in the upper Savannah drainage. Jim Williams volunteered to assist Bud in drafting a letter to the USFS stating the SFC's opposition to the project. Dave Etnier moved that, as a group, the SFC oppose the stocking. A motion was called for and was carried by voice vote.

Steve asked for any other new business. Jim Williams gave a summary of Cindy William's current employment situation, and asked that the SFC send Cindy's supervisor in the USFS a letter stating our appreciation for her efforts to preserve and protect southeastern rivers. Herb Boschung made a motion for someone in the SFC to write the letter, and Noel Burkhead volunteered.

Steve Walsh asked for any other items of interest to the SFC. A motion for adjournment was made, seconded, and approved by voice vote.

ral

ting finds

milks, of the Kentucky State (SNPC) report news from ublished a list of rare plants ntucky Academy of Science (pecies) of Kentucky's fish ance of state and regional nually.

ston of the University of stribution and status survey rn cavefish, in 1995 that s in Kentucky and 44 in h at eight sites in Indiana 1994, and used mark and total of 5602 *A. spelaea*. itat was considered, they ndividuals.

ra, formerly considered last of three records was reen River in Mammoth h Fork Kentucky River. te has yielded only one orts over the years, and ized based on previous ra will be added to the mission rare species list ida was also found at ntucky River where it n 1925. One hundred ntucky River drainage ks thus far) have been ntucky Department for iforcement to provide ns for the coal mining 75 native fishes known es have been collected m the drainage except pling probably would that most of the North intensive strip mining

sportation is planning er Poor Fork of the icky. Channelization impact the federally e blackside dace, and endemic *Etheostoma ohnny darter*.

at the University of in Alabama. They latyrhinus poulsoni, nce. The population erraneus, southern

with the Alabama cavefish. Rick using work on the *Etheostoma* laute student Jessica Boyce is activity patterns for different Tuscumbia darter, with comments

Erimystax cahni, slender chub, at hat this species had disappeared nting that this time it might be y class collected and released one linch River on 9 October, but no en the following day. During the ir specimens of *Noturus stanauli*, ight and released--two from along g the north shore.

y of Tennessee student) completed current status of the undescribed "laurel dace". He concluded that nown from four Tennessee River ridge portion of the Cumberland nnessee. Two populations occur orn Branch of Rock Creek, Cupp ek system, and three in the Piney assin and Young's creeks). These River in Chickamauga and Watts

ion Fisheries, Inc. (CFI), has y of *Fundulus julisia*, Barrens ions were discovered. Currently, 1 the Cumberland River Drainage system of the Tennessee River Cumberland River populations is ocalized and tenuous. Pat made erm conservation of the species.

as (CFI) continued work begun by inois University, Carbondale) to undescribed "chucky madtom", ld surveys conducted through 1996 ucky madtom populations. The ly known only from Little Chucky system of the Tennessee River , although the species is very rare,

C. Shute and Pat Rakes (CFI) for a *percunurum*, in the Big South Fork River, continued through 1996. In ange extension of duskytail darters South Fork, reported in 1996, the panded by about two river miles. fishes of the New River portion of imberland, Brian Evans (University nues to find *Etheostoma cinereum* ained specimens of *Moxostoma* (first for the New) and *M.* Big South Fork, first from the aps the biggest surprise was the

collection of a second specimen of *Noturus exilis*--at Brimstone Creek. The 1953 specimen housed at CU, from the same site, had been treated with some skepticism.

In the Tennessee portion of the Upper Cumberland, Bo Baxter's (University of Tennessee student) continued work indicates that *Notropis r. rubellus*, *Etheostoma baileyi*, and *E. sagitta* are widespread and abundant. *Etheostoma nigrum susanae*, Cumberland johnny darter and *Ericymba buccata*, silverjaw minnow were only taken at one site.

Charlie Saylor and Ed Scott, Tennessee Valley Authority (TVA), report results of 1996 TVA surveys. Snail darters, *Percina tanasi*, are now distributed from the mouth of the French Broad River near Knoxville, upstream almost to Douglas Dam (about 30 river miles), and are relatively common in the lower end of this reach. They were also present again in the lower end of the Little River, near Maryville. In Virginia, *E. acuticeps*, sharphead darter, was collected again, in the South Fork of the Holston River, and its range was extended upstream. *Percina macrocephala*, longhead darter, was collected in the North Fork of the Holston River above Saltville. In Copper Creek, one live and one dead *Noturus flavipinnis*, yellowfin madtom, were observed, as well as one *E. percunurum* and several *Percina burtoni*, blotchside logperch. On the Tennessee side, *C. monacha*, spotfin chub, continues to be present in the Holston River at Surgoinville, and *E. acuticeps* are still common in the Nolichucky River. They found *P. macrocephala* in Rock Creek of the Emory River system; this species hasn't been seen in the Emory system since the mid 1970's. In the Emory River, the distribution of *C. monacha* was extended upstream several river miles, to above the mouth of the Obed River. In the Alabama portion of the Tennessee River drainage, *P. burtoni* was extended up the Estill Fork of the Paint Rock River system almost to the Tennessee/Alabama state line. In 1997, in preparation for assessing subwatersheds and designating new River Action Teams, sampling efforts will be concentrated in the French Broad and Little Tennessee watersheds. Other sampling is scheduled for the Duck/Buffalo system, and tributaries of Kentucky, Pickwick, and Wilson reservoirs.

Captive propagation, reintroduction, and other management activities

As mentioned above, anticipating that Etnier's recent Clinch River *cahni* find might be a preview to a few years of abundance, J.R. Shute and Pat Rakes will be using *E. dissimilis* as a surrogate to try to unlock the secrets of captive rearing of *Erimystax*.

Captive populations are being maintained at CFI for the following species: spotfin chub, *Cyprinella monacha*; blackside dace, *Phoxinus cumberlandensis*; Barrens top-minnow, *Fundulus julisia*; smoky madtom, *Noturus baileyi*; yellowfin madtom, *N. flavipinnis*; spring pygmy sunfish, *Elassoma alabamae*; boulder darter, *Etheostoma wapiti*; and duskytail darter, *E. percunurum*. The Tennessee Aquarium has obtained all necessary permits to assist in rearing *C. monacha* produced by CFI to stocking size.

No stockings were made in 1996 using captive produced

of several mussels. His nongame fishes to stock that sels. They also might try to any raceways present at the complete taxa survey of all A, possibly starting with the a.

hyology, NC State Museum adjusted to his new role. ings and the new museum e UNC-IMS fish collection ope to have the new wet 17 although they had to go k is the new Director of a herpetologist who came s Lab in Oregon. One of the endangered fish report t malacologist, is the new

y of North Carolina at pe Fear and Waccamaw g the carpsuckers in the

ia Division of Marine ins, and J.R. Shute, is roadtail madtoms. The ir River may have been de and Rudy Arndt of sey are continuing their fishes. They would ave. Rohde is working i Carolina on *Elassoma*

F. Rohde

gations and putting off minute, only topical

he Right of Eminent land owners property crosses an unnamed ay County, Georgia. roducing population on of the Conasauga Photographs of

ones and of the visiting allow

boulder darters or blackside dace. As previously reported, *C. monacha*, *N. baileyi*, *N. flavipinnis*, and *E. percnurum*, were again captively propagated. Individuals produced in 1995 were stocked in late spring 1996, and individuals produced in 1996 will be stocked in spring 1997. To date, a cumulative total of more than 2500 *C. monacha*, 1000 *N. baileyi*, 500 *N. flavipinnis*, and nearly 1000 *E. percnurum* have been reintroduced into Abrams Creek in the Great Smoky Mountains National Park, (Blount County, TN). For the second consecutive year, reproduction was documented for *E. percnurum* and *N. baileyi*. Three of the four reintroduced species (*N. baileyi*, *N. flavipinnis*, *E. percnurum*) were observed in Abrams Creek during the 1996 field season.

As recommended by Noel Burkhead to provide supplemental boulder darter spawning substrates, the Tennessee Wildlife Resources Agency (TWRA) and CFI placed more than 50 artificial structures at a boulder darter locality in the Elk River. These structures were placed in a variety of habitats and flow conditions. As more than 120 boulder darters have been captively produced, this management technique may be used to expand the range of the species within the Elk River, or augment existing populations.

Local and regional watershed activities

The KSNPC continues to purchase land to establish a nature preserve to protect Terrapin Creek. This western Kentucky tributary to the Obion River contains Kentucky's most unique fish fauna. In cooperation with the Kentucky Chapter of The Nature Conservancy, KSNPC is drafting a strategic plan to protect the Green River from Green River Reservoir downstream to Mammoth Cave National Park as a bioserve. More than 100 fish and 50 mussel taxa are known from this 100 mile river segment.

Peggy W. Shute and David A. Etnier

REGION IV - South-Central

Bud Freeman at the University of Georgia's Institute of Ecology in Athens reports that TVA has received a permit to construct a new powerline in northwest Georgia that will cross the Conasauga River five times. Recent TVA activities in the system have already destroyed a small stream that was the only known spawning site for *Etheostoma trisella* in Georgia. A truck spilled its pesticide load into a tributary of the middle Etowah River system, which killed fish for several miles, including the federally Threatened *Etheostoma scotti*; there was no prosecution because the action was deemed not willful. On the positive side, Bud has co-authored a Tennessee Aquarium publication on a Stakeholder's guide to the Conasauga River in Tennessee and Georgia, which facilitates education and conservation efforts. Likewise, the community-based Conasauga River Alliance, which is composed of stakeholders in the area, will soon be working with a full time resource

specialist hired by The Nature Conservancy. Bud has documented spawning behavior of *Percina antesella* in artificial streams and is conducting a life history study on *Percina aurolineata* in the Coosawattee River. Additional studies on the Coosawattee and Etowah river systems include spatial distributional databases of fish collections and current land-use practices. David Walters, a MS student, is finishing his thesis on the distribution of fishes in the Conasauga River system, which includes incorporating all collection information into a GIS based spatial database and assessing temporal shifts in the faunal community, identifying sensitive species, and recommending strategies for management. Another MS student, Kevin Barnes, is studying sedimentation impacts on fish assemblages in the upper Blue-Ridge portion of the Etowah River system. Bud also reports that Georgia fisheries biologists are considering the reintroduction of *Acipenser fulvescens* into the upper Coosa River system. In the upper Tallapoosa River, a second and third specimen of *Moxostoma carinatum* were collected by Mary Freeman and the Auburn Coop. unit (and others), respectively. Lastly, Judy Johnson, working with the Auburn Coop. unit, discovered the federally listed *Lampsilis altilis* in the Tallapoosa River above Harris Reservoir; the Georgia portion of the system remains unsampled.

Frank Parauka at the U.S. Fish and Wildlife Service in Panama City, Florida, along with the North Carolina Coop. unit, has been studying the movement and spawning habitat of *Acipenser oxyrhynchus desotoi* in the Choctawhatchee River system in Alabama and Florida. Fifteen adult sturgeon were radio-tagged and tracked. The results indicated that migratory patterns differed according to sex and reproductive condition, with ripe females entering the river in spring and migrating upriver more than 125 miles. Gulf sturgeon appear to be utilizing hardbottom areas 81 miles upriver and beyond for spawning, including the Pea River. Additional habitat characterization on a one mile stretch of river was initiated to develop a classification scheme for predicting the importance of these habitats to the life history of the sturgeon. Future field work will attempt to establish habitat characteristics of spawning sites, and to continue studying relative differences in migratory behavior related to sex and reproductive condition.

Carl Couret at the Service's office in Daphne, Alabama has been involved in the formation of the Tri-State Water Management Plan. Legislators in the three states are preparing to vote on the plan which allocates an "as yet to be determined" amount of water to various states. Once passed at the state level, the plan must receive the go ahead from the U.S. Congress. Unlike previous drafts, the current plan has the wording of "conserving biodiversity" and "maintaining water quality." Carl is concerned that if water allocation to Alabama is reduced, flow requirements necessary to comply with water quality laws may lead to many headwaters being impounded to store water for low flow periods.

Malcolm Pierson of the Alabama Power Company in Birmingham has completed an extensive five year fish study in the Coosa River below Jordan Dam (Elmore County). Preliminary results indicate that the 2000 cfs minimum

continuous flow has improved habitat for most fish species. Reproductive success has been documented for *Cycleptus elongatus* and *Moxostoma carinatum*. *Crystallaria asprella* have been documented from the main channel of the Coosa River and juvenile mussels of several species have been collected in recent years.

Randy Haddock of the Cahaba River Society reports that the executive director of the Society, Beth Stewart, will serve as co-chair on the Jefferson County Stormwater Management Committee to develop recommendations for the county on how to comply with implementation of a new water pollution control program mandated by the Alabama Department of Environmental Management. ADEM, with the help of EPA, is adopting a basin-wide management approach to water pollution in Alabama, and the first effort will be the Cahaba River system. Randy also reported that a grant from the Chesapeake Bay Foundation will allow the Society to develop a new educational program that will be leading numerous teacher and student field trips in the Black Warrior and Cahaba river systems. Lastly, Randy indicated that three of the six gastropods species recently proposed for federal listing in Alabama are presently found in the Cahaba River system.

Bob Stiles at Samford University continues to study the biology of *Cottus pygmaeus* in Coldwater Spring, Calhoun County, Alabama. He is using transects and bottom sampling to assess the population, which appears healthy. He is just starting to collect data on prey items available and how it relates to stomach contents.

Scott Mettee of the Geological Survey of Alabama in Tuscaloosa reports that the Fishes of Alabama and the Mobile Basin became available in December 1996. This 832-page publication (650+ pages in color) was completed as a cooperative effort of the Survey and Alabama Game and Fish Division with funding provided by the USFWS. Introductory chapters include Physical Setting, Fish Distribution, Anatomy, and a Key to 29 families of freshwater and marine fishes known to inhabit freshwater. Most of the book is devoted to two-page species accounts; one page provides a color distribution map generated using GIS technology, and the other page includes information on the distributions, physical characteristics, adult size, habitat and biology, and protected status of 300+ species. Color photos of individual species are included in the species accounts as well as in the Anatomy chapter and the Key to Families. Illustrated taxonomic keys to species occur within each family discussion. Two colorized tables contain checklists to species within Alabama's 16 river systems and 67 counties. Scott also reports that Survey staff documented the movement of specimens of *Cycleptus elongatus* from 68 to 134 miles downstream and over Claiborne Lock and Dam following spawning in the Alabama River in 1995 and 1996. Another study found healthy populations of the federally Threatened *Noturus munitus* in the lower Cahaba River. A biological water quality project will be completed in the lower Cahaba River this year with the results published by the Survey. Studies in the Tennessee River drainage will include documenting Alabama cave shrimp movements in Madison County.

Stuart Poss at the Gulf Coast Research Lab in Ocean Springs, Mississippi completed a contract with the U.S. EPA that resulted in a workshop on identifying potentially endangered species in the Gulf of Mexico and investigations into the research needs for these species. This work utilized the archived collections of ichthyological museums which possessed major holdings of species from the Gulf to document rare and potentially imperiled species. Historical evidence was evaluated to establish that 23 species of fishes may be disappearing, becoming rare, or are otherwise imperiled over parts of their range, and one species was found to be extinct in the Gulf. The results of the workshop and associated information will be available on the U.S. EPA Information Network (GIN).

Mark Peterson, also at the Research Lab, just finished sampling for Gulf Coast *Cycleptus elongatus* from the Pearl and Pascagoula rivers. A MS student, Doug Snyder, is finishing his thesis on the life history of *Enneacanthus gloriosus*; a separate habitat paper on the bluespotted sunfish is due out in March in J. Freshwater Ecol. Mark also just finished a final report on the distribution and habitat of *Fundulus jenkinsi* in Jackson County, where he recorded the first collection of the species in the Pascagoula River. He hopes to get funding to look elsewhere in the Pascagoula.

Melvin Warren at the U.S. Forest Service Hydrology Lab in Oxford, Mississippi reports that he and Wendell Haag have a manuscript coming out in JNABS documenting fish-hosts and reproductive strategies for six species of Mobile Basin mussels, including four federally listed species. They also have a manuscript in review on fish-hosts, mussel communities, and habitat interrelationships in the upper Sipsey Fork (Black Warrior River). Melvin and Wendell will conduct fish-host trials for two or more mussel species from Shoal Creek watershed in Talladega National Forest in east-central Alabama. They also plan to quantitatively sample the mussel fauna in Little South Fork Cumberland River this summer and assess the interrelationships of the fish and mussel community, with emphasis on the effects of surface mining on the lower third of the river. Melvin and Mitzi Pardew are completing a manuscript documenting effects of road crossings on fish movement in several streams, and Melvin and Davis Lonzarich are revising a manuscript documenting the effects of habitat spacing and sequence on the ability of small-stream fishes to recolonize defaunated stream pools; both studies were in the Ouachita National Forest.

Carol Johnston, also at the Hydrology Lab, reports research activities on population dynamics of rare fishes in the Conasauga River. She is also studying sound production in darters, as well as running experimental studies on the role of female choice on reproductive success of hosts in nest association systems. Lastly, Carol is identifying characteristics of mobile and non-mobile fish populations of selected stream fishes.

Steve Ross at the University of Southern Mississippi in Hattiesburg reports that Todd Slack completed his dissertation on the interaction of flooding and stream fish assemblages and

that he is now working as a post-doc on *Acipenser oxyrhynchus desotoi* and on larval ecology of *Etheostoma rubrum*. Brett Albanese is completing his thesis on the life history of *Pteronotropis signipinnis*. Todd and Brett have completed a distributional study of *Notropis chalybaeus* in Mississippi. This species was not collected from any of the historical sites, and was found at only one new site (on the Escatawpa River). Martin O'Connell is continuing work on the use of floodplains by stream fishes. Martin, Todd, John Erwing, and Steve are completing a manuscript on the distribution of *Notropis melanostomus* in Mississippi, primarily in oxbow lakes off of the Pascagoula River. Steve and T. Rauch completed a survey for *Leptolucania ommata* and failed to find any individuals at the historic site in Jackson Creek, or in any other Mississippi stream. Lastly, The Inland Fishes of Mississippi is scheduled for publication by the University Press of Mississippi in March 1998!

Chris Taylor at Mississippi State University in Starkville is compiling all historic records from the Tombigbee River as a baseline database for future work in the drainage. Along these lines, Chris has a graduate student studying the spatial and temporal distribution of fishes in Luxapallila Creek relative to historical collections.

Jan Hoover at the Corps of Engineers Waterways Experiment Station in Vicksburg, Mississippi reports that he and his staff have tagged 250 *Scaphirhynchus platyrhynchus* with Peterson discs over the last two years; over 50 of these were also tagged with PIT tags and field measurements and counts were made. So far there have been two recaptures. They have collected, measured, tagged, and released two *Scaphirhynchus albus* this winter, but several sturgeon have been "pallid-ish." Jan hopes many more pallid sturgeon will be tagged before the river comes up later this spring. They are also collecting the first brood stock specimens for a fish hatchery in Louisiana.

Hank Bart at Tulane University has learned via the Louisiana Audubon Society that the Corps of Engineers is planning to build a water-control structure at Wilson Slough (a scenic waterway) on the Pearl River to prevent the slough from capturing more of the flow of the main river, then dredge a pilot channel in the river between the control structure and Walkiah Bluff. This project's purpose is to benefit a boat launch in the area. Unfortunately, this section of the river is home to one of the largest mussel beds left in the Pearl, and dredging would almost certainly destroy it. The project may be hampered by a serious mercury contamination problem in the river, which would be exacerbated by more dredging. Hank and R.D. Suttkus are almost certain that *Percina aurora* is extirpated from the Pearl River. Collections at all historic sites for this species over the last two years produced only two specimens from the Leaf River above Hattiesburg. The only other record during this time period was one specimen from the Leaf River by a crew from the Illinois Natural History Survey last year. An emergency meeting with federal and state agencies and area ichthyologists resulted in an agreement to pool resources on all future field work and incorporate snorkeling surveys. A decision to list the species will be made

after a third year of field work. Pat Rakes of Conservation Fisheries, Inc. and Steve Ross (USM) agreed to use *Percina copelandi* and *P. brevicauda*, respectively, as surrogate species to learn about breeding and lab propagation protocols to be used for *P. aurora*.

Bob Cashner at the University of New Orleans reports that his graduate students are busy with projects in Region IV. Jeff Stewart is doing a comprehensive study of fish communities in the Bogue Chitto River (Pearl River). Chris Schieble is working on the life history of *Ambloplites ariommus* in the Pearl River drainage. Jeff, Chris, and Bob are involved in a study of Lawrence Creek, a small tributary to the Bogue Chitto that has a surprisingly high species richness. They are also involved in a large, four-year nekton survey of Lake Pontchartrain. Samples at sites collected by Thompson and Verrett in 1979 were begun in October 1996. Lastly, Bob reports that a former student's survey of Bayou Lacombe in 1988 was completely devoid of any *Cyprinella venusta*, even though it was the most abundant species collected in a 1975 survey of the bayou. Monthly samples each spring for the past two years have still not found a single specimen of *C. venusta*.

Bruce Thompson at Louisiana State University reports that the descriptions of the last two southeastern logperch are well underway. The Gulf logperch is in press as Occ. Pap. Mus. Nat. Sci., LSU No. 72. The Mobile logperch is in review. One more paper is planned; a synthesis and phylogeny of all southern forms, including shape analyses.

Brooks Burr at Southern Illinois University at Carbondale reports the collection of a juvenile specimen of *Cichlasoma cyanoguttatum* in June 1996 from Irish Bayou, Louisiana (Lake Pontchartrain), which represents either a pet release or is evidence of reproduction. He also has collected young-of-the-year silver carp in a ponded area near the Ohio River mouth. Brooks is still getting records of *Mugil cephalus* in the lower Ohio and adjacent Mississippi rivers.

Rick Mayden and Herb Boschung at the University of Alabama in Tuscaloosa are working on the completion of their Alabama fish book. Rick and Brooks Burr are completing their systematic study on the *Cycleptus elongatus* complex. Rick is also examining variation in the *Etheostoma ditrema*, *E. ramseyi*, and *E. zonistium* complexes, as well as finishing a status survey on *Etheostoma ditrema*. Graduate student Rex Strange is studying the systematics of the southern walleye. Cesar Blanco is studying habitat usage of *Etheostoma chermocki* in Turkey Creek (Black Warrior River). Results of this study will be used to assist in the development of a watershed management plan for Turkey Creek by Jefferson County and the USFWS.

Ron Larson with the U.S. Fish and Wildlife Service in Jackson, Mississippi has been the driving force in the formation of a recovery plan for *Scaphirhynchus suttkusi* in cooperation with state and federal agencies and business coalitions. The Service is funding a retrofit for the Marion Fish Hatchery for Alabama sturgeon propagation. Funding will also be provided to the State, Auburn Coop. unit, and the Corps of Engineers Waterways Experiment Station for broodstock collection efforts

in the lower Alabama River. Plans are to have four to five netting/trotline crews on the river during April and May. Ron reports that the Alabama sturgeon is currently a candidate for federal listing. On a different topic, Ron is also trying to secure funds to begin several new Section VI projects in his region.

Bernie Kuhajda

REGION V - Northwest

The U.S. Army Corps of Engineers is gathering environmental documentation and developing preliminary plans to construct the White River Navigation Project from the mouth upstream to Batesville, AR, a distance of approximately 255 river miles. The project was re-authorized by the Water Resources Development Act of 1996 and proposes to construct and maintain a 200 foot wide by nine foot deep navigation channel. The White River supports good populations of paddlefish and sturgeon along with a substantial commercial mussel fishery. The proposed navigation project will seriously impact numerous gravel shoals and provide a vector for the increased dispersal of the zebra mussel into the middle reaches of the mainstem White River. Representatives from the Arkansas Game and Fish Commission, Arkansas State University, and the Shell Exporters of America (SEA) are coordinating efforts to provide information to the Corps of Engineers, so that all environmental and economic costs/benefits are included in NEPA documentation for the project. As the project develops, the SFC will be asked to make a position statement regarding the project.

Crooked Creek (White River drainage, north central Arkansas), one of the premier smallmouth bass streams in Arkansas and the Southeast, fell just short of receiving designation as an extraordinary resource (ER) stream in Arkansas which would have prevented instream gravel mining in the water body. This came on the heels of an economic analysis provided by a Governor's Task Force which determined that instream gravel mining in Crooked Creek was not cost effective given the adverse impacts to the fishery and other stream resources and functions. The Arkansas Department of Pollution and Ecology promulgated its Regulation 15 during 1996 which provides permitting and controls for instream gravel mining operations. The ADPC&E Commission has decided to delay the ER designation for Crooked Creek until the effectiveness of Regulation 15 on preserving the water body can be evaluated. To date, there have been three applications for instream gravel mining permits to remove aggregate materials from Crooked Creek.

Arkansas fishes are swimming a little easier these days as Neil Douglas of Northeast Louisiana University is retiring this spring. Neil and his students have provided numerous distributional surveys and amassed quite a database of fish

distribution and relative abundance within Arkansas.

Henry Robison (Southern Arkansas University) reports that he and Bruce Thompson (Louisiana State University) are continuing to analyze and rewrite their manuscript revising the *Percina nasuta* complex in Arkansas. Robison reports that they are "almost there". Additionally, Robison reports that Pat Ceas of Eastern Kentucky University continues his work on the *Etheostoma spectabile* complex in Missouri and Arkansas.

John L. Harris

REGION VI - Southwest

Jack Killgore, U.S. Army Engineer Waterways Experiment Station (WES), begins a larval fish study this spring in Big Cypress Bayou (Red River drainage) to evaluate hydrologic influences on spawning success of riverine fishes. The ultimate goal is to restore floodplain habitats by optimizing reservoir releases.

Jack, Phil Kirk (WES), Jim Morrow (WES) and Howard Rogillio (LA Dept of Wildlife and Fisheries) continue their studies of the demography, distribution, movements and status of Gulf sturgeon, *Acipenser oxyrhynchus desotoi* in the West Pearl River/Lake Pontchartrain system. To date more than 250 fish have been tagged, 15 with radio tags and pectoral spines examined from more than 70 individuals. Age and growth data are being used by Jim and Phil to develop and refine the first population model developed for this species.

Chad Keith, Northeast Louisiana University (NLU) and Frank Pezold (NLU) are initiating a study of seasonal changes in fish communities associated with aquatic macrophyte beds. Frank Pezold and Amy Frobish (NLU) are studying larval fish production in the Ouachita River. Neil Douglas (NLU) is continuing work on his book.

Conservation concerns in the area are many. Gary Tilyou (Louisiana Department of Wildlife and Fisheries) identified several major issues including: mercury contamination in sportfish and the possible effect this may have on length regulations, freshwater mussel harvest and its impact on mussel populations, and the use of grass carp to control aquatic vegetation in public waters. In north Louisiana grass carp were recently introduced into a portion of Bayou Desiard and in 1994 in Caney Lake. Headlines in the Monroe NewsStar last year were reading "think of grass-eating piranha and that's what you've got" and "Grass Carp Out of Control." Basically, Caney Lake is a Trophy bass lake (reservoir) that was stocked after impoundment with introduced Florida bass. Then someone introduced hydrilla in 1988. In 1992 there were 500 acres of hydrilla. The entire lake is under 5000 acres. The 12,000 introduced grass carp have denuded the lake except for lily pads. The Louisiana Department of Wildlife and Fisheries has been attempting to reduce the number by a variety of methods, including electrofishing and a bow-hunting season.

Other carp immigrants from Arkansas have become well-established in NE Louisiana waterways. LaFourche Bayou (tributary to Ouachita River) is a hotbed for silver carp and bighead carp. One 35-lb specimen was recently added to the Museum of Zoology when it jumped out of the water and struck a frog gigger in the chest. He wrestled it down and contributed its body to science.

In Texas and Oklahoma the Red River Chloride Control Project is still being fought out. It started in 1957 when Congress authorized the US Army Corps of Engineers to develop a plan to control salt levels in the Red River. Lake Texoma was built in 1944 and since then has become a greater resource for recreation than for drinking water. Ninety-seven percent of the time it is too saline for municipal (=Dallas) use. Reduction of the salt load is opposed because of the threat to the striped bass fishery in Lake Texoma (a multimillion dollar enterprise) and the effect on native species that have evolved in the saline environment.

Frank Pezold

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Southeastern Fishes Council PROCEEDINGS

Information For Contributors

The primary purpose of the *PROCEEDINGS* is to publish research papers, critical reviews of activities, area reports and other pertinent information pertaining to the biology and conservation of Southeastern fishes

Manuscripts should be submitted in duplicate. A good guide for manuscript preparation is the Fifth Edition of the *CBE Style Manual* available from the Council of Biology Editors, One Illinois Center, Suite 200, 111 East Wacker Drive, Chicago, IL 60601-4298.

The entire manuscript including the abstract (required for feature articles only), text, Literature Cited, tables, headings and legends must be double-spaced. The title, author's name and author's address (including fax number and email address for corresponding author) should be centered on the first page. Indicate a suggested running head of less than ten words at the bottom of the first page. An abstract (if necessary) will be placed at the beginning of the text. Acknowledgments will be cited in the text immediately before the Literature Cited. All references cited in the paper will follow the standard format of using the last name of the author(s) followed by the year of publication of the paper. In the Literature Cited, the references will be alphabetical by the author's last name and chronological under a single authorship. The entire reference should be given with the complete name of the journal spelled out if possible.

Tables should be typed on a separate page, consecutively numbered and should have a short descriptive heading. Figures (to include maps, graphs, charts, drawings and photographs) should be consecutively numbered and if grouped as one figure each part block lettered in the lower left corner. Computer-generated graphics should be high quality prints; for drawings, high quality prints or photocopies are preferred to the original line art. Legends for figures must be on a separate sheet and each figure must be identified on the back. The desired location of each table or figure should be indicated in the margin of the manuscript.

Manuscripts will subject to editing and will be reviewed by at least two anonymous persons knowledgeable in the subject matter. The edited manuscript and page proofs ("galley") will be furnished to the author. Upon returning the reviewed and corrected manuscript to the editor, a PC disk copy of the final form of the text, tables and computer-generated graphics is also requested. Specific formatting information for the disk will be sent to the author with the edited manuscript. Reprints will be available at a nominal cost.

Regional reports, news notes and other short communications will also be edited and included when possible in the next number.

Only manuscripts from members of The Southeastern Fishes Council will be considered for publication. There is no charge for publishing in the *PROCEEDINGS*. All manuscripts and short communications should be sent to the editor:

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