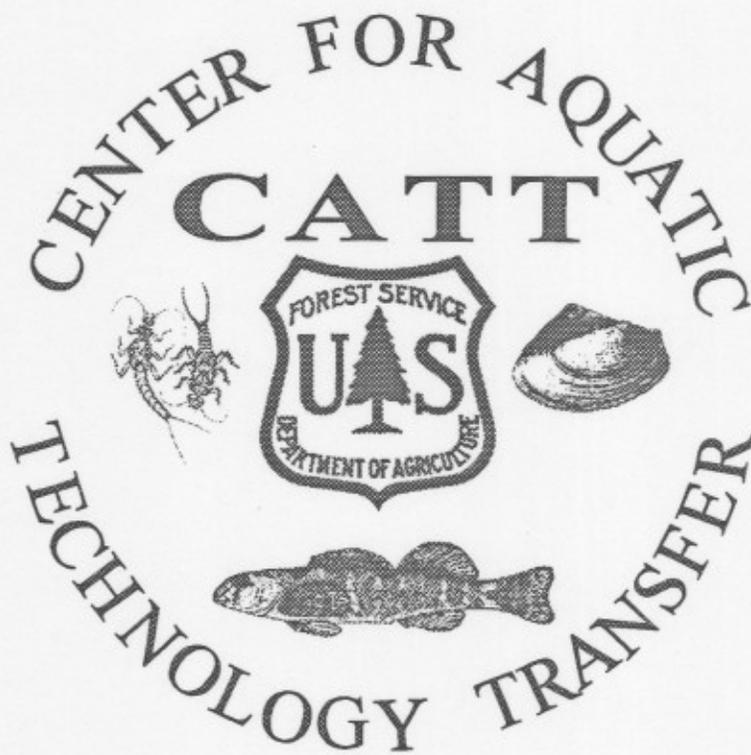


**Distribution of Blue Shiner, Holiday Darter, and Conasauga Logperch in the  
Upper Conasauga River Watershed, Chattahoochee National Forest, Georgia**



United States Department of Agriculture Forest Service  
Center for Aquatic Technology Transfer  
Department of Fisheries and Wildlife Sciences  
Virginia Tech, Blacksburg, VA 24061-0321

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## Introduction

The U.S. Forest Service is responsible for the protection and management of threatened, endangered, and sensitive (TES) fish species found on National Forest land. The first step in managing TES species is to determine their distribution. Streams on the Chattahoochee National Forest (CNF) support numerous TES fishes; however, the distributions of most are not well known. In Fall 1996 we surveyed the Conasauga and Jacks rivers to determine the upstream limits of blue shiner *Cyprinella caerulea*, Conasauga logperch *Percina jenkinsi*, and holiday darter *Etheostoma brevirostrum* distributions.

## Study Streams

We sampled 3.2 river miles of the Conasauga River, starting 0.5 miles downstream of the CNF boundary upstream to the first Conasauga River Trail crossing, and 1.2 miles of Jacks River, starting approximately 0.5 miles above the Forest Service Rt. 16 bridge (Figure 1). An additional site was sampled below our study section at the Forest Service Rt. 16 bridge on the Jacks River. The downstream starting points on both rivers included the suspected upstream limits of blue shiner and holiday darter, and were just above the suspected upstream limit of Conasauga logperch.

## Methods

Visual estimation techniques, modified from standard Basinwide Visual Estimation Techniques (Dolloff et. al 1993), were used for the survey. Habitat units

were classified as pools, riffles, glides, or runs (Platts et.al 1983) and were selected using a random systematic design (Dolloff et. al 1993). The first unit of each habitat type was chosen randomly and additional units were systematically sampled.

Underwater observation was used to estimate the numbers of each target species in each of the selected habitat units. Four observers, using face masks and snorkels, entered each unit at the downstream end and slowly moved upstream (along parallel transects) counting the three target species. Observations were made by scanning the respective area and moving rocks and debris to reveal hidden fish. Divers communicated with each other and directed counted fish out of the line of travel to minimize duplicate counts.

A hipchain was used to measure the distance of each sampled unit and to help locate the units on a U.S.Geological Survey topographical map. A range finder was used to measure the length and average width of each unit sampled to estimate surface area. Surface area was used to calculate densities(fish/hectare) of target species in each unit.

## **Results**

### **- Conasauga River**

We sampled 13 pools, 11 riffles, and 2 runs in the 3.2 mile study section of the Conasauga River. A total of twenty species were found in this section including blue shiners and holiday darters (Table 1). Conasauga logperch were not observed in the Conasauga River survey. Blue shiners were found only in four units (3 pools, 1 run) in

the lower 0.4 miles of the Conasauga study section, and holiday darters were observed in seven units (27% of sampled units) located in the lower 0.9 miles of the study section (Figure 2).

#### **- Jacks River**

There were 7 pools, 7 riffles, and 3 runs sampled in the 1.2 mile section of the Jacks River. The Jacks River section contained 18 species of fish including the holiday darter (Table 1). Both the Conasauga logperch and the blue shiner were only found below the study section at the Forest Service Rt. 16 bridge site (Figure 3). The holiday darter was more common in the Jacks River section than the Conasauga. Holiday darters were found in 67% (compared to 27% in the Conasauga) of the habitat units (12 habitat units) throughout the section including the last unit sampled (Figure 3).

### **Conclusions**

Conasauga logperch were not observed in the Conasauga River or the Jacks River section sections. Only one individual was seen at the Forest Service Rt. 16 bridge, which may be the upper limit of the species' range.

Blue shiners were not observed in the Jacks River study section and only observed in the lower 0.4 miles of the Conasauga River study section. The absence of this species in the Jacks River study section and the upper 2.8 miles of the Conasauga River study section indicates the upstream limits of the species' range for both rivers.

Holiday darters were observed in only the first mile of the 3.2 mile Conasauga River study section. The lack of holiday darter observations above this point also

indicates the upstream limit of this species. Holiday darters were observed throughout the Jacks River study section therefore the upstream limit of this species cannot be estimated. Although more of Jacks River should be sampled to determine the upstream limits of this species, Jacks River Falls located upstream of our study section may be a barrier to migration. This is supported by the absence of holiday darters in a previous survey done upstream near Penitentiary Branch by the Georgia Department of Natural Resources (Mitzi Pardew , Forest Fisheries Biologist, Chattahoochee National Forest-personal communication).

#### Literature Cited

Dolloff, C. A., D. G. Hankin, and G. H. Reeves. 1993. Basinwide estimation of habitat and fish populations in streams. U. S. Forest Service, Southeastern Forest Experiment Station, General Technical Report SE-83.

Platts, W. S., W. F. Megahan, and G. W. Minshall. 1983. Methods for evaluating stream, riparian, and biotic conditions. U. S. Forest Service, Intermountain Forest and Range Experiment Station, General Technical Report INT-138.

**Table 1.** Fish species present during survey of Jacks River (JR) and Conasauga River (CR).

<b>Scientific Name</b>	<b>Common Name</b>	<b>Presence</b>
<i>Campostoma species</i>	Stoneroller	JR, CR
<i>C. caerulea</i>	Blue shiner	JR, CR
<i>C. callistia</i>	Alabama shiner	JR, CR
<i>C. trichroistia</i>	Tricolor shiner	JR, CR
<i>Notropis chrosomus</i>	Rainbow shiner	CR
<i>N. stilbius</i>	Silverstripe shiner	JR, CR
<i>Phenacobius catostomus</i>	Riffle minnow	CR
<i>Hypentelium etowanum</i>	Alabama hogsucker	JR, CR
<i>Noturus leptacanthus</i>	Speckled madtom	CR
<i>Cottus carolinae</i>	Banded sculpin	JR, CR
<i>Ambloplites ariommus</i>	Shadow bass	JR, CR
<i>Micropterus coosae</i>	Redeye bass	JR, CR
<i>M. punctulatus</i>	Spotted bass	JR, CR
<i>Etheostoma brevirostrum</i>	Holiday darter	JR, CR
<i>E. coosae</i>	Coosa darter	JR, CR
<i>E. jordani</i>	Greenbreast darter	JR, CR
<i>E. rupestre</i>	Rock darter	JR, CR
<i>Percina jenkinsi</i>	Conasauga logperch	JR
<i>P. palmaris</i>	Bronze darter	JR, CR
<i>P. species</i>	"Mobile logperch"	JR, CR
<i>P. species</i>	"Muscadine darter"	JR, CR

Conasauga River

Forest Service Rt. 16 Bridge

Jacks River

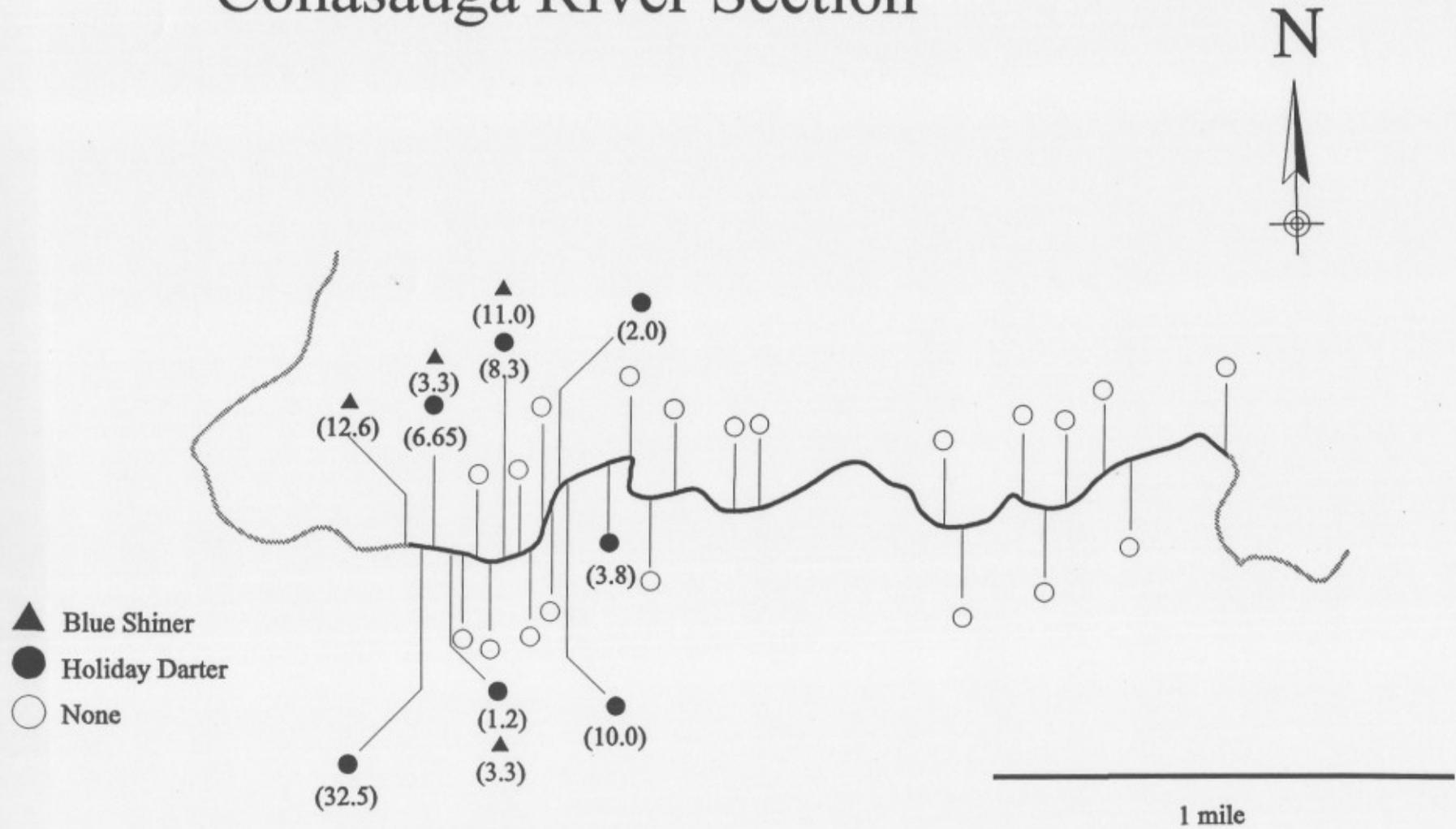
Conasauga River



1 mile

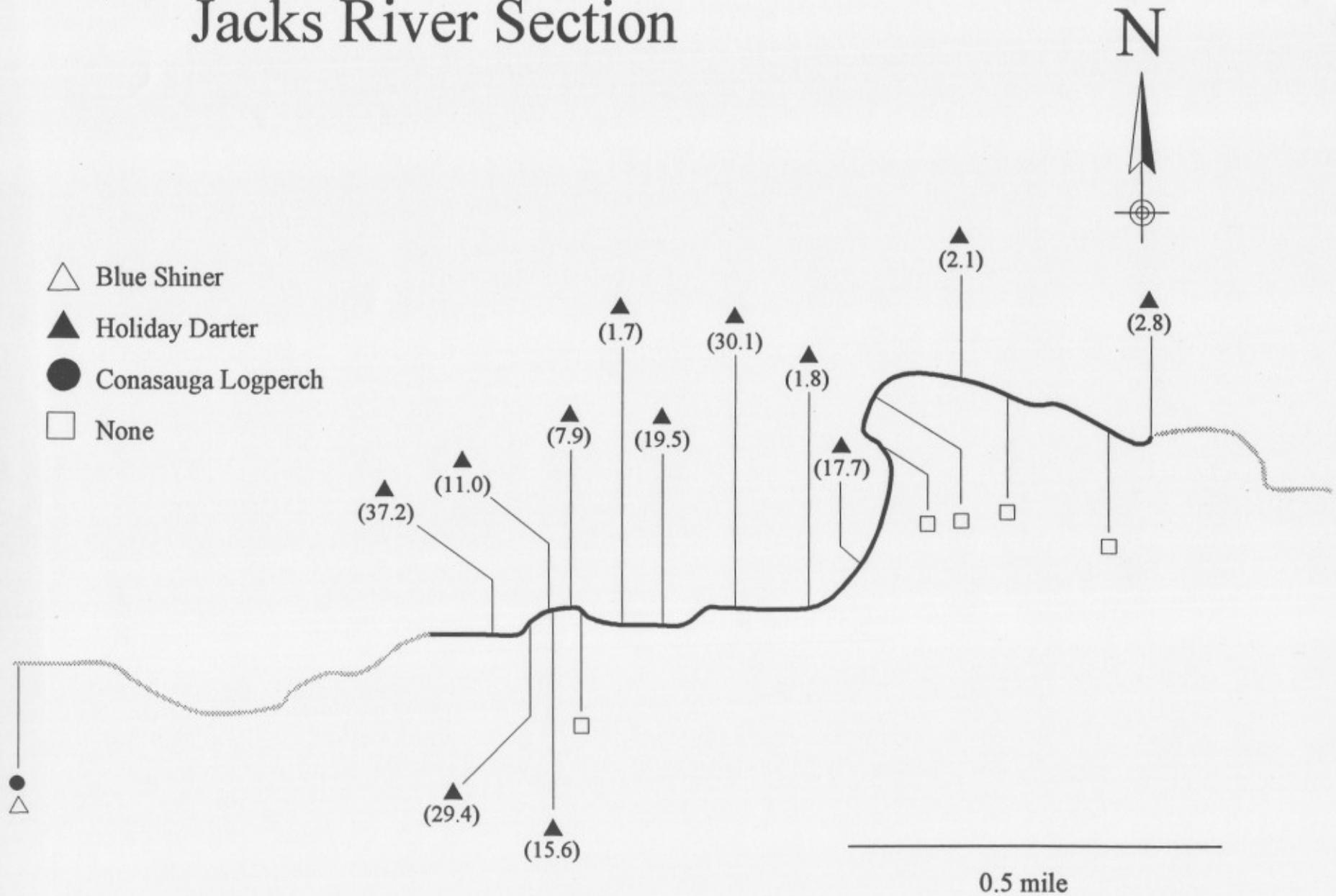
**Figure 1.** Fish densities by species for each sample site. Sample area indicated by bold stream line. Gray indicates areas not sampled.

# Conasauga River Section



**Figure 2.** Fish densities by species for each sample site. Sample area indicated by bold stream line. Gray indicates areas not sampled.

# Jacks River Section



**Figure 3.** Fish densities by species for each sample site. Sample area indicated by bold stream line. Gray indicates areas not sampled.