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Number 28 (December 1993)

Abstract

(December 1993) - Notes on the Habitat Characteristics of the Backwater Darter, *Etheostoma zonifera* (Hubbs and Cannon). By M.S. Peterson, 7 pp.

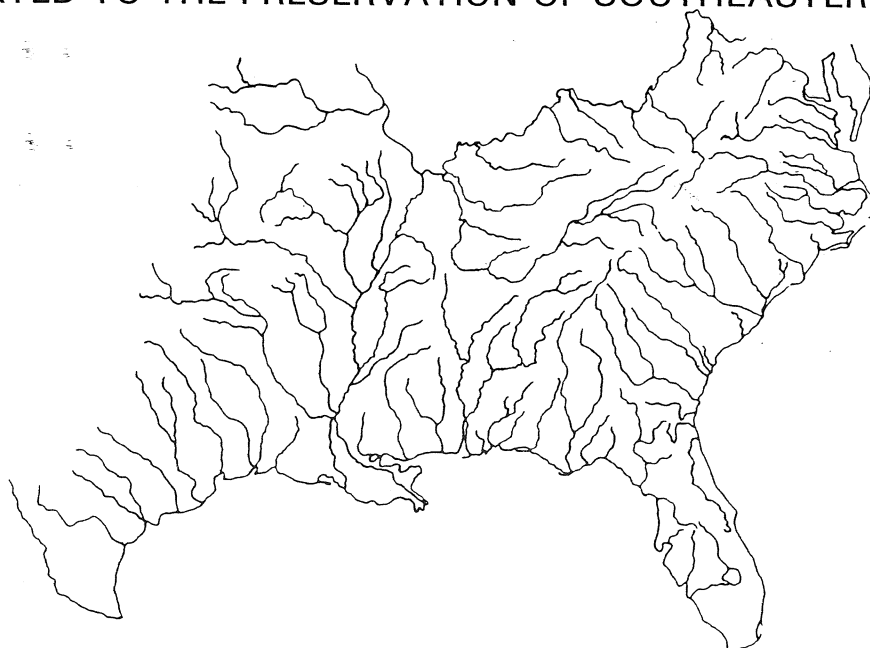
Minutes, Regional Reports and News Notes.

Keywords

blackwater darter, *etheostoma zonifera*

Southeastern Fishes Council **PROCEEDINGS**

DEDICATED TO THE PRESERVATION OF SOUTHEASTERN FISHES



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NOTES ON THE HABITAT CHARACTERISTICS OF THE BACKWATER DARTER, *ETHEOSTOMA ZONIFER* (HUBBS AND CANNON)

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INTRODUCTION

The backwater darter, *Etheostoma zonifer* (Hubbs & Cannon) is endemic to the Mobile River basin, has a narrow range in Mississippi and Alabama in streams immediately below the fall line (Collette, 1962; Kuehne and Barbour 1983), and is considered rare across its distribution (Mettee et al., 1987; Boschung, 1992). For example, Boschung (1989) reported the backwater darter in only 11 of 352 collecting sites in the Upper Tombigbee River drainage in Mississippi and Alabama. The backwater darter is recorded in only 9 of 2,693 collections from the Upper Tombigbee River system in Mississippi in the MSU Ichthyological Collection.

Little detailed data are available concerning the habitat characteristics of this species. Hubbs and Cannon (1935) described *E. zonifer* habitat as creek pools from Catoma Creek, Montgomery, Alabama, and noted that vegetation occurred at many of the collecting stations. Both Page (1983) and Kuehne and Barbour (1983) indicated that because *E. zonifer* is closely related to *E. gracile* (Girard) their habitat is presumed similar and characterized as turbid, sluggish water over a soft bottom. Pierson et al. (1986) collected the backwater darter in the Buttahatchee River near Greenwood Springs, Mississippi, but did not provide any habitat data. Boschung (1989) listed eleven pre-Tennessee-Tombigbee Waterway (TTW) collection sites for the backwater darter in the Upper Tombigbee River drainage in Mississippi and Alabama, and indicated it inhabits pools in small streams of slow to moderate current and are captured over sand or silt bottoms.

During the course of a survey of 39 small streams in the Upper Tombigbee River drainage in Mississippi, I collected two backwater darters from two locations in Broken Pumpkin Creek, Mississippi. Here I provide habitat data associated with these specimens, and provide accounts of unpublished field data from the other specimens collected in the Mobile River basin.

MATERIALS AND METHODS

I surveyed streams periodically during spring and summer 1990 and 1991 throughout the Upper Tombigbee River drainage in Mississippi using: 1) a 3.05 X 1.2 m bag seine constructed of 3.2 mm mesh netting, 2) dip nets made of 3.2 mm mesh netting or 3) small aquarium nets. I made 17 habitat measurements at each collecting site where any darters were collected (see Table 1). Backwater darter specimens are

housed in the MSU Ichthyological Collection (MSU #'s 7974 and 7976). Field notes of collections where *E. zonifer* were present were obtained from J.P. Kelly, G.H. Clemmer, M. Pierson, and the University of Alabama Ichthyological Collection.

Table 1. Habitat data from two sites on Broken Pumpkin Creek where *E. zonifer* was collected on 24 May 1990. Mean values are based on three measurements. The amounts of litter covering the substratum, the amount of vegetation, and cover other than vegetation were scored as 1 (absence), 2 (intermediate amounts) and 3 (high amounts). Shading was scored as 1 = full sun; 2 = partial sun; 3 = temporary full shade; and 4 = permanent full shade. Stream order was determined using U.S. Geological Survey topographic maps (1:24,000 scale).

Variables	Site 1	Site 2
Max Depth (cm):	34.0	49.0
Mean Depth (cm):	23.6 \pm 15.6	44.4 \pm 4.9
Max Width (m):	6.9	6.3
Mean Width (m):	5.0 \pm 1.2	6.1 \pm 0.5
Water Temperature ($^{\circ}$ C):	18.0	18.0
Dissolved Oxygen (mg/L):	6.8	6.4
pH:	6.5	6.7
Conductivity (mOhm):	240.0	250.0
Turbidity (NTU):	45.1	63.4
Current Velocity (m/sec):	.003 \pm .006	.003 \pm .006
Bank Slope ($^{\circ}$):	25.0	40.0
Litter:	1.0	2.0
Vegetation amount:	1.0	1.0
Other Cover:	2.0	2.0
Substratum:	Medium sand, some gravel	Hard mud pan, some gravel
Shading:	2.0	2.0
Stream Order:	3.0	3.0

RESULTS AND DISCUSSION

I made collections in six of the nine pre-TTW sites in Mississippi listed in Boschung (1989) plus other small drainages throughout the upper Tombigbee River drainage. Two of the original eleven sites were in Alabama; one site was flooded and was not sampled, and two sites have been

inundated by the construction of the TTW and were not sampled. I found *E. zonifer* only in Broken Pumpkin Creek with three other species of darters on 24 May 1990 (quad coordinates: T16N, R19E, S10). These were *Etheostoma nigrum* Rafinesque (N=6), *E. chlorosomum* (Hay) (N=3), and *E. whipplei* (Girard) (N=35). The two individuals of *E. zonifer* (16.2 and 21.4 mm standard length) were collected downstream of the bridge located about 0.6 km north of Bigbee Valley, Mississippi, off Highway 388. Table 1 presents the habitat measurements for each station. Although only two individuals were collected, the habitat data indicate that these backwater darters were living in turbid, slow current habitats which is similar to the description in Page (1983) and Kuehne and Barbour (1983). Furthermore, these two stations were characterized by high conductivity and no vegetation, but intermediate amounts of other cover such as logs and branches (Table 1). A review of field notes associated with specimens housed in various museums (37 cataloged collections with habitat data; see Tables 2 and 3) indicated that backwater darters are found: 1) in slightly to moderately turbid waters (eight collections indicated clear); 2) in currents that range from none to moderate (but three collections indicated fast or swift); 3) associated with none or some vegetation (but one collection indicated dense vegetation); and 4) typically in sand, silt, or clay substratum with some gravel or rubble. These qualitative data support the data from Broken Pumpkin Creek for the comparable variables except for the presence of vegetation. All of the unpublished data except for 14 collections (Table 3) plus the initial data of Hubbs and Cannon (1935) indicate that vegetation was present at all sites where *E. zonifer* has been collected.

Based on the effort associated with this study and comments in Boschung (1989, 1992), it is clear that the backwater darter has been and is currently rare throughout the Mobile River basin. Results from this study can not address the habitat requirements of the backwater darter from a number of sites or requirements based on large number of collections from a single stream. It does, however, provide some quantitative and qualitative data concerning specific environmental conditions where *E. zonifer* specimens were collected, particularly prior to the completion of the TTW which upon completion obviously eliminated some of these habitats in directly affected streams. Additional quantitative work must be completed to verify the specific habitat requirements of the backwater darter so that appropriate conservation measures can be put in place to protect this rare species.

ACKNOWLEDGMENTS

This project was funded by the Mississippi Wildlife Heritage Fund, Jackson, Mississippi. I want to thank Mike Papay, James Key, and Cindy Taylor for field assistance. Stephen T. Ross verified the specimens of the backwater darter and provided the collection data from his data base on the MSU Ichthyological Collection. J.P. Kelly, G.H. Clemmer, and M. Pierson graciously provided their field notes and R. Mayden allowed use of the UAIC field notes.

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Table 2. Listing of unpublished records of *E. zonifer* from the Mobile River drainage. Museum numbers with an * are those for which habitat data were available.

Source (Collection #)	Collectors	Location	Counts	Museum Number
Mississippi State University	J.P. Kelly et al.	Luxapallila Creek [Mississippi]	1	MSU 5150*
	G.H. Clemmer et al.	Trim Cane Creek	1	MSU 1596*
		Nichols Creek	1	MSU 6417*
		Tombigbee River	4	MSU 2825*
		Tombigbee River	2	MSU 3337*
		Tombigbee River [all Mississippi]	1	MSU 4666*
	B. Teels	Sun Creek	1	MSU 7023
	C.A. Schultz	[Mississippi]		
Malcolm Pierson (Personal Collection)	M. Pierson C.A. Schultz	Tributary of Magowah Creek [Mississippi]	3	XMP 12.14*
Auburn University	M. Pierson C.A. Schultz	Broken Pumpkin Creek [Mississippi]	1	AUM 21737*
Mississippi Museum of Natural History	M. Pierson	Word Creek [Mississippi]	2	MMNS 10368*
University of Alabama Ichthyological Collection	H. Harima M.F. Mettee	Mattubby Creek [Mississippi]	1	UAIC 4305.21*
	M.R. Mundy T.S. Jandebeur	Buttahatchee River [Mississippi]	1	UAIC 4432.21*
	M. Pierson C.A. Schultz	Nichols Creek [Mississippi]	2	UAIC 9556.01
	A.F. Hemphill H.T. Boschung	Chilatchee Creek [Alabama]	1	UAIC 526.01*
		Prairie Creek [Alabama]	2	UAIC 536.01*
	J.D. Williams J.C. Hall R. Ambrose	Townsend Haney Creek [Alabama]	1	UAIC 1279.09*
	J.D. Williams N. Williams	Wallahatchee Creek [Alabama]	1	UAIC 1353.07*
	J.D. Williams J.C. Hall	Line Creek [Alabama]	2	UAIC 1471.10*
		Tributary of Coleman Creek [Alabama]	2	UAIC 1472.11*

Table 2. Continued.

Source (Collection #)	Collectors	Location	Counts	Museum Number
University of Alabama Ichthyological Collection	J.D. Williams J.C. Hall	Tributary of Bugnall Creek [Alabama]	3	UAIC 1473.11*
		Moore's Creek [Alabama]	5	UAIC 1474.09*
		Opintolocco Creek [Alabama]	1	UAIC 1480.15*
		Tributary of Opintolocco Creek [Alabama]	3	UAIC 1481.08*
		Coleman Creek [Alabama]	2	UAIC 1484.12*
	J.D. Williams C. Knight	Johnsons Creek [Alabama]	4	UAIC 1510.08*
		Washington Creek [Alabama]	1	UAIC 2123.13*
	Charles Tucker Carol Tucker	Washington Creek [Alabama]	2	UAIC 2128.08*
		Mud Creek [Alabama]	1	UAIC 2390.11*
	C. Tucker H. Harima	Bogue Chitto Creek [Alabama]	1	UAIC 2392.24*
		Tatum Creek [Alabama]	4	UAIC 2394.08*
		Dry Creek [Alabama]	1	UAIC 2395.14*
		Bear Creek [Alabama]	1	UAIC 2409.04*
	M. Pierson E. Tyberghein	Cahaba River [Alabama]	1	UAIC 7194.25*
		Cahaba River [Alabama]	2	UAIC 7701.19*
	M. Pierson S. Krotzer	Tallapoosa River [Alabama]	1	UAIC 9261.20*

Table 2. Continued.

Source (Collection #)	Collectors	Location	Counts	Museum Number
University of Alabama Ichthyological Collection	M. Pierson S. Krotzer	Line Creek [Alabama]	1	UAIC 9265.18*
	M. Pierson	Ramer Creek [Alabama]	4	UAIC 9267.10*
	C. Stephenson L. Strick M. Langford	Opintlocco Creek [Alabama]	16	UAIC 9695.24*
	C. Stephenson K. Frazer	Wallahatchee Creek [Alabama]	3	UAIC 9703.07
	M. Pierson	Pintlalla Creek [Alabama]	1	UAIC 9710.11*

Table 3. Habitat data for *E. zonifer* for unpublished records of M. Pierson, Mississippi State University, Auburn University, Mississippi Museum of Natural History, and University of Alabama. T=temperature; DO=dissolved oxygen; Turb=turbidity; Veg=vegetation; Sub=substratum. *=current velocity for these collections are a maximum for the general location (Clemmer, per. comm.). Collectors presented only as the first individual on the original field sheets (see Table 2).

Collectors	T (°C)	DO (mg/L)	PH	Depth (cm)	Width (m)	Turb	Current	Veg	Sub
J.P. Kelly [MSU 5150]	20.0			<122		turbid	slight		sand/silt/gravel
G.H. Clemmer [MSU4666]	12.0				10.7	clear, white	moderate	none	sand/silt
[MSU3337]	19.0			107	9.1	slightly turbid	moderate	none	mud/gravel/rubble
[MSU2825]	24.5			137	26	slightly turbid	moderate	some	gravel/sand
[MSU6417]*	23.0			168	23	slightly turbid	moderate to fast	some	gravel/mud
[MSU1596]*	24.0			152	46	moderately turbid	fast	some	gravel/mud
M. Pierson [AUM21737]				<183	<6.1	clear	slow	root filaments	clay/sand/gravel
[XMP12.14]				<92	<9.2	slightly turbid	slack water	some	sand/silt/gravel
[MMNS10368]	28.3			<92	1.5-4.6	slightly turbid	slight		sand/clay
[UAIC7194.25]	25.5					cloudy/ plankton	slow to swift	sparse <i>Justicia</i>	gravel/sand/silt
[UAIC9261.20]				shallow	9.1-18.2	clear	slow to moderate	root masses	sand/silt/gravel

Table 3. Continued.

Collectors	T (°C)	DO (mg/L)	PH	Depth (cm)	Width (m)	Turb	Current	Veg	Sub
M. Pierson (continued)									
[UAIC9265.18]						slightly turbid	slow	root masses	soapstone/gravel/ sand/silt
[UAIC9267.10]					7.6-9.1	slightly turbid	moderate	none	sand/silt
[UAIC9556.01]									
[UAIC9710.11]				<91	6.1-9.1	turbid	none	flooded veg	silt/soft clay
J.D. Williams									
[UAIC1279.09]	23.5			<61	3.1-4.6	clear	moderate	none	gravel/sand
[UAIC1353.07]	22.7			<122	4.6-6.1	clear	moderate	aquatic plants	mud
[UAIC1471.10]	23.0			>122	0.9-4.6	murky	to slow none	algae/ aquatic plants	mud
[UAIC1472.11]	18.0			46	3.1-4.6	clear	slow to moderate	some algae	sand
[UAIC1473.11]	22.0			<61	3.6-4.6	clear	moderate	some algae	sand
[UAIC1474.09]	25.0			<488	4.6-6.1	murky	still	some algae	mud
[UAIC1480.15]	19.0			<122	4.6-6.1	dark stained	still	some algae	mud
[UAIC1481.08]	22.0			<61	3.1-3.6	murky	none	none	mud
[UAIC1484.12]	23.0			<91	6.1-7.6	murky	still	algae	mud
[UAIC1510.08]	15.0			<61	<6.1	murky	none	none emergents	mud
H. Harima									
[UAIC4305.21]	25.5	6.5	7.0	<92	1.2-7.6	milky, turbid	slow to moderate	dense	gravel/clay
M.R. Mundy									
[UAIC 4432.21]	27.0			<122	<18.3	slightly turbid	moderate to swift	submerged and rooted	gravel/sand/silt
A.F. Hemphill									
[UAIC526.01]	25.0			46	0.6-1.8	murky	slow	none	mud/sand/clay
[UAIC536.01]	25.0			<16	3.05	murky	none-pool almost dry	none in water	silt/sand
C. Tucker									
[UAIC2123.13]				<31	<3.1	slightly cloudy	slow to moderate	none	Selma chalk
[UAIC2128.08]				<91	<4.6	cloudy	slow	none	Selma chalk
[UAIC2390.11]	18.0			<61	3.1	cloudy	none	none	clay
[UAIC2392.24]	18.3			<91	<12	clear to cloudy	slow to swift	none	gravel/sand/silt
[UAIC2394.08]	18.3			<91	6.1	black	none	none	covered with rotting leaves
[UAIC2395.14]	19.5			<122	<4.6	clear	slow	cattails	marl
[UAIC2409.04]	11.2			<107	<9.1	stained	slow	aquatic plants	mud/leaves

Table 3. Continued.

Collectors	T (°C)	DO (mg/L)	PH	Depth (cm)	Width (m)	Turb	Current	Veg	Sub
C.Stephenson [UAIC9695.24]				isolated pools		turbid	stagnant- slow	none	sand

MINUTES

Business Meeting 19th Annual Meeting Southeastern Fishes Council

The Southeastern Fishes Council met 15 April 1993 in the Oceans Room of the Cavalier Hotel, Virginia Beach, VA. Chairman Bruce Bauer called the meeting to order at 4:30 PM local time.

Committee Reports

Secretary's Report:

Minutes of the 1992 Business Meeting appeared in *Proceedings* Issue #27. They were approved without corrections. No button was produced for the 19th Annual Meeting because no artwork received. We are presently seeking artwork of important southeastern fish species for the 20th Annual Meeting button. Anyone with original artwork that they wish to have considered is invited to send the artwork to the Secretary, Hank Bart, preferably by January 15th, 1994.

Treasurer's Report:

The Treasurer's Report from the 1992 Business Meeting, appearing in *Proceedings* Issue #27 contained errors which are corrected as follows: total expenses which appeared as \$742.26 should have read \$724.26 changing the checking balance to \$1,145.12 and the total assets to \$3,613.04.

In updating the mailing list it was noted that only 106 of the 196 individuals/institutions on the list had paid annual dues by the time of the Annual Meeting (the deadline for dues payment according to the BYLAWS). Of 167 individuals on the list, only 103 had paid dues in 1993, 34 had last paid dues in 1992, 14 had last paid in 1991, 5 had last paid in 1990, and 9 had not paid since 1989 or earlier (the remaining two are life members). It was reported that individuals that were not current on dues would be sent a letter asking them to update their membership by June 15th 1993 in order to keep their names on the mailing list. This would be the policy for keeping the mailing list current with membership in subsequent years.

All 29 institutions on the mailing list were sent 1993

dues notices but only three had paid dues by the 1993 meeting date. Several others (mostly libraries) questioned the dues notice because they had not been billed for the *Proceedings* in the past. After a brief discussion, it was agreed that all who receive the *Proceedings* should pay for it, especially in view of the Council's plan to improve the quality of the publication. Stephen Ross suggested that the word "dues" be changed to "subscription" on notices sent to institutions, and Werner Wieland suggested that the amount charged for subscriptions be equal to current dues.

Accounting through 4-7-93	
Checking Account Balance as of 4/2/92	\$1,466.73*
Dues, Button Sales & other contributions (through 4/2/92)	\$1,070.00
Dividends	\$ 25.33
Expenses (through 4/2/92)	
Postmaster	\$ 30.95
Proceedings, Issue #26	\$ 305.67
Proceedings, Issue #27	\$ 326.34
Checking Account Balance (through 4/7/93)	\$2,296.20
Pain Webber Cash Fund (through 12/31/93)	\$2,245.00
TOTAL ASSETS (4/7/93)	\$4,541.20

*Checking account balance adjusted to reflect a \$20 dues deposit and \$1.61 in earned dividends which were not included in last year's Treasurer's Report. This is the reason for the discrepancy in the checking balance in the previous and current reports.

Editor's Report:

The following report was presented on behalf of the Managing Editor, Steve Stevenson, and Desk-top Publishing Editor, George Sedberry, both of whom sent regrets for their not being able to attend the meeting and deliver their reports in person. Steve Stevenson reports that two manuscripts are in the works for issue #28, one note and one full article. Manuscripts are needed for subsequent issues. George Sedberry reports that he was not at all satisfied with the printing of issue #27. The camera ready copy he is producing looked great so the problem appears to have been the photo offset process that was used in printing. George is shopping around for better printers. He would appreciate any ideas or suggestions from members on ways of improving the final

print. Issue #27 is the first with the new cover design. The Proceedings Committee, chaired by the Managing Editor is looking into options for improving paper quality, including a heavier cover stock. Sedberry also asked about archiving camera ready copy and other original materials from the publication process and whether the Council wanted to look into making reprints available to authors.

Historian's Report:

The following report was read by Chairman Bauer on behalf of the Historian, Don Cloutman: The Historian still does not have a complete set of commemorative buttons. Missing are buttons of the Maryland darter and the duskside darter. Anyone having extras of either of these buttons is asked to send one to Don Cloutman. A report entitled History of the Southeastern Fishes Council 1975-1992 was compiled by Cloutman and submitted to the Chairman with the request that it be considered for publication in the *Proceedings*. Dave Etnier moved that the History be submitted for publication and the motion was seconded by unanimous agreement.

Election of Officers:

The following slate of nominees was presented and approved:

Chairman-elect:	Bill Woolcott Steve Walsh
Secretary/Treasurer:	Hank Bart Noel Burkhead

In the voting that followed, Steve Walsh won a close vote for Chairman-elect and Hank Bart was voted to a second term as Secretary/Treasurer.

Old Business:

On the matter of the Council's tax status, it was reported that the CPA that originally investigated the matter for Werner Wieland, R. Allen Whiteside, was contacted about filing for a new Tax Payer Identification number (TIN) as approved at the last Business Meeting. However, since the matter of obtaining the TIN had been transferred to a new Secretary/Treasurer far removed from Fredricksburg, VA where Mr. Whiteside works, and since (in Mr. Whiteside's view) this would complicate meetings and signatures for filing the papers, Mr. Whiteside recommended that the Secretary/Treasurer enlist the help of a CPA in his local area. I am now seeking such a person to assist me in filing for a new TIN (minimally) and tax exempt status.

New Business:

Chairman Bauer mentioned a letter he received from Conservation Fisheries, Inc. requesting the SFC's endorsement for the company's efforts to conserve southeastern fishes through captive propagation. After discussing the merits of the company and its efforts on behalf of Southeastern fishes it was agreed that the SFC would provide a letter of

endorsement. Chairman Bauer agreed to write the letter for Dave Heins whose term as Chairman was to begin at the conclusion of the Business Meeting.

Regional Reports:

Reports were read as follows:

Fritz Rohde - Northeast (read by Chairman Bauer)

Noel Burkhead - Southeast (read by Chairman Bauer)

Dave Etnier - North-Central

Bernie Kuhajda - South-Central (read by Chairman Bauer)

John Harris - Northwest (read by Chairman Bauer)

Bob Cashner - Southwest (regrets and brief report by Hank Bart)

After accepting a motion to adjourn, Chairmen Bauer closed the meeting at 6:00 PM.

Respectfully Submitted
Hank Bart, Jr., Secretary/Treasurer

REGIONAL SFC REPORTS

REGION I - Northeast

Two state books have been published. *Delaware's freshwater and brackish water fishes* by Maynard S. Raasch and Vaughn L. Altemus, Sr. can be obtained for \$12 from Claude E. Phillips Herbarium, Delaware State College, Dover, Delaware 19901. *The freshwater fishes of North Carolina* by Ed Menhinick can be obtained from him at UNCC for \$37.50. We're still waiting for the appearance of Jenkins and Burkhead's tome.

There was a major fish kill on a tributary creek and in the South Fork of the Roanoke River, habitat for *Percina rex*, caused by a spill of liquid manure. Instead of a fine, the violator agreed to a conservation easement. *P. rex* is still present in the Roanoke at Salem. Bob Jenkins and students collected two adults (which were released) in March.

Paul Angermeir and Mel Warren have been working on recovery plans for Virginia state endangered species - Tennessee dace, blackbanded sunfish, sharphead darter, variegated darter, and duskytail darter. There is no field work involved, just an assimilation of data and recommendations. The official list of Virginia threatened and endangered species (excluding federal species) was recently recognized. It includes five endangered and ten threatened species. Paul recently collected *Etheostoma cinereum* in the Clinch River in Virginia.

Gene Maurakis and Bill Woolcott have a two part video on Phylogenetic Systematics available with an instructor's manual.

The North Carolina list of endangered fishes was officially approved in November 1991. It includes 9

endangered, 11 threatened, and 30 special concern fishes. I will be doing survey work on five of these fishes endemic to the upper Dan River in 1992.

F. Rohde

REGION II - Southeast

Research and Conservation Activities

South Carolina.--Gary Meffe (Savannah River Ecology Lab) is still working on a Conservation Biology text (with Ron Carroll, University of Georgia, Athens). Gary continues to work on life history evolution in *Gambusia* and has recently begun to investigate the interrelationship between beaver dams and fish biodiversity.

Dean Fletcher (also SREL) continues to study the interactions between centrarchids and cyprinids. Dean published an article in *Copeia* (1993: 159-167) describing interactions of *Notropis cummingsae* and *Lepomis auritus*. Georgia.--A large project of concern to the SFC is the Tri-State Water Project. The intent of the project is to make more water available to Atlanta by transferring Alabama River drainage water to the Chattahoochee River. The project may eventually involve transferring water from the Altamaha River to the Chattahoochee as well. The preliminary phase of the project was supposed to include the compilation of accurate lists of all candidate and T&E gastropods, mollusks, decapods, and fishes occurring in the project area. After completion of these lists, field surveys were to commence to check the population status of the imperiled aquatic fauna. The preliminary phase of this project was supposed to last for three years but did not get underway until recently because of political wrangling within and between Alabama, Florida, and Georgia. Unfortunately, the same report deadline is retained.

How does this type of poor project management judiciously serve the resource? The management of the Tri-State Water Project has, by action of delay and procrastination, not demonstrated any serious concern for conservation of the aquatic biodiversity in the potentially affected project areas. Rather, the project has proceeded in a business-as-usual fashion with only a token commitment to resource stewardship.

Bob Jenkins (Roanoke College, Salem, VA) and Bud Freeman (University of Georgia, Athens) are finishing the manuscript on *Moxostoma robustum*, a story of systematic confusion now so well known that it may not need to be published. The undescribed "bighead" redhorse is actually *M. robustum* Cope, and the *Scartomyzon* currently known as "*robustum*" is unnamed. *Moxostoma robustum* is a large river species that is severely imperiled and probably merits federal listing as endangered. Insofar as known, the largest extant population is restricted to a relatively small stretch of the Oconee River below a Georgia Power hydroelectric dam.

Jimmy Evans (Georgia Department of Natural Resources)

should be acknowledged for his interest in the nongame fish fauna in his jurisdiction. Jimmy was the biologist that first captured *M. robustum* in the Oconee River and recognized it as something different.

Mary Freeman (Southeastern Stream Ecology Lab, Auburn University) and Bud are close to finishing a manuscript on a new cryptic *Percina* endemic to the Apalachicola River. This new darter is very similar to *P. nigrofasciata*. It is fairly localized in the Flint River system and in the upper Chattahoochee, and may merit federal conservation status. Mary is also working on adapting the IFIM for use in southeastern speciose creeks and rivers. She is examining the feasibility of quantifying total habitat diversity in a stream reach with the IFIM model instead of indirectly measuring habitat diversity by quantifying the habitat of selected fishes.

Bud Freeman with Steve Walsh, Jim Williams, and Noel Burkhead (National Fisheries Research Center-Gainesville, FL) are working on a paper on the fishes of the Etowah River system in north Georgia. Historic and recent collections provide a detailed fish data base which will be analyzed using GIS technology. Anticipated overlays are 1970 and 1990 land use patterns, topography, surface geology, and possibly EPA STORET data. Although greatly stressed, the Etowah River still harbors representative fish biodiversity of the upper Coosa River system. The Etowah River mussels, however, have not fared as well; as many as 35 of 50 species may be extirpated from the river. Noel Burkhead, Jim Williams and Bud Freeman published a popular article on the conservation issues in the Etowah River in *Georgia Wildlife* (1992, 2(4): 10-17).

Steve Vives (Georgia Southern University), unable to shun his western roots, is working on the reproductive behavior of the woundfin *Plagopterus argentissimus*. The objective of the research is to provide technical information that would allow artificial propagation of the species. Steve recently published a note in *Copeia* (1993: 229-232) describing and discussing the plasticity of spawning behavior in *Cyprinella*. He is currently involved in surveys of *Enneacanthus chaetodon* and *Etheostoma parvipinne* on Fort Stewart Army Base.

Florida.--Carter Gilbert (Florida Museum of Natural History) is making steady progress on the freshwater fishes of Florida book, and hopes to complete his type catalog manuscript in the near future.

National Fisheries Research Center-Gainesville.-- Secretary of Interior Bruce Babbitt is reorganizing the research function of all the agencies in the Interior Department into a single agency, probably to be known as the National Biological Survey, harking back to the days of Spencer F. Baird. Some of the new agency missions will be faunal survey, systematics, and conservation research!

Noel Burkhead (NFRC-G) is working with Steve Walsh and Jim Williams on analyzing patterns of imperilment of southern Appalachian fishes. *Conservation Biology* is interested in publishing this paper as the first monograph for the journal. Frank Jordan and Howard Jelks (graduate students at UF) are working with Noel Burkhead on habitat

studies of *Etheostoma okaloosae*.

Ann Foster is about to finish her thesis research on movements of *Acipenser oxyrinchus desotoi* in the Suwannee River.

Bill Smith-Vaniz (NFRC-G) has recently completed a key to the cichlids of Florida. Bill and Jim Williams plan to eventually publish a manual on Florida cichlids which will include species accounts and illustrations.

Leslie Straub, a master's student at NFRC-G is working on the life history of *Notropis harperi*.

Steve Walsh and Dennis Haney (NFRC-G) are continuing to conduct thermal tolerance and thermal preference experiments on selected southern Appalachian cool and cold water fishes. They have added a flow through respirometer to their maze of plumbing and are now including metabolism measurement in their thermal physiology research. Cindy Timmerman, a new Ph.D. student at UF, will be working on a thermal physiology problem in Steve's lab.

Jim Williams is spending much of his time working on mussels. Southeastern mussel populations have declined severely and this decline may foreshadow a parallel decline in freshwater fishes in the next few decades. Jim (with Sam Fuller and Randall Grace) recently published a paper on the effects of impoundments on mussels in the Tombigbee drainage (*Bulletin Alabama Museum of Natural History* 13: 1-10).

Buck Snelson (University of Central Florida) continues his systematic work on *Elassoma okefenokee*. His other research is on marine fishes.

Bruce Bauer (CANIN Associates, Inc., Orlando), Dave Etnier (University of Tennessee), and Noel Burkhead (NFRC-G) have nearly completed the description of a new *Ulocentra*, the Cherokee darter, which is endemic to the Etowah River. This darter merits federal threatened status.

Walt Courtenay (Florida Atlantic University) and Jim Williams recently published a book chapter entitled "Dispersal of Exotic Species from Aquacultural Sources, with Emphasis on Freshwater Fishes," in the 1992 book *Dispersal of Living Organisms into Aquatic Ecosystems* (edited by Arron Rosenfield and Roger Mann).

Bill Loftus (Everglades National Park) has been continuing to monitor the effects of Hurricane Andrew on ENP fishes. Bill and his family lost their home in Homestead, FL to Hurricane Andrew, but fortunately, no injuries were suffered.

N. Burkhead

REGION III - North-Central

The Tennessee fish book is a veritable reality. Page proofs have been seen and edited, an index has been put together, and the book is 659 pages long plus index.

Our most recent gift from the Gulf of Mexico has been

Mugil cephalus, which showed up in Kentucky Reservoir just below mouth of Duck River in January 1993. TWRA provided us with a fine adult specimen of the several that had been captured. Supposedly needlefish (*Strongylura marina*) have also been taken in Kentucky Reservoir recently, but we have not seen any specimens yet. Meanwhile, *Cyprinella camura* has spread downstream in Kentucky Reservoir to enter and occupy most of the Big Sandy system, perhaps replacing *C. whipplei* from that system; *Cyprinella venusta* has also joined the party, probably via the Tenn-Tom; *Cyprinella lutrensis* is already present in the Beech River system, a western tributary to Kentucky Reservoir. Throw these in with the native *Cyprinella spiloptera*, *C. galactura*, and *C. whipplei* and we are likely to be facing some very serious problems in fish identification in that area in the near future.

TVA has agreed to consider modifying discharges below Tims Ford Reservoir on Elk River in the interest of improving conditions for *Etheostoma wapiti*. Adding scattered piles of limestone slabs would really do the trick.

While preparing the description of the Cherokee darter (the snubnose related to *Etheostoma coosae* from the middle Etowah River system), Bauer, Etnier, & Burkhead have noted that the supratemporal canal in that species has gone from complete (33 of 36 specimens, 1948-1950) to half complete (13 of 29, 1984 to 1987) to interrupted (complete in only 1 of 37) in 1990 in the Allatoona Creek system. They suspect this to be a non-genetic, environmentally induced character shift, perhaps caused by some chemical interference with the developmental sequence associated with that canal. It is possible that this is symptomatic of an imminent loss of these populations. Are there other examples?

Lifespace Technologies is recently reorganized as a non-profit company, Conservation Fisheries, Inc. (CFI) with Pat Rakes and J.R. Shute as directors. Tax exempt status is pending review by the IRS. We have moved since last year and greatly expanded the facility but are presently seeking funding to expand even further and allow for full-time staffing by Pat and J.R.

Noturus baileyi and *N. flavipinnis* 1992 Population Monitoring.--Again, the status of both madtom populations in Citico Creek was monitored by snorkel surveys. Our fish per unit effort indices show an increase in the size of the smoky madtom population in Citico Creek, and indicate that the yellowfin madtom population is not declining further. Our 1992 surveying produced higher unit per effort indices for smoky madtoms than any since we have been monitoring this population. We saw more smoky madtoms at night than in any year since Dinkins' (1982) surveys. Most of the madtoms seen at night were young-of-year, and sizes of these young were more variable than previously noted. Spring and early summer 1992 was cool, resulting in a more extended breeding season than usual, and is probably the reason for the size variability noted. The Citico Creek smoky madtom population appears to be very robust.

Since 1986, we have seen the extent of the yellowfin madtom's range in Citico Creek become even further compressed than the two stream miles noted by Shute (1984).

Jim Herring (biologist for Cherokee National Forest) used the data we have collected since we have been monitoring this population and predicted that we wouldn't find any yellowfin madtoms in 1992. We did, however, and our 1992 data indicate that although the size of the Citico Creek yellowfin madtom population is still much lower than Shute (1984) observed in the early 1980's, it is probably increasing from what we've observed in the past several years.

Because of the yellowfin madtom population decline noted above, we had stocked captive reared yellowfin madtoms in three pools (at upper and lower extent, and in middle of range within Citico Creek) in fall 1990. No individuals have been observed in the two pools on either end of the species' range within the creek since 1986 (lowermost pool) or 1987 (the uppermost pool). The individuals that were stocked in 1990 would have been old enough to breed for the first time in 1992, and our observations of young-of-year in these areas is highly suggestive that our strategically placed stocking has had the intended effect of bolstering the declining Citico Creek yellowfin madtom population.

In addition, we have removed (gigged) as many yellow bullheads as possible from the pools inhabited by yellowfin madtoms. This also may have helped "recovery" of the yellowfin madtom population.

Captive Rearing/Propagation.--We had originally planned not to collect eggs of either madtom species in 1992, but because the smoky madtom population appeared so robust, we removed four smoky madtom nests from Citico Creek, totaling 148 eggs or larvae. We raised 77 young from these. Average mortality was 48%, but mortality of individual nests ranged from 97% to 14%. As previously agreed upon by the recovery team, no yellowfin madtom nests were removed from Citico Creek.

A pre-spawning pair of smoky madtoms was collected on 26 June 1992 and about 10 days after being introduced into the aquarium, the pair spawned a small clutch of 15-20 eggs. Both fish remained under the rock for the next seven days while the male agitated and mouthed the eggs. Observations were possible through the bottom of the glass aquarium where the male had cleared the substrate away. On the eighth day, however, the eggs were eaten by one or both parents. This may have been due to the continued presence of the female, as we were reluctant to disturb the nest. If we are successful at stimulating spawning in our captive population, we plan to remove the nest and rear the young with our established techniques. We were encouraged that conditions in our aquaria were apparently conducive for captive breeding.

In the captive population at CFI, adult females of both madtom species became gravid and males were observed clearing and defending nest rocks, but spawning did not occur. Apparently, we were not able to lower water temperature or sufficiently control photoperiod to further stimulate reproductive behaviors. New equipment has remedied this situation. Temperature and photoperiod has been manipulated to mimic natural instream conditions and females in the captive population are again showing signs of becoming gravid.

Status of the Abrams Creek reintroduction effort.--For two consecutive years (1990, 1991) we observed male smoky madtoms defending potential nest rocks at the reintroduction site in Abrams Creek. In 1992, however, we did not observe any madtoms in more than 45 man-hours of surveying Abrams Creek on six dates. In addition, a two-day reconnaissance (Park Service, CFI, FWS, TVA, NC Wildlife Resources Agency) of the entire stretch of Abrams Creek from the mouth to the campground area (which includes the entire reintroduction area for both smoky and yellowfin madtom species and the spotfin chub) had the same results.

On our surveys, we also noted that approximately 10% of the redline darters were infested with cyst-like growths later determined to be a colonial protozoan (myxosporidian). In addition, when compared to our observations of the last five years, we noted significantly increased siltation, rifts of foam in eddies (indicative of elevated organics), and excessive bluegreen algae growth. A visit to Cades Cove in July 1992 indicated that cattle and human access to the creek from the trail beside it are a major source of silt and probably the high nutrient levels. Water and habitat quality appeared to improve at increasing distances downstream from the cove. For this reason and our failure to locate any reintroduced madtoms, we did not release our captive reared young smoky madtoms in fall 1992, as was originally planned. We have maintained the 1992 young in captivity until measures were taken to improve water and habitat quality.

An effort was initiated between the Park Service and Trout Unlimited to improve water and habitat quality in Abrams Creek. They will fence the streams in Cades Cove to prohibit cattle access and restore riparian vegetation. Our present intention is to reintroduce the 1992 young into Abrams Creek in May 1993. This summer the Park Service and Trout Unlimited are also supporting additional searches for the three introduced species plus stream community assessment (fishes, benthic macroinvertebrates, water quality parameters) at about six sites in Abrams Creek extending from Cades Cove to the mouth. These will provide the baseline against which future hoped for improvements can be assessed.

We also plan (with VA Div. Game and Inland Fisheries) to make snorkel surveys of Copper Creek to determine status of the yellowfin madtom population there. The last individual was observed in Copper Creek by Dick Neves (VPI) in 1988. **New CFI Projects:** In summer 1992 we snorkel surveyed Citico Creek to determine extent of duskytail darter range there. We made several interesting observations about preferred microhabitat. They seem to require a heterogeneous mixture of substrate types from sand/gravel/cobble to small slabrocks or boulders. We attempted captive rearing of duskytail darters by removing nest rocks (with attached eggs) from the creek and returning to our facility.

Hatching success was high, and young grew quickly. Our aquarium observations indicate that even young are territorial. Apparently, even young require quite a bit more space than we were able to devote to them last year. The result was that we reared one (dominant!) individual. He is presently the size of a reproductively mature adult, which

supports Steve Layman's notion that most individuals may only live for a year. We will again attempt captive breeding/rearing with this species, and do further snorkel surveys to monitor the Citico Creek population status. We also plan to attempt snorkel surveys for the duskytail darter in the Big South Fork this summer.

We acquired about a dozen young spotfin chubs from the Little Tennessee River in fall 1992, and are presently maintaining them in our facility. We plan to attempt captive breeding of this species also. In addition to continuing our work with all of the species mentioned above, we will begin work the *Phoxinus cumberlandensis* and *Etheostoma wapiti*.

We also hope to be involved in a status survey for *Fundulus julisia* with Tennessee Tech. folks this summer. FWS has changed federal candidate status from 3C (more abundant and widespread than previously thought) to C2 (status undetermined), on Pat and Peggy's recommendation. CFI is still maintaining (and breeding) captive stocks of all genetic types of this species.

Four thousand 2-3" young *Acipenser fulvescens* were introduced into the Clinch River above Norris Reservoir (mile 178.2) by Charlie Saylor et al. (TVA, TWRA) July 1992. TVA plans to monitor their success. So far, nobody has seen any of the transplanted individuals.

Stuart McGregor et al. (Ala. Geol. Survey) made 83 collections at 59 locations in Cypress Creek, Swan Creek, and Flint River watersheds in northern AL (and a few localities in TN) to determine status of *Etheostoma boschungii*. They found the species in 13 localities. Five of these were new. Not many individuals were found in Cypress Creek system, and they didn't see any evidence of reproduction at all there (last February we found what apparently represents two spawning areas near Cypress Inn, Cypress Creek system, near TN/AL border, TN). They found previously unknown spawning sites in Swan Creek and possibly one in the Flint River system. They suggest that they many spawn in rooted aquatic vegetation in streambeds in these areas. They found approximately 92 individuals in their 1992 survey, compared with 238 from same localities 1976-1984 (Boschung's report). They recommend annual monitoring of populations in each system (especially looking for spawning success), and implementation of better land use practices.

Rick Mayden and TVA biologists went into Key Cave and saw *Speoplatyrhinus poulsoni*, but could not capture any. They had been given permission to collect one alive for a photograph. They have plans to attempt this again.

Alabama State Game & Fish folks did a brief status survey in 1992 of the spring pygmy sunfish, *Elassoma* sp. and found them to apparently be doing well. Peggy Shute recently visited Beaverdam Swamp and was able to find specimens as far downstream as the AL Hwy 20 bridge, in vegetation at the stream margin.

Both Key Cave and Beaverdam Swamp are currently being considered for incorporation into Wheeler National Wildlife Refuge. Monsanto reportedly owns the property overlying Key Cave, and a powerline right of way being negotiated through Beaverdam Swamp could result in purchase

and subsequent transfer of the entire system.

Noel Burkhead will look for *Erimystax cahni* this year. Last known observation of this species in either the Clinch or Powell rivers was in 1988 by Rick Mayden et al. *Noturus stanauli*, last collected in 1986 and 1991 in upper Clinch River), and *Ammocrypta clara* (one larva collected in Powell River, 1987) are also species of concern in that area.

Brooks Burr did status surveys for *Etheostoma aquali*, *E. striatulum*, and *Noturus* sp. ("saddled" elegans type) for FWS 1992. He found all three species. *Etheostoma aquali* populations were found in 11 Duck River tributaries and at three sites in Buffalo River. Populations were small, and he concluded that completion of Columbia Reservoir would significantly fragment the range of the species. *Etheostoma striatulum* was found in 10 of 18 historic sites sampled, but not in any of 20 new sites where it was sought. A few individuals were located in a bedrock area with slabrocks in the Duck River main channel in May, 1992, but these may not represent a reproducing population. The boldly saddled form of "*Noturus elegans*" was found to be much less abundant than collections from about ten years ago would suggest, but it was taken in 13 of 32 sites sampled.

Federal listings.--duskytail darter-proposed endangered; *Noturus stanauli*-proposed endangered; palezone shiner-proposed endangered; Jewell darter-proposed endangered; *Etheostoma chienense*-proposed endangered. Also, since last year several mussels listed, including 11 in the Conasauga/Coosa (eight listed as endangered and three threatened).

D.A. Etnier and P.W. Shute

REGION IV - South-Central

Jim Stewart of the U.S. Fish & Wildlife Endangered Species Office at Jackson, MS reports that several candidate species studied over the last year did not warrant protection (C3). These include *Hybopsis lineapunctata*, *Notropis asperifrons*, *Noturus munitus*, *Crystallaria asprella*, *Etheostoma rupestre*, *Percina lenticula*, and *P. palmaris*. Status reviews are currently ongoing for *Alosa alabamiae* and *Notropis melanostomus*. Sampling is continuing in the Cahaba River for *Notropis cahabae*. The biggest story out of his office is the Alabama sturgeon. The Director of the agency has approved the listing of the sturgeon, and Jim believes it will be published very soon, despite huge political and economic pressures. Currently there are four crews attempting to capture a specimen, but collecting efforts have been hampered due to extremely high water levels.

Randy Haddock of the Cahaba River Society recently shocked the Cahaba River with the Alabama Fish & Game from Sprott down to the Alabama River looking for Alabama sturgeon. Water levels were high and no sturgeons were seen, but several large paddlefish and river redhorse were sampled.

Carl Couret of the U.S. Fish & Wildlife Service at Daphne, AL has also been intensely looking for Alabama sturgeon over the last month, but has not turned up any yet. He also reports that eight mussels have been listed as endangered and three as threatened in the Mobile River Drainage.

Frank Parauka of the U.S. Fish & Wildlife Service out of Panama City, FL reports that his office is busy with the Gulf sturgeon. They are collecting information on historical sightings, which range from Texas to the Keys, and has indicated that some populations may exist in unsampled areas. Stocking of sturgeon is on hold until more studies are completed on the genetics of different populations, and his office is just starting a study on population estimates on the Apalachicola River.

Doug Frugé of the U.S. Fish & Wildlife Service out of Ocean Springs, MS reports that a population status and surveys are beginning or ongoing in the Pascagoula and Pearl rivers for Gulf sturgeon, as well as in Lake Pontchartrain.

Steve Ross of the University of Southern Mississippi is continuing work on the fishes of Mississippi book and continuing work on a study of flood plain dynamics on a tributary to Black Creek.

Hank Bart at Tulane University is planning on describing a form of *Etheostoma parvipinne* found above the Fall Line later this year. The fish seems to be doing well in the Sipsey Fork of the Black Warrior River, but Hank has only found one specimen in three trips to the Pinson area of the Locust Fork and none in Etowah County, where the fish seems to be in trouble from beavers and agriculture. Hank and Royal Suttkus are still gathering material for a revision of *Ictiobus* and *Carpiodes*. Hank has also received funding from NSF through 1995 to continue studying factors affecting stream diversity in the southeast.

Rick Mayden at the University of Alabama has started allozyme studies on *Cottus*, *Etheostoma ditrema*, the *E. jordani* complex, and various described and undescribed snubnose darters. Rick is working with Brooks Burr from Southern Illinois University on *Cycleptus elongatus* and has found the form in the Mobile, Pascagoula, and Pearl systems to be different from all other *Cycleptus*. Rick and Herb Boschung's work on the Alabama fishes book is continuing on schedule.

Bill Birkhead at Columbus College, GA recently went through samples from Spring Creek, a tributary to the Apalachicola, and compared this data to samples from 20 years ago and found no difference in faunal composition.

Bud Freeman from the University of Georgia reports that bad things are planned for the upper Etowah in a section which contains *Noturus munitus*, *Percina antesella*, *P. lenticula*, and the etowah and cherokee darters. Included in the near future are three landfills, two water supply reservoirs on tributaries, a golf course along the river, and spray irrigation fields.

Scott Mettee from the Alabama Geological Survey has reports coming out on the effects of coalbed methane gas produced water on water quality, fishes, and benthic

invertebrates for the Big Sandy Creek and Sipsey River systems. Monitoring water quality on the Cahaba River is continuing, and Scott has several new records for *Cycleptus elongatus* and new records for *Moxostoma carinatum* in the Conecuh. Pat O'Neil is working on a study for long-term monitoring of populations of fishes and benthic invertebrates in several coalbed methane gas fields in west Alabama.

Melvin Warren recently took a position with the USDA Forest Service Southern Forest Experimental Station in Oxford, MS. He reports that the description of the palezone shiner is about to be submitted, and he is investigating the possibility of a life history study on the Yazoo darter. Melvin, along with Jim Williams, Kevin Cummings, John Harris, and Dick Neves, is working on a publication of freshwater mussels of North America; endangered, threatened, or of special concern.

B. Kuhajda

REGION V - Northwest

Henry Robison and Bruce Thompson are wrapping up their revision of the longnose darter complex (*Percina nasuta* & friends) and have manuscripts in preparation pending completion of isozyme and mtDNA analyses. The Ouachita River system population will be described as a new species as was reported in Thompson's dissertation. Viable populations of this species have been found in the Caddo River and mainstem Ouachita River below lakes Ouachita, Hamilton, and Catherine which extends the present known range considerably. Other notable results include identification of the Strawberry River (White River drainage) population as (*Percina phoxocephala*). Other White River system populations, primarily from the Spring, Little Red, and upper White rivers are the "true" *Percina nasuta*. The Arkansas River drainage form is still under review pending results of the previously mentioned analyses.

Henry Robison, Betty Cochran (U.S. Forest Service) and John Harris are studying the life history of the Caddo madtom (*Noturus taylori*). Six monthly collections have been taken.

John Harris, Henry Robison, and Al Karlin (University of Arkansas - Little Rock) are in the process of redescribing *Noturus lachneri*, which was originally described from six specimens. Isozyme data and comparison with other members of subgenus *Noturus* are included. The range of *N. lachneri* has been slightly extended to include four streams tributary to the Ouachita River. In addition, the Saline River population appears to be widespread within the headwaters with high numbers of individuals. Charles Gagen (Arkansas Tech University) is finishing life history work on the Ouachita madtom.

John Harris, Betty Cochran, and Henry Robison are wrapping up a three year study of the reproductive habits and population dynamics of *Etheostoma pallididorsum* in a

tributary to the Caddo River. The study has been performed in cooperation with the Caddo Hills High School advanced biology class.

Bill Matthews is conducting long term ecological studies in headwater streams of the Ouachita National Forest. His work centers around fish population dynamics and comparison of various census methods.

Chris Taylor, one of Bill Matthews students, is conducting a status review of *Lythrurus snelsoni*.

Neil Douglas, Frank Pezold, and Northeast Louisiana University students are conducting Basin Area Stream Surveys for Ouachita National Forest streams. These consist of baseline fish relative abundance data, quantitative invertebrate data, and quantitative habitat typing. Douglas says that most of his ongoing work was reported in the last issue of the Proceedings.

Jim Johnson (USFWS Coop Unit, Univ. of Arkansas Fayetteville) and graduate student Myron Means have conducted mark and recapture studies on the Ozark Cavefish (*Amblyopsis rosae*) in Logan Cave. Studies have concentrated on ingress and egress from the Logan Cave system and interconnections of the karst terrain within the region.

Stream modification projects continue to be a source of concern within the region. Proposals to impound the North Fork Saline River for a public water supply will impact approximately eight stream miles of *Noturus lachneri* habitat. The Arkansas Game and Fish Commission has proposed to impound Sullivan Creek, a high quality Ozarkian stream (White River drainage), to create a public fishing lake. On the positive side, the Ouachita River Navigation project, which would create navigable water for barge traffic from Monroe, LA to Camden, AR by way of numerous bendcuts and navigation channel construction, appears dead in the water. The defeat of the primary project sponsor, U.S. Representative Beryl Anthony of Arkansas, in the November elections, dealt the project a severe setback.

A mercury contamination problem in higher food web level fishes has been identified in south Arkansas rivers, lakes and ponds. The contamination was initially found in the lower Ouachita River and was initially thought to be a point source problem. Extensive sampling by two different task forces working on the problem has essentially eliminated point sources from consideration. Explanations now center on natural geochemical cycling or deposition of airborne mercury emissions. Health advisories have been issued in both south Arkansas and north Louisiana.

John Harris

threatened and endangered freshwater fishes in Louisiana. There will be a workshop in early 1994, assisted by Carter Gilbert, to bring together ichthyologists and fisheries biologists working in the state to assess populations and recommend species to be listed as "Of Special Concern".

Neil Douglas reports that his students at Northeast Louisiana University are involved in a number of projects. These include: M'Lee Hoyt - "Preferred water velocities of selected instream fishes of the Sunflower River, West Mississippi"; Robyn Jordan-Mathis - "Fecundity studies of Ohio River Drainage Cyprinids" and "Life History aspects of *Etheostoma proeliare* in Louisiana"; Mark Farr - "Life History aspects of *Cyprinella camura* from S.W. Mississippi"; Madelon Carter - "Comparative studies of fish populations from altered and unaltered waters of N.E. Louisiana"; Sherry Harrell - "Velocity preferences of adult *Percina sciera* and adult and juvenile *P. maculata* in the presence and absence of cover."

Frank Pezold and his students are doing the same things they were last year. He writes that the Ouachita River is turning red with mercury; no frogs invading yet. Everybody agrees it's a problem. Pregnant women and children are advised not to eat too much bass.

R. Cashner

NEWS NOTES

Gibbs Award for Excellence in Systematic Ichthyology.-- Nominations are invited for the American Society of Ichthyologists and Herpetologists (ASIH) Robert H. Gibbs, Jr. Memorial Award for Excellence in Systematic Ichthyology.

Prizes are awarded for an outstanding body of published work in systematic ichthyology by a citizen of a western hemisphere nation who has not been a recipient of the award. The award is offered annually and consists of an appropriate plaque and a cash sum. The award recipient is announced at the annual meeting of the ASIH. The award for 1993, including plaque and cash award, was presented to Dr. Victor Springer, U.S. National Museum, Division of Fishes, for his work with blennioid taxonomy and systematics and the zoogeography of Indo-Pacific fishes.

Nominations may be made by any ichthyologist, including self nominations, and should include the nominee's curriculum vitae and detail the nominee's specific contributions and their impact on systematic ichthyology. Nominations must be received by 1 March of the year to be eligible for the award for that year. Nominations will be effective for three award periods. Four copies of each nomination should be sent to Dr. Brooks M. Burr, Secretary, American Society of Ichthyologists and Herpetologists, Department of Zoology, Southern Illinois University, Carbondale, Illinois 62901, USA.

REGION VI - Southwest

—Bruce Thompson (LSUBR) and Bob Cashner (UNO) received a grant from the Louisiana Water Resources Research Institute to document and evaluate the status of rare,

March 31-April 1 1994. "Aquatic Fauna in Peril: The Southeastern Perspective."--a conference sponsored by the Tennessee Aquarium to be held in Chattanooga, Tennessee. For information contact: Tennessee Aquarium, Attn: Janet Allen, P.O. Box 11048, Chattanooga, TN 37401, or call 1-800-262-0695.

MEETING PRELIMINARY
SFC will meet with ASB at UCF-Orlando
13-16 April 1994, our 20th Anniversary
Details in the next number

Editor's note.--The *SFC PROCEEDINGS* No. 29 will be a Twentieth Anniversary Issue. We will reprint the constitution and by-laws, plus include a history of the Council. Other surprises are in store.

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.

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