Presence of Altamaha shiner (*Cyprinella xaenura*) and Ocmulgee shiner (*Cyprinella callisema*) within several Chattahoochee-Oconee National Forest streams, September 2003

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Introduction

In August 2003, resource managers from the Chattahoochee-Oconee National Forest (CONF) requested assistance from the U.S. Forest Service, Southern Research Station, Center for Aquatic Technology Transfer (CATT) to document the presence of the State Endangered (Johnson 1999) and Forest-sensitive Altamaha Shiner (*Cyprinella xaenura*) and the Forest-sensitive Ocmulgee Shiner (*Cyprinella callisema*) in several Forest watersheds. Past surveys had demonstrated the occurrence of these species in several streams on or near the Forest (CONF unpublished data). In September 2003, a crew from the CATT surveyed ten sites on nine streams using backpack electrofishing techniques to determine fish species presence in the Little River, Upper Ocmulgee River, and Upper Oconee River watersheds (Figure 1) on the CONF, GA during September 2003 (Table 1). Stream-specific maps are included for all streams surveyed (Figures 2-7).

Methods

Sampling methods were designed in coordination CONF biologists to mimic methods used during previous shiner inventories. We used 700 volt AC backpack electrofishing equipment to document species presence in each reach. The number of electrofishing units used was based on stream width: 1 unit for streams 1-5 m wide; 2 units for streams 5-20 m, and 3 units for streams greater than 20 m wide. We assigned one dipnetter to each electrofishing unit. When the bankfull width was 5 m – 15 m, sample reach length was 20-times mean bankfull channel width. A minimum of 100 m and maximum of 300 m was sampled. We attempted to include at least two fast water (riffle/run) and two slow water (pool/guide) units per reach.

We sampled several reaches that had previously been inventoried and new reaches were selected by CONF biologists. All stream reaches were at least 100 m upstream from any road crossings except when private land holdings restricted upstream sampling. When we sampled downstream from a road crossing the upstream end of the survey site was at least 100 m downstream of the road crossing. Reaches were sampled by single-pass removal. Fishes captured were identified to species, recorded using a Husky fex21 field data computer, and then released in the sample reach. Fish that could not be identified in the field were preserved in 10% formalin and returned to the lab for identification. Dr. Bud Freeman's lab at the University of Georgia identified preserved specimens.

Results

We captured a total of 41 fish species in 9 families in the 9 streams we inventoried (Table 2, Appendix A). Ocmulgee shiners were present in 9 of the 10 sites sampled and Altamaha shiners were

present at 5 sites (Table 2). Species richness varied from a high of 24 species (Big Sandy Creek) to a low of 11 species at two sites (Stalking Head Creek and Falling Creek). Redbreast sunfish (*Lepomis auritus*) and yellowfin shiner (*Notropis lutipinnis*) were present at all 10 sample sites. The least common fish were v-lip redhorse (*Moxostoma collapsum*), spotted sucker (*Minytrema melanops*), spotted sunfish (*Lepomis punctatus*), chain pickerel (*Esox niger*), and bluefin stoneroller (*Campostoma pauciradii*) found at one site each. American eels (*Anguilla rostrata)* were found at two sites. Five Catostomidae species were found at seven different sites and Murder Creek (below highway 16) showed the greatest sucker diversity with four species. Striped jumprock (*Scartomyzon rupiscartes)* was present at five sites, possibly being the most locally abundant sucker species.

Discussion

The methods described in this report may yield 80-100% of species present in stream fish communities. However, the methods also may underestimate species richness, particularly for centrarchids and cyprinids (Meador et al. 2003). Longer stream reaches may need to be sampled to capture a larger proportion of species in areas with low population density or low habitat diversity, and even then uncommon or rare species may not be captured (Angermeier and Smogor 1995, Angermeier et al. 2002). In addition, sites on Apalachee River, Murder Creek (Hillsboro Rd.), and Little River streams were too large for us to effectively sample with backpack electrofishers.

Despite limitations, we documented Ocmulgee shiners at one previously sampled site (Murder Creek; Hillsboro Road) where they had been absent in the past (Table 3). In addition, we captured Ocmulgee shiners at six sites and Altamaha shiners at two sites that had not been previously sampled (Table 4). Our results suggest that these and other Forest sensitive species may be more widely distributed within Forest streams than previously realized. Managers should take this into account when planning activities that have the potential to influence water quality and habitat. Further surveys are needed to more fully describe distributions of fish species on CONF managed lands. We recommend that the CONF work with the CATT to develop a comprehensive strategy for gathering inventory information and establish a monitoring plan for all Forest sensitive and threatened and endangered aquatic species.

With only minimal commitment of time and expense, it is possible to greatly expand the utility of such baseline inventories. We recommend that the total number of each species be tallied and that at least a sub-sample of each species be measured and possibly weighed. Such information, when coupled with knowledge of both current and historical conditions, would provide the basis for meeting many of the requirements of NEPA, NFMA, and other legislation.

Literature Cited

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Angermeier, P. L., K.L. Krueger, and C.A. Dolloff. 2002. Discontinuity in stream-fish distributions: Implications for assessing and predicting species occurrence. In Predicting species occurrences: issues of accuracy and scale, (Scott, J.M., P.J. Heglund, M. Morrison, M. Raphael, J. Haufler, B. Wall, eds) Island Press, Covello, CA. 840 p.

Johnson, T.W., *editor*, and 18 co-authors. 1999. Protected Animals of Georgia: An information manual on animals designated by the State of Georgia as endangered, threatened, rare or unusual. Georgia Department of Natural Resources. Wildlife Resources Division. Non-game Wildlife Natural Heritage Section. Social Circle, Georgia. Page 119.

Meador, M. R., J. P. Mcintyre, and K. H. Pollock. 2003. Assessing the efficacy of single-pass backpack electrofishing to characterize fish community structure. Transactions of the American Fisheries Society 132: 39-46.

Table 1. Description of fish sample site locations on CONF, September 2003.

Stream	Date	Location	Bankfull Width (m)	Reach Length (m)	Shock Start Location
Rose Creek (Figure 6)	9/9/03	downstream of highway 15 bridge, private land	10	200	300 m downstream of bridge
Apalachee River (Figure 2)	9/9/03	end of Trembling Bridge Road - bridge frame in place but not functional	25*	180	40 m downstream of bridge, 80 m downstream of side channel
Murder Creek (Figure 5)	9/9/03	downstream of highway 16 bridge	17	300	400 m downstream of bridge
Wise Creek (Figure 3)	9/10/03	100 m upstream of confluence with Ocmulgee River	16	300	100 m upstream of confluence with Ocmulgee River
Stalkinghead Creek (Figure 7)	9/10/03	100 m upstream of forest road 1020 (Felton McMichael Rd.) bridge	7	170	100 m upstream of forest road 1020 bridge
Murder Creek (Figure 5)	9/10/03	59 m upstream of bridge on Hillsboro Rd.	25	97	59 m upstream of bridge on Hillsboro Rd.
Little River (Figure 5)	9/10/03	150 m upstream of Rock Eagle Rd. crossing	20	300	150 m upstream of Rock Eagle Rd. crossing
Big Sandy Creek (Figure 3)	9/11/03	on quad map where gravel road crosses creek more than 1km upstream of railroad crossing; road now washed out; hiked in short distance; turn off hwy 23 north after mile 17 gravel road on right across from Watson Rd., private land	15	300	at old road crossing on quad map-road washed out no longer in use
Caney Creek (Figure 4)	9/11/03	end of 903d road at turnaround	8	160	start where 903d would cross stream if no dead end
Falling Creek (Figure 4)	9/11/03	end of road 904 at turnaround	9	180	start where 904 would cross stream if no dead end

* only two shockers used; right bank of 25 m wide section shocked before entering side channel on left that was less than 20 m wide.

Table 2. Species present at sample sites on CONF streams, September 2003. 'X' equals presence.

Common Name	Rose Creek	Appalachee River	Murder Creek	Little River	Big Sandy Creek	Wise Creek	Falling Creek	Stalking Head Creek	Caney Creek	Murder Creek	Total Number of Streams Where Present
American eel					X			X			2
pirate perch		X	X	X						X	4
redfin pickerel	X	X		X							3
chain pickerel					X						1
golden shiner			X								1
rosyface chub	X		X	X		X			X	X	6
silverjaw minnow					X		X		X		3
eastern silvery minnow	X		X							X	3
spottail shiner	X	X	X	X	X	X			X	X	8
carp	X										1
bluehead chub	X	X	X	X	X		X	X	X	X	9
bluefin stoneroller					X						1
altamaha shiner			X	X	X		X			X	5
ocmulgee shiner	X	X	X	X	X	X	X		X	X	9
yellowfin shiner	X	X	X	X	X	X	X	X	X	X	10
creek chubsucker					X			X			2
spotted sucker			X								1
brassy jumprock			X								1
striped jumprock	X		X	X	X	X					5
v-lip redhorse			X								1
Scartomyzon spp.							X				1
channel catfish	X	X		X		X					4
yellow bullhead	X	X									2
snail bullhead			X	X	X		X	X	X	X	7
margined madtom		X	X	X	X	X					5
mosquitofish	X	X	X	X	X	X					6
redeye bass			X	X	X		X		X	X	6
shoal bass						X		X			2
largemouth bass	X				X						2
warmouth			X	X	X					X	4
black crappie	X				X						2
green sunfish					X						1
bluegill	X	X		X	X	X		X		X	7
spotted sunfish								X			1
redear sunfish	X	X									2
pumpkinseed			X			X					2
longear sunfish					X	X					2
redbreast sunfish	X	X	X	X	X	X	X	X	X	X	10
blackbanded darter	X	X	X	X	X	X	X		X	X	9
tessellated darter		X							X		2
turquoise darter			X		X			X		X	4
christmas darter				X			X	X	X	X	5
Total species	18	15	22	19	24	14	11	11	12	16	

Table 3. Comparison of Altamaha and Ocmulgee shiner presence/absence at site locations from September 2003 and previous sample years. Site numbers are from the Altamaha & Ocmulgee shiners sites map provided by CONF. See Table 1 for site location descriptions.

Stream	**Previous**		**Altamaha shiner**		**Ocmulgee shiner**	
	Sample	**Site #**	**Previous**	**2003**	**Previous**	**2003**
Big Sandy Creek	9/02/1998	7	Present	Present	Present	Present
Rose Creek	9/27/1970	12	Absent	Absent	Present	Present
Murder Creek Hwy 16	9/21/1999	4	Present	Present	Present	Present
Murder Creek Hillsboro Rd.	7/19/1993	10	Present	Present	Absent	Present

Table 4. Altamaha and Ocmulgee shiner presence/absence at new locations sampled in September 2003. See Table 1 for site location descriptions.

Stream	**Altamaha Shiner**	**Ocmulgee Shiner**
Apalachee River	Absent	Present
Wise Creek	Absent	Present
Stalking Head Creek	Absent	Absent
Little River	Present	Present
Caney Creek	Absent	Present
Falling Creek	Present	Present

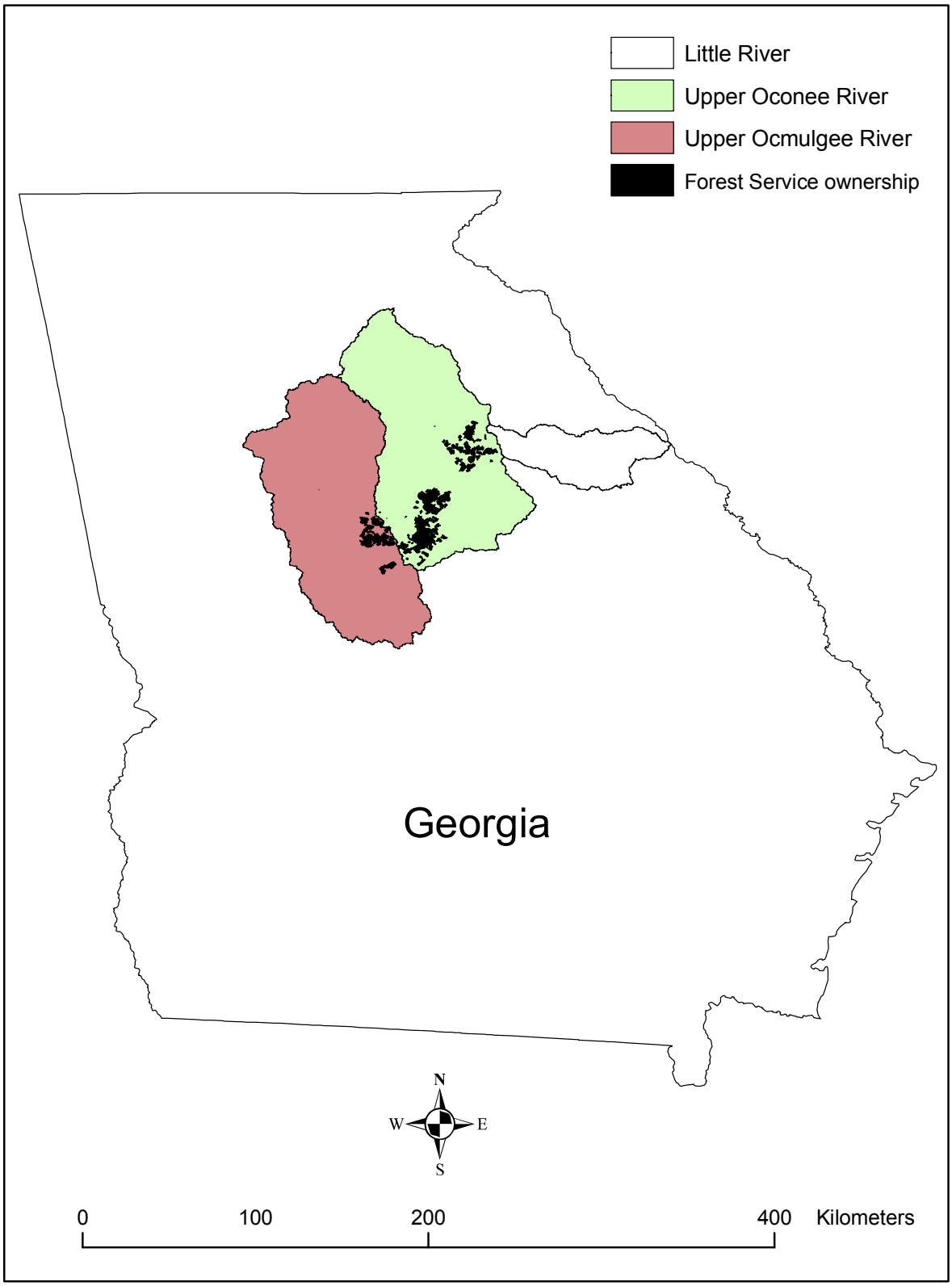

Figure 1. Watersheds sampled on the Chattahoochee-Oconee National Forest, September 2003.

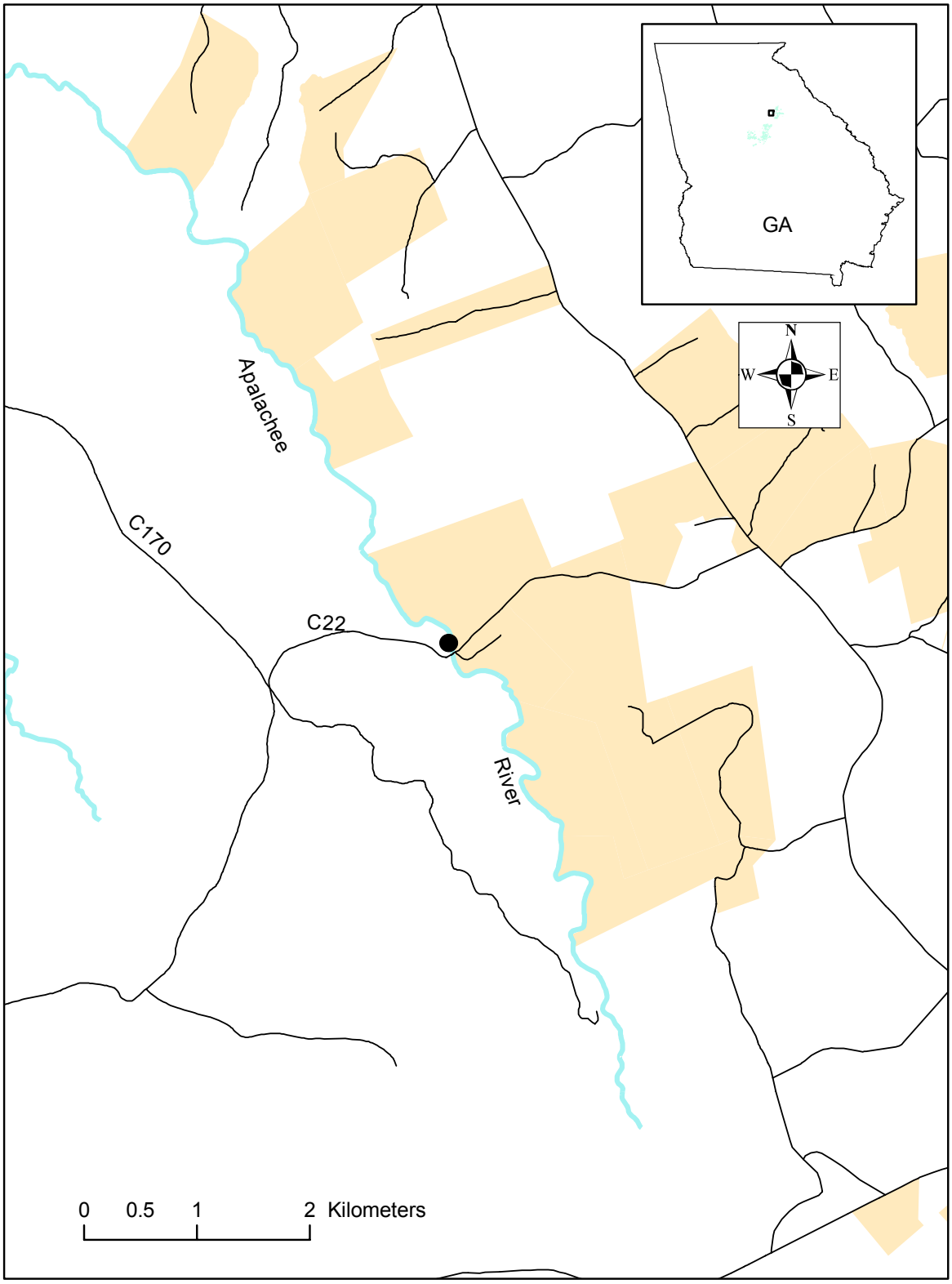

Figure 2. Chattahoochee-Oconee National Forest (shaded), Apalachee River sample site, September 2003. Closed circle represents sample site.

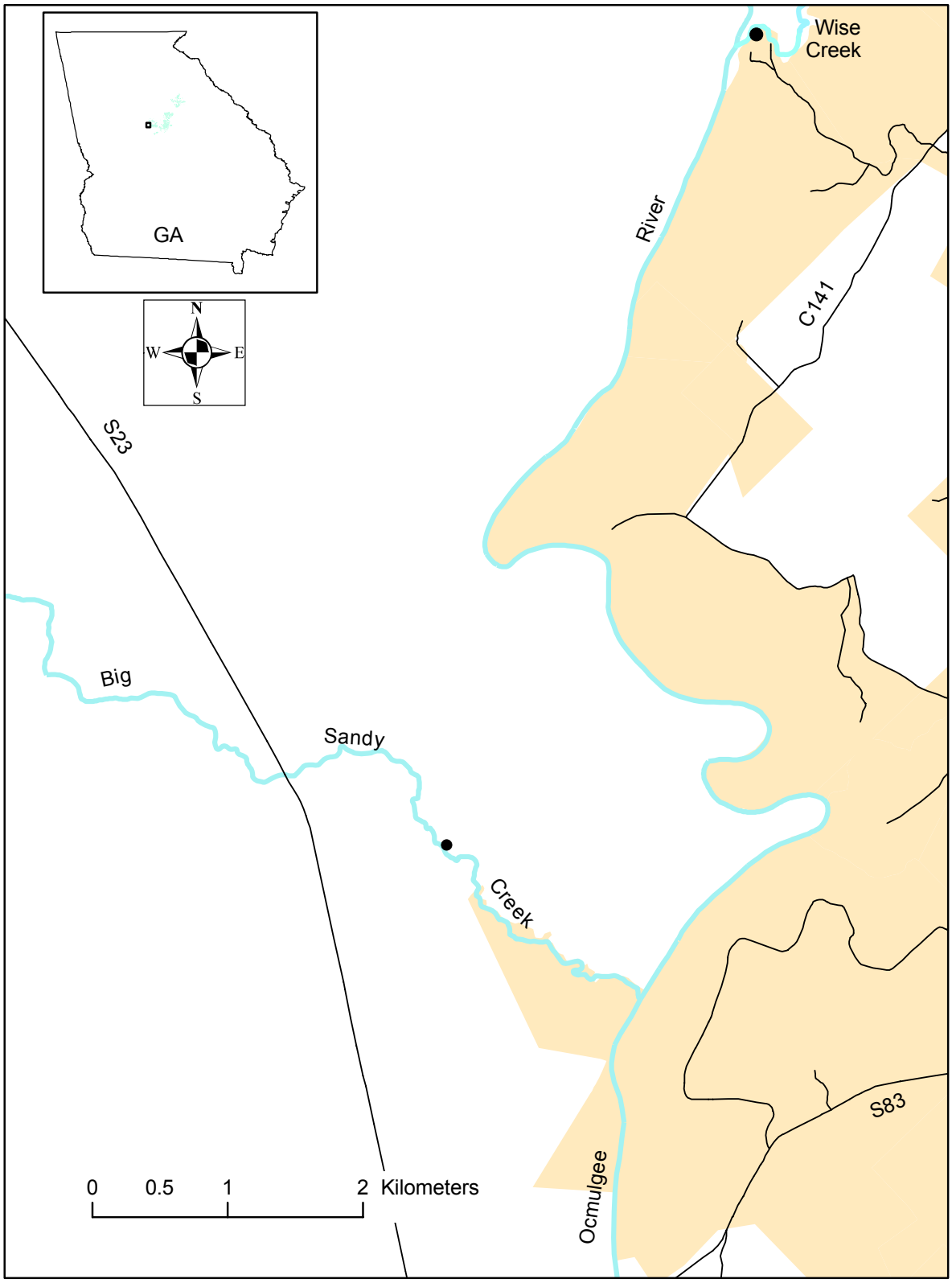

Figure 3. Chattahoochee-Oconee National Forest (shaded), Big Sandy Creek and Wise Creek sample sites, September 2003. Closed circles represent sample sites.

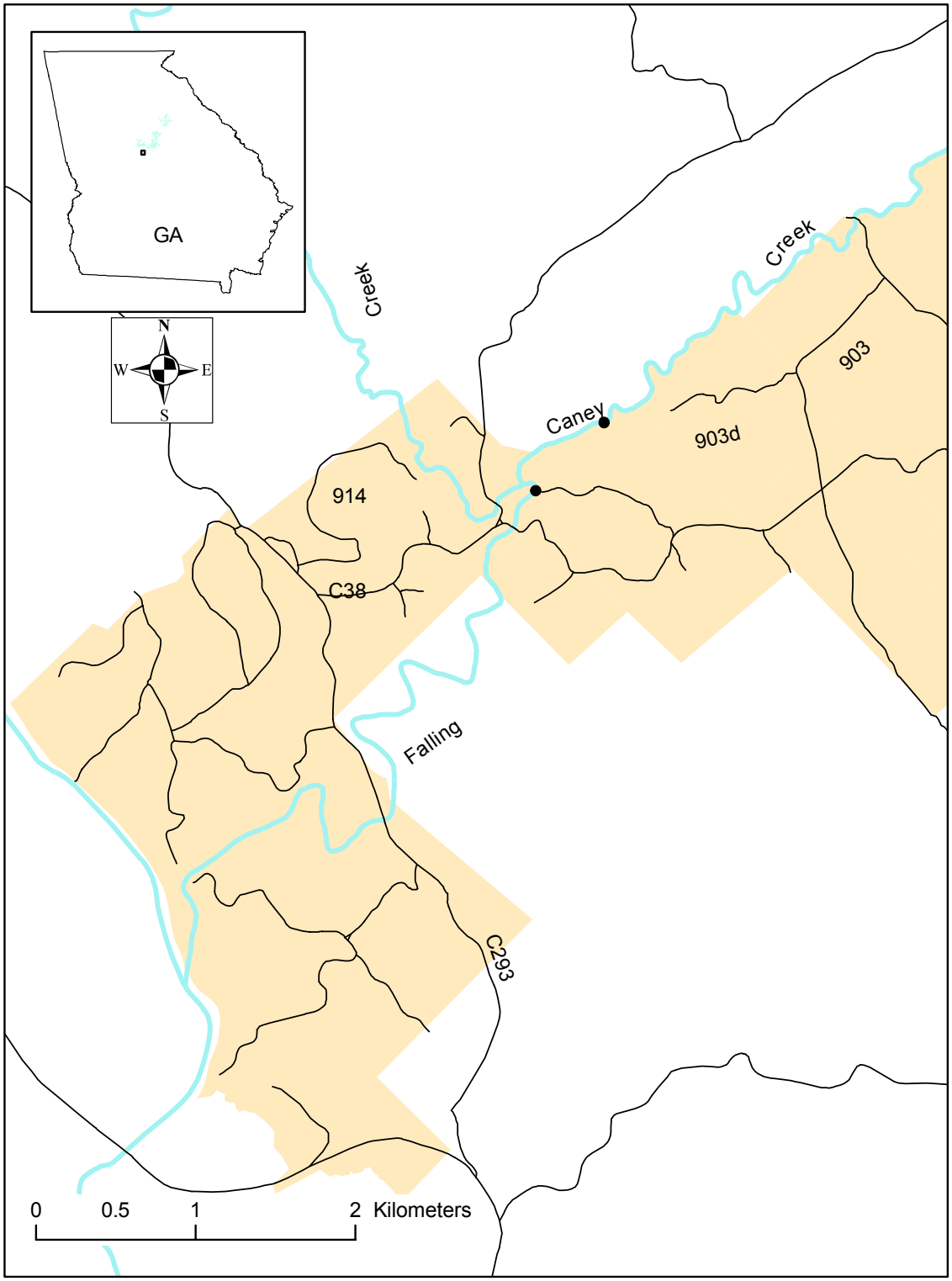

Figure 4. Chattahoochee-Oconee National Forest (shaded), Falling Creek and Caney Creek sample sites, September 2003. Closed circles represent sample sites.

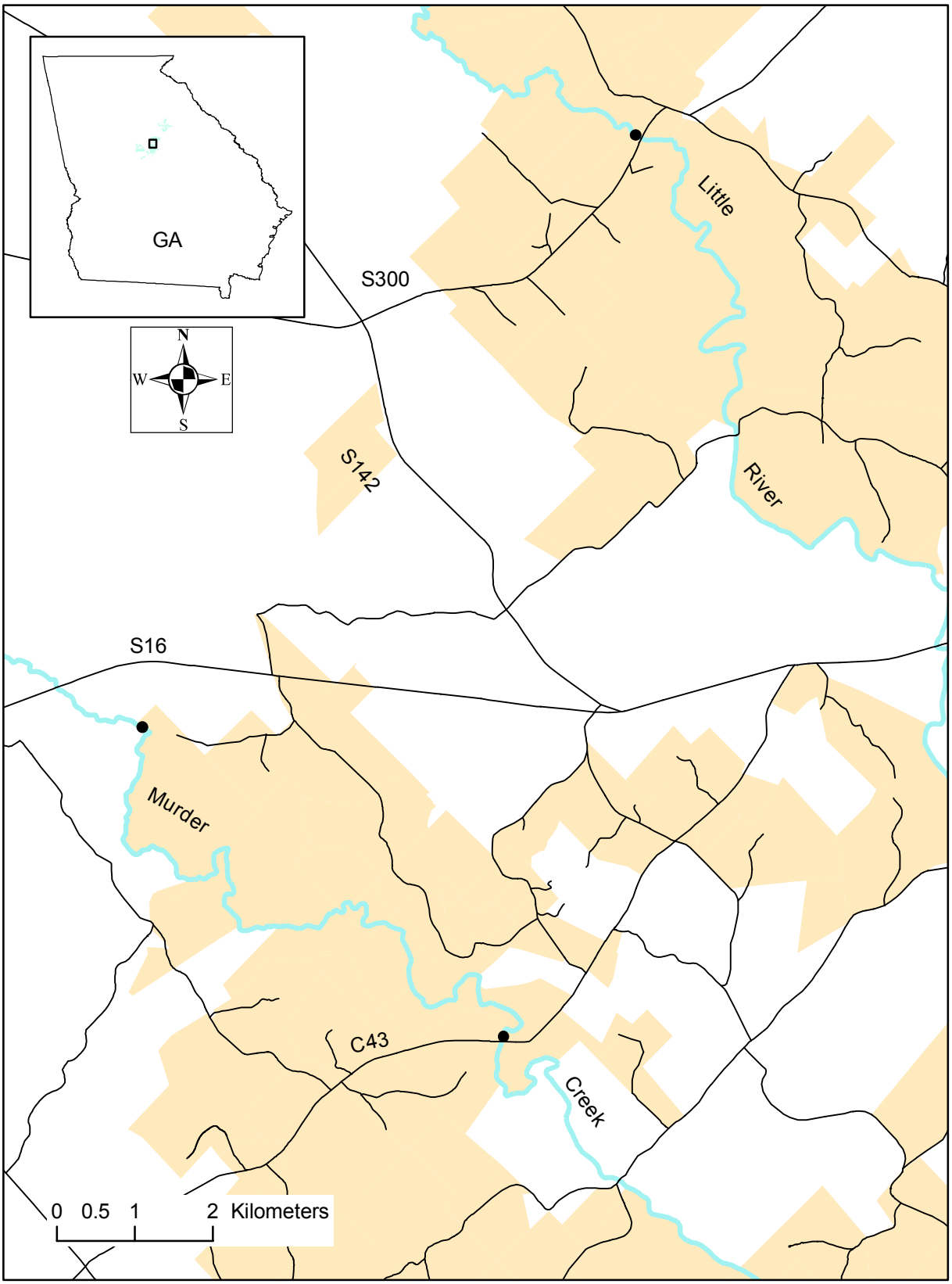

Figure 5. Chattahoochee-Oconee National Forest (shaded), Murder Creek and Little River sample sites, September 2003. Closed circles represent sample sites.

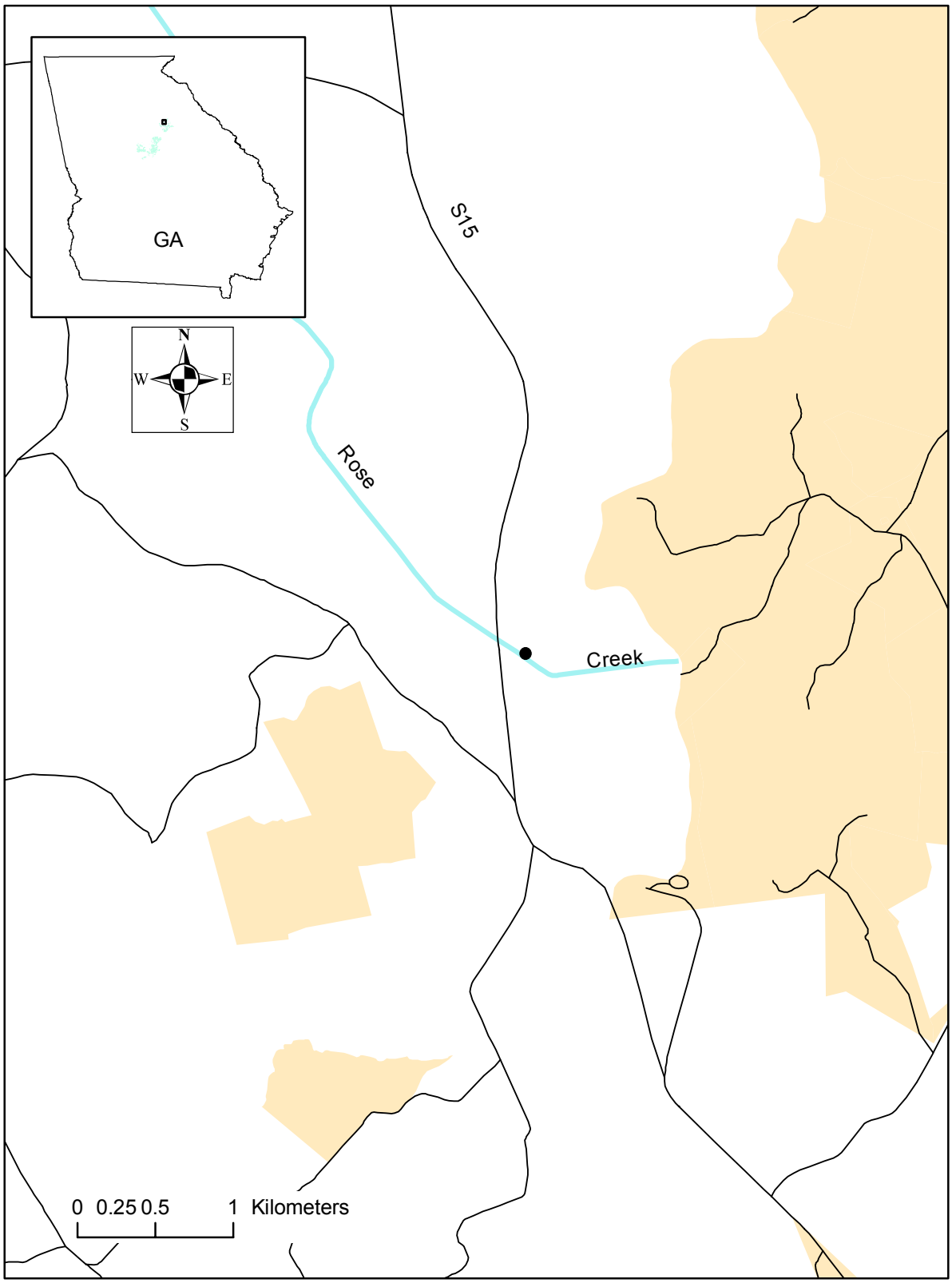

Figure 6. Chattahoochee-Oconee National Forest (shaded), Rose Creek sample site, September 2003. Closed circle represents sample site.

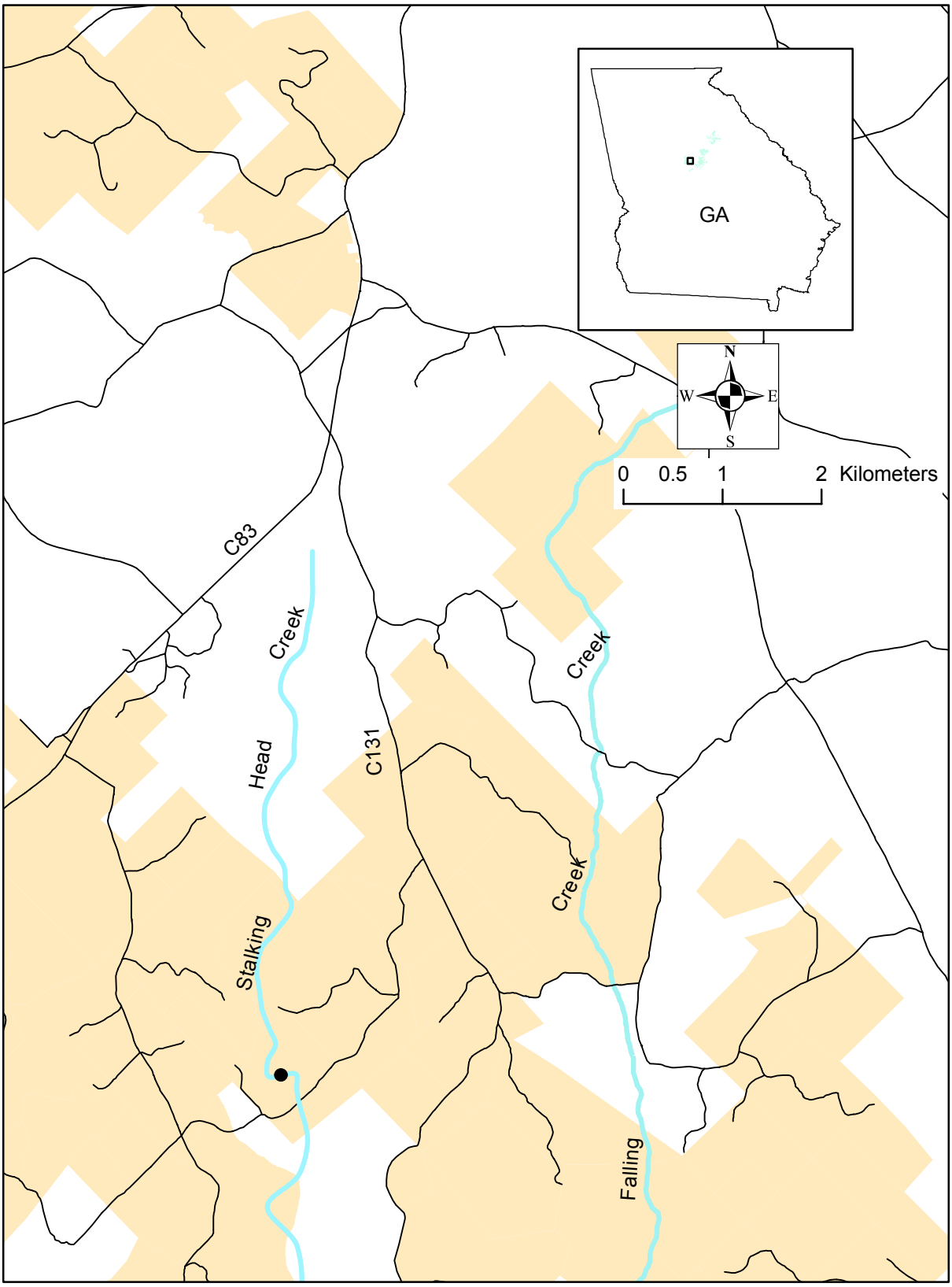

Figure 7. Chattahoochee-Oconee National Forest (shaded), Stalking Head Creek sample site, September 2003. Closed circle represents sample site.

Appendix A. Species and family fish list of fish species captured in CONF streams in September 2003.

Family		**Species**	
Anguillidae	Freshwater Eels	*Anguilla rostrata*	American eel
Aphredoderidae	Pirate perch	*Aphredoderus sayanus*	pirate perch
Esocidae	Pikes	*Esox a. americanus*	redfin pickerel
		Esox niger	chain pickerel
Cyprinidae	Minnows	*Notemigonus crysoleucas*	golden shiner
		Hybopsis rubrifrons	rosyface chub
		Ericymba buccata	silverjaw minnow
		Hybognathus regius	eastern silvery minnow
		Notropis hudsonius	spottail shiner
		Cyprinus carpio	carp
		Nocomis leptocephalus	bluehead chub
		Campostoma pauciradii	bluefin stoneroller
		Cyprinella xaenura	Altamaha shiner
		Cyprinella callisema	Ocmulgee shiner
		Notropis lutipinnis	yellowfin shiner
Catostomidae	Suckers	*Erimyzon oblongus*	creek chubsucker
		Minytrema melanops	spotted sucker
		Scartomyzon brasseus	brassy jumprock
		Scartomyzon rupiscartes	striped jumprock
		Moxostoma collapsum	v-lip redhorse
Ictaluridae	Catfishes	*Ictalurus punctatus*	channel catfish
		Ameiurus natalis	yellow bullhead
		Ameiurus brunneus	snail bullhead
		Noturus insignis	margined madtoms
Poeciliidae	Live bearers	*Gambusia holbrooki*	mosquitofish
Centrarchidae	Sunfishes and Basses	*Micropterus coosae*	redeye bass
		Micropterus cataractae	shoal bass
		Micropterus salmoides	largemouth bass
		Lepomis gulosus	warmouth
		Pomoxis nigromaculatus	black crappie
		Lepomis cyanellus	green sunfish
		Lepomis macrochirus	bluegill
		Lepomis punctatus	spotted sunfish
		Lepomis microlophus	redear sunfish
		Lepomis gibbosus	pumpkinseed
		Lepomis megalotis	longear sunfish
		Lepomis auritus	redbreast sunfish
Percidae	Perch and Darters	*Percina nigrofasciata*	blackbanded sunfish
		Etheostoma olmstedi	tessellated darter
		Etheostoma inscriptum	turquoise darter
		Etheostoma hopkinsi	Christmas darter