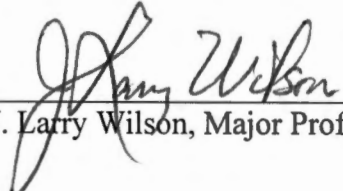
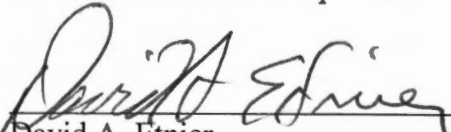


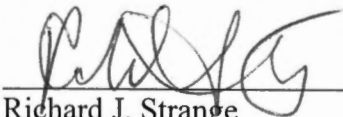
To the Graduate Council:

I am submitting herewith a thesis written by Michael H. Doosey entitled "Fishes of the Little Pigeon River system, Sevier County, Tennessee." I have examined the final paper copy of this thesis for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Master of Science, with a major in Wildlife and Fisheries Science.

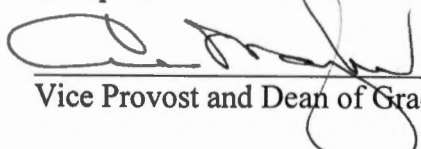

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Vice Provost and Dean of Graduate Studies

FISHES OF THE LITTLE PIGEON RIVER SYSTEM,
SEVIER COUNTY, TENNESSEE

A Thesis
Presented for the
Master of Science
Degree
The University of Tennessee, Knoxville

Michael H. Doosey
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Dedication

This thesis is dedicated to my parents Joyce and Howard Doosey for their guidance, patience, and support.

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Abstract

A survey of the fish fauna of the Little Pigeon River system in Sevier County, Tennessee, was conducted during 1999 through 2001. Eight species which are present in the system or which may potentially be present are jeopardized (i.e. listed as endangered, threatened, or of special concern by state and federal wildlife management agencies). The jeopardized species are *Acipenser fulvescens*, *Phoxinus tennesseensis*, *Noturus* sp. cf. *elegans*, *Carpionodes velifer*, *Salvelinus fontinalis*, *Percina aurantiaca*, *P. macrocephala*, and *P. tanasi*. In addition to the jeopardized taxa, *Macrhybopsis storeriana*, *Notropis atherinoides*, *Pimephales vigilax*, *Carpionodes cyprinus*, *Noturus eleutherus*, *Lepomis megalotis*, *Etheostoma camurum*, *E. vulneratum*, and *Percina sciera* were historically rare in the system.

Since 1932, 92 fish species have been collected in the Little Pigeon River system; however, 72 native species exist presently. *Ichthyomyzon castaneus*, *Dorosoma petenense*, and *Lepomis gulosus* are new system records. *Noturus* sp. cf. *elegans*, *N. eleutherus*, *Lepomis megalotis*, *Etheostoma camurum*, *Percina macrocephala*, and *P. sciera* are extirpated. Included within is an annotated species list, range maps, collection locality data, and vouchered museum material compiled from 410 collections.

The Little Pigeon River system is partially impacted by agriculture runoff, siltation, and waste water from the cities of Gatlinburg, Pigeon Forge, and Sevierville. Declining water quality, particularly in the West Prong Little Pigeon River, has resulted in extirpation and range loss for some fish species.

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List of Symbols

Co.	County
CU	Cornell University Ichthyology Collection
E	east
EFLPR	East Fork Little Pigeon River
ENE	east-northeast
ESE	east-southeast
FLMNH	Florida Museum of Natural History
ft.	feet
GSMNP	Great Smoky Mountains National Park
km	kilometer
LPR	Little Pigeon River
LPRM	Little Pigeon River mile
m	meter(s)
mi.	mile(s)
mm	millimeters
MPLPR	Middle Prong Little Pigeon River
N	north
NE	northeast
NNW	north-northwest
NPS	National Park Service
Rd.	road
RM	river mile(s)

S	south
SE	southeast
SW	southwest
TDC	Tennessee Department of Conservation
TDEC	Tennessee Department of Environment and Conservation
TL	total length
TN	Tennessee
TVA	Tennessee Valley Authority
TWRA	Tennessee Wildlife Resources Agency
UAIC	University of Alabama Ichthyology Collection
UMMZ	University of Michigan Museum of Zoology
US	United States highway
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
UT	University of Tennessee Research Collection of Fishes
W	west
WPLPR	West Prong Little Pigeon River
WSW	west-southwest
yds.	yards

Chapter I

Introduction

The purpose of this thesis is to report the distribution of fishes of the Little Pigeon River (LPR) system in Sevier County, Tennessee. Since 1932, a total of 92 species in 15 families has been reported from within the system. The current survey was conducted between 1999 and 2001. The results of this survey are combined with the available historical records to determine if there has been a change in the distribution of the fish fauna. Distribution and relative abundance for each species were determined from 410 collections of fishes in the system.

Included in this thesis is an annotated species list for all fish known or suspected to occur in the LPR system. Appendices include a dot plot distribution map for each species (Appendix A), a list of species and the localities where they were collected (Appendix B), a list with the description of each locality and the species collected (Appendix C), and a list of vouchered museum material (Appendix D).

Historical Records

The earliest records of fish collecting in the LPR system were conducted by F. O. Hazard and F. W. King of Wilmington College in 1932. Hazard and King made seven collections in the Great Smoky Mountains National Park (GSMNP) and in the vicinity of Gatlinburg. They confidently reported 15 species and several 'undetermined' species. The first attempts at extensive fish collections in the LPR system were conducted between 1937 and 1940 by Carl L. Hubbs from the University of Michigan, and his family, the Tennessee Department of Conservation (TDC), and others. Twenty-seven collecting efforts reporting 48 species were recorded from workers during this period.

Between the years of 1952 and 1954, only 10 fish collections were made. Half of these were conducted by R. E. Lennon, N. R. Bowman, and P. S. Parker in the West Prong Little Pigeon River (WPLPR) and Middle Prong Little Pigeon River (MPLPR) within the GSMNP. The remaining five collections during the early 1950s were conducted by W. S. Woolcott and others. These workers reported 42 species from the system. Eight collections documenting 34 species were reported between the years 1961 and 1963 by various workers from Cornell University. Fifty-two collections including 56 species were reported from the LPR system prior to 1965.

In 1965, David A. Etnier came to the University of Tennessee, and he and his students began to extensively collect the LPR system. Approximately 85% of the 230 collections reported from 1965 through 1998 were conducted by Etnier or his students. A study by L. B. Starnes (1976) investigated the differences in fish and benthic macroinvertebrate diversity between the WPLPR and MPLPR.

Since 1990 a few collections have been made by the Tennessee Valley Authority (TVA) and the Tennessee Wildlife Resources Agency (TWRA) to assess the biological integrity of streams in the LPR system. During the 1990s, extensive stream biota studies were conducted as part of the environmental assessment of the proposed completion of the Foothills Parkway in parts of Sevier County (NPS 1994; ORNL 1997, 1999). The National Park Service (NPS) has recently been conducting trout distribution surveys within the LPR portion of the GSMNP. A total of 86 species was reported from the collections between 1965 and 1998.

Current Records

Current data collections began in May 1999 and continued through October 2001. A total of 125 collections was conducted during this period and 78 species were collected. *Ichthyomyzon castaneus* (chestnut lamprey), *Dorosoma petenense* (threadfin shad), and *Lepomis gulosus* (warmouth) are new records for the LPR system. Many of the recent collections are from areas that had not previously been well collected, such as the main channel of the LPR, WPLPR, Dunn Creek, and several tributary streams.

Rare Species

Special attention was placed upon jeopardized species that occur in the LPR system and those species that have rarely been collected. Eight species that are known from the system, or which may occur there, are state or federally listed as endangered, threatened, in need of management, or as a potential candidate for listing. *Acipenser fulvescens* (lake sturgeon) is endangered in Tennessee and is a potential candidate for federal listing. Lake sturgeon populations have been extirpated from the Tennessee River system mainly because of altered flow regimes from impoundments (Etnier 1997). *Phoxinus tennesseensis* (Tennessee dace) is listed as in need of management in Tennessee because of nonpoint-source pollution (Etnier 1997). *Noturus* sp. cf. *elegans* ("chucky madtom") is endangered in Tennessee because of its very restricted range. *Carpiodes velifer* (highfin carpsucker) is listed as in need of management presumably because it is so rarely collected. *Salvelinus fontinalis* (brook trout) is a potential candidate for state listing because of its continued loss of range (Etnier and Starnes 1993). *Percina aurantiaca* (tangerine darter) is listed as in need of management in Tennessee, presumably because of its restricted range that has become somewhat disjunct because of

impoundments (Etnier and Starnes 1993). *Percina macrocephala* (longhead darter) is another potential candidate for state listing because of altered flows and nonpoint-source pollution (Etnier 1997). *Percina tanasi* (snail darter) is listed as threatened by state and federally agencies because of altered flow (Etnier 1997).

In addition to the jeopardized taxa listed above, there are nine species that are historically rare or potentially extirpated in the LPR system. These species are: *Macrhybopsis storeriana* (silver chub), *Notropis atherinoides* (emerald shiner), *Pimephales vigilax* (bullhead minnow), *Carpionodes cyprinus* (quillback), *Noturus eleutherus* (mountain madtom), *Lepomis megalotis* (longear sunfish), *Etheostoma camurum* (bluebreast darter), *E. vulneratum* (wounded darter), and *Percina sciera* (dusky darter). Extra effort was expended to find the jeopardized taxa, and new locality records for these species were sought.

Chapter II

Description of Study Area

Geography

The LPR system (Figure 1) is entirely within Sevier County in eastern Tennessee. The LPR is a tributary to the French Broad River and empties 4 miles (mi.) downstream of Douglas Dam at river mile (RM) 26.3. The drainage area is about 381 mi.². Sevierville, Pigeon Forge, and Gatlinburg are the largest cities that lie within the watershed. About one-third of the area of the LPR watershed is within the boundary of the GSMNP.

United States Geological Survey (USGS) 7.5-minute topographic maps were used for plotting locality data and for describing the area of the LPR system. The following maps provided coverage for the system (name and number): Boyd's Creek 156-NW, Douglas Dam 156-NE, Shady Grove 164-NW, Walden Creek 156-SW, Pigeon Forge 156-SE, Richardson Cove 164-SW, Jones Cove 164-SE, Wear Cove 157-NW, Gatlinburg 157-NE, Mount LeConte 165-NW, Mt. Guyot 165-NE, and Clingman's Dome 165-SW. Elevations listed in this thesis are given in feet (ft.) for ease of use with USGS maps.

The LPR system can be divided into four segments for convenient reference. Three of the segments are the three major forks of the river system: WPLPR, MPLPR, and East Fork Little Pigeon River (EFLPR). The fourth section, referred to as LPR proper, is the main channel of the river that begins at the confluence of MPLPR and EFLPR and ends at its confluence with the French Broad River.

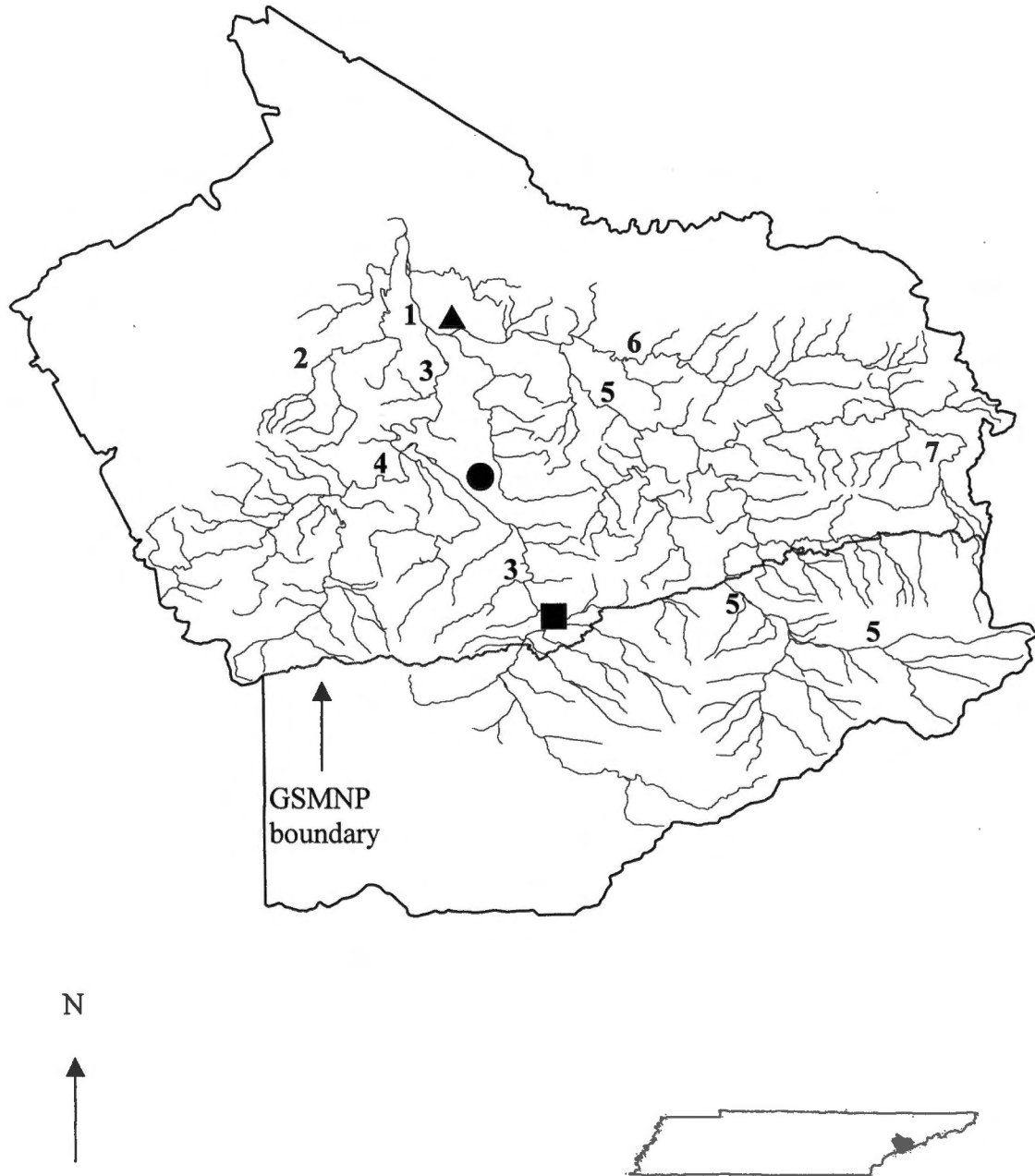


Figure 1. Drainage map of the Little Pigeon River system. Sevier County is outlined in heavy black. Great Smoky Mountains National Park is south of the gray line. Major streams are: 1 Little Pigeon River proper, 2 Gists Creek, 3 West Prong Little Pigeon River, 4 Walden Creek, 5 Middle Prong Little Pigeon River, 6 East Fork Little Pigeon River, 7 Dunn Creek. The locations of the cities are: Sevierville (triangle), Pigeon Forge (circle), Gatlinburg (square).

All of the three major forks of the river have their headwaters in the GSMNP. The WPLPR originates from the confluence of Walker Camp and Road prongs near the Chimney Tops at an elevation of about 3,500 ft. Its course generally flows north through Gatlinburg and Pigeon Forge until its confluence with the LPR proper in Sevierville. Walden Creek, the largest tributary of WPLPR, drains the western part of the system including all of Wear Cove between Cove and Chilhowee Mountains. Mount LeConte and Grapeyard Ridge separate the headwaters of the WPLPR and MPLPR.

Previous workers have referred to the MPLPR as the stream originating in the GSMNP and flowing to the confluence of EFLPR, just east of Sevierville. This designation will be followed even though the USGS topographic maps refer to this length of stream as LPR. Major headwater streams of the MPLPR are Porter's Creek and Eagle Rocks Prong. The MPLPR flows north through the communities of Pittman Center and Richardson Cove before the confluence with EFLPR to form the LPR proper. The largest tributaries of the MPLPR outside the GSMNP are Webb and Bird creeks. Snag Mountain divides the MPLPR headwaters from those of the EFLPR.

Dunn and Yellow Breeches creeks are the primary tributary streams of the EFLPR. A low ridge in the southeastern portion of Sevier County separates the EFLPR watershed from the Cosby Creek watershed (Pigeon River system). The EFLPR flows west through Harrisburg until the confluence with MPLPR.

The LPR proper flows west for about five mi. until it reaches Sevierville, where it begins a northern course until it empties into the French Broad River. The major tributaries of the LPR proper exclusive of the three forks are Gists and Middle creeks.

Gists Creek drains a small area in the northwest portion of the system and empties into LPR at RM 1.0. Middle Creek drains the interior section of the system and empties at RM 5.5.

Geology

The LPR system flows through two physiographic provinces, the Blue Ridge and the Ridge and Valley. The geological data for the system are summarized from Hardeman's (1966) Geologic Map of Tennessee. Much of the land of Sevier County that is in the Blue Ridge province is characterized by Precambrian rock formations of the Ocoee Supergroup. Streams that exist in the GSMNP and surrounding foothill towns to the north including Pigeon Forge and Richardson Cove, flow over ancient Precambrian rocks of the Great Smoky Group and the Snowbird Group. For the most part these rocks are poorly sorted, very coarse and moderately thick. Tributaries to Dunn Creek near Jones Cove flow over the siltstone and slate formations of the Wilhite Group. The formations beneath Gatlinburg and lands on the south slope of Webb Mountain are characterized as Rich Butt Sandstone, which contains beds of feldspars and fine or medium grained-sandstones. Walden Creek and all of its tributaries, except Cove Creek, flow over slates and shales of the Walden Creek Group.

The lands that are in the Ridge and Valley province are characterized by younger Ordovician rock formations of the Knox Group and Chickamauga Group. The formations of the Knox Group are silicon-rich beds of dolomite and magnesian limestone, while the Chickamauga Group are primarily limestone. In Wear Cove, Cove Creek flows over rocks of these groups. The streams in Sevierville and surrounding towns flow over shales and limestones of various groups. The Sevier Shale formation is

a calcareous shale with some thin limestone layers that is the dominant rock formation in land surrounding Sevierville. Thin beds of dolomite with interbeds of limestone and chert occur near the confluence of MPLPR and EFLPR.

Land Use and Water Quality

The land of Sevier County was differentiated into 16 cover types by SAMAB (1996). Three-quarters of the county is forested and further subdivided into nine forest types. Approximately 20% of Sevier County is used for agriculture. Nearly all the agriculture area is used for pastureland. Only 2.2% of the land is developed; however, two of the largest and most populated urban areas, Gatlinburg and Pigeon Forge, are developed on the WPLPR. Sevierville, the county seat, is located on the LPR proper at RM 5.0, near the mouth of WPLPR. During the early 1900s much of Sevier County was deforested for timber.

The effects of land use are apparent in the water quality of streams of the LPR system. The Tennessee Department of Environment and Conservation (TDEC) assesses water quality of Tennessee's rivers and lakes. Some of the streams in the system are affected by pollutants including pathogens, siltation, and nutrients (Denton et al. 2000). The major sources of these pollutants are leaking septic systems and improper sewer connections (Denton et al. 2000).

Denton et al. (2000) classified streams as fully supporting, partially supporting, or not supporting based on chemical, biological, physical, sediment, and fish tissue data. They gave the following definitions for the classifications. Fully supporting streams "have water quality that is as good or better than that needed to support the designated uses assigned to it by the Water Quality Control Board." Partially supporting streams

“are somewhat impacted by pollution and water quality criteria are violated on a regular basis.” Streams that are not supporting “are highly impacted by pollution and water quality criteria are violated frequently.” Designated uses for water include “fish and aquatic life protection, recreation, drinking water supply, irrigation, industrial water supply, livestock watering and wildlife, and navigation” (Denton et al. 2000).

The entire length of the WPLPR from Gatlinburg downstream and LPR proper from the mouth of WPLPR downstream is not supporting because of urban runoff and failing septic systems (Denton et al. 2000). In addition, seven tributaries of the WPLPR (Beech, King, Gnatty, Holy, and Baskins branches; Roaring and Dudley creeks) are also not supporting. A bacteriological advisory is posted for all of these waterways. Walden Creek and a few of its tributaries are listed as partially supporting. The entire length of Dunn Creek/EFLPR from the GSMNP boundary downstream to the confluence with MPLPR is also only partially supporting.

All of the headwater streams of the LPR system in the GSMNP are fully supporting, although some have not been assessed. The entire length of the MPLPR from the GSMNP boundary downstream to the confluence with EFLPR and the LPR proper from Sevierville upstream is listed as fully supporting.

Chapter III

Methods

Historical records of collections conducted in the LPR system were gathered from natural history museums, online databases, published reports, field notes, and unpublished theses. The data were summarized to interpret the historical distribution of fishes in the LPR system. These records were combined with the current distribution records that were collected during 1999 through 2001. Localities, species collected and relative abundance, distribution maps, and other available data are listed in the appendices of this thesis. Distribution maps were created with Environmental Systems Research Institute, Inc., ArcView GIS Version 3.0, and United States Bureau of the Census TIGER data.

Fishes were collected by using 10' x 6' x ¼" and 6' x 3' x ¼" mesh nylon straight seines and 60' x 6' x ¼" mesh nylon bag seines, backpack electrofishing units with dipnets, boat shocking equipment, and angling. Occasionally underwater observations were conducted by snorkeling. Stream segments were sampled in all habitats until no new taxa were captured. Most of the sites collected were worked by 3-6 collectors with seines and backpack electrofishing equipment. The larger streams were often sampled by up to 20 collectors or with boat shocking equipment. Criteria for choosing localities included where imperiled or rare taxa were previously collected, streams that were not well-sampled by earlier workers, and in larger waterways that required repeated effort to collect thoroughly. Many of the small creeks in the watershed were not collected because of their size and recent efforts during Foothills Parkway stream biota surveys. The

majority of the collecting was done in the larger streams. Collection localities are plotted on the stream drainage map (Figure 2).

Specimens were preserved in a solution of 10% formaldehyde for later identification in the laboratory. Species were identified by using Etnier and Starnes (1993) and various primary literature sources. Voucher specimens were stored in a 50% solution of isopropyl alcohol and catalogued in the University of Tennessee Research Collection of Fishes (UT).

Collecting was permitted by TWRA scientific collecting permit number 791 issued to Dr. David Etnier and the author. Collecting in the GSMNP was permitted by NPS research and collecting permit number GRSM-00-053 issued to the author.

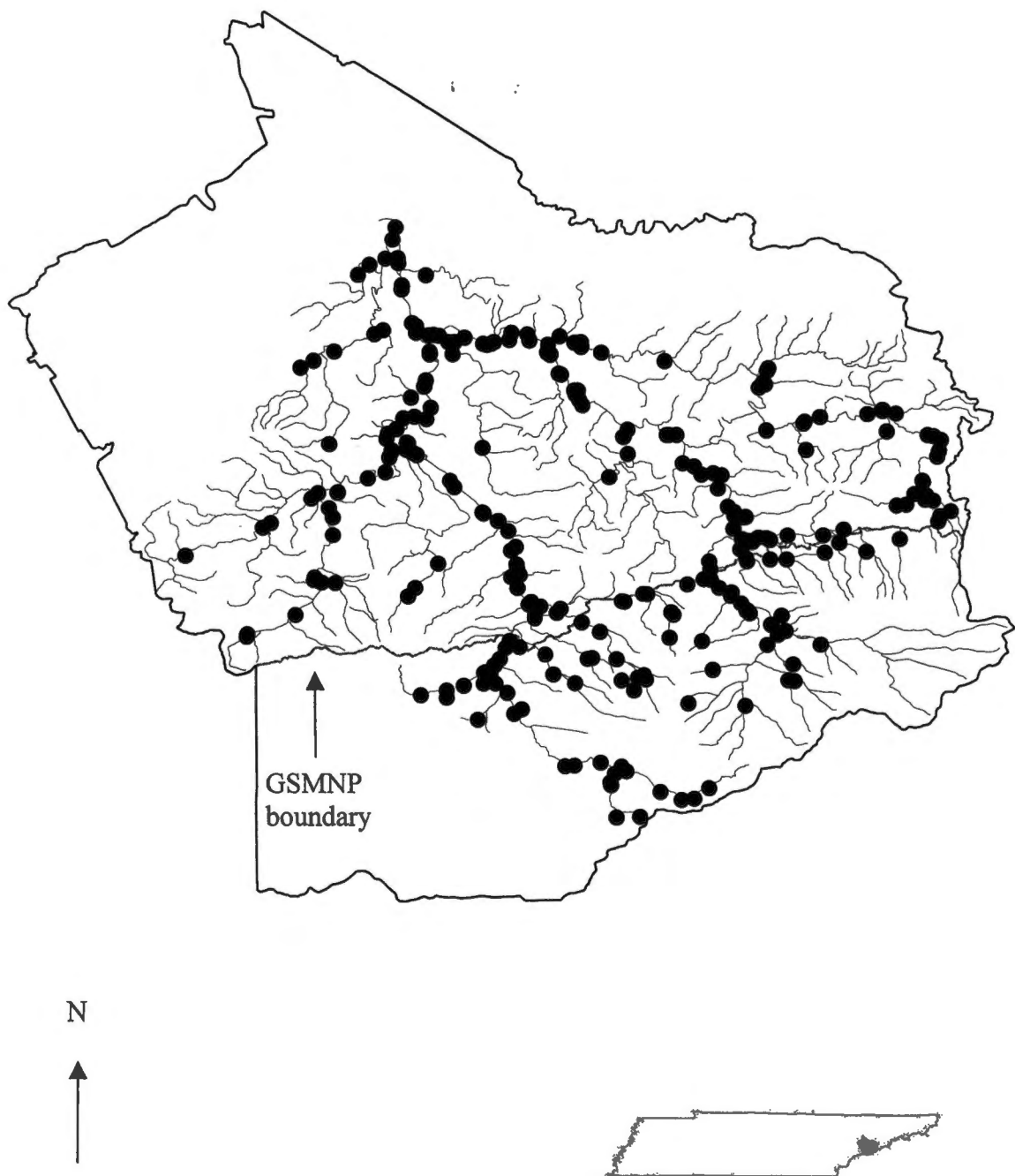


Figure 2. Drainage map of the Little Pigeon River system showing all collection localities. Sevier County is outlined in heavy black. Great Smoky Mountains National Park is south of the gray line.

Chapter IV

Species Accounts

The following is an annotated species list for all fishes known or suspected to occur in the LPR system. The number that precedes each description is the designated species number for that fish. These numbers are used in the appendices and each number corresponds to a different species listed below. Species are listed in phylogenetic order by family and alphabetically by genus and species epithet. Phylogenetic order and taxonomy follow Nelson et al. (in press) except as noted.

Petromyzontidae--lampreys

1. *Ichthyomyzon bdellium* Jordan--Ohio lamprey (Figure A1): The Ohio lamprey is a parasitic species that occurs in the lower portions of the WPLPR, MPLPR and LPR proper. It was collected over gravel and cobble substrates in 1-2 ft. deep riffles. *Ichthyomyzon bdellium* was not reported from any of the collections prior to 1980, and ammocoetes have never been collected. It is the most common *Ichthyomyzon* in the LPR system. A *Carpionodes velifer* (highfin carpsucker) collected on 5 July 2000 had circular wounds on both operculums, presumably from *I. bdellium* or *I. castaneus*.

2. *Ichthyomyzon castaneus* Girard--chestnut lamprey (Figure A2): The chestnut lamprey is a new record for the LPR system. It is a parasitic species known from two large adult specimens taken in the LPR at about RM 3.0 in 2000, and RM 8.2 in 2001. It was reported in 1980 from the WPLPR just upstream from Sevierville, but these specimens were re-identified as *I. bdellium* (UAIC 8942.01) by B. R. Kuhajda in 2000. The systematics of *I. bdellium* and *I. castaneus* are being researched by B. R. Kuhajda.

3. *Ichthyomyzon greeleyi* Hubbs & Trautman--mountain brook lamprey (Figure A3): One mountain brook lamprey ammocoetes was collected in the WPLPR downstream from Large Island in 2000. An adult was taken in the spring of 1974, (UT 2.40) from the MPLPR. An additional ammocoetes was collected near the mouth of the MPLPR in 2000. *Ichthyomyzon greeleyi* is smaller than other *Ichthyomyzon* species and is nonparasitic. It prefers large creeks and small rivers and may be more common than reported since adults are available for only a short time (Etnier and Starnes 1993).

4. *Lampetra appendix* DeKay--American brook lamprey (Figure A4): The American brook lamprey is the most abundant lamprey in the system. It occurs in pools and near the banks of large streams of all three major forks of the system. *Lampetra appendix* seems to be absent from the MPLPR upstream of Bird Creek. However, Etnier and Starnes (1993) indicated a specimen from the upper portion of the MPLPR, but the record for this individual could not be located. W. S. Woolcott first collected *L. appendix* in the system in 1953. Ammocoetes transform between mid-September and mid-November in Walden Creek.

Acipenseridae--sturgeons

5. *Acipenser fulvescens* Rafinesque--lake sturgeon: The lake sturgeon was never collected from the LPR, but formerly inhabited the upper Tennessee River system (Etnier and Starnes 1993). Lake sturgeon were reintroduced into the French Broad River below Douglas Dam in the spring and summer of 2000. A 556 mm TL male stocked at Seven Islands (French Broad RM 15.0) on 19 July 2000 was tracked at the mouth of the LPR on 7 August 2000. It remained in the vicinity of the LPR until its implanted radio tag expired on 17 November 2000 (R. Martin, Tennessee Technological University,

personal communication). It is unlikely that *A. fulvescens* will establish a population in the LPR.

Lepisosteidae--gars

6. *Lepisosteus oculatus* (Winchell)--spotted gar (Figure A5): The spotted gar is known from the LPR downstream of the mouth of WPLPR. A few adults were collected by boat shocking on 5 July 2000 and again in 2001 in sluggish backwater habitats. The only other record for *L. oculatus* was from 1968. It is far less abundant than the longnose gar.

7. *Lepisosteus osseus* (Linnaeus)--longnose gar (Figure A6): The longnose gar was frequently collected in the LPR downstream of Sevierville. More than 20 adults were observed in sluggish pools during boat shocking efforts and juveniles (20-180 mm TL) were common in flooded backwater pools and *Justicia* (water willow) beds. An adult gar (probably *L. osseus*) was observed by snorkeling in the MPLPR at Richardson Cove on 12 June 1999. Longnose gar was not reported from the system prior to 1975.

Clupeidae--herrings

8. *Alosa chrysochloris* (Rafinesque)--skipjack herring: The skipjack herring is not historically or presently known from the LPR system. It does occur in abundance in the French Broad River and might be collected at the mouth of the LPR.

9. *Dorosoma cepedianum* (Lesueur)--gizzard shad (Figure A7): Gizzard shad occur in all three major forks and LPR proper. *Dorosoma cepedianum* is most abundant in the LPR proper; however, it has been collected in small streams like Yellow Breeches and Middle creeks. Gizzard shad were first collected from the system in 1965.

Adults prefer open water habitats, but often venture into small rivers and even medium sized creeks.

10. *Dorosoma petenense* (Guenther)--threadfin shad (Figure A8): The threadfin shad is a new record for the LPR system. Six juveniles (UT 29.207) were collected in the LPR downstream of Sanders Island on 5 October 2000. *Dorosoma petenense* prefers large open-water habitat and is less common than the gizzard shad. Adults were not encountered.

Cyprinidae--minnows

11. *Campostoma anomalum* (Rafinesque)--central stoneroller (Figure A9): The central stoneroller is primarily restricted to the Blue Ridge portion of the system. It occurs in headwater streams of all three major forks of the system. The central stoneroller prefers gravel riffles and flowing pools. Simbeck (1990) reported collections of *C. anomalum* in the GSMNP up to an elevation of 2,640 ft. *Campostoma anomalum* is the most abundant fish in the LPR system and can be easily collected by the hundreds.

12. *Campostoma oligolepis* Hubbs and Greene--largescale stoneroller (Figure A10): The largescale stoneroller is distributed system-wide in Ridge and Valley streams. It prefers riffles and flowing pools in streams of all sizes. There are *C. oligolepis* in Bird Creek, even though this stream is in the Blue Ridge province. D. A. Etnier and H. T. Boschung are researching the systematics and distribution of *Campostoma* species.

13. *Carassius auratus* (Linnaeus)--goldfish (Figure A11): The goldfish is a non-native species that is only known from one specimen collected from the LPRM 10.0 (near confluence of MPLPR and EFLPR) by TVA on 12 July 1990. Goldfish can be

anticipated in suitable habitat system-wide because of introductions from bait buckets and releases of unwanted pets.

14. *Cyprinella galactura* (Cope)--whitetail shiner (Figure A12): The whitetail shiner occurs abundantly system-wide in clear streams ranging in size from small creeks up to the main channel of the LPR proper. *Cyprinella galactura* prefers clear flowing pools over firm substrate. It is most abundant in upland streams in the system

15. *Cyprinella spiloptera* (Cope)--spotfin shiner (Figure A13): The spotfin shiner occurs system-wide in slow flowing pools of medium to large streams with warmer water and some turbidity. *Cyprinella spiloptera* is more common than *C. galactura* in lower elevation streams. The spotfin and whitetail shiners occur sympatrically in the lower reaches of WPLPR, MPLPR, and EFLPR.

16. *Cyprinus carpio* Linnaeus--common carp (Figure A14): The common carp is a non-native species that occurs only in the lower portion of the system. It is known from the entire length of LPR proper and from the mouth of the Walden Creek downstream in the WPLPR. *Cyprinus carpio* was collected in sluggish, turbid pools and near stream banks in beds of *Justicia*. Only large specimens have been collected. It was first collected from the LPR system in 1965.

17. *Erimystax insignis* (Hubbs & Crowe)--blotched chub (Figure A15): The blotched chub was not collected from the system during this survey; however, it was widespread in the system until 1997. It occurred from the mouth of the LPR proper upstream in the WPLPR to just below Gatlinburg, and in the MPLPR upstream to above Richardson Cove. It was only taken twice in the EFLPR, near its mouth. It is probable that *E. insignis* still persists in the LPR. However, it is extirpated from the nearby Pigeon

River system in Cocke County, TN, where it was last collected in 1940. Populations of *E. insignis* do persist in the French Broad River.

18. *Hybopsis amblops* (Rafinesque)--bigeye chub (Figure A16): The bigeye chub is distributed in larger streams of all three major forks and LPR proper over sandy substrates with slow current. *Hybopsis amblops* appears to have lost some of its range in the WPLPR. It was commonly taken in the WPLPR to as far upstream as Gatlinburg until about 1992. Currently, it is absent from the WPLPR above the mouth of Walden Creek.

19. *Luxilus chrysocephalus* Rafinesque--striped shiner (Figure A17): The striped shiner is an abundant minnow that occurs in all three major forks of the system. It prefers small to medium sized creeks in pool areas. *Luxilus chrysocephalus* does not inhabit streams of the Blue Ridge province. It is currently less abundant in the WPLPR near Pigeon Forge than reported by previous workers.

20. *Luxilus coccogenis* (Cope)--warpaint shiner (Figure A18): The warpaint shiner is a widely distributed and common species in small and medium sized creeks of both the Blue Ridge and Ridge and Valley provinces. It prefers cool and clear streams with substrate ranging from small gravel to bedrock. Large specimens of *L. coccogenis* were taken by angling with *Lumbricus* (earthworm) from the MPLPR during June and July of 2000.

21. *Lythrurus lirus* (Jordan)--mountain shiner (Figure A19): The mountain shiner is restricted to pool habitats of the WPLPR, Walden Creek, MPLPR, and LPR proper. It is not known why *L. lirus* does not occur in suitable habitat in EFLPR. According to range maps in Etnier and Starnes (1993) and Lee et al. (1980), the LPR is

the only river system occupied by the mountain shiner in the entire French Broad River and Holston River watersheds.

22. *Macrhybopsis storeriana* (Kirkland)--silver chub (Figure A20): The silver chub was not collected during this survey. It was previously known from only three specimens collected from the LPR proper at Sevierville on 8 August 1967.

Macrhybopsis storeriana prefers larger river habitats than the Little Pigeon can provide. Tennessee Valley Authority biologists collected the silver chub at Saffel Island, French Broad River RM 29.5 in 1997, which is about 2.5 mi. upstream of the mouth of LPR. It is likely that the specimens collected in 1967 were from a French Broad River population.

23. *Nocomis micropogon* (Cope)--river chub (Figure A21): The river chub is a widely distributed and common species in medium and large sized streams of both the Blue Ridge and Ridge and Valley provinces. It prefers swift current over boulder and cobble substrates. *Nocomis micropogon* is presently more abundant in the MPLPR and EFLPR watersheds than in the WPLPR.

24. *Notropis atherinoides* Rafinesque--emerald shiner (Figure A22): The emerald shiner was known from two specimens collected in the LPR proper at Sevierville on 28 October and 7 November 1965, and one specimen from the lower WPLPR on 7 June 1968. Populations of *N. atherinoides* exist in the French Broad River upstream to Douglas Dam. The large river and open water pool habitat necessary for the emerald shiner to persist is not available in the LPR, and the three specimens taken in LPR presumably represent vagrants from the French Broad River.

25. *Notropis leuciodus* (Cope)--Tennessee shiner (Figure A23): The Tennessee shiner is common system-wide from the LPR proper upstream to small creeks at an elevation of about 1,400 ft., although it is absent from Gists Creek. It prefers clear waters in riffles or flowing pools over a variety of substrates.

26. *Notropis micropteryx* (Cope)--highland shiner (Figure A24): The highland shiner is distributed in the WPLPR and MPLPR upstream to elevations of about 1,000 ft. It has been collected only a few times in the EFLPR. *Notropis micropteryx* is most abundant in the LPR in the vicinity of Sevierville and was collected in areas with moderate current over boulder and cobble substrates. This species has been previously reported as *N. rubellus*.

27. *Notropis photogenis* (Cope)--silver shiner (Figure A25): The silver shiner was collected occasionally in larger streams of all three major forks of the system, particularly WPLPR and the LPR proper. However, it was not taken from the EFLPR during the current survey. *Notropis photogenis* prefers clear waters in flowing pools.

28. *Notropis rubricroceus* (Cope)--saffron shiner (Figure A26): The saffron shiner is an inhabitant of small and medium sized creeks of the Blue Ridge province. It prefers cool, clear water in shallow riffles over boulder and bedrock substrates. *Notropis rubricroceus* occurs up to elevations of about 1,800 ft. but rarely below 1,200 ft.

29. *Notropis stramineus* (Cope)--sand shiner (Figure A27): The sand shiner is widespread in medium and large sized creeks of the WPLPR, EFLPR, and LPR proper. *Notropis stramineus* is absent from the MPLPR proper, presumably due to the dominant rocky substrates found there, but it has been taken in Bird Creek. It is most abundant in clear pools over sandy substrates. *Notropis stramineus* occupies smaller creeks than the

similar *N. volucellus*. This species is reported as *N. ludibundus* by some ichthyologists (see Etnier and Starnes 1993, 2001).

30. *Notropis telescopus* (Cope)--telescope shiner (Figure A28): The telescope shiner was historically abundant in the WPLPR from Sevierville upstream to Gatlinburg, the entire length of the MPLPR up to about the GSMNP boundary, and in the EFLPR upstream to Jones Cove. Its present range and abundance is reduced in the WPLPR but remains the same in MPLPR and EFLPR. *Notropis telescopus* prefers run areas downstream of riffles.

31. *Notropis volucellus* (Cope)--mimic shiner (Figure A29): The mimic shiner was occasionally collected from the lower reaches of all three major forks. It was more frequently taken in the LPR proper downstream of Sevierville. *Notropis volucellus* prefers sandy pools and flowing waters near the streambank.

32. *Phenacobius uranops* Cope--stargazing minnow (Figure A30): The stargazing minnow occurs in the lower portions of all three major forks of the LPR system. Its most upstream occurrence was at about 1,000 ft. elevation in the WPLPR. *Phenacobius uranops* is an uncommon minnow in the watershed. It was collected in fast flowing riffles over cobble and bedrock substrates.

33. *Phoxinus tennesseensis* Starnes and Jenkins--Tennessee dace (Figure A31): The Tennessee dace is restricted to small Blue Ridge creeks draining into WPLPR and EFLPR. Streams known to be inhabited by *P. tennesseensis* include Cove Creek and Mill Creek (tributaries to WPLPR) and Chucky Creek, Dockery Branch, and Dunn Creek (tributaries to EFLPR). The Tennessee dace is locally abundant in small streams with gravel substrate and low gradient. *Phoxinus tennesseensis* might be more widespread

than is reported here since its habitat preference is small, remote streams, many of which are on private property. It can be expected in any of the suitable streams on Cove and Webb Mountains. One hybrid between *P. tennesseensis* and *Semotilus atromaculatus* (creek chub) was collected in Dockery Branch on 19 April 2000. Eisenhour and Piller (1997) reported on hybrids of these two species and intermediacy of morphological character states.

34. *Pimephales notatus* (Rafinesque)--bluntnose minnow (Figure A32): The bluntnose minnow occurs from the mouth of WPLPR downstream to the mouth of the LPR proper. It also occupies Gists Creek and some of its smallest tributary streams and lower Middle Creek in Sevierville. It was first reported from the system in 1967, but was not collected again until 1995. *Pimephales notatus* seems to be more common today than in the past. It was collected in large numbers in slow pools, backwaters, and in marshy areas.

35. *Pimephales promelas* Rafinesque--fathead minnow (Figure A33): The fathead minnow is rare in the LPR system. It has only been reported from three tributary streams of the WPLPR and Middle Creek. *Pimephales promelas* is probably not native to the LPR system. This species is commonly used for bait and accidental introductions are certain. It can be expected in any warm waters of the LPR system, especially in the vicinity of Sevierville and downstream.

36. *Pimephales vigilax* (Baird and Girard)--bullhead minnow (Figure A34): The bullhead minnow was known from a single specimen collected from the LPR in Sevierville in 1968. If a sustained population of *P. vigilax* existed in the LPR, it is probably now extirpated. The specimen collected may have been a vagrant from a

French Broad River population. The TVA reported five specimens of *P. vigilax* from the LPR at RM 2.0 in 2001, but it is likely that these were misidentified *P. notatus*.

37. *Rhinichthys cataractae* (Valenciennes)--longnose dace (Figure A35): The longnose dace is predominantly a Blue Ridge species that inhabits fast flowing riffles in medium sized creeks with high gradient. It occurs in headwater streams of all the three major forks of the LPR system. *Rhinichthys cataractae* exists in the WPLPR as far upstream as 2,800 ft. elevation at the Chimneys Campground in the GSMNP. It has been collected as far downstream as RM 3.0 of WPLPR and in the lower portion of MPLPR.

38. *Rhinichthys obtusus* Agassiz--orangeside dace (Figure A36): The orangeside dace is distributed system-wide in streams of all sizes. It is most abundant in the smallest order streams where it may be the only species of fish present. It is occasionally found in the lower portions of WPLPR and the LPR proper. The upstream range of *R. obtusus* is limited to an elevation of about 2,200 ft. This species was previously reported as *R. atratulus*.

39. *Semotilus atromaculatus* (Mitchill)--creek chub (Figure A37): The creek chub exists system-wide and is one of the few fishes common in the smallest creeks in the system. It rarely inhabits creeks above an elevation of about 1,600 ft. *Semotilus atromaculatus* has been collected in the main channel of the LPR, but never in large numbers.

Catostomidae--suckers

40. *Carpionodes cyprinus* (Lesueur)--quillback (Figure A38): Only a few specimens of quillback have ever been reported from the LPR system. They were collected from the LPR proper between RM 2.0-3.0 in 1997 and 1998. One of the

specimens (UT 45.1516) was an adult. Additional specimens were tentatively identified by the TVA in 2001. Presumably there are still enough *C. cyprinus* in the LPR to sustain a small population.

41. *Carpiodes velifer* (Rafinesque)--highfin carpsucker (Figure A39): The highfin carpsucker has been collected five times from the LPR near RM 3.0. A total of at least 18 individuals has been collected since 1990. It is more common than *C. cyprinus* and adults and juveniles have been collected. It prefers flowing water over clear gravel substrate, but also has been taken in turbid backwater pools.

42. *Catostomus commersonnii* (Lesueur)--white sucker (Figure A40): The white sucker has a scattered distribution in Walden Creek, WPLPR, Gists Creek, and EFLPR. It is never very common when it is collected. *Catostomus commersonnii* prefers pools in small or medium sized creeks. Most of the specimens collected have been adults or subadults, except for young-of-the-year found at the mouth of Caney Creek (WPLPR tributary) on 13 July 2001.

43. *Hypentelium nigricans* (Lesueur)--northern hogsucker (Figure A41): The northern hogsucker is the most abundant and widely distributed catostomid in the system. It occurs from the mouth of the LPR to as far upstream as elevations of 1,600 ft. in the GSMNP. *Hypentelium nigricans* prefers riffle areas from depths of a few inches to several ft. in current from slow to rapid. It is most abundant over rocky substrates.

44. *Ictiobus bubalus* (Rafinesque)--smallmouth buffalo (Figure A42): The smallmouth buffalo is restricted to the LPR proper downstream of Sevierville. Large adults are fairly common in deep pools and in runs with slow flow. *Ictiobus bubalus* was

first reported from the system in 1967. The TVA reported *I. niger* (black buffalo) from LPR at RM 2.0 in 2001. It is likely that these specimens were misidentified *I. bubalus*.

45. *Minytrema melanops* (Rafinesque)--spotted sucker (Figure A43): The spotted sucker is rare and restricted to the lower 10 mi. of the LPR proper and Gists Creek. Juveniles were taken in Gists Creek in 1998 and 2001, and adults were taken just above the mouth of LPR in 2000. Adults were collected from a deep, turbid pool near woody debris.

46. *Moxostoma breviceps* (Cope)--smallmouth redhorse (Figure A44): The smallmouth redhorse was occasionally collected from only the lower five mi. of the LPR proper. It was collected in fast flowing water over gravel substrates. Only a few subadult individuals have ever been collected. This species was previously reported as *M. macrolepidotum*.

47. *Moxostoma carinatum* (Cope)--river redhorse (Figure A45): The river redhorse is known from the entire length of the LPR proper and from the lower MPLPR. It was collected in habitats similar to those occupied by *M. breviceps*. *Moxostoma carinatum* is rare in the LPR system and only subadults have been collected.

48. *Moxostoma duquesnii* (Lesueur)--black redhorse (Figure A46): The black redhorse occurs system-wide in medium to large sized creeks. It is abundant in clear water over gravel shoals and it also inhabits slow flowing pools. *Moxostoma duquesnii* occurs at higher elevations than the similar *M. erythrurum*. Young-of-the-year and juveniles are very abundant, but adults are more difficult to collect.

49. *Moxostoma erythrurum* (Rafinesque)--golden redhorse (Figure A47): The golden redhorse has a distribution similar to that of the black redhorse and it is just as

abundant. They often occur sympatrically; in some instances, redhorses were not identified to species since field identification is difficult. The common redhorse species in creeks are *M. duquesnii* and *M. erythrurum*.

Ictaluridae--catfishes

50. *Ameiurus natalis* (Lesueur)--yellow bullhead (Figure A48): The yellow bullhead is the most abundant and widely distributed ictalurid in the system. It occurs in turbid pools and near undercut banks of the middle and lower sections of all three forks of the LPR system. *Ameiurus natalis* may be more abundant than is reported here since it is often difficult to collect.

51. *Ictalurus punctatus* (Rafinesque)--channel catfish (Figure A49): The channel catfish inhabits the LPR proper downstream of Sevierville and was reported from the MPLPR as far upstream as Emerts Cove. *Ictalurus punctatus* was first reported from the system in 1990. It surely has historical occurrence in the system, but was not collected by earlier workers.

52. *Noturus* sp. cf. *elegans*--“chucky madtom” (Figure A50): The “chucky madtom” is known from a single specimen (UMMZ 131386) collected from Dunn Creek at the mouth of Yellow Breeches Creek by C. L. Hubbs on 26 June 1940. The taxonomic status of this population is not understood. It differs from other populations of *N. elegans* in pigmentation and body shape. It prefers gravel shoals or shallow pools habitats (Etnier and Starnes 1993). *Noturus* sp. cf. *elegans* is extirpated from the LPR system. Surveys at the known locality and in the vicinity of Jones Cove were made by the author and many other workers since the mid-1960s, but no specimens were encountered.

53. *Noturus eleutherus* Jordan--mountain madtom (Figure A51): The mountain madtom is historically known from only four collections from the WPLPR and LPR proper near Sevierville. *Noturus eleutherus* was locally abundant, with 12 individuals taken together on 1 September 1953. The mountain madtom prefers coarse gravel and rubble substrates in riffles (Etnier and Starnes 1993). It was last collected in 1961 and is presumed to be extirpated from the system.

54. *Pylodictis olivaris* (Rafinesque)--flathead catfish (Figure A52): The flathead catfish is rarely collected from the system. It has been taken from the lower portion of LPR near RM 2.0 first in 1997 and again in 2000 and 2001. It occupies deep pools and undercut banks near woody debris. *Pylodictis olivaris* has only been collected during boat shocking efforts. Local anglers that were interviewed did not report targeting this species in the LPR.

Salmonidae--trouts

55. *Oncorhynchus mykiss* (Walbaum)--rainbow trout (Figure A53): The rainbow trout is a non-native species that was widely introduced in the Blue Ridge portion of the system in the early 1900s (Moore et al. 1986). Stocking of rainbow trout in the GSMNP ended in 1974 (S. E. Moore, National Park Service, personal communication). In the MPLPR, TWRA still stocks rainbow trout from Pittman Center downstream to about the mouth of Bird Creek (TWRA 1999). The current distribution of *O. mykiss* includes all suitable, non-intermittent upland streams and rivers of the system. Rainbow trout are most abundant in the WPLPR watershed and occur to an elevation of at least 4,280 ft. in Walker Camp Prong. In headwater streams of the MPLPR, *O. mykiss* is less common because of highly acidic water. In headwaters of Dunn Creek, rainbow

trout are present but have a greater abundance downstream of the GSMNP boundary.

The furthest downstream record of *O. mykiss* is from LPR proper just east of Sevierville.

56. *Salmo trutta* Linnaeus--brown trout (Figure A54): The brown trout is very rare in the LPR system. It is a non-native species that has only been collected from MPLPR and Webb Creek. *Salmo trutta* was first collected in the system in 1994.

57. *Salvelinus fontinalis* (Mitchill)--brook trout (Figure A55): The brook trout is the only native salmonid in the system. It is currently restricted to the headwater streams within and around the GSMNP. The largest populations are located in Road and Walker Camp prongs (WPLPR headwater). Formerly, brook trout inhabited streams to elevations as low as 2,000 ft. (King 1937). Populations are actively being restored by NPS biologists. A 1.6-mi. section of LeConte Creek above Twin Creeks Natural Resources Center in the GSMNP was restored in 1998 and 1999.

Fundulidae--topminnows

58. *Fundulus catenatus* (Storer)--northern studfish (Figure A56): The northern studfish is distributed in the Ridge and Valley portion of all three major forks and the LPR proper. It occurs most frequently near stream banks and in pools of medium sized creeks. *Fundulus catenatus* is most abundant at the lower elevations of WPLPR and LPR.

59. *Fundulus notatus* (Rafinesque)--blackstripe topminnow (Figure A57): The blackstripe topminnow is restricted to WPLPR and some of its larger tributary streams and the LPR proper and its tributaries. It occupies habitats ranging from shallows near the stream edge to flooded backwater pools of the LPR proper. *Fundulus notatus* might invade suitable habitat in the lower reaches of EFLPR.

Poeciliidae--livebearers

60. *Gambusia affinis* (Baird and Girard)--western mosquitofish (Figure A58):

The western mosquitofish inhabits the LPR proper and its tributaries downstream of Sevierville and the lower WPLPR. It can be locally abundant in sluggish pools and backwaters. *Gambusia affinis* is probably not native to the upper Tennessee River drainage (Etnier and Starnes 1993). It was collected for the first time in 1995. *Gambusia affinis* might expand its range in the LPR system in the future.

Atherinidae--silversides

61. *Labidesthes sicculus* (Cope)--brook silverside (Figure A59): The brook silverside has a distribution similar to that of the western mosquitofish in the LPR system. *Labidesthes sicculus* is frequently encountered at the surface of open water pools of the LPR proper and the lower portion of WPLPR. There is one record for this species from just upstream of the mouth of EFLPR. It was first collected in 1963, and has been common in collections since 1998.

Cottidae--sculpins

62. *Cottus bairdii* Girard--mottled sculpin (Figure A60): The mottled sculpin is predominantly an upland species that inhabits Blue Ridge streams with moderate gradient. *Cottus bairdii* is most abundant in the WPLPR and its upland tributaries and in the Dunn Creek watershed. It also occurs in the MPLPR and Webb Creek, but with less frequency. It prefers swift, shallow riffles over cobble and gravel substrates.

63. *Cottus carolinae* Gill--banded sculpin (Figure A61): The banded sculpin is more widespread and abundant than the mottled sculpin. It occurs in a variety of habitats ranging from LPR proper to small creeks. *Cottus carolinae* is more abundant in

the Ridge and Valley portion of the system. Occasionally the two sculpin species are sympatric (Webb Creek and Dunn Creek) where identification can be troublesome. It has similar habitat preferences as *C. bairdii*.

Moronidae--temperate basses

64. *Morone chrysops* (Rafinesque)--white bass (Figure A62): The white bass is known from the lower LPR proper from four specimens collected in 1997 and 2000. It is not very common since large river habitat is not available in the LPR system. A large population and fishery for *M. chrysops* is not anticipated for the LPR.

Centrarchidae--sunfishes

65. *Ambloplites rupestris* (Rafinesque)--rockbass (Figure A63): The rockbass is very widely distributed in the LPR system and is the most common native centrarchid. It is equally abundant in the Blue Ridge and the Ridge and Valley province. *Ambloplites rupestris* occurs in all three forks of the system from an upstream elevation of about 1,400 ft. to the mouth of the LPR proper. Adult and juvenile *A. rupestris* were collected in pools associated with cover and also below riffles. Rockbass are an important sport fish in the streams of the LPR system.

66. *Lepomis auritus* (Linnaeus)--redbreast sunfish (Figure A64): The redbreast sunfish is a non-native species that is now well established and widely distributed in the LPR system. It occurs in pool habitats in streams ranging from small creeks up to the LPR proper. *Lepomis auritus* is very abundant in the Ridge and Valley portion of the system; however, it does occur at low elevations of the Blue Ridge province. Its distribution and abundance in the system is increasing.

67. *Lepomis cyanellus* Rafinesque--green sunfish (Figure A65): The green sunfish has a wide distribution in the LPR system, but it is only occasionally collected. It occurs in the Ridge and Valley portions of all three major forks and in their larger tributaries. *Lepomis cyanellus* was collected in pools or near the stream banks. It was collected for the first time in 1994.

68. *Lepomis gulosus* (Cuvier)--warmouth (Figure A66): The warmouth is a new record for the LPR system. It was collected from Gists Creek in 2000 and 2001. *Lepomis gulosus* prefers slow flowing, turbid waters near woody debris. All the specimens collected were taken from muddy pools about 3 ft. deep. The warmouth is likely to inhabit the LPR proper from Sevierville downstream to the mouth.

69. *Lepomis macrochirus* Rafinesque--bluegill (Figure A67): The bluegill occurs system-wide in a diverse range of habitats. It is most prolific in medium sized streams at lower elevations. Juvenile *L. macrochirus* are so locally abundant that they can easily be collected by the hundreds. Large adult bluegills were not collected and it is unknown if a fishery exists in the LPR system.

70. *Lepomis megalotis* (Rafinesque)--longear sunfish (Figure A68): The longear sunfish is known from five localities including Walden Creek, WPLPR, and LPR proper near Cherokee Hills (RM 9.0). It has been rare in the system since the earliest records in 1937 by C. L. Hubbs. It was last collected in 1975 and is extirpated from the system. *Lepomis megalotis* may have been extirpated because of competition with *L. auritus* (Etnier and Starnes 1993).

71. *Lepomis microlophus* (Guenther)--redear sunfish (Figure A69): The redeer sunfish is very rare in the LPR system. It was first collected in 1965 from Gists

Creek. In 1994, it was recorded from MPLPR near Pittman Center (UT 90.1641). Two adults were collected just upstream of the mouth of LPR on 11 December 2000. *Lepomis microlophus* prefers sluggish backwaters and ponds.

72. *Micropterus dolomieu* Lacepede--smallmouth bass (Figure A70): The smallmouth bass is wide ranging and abundant in the LPR system. It has a similar distribution to that of *Ambloplites rupestris*, although it is collected less frequently. *Micropterus dolomieu* is more abundant in the upland streams of the system than in the LPR proper. It prefers swift flowing waters in stream habitats or pools with cover. Smallmouth bass are an important sport fish in the system and a good fishery exists.

73. *Micropterus punctulatus* (Rafinesque)--spotted bass (Figure A71): The spotted bass occurs in Walden Creek, WPLPR, Gists Creek, Middle Creek, and the LPR proper. It is the least abundant species of *Micropterus* in the system. It prefers turbid, sluggish waters with woody cover. *Micropterus punctulatus* might occur in suitable habitat in the lower portions of EFLPR.

74. *Micropterus salmoides* (Lacepede)--largemouth bass (Figure A72): The largemouth bass was occasionally collected in the lower LPR; it has a spotty distribution in tributary streams of all three major forks. There are four records for largemouth bass in Blue Ridge streams including Cove, Webb, and Hills creeks, and Ogle Springs Branch. These are most likely present as a result of escape from nearby farm ponds. *Micropterus salmoides* prefers sluggish pools of large streams and rivers (Etnier and Starnes 1993). The largemouth bass population supports a limited sport fishery.

75. *Pomoxis annularis* Rafinesque--white crappie (Figure A73): The white crappie is not a resident of the LPR system, but two adults (UT 90.1334) were collected

from Cove Creek in Wear Valley in 1991. They were probably released by a local fisherman from Douglas Lake (D. A. Etnier, University of Tennessee, personal communication). The two *P. annularis* were also collected with two adult *P. nigromaculatus* and one hybrid between these two species (UT 90.1336).

76. *Pomoxis nigromaculatus* (Lesueur)--black crappie (Figure A74): The black crappie is not a resident of the LPR system, but two adults (UT 90.1335) were collected from Cove Creek in Wear Valley in 1991. See comments under *P. annularis*.

Percidae--perches

77. *Etheostoma blennioides* Rafinesque--greenside darter (Figure A75): The greenside darter is wide spread and common in the LPR system. It occurs in swift current over boulder and large cobble substrate in the Blue Ridge and Ridge and Valley streams. *Etheostoma blennioides* is most abundant in medium sized streams like WPLPR and MPLPR.

78. *Etheostoma camurum* (Cope)--bluebreast darter (Figure A76): The bluebreast darter was reported once from the LPR at Sevierville in 1967. Hubbs reported it from WPLPR upstream of Gatlinburg and MPLPR at Richardson Cove, but these specimens represent *E. chlorbranchium*. The bluebreast darter is more of an inhabitant of the Ridge and Valley province than the closely related *E. chlorbranchium* (Eisenhour 1993). *Etheostoma camurum* is presumably extirpated from the LPR system.

79. *Etheostoma chlorbranchium* Zorach--greenfin darter (Figure A77): The greenfin darter is an inhabitant of the Blue Ridge portions of the WPLPR and MPLPR. It can be locally common, but it is not very widespread. The greenfin darter prefers high gradient streams with fast current and bedrock or boulder substrates. *Etheostoma*

chlorobranchium is known to exist up to at least 1,600 ft. elevation in Porter's Creek (MPLPR tributary).

80. *Etheostoma flabellare* Rafinesque--fantail darter (Figure A78): The fantail darter is a widespread inhabitant of small to medium sized Blue Ridge creeks of all three major forks of the LPR system. It occurs in shallow riffles with gravel and cobble substrates. *Etheostoma flabellare* rarely occurs in the Ridge and Valley portion of the system. The most downstream record is from LPRM 10.0. There are a few records of *E. flabellare* occurring sympatrically with the closely related *E. kennicotti*.

81. *Etheostoma jessiae* (Jordan and Brayton)--blueside darter (Figure A79): The blueside darter occurs commonly in Walden Creek, WPLPR downstream of the mouth of Walden Creek, lower portions of EFLPR, and in the LPR proper. It is not known from the MPLPR. *Etheostoma jessiae* is locally common in swift currents over fine gravel or sandy substrates. This species was previously reported as *E. stigmaeum*.

82. *Etheostoma kennicotti* (Putnam)--stripetail darter (Figure A80): The stripetail darter is widespread and common in Ridge and Valley streams of various sizes. It occurs in all three major forks of the LPR. *Etheostoma kennicotti* is most abundant in small to medium sized creeks in habitat with slow current and pools.

83. *Etheostoma rufileatum* (Cope)--redline darter (Figure A81): The redline darter is probably the most abundant percoid in the LPR system. It occurs system-wide in shallow, fast flowing riffles with gravel and cobble substrate. *Etheostoma rufileatum* inhabits streams ranging in size from small Blue Ridge creeks up to the LPR proper. The redline darter is the most abundant darter in riffles.

84. *Etheostoma simoterum* (Cope)--snubnose darter (Figure A82): The snubnose darter is just as widespread as the redline darter, but may be slightly less abundant. It occurs system-wide in shallow riffles and pools with gravel substrate. The snubnose darter is equally abundant in small creeks and larger streams.

85. *Etheostoma swannanoa* Jordan and Evermann--Swannanoa darter (Figure A83): The Swannanoa darter is an inhabitant of headwater Blue Ridge creeks of all three major forks of the LPR system. It is not very common in any of the streams where it occurs. *Etheostoma swannanoa* prefers riffles with boulders and flowing pool areas.

86. *Etheostoma vulneratum* (Cope)--wounded darter (Figure A84): The wounded darter was occasionally collected in the LPR system.. It is presently distributed in the lower portion of WPLPR and LPR proper. *Etheostoma vulneratum* formerly inhabited the WPLPR to as far upstream as Pigeon Forge and the lower portions of EFLPR, but it is presumed to be extirpated from these localities. The wounded darter prefers larger streams with cobbles and boulders. It is encountered in water about 2 ft. deep with moderate current and often near *Podostemum* (river weed).

87. *Etheostoma zonale* (Cope)--banded darter (Figure A85): The banded darter inhabits the main channels of all three forks, their larger tributary streams, and the LPR proper. It is most abundant in the lower MPLPR and LPR. *Etheostoma zonale* prefers slow or moderate flowing riffles with gravel substrates. It is currently less common in the WPLPR than was reported by previous workers.

88. *Percina aurantiaca* (Cope)--tangerine darter (Figure A86): The tangerine darter inhabits the entire length of the MPLPR up to about the GSMNP boundary, the lower four mi. of WPLPR, and LPR proper. It prefers clear waters in flowing pools and

swift, deep riffles. It is most abundant in the MPLPR between elevations of 1,000-1,200 ft. (Howell 1971). This survey has expanded the known range of the tangerine darter in the system. *Percina aurantiaca* was previously not known to exist in the WPLPR and in the LPR downstream of Sevierville. A single adult (UT 91.5943) was collected at WPLPR RM 4.25, about 2 mi. upstream of an old mill dam. The TWRA reported a tangerine darter in the LPR proper at RM 1.0, near the Boyd's Creek Road bridge.

89. *Percina caprodes* (Rafinesque)--logperch (Figure A87): The logperch is distributed in all three major forks of the system and the LPR proper. It inhabits large Ridge and Valley streams in deep riffles and flowing pools. *Percina caprodes* formerly occurred in the WPLPR as far upstream as Gatlinburg, but now it is not found upstream of Pigeon Forge. The logperch is most abundant in the lower WPLPR and MPLPR and the LPR downstream of Sevierville.

90. *Percina evides* (Jordan and Copeland)--gilt darter: (Figure A88) The gilt darter occurs in all three major forks of the system and the LPR proper. It inhabits large Ridge and Valley streams in clear, flowing riffles with gravel or sandy substrates. *Percina evides* occurs to an upstream elevation of about 1,200 ft., but it is most abundant at lower elevations in the LPR proper.

91. *Percina macrocephala* (Cope)--longhead darter (Figure A89): The longhead darter was formerly known to inhabit the lower portion of Walden Creek and in WPLPR in the vicinity of the mouth of Walden Creek. It was only collected three times, most recently in 1953. It was reported from EFLPR but this locality is inaccurate. It prefers pools that are clear with little turbidity and siltation (Etnier and Starnes 1993). *Percina macrocephala* is now extirpated from the LPR system.

92. *Percina sciera* (Swain)--dusky darter(Figure A90): The dusky darter formerly inhabited Walden Creek and the LPR proper. It may have occurred in suitable habitat in the WPLPR but was never recorded from there. The dusky darter prefers larger streams with moderate current and debris over sandy substrates (Etnier and Starnes 1993). *Percina sciera* was only collected three times, most recently in 1967. It is now extirpated from the LPR system.

93. *Percina tanasi* Etnier--snail darter: The snail darter is not known from the LPR system, but it can be expected to invade the lower portion of the river. *Percina tanasi* inhabits the French Broad River up to Douglas Dam and the nearby Little River, Blount County, Tennessee. It prefers sand and gravel areas of large streams (Etnier and Starnes 1993).

94. *Sander canadense* (Griffith and Smith)--sauger (Figure A91): The sauger is known from only the lower portion of the LPR downstream of Sevierville. One individual was collected at RM 2.0 in 1997. Large river habitat is not available for sauger in the LPR. It is likely that some individuals from the French Broad River migrate upstream in to the LPR. This species was previously reported as *Stizostedion canadense*.
Sciaenidae--drums

95. *Aplodinotus grunniens* Rafinesque--freshwater drum (Figure A92): The freshwater drum is restricted to the lower 10 mi. of the LPR proper. It inhabits sluggish areas and turbid pools. *Aplodinotus grunniens* is uncommon in the system and it is not likely that a fishery exists for it in the LPR.

Chapter V

Discussion

Ninety-two species of fishes have been reported from the LPR system since 1932 (Table 1). *Ichthyomyzon castaneus*, *Dorosoma petenense*, and *Lepomis gulosus* were collected for the first time during the current survey. *Noturus* sp. cf. *elegans*, *N. eleutherus*, *Lepomis megalotis*, *Etheostoma camurum*, *Percina macrocephala*, and *P. sciera* are extirpated from the system. *Carassius auratus*, *Cyprinus carpio*, *Pimephales promelas*, *Oncorhynchus mykiss*, *Salmo trutta*, *Gambusia affinis*, *Lepomis auroch*, *Pomoxis annularis*, and *P. nigromaculatus* are present as a result of introduction. There are presently 72 native fish species in the LPR system.

Extant Jeopardized Species

The jeopardized species that are present in the system may require special management to persist. Habitat and water quality restoration, careful land use practices, and population monitoring may be necessary to sustain and increase population levels of the rare species. The status of each jeopardized species is discussed.

Phoxinus tennesseensis is listed as in need of management in Tennessee. There are only a few known localities for the Tennessee dace in the LPR system; however, it is common in these streams. *Phoxinus tennesseensis* appears to have a stable population in the system. The small streams that it prefers are not currently impacted by pollution, but continued runoff from development and agriculture practices might be detrimental to Tennessee dace populations. It is recommended that the known localities of *P. tennesseensis* be protected, but this will be difficult since many of these streams are on private lands.

Table 1. List of all fishes collected from the Little Pigeon River system since 1932 and occurrence in each watershed. West Prong (WP), Middle Prong (MP), East Fork (EF), and Little Pigeon River proper (LPR). Probable extant occurrence is denoted by (X); probable extirpation denoted by (E); vagrant specimens probably from a French Broad River population denoted by (V); introduced species denoted by asterisk (*).

Family Species (common name)	WP	MP	EF	LPR
Petromyzontidae				
<i>Ichthyomyzon bdellium</i> (Ohio lamprey)	X	X		X
<i>I. castaneus</i> (chestnut lamprey)				X
<i>I. greeleyi</i> (mountain brook lamprey)			X	X
<i>Lampetra appendix</i> (American brook lamprey)	X	X	X	X
Lepisosteidae				
<i>Lepisosteus oculatus</i> (spotted gar)				X
<i>L. osseus</i> (longnose gar)		X		X
Clupeidae				
<i>Dorosoma cepedianum</i> (gizzard shad)	X	X	X	X
<i>D. petenense</i> (threadfin shad)				X
Cyprinidae				
<i>Campostoma anomalum</i> (central stoneroller)		X	X	X
<i>C. oligolepis</i> (largescale stoneroller)	X	X	X	X
<i>Carassius auratus</i> (goldfish)*				X
<i>Cyprinella galactura</i> (whitetail shiner)	X	X	X	X
<i>C. spiloptera</i> (spotfin shiner)	X	X	X	X
<i>Cyprinus carpio</i> (common carp)*	X			X
<i>Erimystax insignis</i> (blotched chub)	X	X	X	X
<i>Hybopsis amblops</i> (bigeye chub)	X	X	X	X
<i>Luxilus chrysocephalus</i> (striped shiner)	X	X	X	X
<i>L. coccogenis</i> (warpaint shiner)	X	X	X	X
<i>Lythrurus lirus</i> (mountain shiner)	X	X		X
<i>Macrhybopsis storeriana</i> (silver chub)				V
<i>Nocomis micropogon</i> (river chub)	X	X	X	X
<i>Notropis atherinoides</i> (emerald shiner)	V			V
<i>N. leuciodus</i> (Tennessee shiner)	X	X	X	X
<i>N. micropteryx</i> (highland shiner)	X	X	X	X
<i>N. photogenis</i> (silver shiner)	X	X	X	X
<i>N. rubricroceus</i> (saffron shiner)	X	X	X	X
<i>N. stramineus</i> (sand shiner)	X	X	X	X
<i>N. telescopus</i> (telescope shiner)	X	X	X	X
<i>N. volucellus</i> (mimic shiner)	X	X	X	X
<i>Phenacobius uranops</i> (stargazing minnow)	X	X	X	X
<i>Phoxinus tennesseensis</i> (Tennessee dace)	X			X
<i>Pimephales notatus</i> (bluntnose minnow)	X			X

Table 1. (continued)

Family Species (common name)	WP	MP	EF	LPR
Cyprinidae (continued)				
<i>Pimephales promelas</i> (fathead minnow)*	X			
<i>P. vigilax</i> (bullhead minnow)				V
<i>Rhinichthys cataractae</i> (longnose dace)	X	X	X	
<i>R. obtusus</i> (orangeside dace)	X	X	X	X
<i>Semotilus atromaculatus</i> (creek chub)	X	X	X	X
Catostomidae				
<i>Carpiodes cyprinus</i> (quillback)				X
<i>C. velifer</i> (highfin carpsucker)				X
<i>Catostomus commersonnii</i> (white sucker)	X		X	X
<i>Hypentelium nigricans</i> (northern hogsucker)	X	X	X	X
<i>Ictiobus bubalus</i> (smallmouth buffalo)				X
<i>Minytrema melanops</i> (spotted sucker)				X
<i>Moxostoma breviceps</i> (smallmouth redhorse)				X
<i>M. carinatum</i> (river redhorse)	X		X	
<i>M. duquesnii</i> (black redhorse)	X	X	X	X
<i>M. erythrurum</i> (golden redhorse)	X	X	X	X
Ictaluridae				
<i>Ameiurus natalis</i> (yellow bullhead)	X	X	X	X
<i>Ictalurus punctatus</i> (channel catfish)		X		X
<i>Noturus</i> sp. cf. <i>elegans</i> ("chucky madtom")			E	
<i>N. eleutherus</i> (mountain madtom)	E			E
<i>Pylodictis olivaris</i> (flathead catfish)				X
Salmonidae				
<i>Oncorhynchus mykiss</i> (rainbow trout)*	X	X	X	X
<i>Salmo trutta</i> (brown trout)*		X		
<i>Salvelinus fontinalis</i> (brook trout)	X	X	X	
Fundulidae				
<i>Fundulus catenatus</i> (northern studfish)	X	X	X	X
<i>F. notatus</i> (blackstripe topminnow)	X			X
Poeciliidae				
<i>Gambusia affinis</i> (western mosquitofish)*	X			X
Atherinidae				
<i>Labidesthes sicculus</i> (brook silverside)	X		X	X
Cottidae				
<i>Cottus bairdii</i> (mottled sculpin)	X	X	X	
<i>C. carolinae</i> (banded sculpin)	X	X	X	X
Moronidae				
<i>Morone chrysops</i> (white bass)				X

Table 1. (continued)

Family Species (common name)	WP	MP	EF	LPR
Centrarchidae				
<i>Ambloplites rupestris</i> (rockbass)	X	X	X	X
<i>Lepomis auritus</i> (redbreast sunfish)*	X	X	X	X
<i>L. cyanellus</i> (green sunfish)	X	X	X	X
<i>L. gulosus</i> (warmouth)				X
<i>L. macrochirus</i> (bluegill)	X	X	X	X
<i>L. megalotis</i> (longear sunfish)	E			E
<i>L. microlophus</i> (redeer sunfish)		X		X
<i>Micropterus dolomieu</i> (smallmouth bass)	X	X	X	X
<i>M. punctulatus</i> (spotted bass)	X			X
<i>M. salmoides</i> (largemouth bass)	X	X	X	X
<i>Pomoxis annularis</i> (white crappie)*	X			
<i>P. nigromaculatus</i> (black crappie)*	X			
Percidae				
<i>Etheostoma blennioides</i> (greenside darter)	X	X	X	X
<i>E. camurum</i> (bluebreast darter)				E
<i>E. chlorbranchium</i> (greenfin darter)	X	X		
<i>E. flabellare</i> (fantail darter)	X	X	X	X
<i>E. jessiae</i> (blueside darter)	X		X	X
<i>E. kennicotti</i> (stripetail darter)	X	X	X	X
<i>E. rufilineatum</i> (redline darter)	X	X	X	X
<i>E. simoterum</i> (snubnose darter)	X	X	X	X
<i>E. swannanoa</i> (Swannanoa darter)	X	X	X	
<i>E. vulneratum</i> (wounded darter)	X		X	X
<i>E. zonale</i> (banded darter)	X	X	X	X
<i>Percina aurantiaca</i> (tangerine darter)	X	X		X
<i>P. caprodes</i> (logperch)	X	X	X	X
<i>P. evides</i> (gilt darter)	X	X	X	X
<i>P. macrocephala</i> (longhead darter)	E			
<i>P. sciera</i> (dusky darter)	E			E
<i>Sander canadense</i> (sauger)				X
Sciaenidae				
<i>Aplodinotus grunniens</i> (freshwater drum)				X

Carpiodes velifer is also listed as in need of management in Tennessee. It was first collected from the LPR system in 1990 and only a few more times since then. The lack of historical data about its distribution and abundance in the system makes it difficult to determine changes in its population. It is probable that the distribution of *C. velifer* in the lower LPR is the same today as it was before the river was impacted. However, it is more difficult to make inferences about its change in abundance.

Salvelinus fontinalis is a potential candidate for state listing. In the GSMNP it is locally abundant and often the only fish species present in headwater creeks. There are conflicting viewpoints about the distribution of brook trout within the GSMNP. Kelly et al. (1980) reported that introduction of *Oncorhynchus mykiss* has reduced the distribution of *S. fontinalis*. However, Strange and Habera (1998) concluded that *O. mykiss* are not affecting the downstream range of *S. fontinalis*.

Percina aurantiaca is listed as in need of management in Tennessee. The MPLPR population is a stronghold for the species and the population will remain very large if water quality continues to be excellent. However, recent development in the vicinity of Pittman Center has added sediment to the stream, but it is not impacted by sewage like WPLPR. The discovery of *P. aurantiaca* in the WPLPR is encouraging. If it can persist under the current water quality conditions, perhaps with improved water quality it will expand its range in WPLPR.

Rare and Potentially Extant Species

Acipenser fulvescens is not known to inhabit the LPR system, but if reintroduction efforts are successful in the French Broad River it may enter the lower LPR. It is

recommended that TVA and TWRA biologists monitor the lower LPR for the occurrence of lake sturgeon.

Macrhybopsis storeriana, *Notropis atherinoides*, and *Pimephales vigilax* were all collected from the LPR near Sevierville during the mid and late-1960s. Since each of these species were represented by only a few specimens, it is possible that reproducing populations did not exist in the LPR system. These three species may have been present in the LPR because of vagrants from the French Broad River.

Carpiodes cyprinus was first collected in the LPR in 1997. Since then it has been reported only a few times. All the collections have been from or very near LPRM 2.0. The lack of historical data about its distribution and abundance in the system makes it difficult to determine changes in its population. It is likely that the population trend of *C. cyprinus* is similar to the trend for *C. velifer*. *Carpiodes carpio* (river carpsucker) was reported from the LPR by TVA in 2001. There are no earlier records of this species from the system and no voucher specimens for positive identification; therefore, *C. carpio*, is not including as part of the LPR fauna.

Etheostoma vulneratum was occasionally collected in the LPR system. It is presumably extirpated from its range in the EFLPR and the WPLPR upstream of Sevierville. Presently it is restricted to the lower WPLPR and LPR in the vicinity of Sevierville. Declining water quality in WPLPR downstream of Gatlinburg may have contributed to the decrease in the range of the wounded darter.

Percina tanasi is not known to inhabit the LPR system, but it is expected to be found in the lower LPR. Since this species is listed as threatened, it is recommended that

TVA, TWRA, and TDEC biologists continue to carefully search for the snail darter during their future surveys.

Extirpated Species

Etheostoma camurum, *Percina macrocephala*, and *P. sciera* were historically very rare in the system. No verified specimens of these species have been collected since 1971. All of these species were known, or potentially existed in the lower portion of WPLPR or from the LPR at Sevierville. In the late 1960s, 0.5 mi. of the lower WPLPR was channelized and the river's course was changed to relieve flooding in Sevierville. The immediate effects of stream channelization including erosion, sedimentation, and habitat destruction may have contributed to the extirpation of the small populations of these species. In addition, poor water quality in the WPLPR may have been a factor for these extirpations.

Percina macrocephala is a potential candidate for state listing. It was reported from lower Walden Creek, WPLPR near the mouth of Walden Creek, and erroneously from the EFLPR. Collection 36 was made by W. S. Woolcott and he listed the locality as "EFLPR 2.0 mi. north of Pigeon Forge, turn west at second bridge, 14 March 1953, (WSW 2369)." A note of this collection was published (Woolcott 1953) but without the complete locality data. This true locality must be in the WPLPR, because it is impossible to be in the EFLPR and be 2.0 mi. north of Pigeon Forge. The specimen (CU 24685) was inspected by D. A. Etnier and it was correctly identified.

Both species of madtoms, *Noturus* sp. cf. *elegans* and *N. eleutherus*, have been extirpated for potentially five decades. *Noturus* sp. cf. *elegans* is endangered in Tennessee and may deserve federal protection. The "chucky madtom" was collected just

one time from Dunn Creek in 1937. It is unclear why the “chucky madtom” was so rare even in 1937. C. L. Hubbs was a thorough collector and he managed to collect only the single specimen. Perhaps the effects of clear cutting in the Dunn Creek watershed in the early 20th century contributed to the demise of *N. sp. cf. elegans* in the LPR. *Noturus eleutherus* may have been extirpated because of water pollution in the WPLPR watershed.

Lepomis megalotis was rare in LPR system as well as the entire upper Tennessee River drainage (Etnier and Starnes 1993). The longear sunfish was last collected in 1975. Factors that may have contributed to its extirpation are competition from *L. auritus* and water quality degradation.

Remaining Fauna

The rest of the LPR fauna appears to have stable populations. All of the remaining fauna were collected during the current survey with the exception of *Erimystax insignis*. It was last collected in 1997 from WPLPR near Pigeon Forge. It is unlikely that *E. insignis* has become extirpated in the last four years.

The LPR is important to the people of Sevier County. Public concerns about water quality, fish populations, and flooding problems have led TVA and TDEC to begin a study of the lower French Broad River watershed. A baseline stream conditions monitoring plan was developed and the data collection began in spring 2001. Across the system, streams were monitored for water chemistry, benthic macroinvertebrates, bacteria, and fishes. It is hopeful that the information gathered from this study will identify specific water quality problems in the LPR. After the study is completed, it is

recommended that the stream monitoring continue annually. Also, a plan must be devised to improve water quality in the LPR.

The TWRA should take the lead in planning and conducting the monitoring of fishes in the LPR. However, all the stages of planning and monitoring should be coordinated with other agencies such as TVA and TDEC. The TWRA has already suggested implementing additional electrofishing surveys in the LPR to build a database on the status of centrarchid sport species (Bivens et al. 1998). This plan could be modified to include all species of fishes. It is important that the monitoring includes all species of fishes, not just game and jeopardized species.

Taxonomic Considerations

The sixth edition of *Common and Scientific Names of Fishes from the United States, Canada, and Mexico* was expected to be published in 2001. A manuscript of the new edition was provided to D. A. Etnier from the American Fisheries Society Committee on Names of Fishes. This manuscript was used for name changes of species that occur in the LPR. Species names changes from the fifth edition are: *Notropis rubellus* (Agassiz, 1850) is now *Notropis micropteryx* (Cope, 1868); *Rhinichthys atratulus* (Hermann, 1804) is now *Rhinichthys obtusus* Agassiz, 1854; *Moxostoma macrolepidotum* (Lesueur, 1817) is now *Moxostoma breviceps* (Cope, 1870); and *Stizostedion canadense* (Smith, 1834) is now *Sander canadense* (Griffith and Smith, 1834). The author follows Etnier and Starnes (1993, 2001) in conserving the name *Notropis stramineus* (Cope, 1865) and rejecting *Notropis ludibundus* (Girard, 1856).

In addition to the species name changes, the fourth edition of *International Code of Zoological Nomenclature* (ICZN1 999) stated a ruling for spellings of specific epithets

ending in *-i* and *-ii*. The following scientific names have spelling changes: *Catostomus commersoni* (Lacepede, 1803) is now spelled *C. commersonnii*; *Moxostoma duquesnei* (Lesueur, 1817) is now spelled *M. duquesnii*; and *Cottus bairdi* Girard, 1850 is now spelled *C. bairdii*.

Stoneroller systematics are currently being studied by D. A. Etnier of UT and H. T. Boshung of the University of Alabama. In the LPR, both *Campostoma anomalum* and *C. oligolepis* exist. However, without tuberculate males it is difficult to make certain identification. The distributions for these species were plotted based approximately on geography of the physiographic provinces. Hybridization between stoneroller species exists, but the extent of the intergrade zone in the LPR is not known. The *C. anomalum* populations of the Blue Ridge probably existed before *C. oligolepis* colonized the Ridge and Valley portion of the system.

Conclusions

The LPR system contains a diversity of fishes. The current total of 78 species is less than the known 92 species that have been collected in the system since 1932. Increased pollution and water quality degradation for the past 40 years or more has undoubtedly affected fish diversity in the system. The highest percentage of extirpated species in the system is in the WPLPR. Five of the 70 species (7.1 %) that are known from there have been extirpated. In the LPR proper, four of the 79 species (5.1 %) have disappeared. Only one species has been lost from EFLPR, which is 2.0 % of the known fauna. There have been no extirpations from the MPLPR.

This thesis may serve as a baseline study for system-wide fish studies which may be undertaken in the future. In addition to the system-wide biological and chemical

monitoring by TVA, TWRA, and TDEC, this work provides evidence for the need to improve water quality in the LPR system. The fishes of the LPR are valuable for the economy of Sevier County, recreational fisheries, and for the biodiversity of the LPR system.

100% COTTON

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Appendices

Appendix A
Distribution Maps

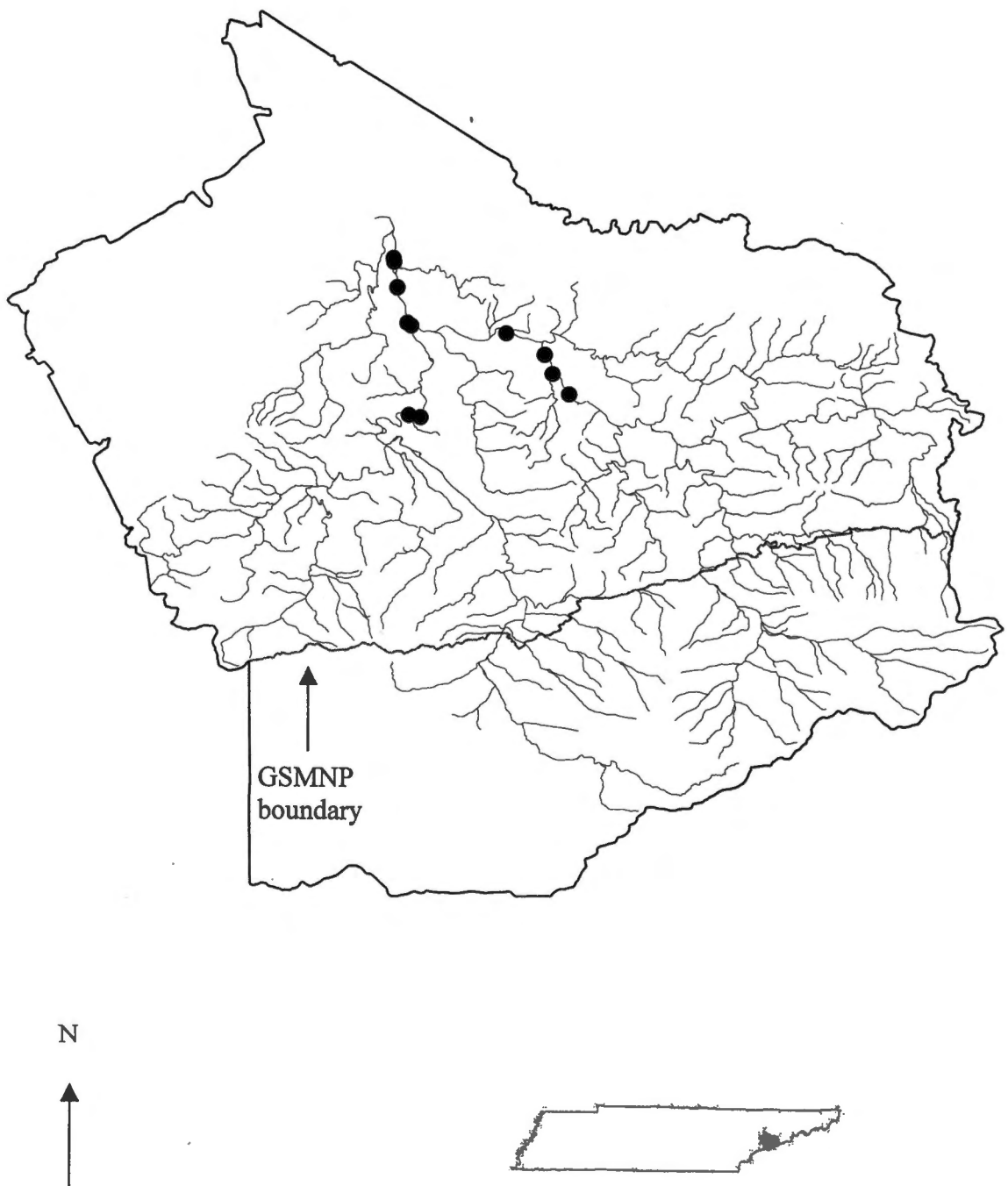


Figure A1. Collection localities for *Ichthyomyzon bdellium*, Ohio lamprey, in the Little Pigeon River system, Sevier Co., TN.

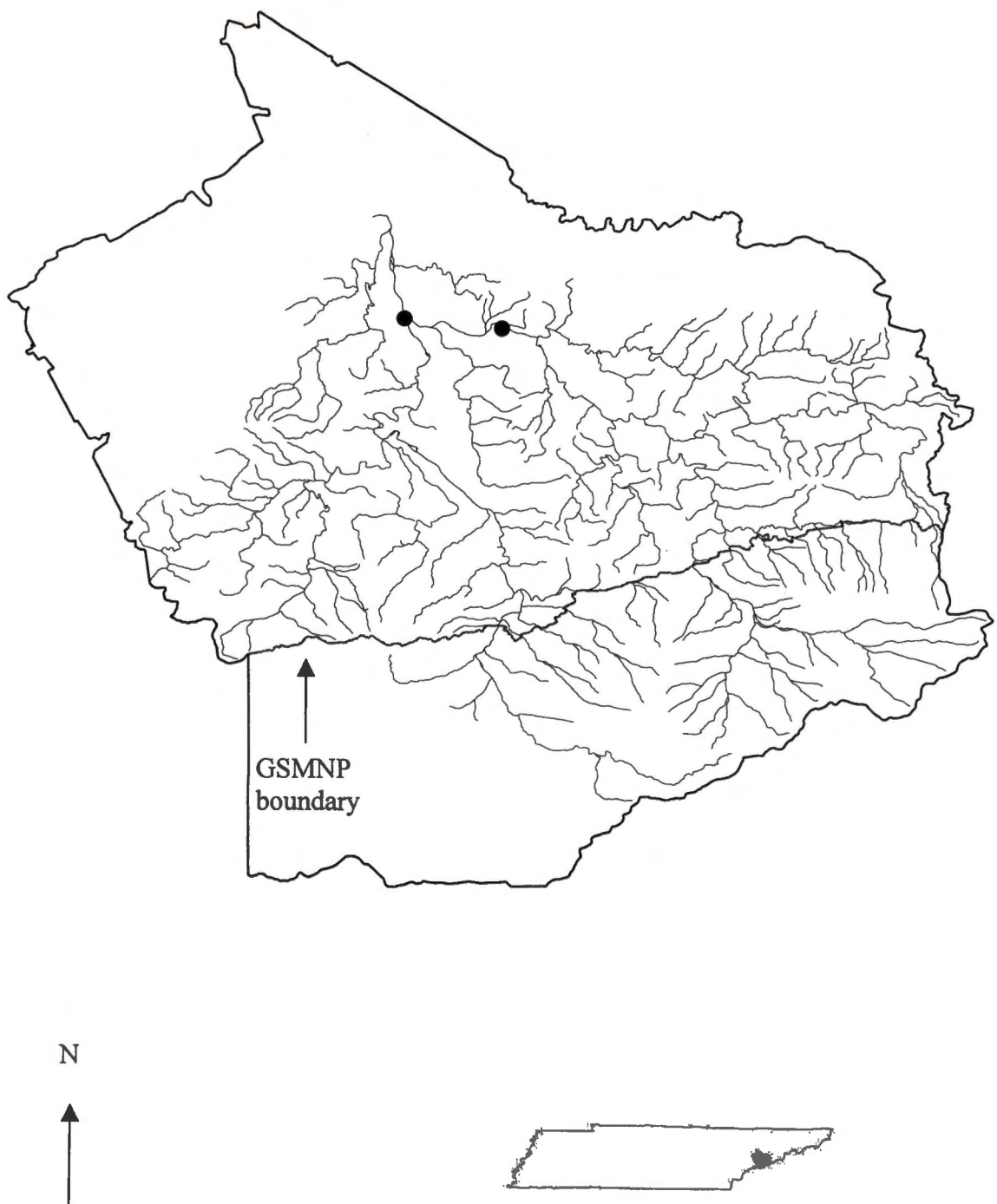


Figure A2. Collection localities for *Ichthyomyzon castaneus*, chestnut lamprey, in the Little Pigeon River system, Sevier Co., TN.

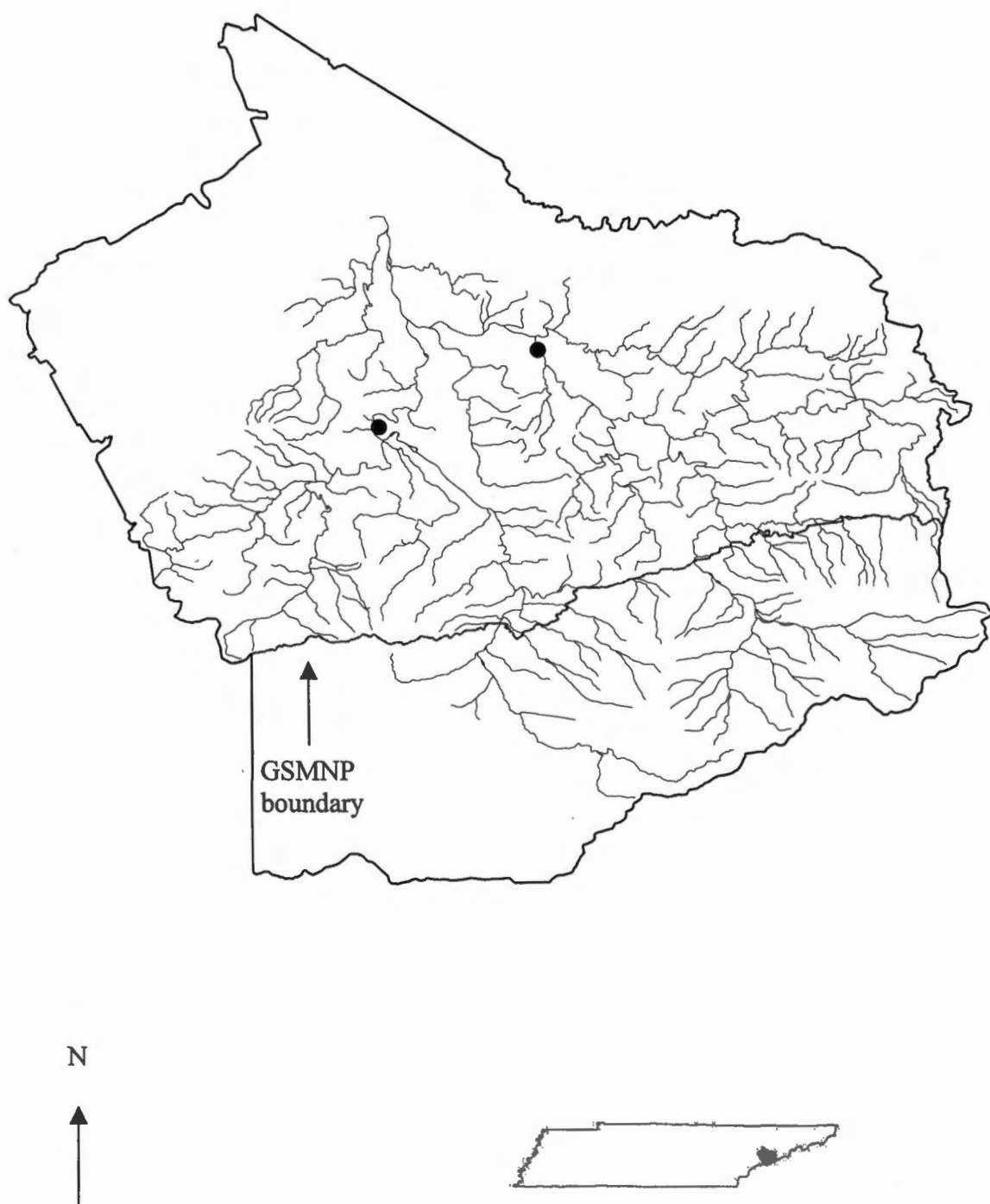


Figure A3. Collection localities for *Ichthyomyzon greeleyi*, mountain brook lamprey, in the Little Pigeon River system, Sevier Co., TN.

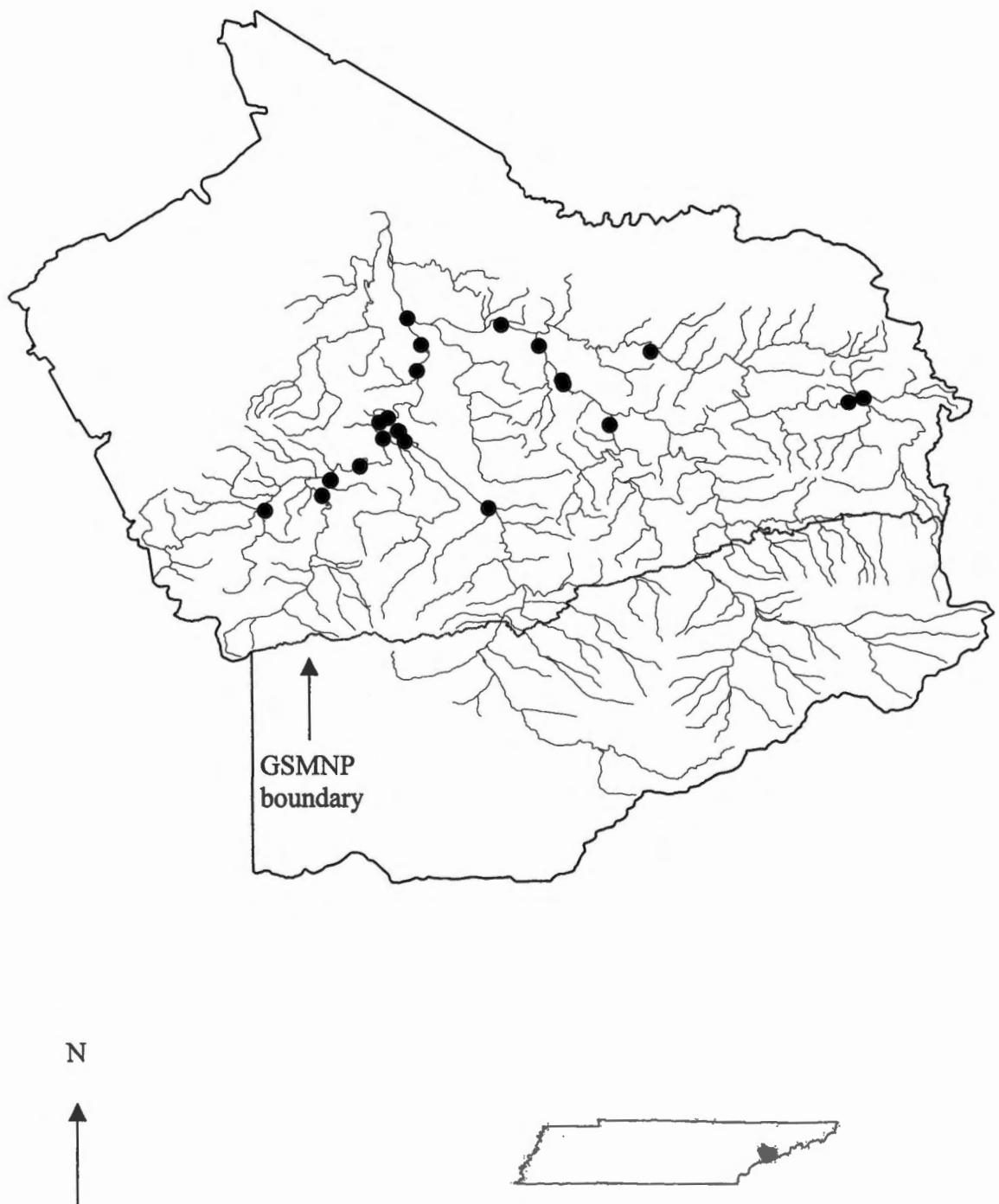


Figure A4. Collection localities for *Lampetra appendix*, American brook lamprey, in the Little Pigeon River system, Sevier Co., TN.

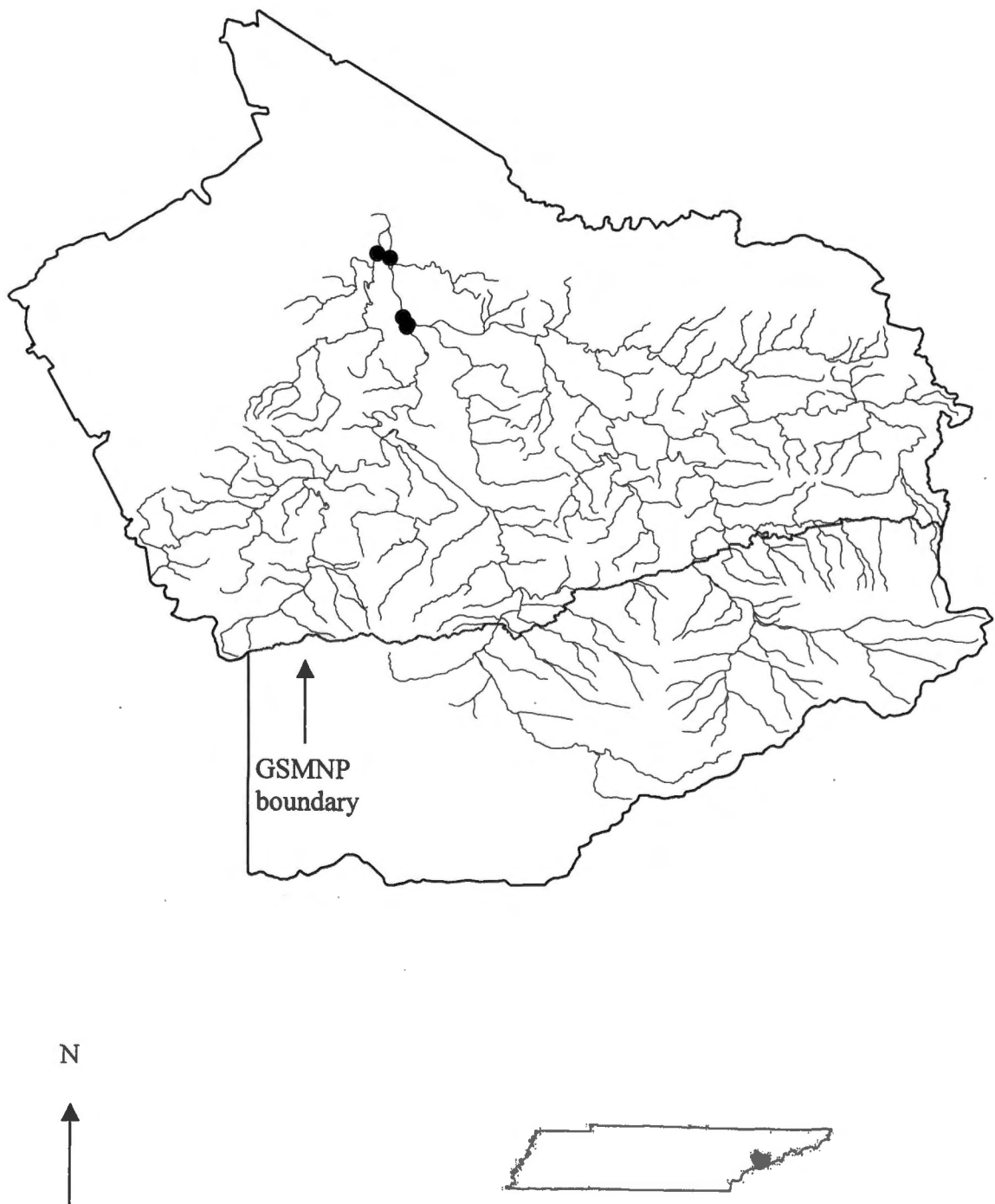


Figure A5. Collection localities for *Lepisosteus oculatus*, spotted gar, in the Little Pigeon River system, Sevier Co., TN.

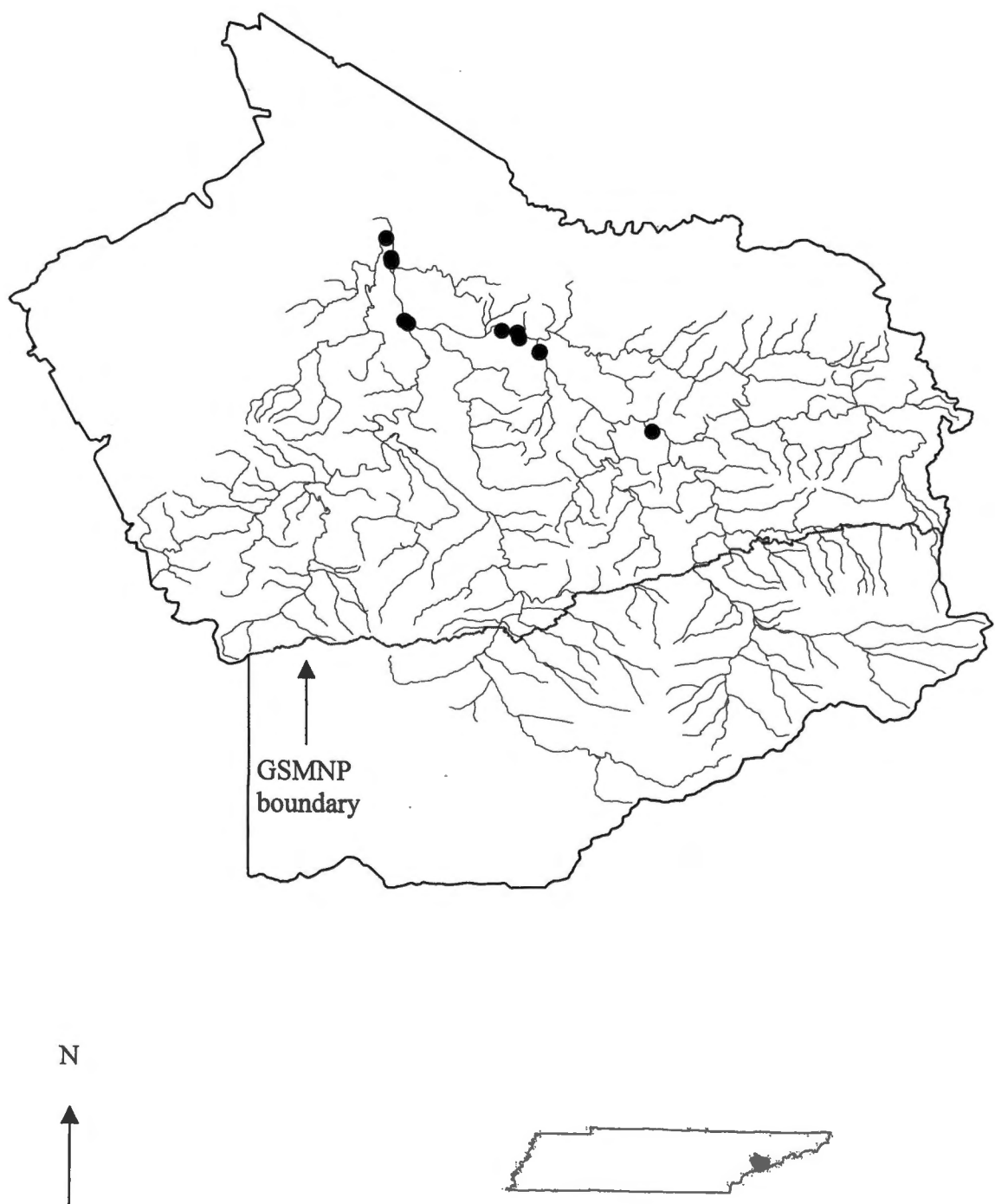


Figure A6. Collection localities for *Lepisosteus osseus*, longnose gar, in the Little Pigeon River system, Sevier Co., TN.

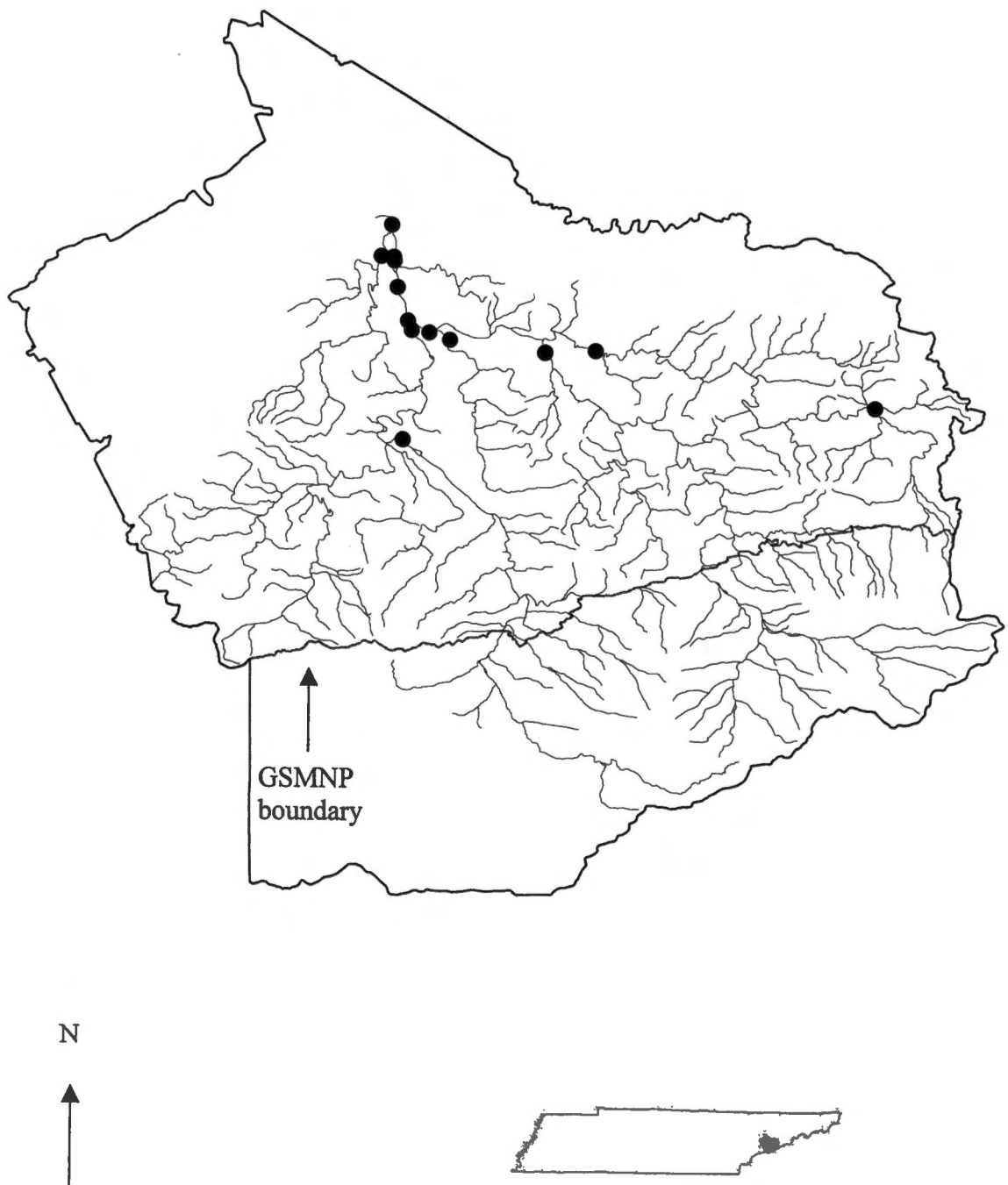


Figure A7. Collection localities for *Dorosoma cepedianum*, gizzard shad, in the Little Pigeon River system, Sevier Co., TN.

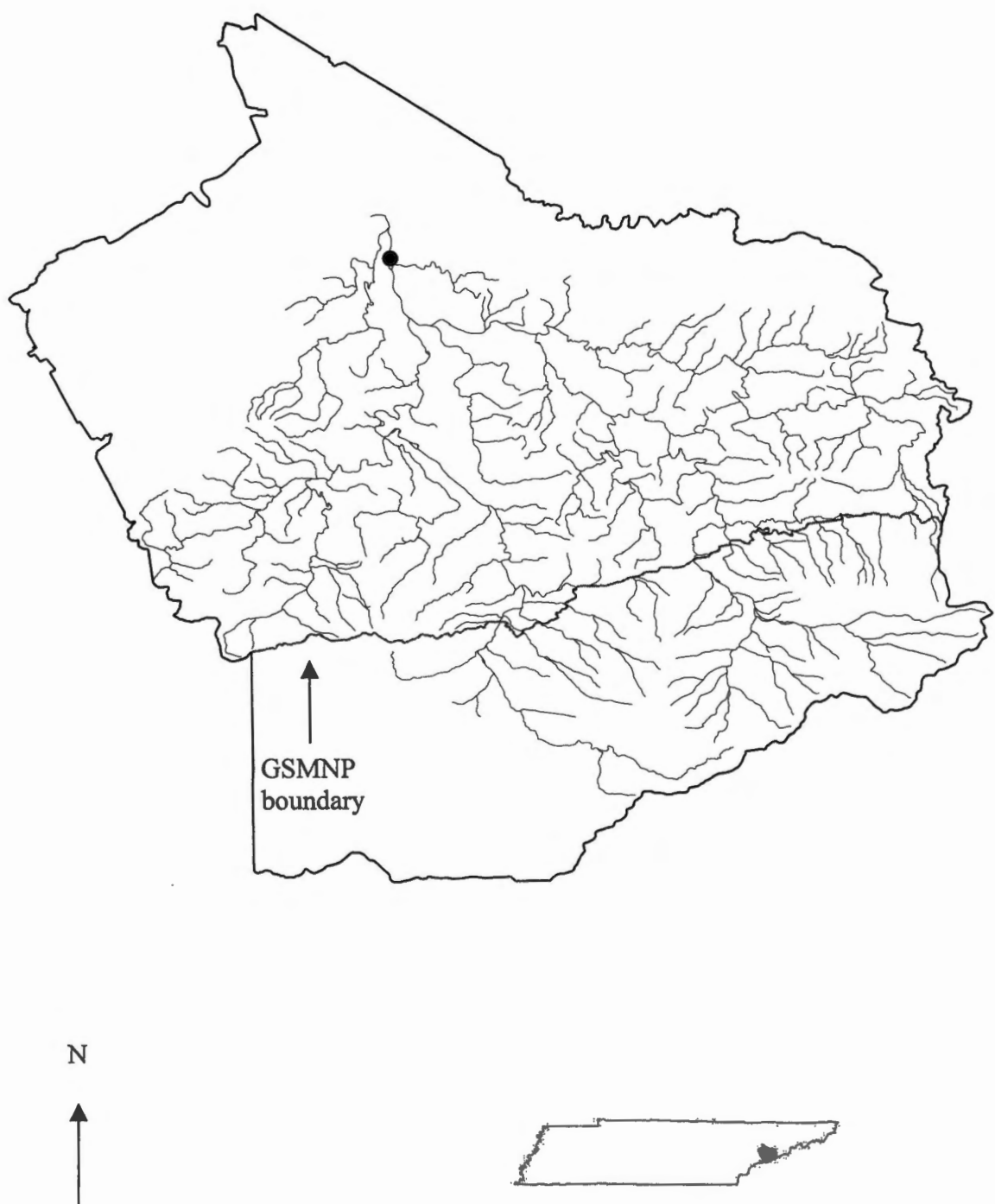


Figure A8. Collection localities for *Dorosoma petenense*, threadfin shad, in the Little Pigeon River system, Sevier Co., TN.

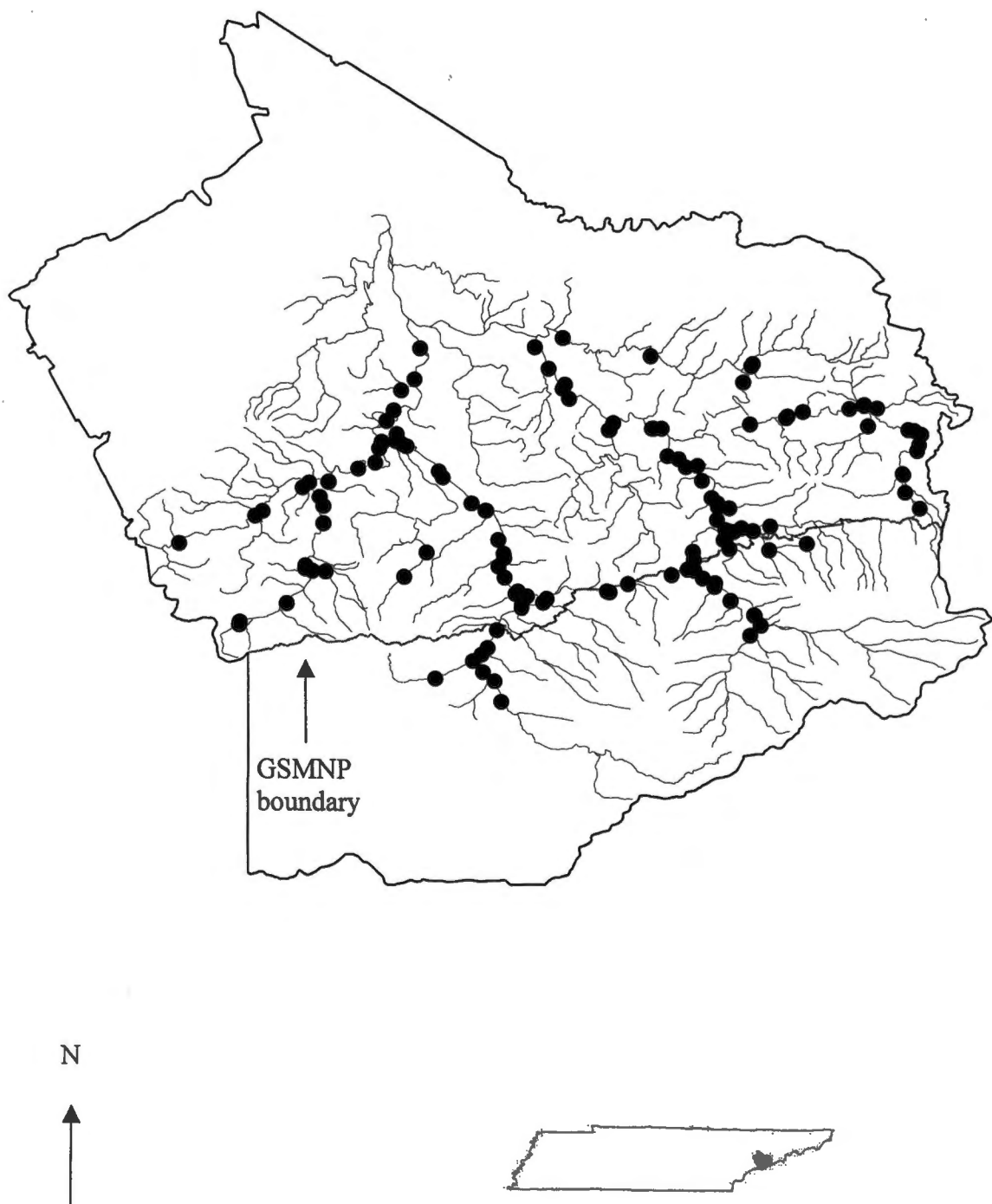


Figure A9. Collection localities for *Campostoma anomalum*, central stoneroller in the Little Pigeon River system, Sevier Co., TN.

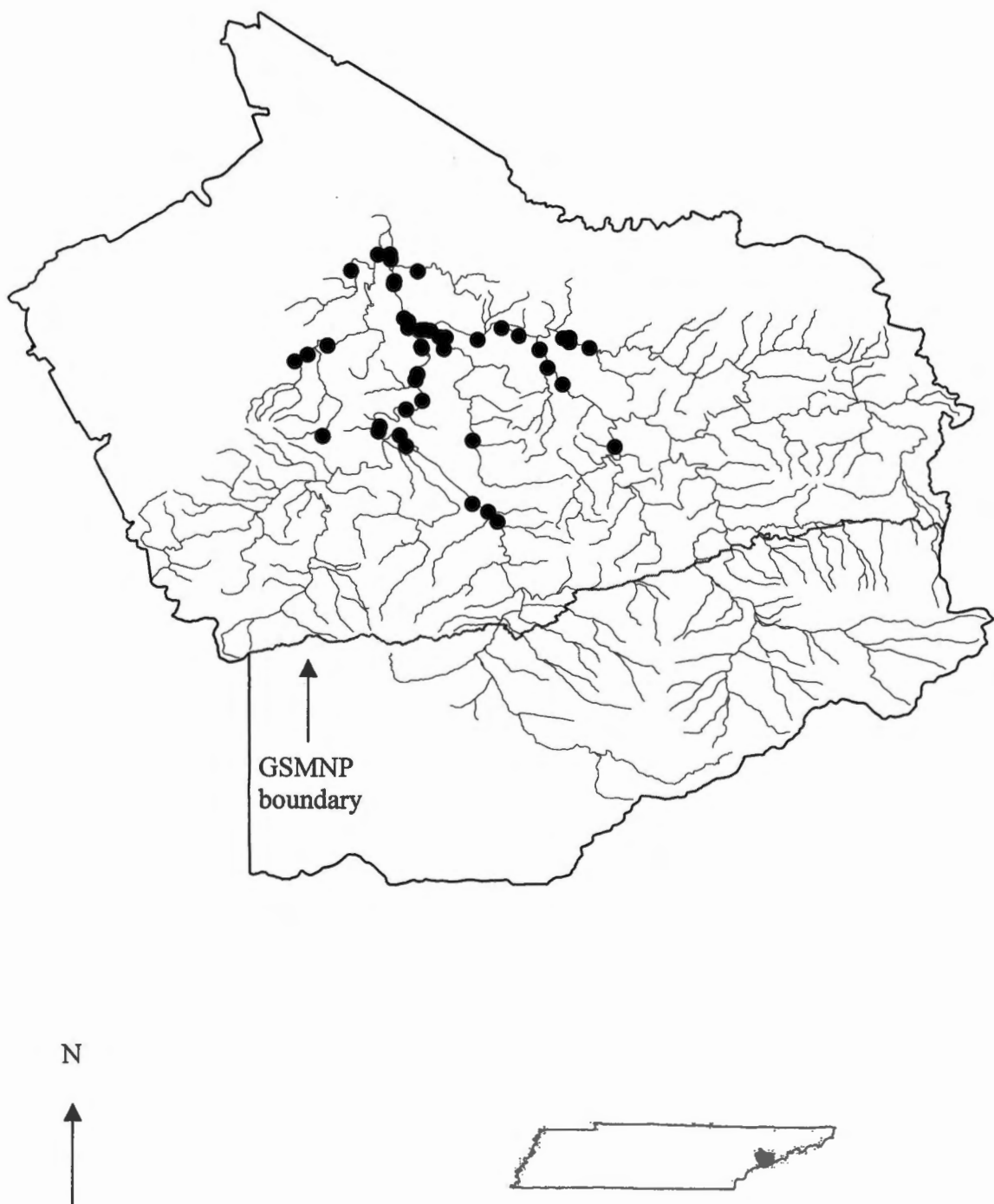


Figure A10. Collection localities for *Campostoma oligolepis*, largescale stoneroller, in the Little Pigeon River system, Sevier Co., TN.

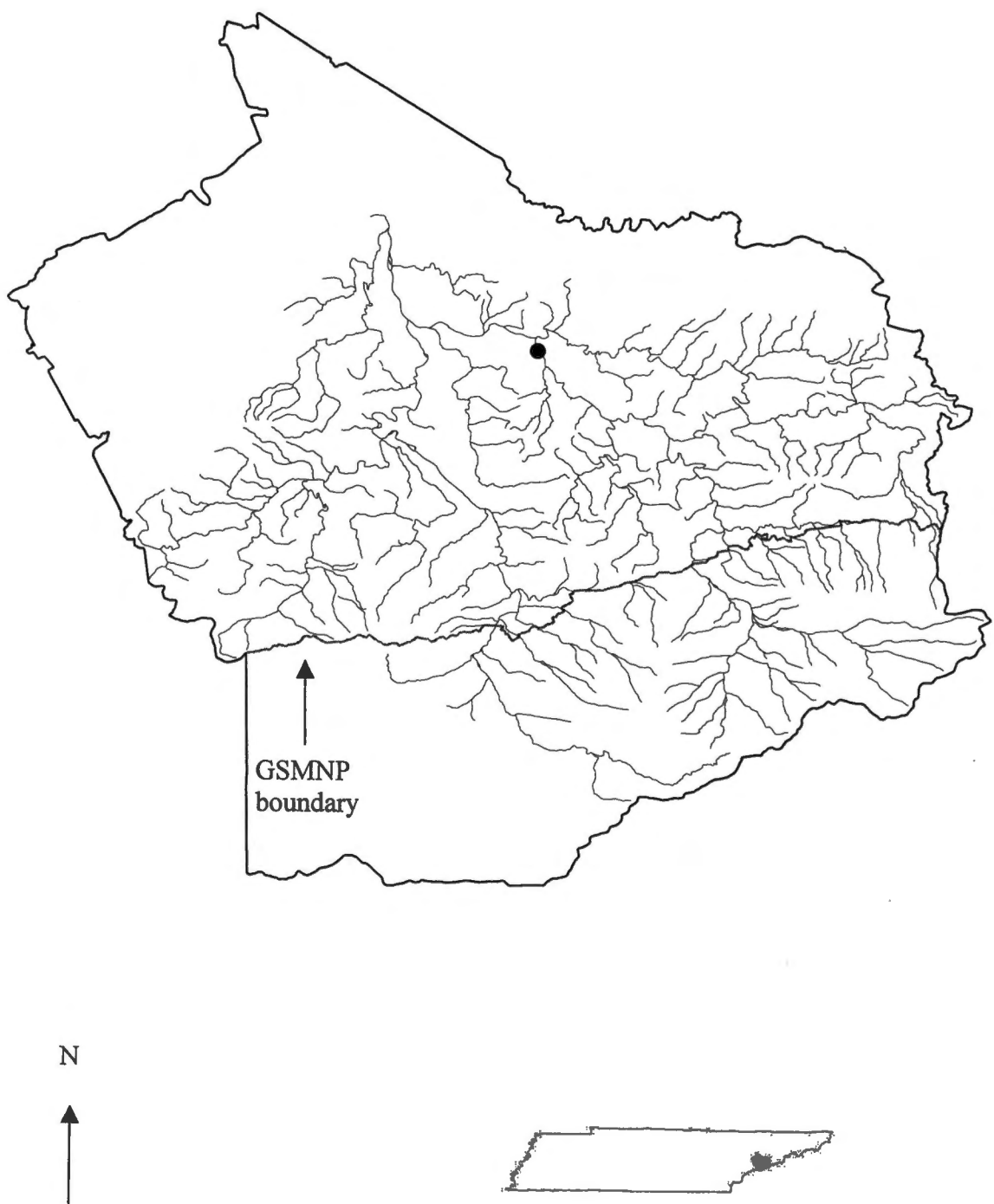


Figure A11. Collection localities for *Carassius auratus*, goldfish, in the Little Pigeon River system, Sevier Co., TN.

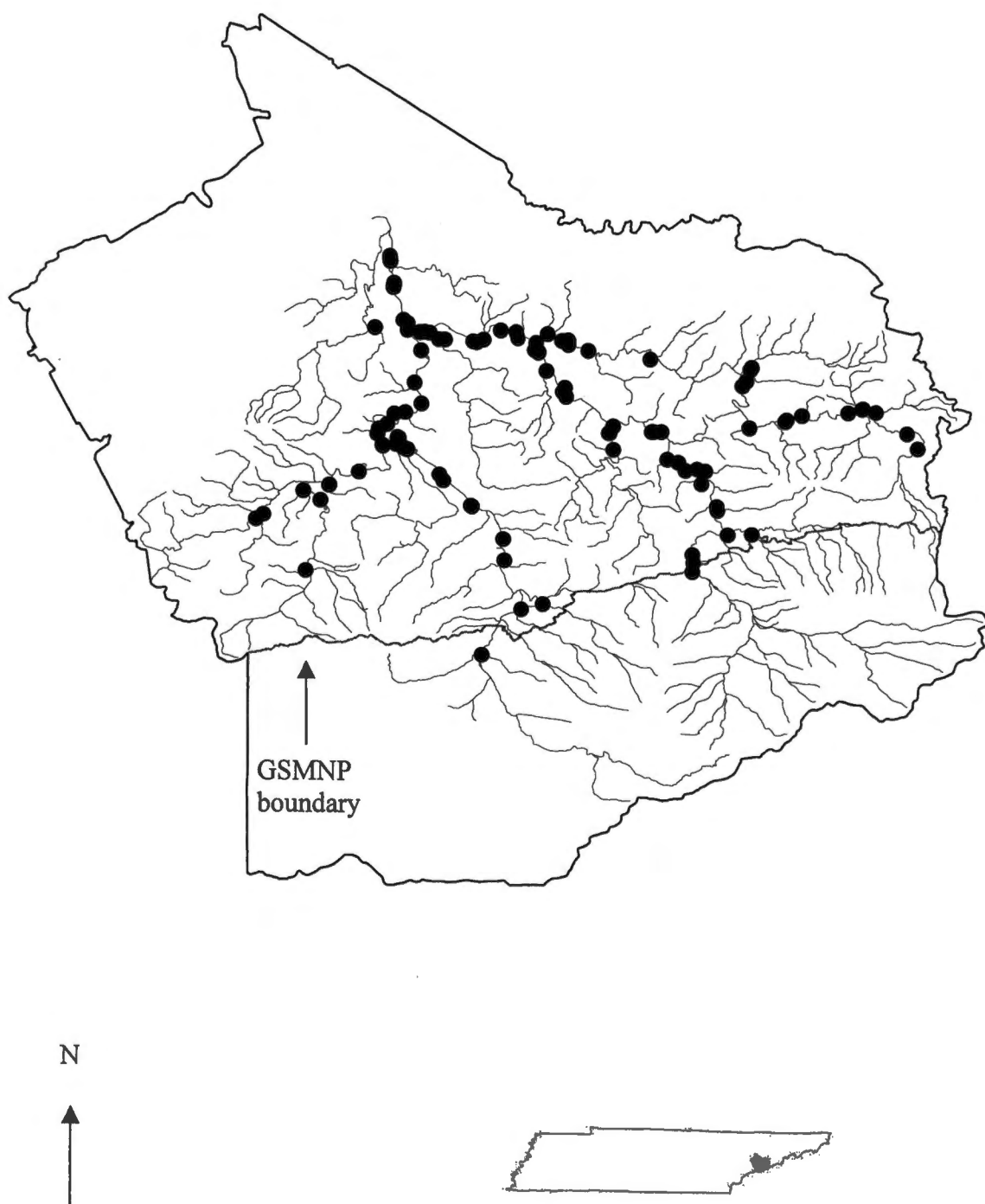


Figure A12. Collection localities for *Cyprinella galactura*, whitetail shiner, in the Little Pigeon River system, Sevier Co., TN.

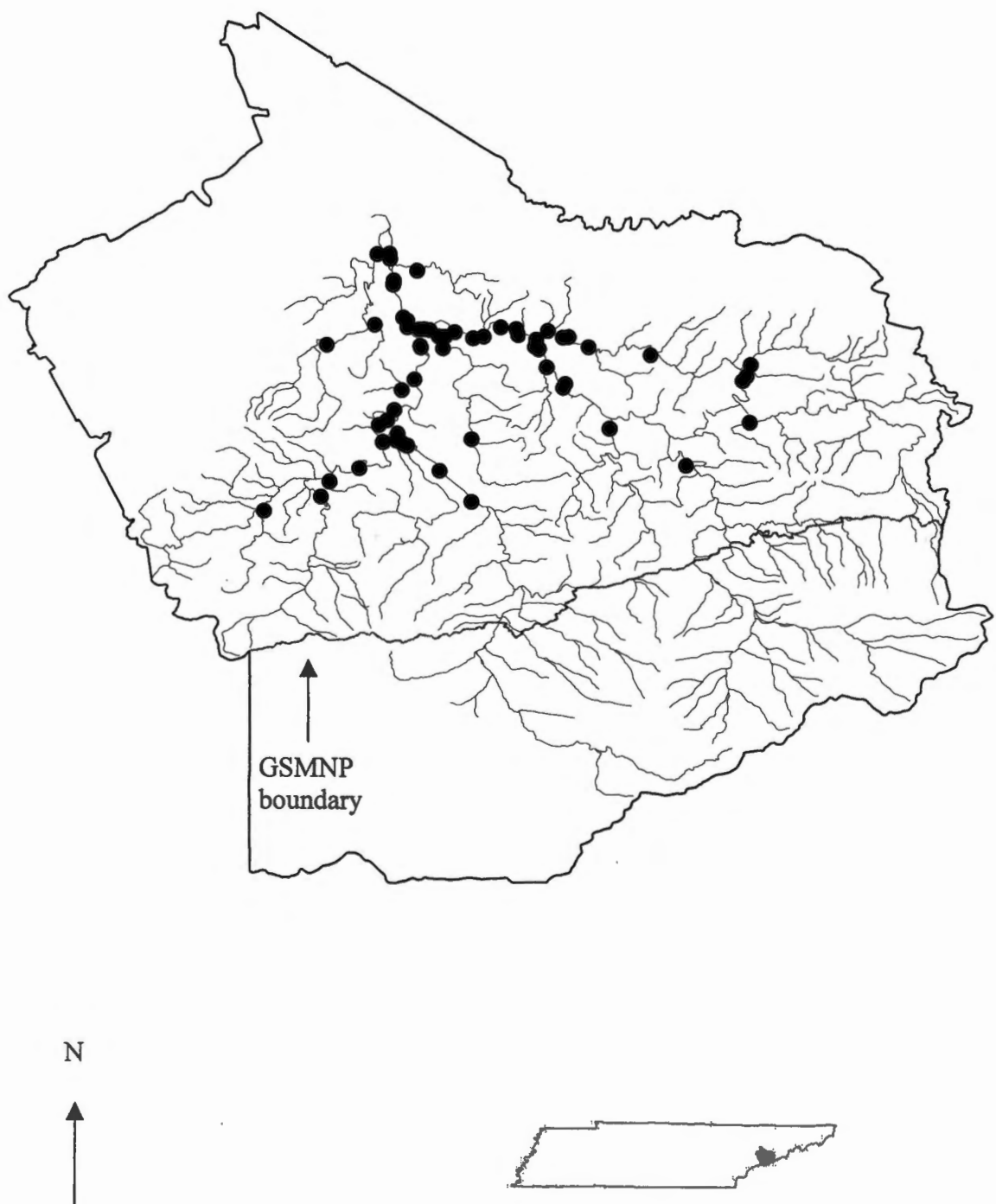


Figure A13. Collection localities for *Cyprinella spiloptera*, spotfin shiner, in the Little Pigeon River system, Sevier Co., TN.

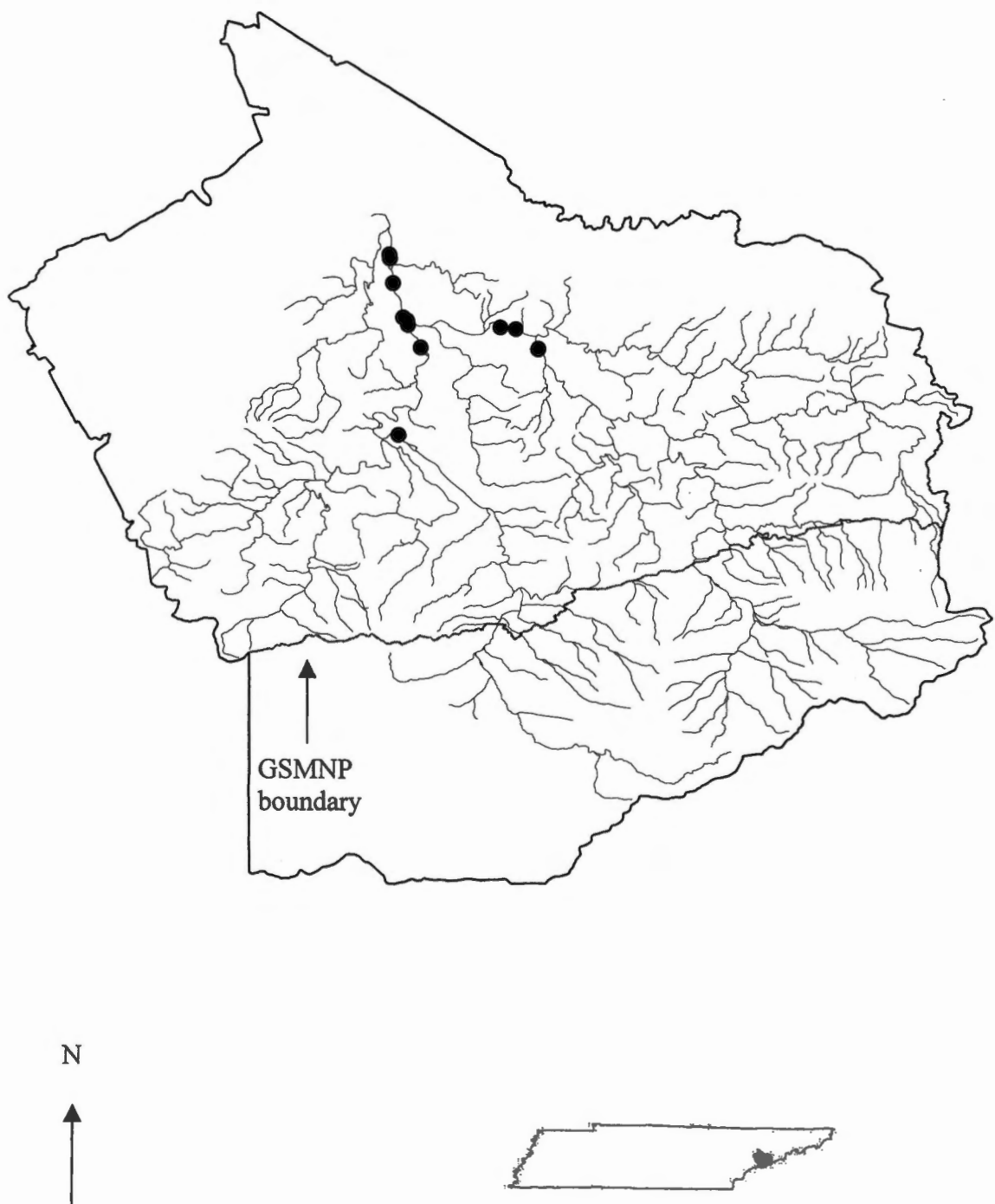


Figure A14. Collection localities for *Cyprinus carpio*, common carp, in the Little Pigeon River system, Sevier Co., TN.

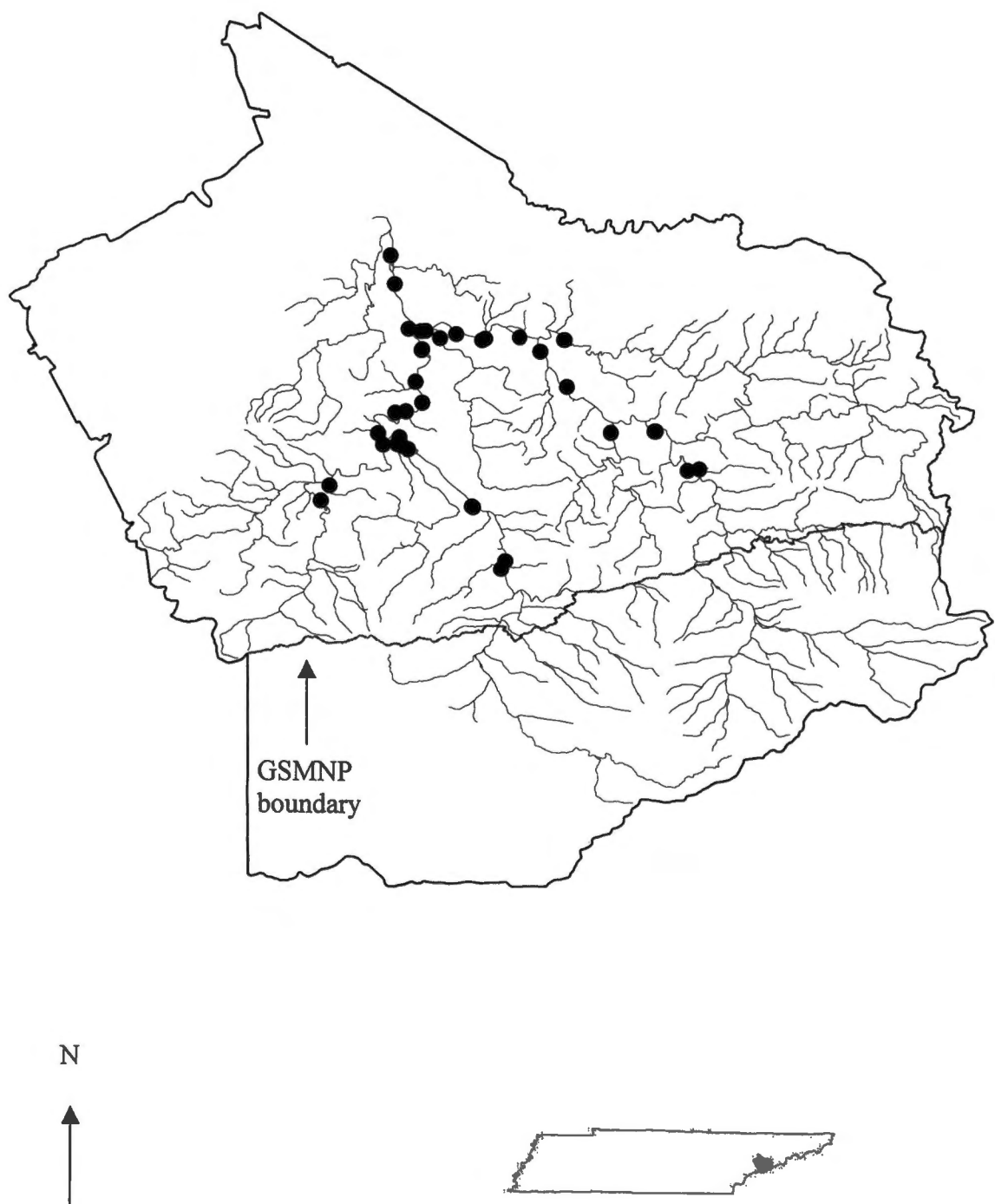


Figure A15. Collection localities for *Erimystax insignis*, blotched chub, in the Little Pigeon River system, Sevier Co., TN.

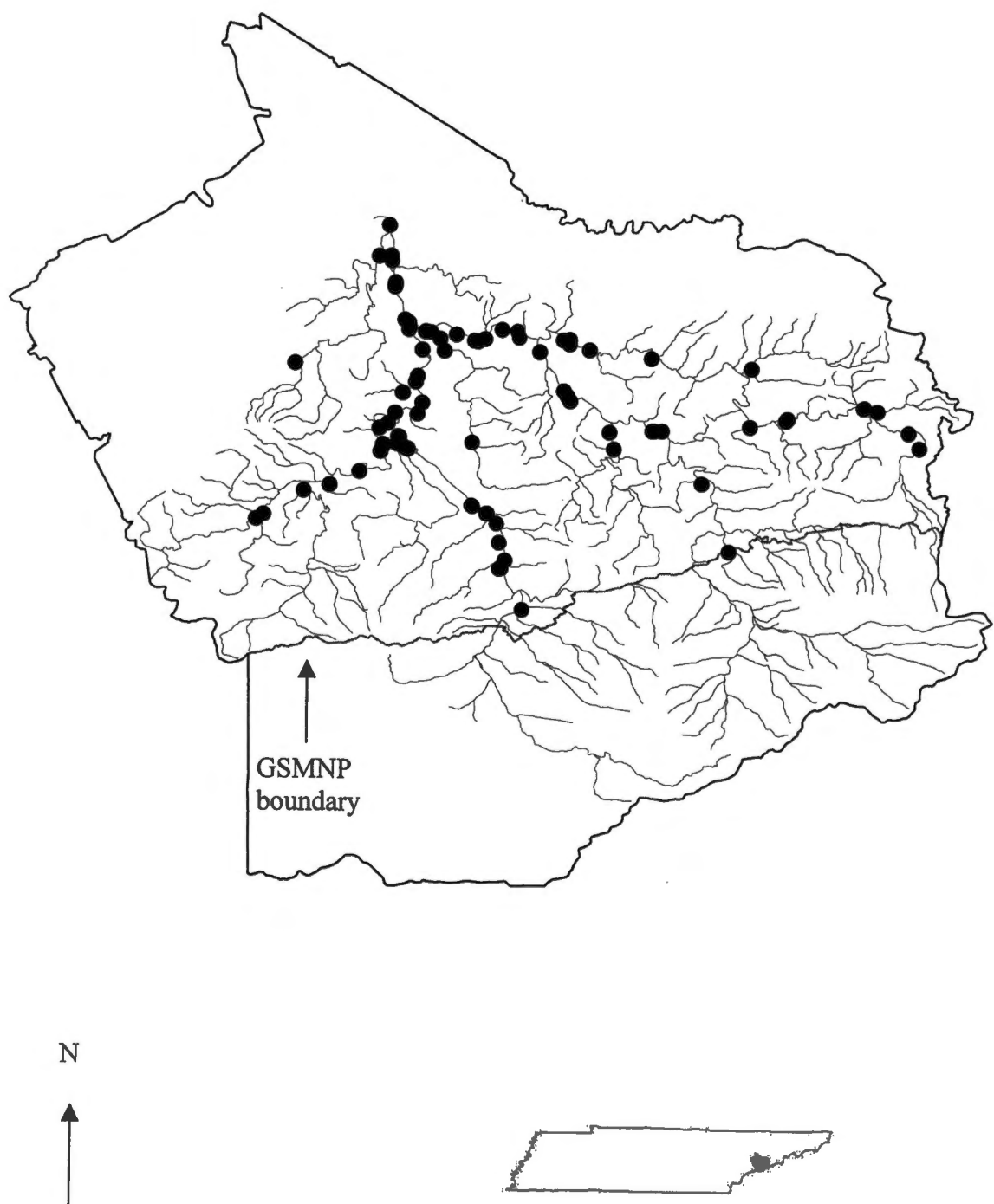


Figure A16. Collection localities for *Hybopsis amblops*, bigeye chub, in the Little Pigeon River system, Sevier Co., TN.

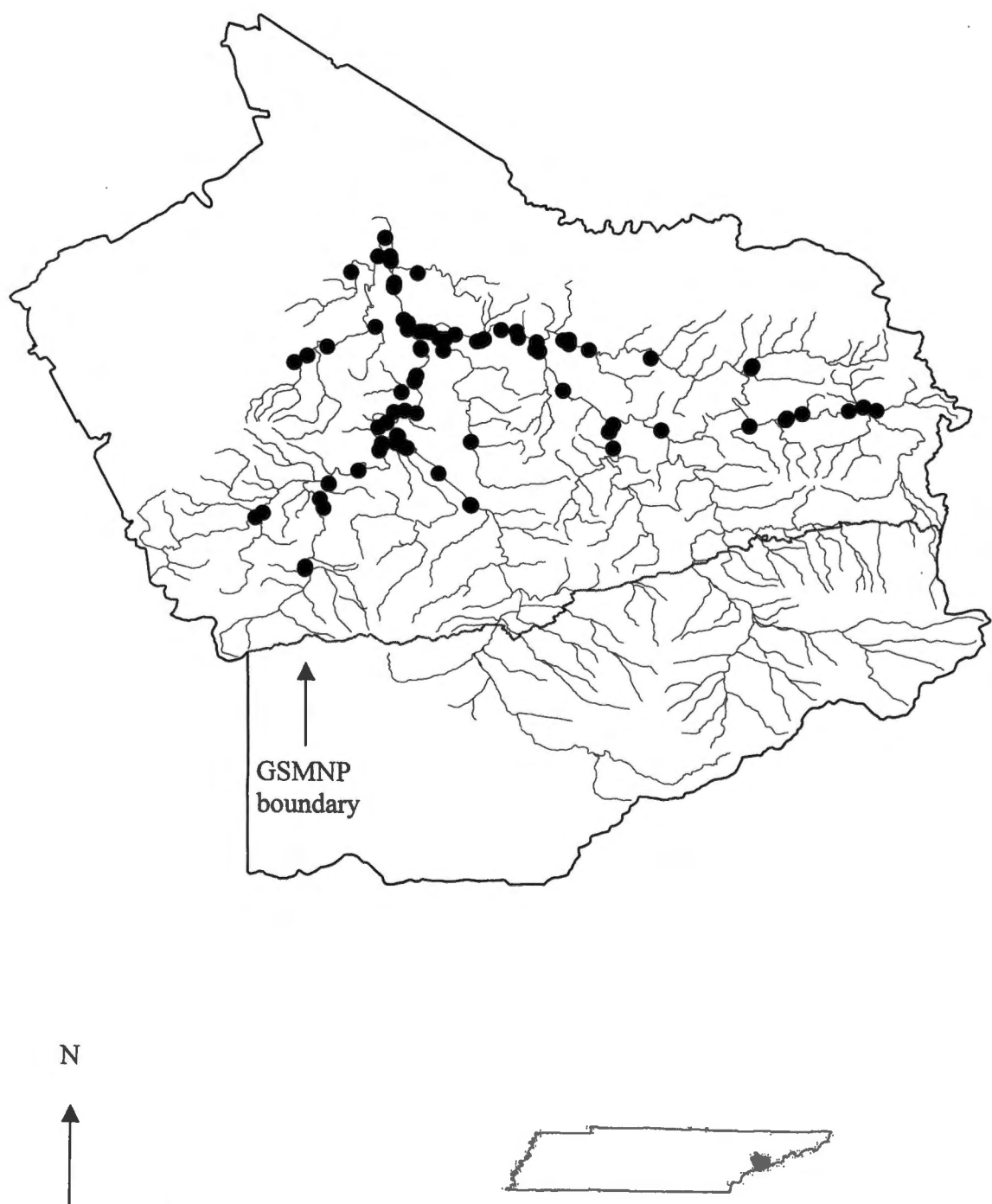


Figure A17. Collection localities for *Luxilus chrysocephalus*, striped shiner, in the Little Pigeon River system, Sevier Co., TN.

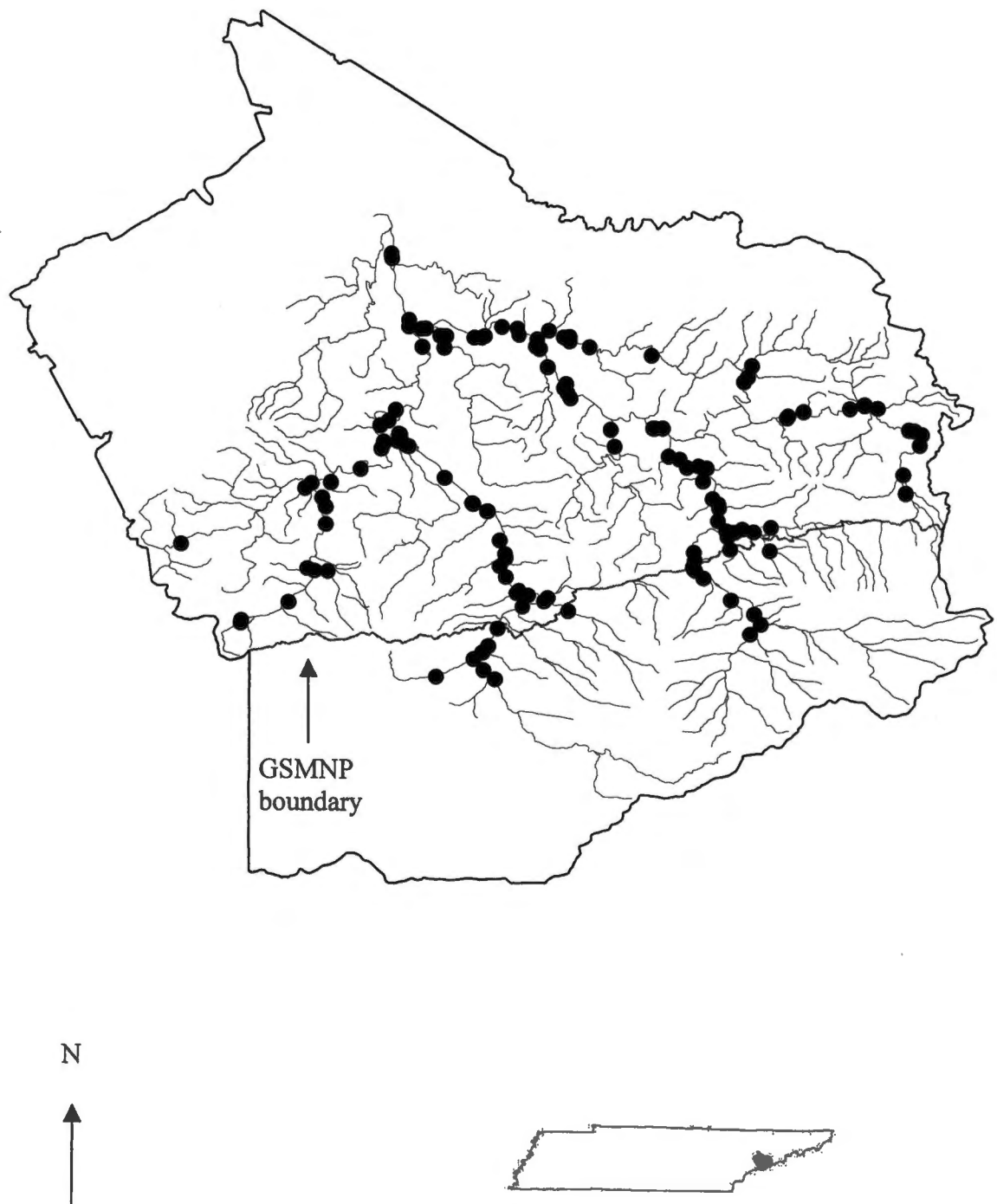


Figure A18. Collection localities for *Luxilus coccogenis*, warpaint shiner, in the Little Pigeon River system, Sevier Co., TN.

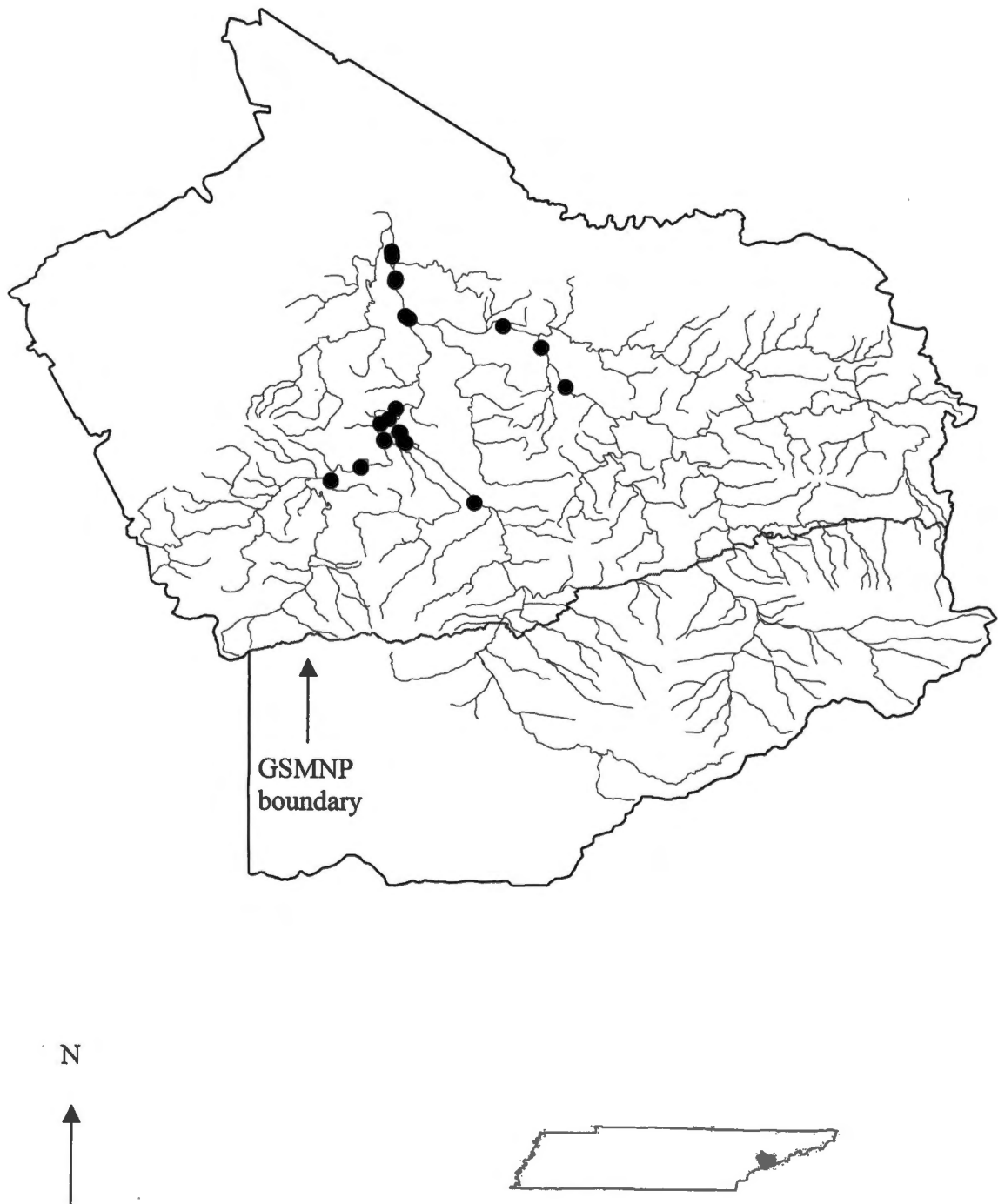


Figure A19. Collection localities for *Lythrurus lirus*, mountain shiner, in the Little Pigeon River system, Sevier Co., TN.

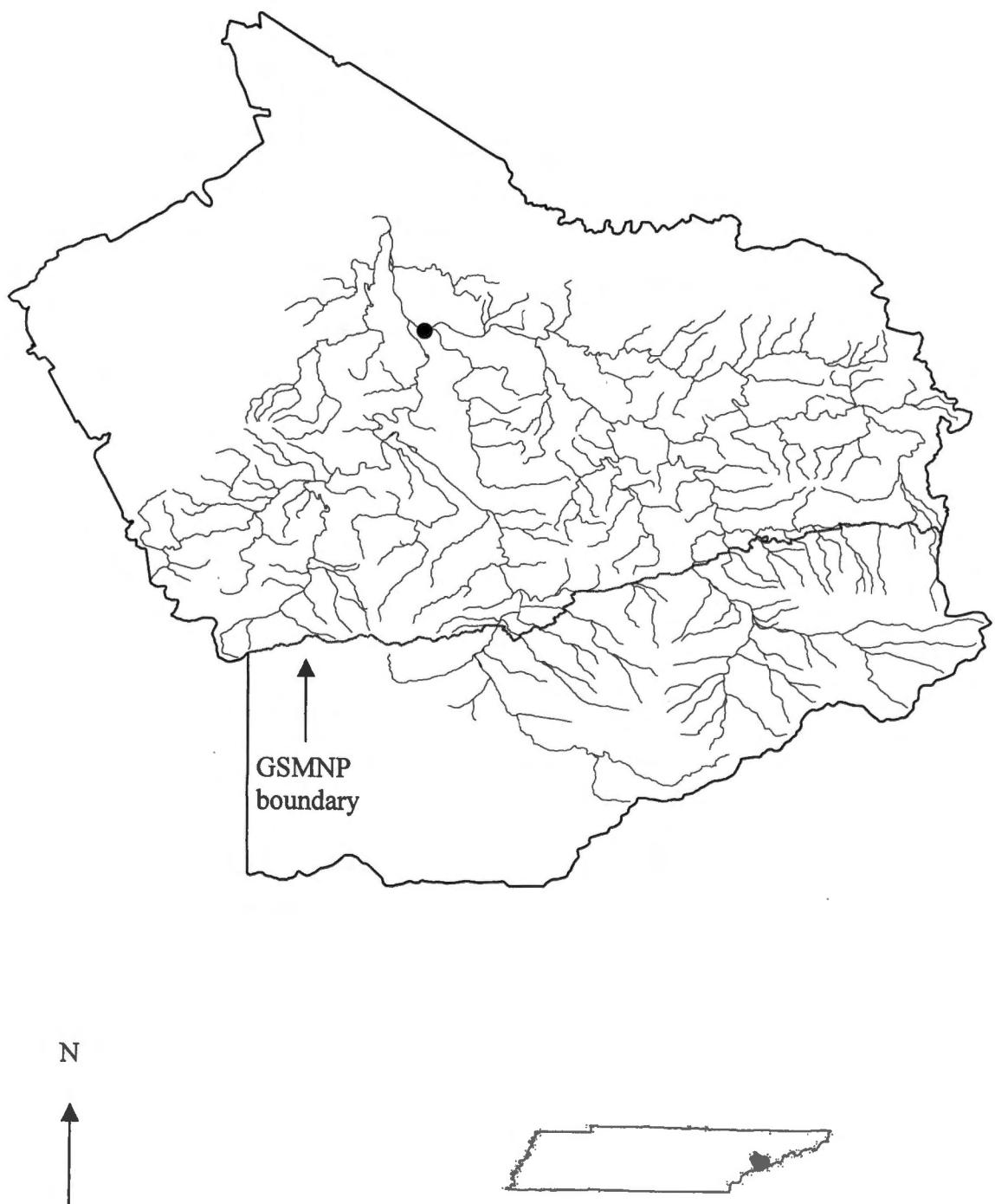


Figure A20. Collection localities for *Macrhybopsis storeriana*, silver chub, in the Little Pigeon River system, Sevier Co., TN.

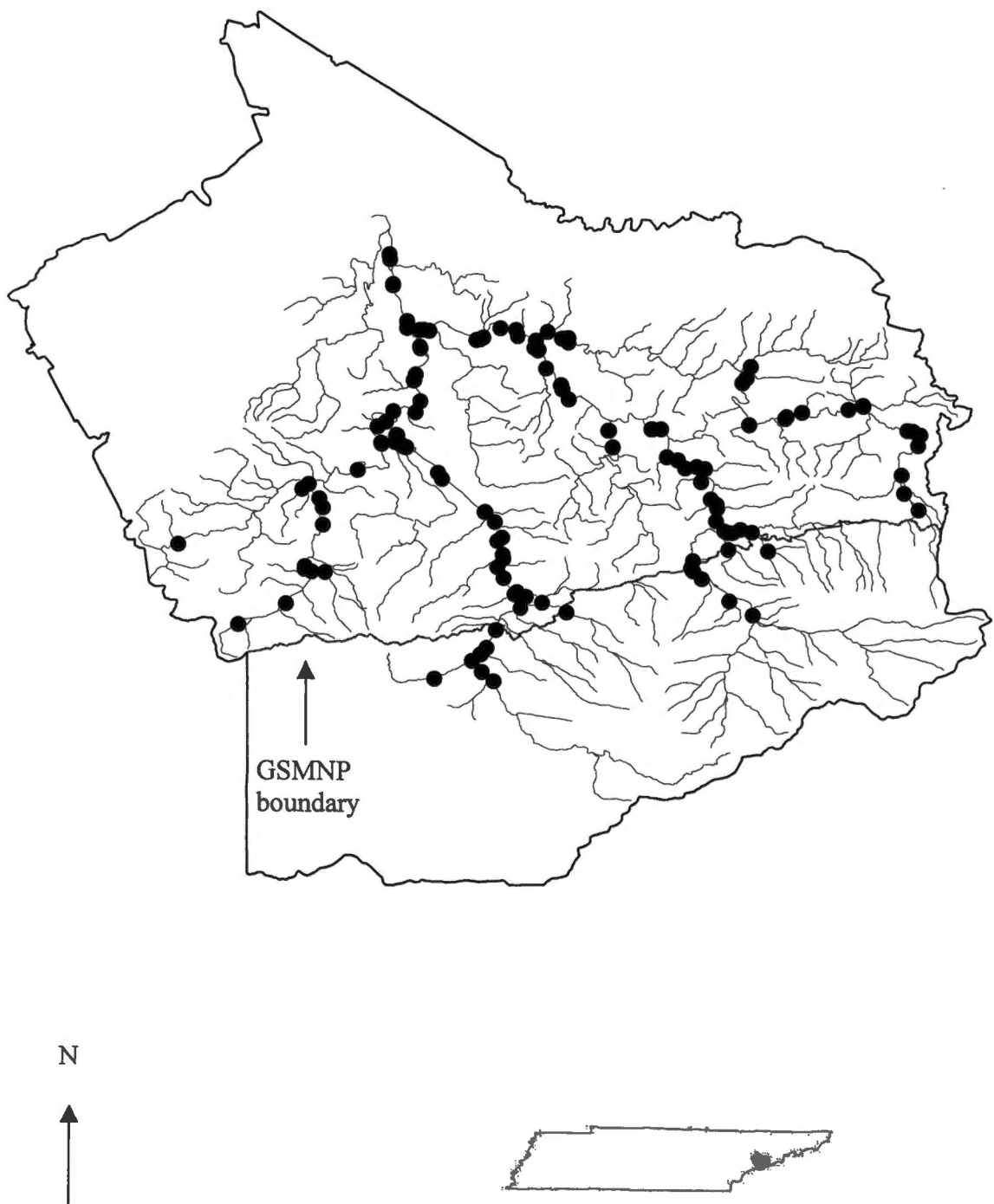


Figure A21. Collection localities for *Nocomis micropogon*, river chub, in the Little Pigeon River system, Sevier Co., TN.

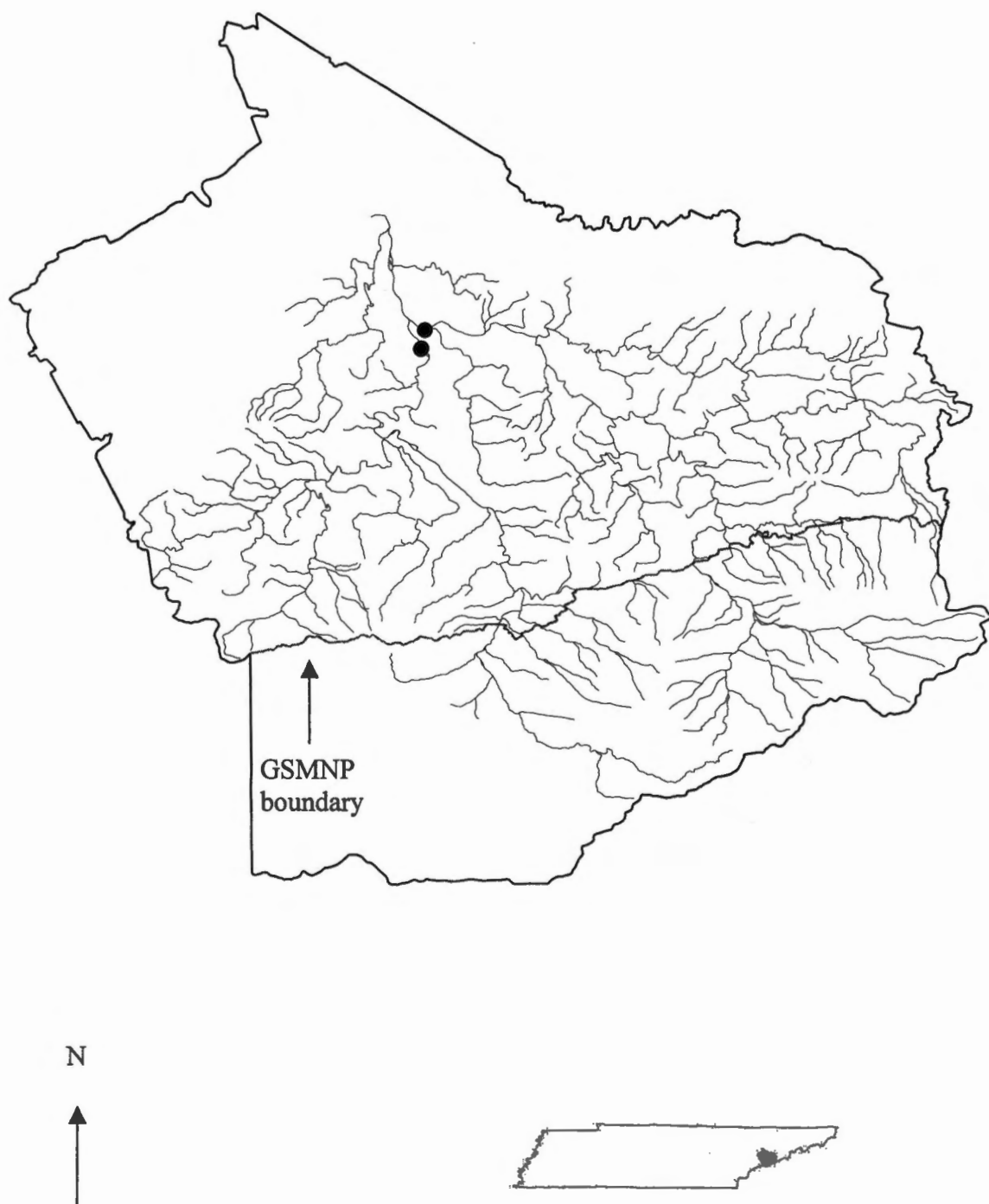


Figure A22. Collection localities for *Notropis atherinoides*, emerald shiner, in the Little Pigeon River system, Sevier Co., TN.

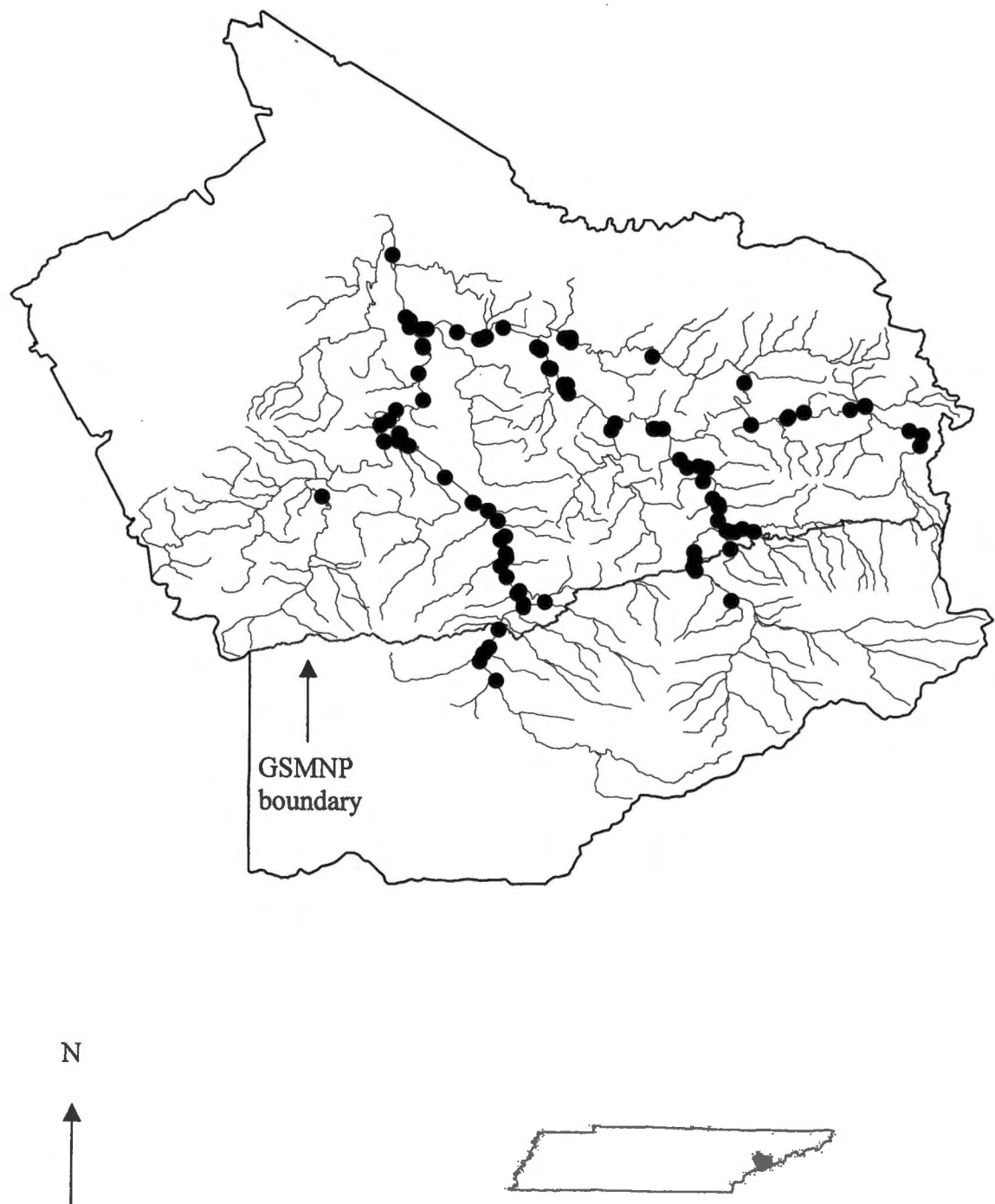


Figure A23. Collection localities for *Notropis leuciodus*, Tennessee shiner, in the Little Pigeon River system, Sevier Co., TN.

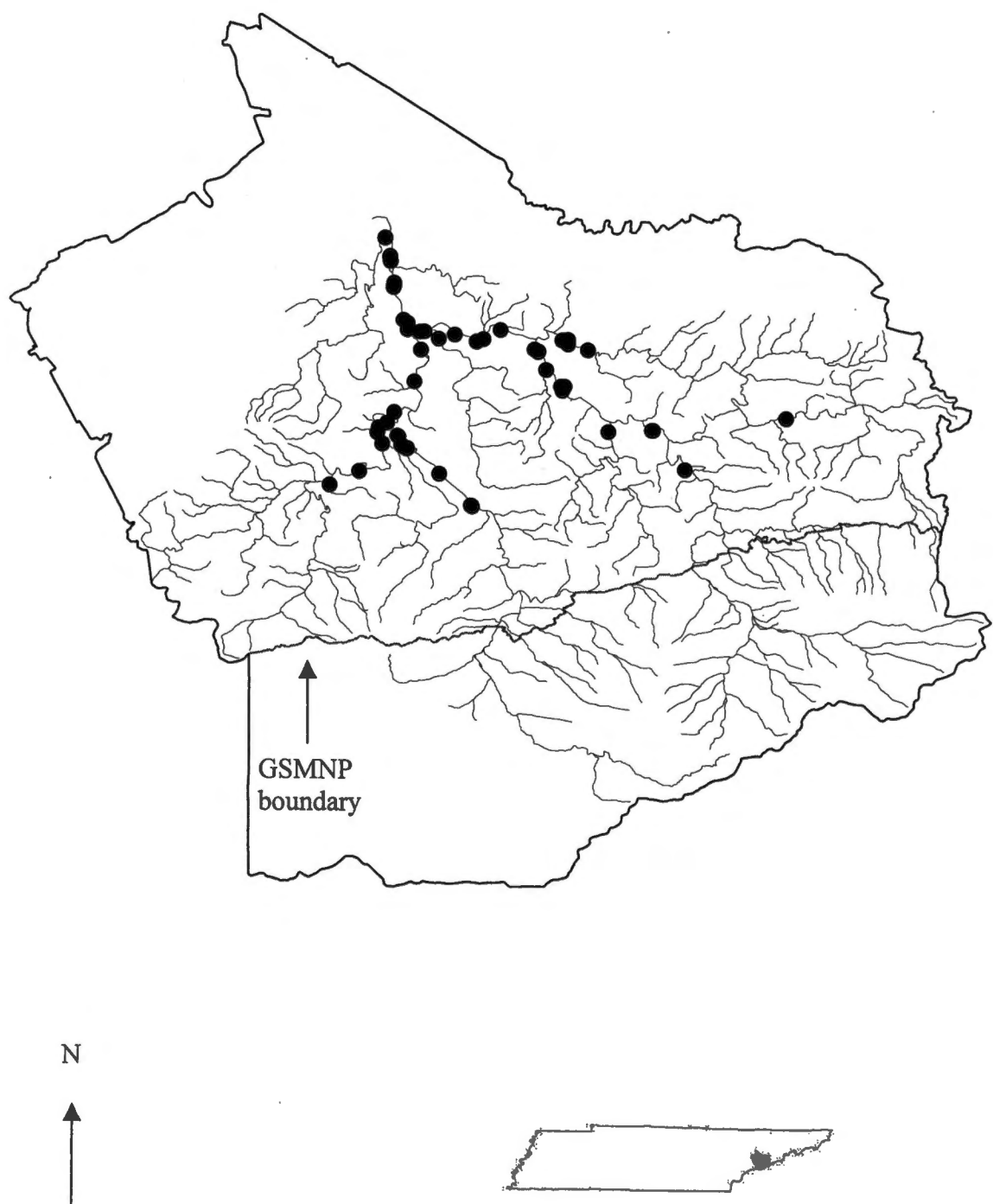


Figure A24. Collection localities for *Notropis micropteryx*, highland shiner, in the Little Pigeon River system, Sevier Co., TN.

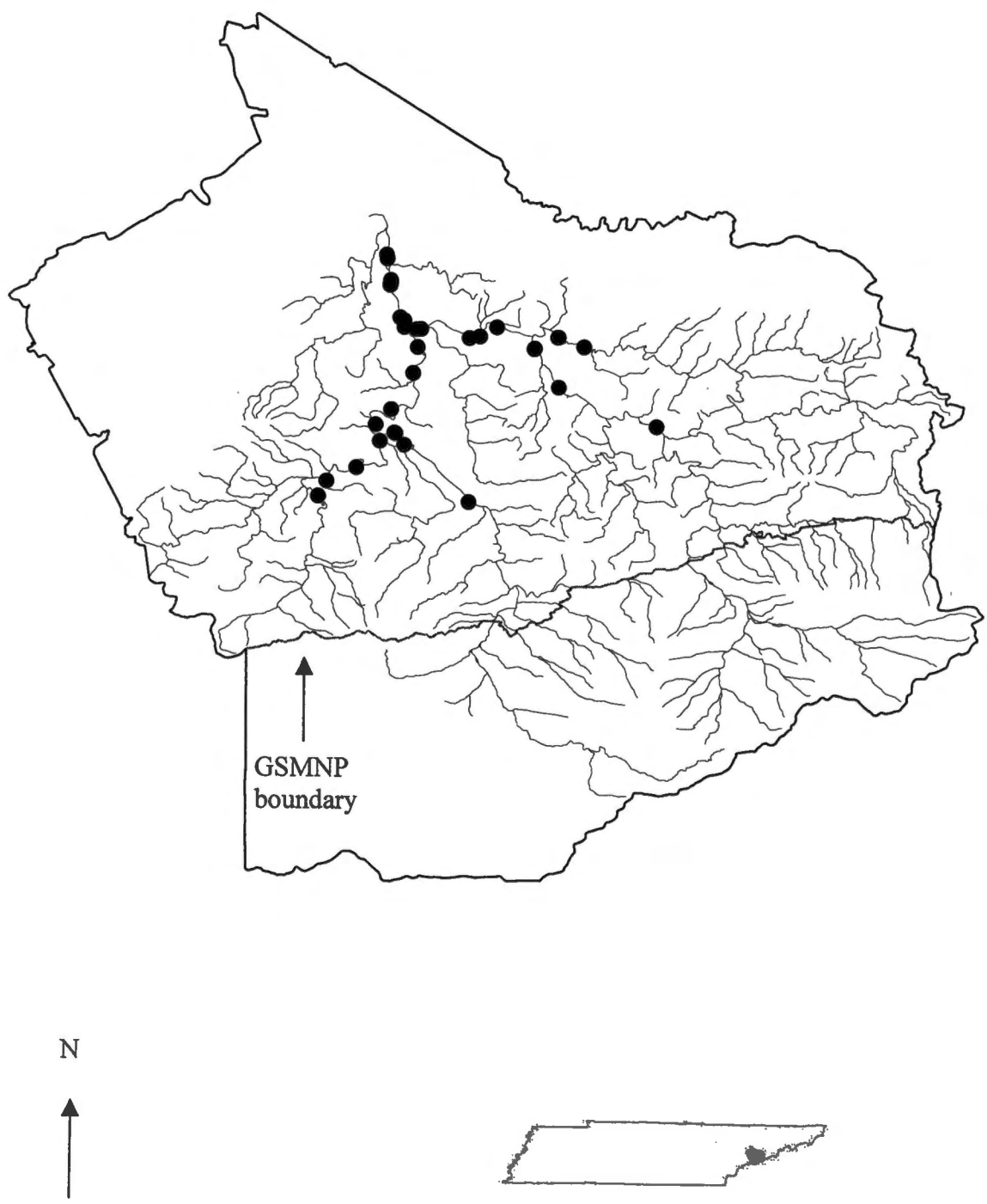


Figure A25. Collection localities for *Notropis photogenis*, silver shiner, in the Little Pigeon River system, Sevier Co., TN.

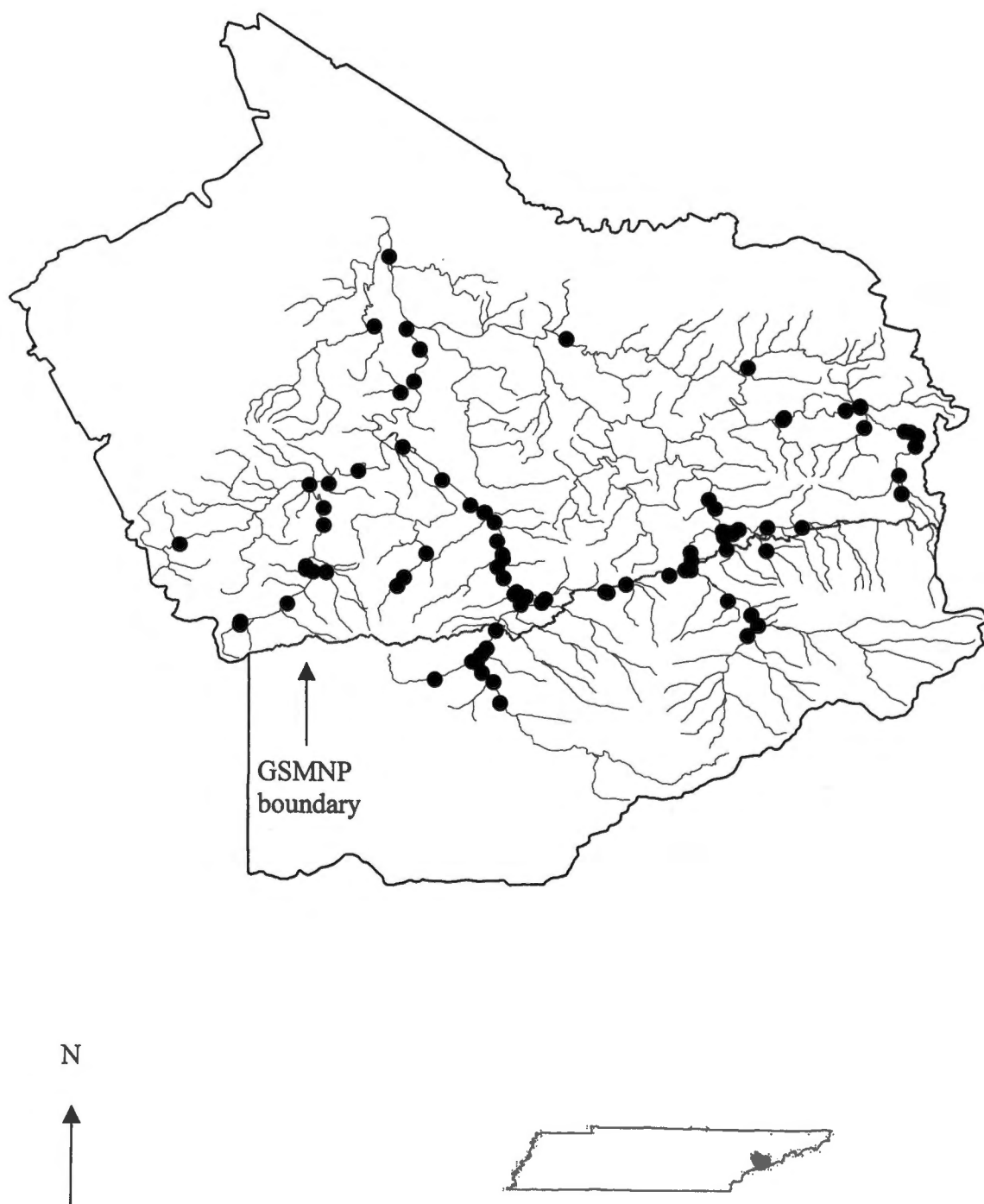


Figure A26. Collection localities for *Notropis rubricroceus*, saffron shiner, in the Little Pigeon River system, Sevier Co., TN.

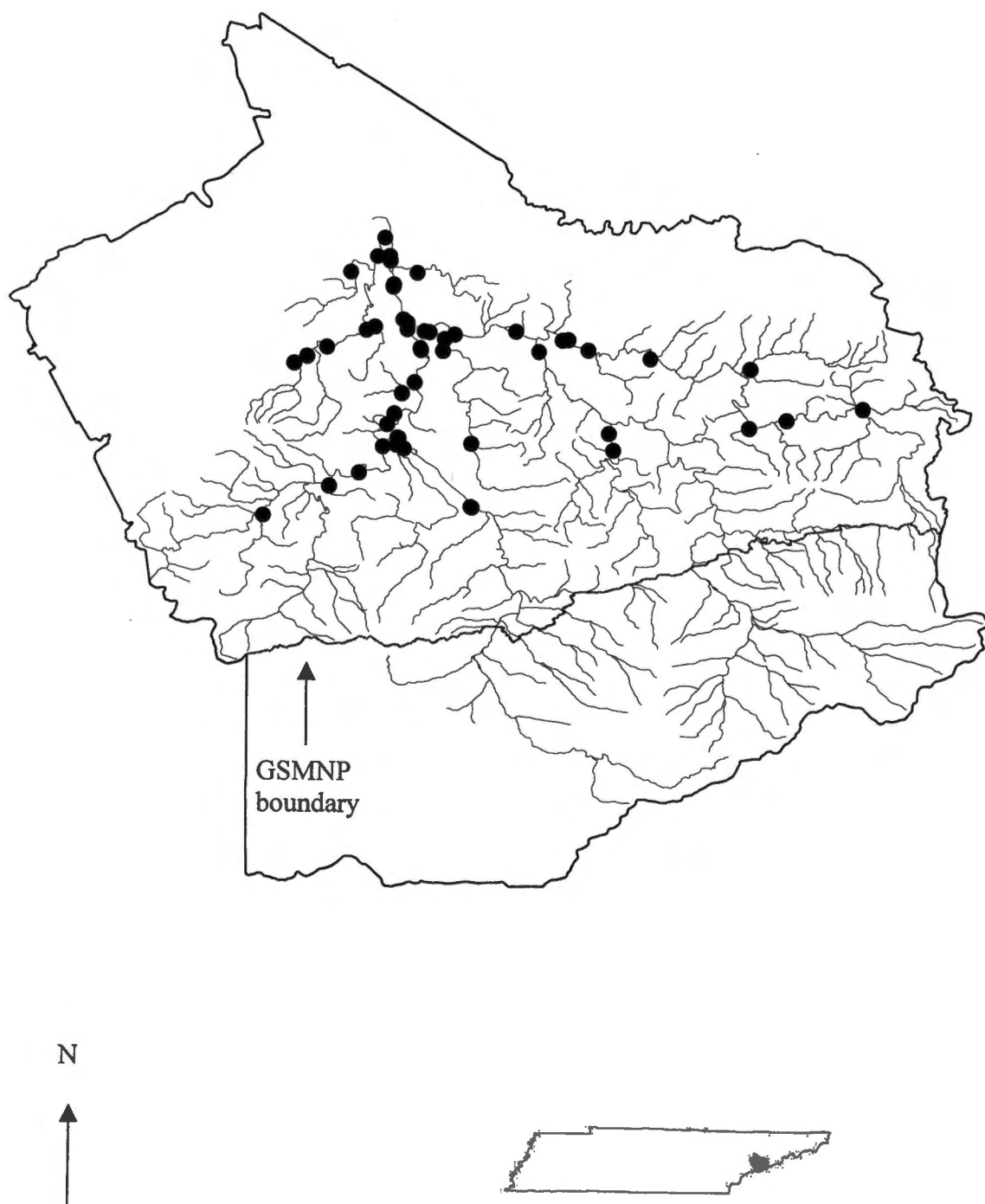


Figure A27. Collection localities for *Notropis stramineus*, sand shiner, in the Little Pigeon River system, Sevier Co., TN.

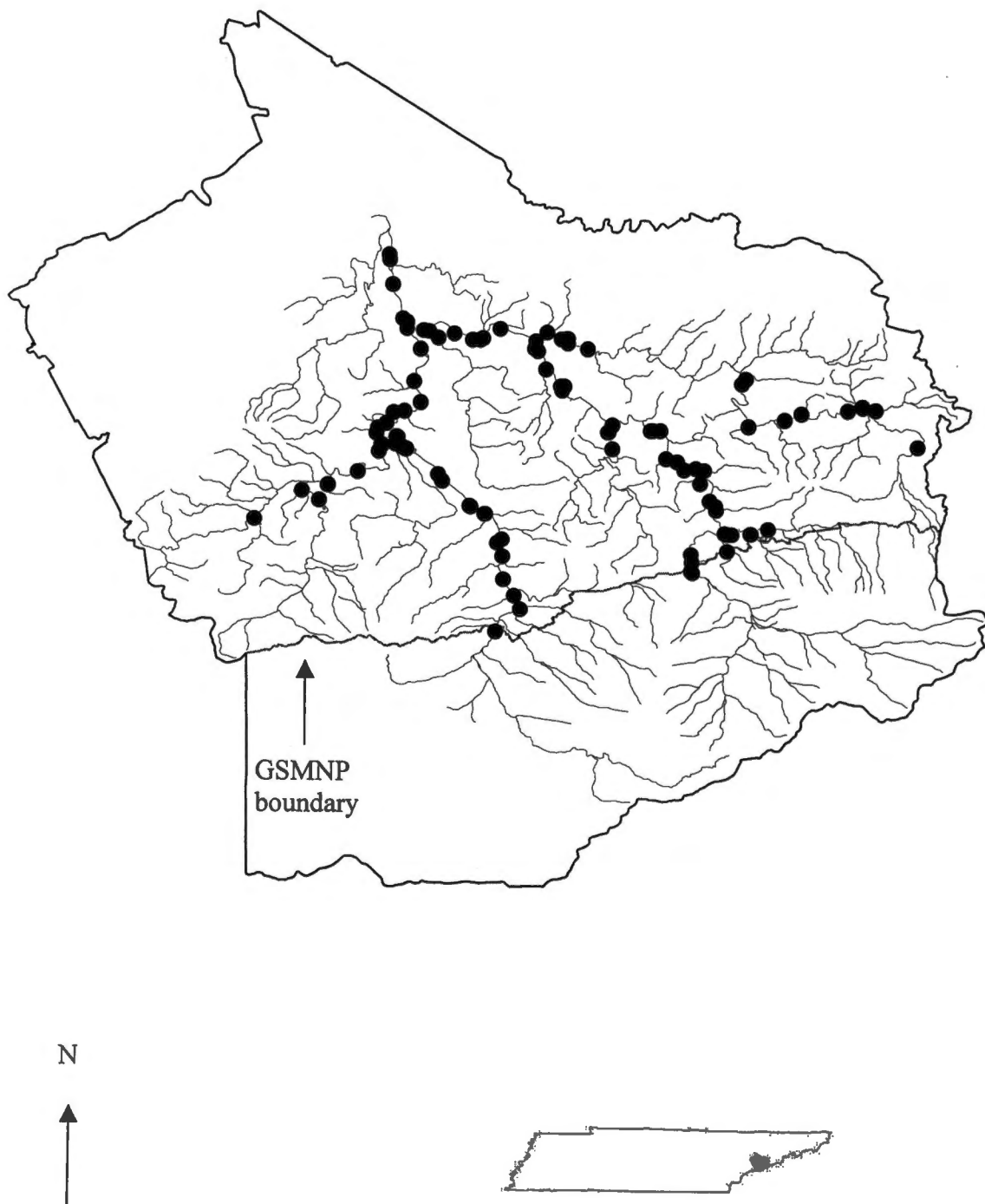


Figure A28. Collection localities for *Notropis telescopus*, telescope shiner, in the Little Pigeon River system, Sevier Co., TN.

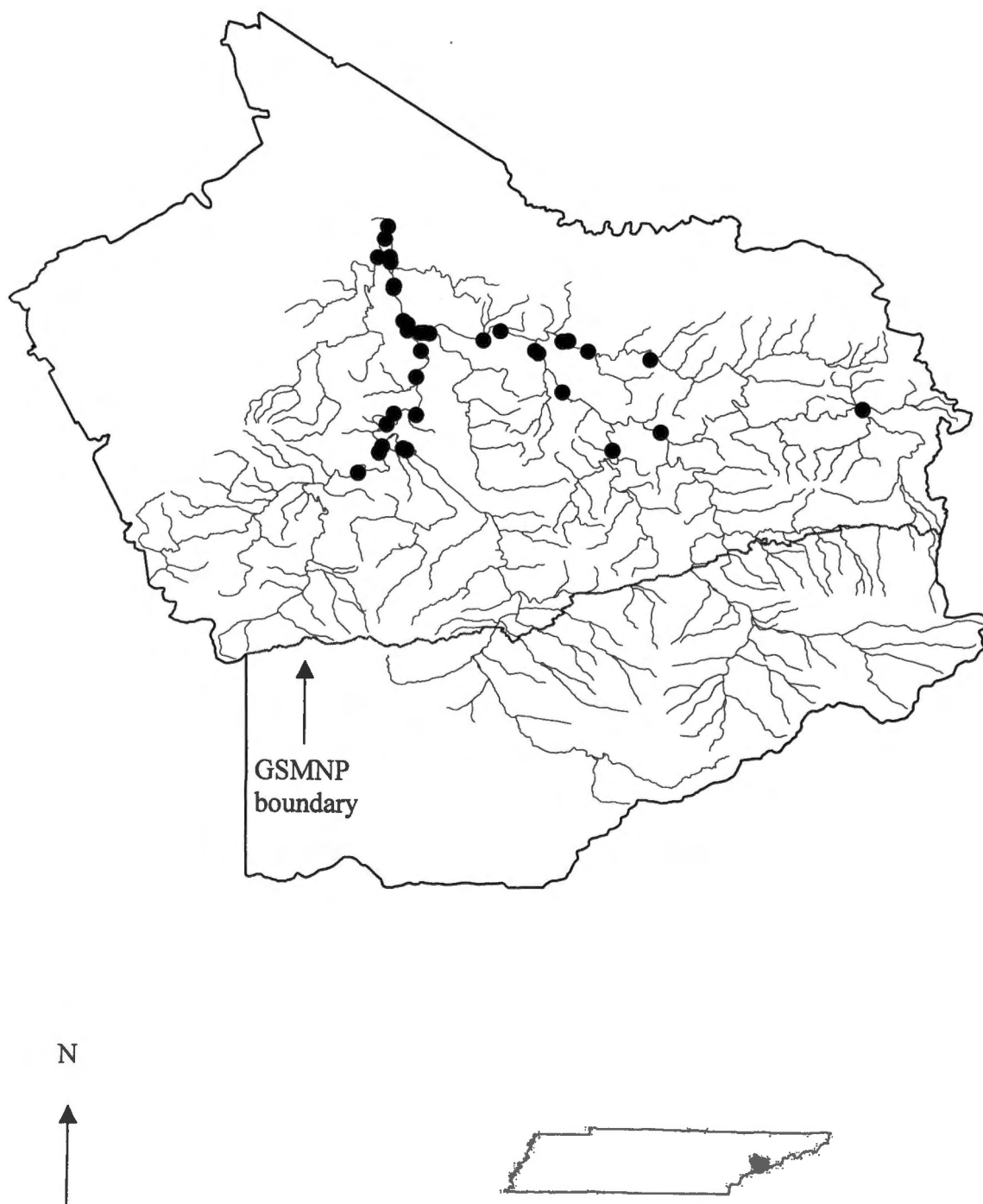


Figure A29. Collection localities for *Notropis volucellus*, mimic shiner, in the Little Pigeon River system, Sevier Co., TN.

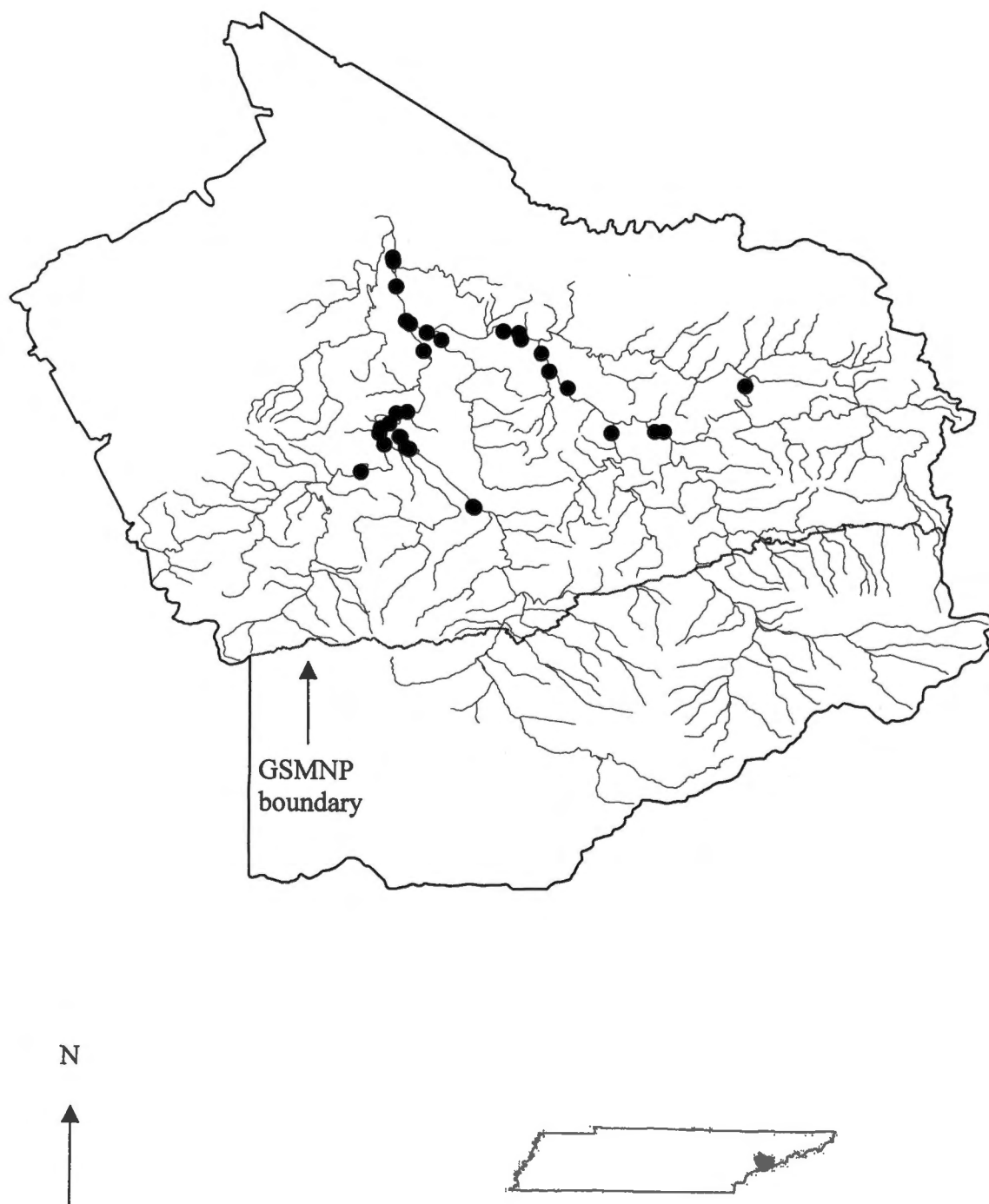


Figure A30. Collection localities for *Phenacobius uranops*, stargazing minnow, in the Little Pigeon River system, Sevier Co., TN.

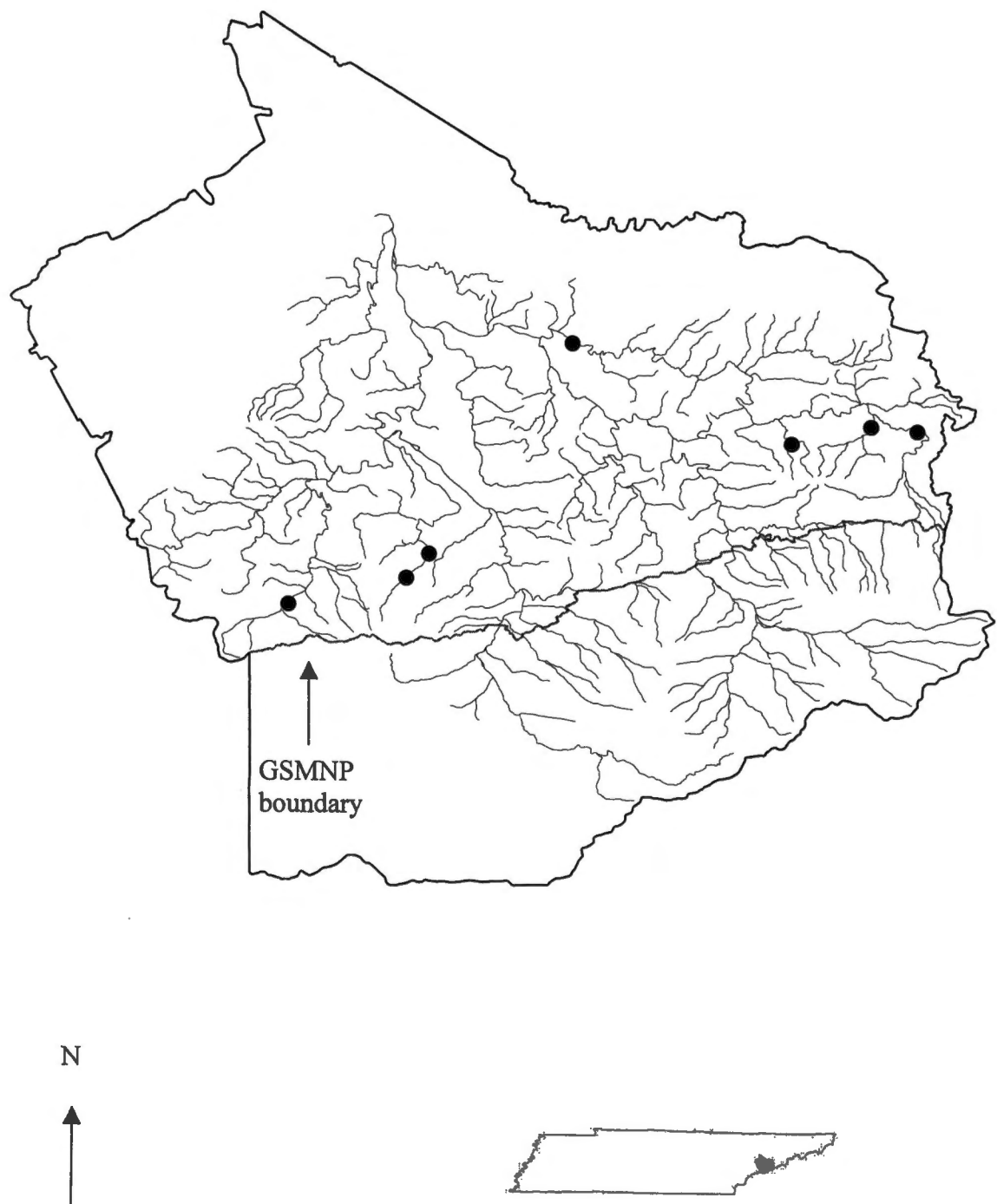


Figure A31. Collection localities for *Phoxinus tennesseensis*, Tennessee dace, in the Little Pigeon River system, Sevier Co., TN.

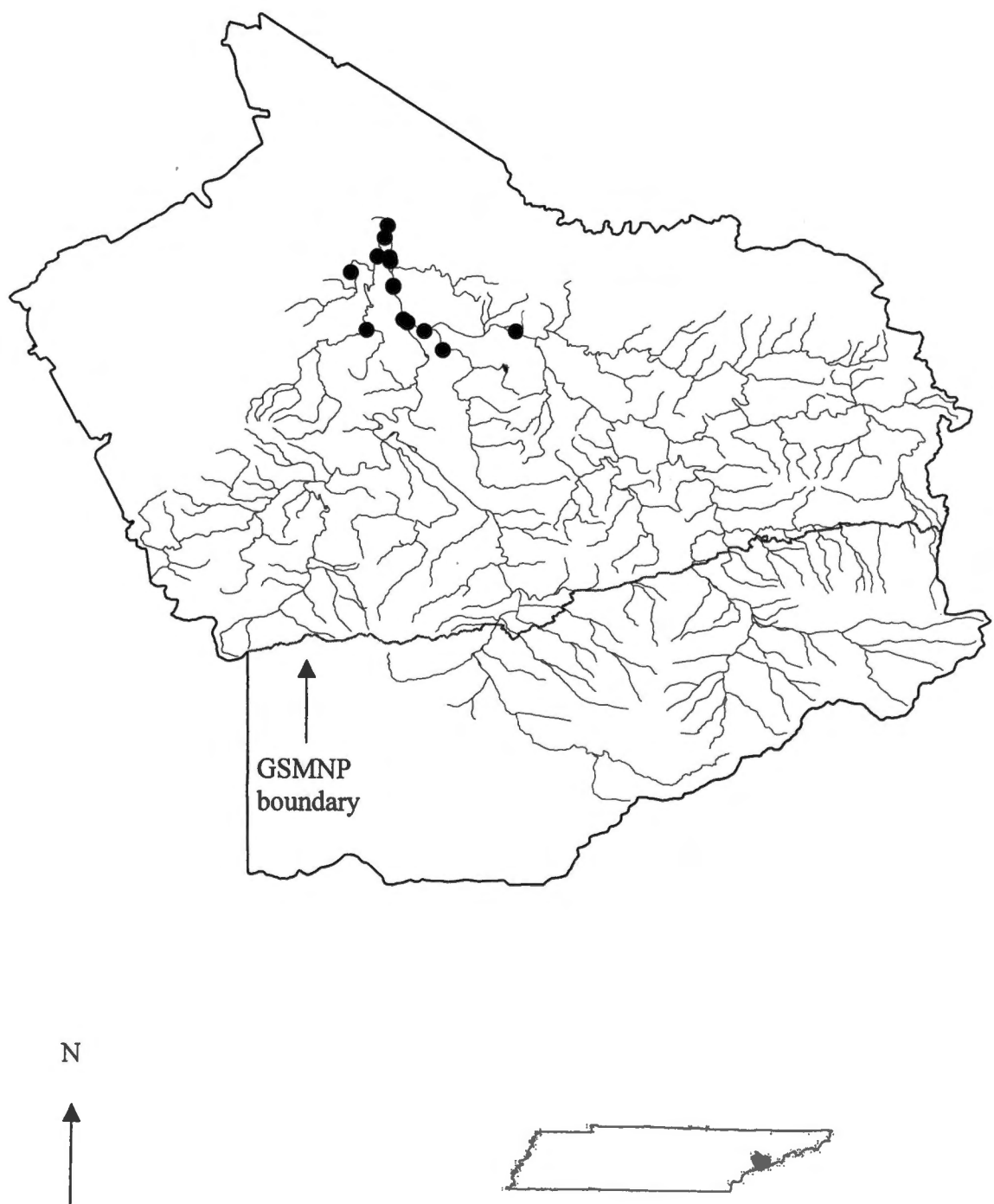


Figure A32. Collection localities for *Pimephales notatus*, bluntnose minnow, in the Little Pigeon River system, Sevier Co., TN.

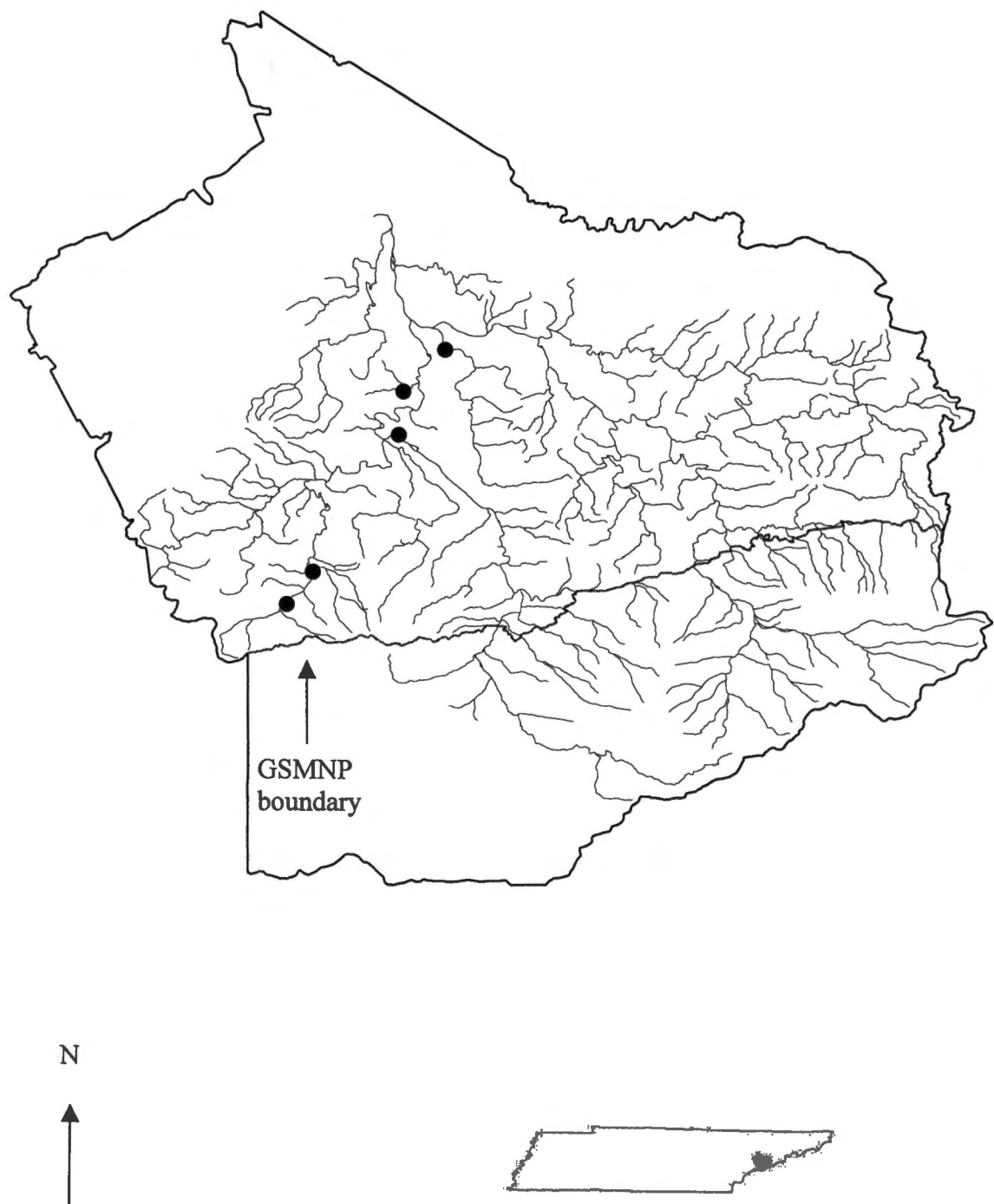


Figure A33. Collection localities for *Pimephales promelas*, fathead minnow, in the Little Pigeon River system, Sevier Co., TN.

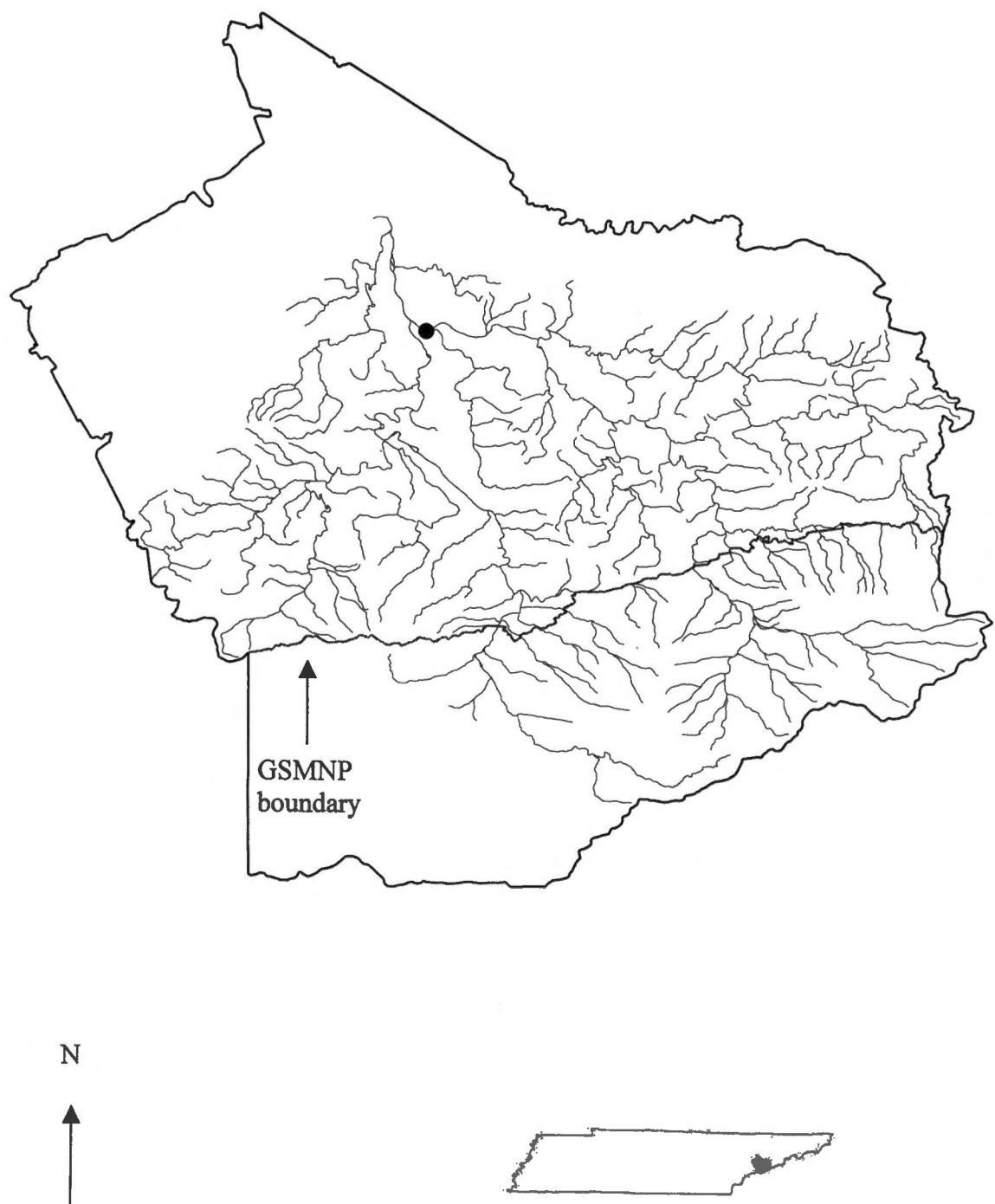


Figure A34. Collection localities for *Pimephales vigilax*, bullhead minnow, in the Little Pigeon River system, Sevier Co., TN.

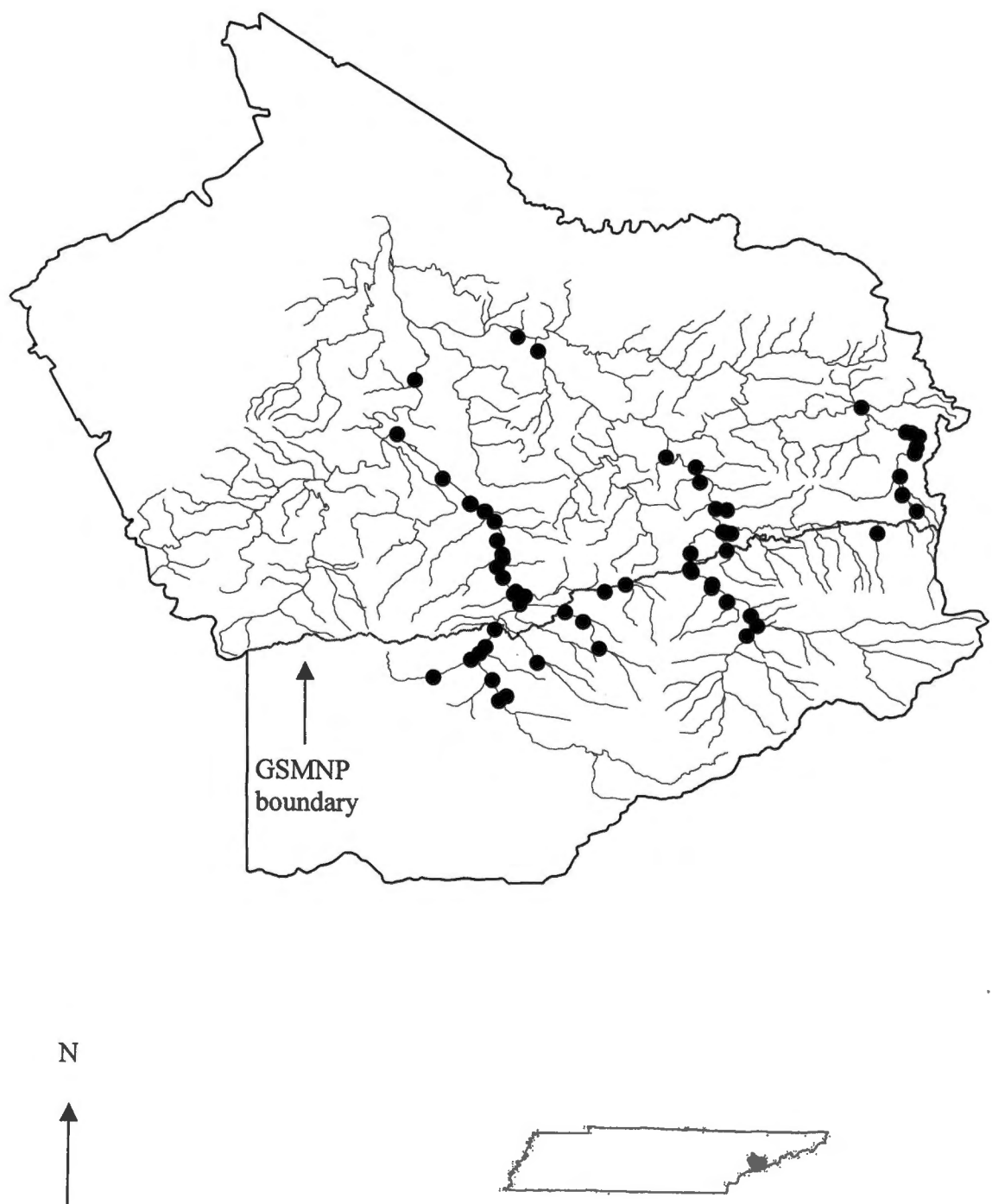


Figure A35. Collection localities for *Rhinichthys cataractae*, longnose dace, in the Little Pigeon River system, Sevier Co., TN.

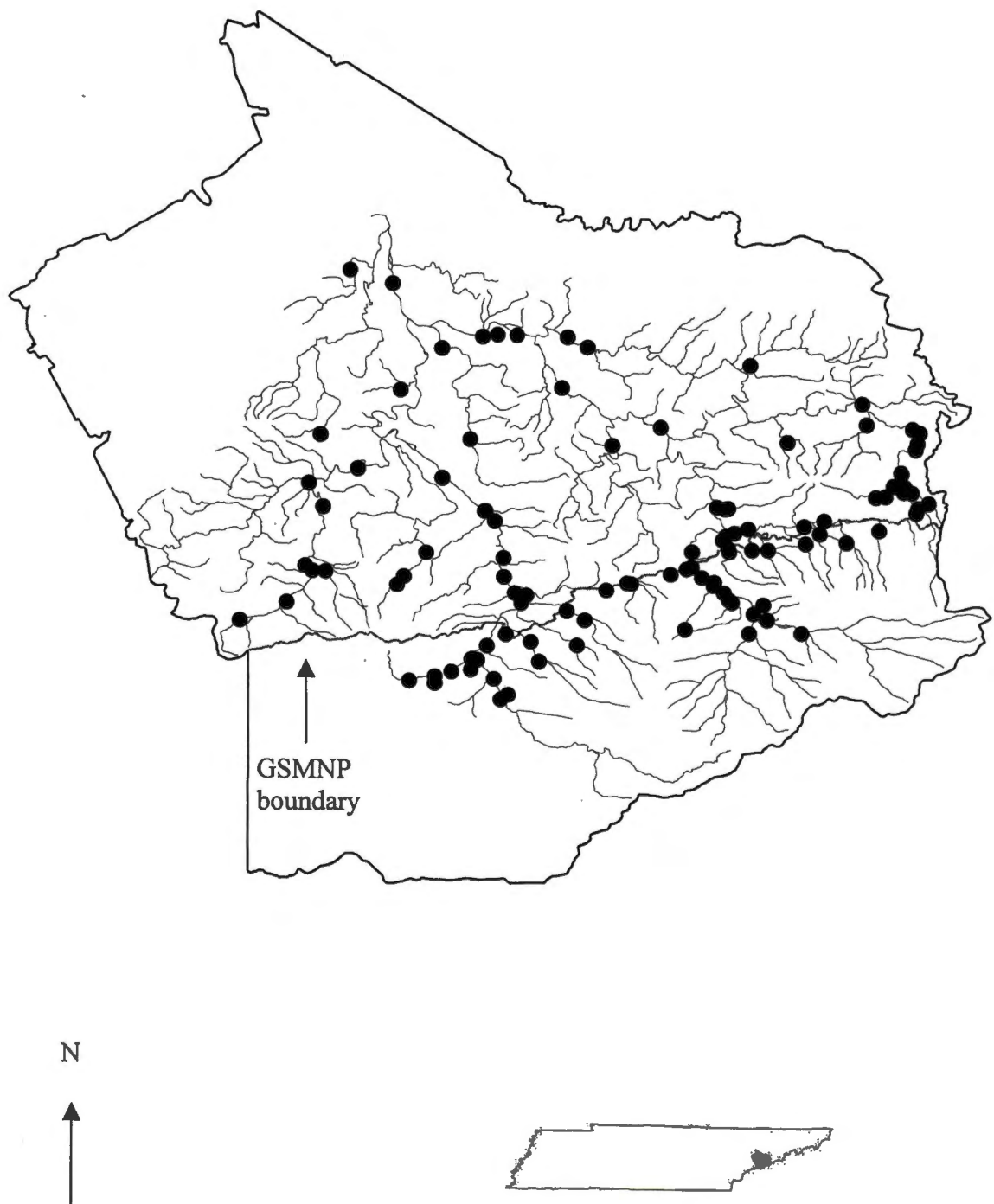


Figure A36. Collection localities for *Rhinichthys obtusus*, orangeside dace, in the Little Pigeon River system, Sevier Co., TN.

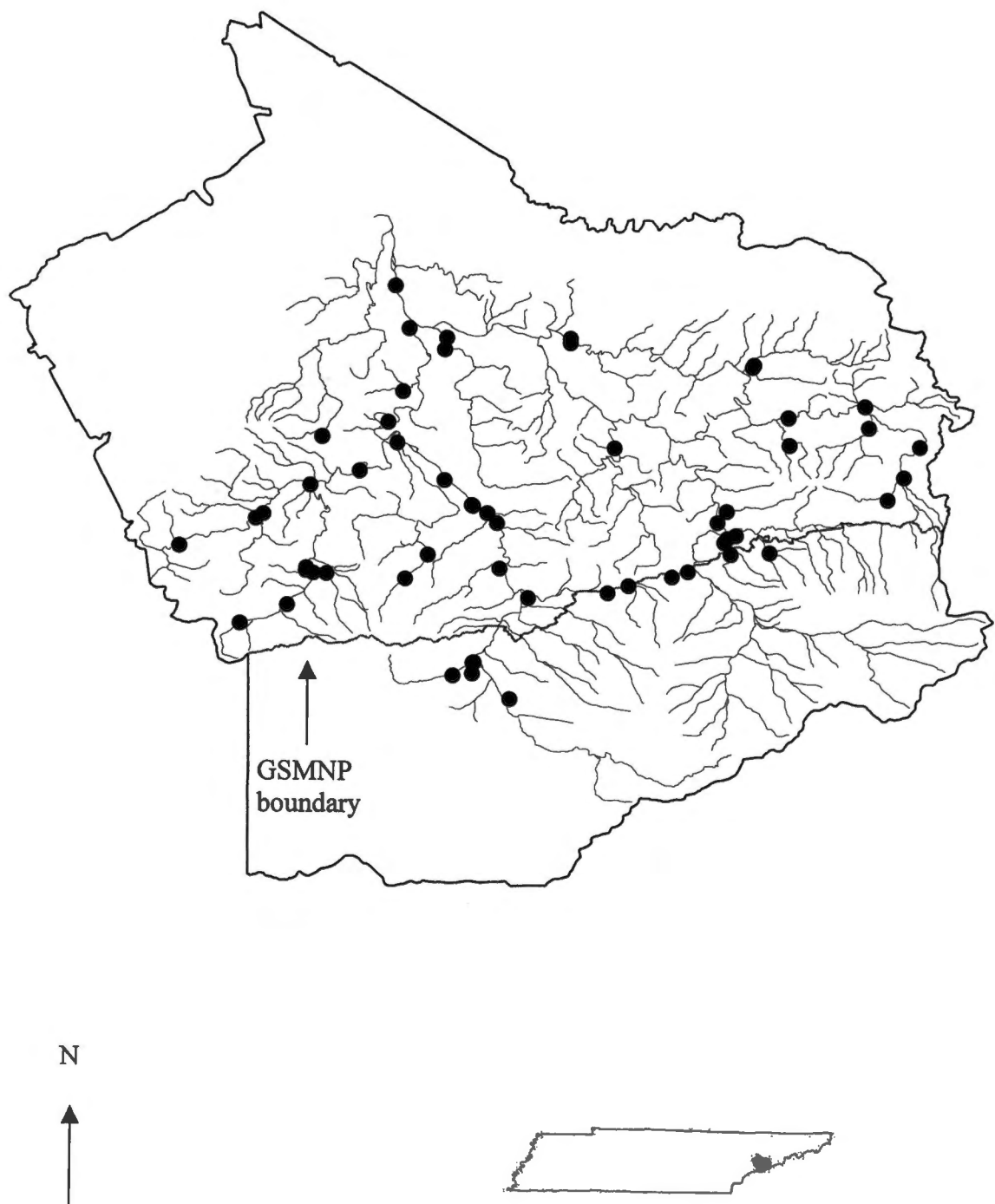


Figure A37. Collection localities for *Semotilus atromaculatus*, creek chub, in the Little Pigeon River system, Sevier Co., TN.

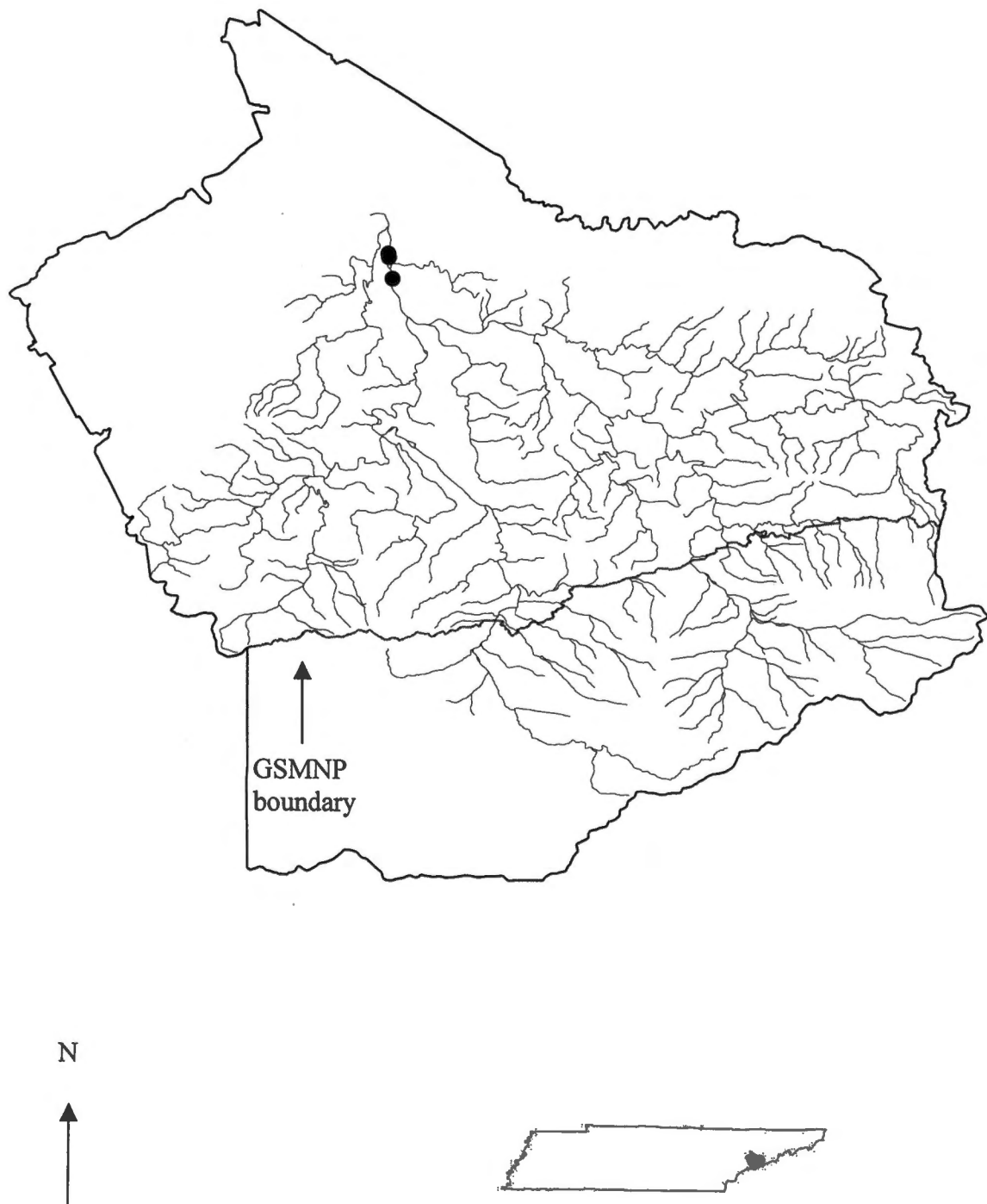


Figure A38. Collection localities for *Carpionodes cyprinus*, quillback, in the Little Pigeon River system, Sevier Co., TN.

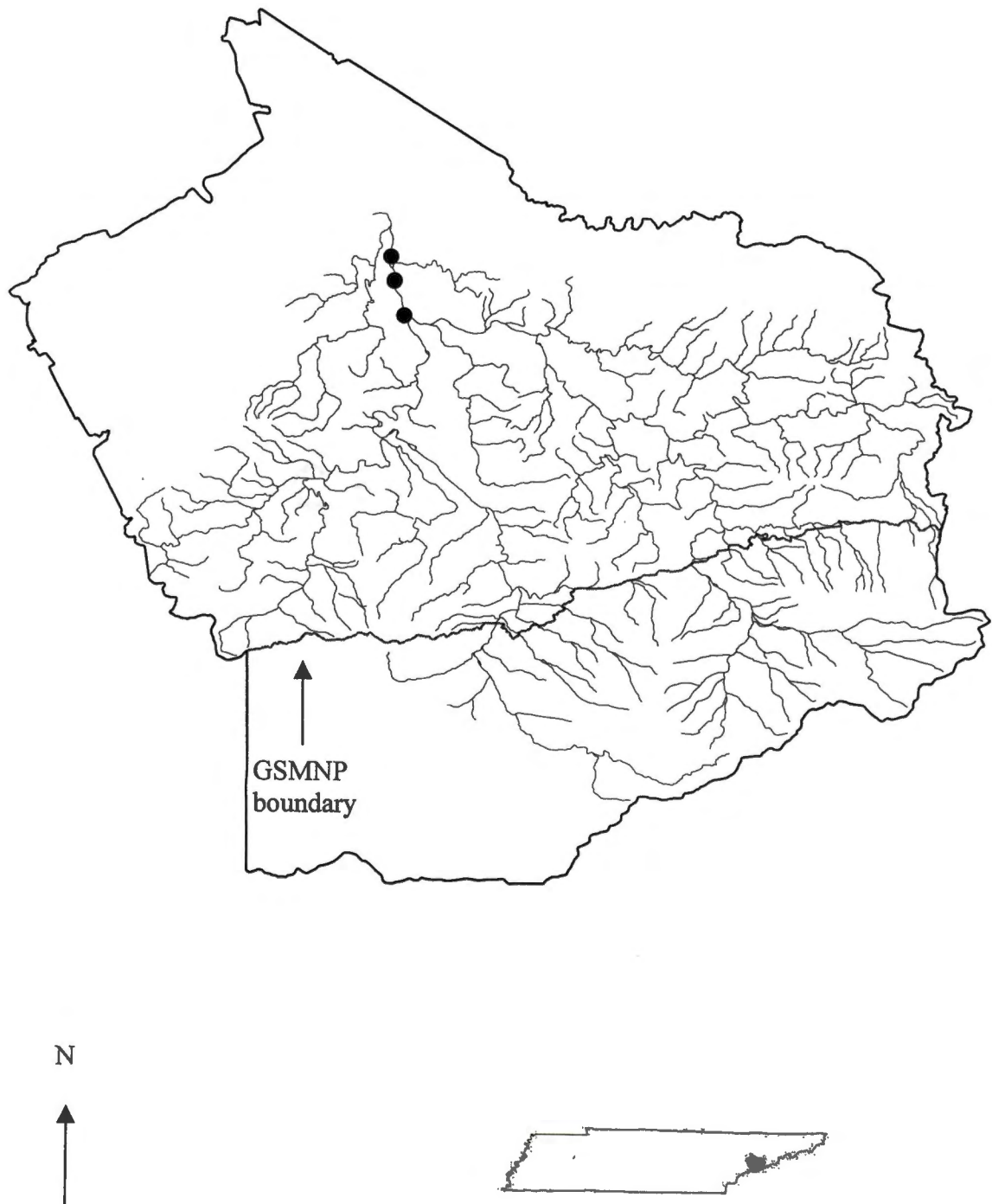


Figure A39. Collection localities for *Carpiodes velifer*, highfin carpsucker, in the Little Pigeon River system, Sevier Co., TN.

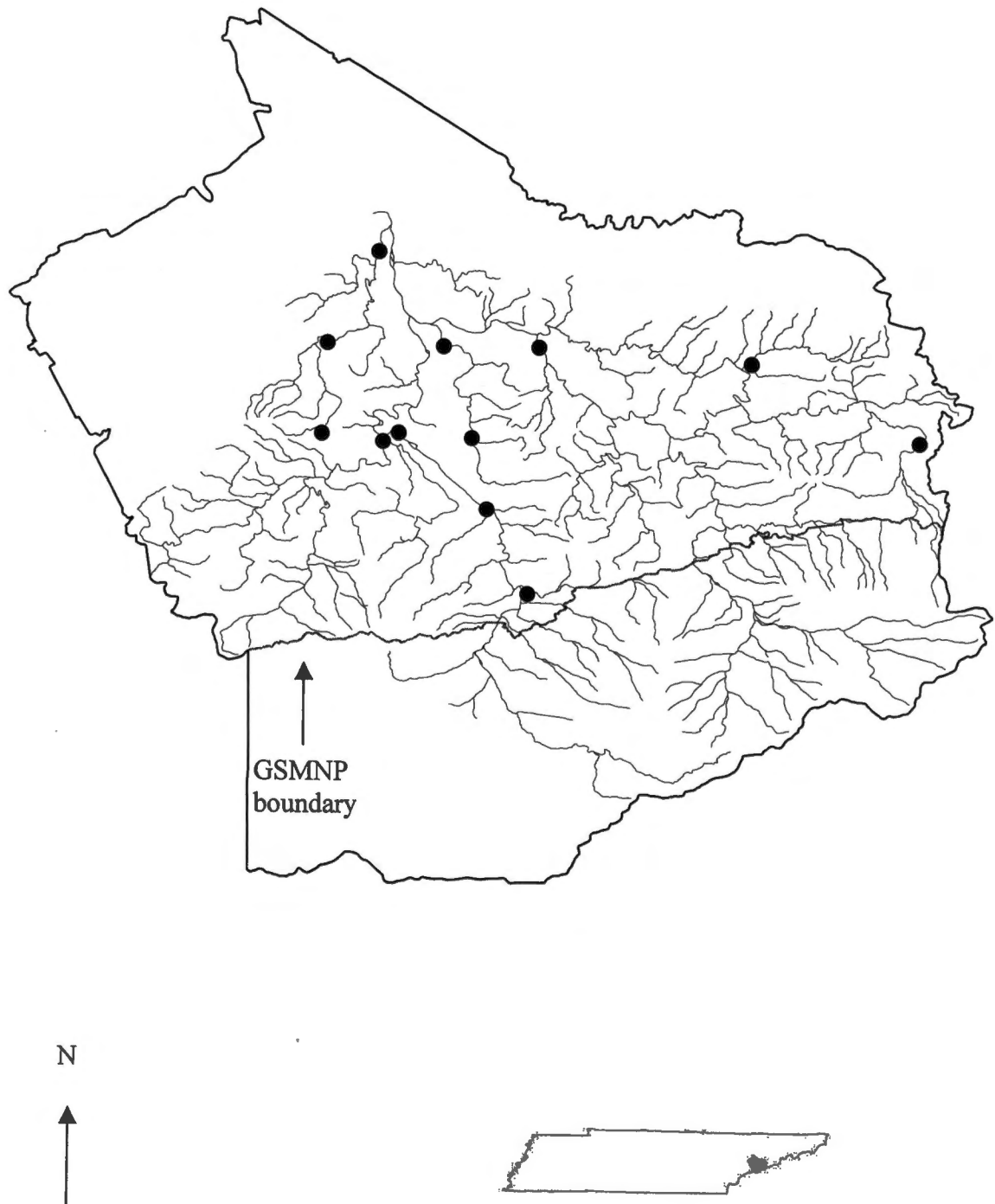


Figure A40. Collection localities for *Catostomus commersonnii*, white sucker, in the Little Pigeon River system, Sevier Co., TN.

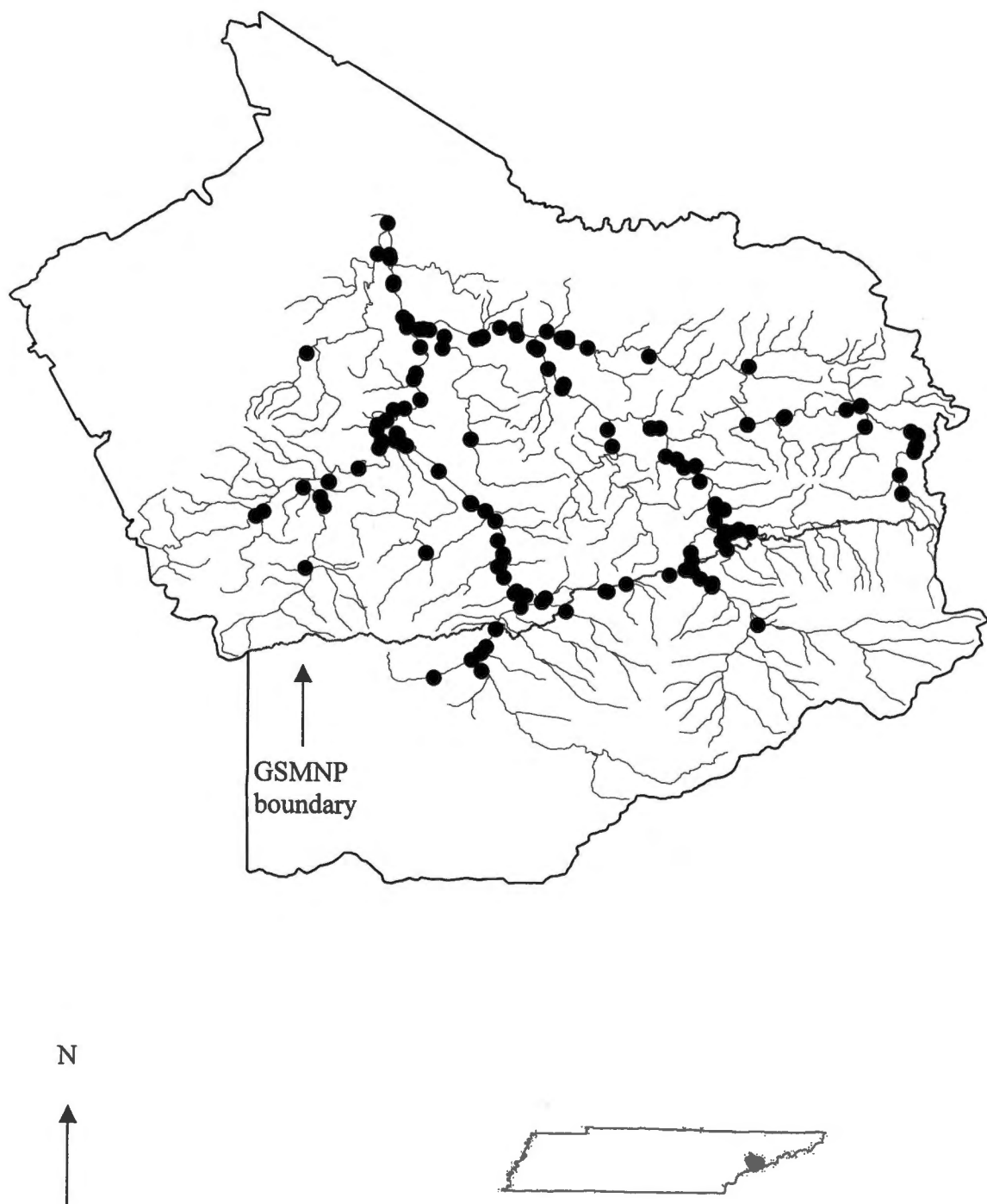


Figure A41. Collection localities for *Hypentelium nigricans*, northern hogsucker, in the Little Pigeon River system, Sevier Co., TN.

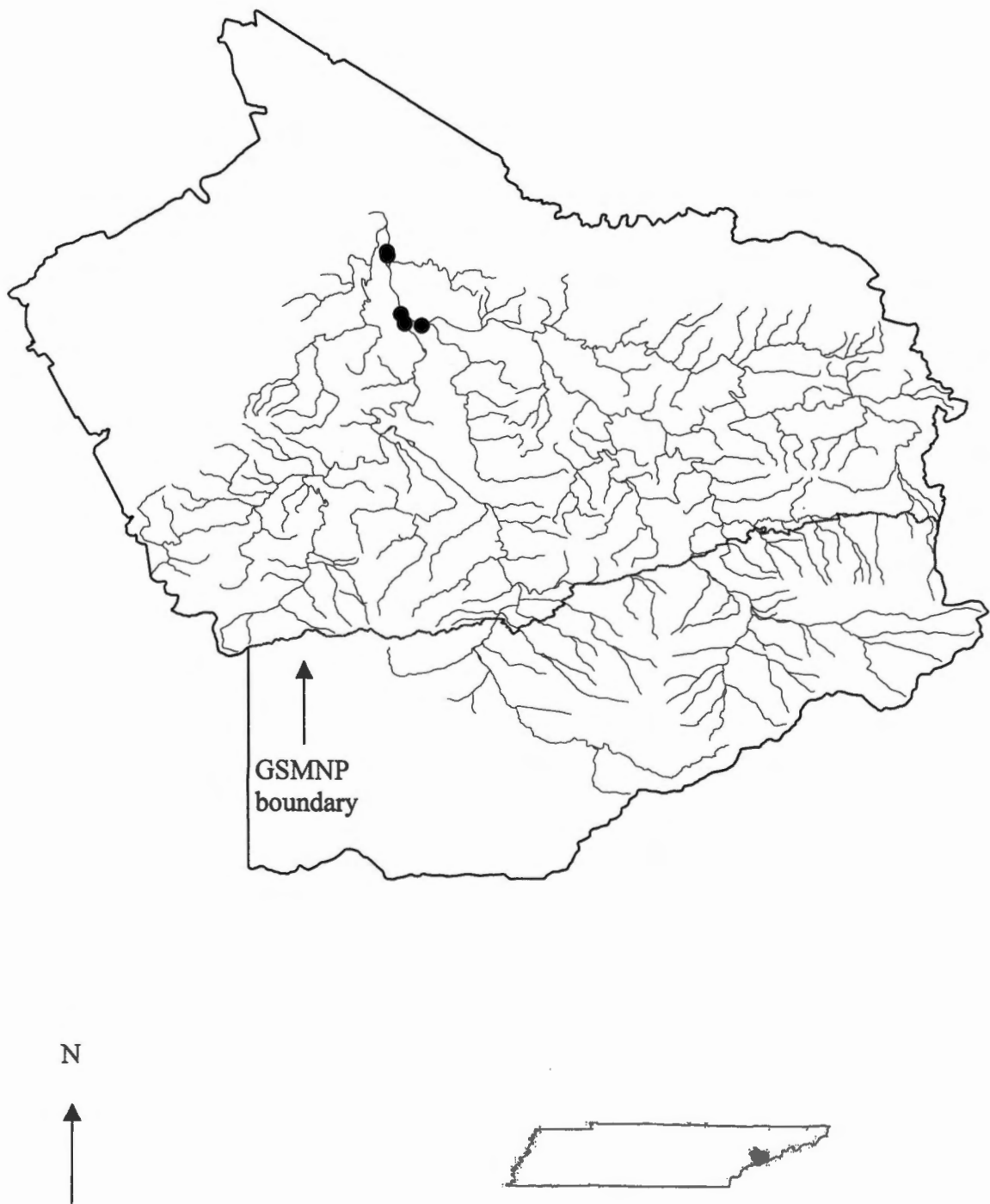


Figure A42. Collection localities for *Ictiobus bubalus*, smallmouth buffalo, in the Little Pigeon River system, Sevier Co., TN.

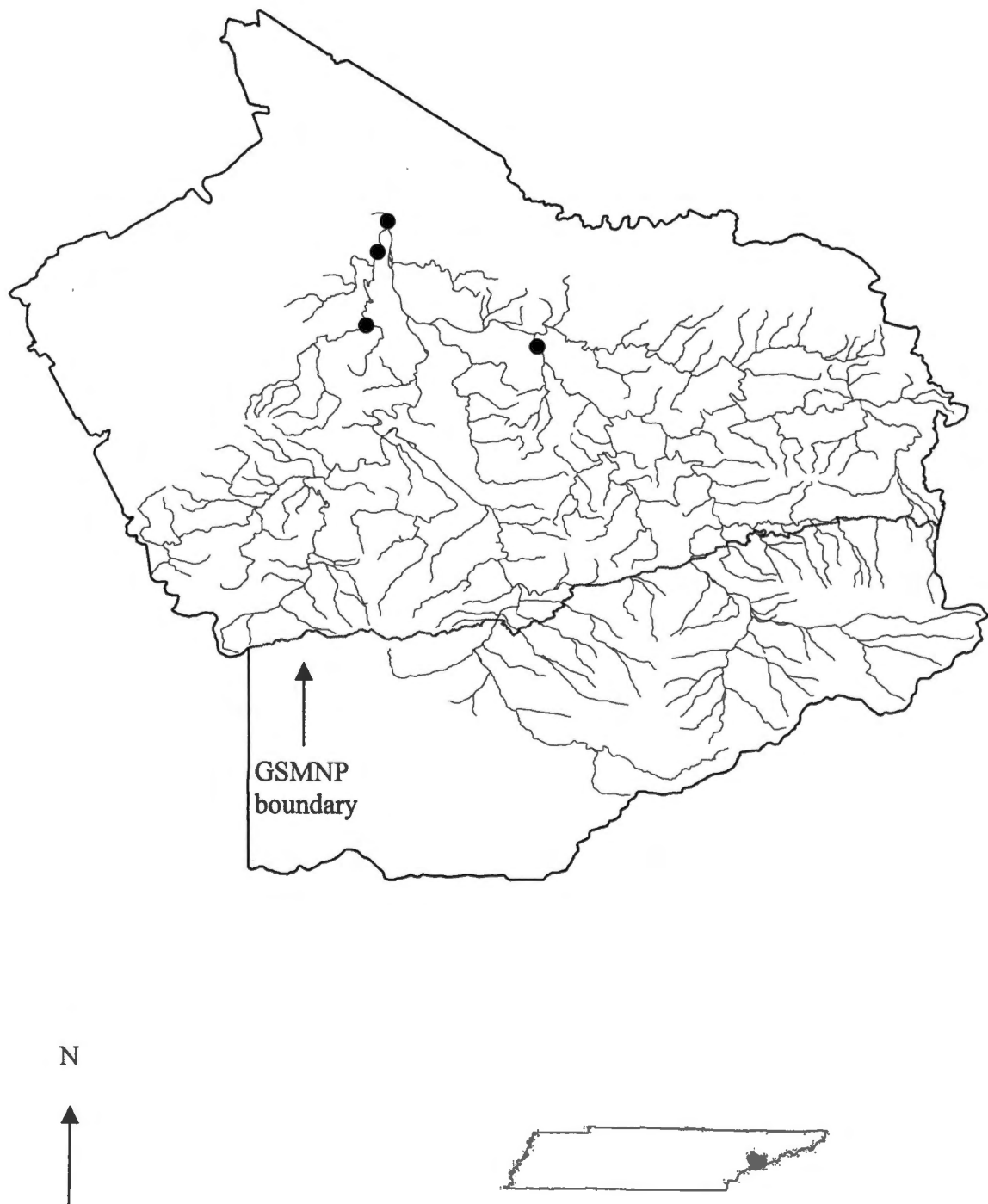


Figure A43. Collection localities for *Minytrema melanops*, spotted sucker, in the Little Pigeon River system, Sevier Co., TN.

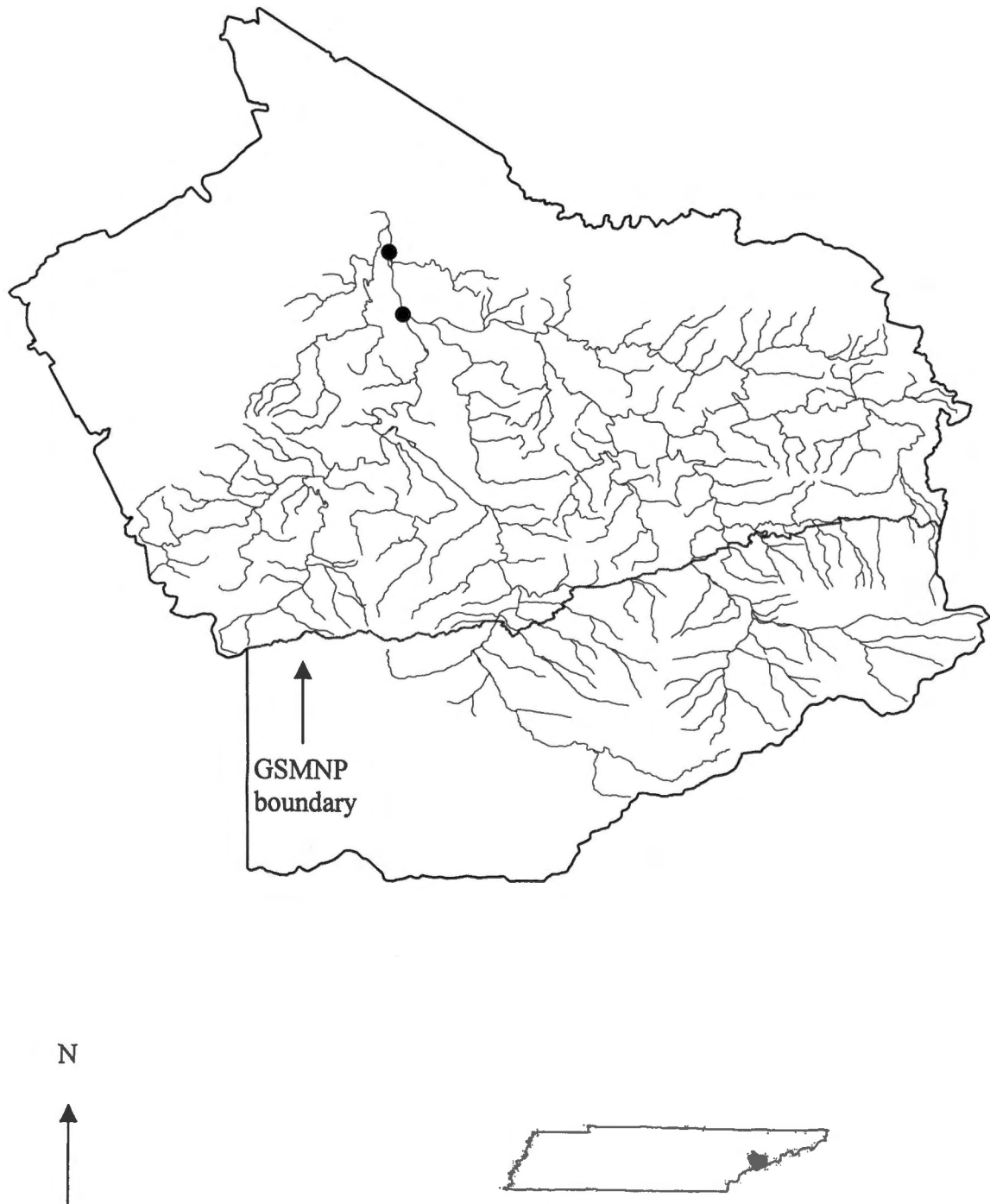


Figure A44. Collection localities for *Moxostoma breviceps*, smallmouth redhorse, in the Little Pigeon River system, Sevier Co., TN.

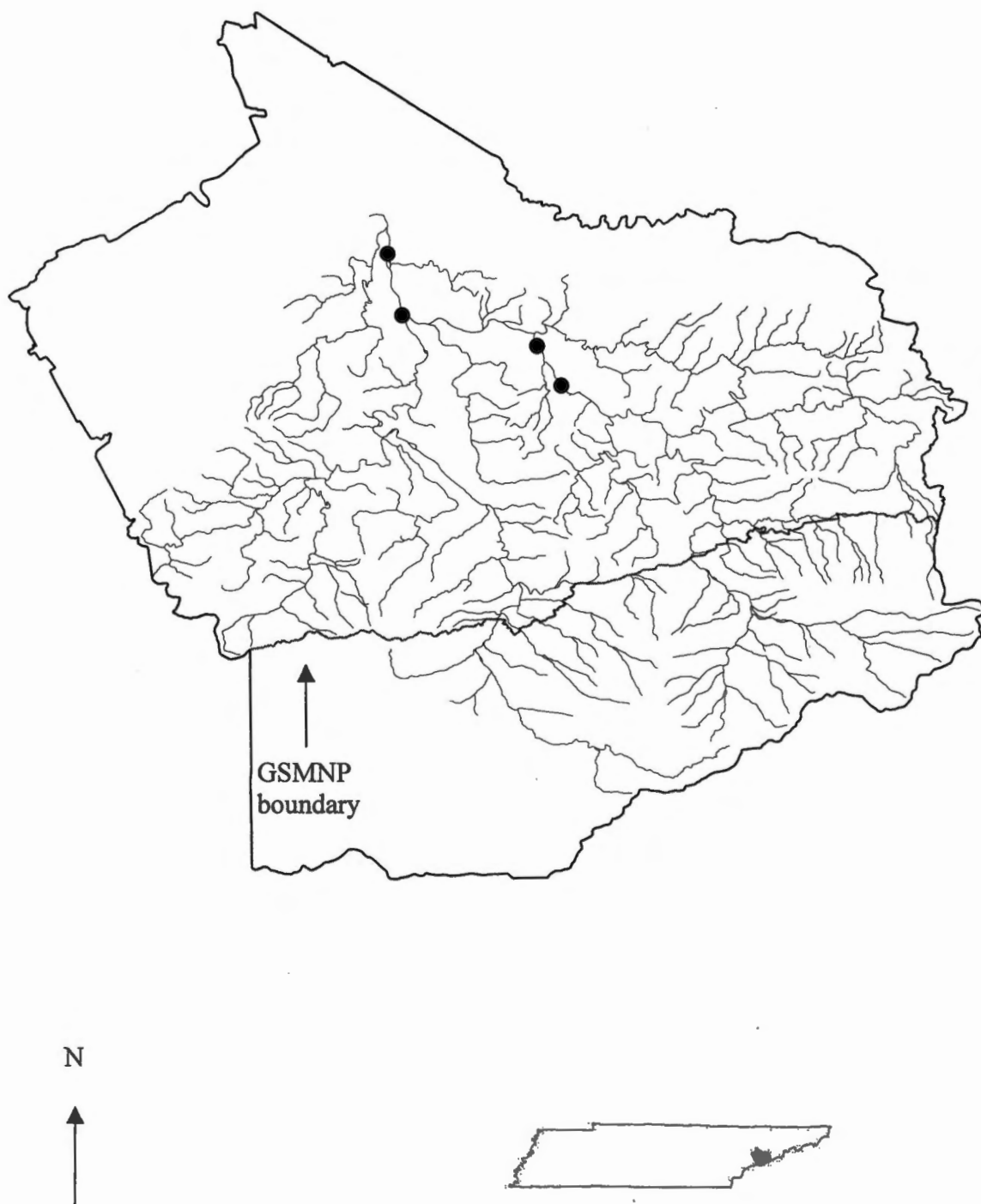


Figure A45. Collection localities for *Moxostoma carinatum*, river redhorse, in the Little Pigeon River system, Sevier Co., TN.

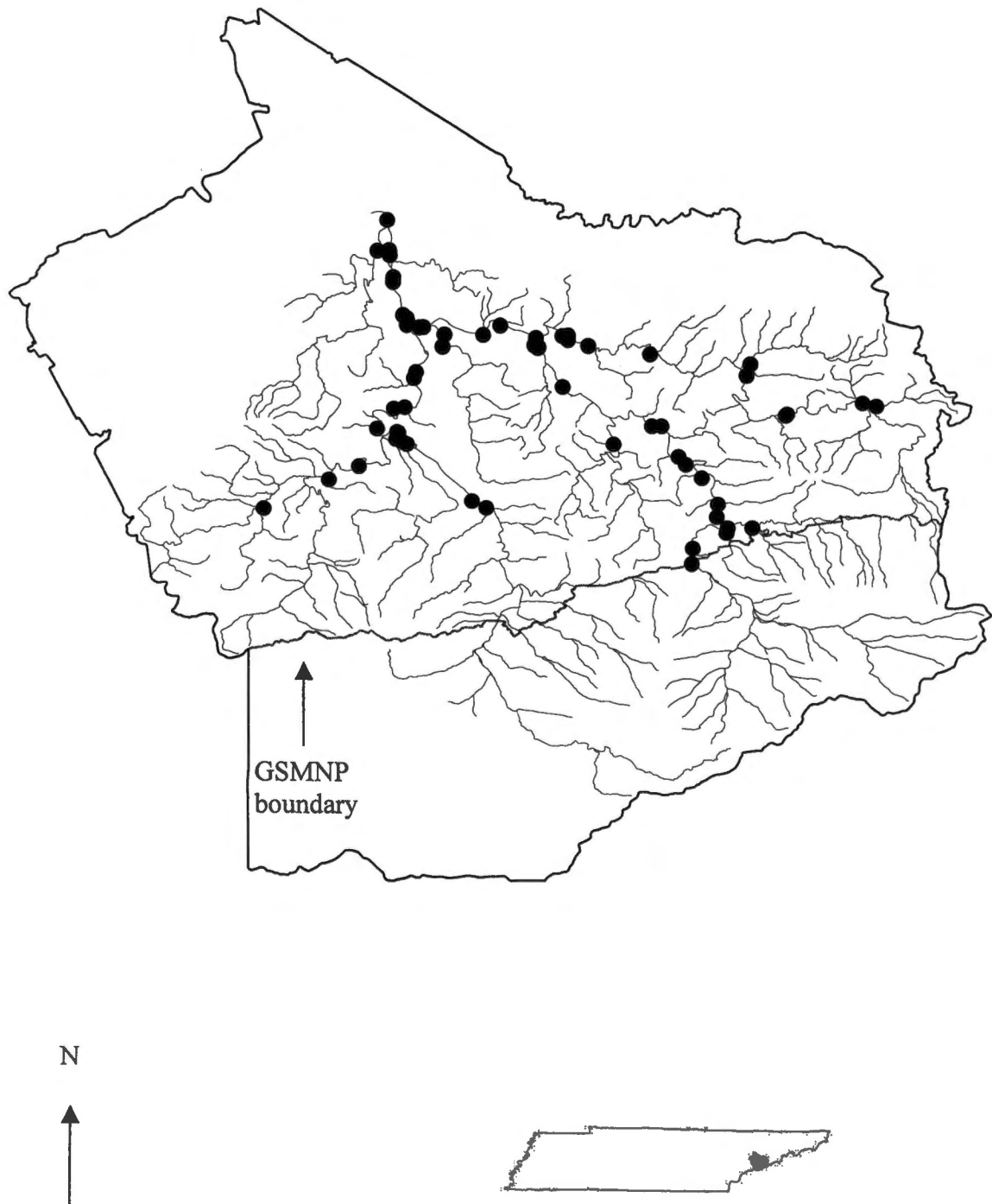


Figure A46. Collection localities for *Moxostoma duquesnii*, black redhorse, in the Little Pigeon River system, Sevier Co., TN.

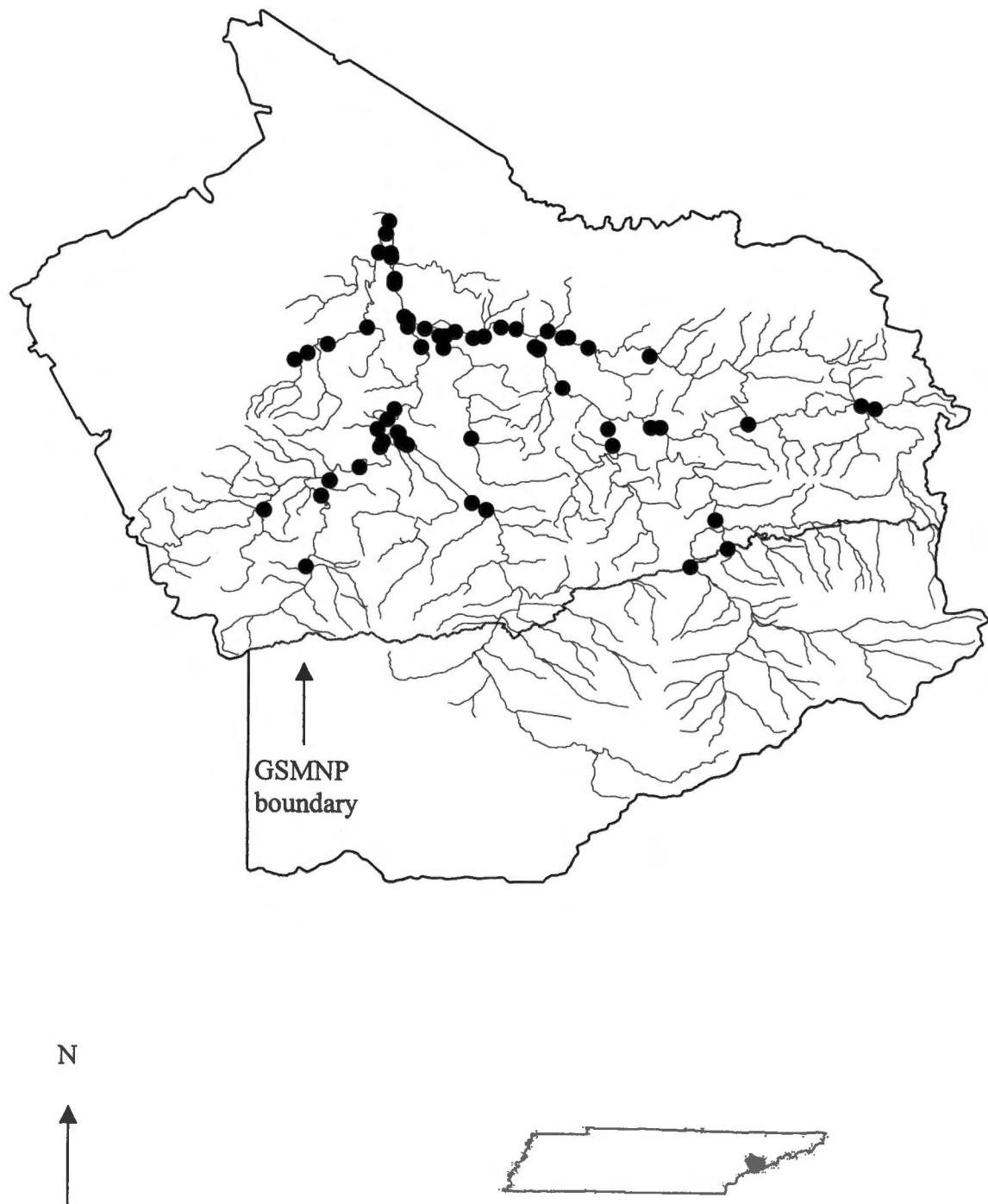


Figure A47. Collection localities for *Moxostoma erythrurum*, golden redhorse, in the Little Pigeon River system, Sevier Co., TN.

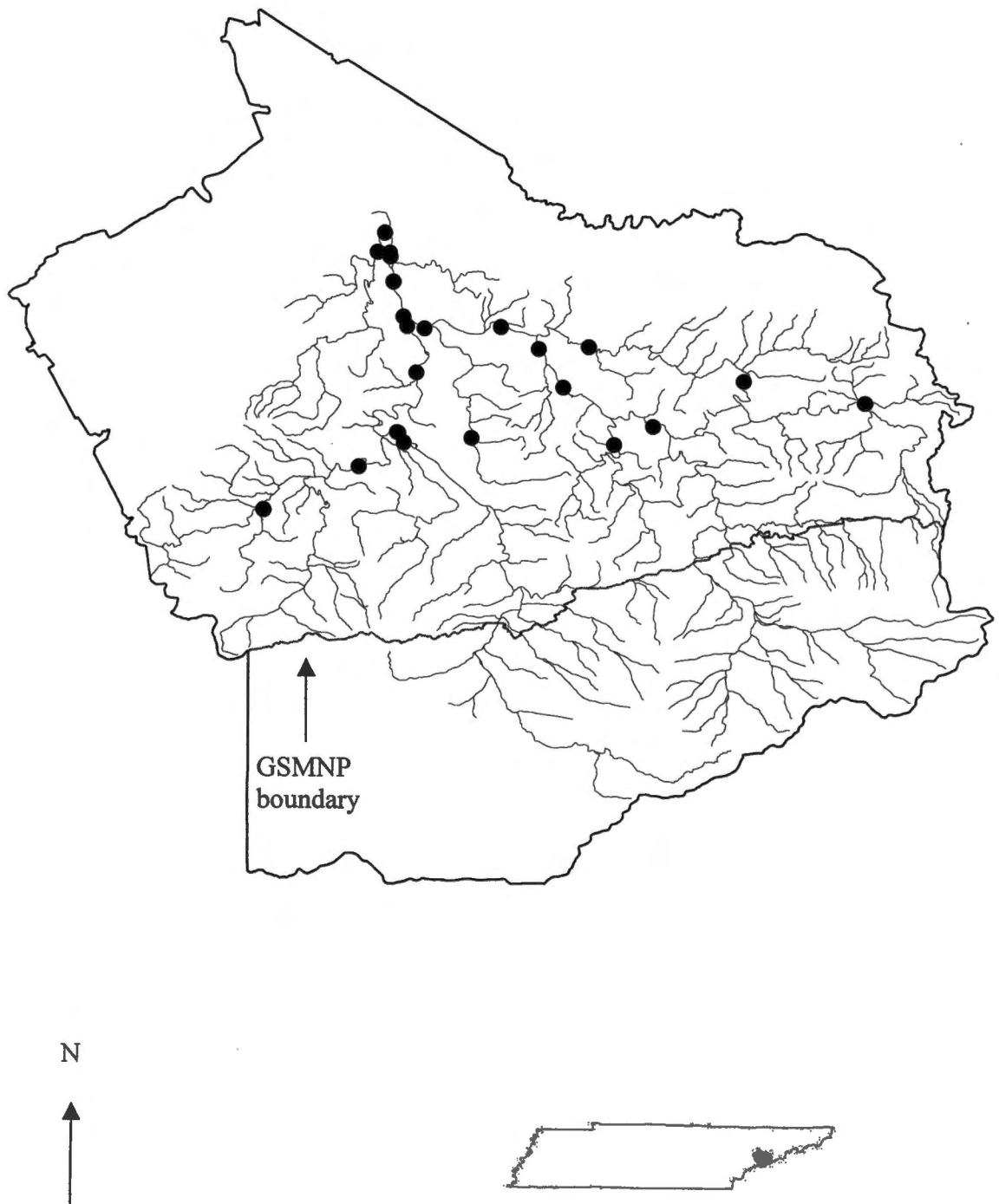


Figure A48. Collection localities for *Ameiurus natalis*, yellow bullhead, in the Little Pigeon River system, Sevier Co., TN.

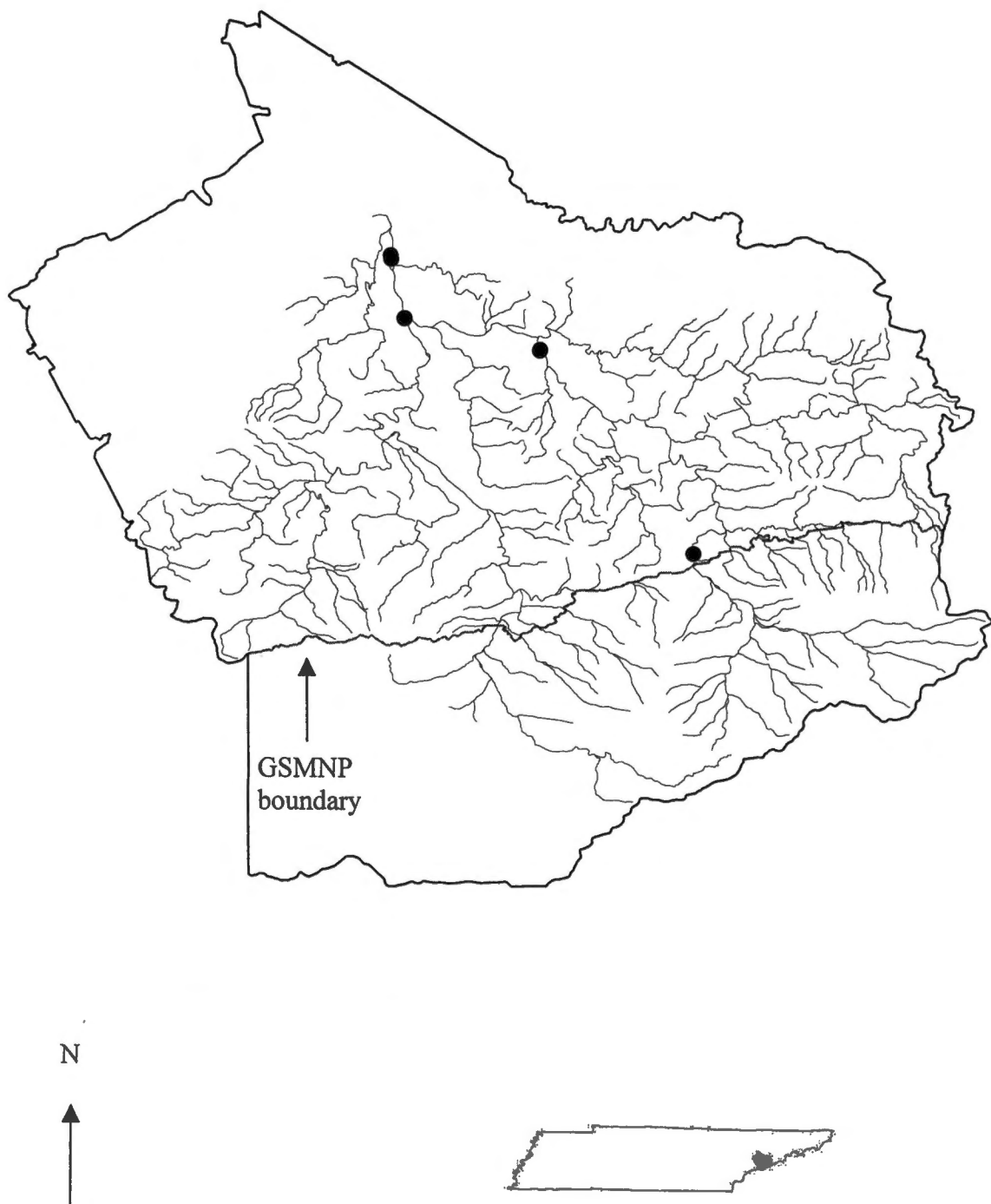


Figure A49. Collection localities for *Ictalurus punctatus*, channel catfish, in the Little Pigeon River system, Sevier Co., TN.

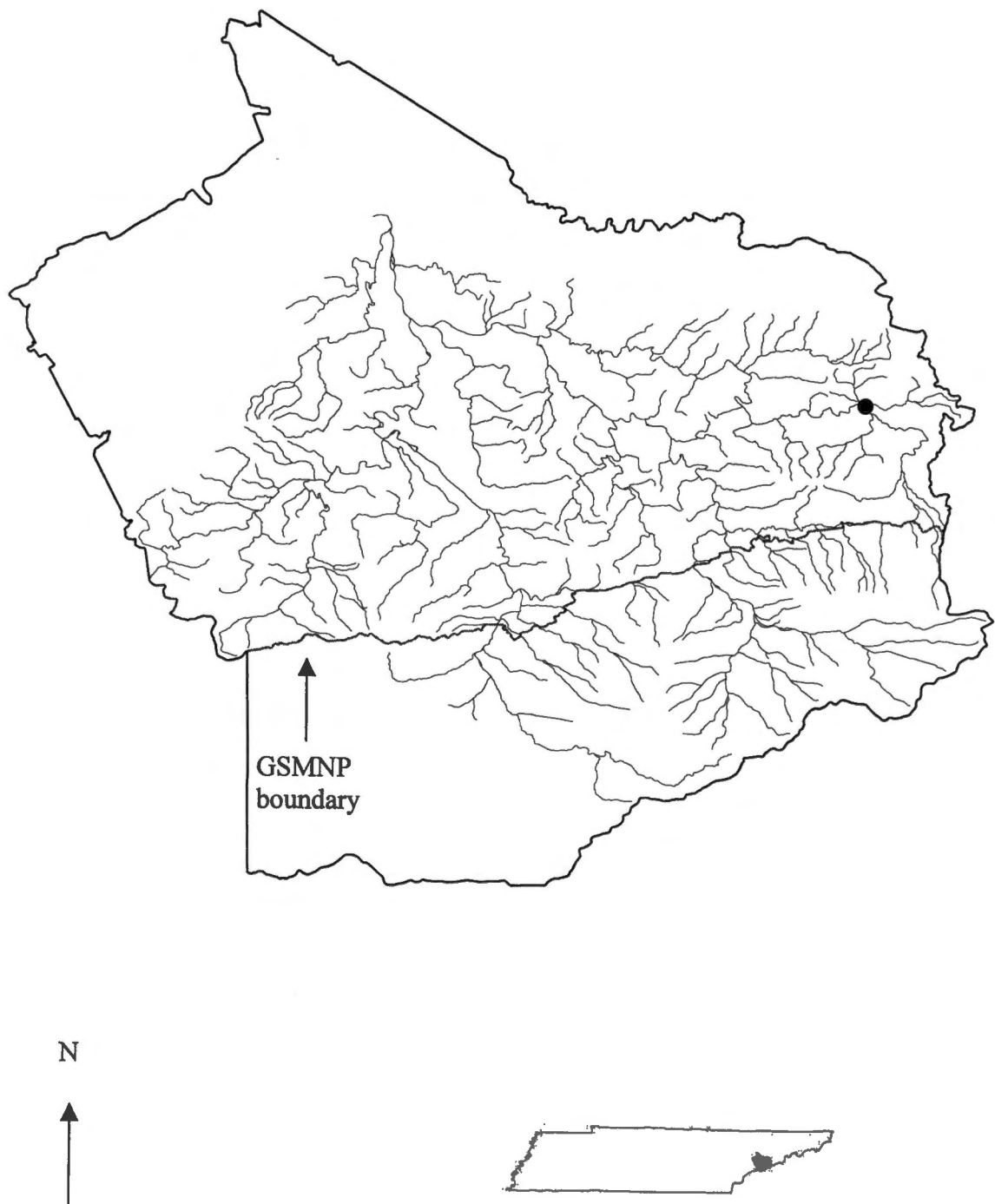


Figure A50. Collection localities for *Noturus* sp. cf. *elegans*, “chucky madtom,” in the Little Pigeon River system, Sevier Co., TN.

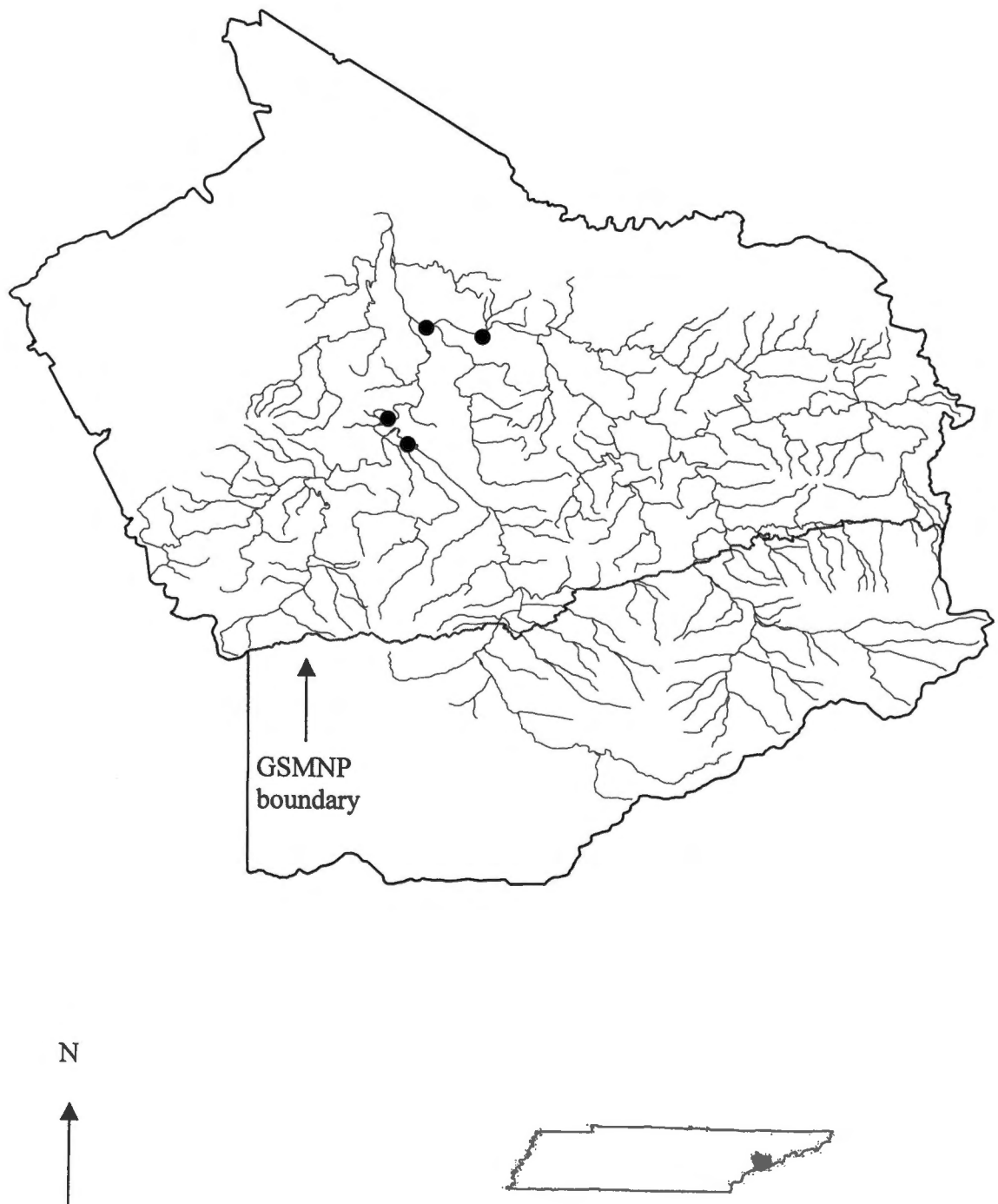


Figure A51. Collection localities for *Noturus eleutherus*, mountain madtom, in the Little Pigeon River system, Sevier Co., TN.

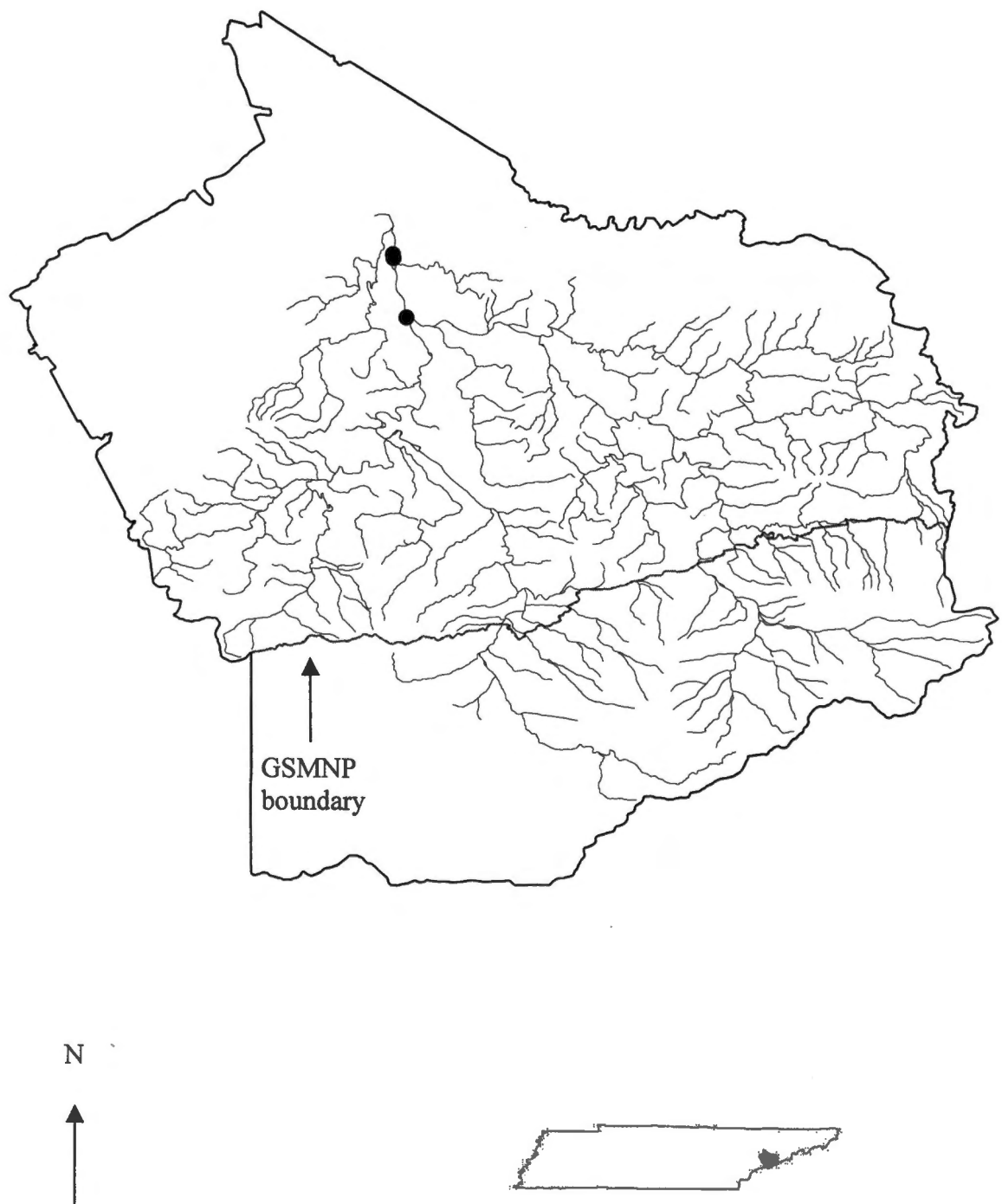


Figure A52. Collection localities for *Pyiodictis olivaris*, flathead catfish, in the Little Pigeon River system, Sevier Co., TN.

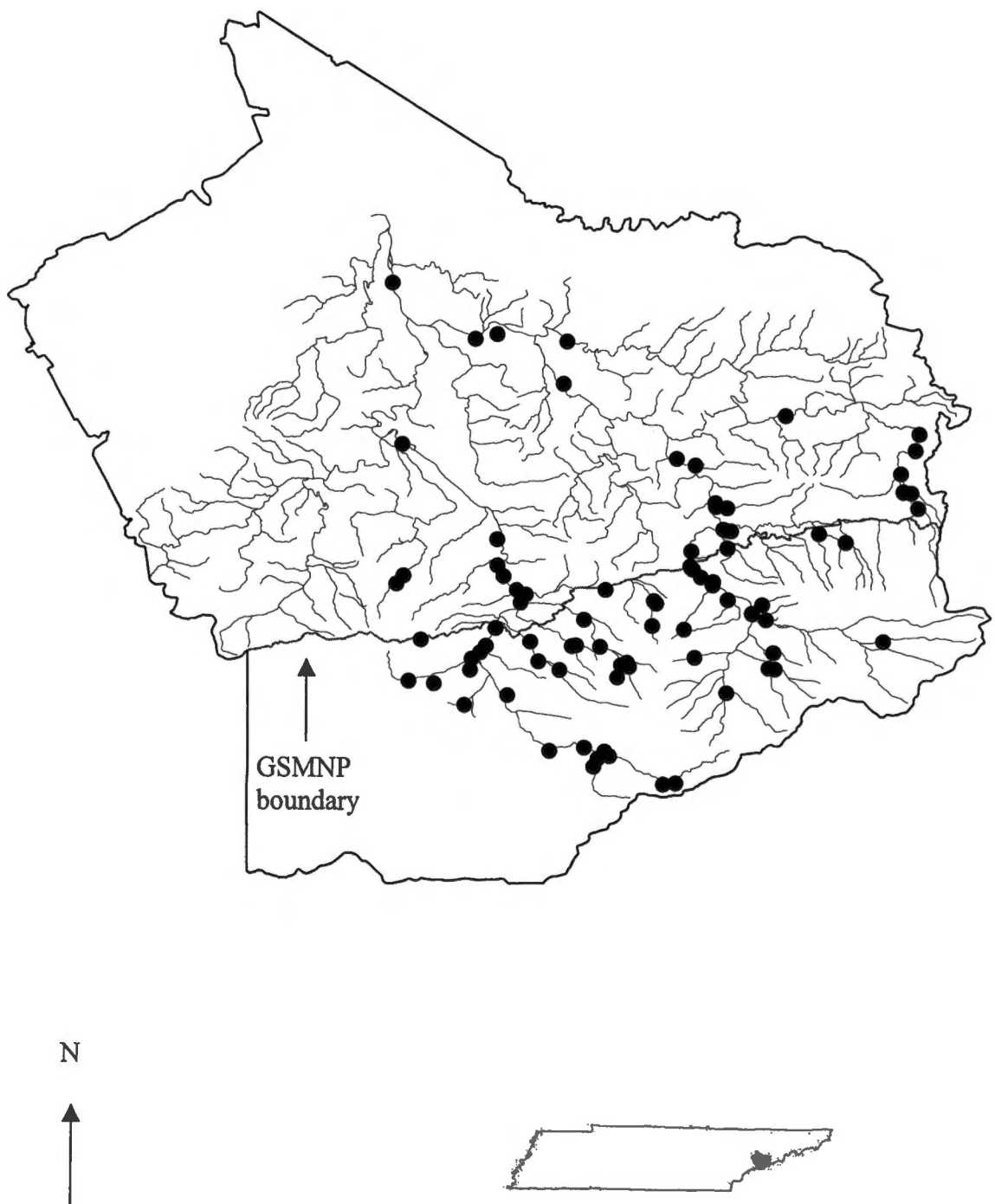


Figure A53. Collection localities for *Oncorhynchus mykiss*, rainbow trout, in the Little Pigeon River system, Sevier Co., TN.

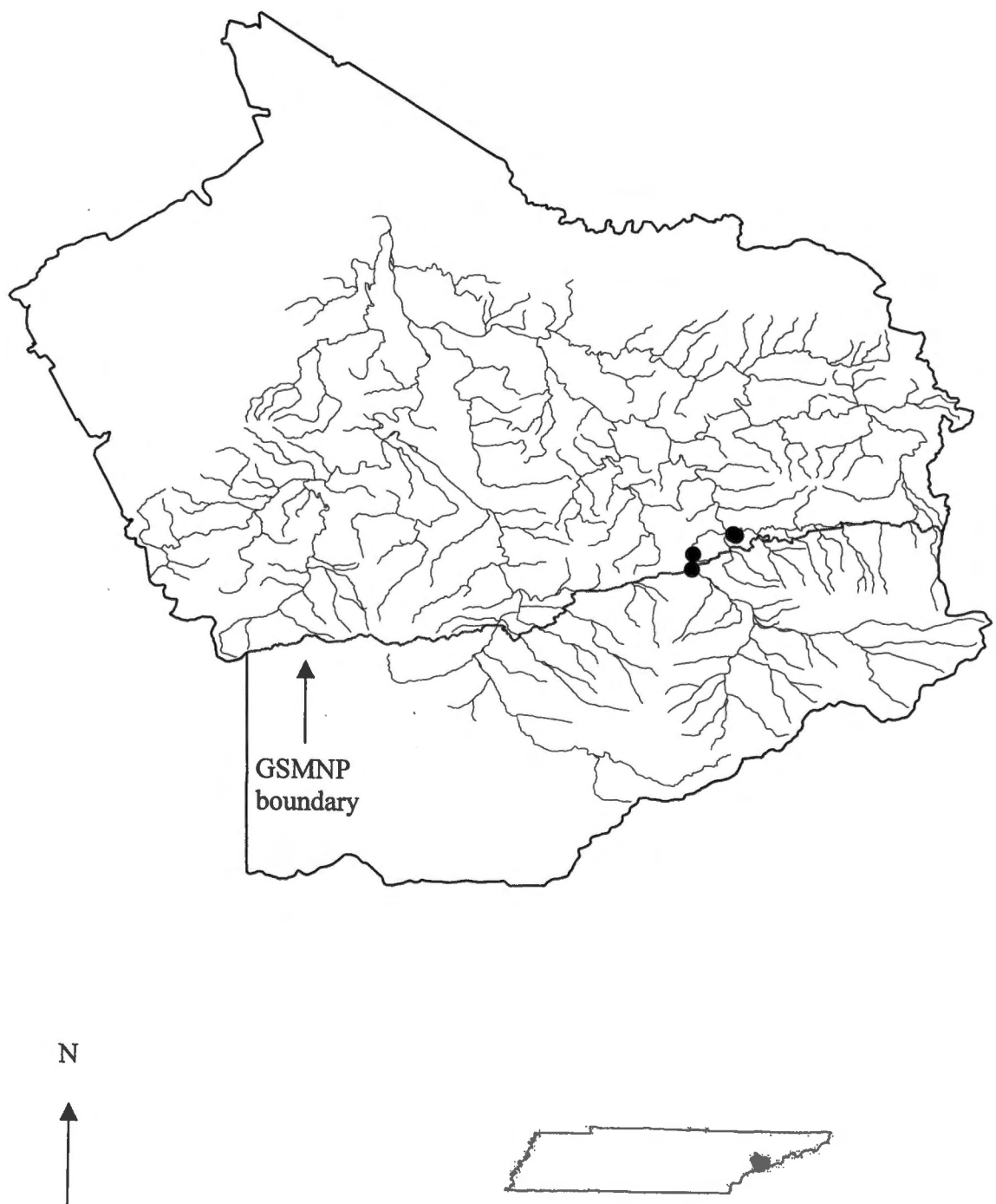


Figure A54. Collection localities for *Salmo trutta*, brown trout, in the Little Pigeon River system, Sevier Co., TN.

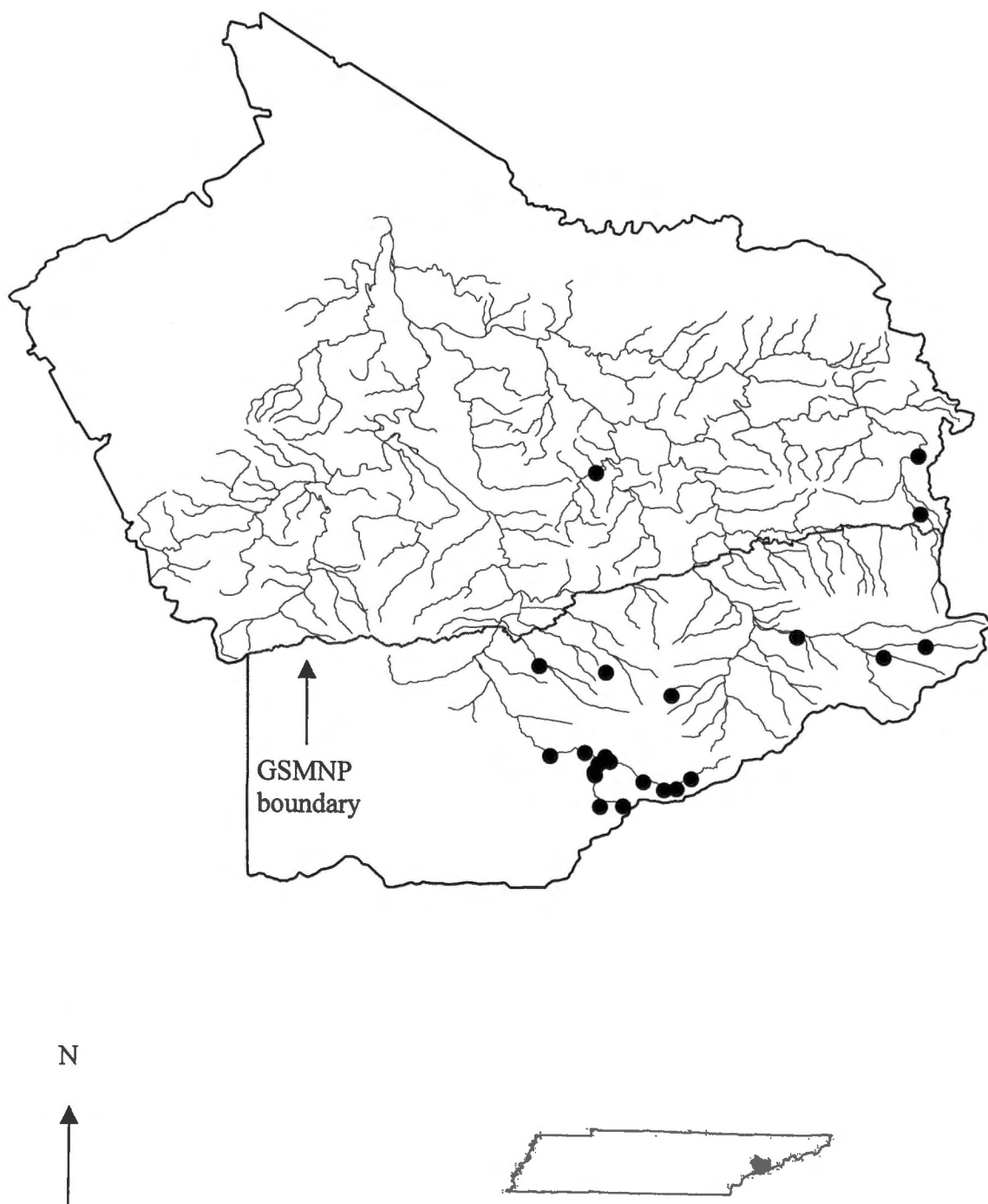


Figure A55. Collection localities for *Salvelinus fontinalis*, brook trout, in the Little Pigeon River system, Sevier Co., TN.

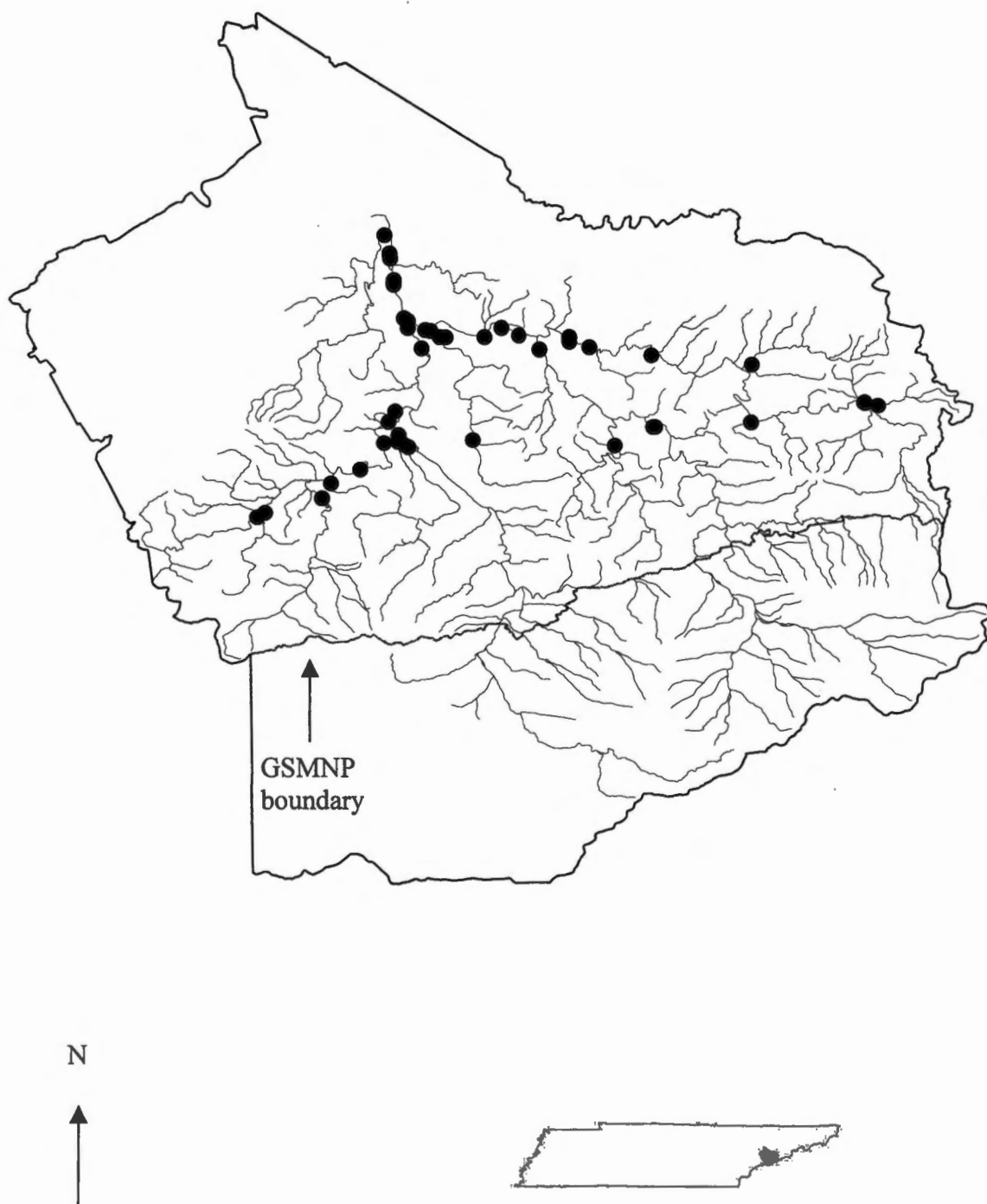


Figure A56. Collection localities for *Fundulus catenatus*, northern studfish, in the Little Pigeon River system, Sevier Co., TN.

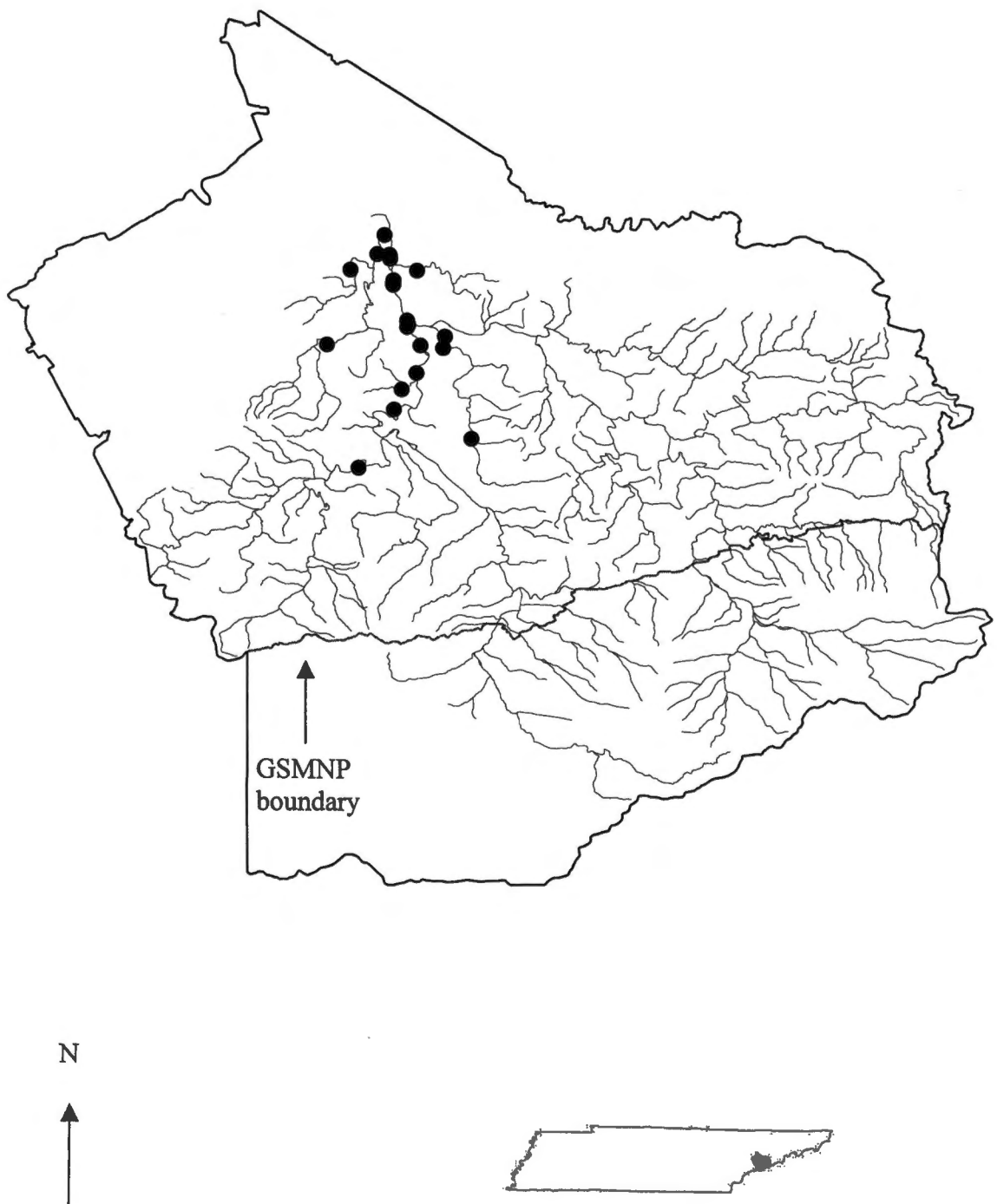


Figure A57. Collection localities for *Fundulus notatus*, blackstripe topminnow, in the Little Pigeon River system, Sevier Co., TN.

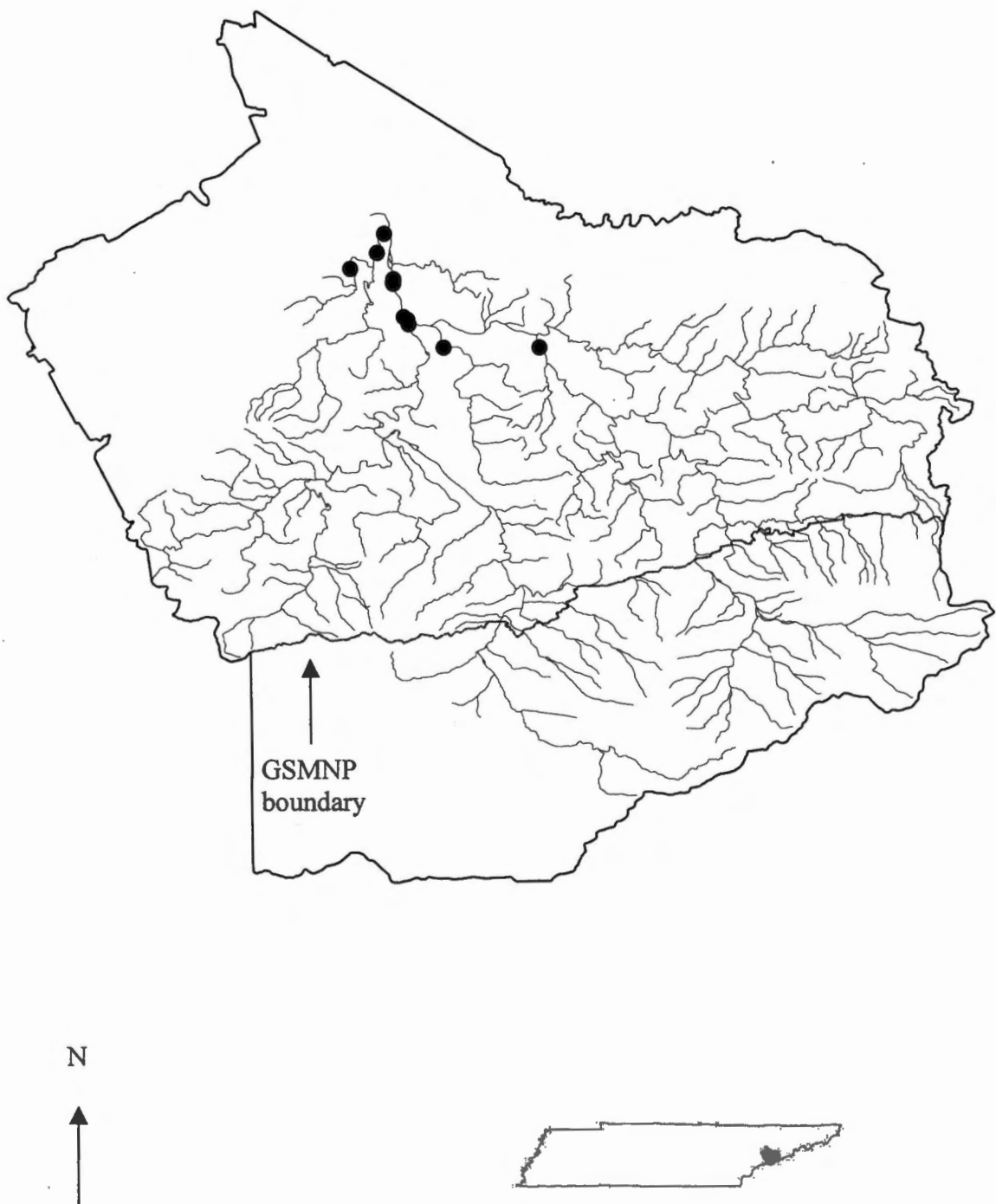


Figure A58. Collection localities for *Gambusia affinis*, western mosquitofish, in the Little Pigeon River system, Sevier Co., TN.

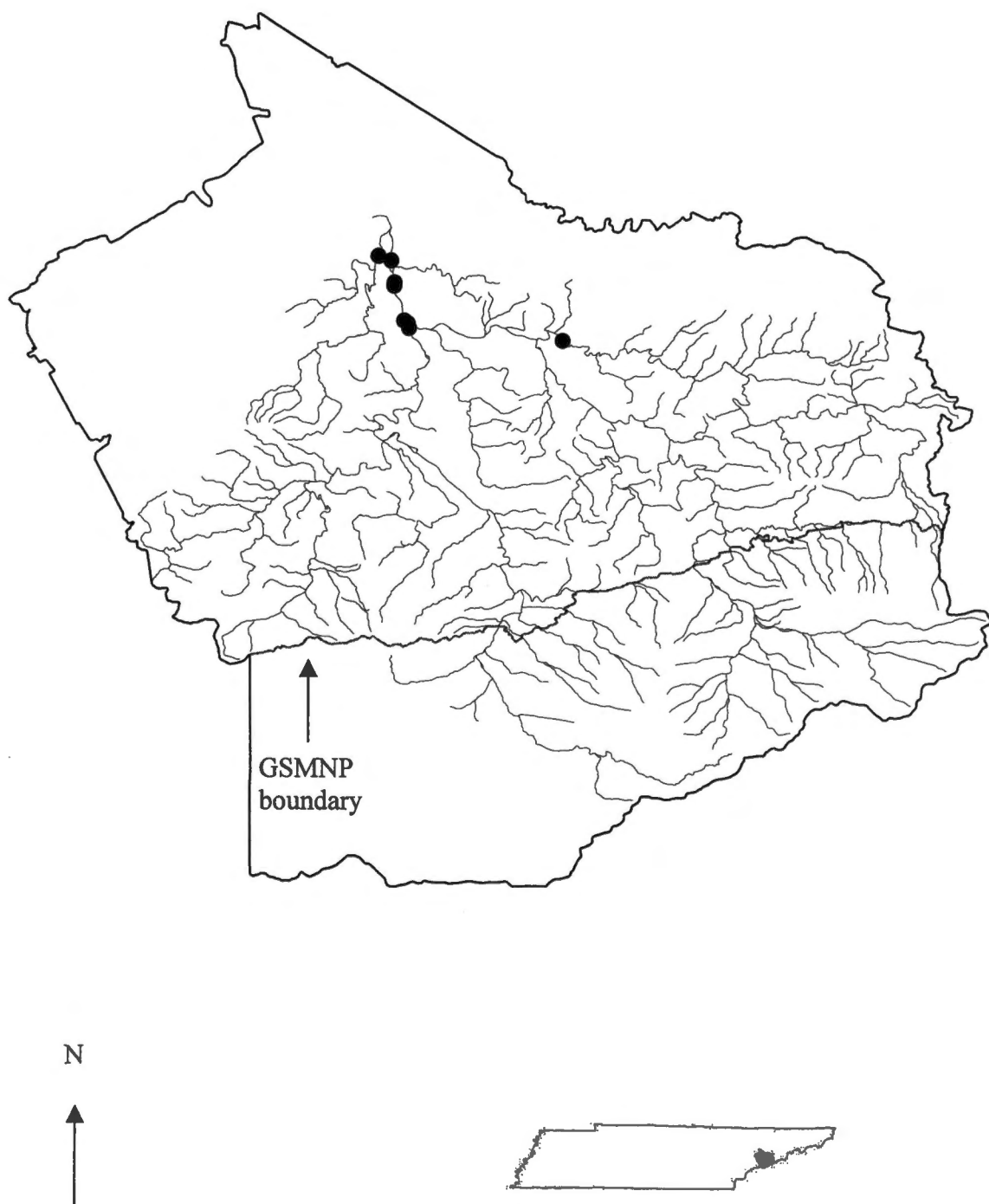


Figure A59. Collection localities for *Labidesthes sicculus*, brook silverside, in the Little Pigeon River system, Sevier Co., TN.

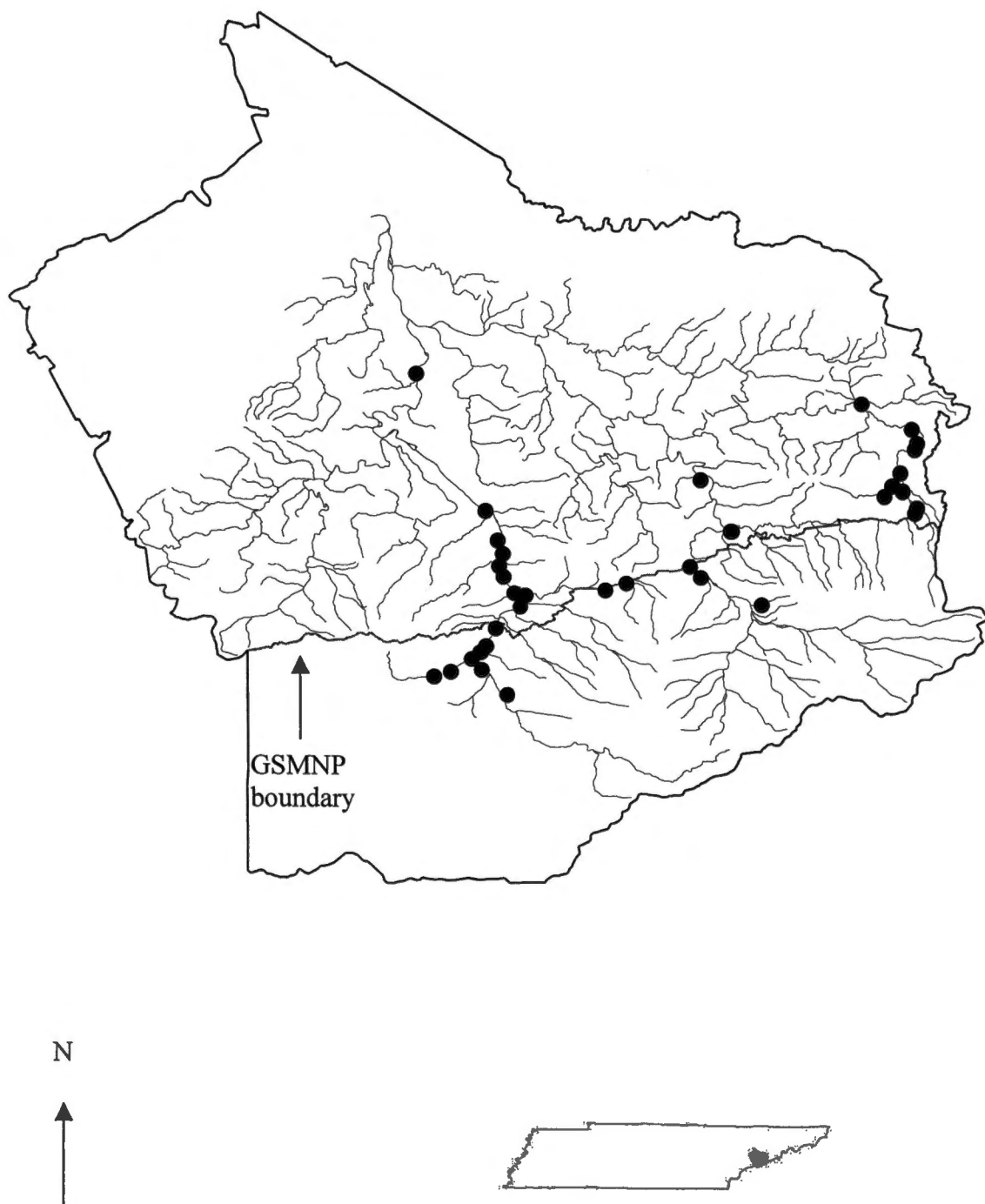


Figure A60. Collection localities for *Cottus bairdii*, mottled sculpin, in the Little Pigeon River system, Sevier Co., TN.

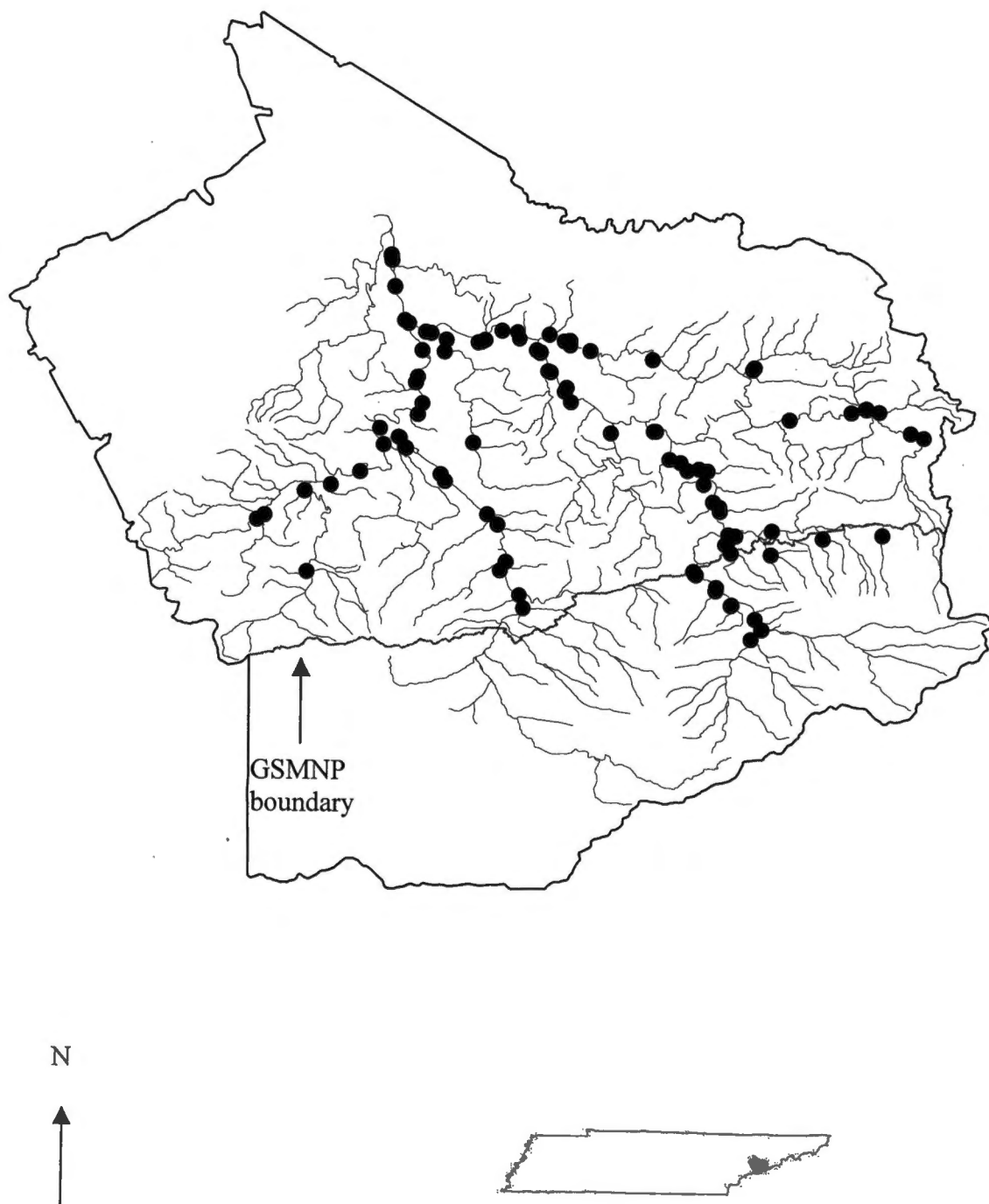


Figure A61. Collection localities for *Cottus carolinae*, banded sculpin, in the Little Pigeon River system, Sevier Co., TN.

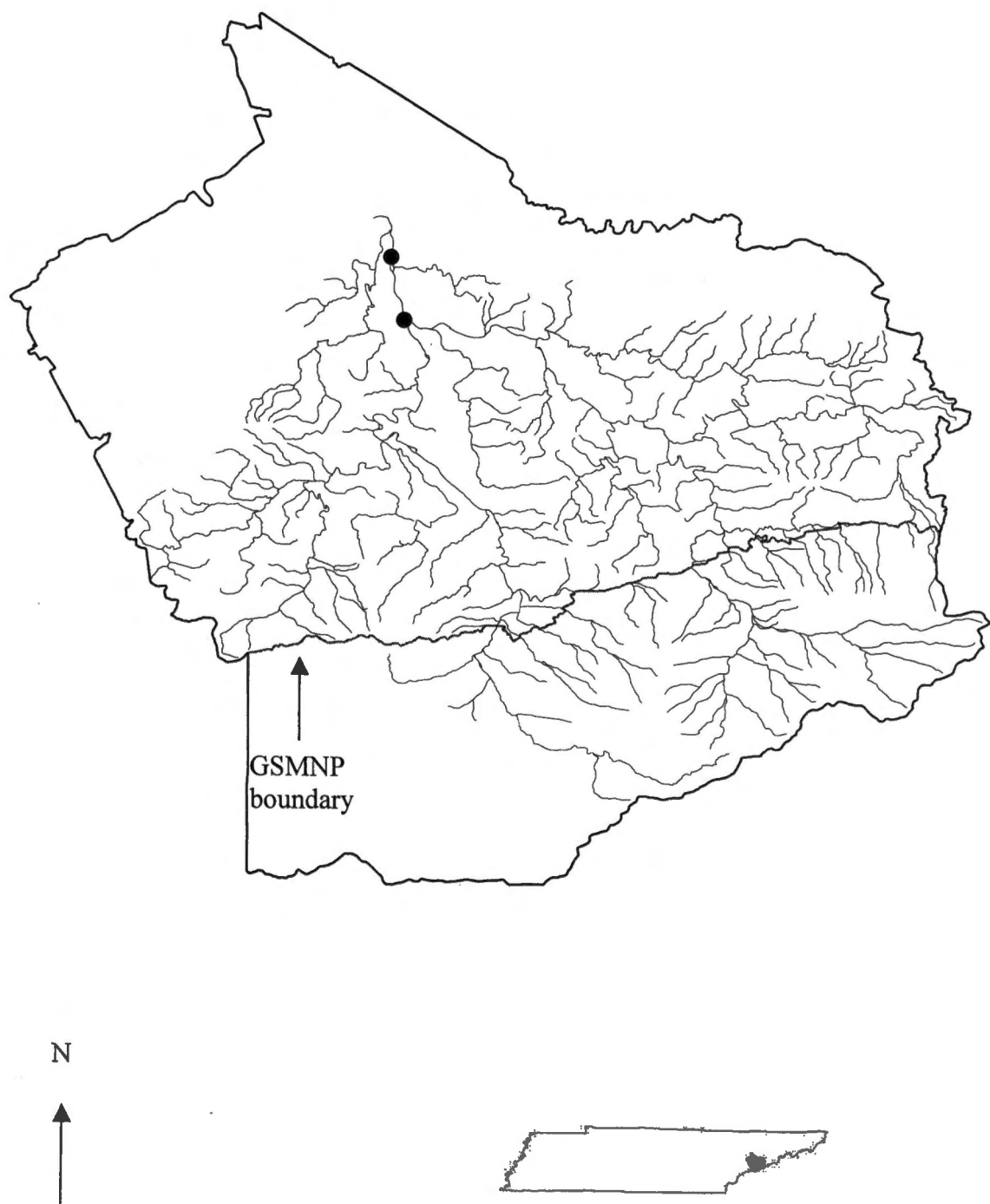


Figure A62. Collection localities for *Morone chrysops*, white bass, in the Little Pigeon River system, Sevier Co., TN.

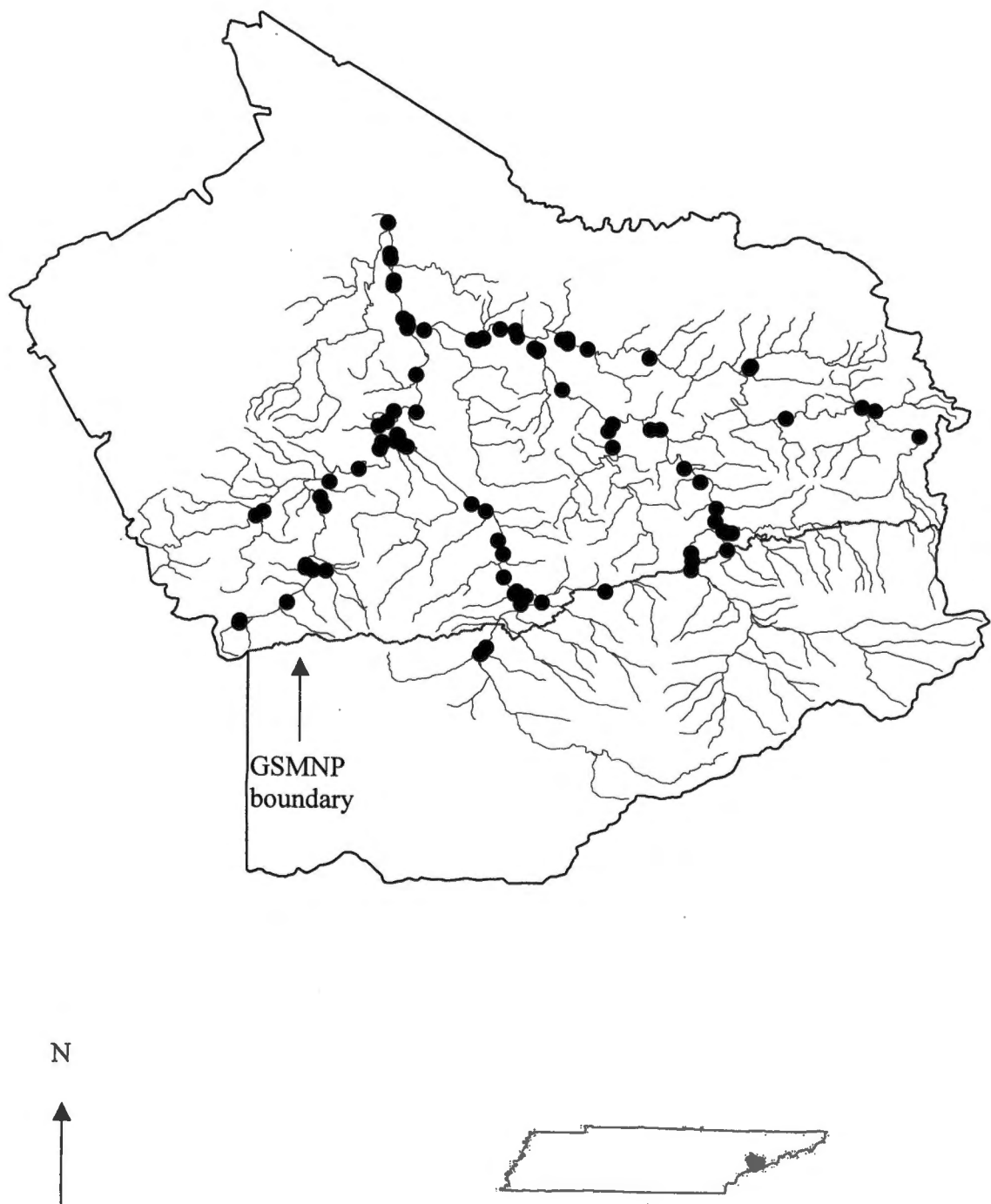


Figure A63. Collection localities for *Ambloplites rupestris*, rockbass, in the Little Pigeon River system, Sevier Co., TN.

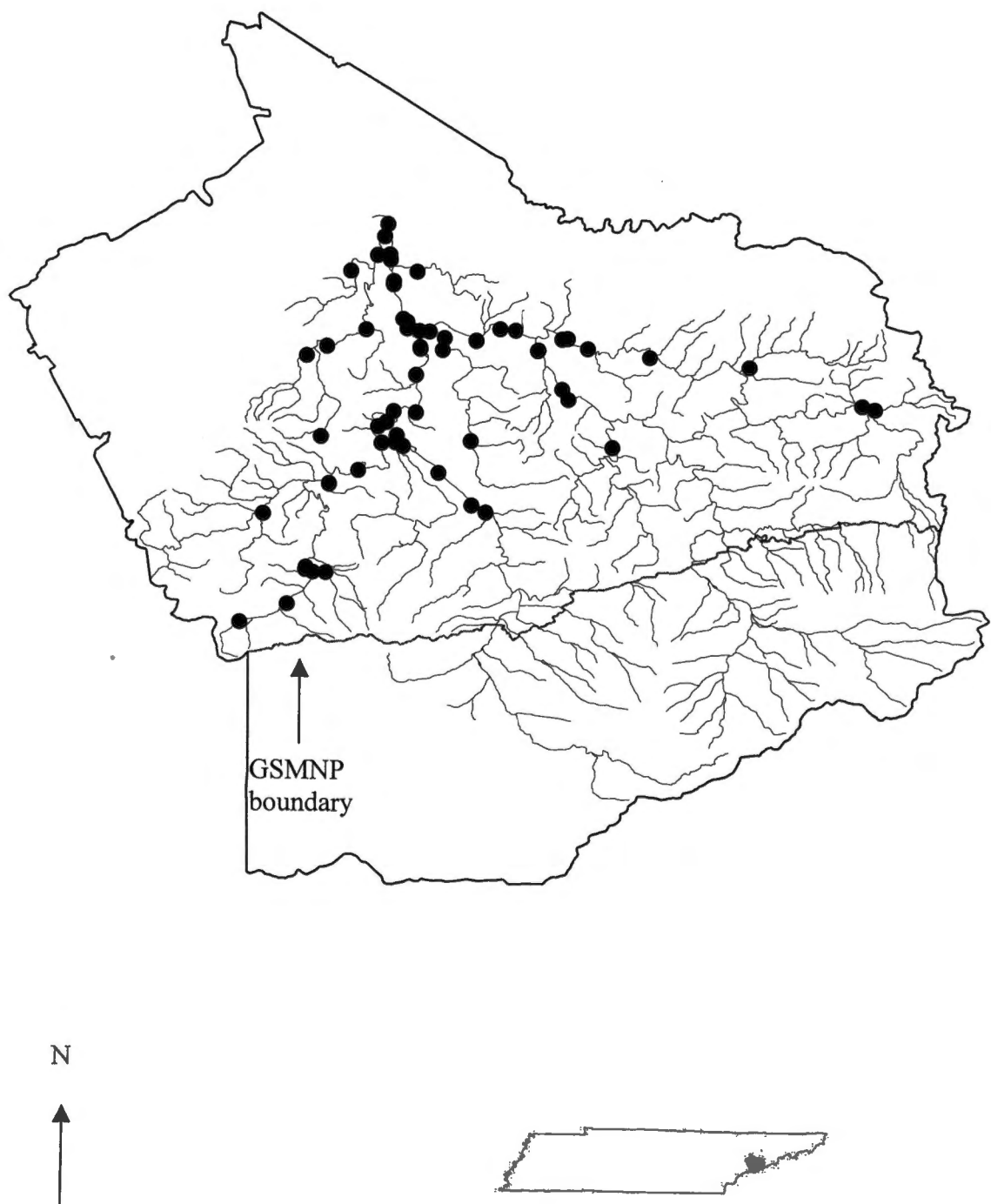


Figure A64. Collection localities for *Lepomis auritus*, redbreast sunfish, in the Little Pigeon River system, Sevier Co., TN.

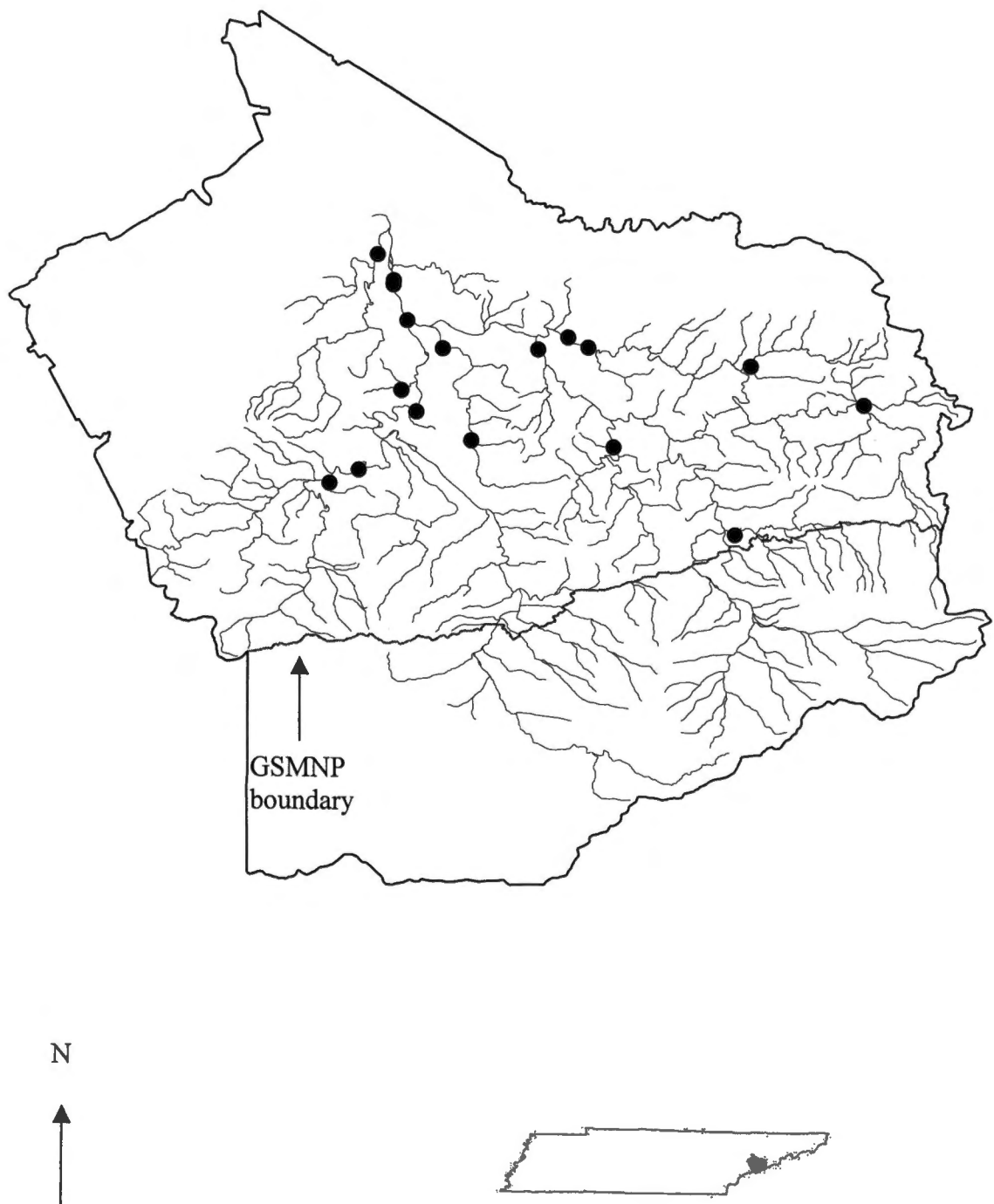


Figure A65. Collection localities for *Lepomis cyanellus*, green sunfish, in the Little Pigeon River system, Sevier Co., TN.

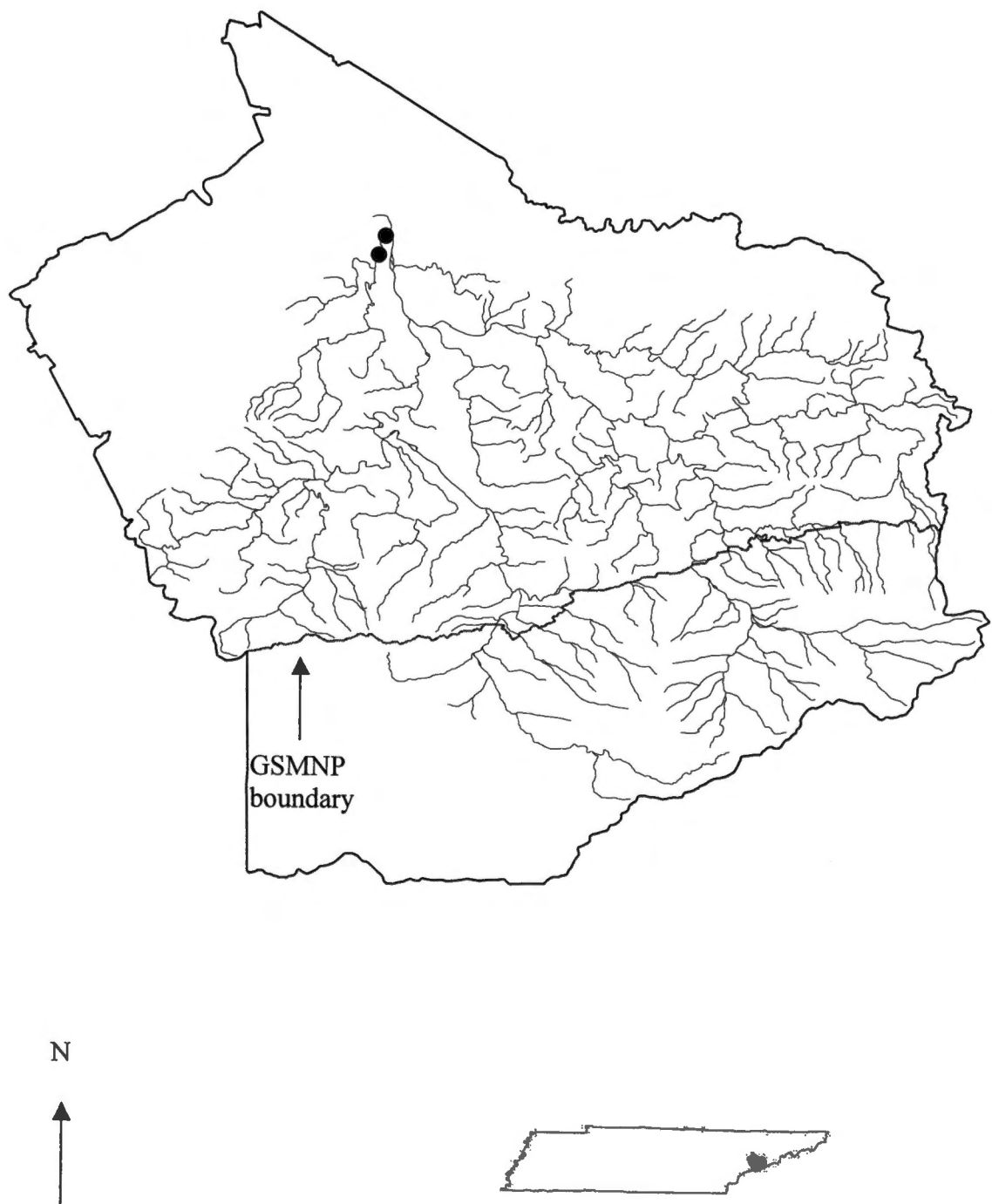


Figure A66. Collection localities for *Lepomis gulosus*, warmouth, in the Little Pigeon River system, Sevier Co., TN.

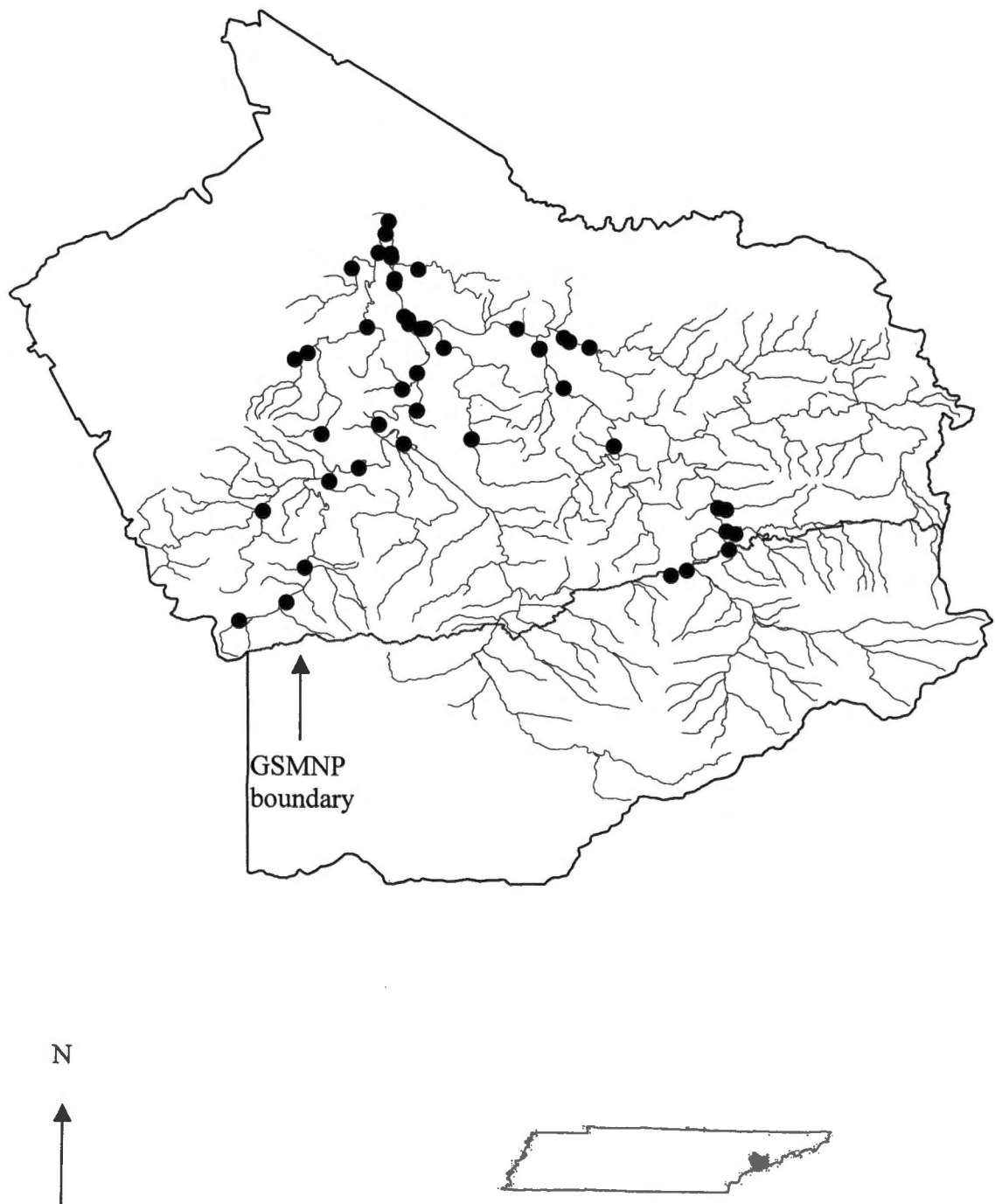


Figure A67. Collection localities for *Lepomis macrochirus*, bluegill, in the Little Pigeon River system, Sevier Co., TN.

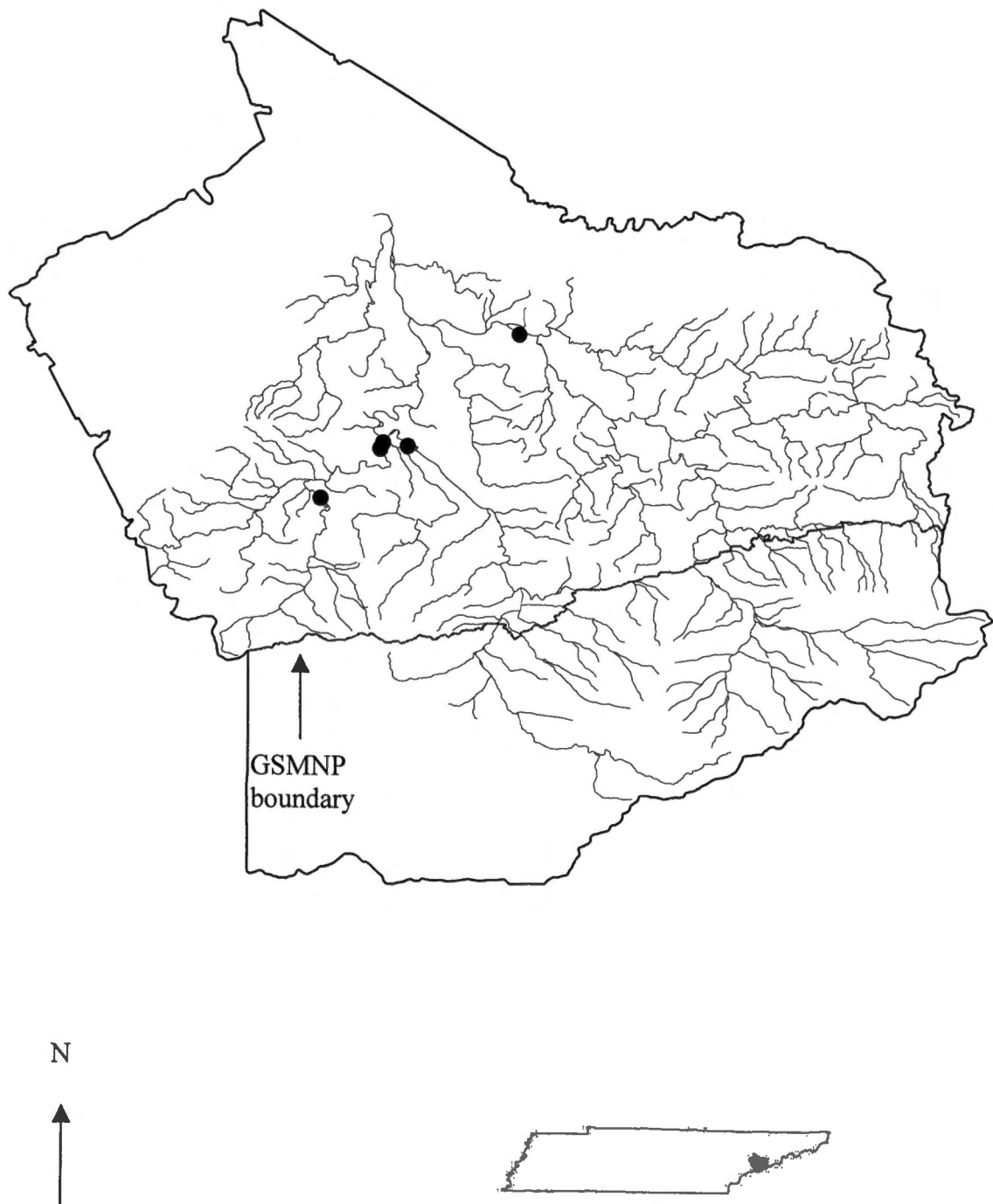


Figure A68. Collection localities for *Lepomis megalotis*, longear sunfish, in the Little Pigeon River system, Sevier Co., TN.

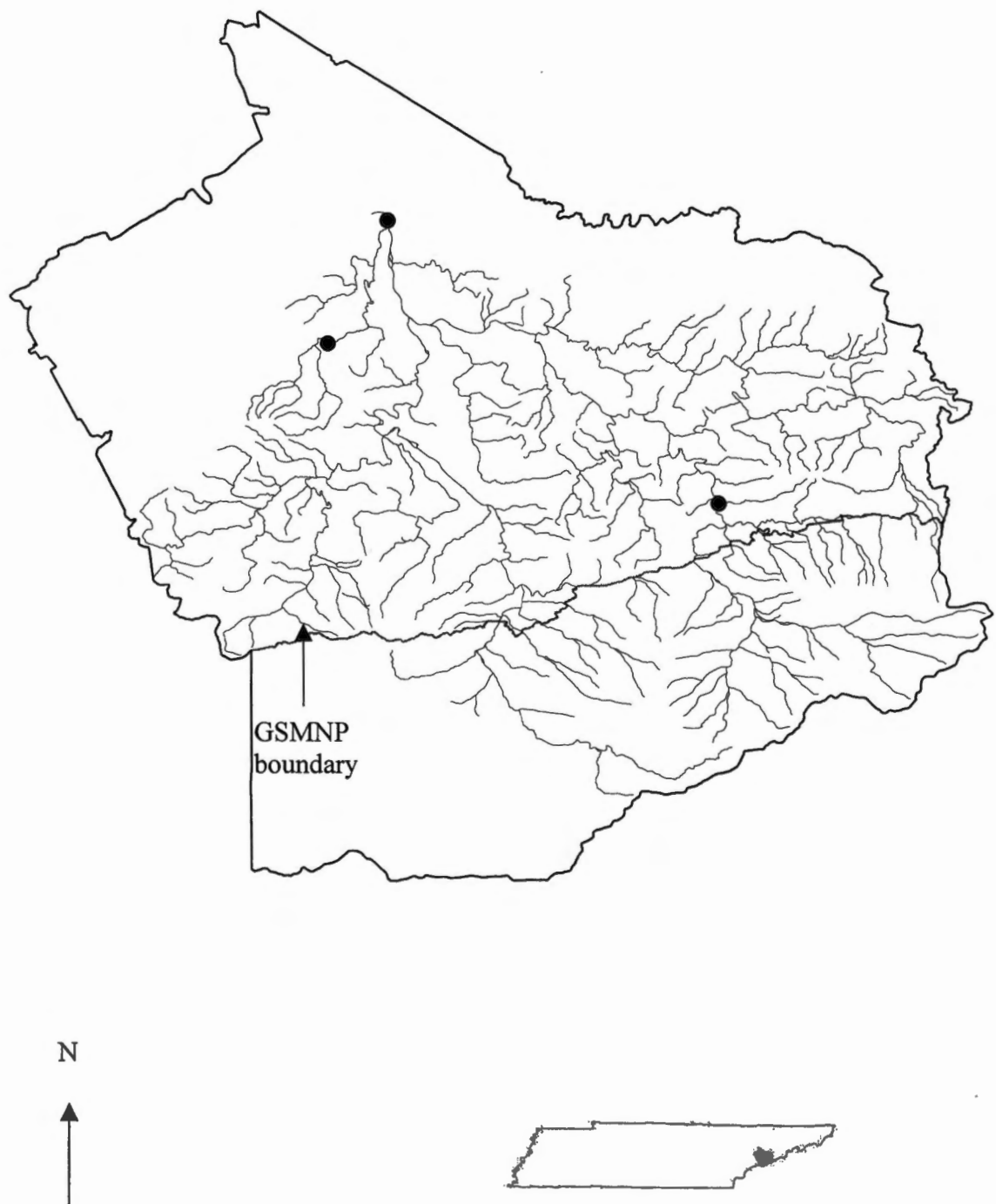


Figure A69. Collection localities for *Lepomis microlophus*, redear sunfish, in the Little Pigeon River system, Sevier Co., TN.

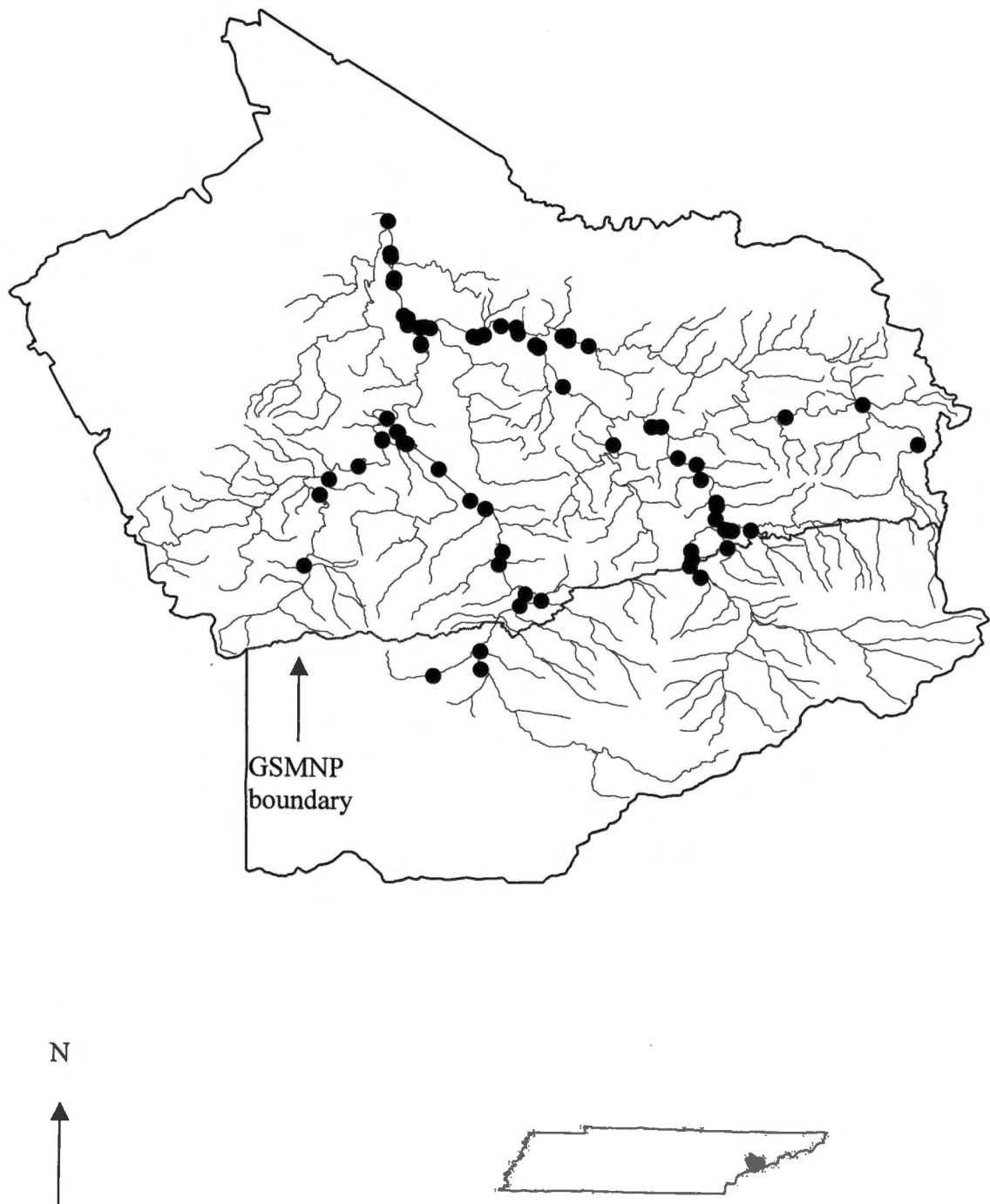


Figure A70. Collection localities for *Micropterus dolomieu*, smallmouth bass, in the Little Pigeon River system, Sevier Co., TN.

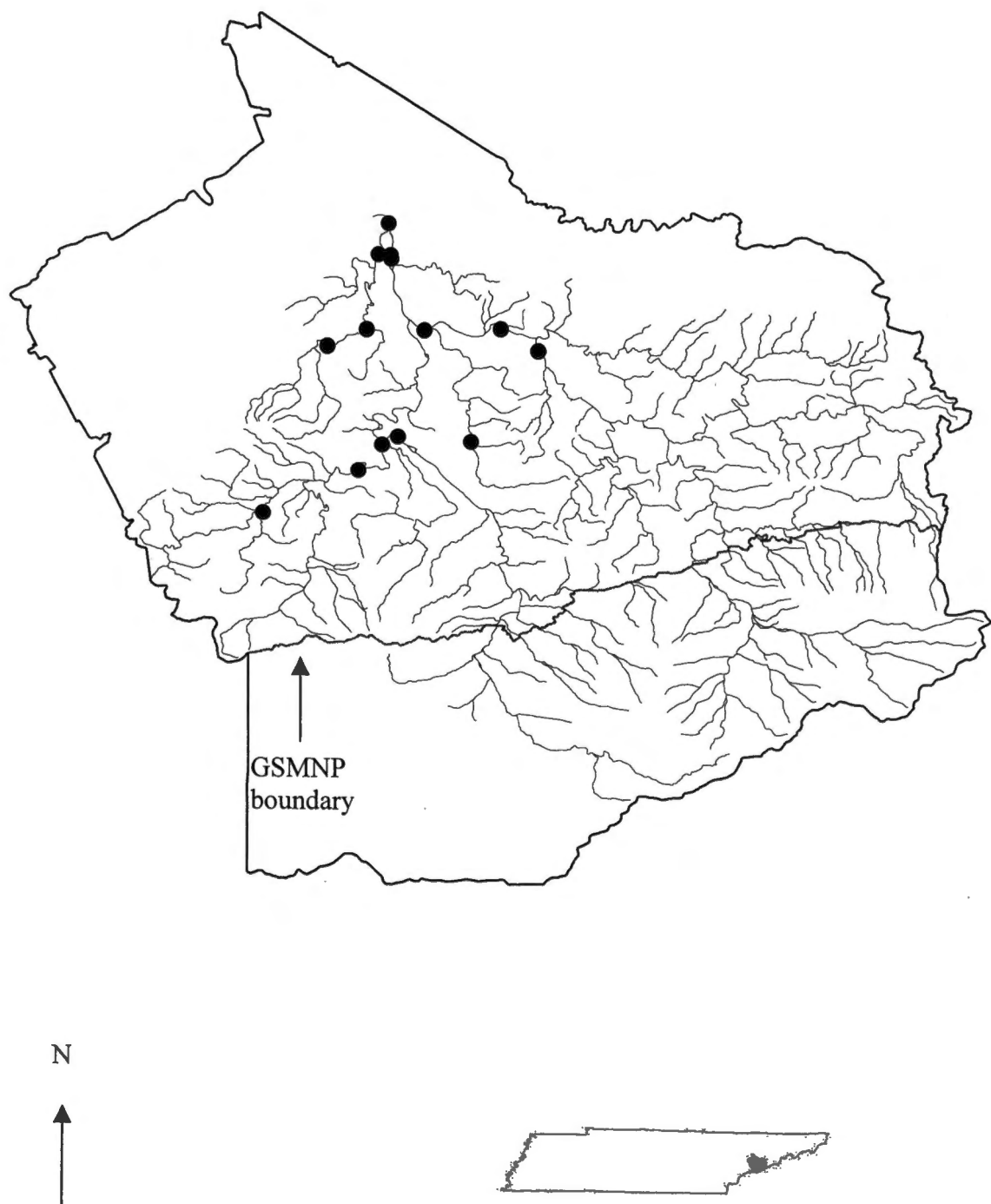


Figure A71. Collection localities for *Micropterus punctulatus*, spotted bass, in the Little Pigeon River system, Sevier Co., TN.

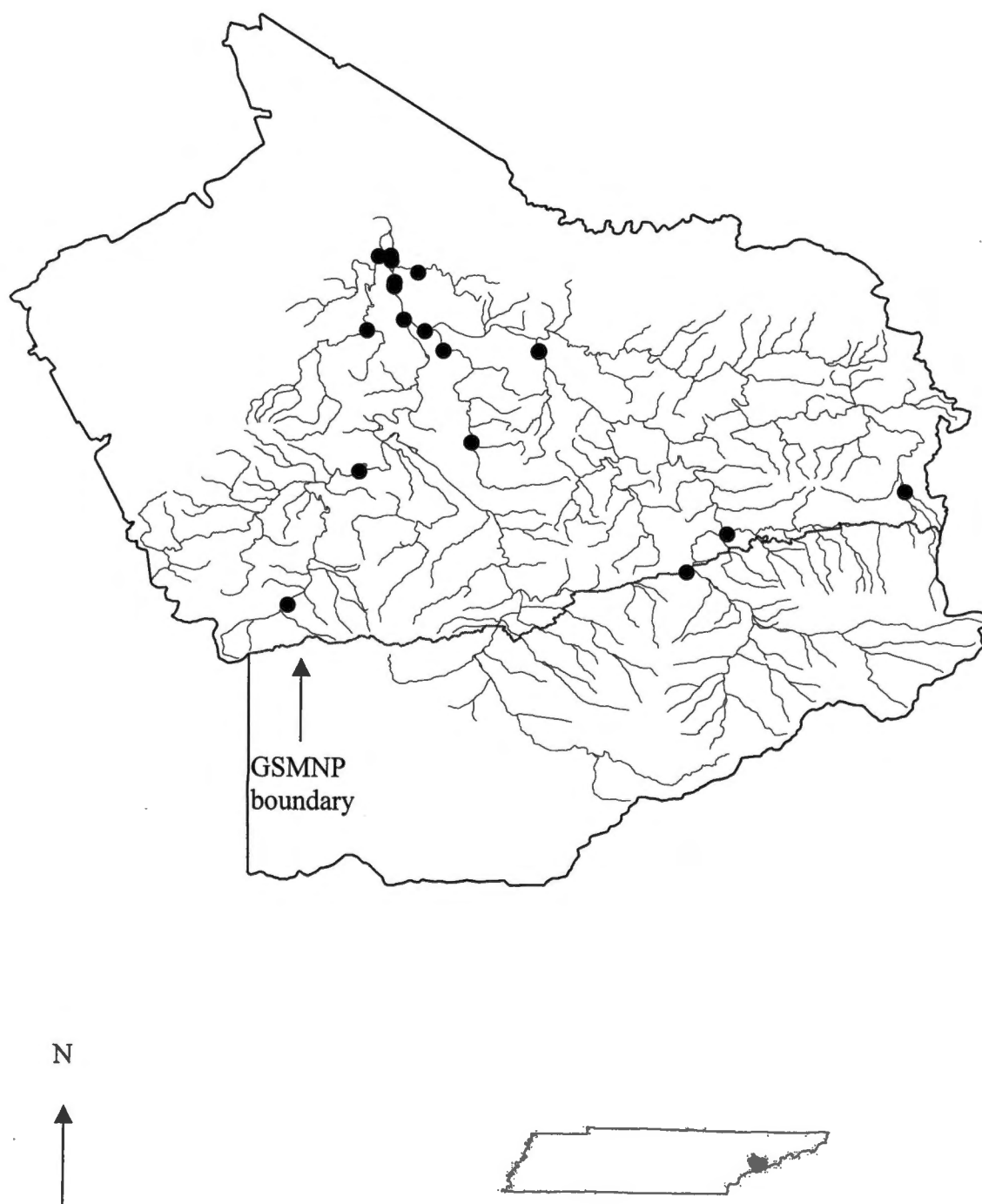


Figure A72. Collection localities for *Micropterus salmoides*, largemouth bass, in the Little Pigeon River system, Sevier Co., TN.

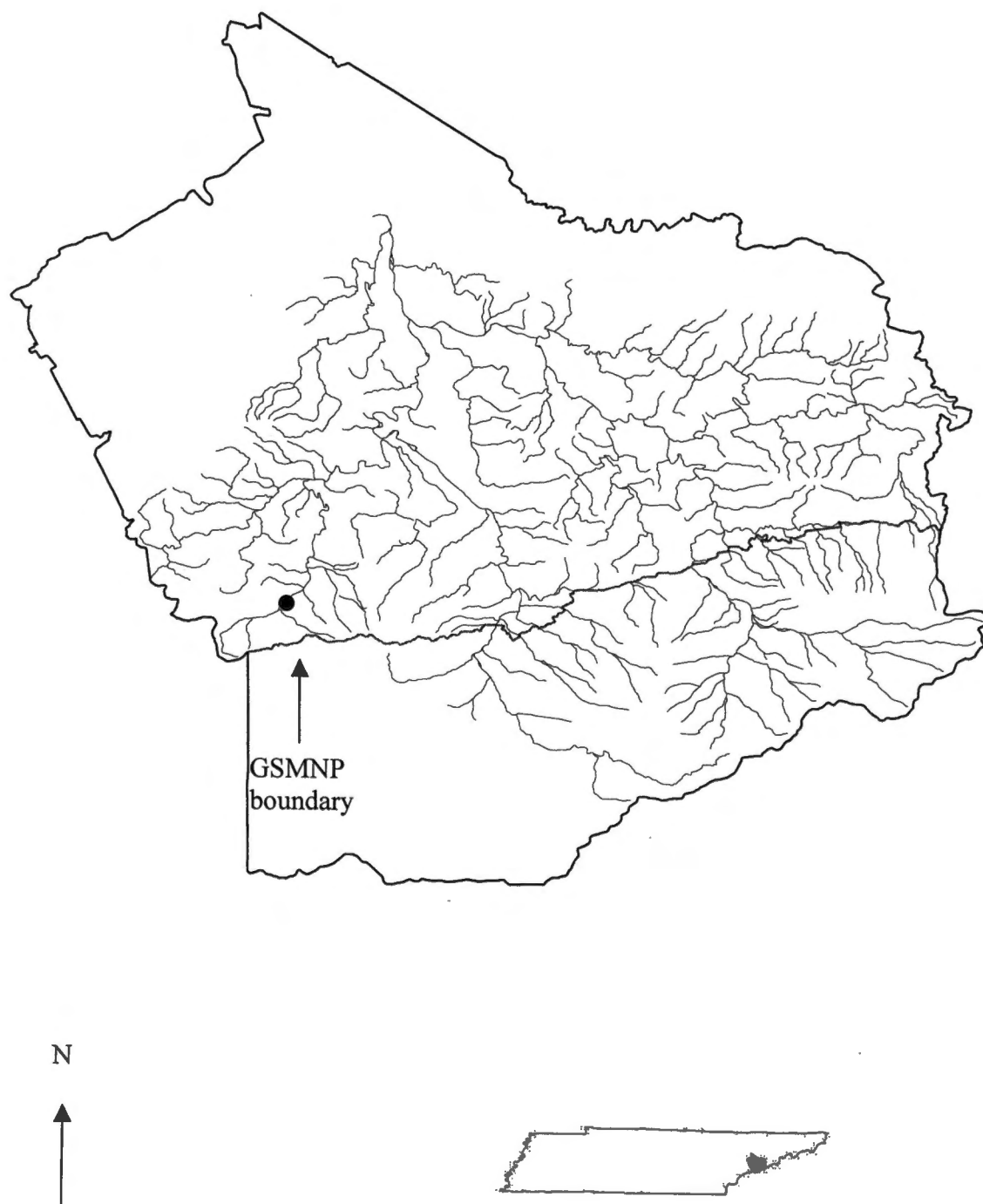


Figure A73. Collection localities for *Pomoxis annularis*, white crappie, in the Little Pigeon River system, Sevier Co., TN.

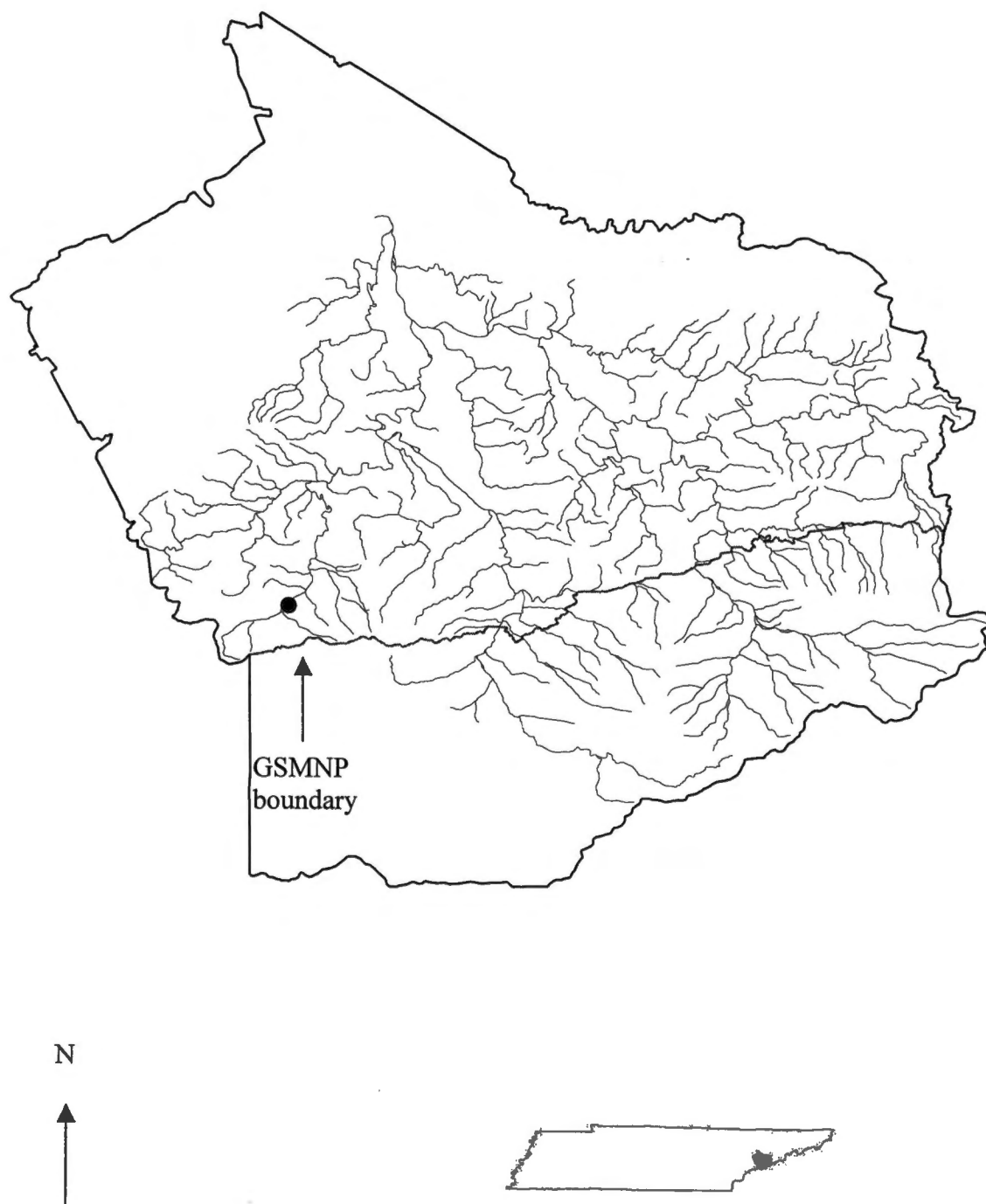


Figure A74. Collection localities for *Pomoxis nigromaculatus*, black crappie, in the Little Pigeon River system, Sevier Co., TN.

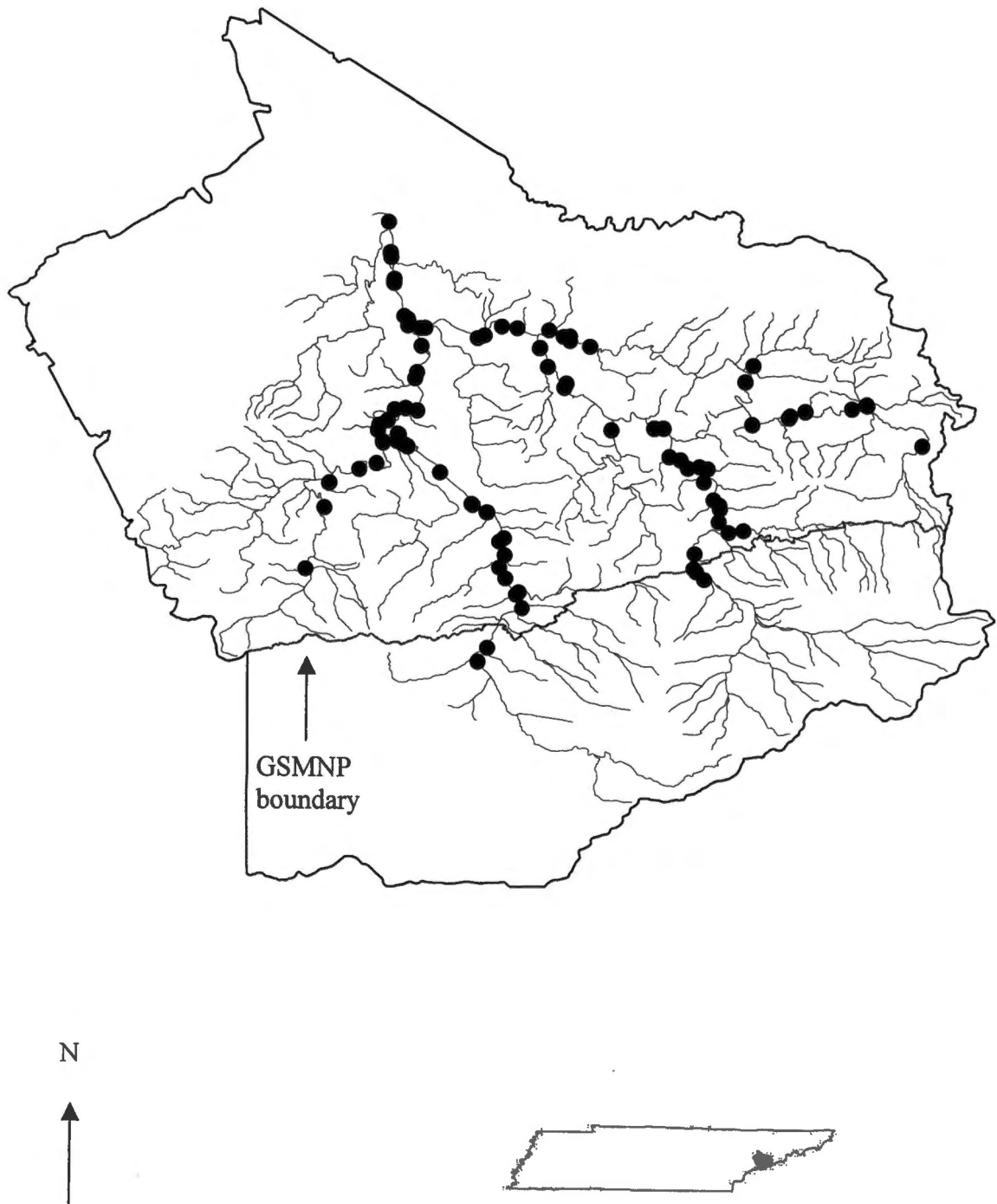


Figure A75. Collection localities for *Etheostoma blennioides*, greenside darter, in the Little Pigeon River system, Sevier Co., TN.



Figure A76. Collection localities for *Etheostoma camurum*, bluebreast darter, in the Little Pigeon River system, Sevier Co., TN.

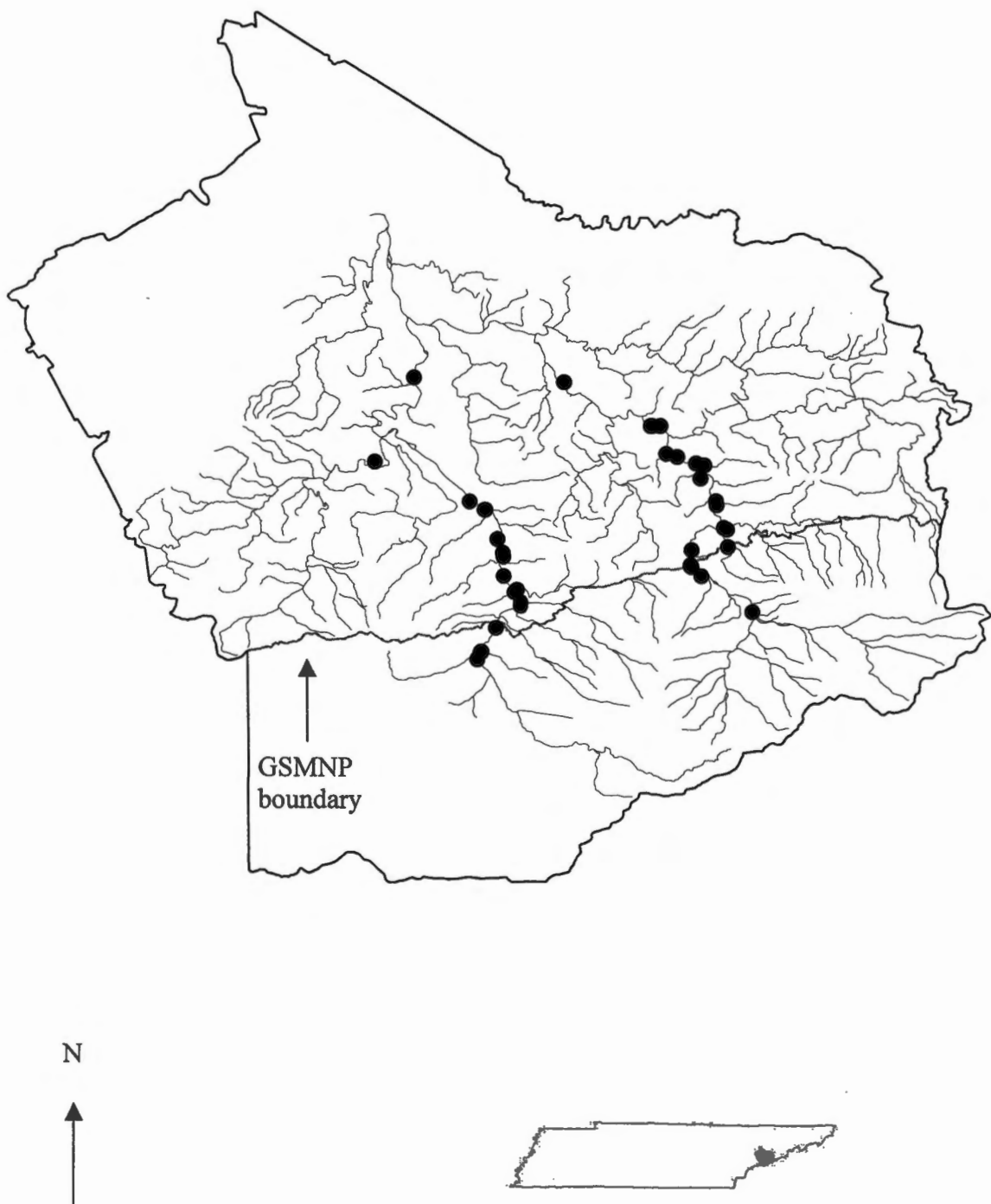


Figure A77. Collection localities for *Etheostoma chlorobranchium*, greenfin darter, in the Little Pigeon River system, Sevier Co., TN.

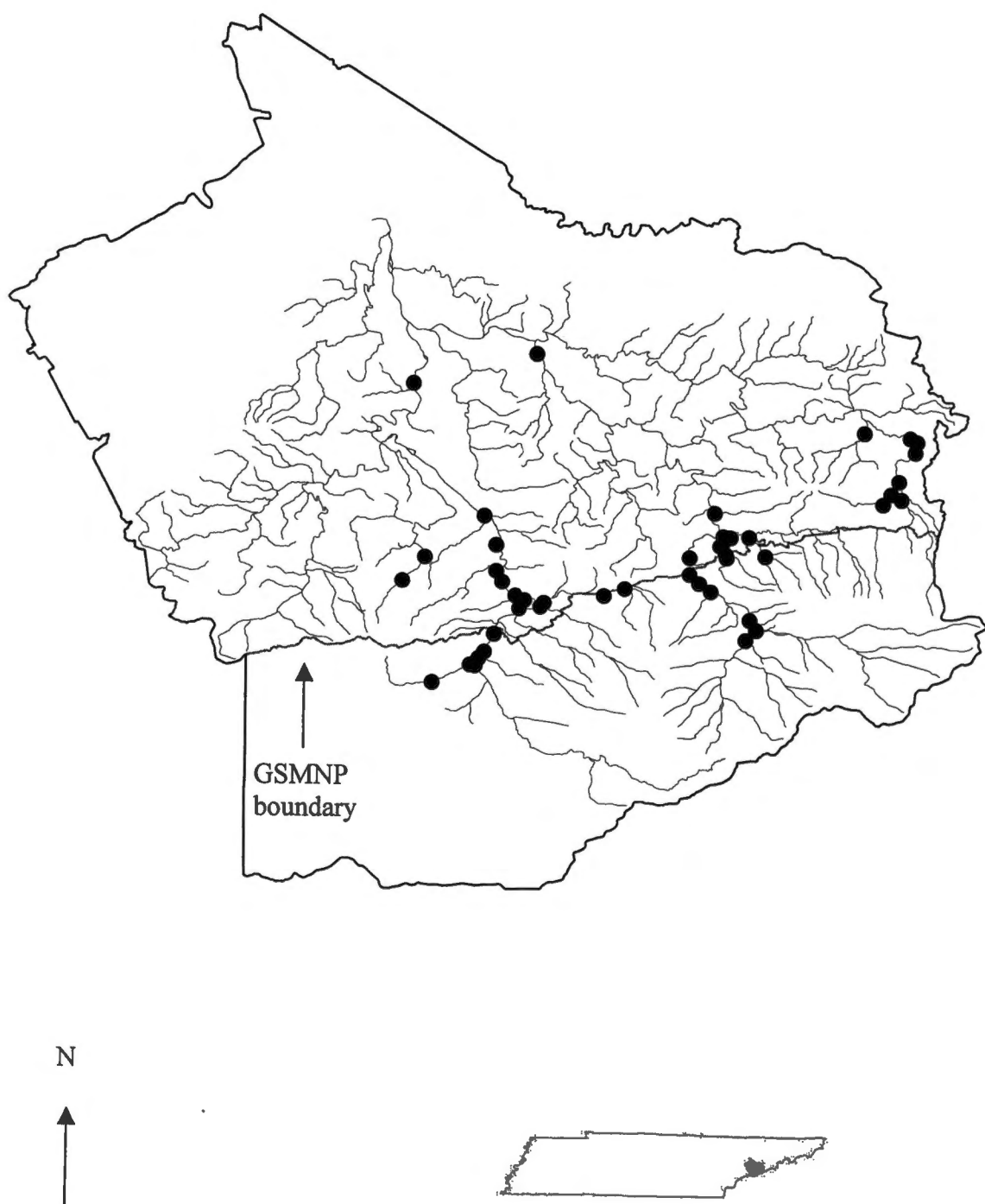


Figure A78. Collection localities for *Etheostoma flabellare*, fantail darter, in the Little Pigeon River system, Sevier Co., TN.

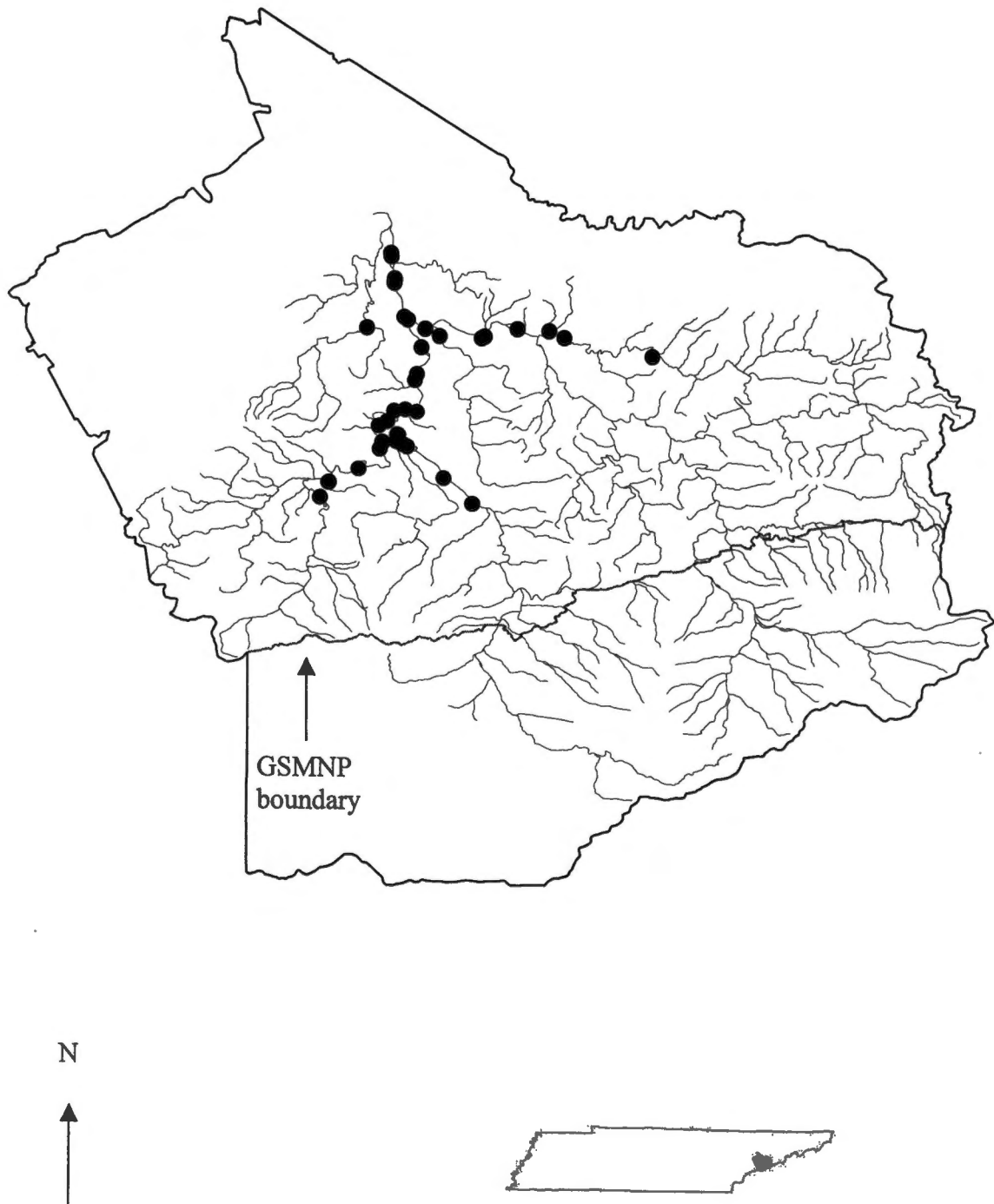


Figure A79. Collection localities for *Etheostoma jessiae*, blueside darter, in the Little Pigeon River system, Sevier Co., TN.

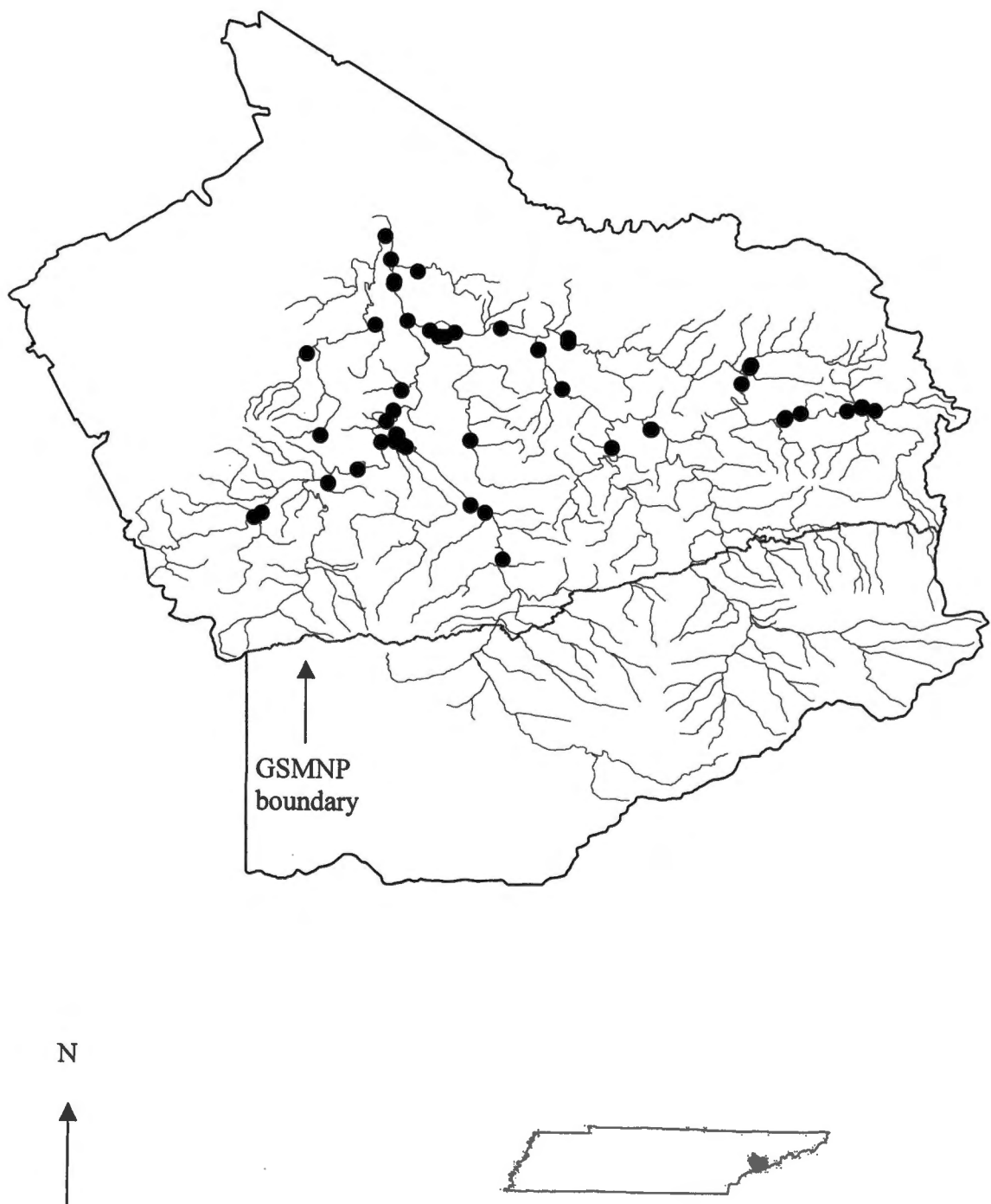


Figure A80. Collection localities for *Etheostoma kennicotti*, stripedetail darter, in the Little Pigeon River system, Sevier Co., TN.

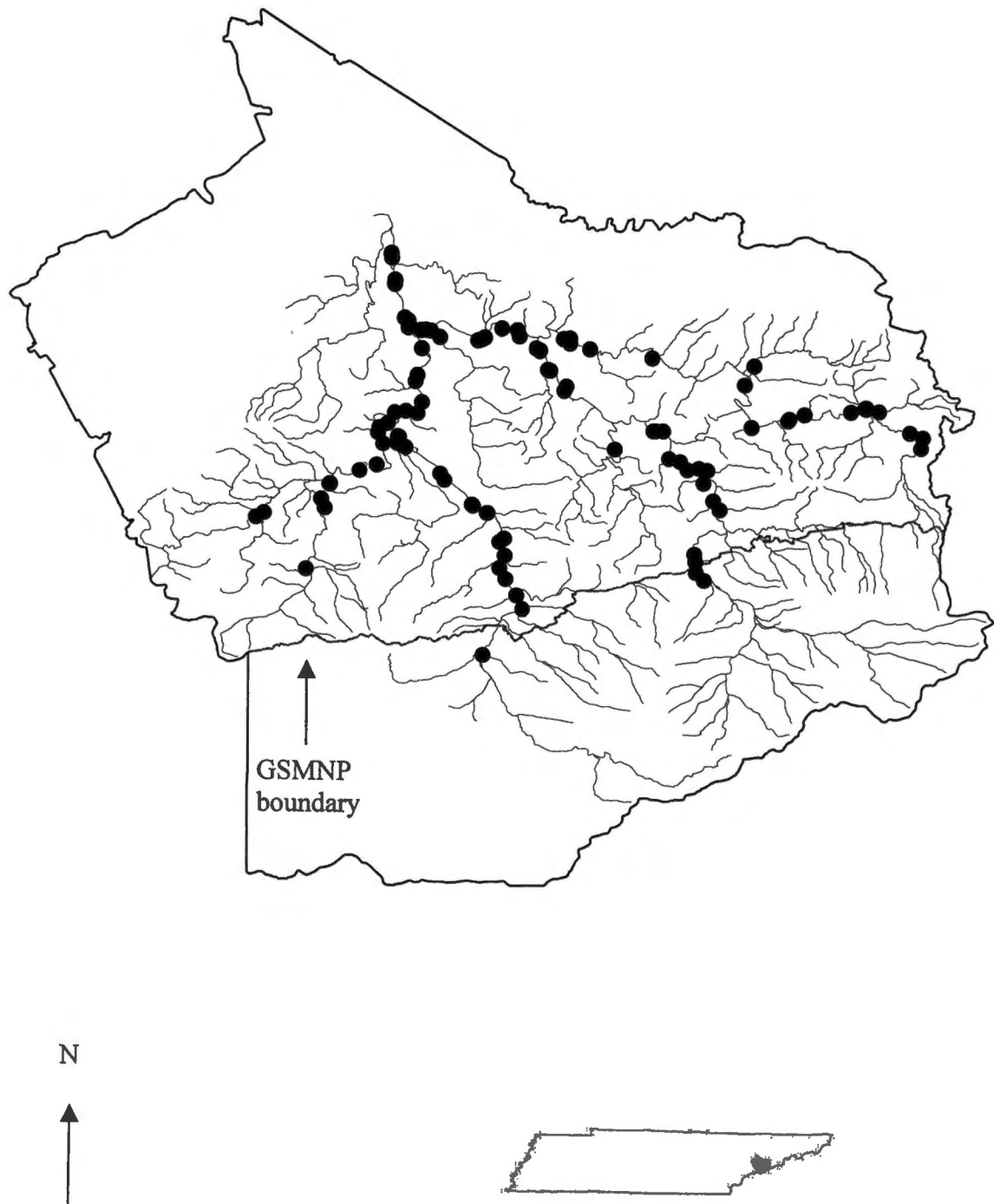


Figure A81. Collection localities for *Etheostoma rufilineatum*, redline darter, in the Little Pigeon River system, Sevier Co., TN.

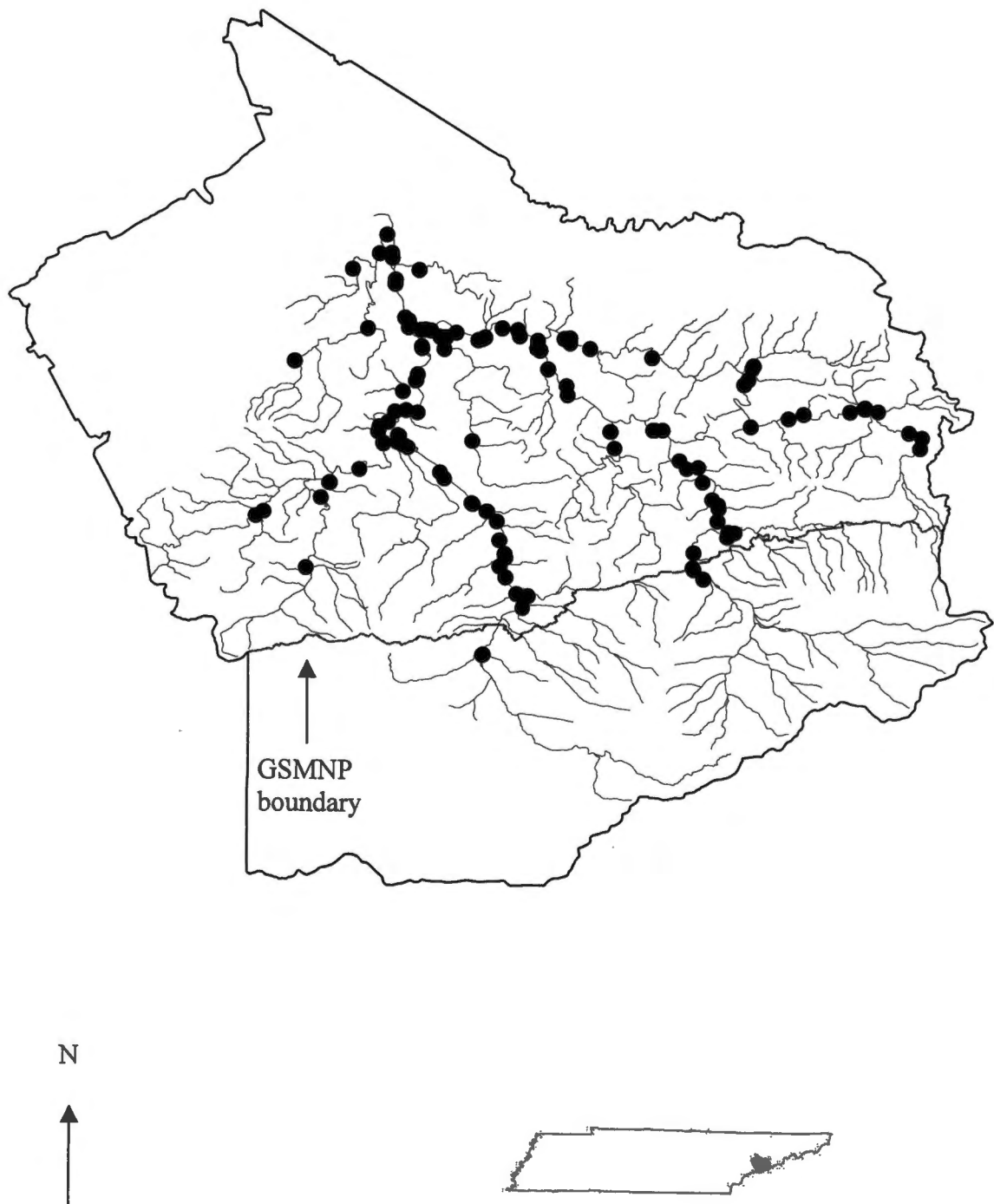


Figure A82. Collection localities for *Etheostoma simoterum*, snubnose darter, in the Little Pigeon River system, Sevier Co., TN.

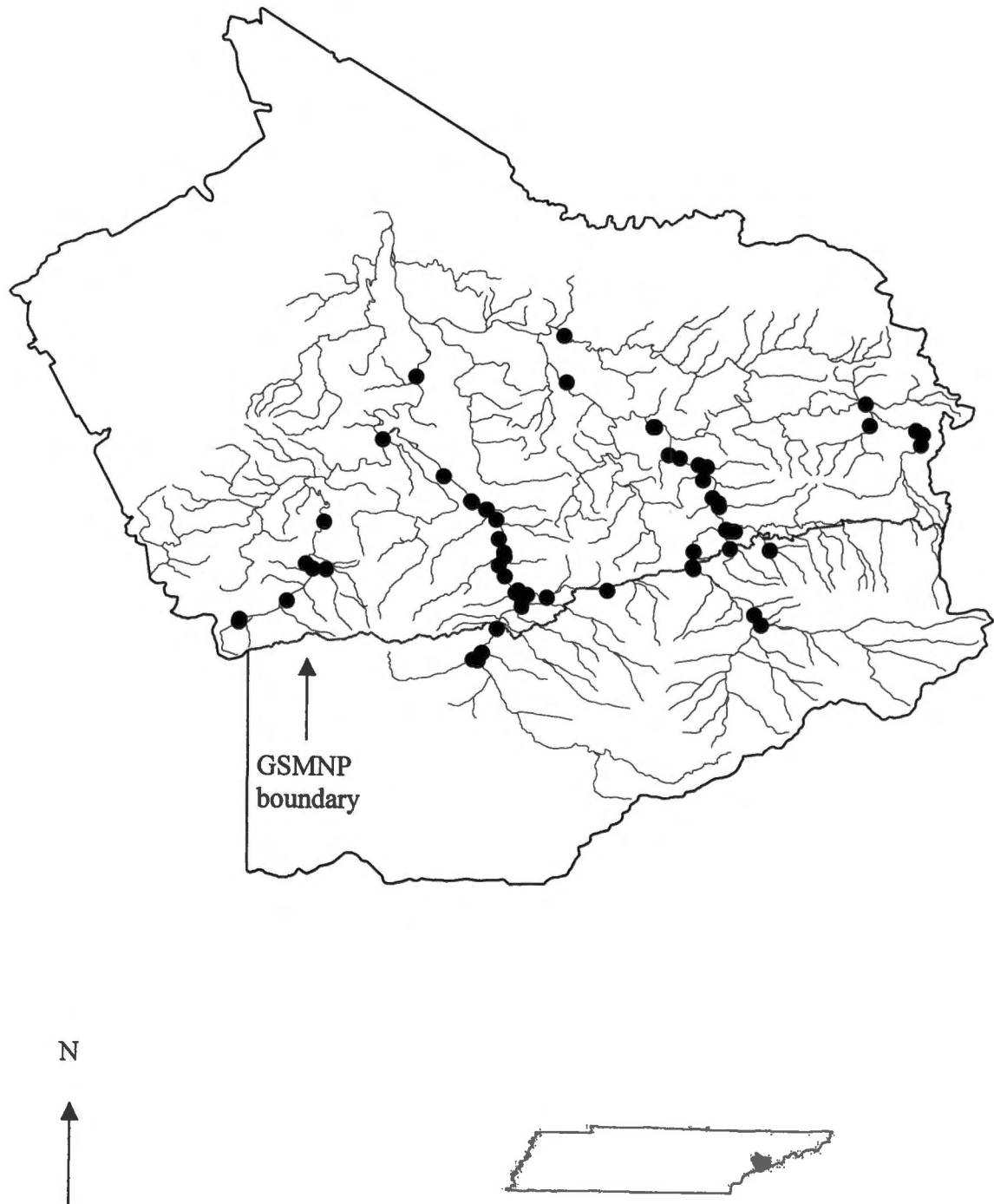


Figure A83. Collection localities for *Etheostoma swannanoa*, Swannanoa darter, in the Little Pigeon River system, Sevier Co., TN.

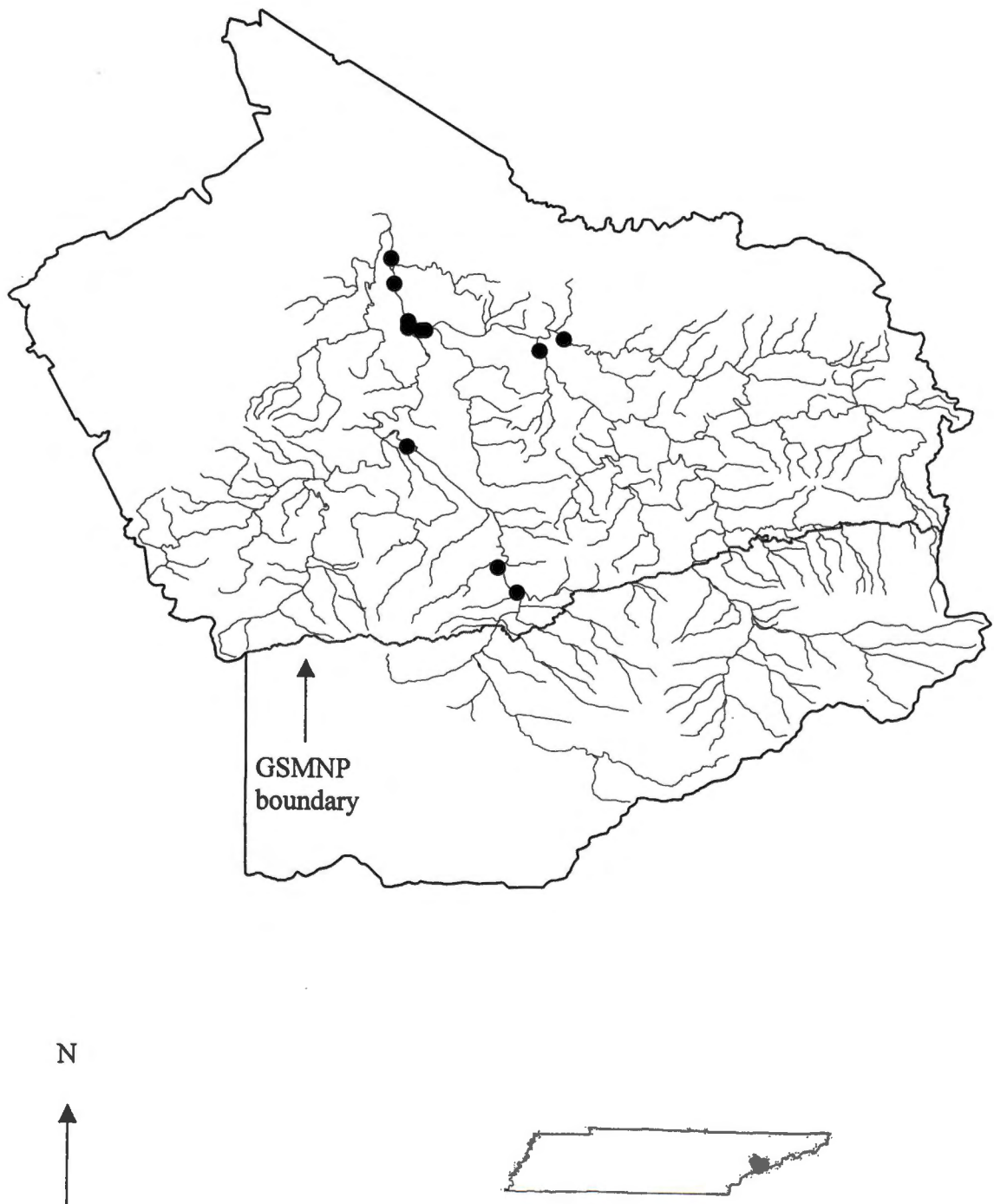


Figure A84. Collection localities for *Etheostoma vulneratum*, wounded darter, in the Little Pigeon River system, Sevier Co., TN.

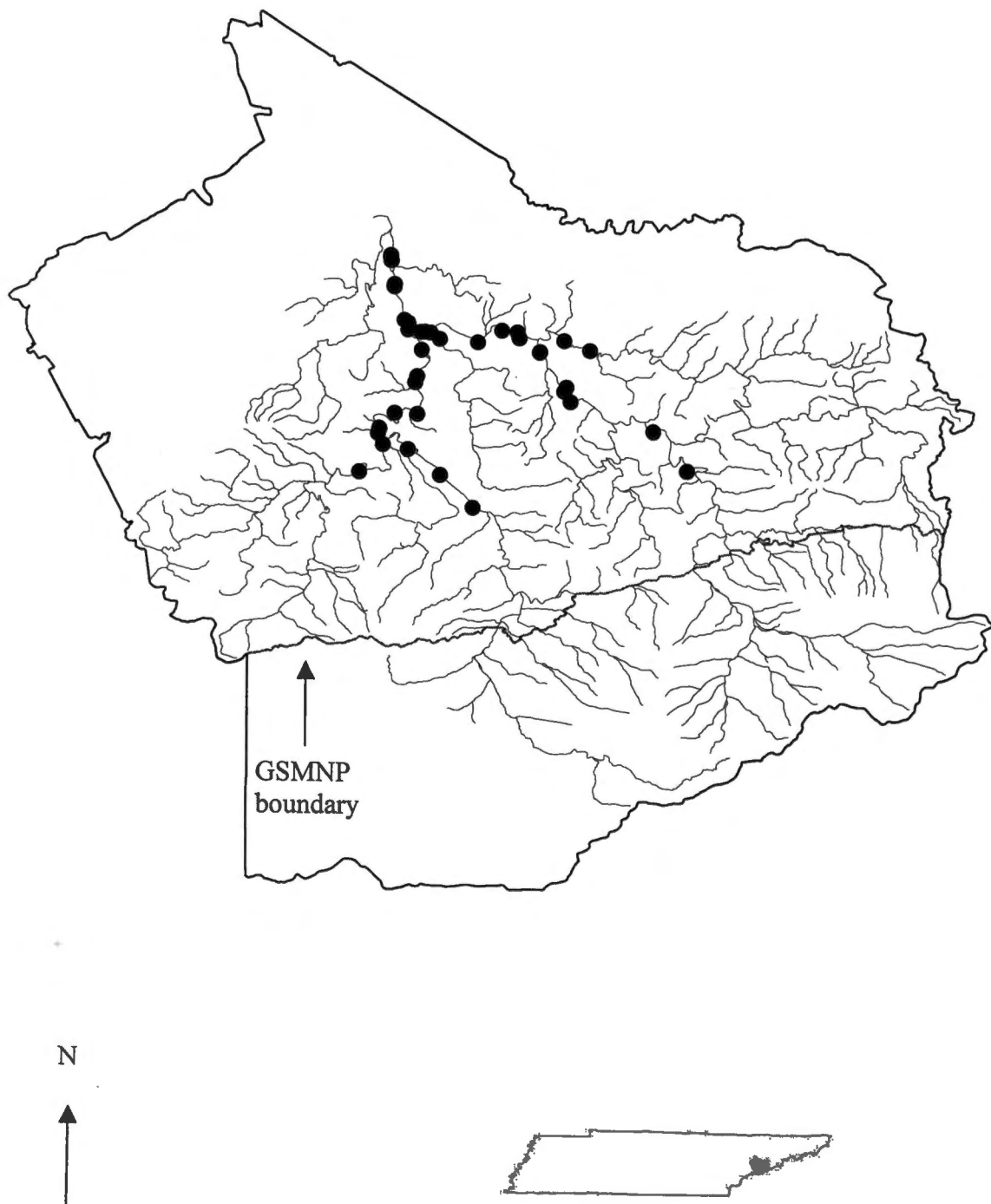


Figure A85. Collection localities for *Etheostoma zonale*, banded darter, in the Little Pigeon River system, Sevier Co., TN.

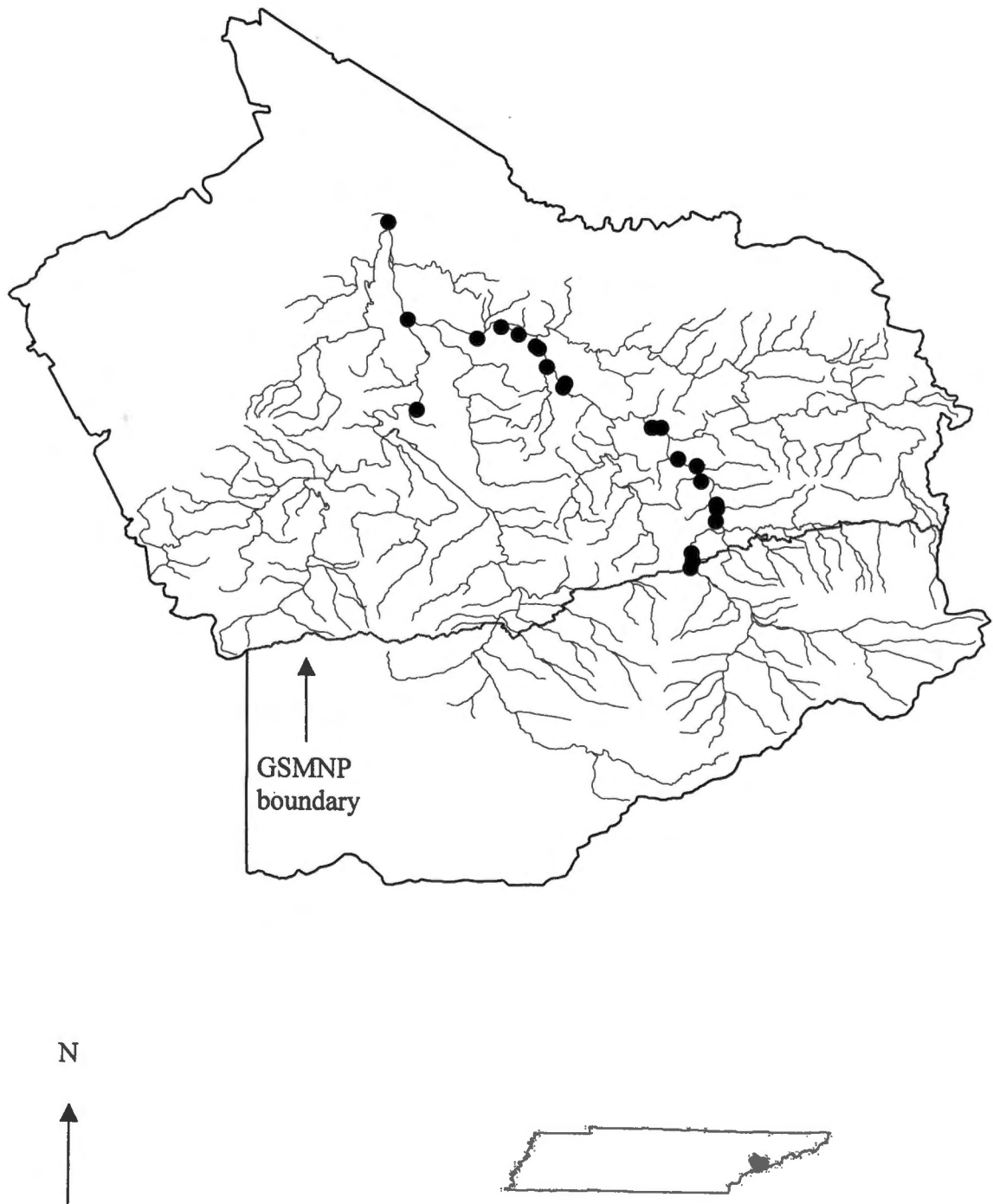


Figure A86. Collection localities for *Percina aurantiaca*, tangerine darter, in the Little Pigeon River system, Sevier Co., TN.

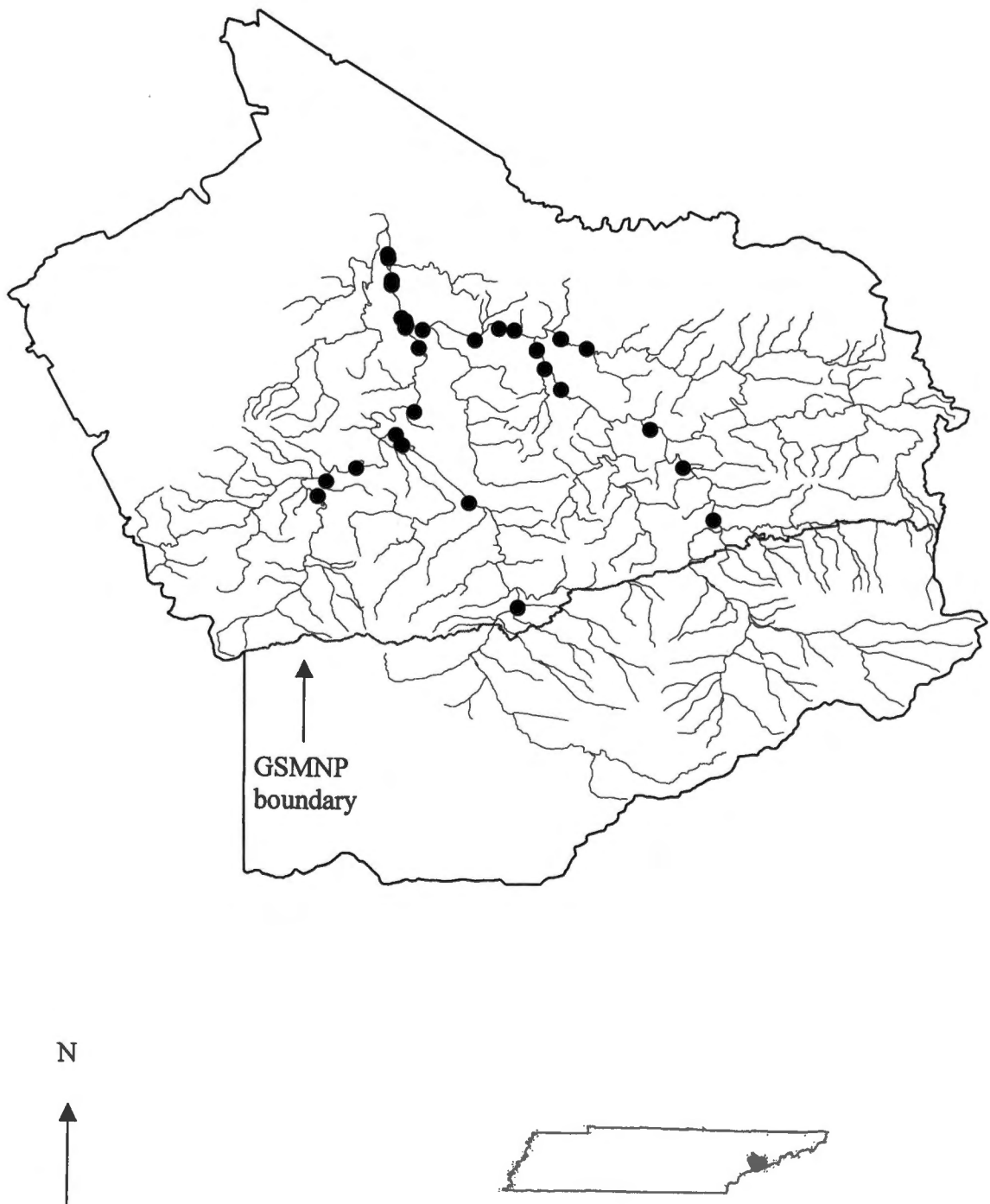


Figure A87. Collection localities for *Percina caprodes*, logperch, in the Little Pigeon River system, Sevier Co., TN.

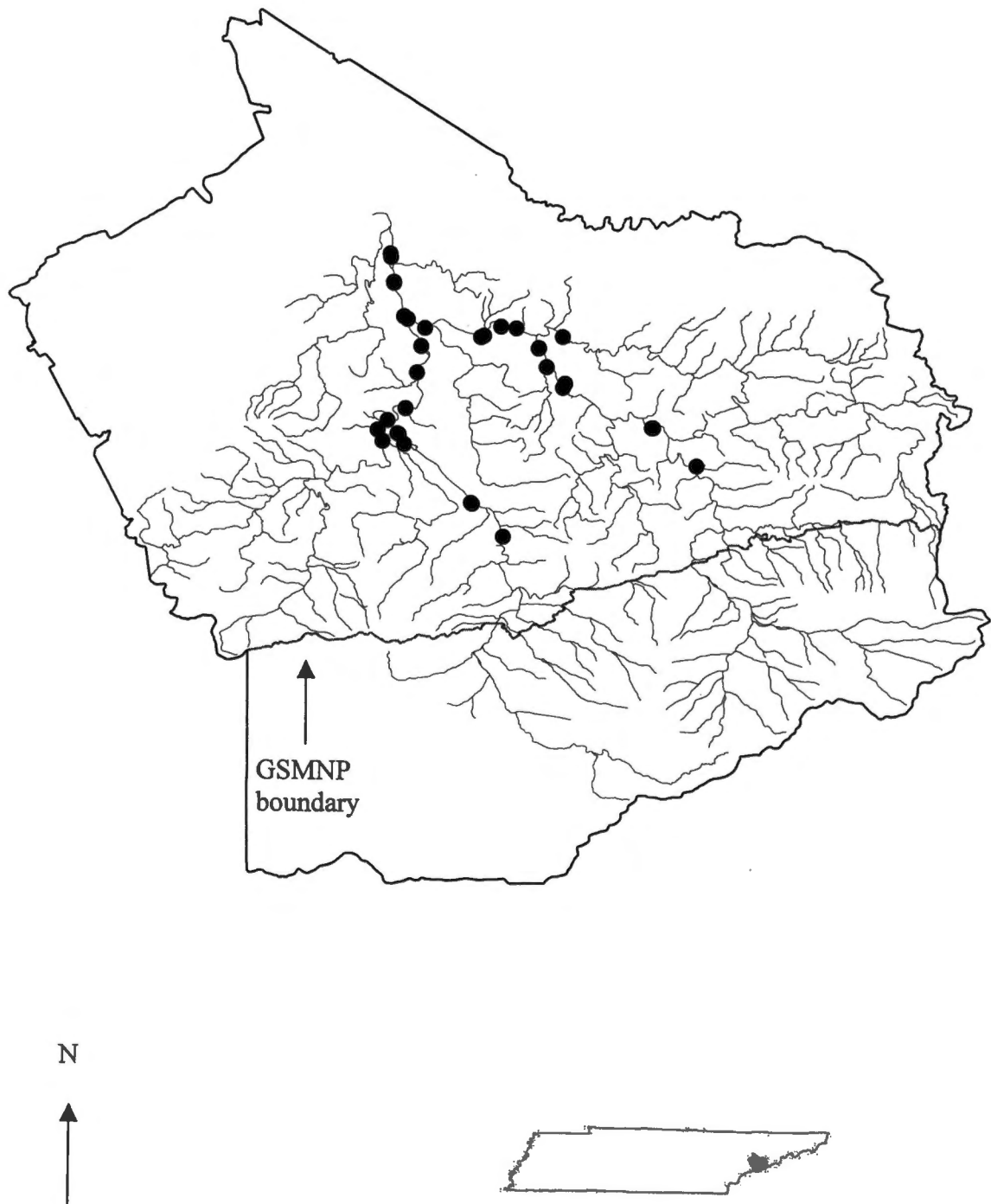


Figure A88. Collection localities for *Percina evides*, gilt darter, in the Little Pigeon River system, Sevier Co., TN.

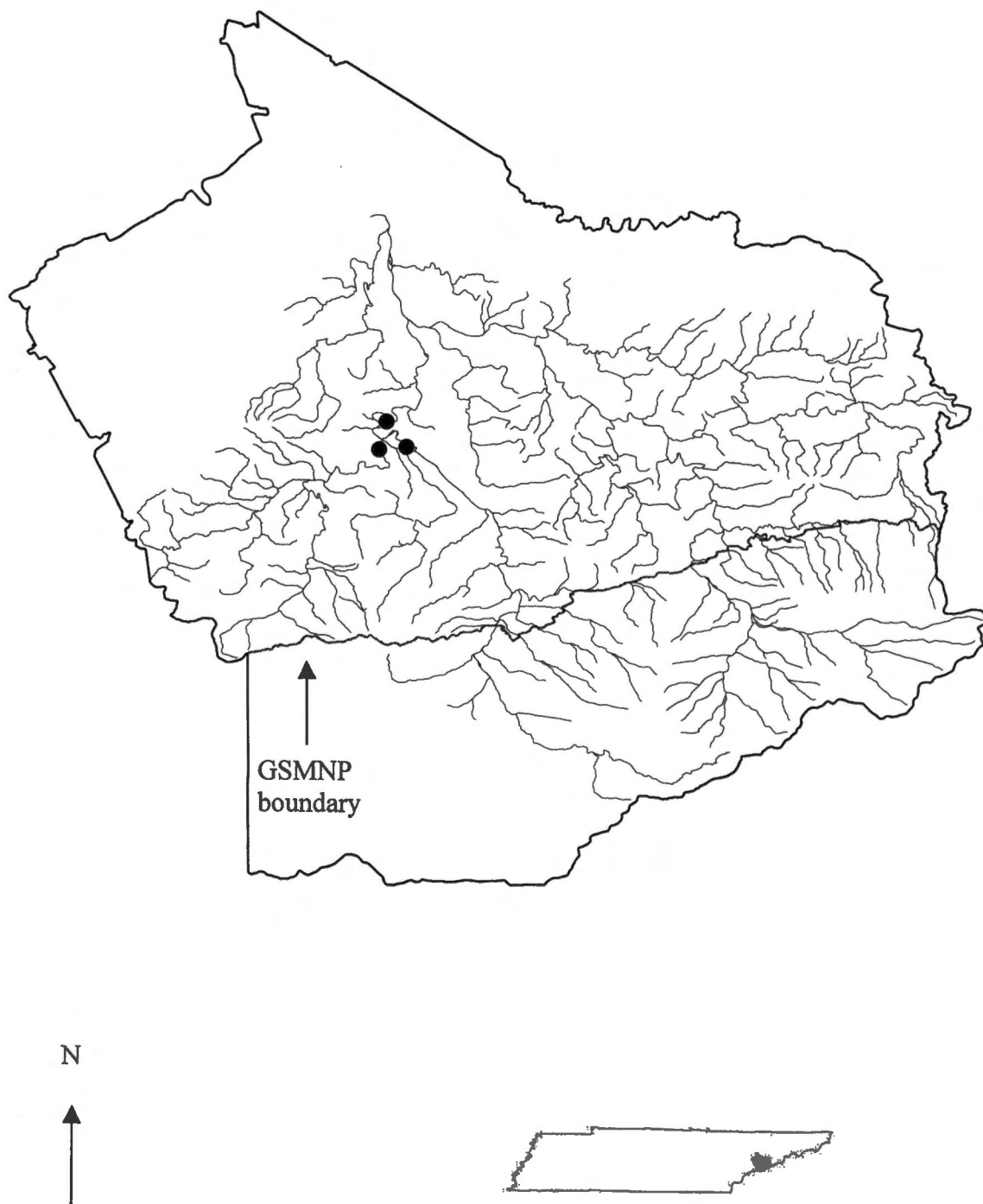


Figure A89. Collection localities for *Percina macrocephala*, longhead darter, in the Little Pigeon River system, Sevier Co., TN.

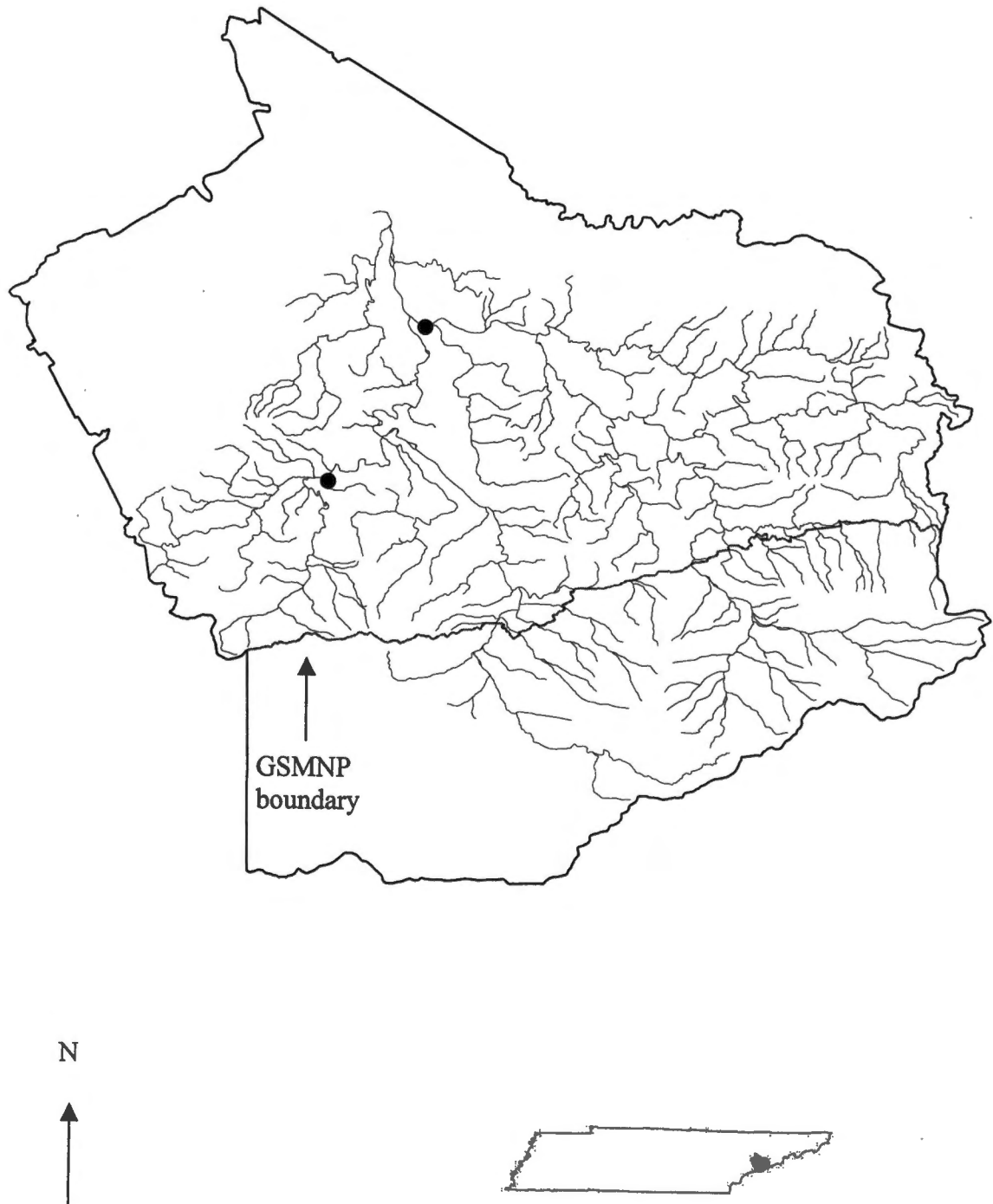


Figure A90. Collection localities for *Percina sciera*, dusky darter, in the Little Pigeon River system, Sevier Co., TN.

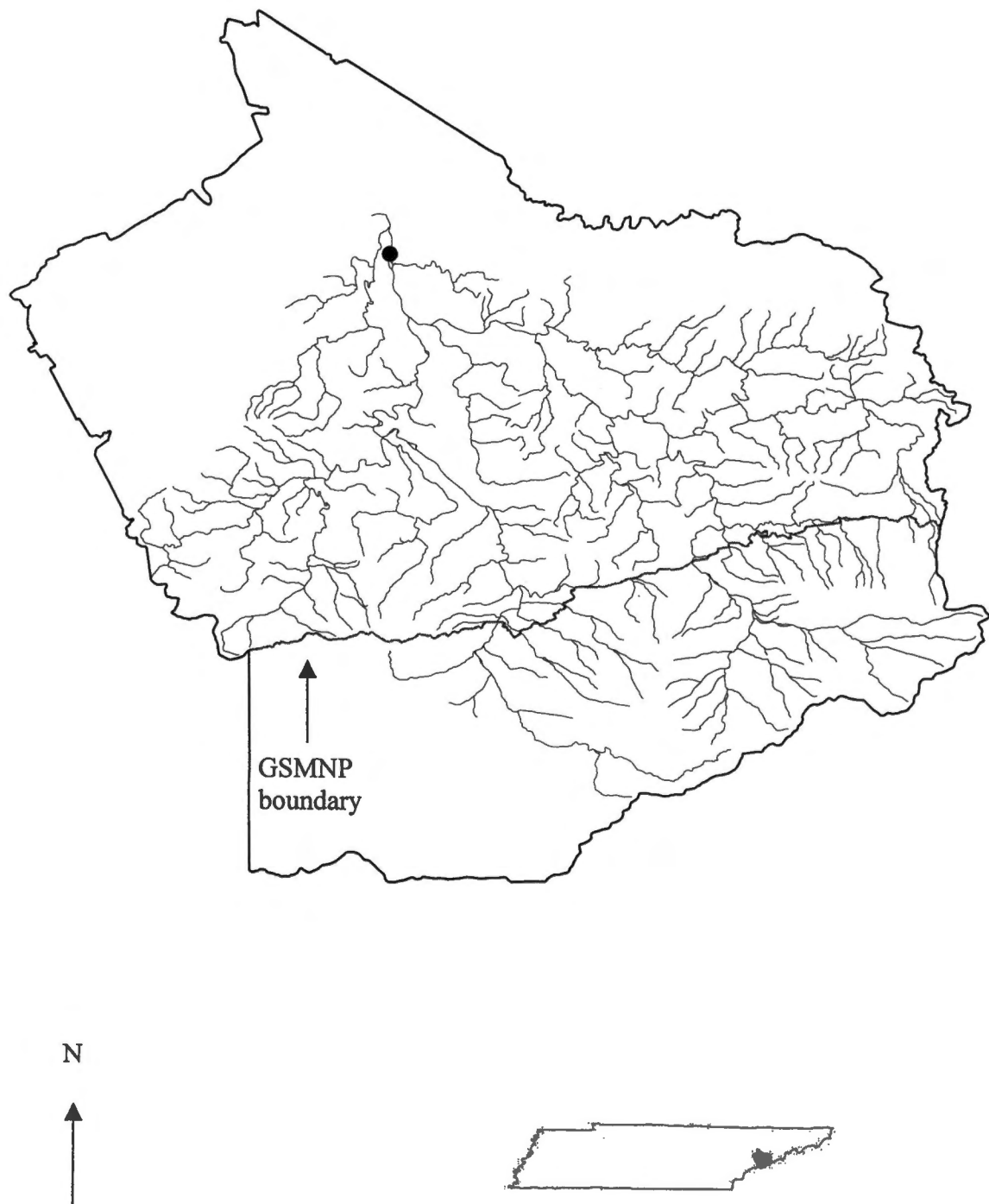


Figure A91. Collection localities for *Sander canadense*, sauger, in the Little Pigeon River system, Sevier Co., TN.

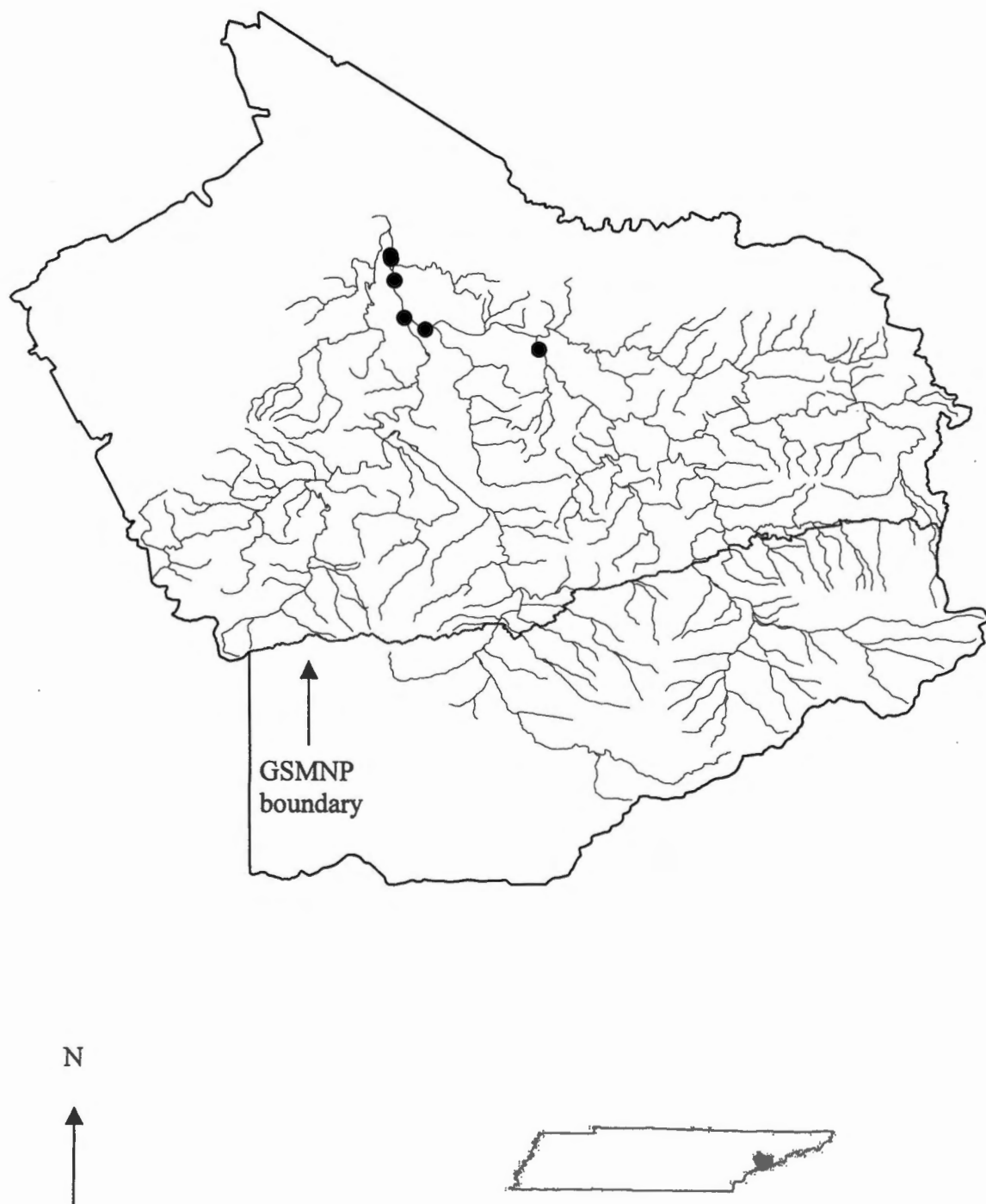


Figure A92. Collection localities for *Aplodinotus grunniens*, freshwater drum, in the Little Pigeon River system, Sevier Co., TN.

Appendix B
Collection Data

The following is a species list of all the fishes known from the LPR system. The number preceding each species is its designated species number. The numbers following the name of each species corresponds to the localities where it was collected. The numbers in parentheses are the number of individuals collected at that locality. An asterisk (*) indicates that the species was present but there is no data about its abundance. The notation (sp.) indicates that the specimens were not positively identified to species.

1. *Ichthyomyzon bdellium*--159(3), 167(*), 279(3), 298(1), 346(1), 379(3), 386(24), 387(3), 388(1), 396(10), 397(1), 407(1)
2. *Ichthyomyzon castaneus*--346(1), 386(1)
3. *Ichthyomyzon greeleyi*--251(2), 353(1), 360(1)
4. *Lampetra appendix*--36(3), 38(1), 49(1), 66(1), 67(1), 69(1), 70(1), 92(1), 172(2), 173(1), 194(2), 195(1), 220(4), 251(1), 280(9), 323(1), 328(2), 348(2), 353(1), 358(3), 361(1), 366(4), 368(1), 372(1), 373(4), 386(4), 388(4), 389(1), 406(7)
6. *Lepisosteus oculatus*--73(1), 346(*), 359(1), 385(1), 391(1), 397(2)
7. *Lepisosteus osseus*--99(1), 189(1), 279(3), 286(1), 310(1), 346(23), 385(2), 386(1), 396(6), 397(13), 402(2), 404(1), 407(1)
9. *Dorosoma cepedianum*--55(1), 73(1), 164(6), 172(4), 176(1), 189(3), 206(19), 248(2), 250(1), 279(63), 280(5), 346(*), 369(4), 385(8), 391(1), 396(6), 397(13), 402(36)
10. *Dorosoma petenense*--363(6)
11. *Campostoma anomalum*--1(*), 4(*), 5(*), 7(*), 9(3), 10(8), 11(13), 13(5), 16(19), 18(1), 19(13), 20(12), 22(10), 24(15), 25(44), 27(5), 28(1), 32(4), 33(1), 34(2), 35(8), 36(7), 37(1), 38(23), 41(5), 42(7), 43(6), 44(*), 45(4), 47(14), 49(16), 52(25), 67(11), 68(26), 69(2), 70(4), 71(2), 74a(2), 74b(11), 75(7), 77(40), 79(29), 80(6), 81(1), 82(3), 86(6), 87(2), 88(1), 89(1), 90(5), 93(5), 96(140), 97(214), 98(108), 100(1), 103(43), 104(4), 106(24), 107(6), 109(24), 110(2), 111(18), 112(46), 113(43), 116(3), 117(4), 118(5), 119(168), 120(3), 123(154), 125(5), 127(122), 130(5), 132(7), 133(36), 134(8), 137(68), 138(2), 139(1), 140(24), 141(2), 144(2), 145(6), 146(1), 147(4), 151(2), 152(7), 153(4), 154(24), 155(1), 156(1), 161(4), 165(*), 169(*), 170(7), 171(2), 172(2), 173(30), 174(10), 175(11), 179(*), 180(*), 182(*), 183(*), 184(*), 186(79), 187(1), 188(14), 190(40), 193(86), 194(74), 195(210), 196(27), 198(17), 199(43), 200(144), 201(238), 203(490), 204(15), 205(33), 207(80), 208(36), 210(95), 211(19), 212(29), 213(41), 214(910), 215(350), 216(80), 217(118), 218(106), 219(93), 221(74), 222(88), 223(366), 224(19), 226(5), 229(6), 230(50), 240(1), 241(50), 242(1749), 243(21), 244(9), 245(*), 246(*), 252(66), 285(*), 286(*), 291(*), 292(*), 293(*), 294(*), 295(*), 296(*), 305(6), 307(20), 308(208), 311(2), 313(55), 315(34), 316(102), 322(111), 323(35), 328(155), 333(25), 334(16), 336(*), 338(*), 347(26), 348(132), 349(50), 351(50), 352(*), 357(*), 358(21), 360(50), 361(200), 362(100), 364(26), 365(1), 366(108), 368(100), 370(2), 371(2), 374(35), 376(107), 378(425), 388(22), 389(5), 392(495), 393(75), 394(136), 395(251), 398(25), 399(250), 400(*), 401(*), 406(458)
12. *Campostoma oligolepis*--23(14), 39(4), 46(44), 50(52), 51(424), 54(32), 55(27), 56(1), 59(10), 60(4), 61(2), 62(6), 65(8), 73(56), 76(5), 83(15), 85(1), 91(2), 92(6), 95(164), 99(58), 114(1), 115(5), 122(2), 128(1), 129(6), 135(2), 136(9), 142(45), 143(7), 148(36), 149(29), 157(4),

158(62), 159(4), 160(140), 162(40), 163(43), 164(36), 167(*), 176(5), 177(3), 181(12), 185(*), 189(174), 191(1), 192(4), 220(130), 249(230), 250(92), 251(130), 279(162), 280(152), 281(*), 283(342), 284(27), 298(*), 299(10), 300(1), 301(4), 302(1), 304(3), 309(102), 318(100), 346(24), 353(200), 359(3), 363(202), 367(50), 372(4), 373(83), 377(7), 386(22), 387(25), 390(25), 391(12), 396(72), 397(20), 402(100), 403(*), 404(200), 405(*), 407(*)

13. *Carassius auratus*--189(1)

14. *Cyprinella galactura*--9(10), 11(1), 12(28), 16(27), 18(30), 19(26), 20(32), 22(6), 23(26), 24(24), 25(2), 26(3), 28(7), 29(4), 30(3), 31(5), 34(1), 37(7), 38(4), 49(24), 50(1), 51(4), 54(10), 55(11), 56(1), 59(14), 60(1), 61(12), 65(21), 68(5), 70(132), 72(1), 73(40), 75(19), 76(4), 77(16), 78(15), 80(2), 81(1), 82(6), 83(14), 84(1), 85(9), 88(1), 89(1), 91(2), 93(17), 99(26), 105(1), 109(1), 114(1), 122(5), 126(1), 152(8), 153(2), 154(7), 155(1), 156(2), 157(2), 158(10), 160(14), 161(4), 162(27), 163(15), 164(10), 166(7), 167(*), 168(*), 169(*), 170(4), 172(9), 173(3), 174(4), 176(27), 181(18), 183(*), 184(*), 186(29), 189(63), 191(39), 192(1), 193(37), 194(20), 195(44), 196(44), 206(1), 216(10), 223(13), 241(30), 242(9), 247(1), 248(8), 249(27), 250(11), 251(19), 252(25), 279(33), 280(73), 281(*), 283(80), 284(39), 286(*), 294(*), 298(18), 301(1), 308(4), 318(27), 322(2), 323(1), 328(6), 346(109), 347(1), 348(12), 353(150), 358(45), 360(30), 361(50), 363(23), 364(10), 365(5), 366(20), 368(10), 370(3), 372(11), 377(115), 378(9), 386(70), 387(1), 388(79), 389(16), 392(2), 393(4), 395(50), 396(31), 397(65), 401(*), 402(*), 403(*), 404(1), 405(*), 406(185), 407(*)

15. *Cyprinella spiloptera*--19(1), 22(7), 23(25), 26(1), 29(4), 30(6), 31(4), 38(1), 39(15), 49(12), 53(*), 55(24), 56(22), 57(5), 59(56), 61(72), 62(1), 63(97), 65(27), 68(1), 69(19), 70(17), 72(39), 73(360), 75(21), 76(44), 78(41), 83(10), 86(1), 93(67), 99(16), 101(5), 118(2), 121(1), 158(10), 161(1), 164(3), 167(*), 169(*), 170(2), 176(16), 181(27), 185(*), 189(3), 191(37), 192(8), 193(2), 195(7), 196(5), 247(15), 248(55), 250(4), 251(6), 252(12), 279(56), 281(*), 283(34), 284(65), 298(26), 301(2), 302(1), 307(1), 309(28), 323(1), 346(114), 348(14), 353(20), 358(5), 360(1), 361(4), 363(9), 365(1), 366(1), 372(12), 378(9), 385(5), 386(14), 387(11), 388(9), 389(2), 390(2), 391(10), 395(22), 396(20), 397(43), 402(*), 403(3), 406(15), 407(*)

16. *Cyprinus carpio*--56(1), 189(12), 206(8), 279(29), 280(4), 346(20), 359(2), 363(1), 372(2), 385(8), 386(1), 396(24), 397(8), 402(12), 403(10), 404(2)

17. *Erimystax insignis*--3(*), 19(3), 23(3), 38(2), 46(15), 49(1), 51(6), 54(1), 55(4), 56(4), 57(1), 59(2), 60(3), 61(14), 63(13), 65(13), 66(1), 67(2), 73(3), 74b(3), 76(1), 77(50), 78(22), 82(1), 83(16), 85(17), 86(6), 91(1), 99(1), 104(3), 108(3), 110(1), 114(2), 115(3), 116(3), 117(2), 119(6), 121(1), 122(14), 124(6), 125(4), 128(8), 129(16), 132(2), 135(2), 136(5), 143(6), 157(4), 159(1), 161(2), 176(3), 181(2), 189(66), 191(1), 192(3), 193(11), 194(6), 196(2), 251(5), 280(2)

18. *Hybopsis amblops*--3(*), 18(19), 19(28), 20(77), 22(22), 23(11), 24(6), 25(1), 29(10), 33(2), 37(15), 49(48), 50(12), 51(13), 55(18), 56(47), 57(1), 59(20), 60(4), 61(50), 63(21), 65(18), 67(4), 69(5), 70(13), 73(16), 74b(18), 75(1), 77(678), 78(1), 79(8), 80(4), 81(1), 82(1), 83(18), 85(49), 86(34), 93(50), 95(15), 96(32), 99(21), 108(1), 126(1), 127(2), 151(1), 152(15), 153(12), 154(6), 158(2), 166(1), 176(12), 181(4), 184(*), 189(14), 191(42), 192(3), 193(170), 194(86), 195(66), 196(154), 216(3), 219(2), 220(7), 223(10), 247(36), 248(82), 249(3), 250(6), 251(6), 252(36), 279(97), 280(89), 281(*), 283(20), 284(12), 298(18), 299(1), 301(5), 307(1), 308(1), 309(60), 316(2), 318(44), 328(33), 346(64), 347(1), 348(22), 353(3), 358(53), 359(1), 361(11), 363(37), 366(27), 367(10), 369(1), 372(103), 373(3), 377(25), 378(2), 379(59), 386(24), 387(15), 388(10), 389(16), 390(125), 391(16), 395(39), 397(19), 399(2), 401(*), 402(100), 403(150), 404(200), 405(250), 406(318), 407(*)

19. *Luxilus chrysocephalus*--18(9), 19(8), 22(24), 23(5), 28(1), 31(3), 33(12), 36(9), 38(8), 46(28), 49(156), 53(1), 55(90), 56(21), 57(3), 59(56), 61(15), 62(2), 63(12), 64(20), 65(7), 68(1), 70(48), 72(12), 73(57), 74b(26), 75(5), 76(1), 77(50), 78(22), 80(6), 83(14), 85(4), 86(9), 93(5), 99(12),

- 101(33), 108(1), 152(21), 154(4), 155(1), 157(6), 158(32), 159(3), 160(18), 162(16), 163(4), 164(19), 169(*), 172(1), 173(1), 174(3), 176(22), 177(22), 181(46), 185(*), 189(1), 191(77), 192(28), 193(130), 194(49), 195(204), 196(15), 223(10), 247(1), 248(21), 249(47), 250(33), 251(1), 252(75), 279(264), 280(66), 281(*), 283(144), 284(128), 298(12), 299(13), 300(16), 302(15), 303(1), 307(31), 308(108), 309(107), 310(1), 318(61), 322(76), 323(36), 328(122), 346(128), 347(1), 348(82), 353(100), 358(176), 359(5), 360(1), 361(52), 363(114), 364(20), 365(1), 366(54), 367(107), 368(10), 371(5), 372(20), 373(30), 377(100), 378(165), 379(6), 386(57), 387(9), 388(1), 389(14), 390(176), 391(10), 393(38), 395(116), 396(36), 397(7), 398(15), 403(*), 404(200), 405(*), 406(122), 407(*)
20. *Luxilus coccogenis*--2(*), 4(*), 7(*), 9(90), 11(60), 12(70), 13(19), 16(73), 18(30), 19(28), 20(26), 22(10), 23(16), 24(4), 25(50), 26(3), 27(10), 29(7), 30(1), 31(1), 32(20), 33(2), 34(7), 35(48), 36(11), 37(13), 38(8), 39(3), 41(2), 42(14), 43(8), 44(*), 45(7), 46(28), 47(17), 49(11), 50(122), 52(6), 54(18), 55(4), 56(9), 59(2), 61(16), 65(1), 70(3), 71(78), 75(4), 76(1), 77(2), 78(15), 79(18), 81(2), 82(4), 83(3), 88(1), 89(1), 96(13), 97(2), 99(1), 100(3), 103(3), 105(2), 106(3), 107(7), 108(1), 120(4), 123(3), 127(1), 131(1), 151(3), 152(3), 153(39), 154(11), 155(1), 156(21), 161(25), 163(4), 166(8), 167(*), 168(*), 170(2), 171(3), 172(4), 173(16), 174(15), 175(10), 176(3), 180(*), 181(8), 183(*), 184(*), 186(4), 189(116), 190(7), 193(25), 194(2), 195(6), 196(27), 199(1), 200(1), 201(3), 204(2), 205(1), 212(11), 214(18), 215(19), 216(75), 217(7), 218(12), 219(124), 220(41), 221(73), 222(32), 223(24), 226(3), 230(4), 241(50), 242(524), 243(50), 244(*), 245(*), 249(23), 250(7), 251(23), 252(1), 279(20), 280(73), 283(146), 284(13), 285(*), 286(*), 291(*), 292(*), 293(*), 295(*), 296(*), 305(7), 313(7), 315(17), 316(33), 318(20), 328(67), 336(*), 347(17), 348(11), 349(10), 351(50), 353(5), 357(*), 358(11), 360(1), 361(23), 362(75), 363(2), 364(50), 365(5), 371(2), 377(10), 378(9), 386(20), 387(5), 388(100), 389(1), 390(1), 392(240), 393(156), 394(315), 395(7), 396(62), 397(5), 399(50), 400(*), 401(*), 404(1), 406(41)
21. *Lythrurus lirus*--22(3), 49(8), 69(2), 70(23), 74b(1), 77(10), 86(2), 181(6), 191(*), 194(2), 195(2), 196(2), 252(46), 280(8), 281(1), 298(3), 301(1), 346(21), 348(20), 353(6), 358(12), 361(40), 363(12), 372(1), 385(1), 386(7), 387(90), 388(2), 389(1), 395(56), 396(4), 397(48), 406(12)
22. *Macrhybopsis storeriana*--59(3)
23. *Nocomis micropogon*--2(*), 4(*), 9(2), 11(26), 12(9), 13(1), 16(29), 18(6), 19(24), 20(5), 22(7), 23(7), 24(2), 25(15), 26(1), 27(5), 30(1), 31(3), 32(11), 34(1), 35(5), 36(4), 37(2), 38(5), 39(29), 42(2), 43(1), 44(*), 45(6), 46(19), 50(5), 51(1), 52(23), 54(10), 55(21), 56(1), 59(5), 60(3), 61(4), 68(1), 71(24), 73(4), 76(1), 79(4), 81(1), 83(2), 84(1), 86(1), 87(1), 88(1), 89(1), 91(6), 92(1), 93(2), 95(15), 96(11), 97(2), 99(5), 101(1), 103(2), 106(9), 107(3), 109(1), 113(2), 120(2), 123(3), 127(13), 130(2), 150(1), 151(1), 153(9), 154(8), 156(4), 160(1), 161(25), 167(*), 168(*), 169(*), 170(4), 171(4), 173(10), 174(15), 175(17), 176(15), 180(*), 181(4), 182(*), 183(*), 184(*), 185(*), 186(1), 189(87), 190(6), 192(1), 193(15), 194(1), 195(3), 196(5), 200(1), 201(12), 205(1), 207(1), 212(10), 214(7), 215(4), 216(18), 217(12), 218(14), 219(8), 220(19), 221(57), 222(7), 223(9), 226(3), 241(67), 243(19), 244(16), 246(*), 247(1), 249(7), 251(22), 279(20), 280(5), 283(30), 285(*), 286(*), 292(*), 293(*), 294(*), 295(*), 296(*), 298(1), 305(9), 313(12), 315(2), 316(8), 328(11), 336(*), 347(6), 348(1), 349(10), 351(20), 353(21), 357(*), 358(5), 360(1), 362(20), 363(12), 364(6), 365(1), 370(4), 371(2), 373(17), 377(1), 378(5), 379(4), 386(15), 387(3), 388(16), 392(210), 393(45), 394(185), 395(2), 396(17), 397(2), 398(100), 399(100), 400(*), 401(*), 402(*), 404(1), 405(*), 406(14), 407(*)
24. *Notropis atherinoides*--55(1), 56(1), 74b(1)
25. *Notropis leuciodus*--9(10), 11(8), 12(13), 16(55), 18(2), 19(34), 20(7), 23(18), 24(8), 25(75), 27(6), 28(1), 34(27), 35(18), 36(3), 38(4), 39(4), 42(1), 43(13), 45(2), 46(30), 50(61), 51(3), 54(3), 56(31), 57(2), 59(18), 60(2), 61(29), 63(18), 73(12), 74a(2), 75(2), 76(1), 77(26), 78(9), 79(3), 80(4), 81(8), 82(14), 83(14), 84(19), 85(22), 87(1), 88(1), 89(1), 91(5), 92(4), 93(17), 95(10),

- 96(74), 97(1), 98(4), 101(12), 103(19), 104(12), 105(2), 106(1), 107(13), 109(8), 110(1), 111(28), 112(9), 113(5), 117(2), 119(6), 120(15), 123(27), 124(24), 125(17), 127(10), 128(1), 132(5), 137(8), 144(1), 145(7), 150(2), 153(28), 154(41), 156(34), 161(18), 166(3), 167(*), 168(*), 170(28), 171(32), 172(3), 173(32), 174(25), 176(5), 178(*), 180(*), 184(*), 185(*), 189(128), 190(6), 193(20), 194(10), 195(10), 196(10), 216(51), 217(15), 218(27), 219(35), 220(85), 221(26), 223(12), 241(50), 242(426), 243(39), 244(*), 249(28), 251(106), 279(7), 280(49), 283(192), 285(*), 286(*), 291(*), 292(*), 293(*), 294(*), 316(125), 328(9), 346(51), 347(18), 349(6), 351(21), 353(51), 357(*), 359(1), 360(101), 362(30), 364(10), 365(1), 370(1), 372(1), 373(1), 386(16), 388(49), 389(*), 392(102), 394(239), 396(98), 399(25), 400(*), 401(*), 405(*), 406(138), 407(*)
26. *Notropis micropteryx*--19(3), 23(2), 39(11), 49(22), 55(200), 56(50), 57(37), 59(156), 61(50), 65(100), 68(11), 70(6), 73(496), 76(20), 77(87), 78(94), 82(4), 83(20), 85(12), 86(17), 91(10), 92(2), 94(1), 105(4), 121(1), 122(1), 161(15), 167(*), 169(*), 176(6), 181(112), 184(*), 189(4), 191(59), 192(2), 194(20), 195(10), 196(6), 223(1), 247(15), 248(6), 249(1), 250(4), 251(3), 252(2), 279(17), 280(38), 281(*), 283(7), 284(16), 298(7), 301(5), 310(10), 346(107), 348(3), 353(22), 358(1), 360(2), 363(30), 372(104), 386(215), 387(2), 388(9), 389(*), 396(96), 397(26), 402(*), 403(*), 405(*), 406(25), 407(*)
27. *Notropis photogenis*--18(1), 19(16), 23(1), 29(1), 38(1), 49(8), 51(48), 55(1), 59(6), 61(1), 73(1), 76(188), 77(21), 78(80), 83(5), 85(7), 91(3), 101(1), 189(6), 191(1), 196(6), 247(26), 248(4), 250(8), 252(5), 279(6), 280(61), 281(*), 284(1), 346(118), 353(16), 363(1), 372(22), 373(1), 385(2), 386(17), 387(2), 388(9), 396(13), 397(26), 406(81), 407(*)
28. *Notropis rubricroceus*--1(*), 4(*), 5(*), 7(*), 9(1), 11(19), 12(3), 13(7), 24(2), 25(72), 27(2), 32(2), 41(5), 42(8), 43(18), 44(*), 45(1), 47(108), 52(97), 58(25), 63(314), 71(148), 72(1), 73(2), 74b(2), 77(1), 79(5), 87(1), 95(85), 96(81), 97(26), 98(66), 100(2), 106(2), 126(21), 127(8), 133(1), 140(5), 153(1), 154(1), 165(*), 171(9), 173(2), 175(41), 178(*), 182(3), 186(19), 187(2), 188(11), 190(58), 199(8), 200(59), 201(262), 203(4), 204(1), 205(9), 207(118), 208(39), 209(19), 210(30), 211(6), 212(126), 213(11), 214(50), 215(44), 217(142), 218(56), 219(22), 220(12), 221(20), 222(80), 223(1), 226(7), 230(1), 235(1), 237(7), 241(158), 242(57), 243(50), 244(*), 245(*), 252(1), 279(3), 283(12), 291(*), 292(*), 295(*), 305(12), 307(207), 313(34), 315(18), 316(43), 328(5), 333(33), 334(27), 336(*), 347(22), 349(51), 351(50), 352(*), 357(*), 358(1), 361(5), 362(31), 364(50), 371(3), 376(153), 378(6), 389(*), 392(575), 393(170), 394(458), 398(100), 399(259), 400(*)
29. *Notropis stramineus*--22(1), 49(30), 53(*), 55(2), 56(6), 57(3), 59(2), 61(9), 62(214), 63(154), 64(126), 68(5), 69(3), 72(29), 73(5), 74b(2), 77(25), 83(1), 85(2), 93(41), 114(1), 158(22), 160(3), 162(106), 163(87), 164(37), 176(1), 177(26), 181(4), 185(*), 191(11), 192(1), 193(2), 195(4), 196(1), 223(2), 247(10), 248(1), 250(3), 252(1), 279(7), 280(12), 282(30), 283(22), 284(42), 299(14), 300(34), 301(8), 302(40), 303(4), 307(27), 309(207), 310(1), 318(3), 323(21), 328(69), 346(1), 348(34), 358(52), 361(1), 366(21), 367(1), 372(1), 377(12), 378(13), 385(3), 389(*), 390(347), 391(21), 395(137), 396(10), 397(3), 404(1), 406(7)
30. *Notropis telescopus*--9(21), 16(35), 18(1), 19(37), 20(43), 22(10), 23(15), 24(6), 25(25), 26(3), 28(2), 29(20), 30(3), 31(2), 33(3), 34(16), 35(16), 36(18), 37(10), 38(30), 39(1), 45(35), 46(79), 49(58), 50(13), 51(7), 54(59), 55(31), 56(47), 57(2), 58(3), 59(9), 60(4), 61(6), 65(1), 68(1), 69(1), 70(59), 73(23), 77(116), 78(4), 80(2), 81(3), 82(13), 83(42), 84(3), 85(10), 86(3), 87(3), 88(1), 89(1), 91(5), 92(8), 93(7), 96(3), 100(7), 103(8), 104(2), 108(1), 111(1), 118(1), 120(1), 123(20), 125(3), 130(1), 131(1), 132(1), 136(1), 138(1), 147(1), 152(35), 154(6), 157(1), 160(14), 161(23), 167(*), 168(*), 169(*), 170(28), 171(1), 173(2), 174(2), 176(2), 180(*), 181(4), 183(*), 184(*), 186(12), 189(7), 192(26), 193(79), 194(19), 195(20), 196(17), 216(58), 217(8), 218(2), 219(4), 220(41), 221(8), 241(50), 242(77), 243(49), 244(*), 249(3), 250(1), 251(17), 252(110), 280(44), 283(12), 284(4), 308(9), 316(55), 318(22), 328(3), 346(5), 348(3), 349(1), 353(6), 358(22),

- 360(8), 361(3), 362(2), 363(3), 364(50), 365(3), 372(2), 377(10), 386(25), 387(7), 388(29), 389(1), 392(1), 394(9), 395(23), 397(4), 399(10), 401(*), 403(*), 406(108), 407(*)
31. *Notropis volucellus*--18(32), 19(4), 22(2), 23(5), 33(3), 56(5), 59(1), 63(12), 73(2), 75(1), 76(2), 83(3), 155(1), 160(1), 181(1), 189(2), 191(12), 195(3), 196(2), 206(4), 247(26), 248(54), 279(7), 283(3), 284(1), 298(16), 301(1), 303(1), 310(20), 318(2), 346(8), 348(1), 360(3), 363(12), 369(3), 372(1), 373(1), 379(3), 385(16), 386(22), 387(42), 388(14), 389(*), 397(95), 402(*), 403(*)
 32. *Phenacobius uranops*--18(4), 19(6), 55(2), 56(1), 61(2), 65(10), 66(1), 68(4), 77(4), 78(2), 99(1), 104(1), 121(1), 122(1), 125(1), 128(6), 129(5), 131(1), 132(1), 135(4), 136(2), 142(1), 143(7), 157(2), 167(*), 170(2), 189(1), 194(6), 195(1), 196(1), 252(1), 279(9), 280(1), 298(2), 346(4), 353(3), 372(14), 386(4), 389(*), 397(5), 404(20), 406(5), 407(*)
 33. *Phoxinus tennesseensis*--208(8), 210(12), 214(2), 249(3), 305(1), 306(62), 376(33)
 34. *Pimephales notatus*--59(1), 248(1), 279(8), 282(1), 300(5), 301(11), 303(23), 310(16), 346(3), 363(4), 369(1), 372(1), 387(1), 390(8), 391(46), 397(15), 404(2), 407(*)
 35. *Pimephales promelas*--201(1), 214(1), 307(1), 390(1), 406(1)
 36. *Pimephales vigilax*--63(3)
 37. *Rhinichthys cataractae*--2(*), 5(*), 7(*), 10(6), 13(5), 25(19), 41(18), 42(7), 43(13), 44(*), 58(1), 77(1), 79(63), 81(1), 95(7), 96(40), 97(37), 98(30), 99(1), 106(21), 107(1), 109(1), 126(3), 127(3), 128(1), 133(20), 134(3), 140(18), 141(1), 146(6), 147(1), 153(1), 165(*), 179(*), 180(*), 182(17), 183(*), 186(5), 187(8), 188(2), 190(2), 215(2), 216(2), 217(10), 218(9), 219(23), 220(4), 221(5), 222(30), 224(16), 226(13), 240(1), 241(18), 242(12), 243(19), 244(3), 245(*), 246(*), 251(4), 255(*), 279(1), 295(*), 305(2), 311(6), 312(1), 313(23), 316(2), 324(*), 325(*), 332(*), 333(2), 342(*), 349(5), 351(2), 357(*), 362(1), 374(11), 392(24), 394(6), 400(*), 406(1)
 38. *Rhinichthys obtusus*--2(*), 5(*), 10(49), 13(26), 14(3), 17(28), 21(67), 23(1), 25(6), 32(1), 41(15), 43(21), 58(3), 81(1), 95(77), 98(8), 99(1), 112(4), 126(2), 127(1), 155(1), 178(*), 179(*), 187(69), 188(1), 197(25), 198(108), 199(42), 200(380), 201(104), 202(63), 203(106), 204(11), 205(30), 207(254), 208(422), 209(21), 210(208), 211(19), 212(74), 213(45), 214(120), 215(8), 217(1), 218(2), 220(2), 222(246), 224(24), 225(42), 226(18), 227(282), 228(19), 229(31), 230(35), 231(27), 232(28), 233(28), 234(48), 235(49), 236(64), 237(63), 238(55), 239(36), 240(53), 241(2), 242(13), 245(*), 246(*), 255(*), 256(*), 257(*), 258(*), 260(*), 261(*), 264(*), 265(*), 274(*), 275(*), 283(2), 284(1), 295(*), 296(*), 298(*), 300(4), 304(15), 305(80), 306(84), 307(47), 309(35), 311(23), 312(50), 313(51), 314(*), 315(55), 316(3), 319(*), 320(*), 321(*), 325(*), 326(*), 332(*), 333(29), 334(28), 336(*), 337(*), 338(*), 339(*), 340(*), 341(*), 342(*), 343(*), 345(*), 348(2), 351(1), 352(*), 357(*), 358(4), 367(20), 371(1), 374(182), 375(*), 376(123), 377(1), 378(1), 388(1), 390(31), 398(3), 399(2)
 39. *Semotilus atromaculatus*--25(2), 32(3), 58(1), 71(2), 73(1), 77(1), 79(1), 87(1), 95(3), 114(1), 162(2), 164(1), 187(22), 193(2), 195(1), 198(2), 199(88), 200(99), 202(27), 203(172), 204(36), 205(7), 207(88), 208(78), 210(15), 211(31), 212(44), 213(31), 214(220), 215(7), 223(4), 225(1), 228(10), 229(44), 230(74), 231(35), 235(15), 239(1), 248(1), 249(15), 252(1), 255(*), 260(*), 261(*), 283(2), 285(*), 286(*), 304(12), 306(31), 307(2), 308(2), 313(1), 314(102), 320(*), 322(3), 328(4), 333(30), 334(54), 336(*), 352(*), 358(8), 366(1), 374(38), 376(1), 377(1), 378(30), 390(28), 393(2), 395(2), 398(15), 399(2)
 40. *Carpionodes cyprinus*--279(1), 281(1), 385(7 sp.), 397(7 sp.)
 41. *Carpionodes velifer*--191(4), 346(3), 385(5), 397(5), 403(1)

42. *Catostomus commersonnii*--22(2), 25(4), 53(1), 62(1), 215(1), 251(1), 280(2), 304(3), 309(7), 367(5), 378(1), 390(1), 391(1), 399(5)
43. *Hypentelium nigricans*--1(*), 2(*), 3(*), 4(*), 7(*), 9(3), 11(10), 12(20), 13(4), 16(17), 18(2), 19(9), 20(18), 22(2), 23(8), 24(2), 25(15), 27(1), 30(2), 33(1), 36(3), 37(4), 38(11), 39(2), 46(8), 47(4), 49(16), 50(2), 51(6), 54(14), 55(4), 56(1), 59(7), 60(3), 61(5), 63(4), 66(3), 67(5), 68(1), 70(4), 73(96), 74a(1), 74b(5), 75(3), 76(33), 77(8), 78(1), 79(1), 80(1), 81(1), 83(5), 86(5), 88(1), 89(3), 91(2), 93(9), 94(3), 95(24), 96(4), 97(14), 99(8), 102(3), 104(1), 106(3), 107(3), 108(3), 112(8), 113(17), 114(2), 115(2), 117(2), 119(21), 122(4), 124(1), 125(2), 126(24), 127(29), 128(1), 129(9), 133(1), 135(1), 136(1), 138(1), 139(1), 140(1), 141(3), 143(2), 144(4), 146(2), 147(10), 148(3), 149(10), 154(2), 155(1), 156(1), 157(1), 158(1), 159(1), 160(12), 161(1), 162(2), 163(5), 164(1), 169(*), 173(2), 176(3), 177(1), 179(*), 180(*), 183(*), 184(*), 186(9), 187(6), 188(1), 189(17), 190(2), 191(1), 192(3), 193(5), 194(8), 195(10), 196(7), 200(22), 206(5), 207(19), 210(11), 215(22), 216(6), 217(3), 218(7), 219(2), 220(22), 221(14), 222(11), 223(38), 224(2), 226(2), 229(8), 230(20), 239(1), 241(2), 242(34), 243(1), 244(7), 245(*), 247(4), 248(6), 249(11), 250(12), 251(59), 252(14), 279(166), 280(36), 283(9), 284(12), 285(*), 286(*), 291(*), 292(*), 293(*), 294(*), 295(*), 296(*), 298(5), 301(2), 305(4), 308(1), 309(5), 311(2), 313(11), 315(12), 316(11), 318(5), 328(1), 333(2), 334(1), 346(25), 347(1), 348(81), 349(10), 351(5), 352(*), 353(11), 357(*), 358(212), 359(10), 360(1), 361(4), 362(1), 363(5), 364(1), 366(8), 367(5), 368(4), 369(1), 370(2), 371(3), 372(53), 373(9), 374(14), 376(1), 377(1), 378(26), 385(1), 386(5), 387(29), 388(1), 389(10), 390(3), 391(5), 392(6), 393(15), 394(2), 395(58), 396(8), 397(26), 399(10), 401(*), 402(25), 403(*), 404(50), 405(*), 406(28), 407(*)
44. *Ictiobus bubalus*--61(1), 73(51), 279(2), 346(*), 385(5), 397(5)
45. *Minytrema melanops*--282(2), 369(2), 391(1), 396(1)
46. *Moxostoma breviceps*--279(4), 346(*)
47. *Moxostoma carinatum*--279(18), 346(*), 388(1), 396(2)
48. *Moxostoma duquesnii*--16(2), 18(19), 19(5), 23(5), 26(*), 31(1), 49(1), 76(7), 77(6), 78(1), 83(19), 86(1), 88(1), 143(1), 152(5), 154(1), 155(1), 159(2), 161(*), 176(1), 181(2), 189(15), 192(1), 193(1), 196(1), 206(3), 216(7), 220(1), 221(5), 223(2), 230(1), 241(2), 242(4), 247(12 sp.), 248(6 sp.), 249(8), 251(22), 279(63), 280(67), 281(*), 283(15), 284(14), 285(* sp.), 286(8 sp.), 291(* sp.), 292(1), 294(* sp.), 301(1), 323(1), 346(4), 348(8), 358(5), 359(4), 360(2 sp.), 363(2), 366(1), 369(1), 372(1), 373(3), 377(1), 378(2), 380(*), 385(5), 386(2), 387(1), 388(22), 389(46), 390(5), 391(9), 395(6), 396(41), 397(5), 399(* sp.), 401(*), 402(10), 403(*), 406(34), 407(*)
49. *Moxostoma erythrurum*--18(5), 19(7), 22(9), 23(17), 24(1), 29(3), 30(3), 33(3), 36(5), 38(2), 49(11), 53(11), 55(1), 56(4), 57(1), 59(3), 62(8), 64(15), 65(1), 66(24), 68(2), 75(2), 77(1), 83(10), 86(8), 93(3), 102(1), 122(5), 152(3), 176(1), 177(8), 189(17), 191(5), 195(2), 196(8), 206(9), 247(12 sp.), 248(6 sp.), 250(2), 251(4), 252(2), 279(32), 280(67), 281(*), 282(*), 283(8), 284(14), 285(* sp.), 286(8 sp.), 291(* sp.), 294(* sp.), 299(1), 309(6), 310(3), 316(5), 323(3), 346(*), 348(20), 358(6), 360(2 sp.), 361(4), 366(1), 369(2), 372(4), 377(1), 380(*), 385(46), 386(2), 387(1), 388(14), 389(21), 390(7), 393(1), 396(2), 397(73), 399(* sp.), 404(1), 406(30), 407(*)
50. *Ameiurus natalis*--39(2), 59(6), 73(1), 117(1), 170(1), 172(1), 176(4), 189(4), 206(1), 279(1), 280(1), 284(1), 298(1), 310(1), 318(2), 328(1), 346(1), 348(4), 358(2), 366(1), 367(1), 373(1), 377(1), 385(1), 386(2), 388(1), 389(3), 391(2), 397(1), 406(1)
51. *Ictalurus punctatus*--189(5), 206(2), 242(1), 279(3), 346(3), 385(1), 396(1), 397(1)
52. *Noturus* sp. cf. *elegans*--24(1)

53. *Noturus eleutherus*--19(3), 36(2), 39(12), 46(3)
54. *Pylodictis olivaris*--279(1), 346(2), 385(1), 397(1)
55. *Oncorhynchus mykiss*--10(2), 14(1), 44(*), 79(2), 88(1), 89(5), 97(18), 98(4), 105(3), 118(3), 130(2), 139(2), 179(*), 180(*), 186(3), 190(6), 197(15), 202(93), 208(8), 209(16), 215(4), 218(1), 219(1), 221(2), 222(13), 223(1), 224(7), 226(1), 227(8), 240(1), 241(8), 242(5), 244(1), 245(*), 246(*), 249(2), 253(*), 254(*), 255(*), 256(*), 257(*), 258(*), 259(*), 260(*), 263(*), 264(*), 266(*), 267(*), 268(*), 272(*), 273(*), 275(*), 276(*), 277(*), 278(*), 288(*), 289(*), 290(*), 291(*), 292(*), 293(*), 295(*), 296(*), 297(35), 298(*), 311(17), 312(12), 313(52), 316(2), 319(*), 324(*), 325(*), 327(*), 329(*), 331(*), 332(*), 335(2), 337(*), 339(*), 340(*), 341(*), 344(*), 349(3), 350(*), 351(1), 354(*), 355(*), 356(*), 357(*), 374(3), 389(2), 394(1), 397a(*), 400(*), 405(1)
56. *Salmo trutta*--235(1), 242(1), 244(1), 291(1)
57. *Salvelinus fontinalis*--6(*), 14(1), 15(3), 224(1), 246(*), 253(*), 262(*), 269(*), 270(*), 271(*), 278(*), 287(*), 288(*), 289(*), 290(*), 297(6), 329(*), 330(*), 331(*), 332(*), 335(60), 397a(*), 397b(*)
58. *Fundulus catenatus*--19(5), 23(1), 38(7), 55(3), 56(5), 63(3), 65(3), 69(3), 70(4), 73(3), 74b(1), 83(2), 93(2), 99(1), 101(7), 152(1), 155(1), 158(3), 162(16), 163(2), 171(2), 181(2), 189(1), 191(4), 193(12), 195(3), 196(1), 247(1), 248(11), 249(5), 252(2), 279(9), 281(*), 283(1), 284(3), 298(5), 301(1), 308(1), 309(1), 310(1), 318(9), 323(4), 328(16), 346(1), 348(1), 358(1), 363(26), 364(20), 366(4), 367(3), 372(1), 377(2), 378(16), 386(6), 389(*), 395(2), 397(2), 401(*), 406(5)
59. *Fundulus notatus*--53(10), 62(36), 64(8), 162(4), 163(6), 164(1), 176(6), 185(*), 196(2), 247(3), 248(16), 279(1), 281(17), 298(9), 300(6), 301(1), 302(22), 303(2), 307(2), 309(16), 310(5), 348(2), 359(1), 363(1), 367(3), 372(1), 373(1), 390(10), 397(4), 403(*), 407(*)
60. *Gambusia affinis*--247(1), 248(2), 281(*), 298(12), 300(1), 301(13), 303(4), 310(5), 346(29), 359(10), 390(15), 391(2), 396(1), 407(*)
61. *Labidesthes sicculus*--51(1), 281(*), 298(12), 303(1), 346(1), 359(2), 363(22), 372(1), 385(2), 391(1), 397(2)
62. *Cottus bairdii*--3(*), 4(*), 12(2), 13(31), 20(10), 21(4), 24(11), 25(1), 187(87), 190(36), 215(43), 216(17), 217(95), 218(104), 219(136), 220(112), 222(120), 224(61), 226(6), 231(6), 232(3), 243(*), 244(15), 245(*), 246(*), 255(*), 261(*), 291(8 sp.), 295(*), 296(*), 305(57), 313(32), 333(35), 339(*), 349(30), 357(*), 362(11), 373(112), 399(2)
63. *Cottus carolinae*--7(*), 23(12), 30(2), 36(1), 37(2), 39(1), 41(3), 42(5), 44(*), 45(2), 46(8), 50(1), 55(1), 58(1), 60(1), 66(1), 68(1), 74a(2), 75(2), 79(41), 80(1), 81(1), 82(1), 83(2), 88(1), 89(10), 94(8), 95(1), 96(30), 97(42), 98(39), 99(4), 100(2), 103(1), 110(1), 111(1), 113(1), 119(3), 123(3), 132(1), 144(1), 145(3), 150(3), 151(1), 152(1), 153(7), 155(1), 156(10), 160(2), 161(3), 162(1), 163(3), 164(2), 167(*), 168(*), 169(*), 171(23), 172(2), 173(10), 179(*), 180(*), 181(1), 183(*), 184(*), 186(61), 188(21), 189(304), 192(1), 194(1), 216(15), 221(74), 223(22), 229(10), 230(7), 241(50), 243(3), 244(11), 247(1), 248(1), 249(1), 250(26), 251(51), 252(6), 279(25), 280(45), 283(18), 284(32), 286(*), 291(8 sp.), 308(106), 309(5), 311(12), 312(2), 315(27), 316(52), 322(30), 323(67), 328(10), 336(*), 341(*), 342(*), 346(*), 347(1), 348(31), 351(29), 353(22), 358(30), 360(25), 361(10), 364(100), 366(8), 367(1), 368(10), 370(10), 371(8), 372(1), 373(3), 378(11), 379(3), 386(102), 387(1), 388(42), 389(*), 390(5), 392(194), 393(68), 394(80), 395(21), 396(94), 397(1), 400(2), 401(*), 404(2), 405(*), 406(17), 407(*)
64. *Morone chrysops*--279(2), 346(2)

65. *Ambloplites rupestris*--9(5), 11(1), 12(2), 18(4), 19(6), 22(4), 23(3), 28(1), 29(1), 33(3), 38(3), 52(1), 54(1), 55(1), 77(3), 80(2), 83(1), 96(2), 97(3), 98(4), 99(6), 152(6), 161(2), 176(21), 181(2), 186(2), 189(14), 190(1), 193(6), 194(9), 195(5), 196(4), 199(1), 200(4), 201(4), 203(10), 204(3), 205(4), 206(6), 211(1), 212(15), 214(17), 215(8), 216(15), 217(1), 218(6), 219(21), 220(14), 221(18), 223(14), 241(1), 242(6), 243(*), 248(1), 249(5), 251(22), 252(4), 280(22), 281(*), 283(15), 284(16), 285(*), 286(*), 298(*), 308(8), 316(6), 318(2), 322(1), 323(7), 328(8), 333(1), 346(20), 347(1), 348(57), 351(2), 353(15), 357(*), 358(49), 359(6), 360(8), 361(5), 362(2), 363(5), 364(1), 365(1), 366(2), 369(1), 371(2), 372(12), 373(7), 377(5), 378(16), 379(11), 385(2), 386(30), 387(3), 388(20), 389(39), 392(4), 393(10), 394(26), 395(33), 396(16), 397(16), 398(1), 399(5), 400(*), 401(*), 404(75), 405(*), 406(28), 407(*)
66. *Lepomis auritus*--53(2), 56(1), 62(9), 64(4), 69(3), 70(2), 74b(4), 76(1), 77(1), 83(2), 151(1), 152(2), 160(1), 162(4), 163(7), 169(*), 172(1), 176(5), 177(1), 181(3), 185(*), 189(150), 193(3), 194(3), 195(8), 196(2), 201(4), 203(4), 204(1), 205(1), 206(81), 211(1), 212(3), 213(1), 214(9), 220(1), 223(15), 247(24), 248(19), 249(12), 250(5), 251(62), 252(5), 279(57), 280(39), 281(*), 282(*), 283(3), 284(9), 298(*), 300(2), 301(1), 302(16), 303(8), 304(1), 309(26), 310(1), 318(23), 323(16), 328(4), 346(4), 348(37), 353(11), 358(50), 359(12), 361(10), 363(8), 366(18), 367(1), 369(1), 372(1), 373(8), 377(50), 378(20), 379(1), 385(241), 386(8), 388(8), 389(58), 390(72), 391(228), 395(15), 396(56), 397(152), 398(3), 402(50), 403(150), 404(100), 406(25), 407(*)
67. *Lepomis cyanellus*--228(3), 248(2), 250(3), 251(1), 252(1), 281(*), 283(2), 284(1), 298(1), 303(3), 307(17), 318(1), 328(5), 348(4), 358(6), 361(1), 367(2), 372(1), 377(1), 378(7), 379(1), 385(1), 390(6), 391(18), 403(*)
68. *Lepomis gulosus*--303(1), 310(1), 391(3)
69. *Lepomis macrochirus*--59(2), 69(2), 76(1), 83(1), 177(2), 189(13), 199(3), 203(126), 204(8), 206(3), 211(11), 214(108), 228(9), 239(1), 241(3), 247(2), 248(11), 249(1), 250(35), 251(11), 252(1), 279(6), 281(*), 282(*), 298(*), 299(7), 300(3), 301(1), 302(4), 303(16), 304(2), 307(8), 309(32), 310(2), 316(1), 318(13), 334(3), 346(1), 348(3), 352(*), 353(2), 358(11), 359(3), 361(10), 366(1), 367(1), 369(3), 373(1), 377(10), 379(1), 385(16), 388(1), 389(3), 390(3), 391(51), 393(2), 394(2), 395(2), 396(3), 397(22), 403(*), 404(1), 407(*)
70. *Lepomis megalotis*--19(2), 22(11), 33(1), 38(2), 99(1)
71. *Lepomis microlophus*--53(1), 241(3), 369(2)
72. *Micropterus dolomieu*--3(*), 4(*), 9(5), 11(5), 12(6), 13(1), 16(1), 18(4), 19(5), 20(2), 22(2), 23(12), 24(2), 25(1), 29(5), 38(3), 51(1), 54(2), 55(1), 59(5), 61(1), 73(2), 76(1), 78(2), 83(5), 85(1), 88(1), 89(3), 96(1), 99(5), 101(2), 123(6), 135(1), 137(2), 154(1), 158(1), 169(*), 176(5), 184(*), 185(*), 189(4), 194(1), 195(1), 206(5), 215(3), 216(3), 220(4), 221(5), 241(2), 242(1), 243(*), 244(*), 247(2), 248(1), 249(1), 250(1), 251(6), 279(7), 280(7), 281(*), 283(1), 284(1), 285(*), 286(*), 291(*), 292(*), 293(*), 294(*), 296(*), 298(*), 316(4), 318(3), 346(8), 348(6), 358(4), 359(16), 360(3), 361(3), 362(1), 363(1), 369(1), 372(1), 377(1), 385(4), 386(2), 388(1), 389(12), 393(1), 394(1), 396(2), 397(6), 401(*), 402(15), 403(*), 404(7), 405(*), 406(3), 407(*)
73. *Micropterus punctulatus*--22(3), 59(1), 62(1), 206(1), 252(2), 279(2), 280(2), 282(1), 348(1), 358(1), 366(3), 367(1), 369(1), 385(2), 386(1), 391(3), 395(1), 397(2)
74. *Micropterus salmoides*--39(3), 181(1), 189(1), 203(2), 206(2), 221(1), 233(1), 248(1), 251(2), 279(3), 281(*), 282(2), 298(1), 302(1), 309(2), 334(2), 346(6), 348(2), 358(1), 363(1), 367(6), 390(3), 391(3), 396(1)
75. *Pomoxis annularis*--214(2)

76. *Pomoxis nigromaculatus*--214(2)
77. *Etheostoma blennioides*--18(2), 19(5), 20(3), 22(1), 23(2), 24(1), 25(7), 27(1), 30(1), 36(7), 39(6), 45(2), 49(3), 50(8), 51(6), 55(2), 56(5), 61(2), 63(1), 73(2), 74b(1), 76(1), 77(23), 78(2), 79(26), 81(1), 83(2), 84(4), 86(7), 87(1), 88(1), 89(10), 90(1), 93(1), 96(1), 97(3), 102(8), 105(2), 111(4), 113(1), 115(5), 116(1), 121(1), 122(24), 125(3), 127(14), 129(14), 136(8), 138(2), 143(7), 144(1), 149(15), 154(2), 157(4), 159(1), 161(4), 165(*), 167(*), 168(*), 169(*), 170(9), 171(2), 173(1), 174(3), 176(1), 178(*), 180(*), 181(1), 183(*), 184(*), 189(34), 192(2), 193(1), 194(1), 195(1), 196(7), 206(1), 216(1), 217(3), 218(4), 219(2), 220(8), 223(15), 241(23), 242(1), 247(1), 248(1), 249(12), 250(10), 251(9), 252(15), 279(14), 280(7), 281(*), 283(14), 284(16), 285(*), 291(*), 292(*), 293(*), 296(*), 298(*), 346(12), 347(1), 348(10), 353(16), 357(*), 358(5), 359(1), 361(10), 362(1), 363(4), 364(1), 365(1), 368(3), 369(1), 371(2), 372(6), 373(1), 378(6), 379(12), 386(10), 387(12), 388(15), 389(*), 393(2), 394(3), 395(7), 396(1), 397(20), 399(1), 401(*), 402(15), 403(*), 404(15), 405(*), 406(4), 407(*)
78. *Etheostoma camurum*--61(1)
79. *Etheostoma chlorobranchium*--12(2), 18(2), 20(1), 40(7), 44(3), 79(108), 88(15), 89(2), 90(4), 96(6), 97(7), 98(18), 109(6), 111(10), 112(3), 113(2), 117(1), 118(8), 119(8), 123(12), 126(6), 127(5), 130(7), 137(10), 150(2), 156(2), 165(*), 168(*), 178(*), 182(3), 183(*), 184(*), 186(11), 188(5), 190(9), 216(10), 217(8), 218(5), 219(28), 220(8), 241(30), 242(24), 292(*), 296(*), 316(4), 349(4), 362(5), 392(3), 400(3)
80. *Etheostoma flabellare*--7(*), 11(4), 13(11), 16(4), 25(4), 41(1), 44(*), 47(14), 79(1), 97(1), 98(6), 178(*), 179(*), 182(1), 186(9), 187(2), 189(4), 190(4), 198(29), 202(94), 208(68), 210(50), 215(3), 218(3), 219(1), 220(*), 221(5), 222(21), 226(8), 229(43), 230(25), 231(3), 232(5), 241(13), 242(4), 243(4), 244(2), 245(*), 295(*), 296(*), 305(37), 313(17), 315(29), 316(8), 320(*), 333(16), 336(*), 349(21), 351(5), 357(*), 374(15), 376(24), 392(34), 394(11)
81. *Etheostoma jessiae*--19(4), 22(2), 23(1), 30(1), 33(1), 36(1), 38(1), 46(8), 49(18), 54(1), 55(5), 56(6), 58(4), 63(5), 65(15), 69(7), 70(3), 74b(1), 75(3), 77(7), 86(10), 157(1), 191(2), 192(1), 193(1), 194(18), 195(9), 196(42), 247(6), 248(6), 252(16), 279(4), 280(4), 281(*), 282(4), 298(*), 301(1), 346(22), 348(12), 353(10), 358(22), 361(1), 363(8), 368(1), 372(127), 373(4), 379(4), 389(1), 395(32), 397(4), 402(5), 403(*), 404(5), 407(*)
82. *Etheostoma kenneicotti*--19(5), 24(1), 57(22), 65(2), 69(3), 72(2), 77(2), 80(6), 81(1), 112(5), 117(2), 152(10), 154(15), 156(1), 158(2), 162(10), 163(9), 164(1), 170(2), 171(2), 172(3), 173(4), 174(2), 177(1), 189(5), 193(4), 194(7), 195(2), 196(1), 220(1), 223(22), 249(3), 252(5), 280(8), 281(*), 283(30), 286(*), 294(*), 298(*), 302(28), 304(3), 307(35), 308(32), 309(23), 310(2), 318(3), 322(25), 328(35), 348(7), 358(22), 363(1), 364(1), 366(3), 367(1), 368(10), 372(3), 377(3), 378(187), 386(10), 388(2), 389(*), 395(10), 396(24), 401(*), 406(8)
83. *Etheostoma rufilineatum*--9(1), 12(1), 18(3), 20(2), 23(16), 24(4), 25(3), 36(10), 38(4), 39(10), 45(1), 46(18), 49(11), 50(5), 51(4), 55(14), 56(10), 58(5), 59(2), 60(6), 61(7), 63(8), 65(1), 69(4), 70(1), 73(31), 74a(14), 74b(8), 75(3), 76(5), 77(62), 79(13), 80(2), 81(1), 82(1), 83(1), 84(4), 86(13), 87(1), 88(1), 90(2), 93(5), 94(2), 99(28), 102(57), 103(10), 104(44), 105(116), 108(6), 109(56), 110(74), 111(3), 114(28), 115(56), 117(66), 118(2), 120(1), 121(12), 122(172), 123(12), 124(91), 125(14), 128(9), 129(23), 130(4), 131(36), 132(112), 135(7), 136(32), 137(4), 138(8), 139(19), 142(5), 143(41), 144(10), 145(5), 148(1), 149(5), 150(7), 152(2), 153(9), 154(36), 155(1), 156(22), 157(4), 159(28), 160(1), 161(9), 167(*), 168(*), 169(*), 170(32), 171(20), 172(2), 173(36), 174(7), 176(4), 180(*), 181(3), 183(*), 184(*), 189(620), 191(1), 192(3), 193(9), 194(26), 195(8), 196(7), 216(27), 217(6), 218(2), 219(49), 220(29), 223(59), 241(16), 242(3), 247(4), 248(3), 249(46), 250(13), 251(158), 252(35), 279(222), 280(102), 281(*), 283(240), 284(308), 286(*), 294(*), 296(*), 298(*), 301(4), 308(107), 318(4), 322(1), 323(6), 328(1), 346(51), 348(33), 351(7), 353(51), 358(27), 359(26), 360(50), 361(50), 362(52), 363(55), 364(10),

- 366(63), 368(20), 370(1), 371(4), 372(3), 373(3), 377(25), 379(1), 386(333), 387(19), 389(*), 393(57), 395(132), 396(283), 397(142), 399(10), 401(*), 402(50), 403(*), 404(20), 405(*), 406(229), 407(*)
84. *Etheostoma simoterum*--12(4), 18(3), 19(25), 20(2), 22(2), 23(8), 24(1), 25(10), 26(*), 31(1), 36(3), 38(3), 39(2), 45(3), 46(2), 49(10), 54(1), 55(10), 56(14), 57(9), 58(2), 59(1), 61(38), 65(13), 67(3), 68(2), 69(2), 70(4), 73(2), 74b(1), 75(17), 76(26), 77(98), 78(5), 79(12), 80(1), 82(3), 83(30), 85(1), 86(14), 87(1), 88(1), 89(1), 93(2), 94(2), 95(9), 99(16), 102(1), 103(2), 104(1), 105(4), 112(2), 113(8), 114(3), 116(76), 117(1), 121(1), 122(1), 123(3), 127(5), 132(1), 135(1), 137(4), 141(2), 144(1), 145(1), 150(1), 152(6), 153(21), 155(1), 157(5), 158(31), 160(11), 161(2), 162(37), 163(44), 164(13), 165(*), 166(1), 167(*), 169(*), 170(11), 171(6), 172(5), 173(14), 174(18), 176(34), 181(3), 182(1), 184(*), 185(*), 186(5), 189(21), 190(1), 192(11), 193(91), 194(64), 195(41), 196(59), 206(1), 215(6), 216(1), 217(1), 218(2), 219(6), 220(7), 221(1), 223(27), 230(1), 241(30), 242(18), 243(*), 247(19), 248(5), 249(20), 250(16), 251(10), 252(15), 279(5), 280(30), 281(*), 282(2), 283(48), 284(21), 285(*), 286(*), 292(*), 294(*), 296(*), 298(*), 299(3), 300(12), 301(1), 302(14), 303(3), 307(6), 308(5), 309(12), 310(2), 318(8), 322(24), 323(4), 328(20), 346(54), 347(1), 348(33), 351(3), 353(10), 358(49), 359(1), 360(10), 361(25), 362(3), 363(55), 364(10), 365(1), 366(16), 367(1), 368(1), 370(3), 372(1), 373(5), 377(21), 378(104), 379(13), 386(7), 387(4), 389(*), 390(35), 391(18), 393(5), 395(57), 396(10), 397(9), 399(4), 401(*), 402(100), 403(*), 404(120), 405(*), 406(19), 407(*)
85. *Etheostoma swannanoa*--7(*), 12(1), 20(5), 25(5), 44(*), 45(1), 47(1), 51(3), 52(12), 58(4), 77(7), 79(46), 82(1), 87(16), 88(1), 89(1), 95(33), 96(6), 97(29), 98(28), 103(16), 104(3), 105(6), 107(14), 109(1), 111(6), 112(7), 113(1), 114(1), 116(1), 117(1), 118(3), 119(31), 120(4), 123(27), 125(1), 126(1), 127(12), 131(1), 134(2), 135(2), 137(22), 138(1), 141(7), 144(2), 145(1), 147(1), 150(18), 156(13), 165(*), 168(*), 175(5), 178(*), 182(5), 183(*), 184(*), 186(23), 188(5), 190(1), 194(2), 199(13), 201(49), 203(37), 204(6), 205(5), 211(10), 212(26), 214(23), 215(1), 216(17), 217(18), 218(22), 219(28), 220(34), 221(2), 241(30), 242(64), 243(*), 244(*), 291(*), 305(3), 313(1), 316(13), 333(2), 336(*), 349(5), 351(5), 362(7), 364(1), 374(4), 376(1), 392(4), 394(4), 398(2), 399(3), 400(5)
86. *Etheostoma vulneratum*--19(4), 36(2), 39(3), 54(1), 61(2), 76(2), 79(1), 97(1), 176(3), 189(3), 298(4), 359(3), 397(1), 407(3)
87. *Etheostoma zonale*--19(10), 36(23), 39(14), 55(35), 56(14), 59(6), 61(67), 63(11), 65(8), 66(1), 76(9), 77(4), 78(5), 83(5), 99(3), 105(1), 115(1), 122(7), 125(1), 151(1), 160(3), 161(2), 169(*), 176(37), 181(5), 189(2), 191(1), 192(5), 194(1), 196(10), 248(3), 250(1), 251(4), 279(19), 298(*), 301(2), 346(1), 348(2), 353(2), 358(2), 359(1), 363(36), 370(1), 372(3), 373(3), 379(3), 386(3), 387(3), 388(1), 396(6), 397(4), 401(*), 402(10), 403(*), 404(10), 405(*), 407(*)
88. *Percina aurantiaca*--8(1), 18(1), 88(1), 89(10), 99(1), 105(2), 116(1), 125(3), 132(3), 165(*), 167(*), 184(*), 189(1), 206(1), 216(1), 241(1), 242(1), 285(4), 286(*), 291(*), 292(2), 293(*), 294(*), 360(1), 379(1), 386(2), 388(4), 405(1)
89. *Percina caprodes*--20(1), 36(1), 38(1), 49(3), 50(1), 51(2), 55(1), 59(2), 63(1), 77(5), 83(1), 94(2), 104(1), 161(1), 167(*), 176(1), 184(*), 189(8), 206(1), 247(4), 248(5), 250(2), 251(13), 252(5), 279(25), 280(6), 281(*), 285(*), 286(*), 298(*), 346(1), 348(2), 358(2), 359(1), 372(1), 379(1), 386(4), 387(13), 388(3), 389(*), 396(7), 397(11), 402(4), 403(*), 404(1), 405(*), 407(*)
90. *Percina evides*--23(2), 36(1), 39(1), 46(8), 55(5), 56(2), 61(5), 63(7), 77(5), 82(2), 83(5), 84(1), 104(2), 105(1), 109(2), 110(1), 114(2), 117(3), 121(6), 124(6), 125(7), 129(4), 131(1), 136(1), 148(3), 157(2), 167(*), 184(*), 189(1), 194(1), 195(1), 247(4), 248(1), 251(2), 279(6), 280(10), 298(*), 346(2), 363(6), 372(7), 373(1), 386(4), 387(24), 388(1), 389(*), 396(1), 397(8), 402(5), 404(2), 406(2), 407(*)

- 91. *Percina macrocephala*--19(1), 33(1), 36(1)
- 92. *Percina sciera*--49(2), 55(2), 61(2)
- 94. *Sander canadense*--279(1)
- 95. *Aplodinotus grunniens*--39(2), 189(9), 206(8), 279(6), 281(*), 346(10), 385(2), 397(2)

Appendix C
Locality Data

The following is a list of all locality records for the LPR system. Included in each entry, when available, is the stream name and descriptive location, date, collectors, field number (in parentheses), extra notes, and the list of species collected. Localities are numbered consecutively and listed in chronological order. Identified hybrids are listed, (e.g. 25 x 28) refers to a *Notropis leuciodus* x *N. rubricroceus* hybrid.

1. Dudley Creek at elevation 1,500 ft., GSMNP, 30 August 1932, FO Hazard and FW King. 11, 28, 43
2. Roaring Fork at elevation 1,500 ft., GSMNP, 30 August 1932, FO Hazard and FW King. 20, 23, 37, 38, 43
3. WPLPR at elevation 1,200 ft., 2.0 mi. downstream of Gatlinburg, 31 August 1932, FO Hazard and FW King. 17, 18, 43, 62, 72
4. WPLPR at elevation 1,500 ft., 1.5 mi. upstream of Gatlinburg, GSMNP, 31 August 1932, FO Hazard and FW King. 11, 20, 23, 28, 43, 62, 72
5. WPLPR at elevation 1,700 ft. at Indian Gap Rd., GSMNP, 31 August 1932, FO Hazard and FW King. 11, 28, 37, 38
6. Walker Camp Prong at elevation 4,000 ft. at Indian Gap Rd., GSMNP, 1 September 1932, FO Hazard and FW King. 57
7. MPLPR at elevation 1,700 ft., near Greenbrier, GSMNP, 2 September 1932, FO Hazard and FW King. 11, 20, 28, 37, 43, 63, 80, 85
8. MPLPR at elevation 1,370 ft., immediately N of the GSMNP boundary, Emerts Cove, 29 April 1937, Z Whaley. 88
9. MPLPR at elevation 1,370 ft., immediately N of the GSMNP boundary, Emerts Cove, 27 August 1937, CL Hubbs et al., (CLHM 37-900). 11, 14, 20, 23, 25, 28, 30, 43, 65, 72, 83
10. MPLPR, side and main channel upstream of Porter's Creek, GSMNP, 27 August 1937, CL Hubbs et al., (CLHM 37-901). 11, 37, 38, 55
11. Dudley Creek at elevation 1,300 ft., about 1 mi. NE of Gatlinburg and just downstream of the GSMNP boundary, 27 August 1937, CL Hubbs et al., (CLHM 37-902). 11, 14, 20, 23, 25, 28, 25 x 28, 43, 65, 72, 80
12. WPLPR at elevation 1,400 ft., 2.0 mi. upstream of Gatlinburg, GSMNP, 28 August 1937, CL Hubbs et al., (CLHM 37-903). 14, 20, 23, 25, 28, 25 x 28, 30, 43, 62, 65, 72, 79, 83, 84, 85
13. Fighting Creek at elevation 1,600 ft., GSMNP, 28 August 1937, CL Hubbs et al., (CLHM 37-904). 11, 20, 23, 28, 37, 38, 43, 62, 72, 80
14. WPLPR at elevation 2,700 ft., just downstream of the Chimney Tops, GSMNP, 28 August 1937, CL Hubbs et al., (CLHM 37-905). 38, 55, 57
15. Walker Camp Prong at elevation 4,550 ft., GSMNP, 30 August 1937, CL Hubbs et al., (CLHM 37-906). 57

16. Webb Creek at elevation 1,350 ft., 0.7 mi. upstream of mouth, 30 August 1937, CL Hubbs et al., (CLHM 37-907). 11, 14, 20, 23, 25, 30, 43, 48, 72, 80
17. MPLPR at just downstream of 1,100 ft. elevation, small tributary at Richardson Cove, 30 August 1937, CL Hubbs et al., (CLHM 37-908A). 38
18. MPLPR at elevation 1,100 ft., Richardson Cove, 30 August 1937, CL Hubbs et al., (CLHM 37-908B). 11, 14, 18, 19, 20, 23, 25, 27, 30, 31, 32, 43, 48, 49, 65, 72, 77, 79, 83, 84, 88
19. WPLPR at TN 71, about halfway between Gatlinburg and Sevierville, 31 August 1937, CL Hubbs et al., (CLHM37-909). 11, 14, 15, 17, 18, 19, 20, 23, 25, 26, 27, 30, 31, 32, 43, 48, 49, 53, 58, 65, 70, 72, 77, 81, 82, 83, 84, 86, 87, 91
20. Roaring Fork at 3.0 mi. NNW of Gatlinburg (4.6 rd. mi. by TN 71), 7 September 1939, RM and MK Bailey, (RMB 39-91). 11, 14, 18, 20, 23, 25, 30, 43, 62, 72, 77, 79, 83, 84, 85, 89
21. Dunn Creek just downstream of the GSMNP boundary, 21 June 1940, CL Hubbs et al., (CLHM 40-212). 38, 62
22. Walden Creek upstream of mouth, between first and second bridge crossings near Gatlinburg, 23 June 1940, CL Hubbs et al., (CLHM 40-217). 11, 14, 15, 18, 19, 20, 21, 23, 29, 30, 31, 42, 43, 49, 65, 70, 72, 73, 77, 81, 84
23. LPR at elevation 900 ft. on TN 35, 2.0 mi. upstream of Sevierville, 24 June 1940, CL Hubbs et al., (CLHM 40-218). 12, 14, 15, 17, 18, 19, 20, 23, 25, 26, 27, 30, 31, 38, 43, 48, 49, 58, 63, 65, 72, 77, 81, 83, 84, 90
24. Dunn Creek at mouth of Yellow Breeches Creek, Jones Cove, 26 June 1940, CL Hubbs et al., (CLHM 40-223). 11, 14, 18, 20, 23, 25, 28, 30, 43, 49, 52, 62, 72, 77, 82, 83, 84
25. Dunn Creek just upstream of Bradley Church, 3.0 mi. upstream of Jones Cove, 26 June 1940, CL Hubbs et al., (CLHM 40-224). 11, 14, 18, 20, 23, 25, 28, 25 x 28, 30, 37, 38, 39, 42, 43, 62, 72, 77, 80, 83, 84, 85
26. Dunn Creek at Jones Cove, 1 August 1940, JH Peyton and CJ Chance, (TDC 40-74). 14, 15, 20, 23, 30, 48, 84
27. Webb Creek just E of Pittman Center, 2 August 1940, JH Peyton and CJ Chance. 11, 20, 23, 25, 28, 43, 77
28. Bird Creek just SE of Sevierville, 2 August 1940, JH Peyton and CJ Chance. 11, 14, 19, 25, 30, 65
29. LPR just E of Sevierville, 2 August 1940, JH Peyton and CJ Chance, (TDC 40-78). 14, 15, 18, 20, 27, 30, 49, 65, 72
30. EFLPR just E of Sevierville, 2 August 1940, JH Peyton and CJ Chance, (TDC 40-77). 14, 15, 20, 23, 30, 43, 49, 63, 77, 81
31. EFLPR at Sevierville, 2 August 1940, JH Peyton and CJ Chance, (TDC 40-?). 14, 15, 19, 20, 23, 30, 48, 84
32. Cove Creek at elevation 1,700 ft., 27 August 1940, JH Peyton and CJ Chance, (TDC 40-101). 11, 20, 23, 28, 38, 39

33. Walden Creek at elevation 1,600 ft., (this is not a correct elevation, must be much closer to the mouth of Walden Creek) 27 August 1940, JH Peyton and CJ Chance, (TDC 40-102). 11, 18, 19, 20, 30, 31, 43, 49, 65, 70, 81, 91
34. WPLPR between Gatlinburg and Sevierville, 27 August 1940, JH Peyton and CJ Chance, (TDC 40-105). 11, 14, 20, 23, 25, 30
35. Webb Creek at 0.6 mi. from Pittman Center, 24 July 1952, JG and B New, (JGN 52-18). 11, 20, 23, 25, 30
36. EFLPR (must be West Prong), 2.0 mi. N of Pigeon Forge, turn W at second bridge, 14 March 1953, WS Woolcott and class, (WSW 2369). This locality must be inaccurate, it is surely in the West Prong. 4, 11, 19, 20, 23, 25, 30, 43, 49, 53, 63, 77, 81, 83, 84, 86, 87, 89, 90, 91
37. Cove Creek about 3.0 mi. downstream of Cove Creek Cascades, 14 March 1953, WS Woolcott and class, (WSW 2370). 11, 14, 18, 20, 23, 30, 43, 63
38. EFLPR at 2.5 mi. S of Sevierville on US 441, (must be West Prong) 7 May 1953, WS Woolcott, (WSW 2379). This locality must be inaccurate, it is surely in the West Prong. 4, 11, 14, 15, 17, 19, 20, 23, 25, 27, 30, 43, 49, 58, 65, 70, 72, 81, 83, 84, 89
39. LPR at Sevierville, 1 September 1953, RH Gibbs and PP Caswell, (RHG 425). 12, 15, 20, 23, 25, 26, 30, 43, 50, 53, 63, 74, 77, 83, 84, 86, 87, 90, 95
40. MPLPR at the GSMNP boundary, 24 September 1953, RE Lennon and PS Parker. 79
41. Porter's Creek at elevation 1,750 ft., 0.3 mi. upstream of mouth, GSMNP, 28 October 1953, RE Lennon and NR Bowman, (REL 53-4). 11, 20, 28, 37, 38, 63, 80
42. MPLPR at elevation 1,500 ft., 1.9 mi. upstream of the GSMNP boundary, 28 October 1953, RE Lennon and NR Bowman, (REL 53-5). 11, 20, 23, 25, 28, 37, 63
43. WPLPR at elevation 1,600 ft., 2.0 mi. upstream of the GSMNP Headquarters, 4 November 1953, RE Lennon and NR Bowman, (REL 53-7). 11, 20, 23, 25, 28, 37, 38
44. Porter's Creek at mouth, GSMNP, 2 September 1954, RE Lennon and PS Parker. 11, 20, 23, 28, 37, 55, 63, 79, 80, 85
45. MPLPR at 1.5 mi. from Pittman Center, about 1.0 mi. downstream of Webb Creek, 29 March 1961, WP Davis, Futuyma and Michener, (WPD 195). 11, 20, 23, 25, 28, 30, 63, 77, 83, 84, 85
46. LPR at US 411 at roadside park 2.0 mi. NE of Sevierville, 29 March 1961, WP Davis, Futuyma and Michener, (WPD 197). 12, 17, 19, 20, 23, 25, 30, 43, 53, 63, 81, 83, 84, 90
47. Dudley Creek at TN 73, 1.0 mi. E of Gatlinburg, 29 March 1961, WP Davis, Futuyma and Michener, (WPD 194). 11, 20, 28, 43, 80, 85
48. WPLPR at 1.1 mi. NE of the GSMNP Headquarters, Gatlinburg, 22 August 1961, RD Ross, P Fletcher, G Clemmer, (RDR 1543). Fish data lost
49. Walden Creek at 3.1 air mi. SW of Pine Grove, 1 April 1962, WJ Richards, BB Collette, L Knapp, RD Ross, (WJR 175). 4, 11, 14, 15, 17, 18, 19, 20, 21, 26, 27, 29, 30, 43, 48, 49, 77, 81, 83, 84, 89, 92

50. WPLPR at US 441, 4.4 mi. S of Sevierville, 11 August 1963, E Kotkas, CF Tsai, T Zorach, (TZ 006). 12, 14, 18, 20, 23, 25, 30, 43, 63, 77, 83, 89
51. EFLPR at US 411, 4.0 mi. E of Sevierville, 11 August 1963, E Kotkas, CF Tsai, T Zorach, (TZ 005). 12, 14, 17, 18, 23, 25, 27, 30, 43, 61, 72, 77, 83, 85, 89
52. Cove Creek at 9.8 mi. NE of Townsend limits on open stretch of creek, 11 August 1963, E Kotkas, CF Tsai, T Zorach, (TZ 008). 11, 20, 23, 28, 65, 85
53. Gists Creek at US 441, W of Sevierville, 2 October 1965, DA Etnier et al. 15, 19, 29, 42, 49, 59, 66, 71
54. EFLPR at US 411, 2 October 1965, DA Etnier et al. 12, 14, 17, 20, 23, 25, 30, 43, 65, 72, 81, 84, 86
55. LPR original channel at Sevierville, 28 October 1965, DA Etnier et al. 9, 12, 14, 15, 17, 18, 19, 20, 23, 24, 26, 27, 29, 30, 32, 43, 49, 58, 63, 65, 72, 77, 81, 83, 84, 87, 89, 90, 92
56. LPR S of Sevierville, 7 November 1965, DA Etnier et al. 12, 14, 15, 16, 17, 18, 19, 20, 23, 24, 25, 26, 29, 30, 31, 32, 43, 49, 58, 66, 77, 81, 83, 84, 87, 90
57. Middle Creek 0.5 mi. E of Sevierville, 12 January 1967, DA Etnier et al. 15, 17, 18, 19, 25, 26, 29, 30, 49, 82, 84
58. WPLPR near Pigeon Forge, 8 February 1967, DA Etnier, D Findley, JT Goodwin. 28, 30, 37, 38, 39, 63, 81, 83, 84, 85
59. LPR at Sevierville, 8 August 1967, DA Etnier and UT Ichthyology Class. 12, 14, 15, 17, 18, 19, 20, 22, 23, 25, 26, 27, 29, 30, 31, 34, 43, 49, 50, 69, 72, 73, 83, 84, 87, 89
60. LPR 2.6 mi. S of US 411 on secondary road, 10 August 1967, RF Denoncourt and DC Wallace, (RFD 67-92). 12, 14, 17, 18, 23, 25, 30, 43, 60, 63, 83
61. LPR at Sevierville, 5 October 1967, DA Etnier and UT Ichthyology Class. 12, 14, 15, 17, 18, 19, 20, 23, 25, 26, 27, 29, 30, 32, 43, 44, 72, 77, 78, 83, 84, 86, 87, 90, 92
62. Gists Creek 3.0 mi. W of Sevierville, 5 October 1967, DA Etnier and UT Ichthyology Class. 12, 15, 19, 29, 42, 49, 59, 66, 73
63. LPR at US 441, 17 January 1968, DA Etnier et al. 15, 17, 18, 19, 25, 28, 29, 31, 36, 43, 58, 77, 81, 83, 87, 89, 90
64. Gists Creek at US 441, 21 January 1968, DA Etnier et al. 19, 29, 49, 59, 66
65. Middle Creek at US 411, 8 February 1968, DA Etnier et al. 12, 14, 15, 17, 18, 19, 20, 26, 30, 32, 49, 58, 81, 82, 83, 84, 87
66. LPR at US 441, 24 February 1968, DA Etnier et al. 4, 17, 32, 43, 49, 63, 87
67. Bird Creek at US 411, 24 February 1968, DA Etnier et al. 4, 11, 17, 18, 43, 84
68. Bird Creek at US 411, 0.5 mi. E of Sevierville, 12 April 1968, DA Etnier et al. 11, 14, 15, 19, 23, 26, 29, 30, 32, 43, 49, 63, 84

69. Walden Creek at Cascades Village Rd., 2.7 mi. S of US 441, 12 April 1968, DA Etnier et al. 4, 11, 15, 18, 21, 29, 30, 58, 66, 69, 81, 82, 83, 84
70. Walden Creek at Cascades Village Rd., 2.7 mi. S of US 441, 21 April 1968, DA Etnier et al. 4, 11, 14, 15, 18, 19, 20, 21, 26, 30, 43, 58, 66, 81, 83, 84
71. Walden Creek 7.0 mi. S of US 441, 21 April 1968, DA Etnier et al. 11, 20, 23, 28, 39
72. Gists Creek at US 441, 0.25 mi. W of Sevierville, 21 April 1968, DA Etnier et al. 14, 15, 19, 28, 29, 82
73. LPR at US 441, W of Sevierville, 7 June 1968, DA Etnier et al. 6, 9, 12, 14, 15, 17, 18, 19, 23, 25, 26, 27, 28, 29, 30, 31, 39, 43, 44, 50, 58, 72, 77, 83, 84
- 74a. MPLPR on a tar road to Pittman Center (TN 416), 0.8 mi. S of US 411, 7 June 1968, T Zorach and LP Jones, (TZ 206). 11, 25, 43, 63, 83
- 74b. WPLPR at bridge just E of US 441, 0.2 mi. S of US 411, Pigeon Forge, 7 June 1968, T Zorach and LP Jones, (TZ 203). 11, 17, 18, 19, 21, 24, 28, 29, 43, 58, 66, 77, 81, 83, 84
75. EFLPR at Bethel Baptist Church, 2.3 mi. SE of US 411 on Jones Cove Rd., 7 June 1968, T Zorach and LP Jones, (TZ 207). 11, 14, 15, 18, 19, 20, 25, 31, 43, 49, 63, 81, 83, 84
76. LPR at US 411, Sevierville, 14 June 1968, CR Gilbert et al. 12, 14, 15, 17, 19, 20, 23, 25, 26, 27, 31, 43, 48, 66, 69, 72, 77, 83, 84, 86, 87
77. WPLPR downstream of US 441, Pigeon Forge, 31 October 1968, DA Etnier et al. 11, 14, 17, 18, 19, 20, 21, 25, 26, 27, 28, 29, 30, 32, 37, 39, 43, 48, 49, 65, 66, 77, 81, 82, 83, 84, 85, 87, 89, 90
78. LPR at Sevierville, 7 August 1969, DA Etnier et al. 14, 15, 17, 18, 19, 20, 25, 26, 27, 30, 32, 43, 48, 72, 77, 84, 87
79. WPLPR at Norton Creek Rd., 7 August 1969, DA Etnier et al. 11, 18, 20, 23, 25, 28, 37, 39, 43, 55, 63, 77, 79, 80, 83, 84, 85, 86
80. Yellow Breeches Creek at confluence with Dunn Creek, 21 April 1970, DA Etnier et al. 11, 14, 18, 19, 25, 30, 43, 63, 65, 82, 83, 84
81. Yellow Breeches Creek at confluence with Dunn Creek, 13 May 1970, DA Etnier et al. 11, 14, 18, 20, 23, 25, 30, 37, 38, 43, 63, 77, 82, 83
82. MPLPR at Richardson Cove, 14 July 1970, DA Etnier et al. 11, 14, 17, 18, 20, 25, 26, 30, 63, 83, 84, 85, 90
83. EFLPR at first bridge crossing E of Sevierville, 14 July 1970, DA Etnier et al. 12, 14, 15, 17, 18, 19, 20, 23, 25, 26, 27, 29, 30, 31, 43, 48, 49, 58, 63, 65, 66, 69, 72, 77, 83, 84, 87, 89, 90
84. WPLPR at US 441, 3.0-4.0 mi. N of Gatlinburg, 16 July 1971, WC Starnes. 14, 23, 25, 30, 77, 79, 83, 90
85. LPR at US 411, Sevierville, 8 November 1972, DA Etnier et al. 12, 14, 17, 18, 19, 25, 26, 27, 29, 30, 72, 84
86. WPLPR downstream of second bridge, Pigeon Forge, 8 November 1972, DA Etnier et al. 11, 15, 17, 18, 19, 21, 23, 26, 30, 43, 48, 49, 77, 81, 83, 84

87. WPLPR at Beech Grove Rd., about 2.0 mi. upstream of Pigeon Forge, 10 November 1972, DA Etnier et al. 11, 23, 25, 28, 30, 39, 77, 83, 84, 85
88. MPLPR 2.0 air mi. ESE of Richardson Cove, 20 June 1973, DA Etnier et al. 11, 14, 20, 23, 25, 30, 43, 48, 55, 63, 72, 77, 79, 83, 84, 85, 88
89. MPLPR 1.3 air mi. NE of Pittman Center, 22 June 1973, DA Etnier et al. 11, 14, 20, 23, 25, 30, 43, 55, 63, 72, 77, 79, 84, 85, 88
90. MPLPR 2.0 mi. upstream of Richardson Cove, 8 April 1974, DA Etnier et al. 11, 77, 79, 83
91. WPLPR just below most upstream extent of rechanneling at US 441, Sevierville, 8 April 1974, DA Etnier et al. 12, 14, 17, 23, 25, 26, 27, 30, 43
92. MPLPR upstream of US 411, 8 April 1974, DA Etnier et al. 4, 12, 23, 25, 26, 30
93. EFLPR 3.0 mi. downstream of Jones Cove, 9 April 1974, DA Etnier et al. 11, 14, 15, 18, 19, 23, 25, 29, 30, 43, 49, 58, 77, 83, 84
94. EFLPR at US 411, 9 April 1974, DA Etnier et al. 26, 43, 63, 83, 84, 89
95. WPLPR at RM 13.3, near McCookville, 6 August 1974, TVA and USFWS. 12, 18, 23, 25, 28, 37, 38, 39, 43, 63, 84, 85
96. WPLPR at RM 17.1, just downstream of Gatlinburg, 6 August 1974, TVA and USFWS. 11, 18, 20, 23, 25, 28, 30, 37, 43, 63, 65, 72, 77, 79, 85
97. WPLPR at RM 18.0, Gatlinburg, 6 August 1974, TVA and USFWS. 11, 20, 23, 25, 28, 37, 43, 55, 63, 65, 77, 79, 80, 85, 86
98. WPLPR at RM 18.7, Gatlinburg, 6 August 1974, TVA and USFWS. 11, 25, 28, 37, 38, 55, 63, 65, 79, 80, 85
99. LPR at US 411, Cherokee Hills, 3.4 air mi. E of Sevierville, 25 July 1975, BH Bauer and Kornman. 7, 12, 14, 15, 17, 18, 19, 20, 23, 32, 37, 38, 43, 58, 63, 65, 70, 72, 83, 84, 87, 88
100. Unnamed tributary to Webb Creek at TN 73, 7.8 air mi. ENE of Gatlinburg, 25 July 1975, BH Bauer and Kornman. 11, 20, 28, 30, 63
101. LPR at confluence with Mill Creek, downstream of US 441, Sevierville, 25 July 1975, BH Bauer and Kornman. 15, 19, 23, 25, 27, 58, 72
102. WPLPR at head end of Large Island, about 2.0 mi. from Henderson Chapel, 14 May 1976, DA Etnier et al. 43, 49, 77, 83, 84
103. MPLPR at RM 20.2, about 1.0 mi. downstream of Turkeypen Branch, 14 May 1976, DA Etnier et al. 11, 20, 23, 25, 30, 63, 83, 84, 85
104. MPLPR about 20 yds. upstream of bridge at Richardson Cove, 14 May 1976, DA Etnier et al. 11, 17, 25, 30, 32, 43, 83, 84, 85, 89, 90
105. MPLPR at 5.0 mi. from bridge crossing at Red Bank Church, 14 May 1976, DA Etnier et al. 14, 20, 25, 26, 55, 77, 83, 84, 85, 87, 88, 90

106. WPLPR 1.0 mi. downstream of Gatlinburg sewage plant, 14 May 1976, DA Etnier et al. 11, 20, 23, 25, 28, 37, 43
107. WPLPR 100 yds. upstream of Caney Creek, 14 May 1976, DA Etnier et al. 20, 23, 25, 37, 43, 85
108. WPLPR 250 yds. downstream US 441, 14 May 1976, DA Etnier et al. 17, 18, 19, 20, 30, 43, 83
109. MPLPR at RM 20.2, about 1.0 mi. downstream of Turkeypen Branch, 21 June 1976, DA Etnier et al. 11, 14, 23, 25, 37, 79, 83, 85, 90
110. MPLPR about 20 yds. upstream of bridge at Richardson Cove, 21 June 1976, DA Etnier et al. 11, 17, 25, 83, 90
111. MPLPR 5.0 mi. from bridge crossing at Red Bank Church, 21 June 1976, DA Etnier et al. 11, 25, 30, 63, 79, 83, 85
112. WPLPR 1.0 mi. downstream of Gatlinburg sewage plant, 21 June 1976, DA Etnier et al. 11, 25, 38, 43, 79, 82, 84, 85
113. WPLPR 100 yds. upstream of Caney Creek, 21 June 1976, DA Etnier et al. 11, 23, 25, 43, 63, 77, 79, 84, 85
114. WPLPR 250 yds. downstream US 441, 21 June 1976, DA Etnier et al. 12, 14, 17, 29, 39, 43, 83, 84, 85, 90
115. WPLPR at head end of Large Island, about 2.0 mi. from Henderson Chapel, 21 June 1976, DA Etnier et al. 12, 17, 43, 77, 83, 87
116. MPLPR at RM 20.2, about 1.0 mi. downstream of Turkeypen Branch, 19 July 1976, DA Etnier et al. 11, 17, 77, 84, 85, 88
117. MPLPR about 20 yds. upstream of bridge at Richardson Cove, 19 July 1976, DA Etnier et al. 11, 17, 25, 43, 50, 79, 82, 83, 84, 85, 90
118. MPLPR 5.0 mi. from bridge crossing at Red Bank Church, 19 July 1976, DA Etnier et al. 11, 15, 30, 55, 79, 83, 85
119. WPLPR 1.0 mi. downstream of Gatlinburg sewage plant, 19 July 1976, DA Etnier et al. 11, 17, 25, 43, 63, 79, 85
120. WPLPR 100 yds. upstream of Caney Creek, 19 July 1976, DA Etnier et al. 11, 20, 23, 25, 30, 83, 85
121. WPLPR 250 yds. downstream US 441, 19 July 1976, DA Etnier et al. 15, 17, 26, 32, 77, 83, 84, 90
122. WPLPR at head end of Large Island, about 2.0 mi. from Henderson Chapel, 19 July 1976, DA Etnier et al. 12, 14, 17, 26, 32, 43, 49, 77, 83, 84, 87
123. MPLPR at RM 20.2, about 1.0 mi. downstream of Turkeypen Branch, 17 August 1976, DA Etnier et al. 11, 20, 23, 25, 30, 63, 72, 79, 83, 84, 85
124. MPLPR about 20 yds. upstream of bridge at Richardson Cove, 17 August 1976, DA Etnier et al. 17, 25, 43, 83, 90

125. MPLPR 5.0 mi. from bridge crossing at Red Bank Church, 17 August 1976, DA Etnier et al. 11, 17, 25, 30, 32, 43, 77, 83, 85, 87, 88, 90
126. WPLPR 1.0 mi. downstream of Gatlinburg sewage plant, 17 August 1976, DA Etnier et al. 14, 18, 28, 37, 38, 43, 79, 85
127. WPLPR 100 yds. upstream of Caney Creek, 17 August 1976, DA Etnier et al. 11, 18, 20, 23, 25, 28, 37, 38, 43, 77, 79, 84, 85
128. WPLPR 250 yds. downstream US 441, 17 August 1976, DA Etnier et al. 12, 17, 25, 32, 37, 43, 83
129. WPLPR at head end of Large Island, about 2.0 mi. from Henderson Chapel, 17 August 1976, DA Etnier et al. 12, 17, 32, 43, 77, 83, 90
130. MPLPR at RM 20.2, about 1.0 mi. downstream of Turkeypen Branch, 28 September 1976, DA Etnier et al. 11, 23, 30, 55, 79, 83
131. MPLPR about 20 yds. upstream of bridge at Richardson Cove, 28 September 1976, DA Etnier et al. 20, 30, 32, 83, 85, 90
132. MPLPR 5.0 mi. from bridge crossing at Red Bank Church, 28 September 1976, DA Etnier et al. 11, 17, 25, 30, 32, 63, 83, 84, 88
133. WPLPR 1.0 mi. downstream of Gatlinburg sewage plant, 28 September 1976, DA Etnier et al. 11, 28, 37, 43
134. WPLPR 100 yds. upstream of Caney Creek, 28 September 1976, DA Etnier et al. 11, 37, 85
135. WPLPR 250 yds. downstream US 441, 28 September 1976, DA Etnier et al. 12, 17, 32, 43, 72, 83, 84, 85
136. WPLPR at head end of Large Island, about 2.0 mi. from Henderson Chapel, 28 September 1976, DA Etnier et al. 12, 17, 30, 32, 43, 77, 83, 90
137. MPLPR at RM 20.2, about 1.0 mi. downstream of Turkeypen Branch, 21 October 1976, DA Etnier et al. 11, 25, 72, 79, 83, 84, 85
138. MPLPR about 20 yds. upstream of bridge at Richardson Cove, 21 October 1976, DA Etnier et al. 11, 30, 43, 77, 83, 85
139. MPLPR 5.0 mi. from bridge crossing at Red Bank Church, 21 October 1976, DA Etnier et al. 11, 43, 55, 83
140. WPLPR 1.0 mi. downstream of Gatlinburg sewage plant, 21 October 1976, DA Etnier et al. 11, 28, 37, 43
141. WPLPR 100 yds. upstream of Caney Creek, 21 October 1976, DA Etnier et al. 11, 37, 43, 84, 85
142. WPLPR 250 yds. downstream US 441, 21 October 1976, DA Etnier et al. 12, 32, 83
143. WPLPR at head end of Large Island, about 2.0 mi. from Henderson Chapel, 21 October 1976, DA Etnier et al. 12, 17, 32, 43, 48, 77, 83

144. MPLPR at RM 20.2, about 1.0 mi. downstream of Turkeypen Branch, 15 November 1976, DA Etnier et al. 11, 25, 43, 63, 77, 83, 84, 85
145. MPLPR about 20 yds. upstream of bridge at Richardson Cove, 15 November 1976, DA Etnier et al. 11, 25, 63, 83, 84, 85
146. WPLPR 1.0 mi. downstream of Gatlinburg sewage plant, 15 November 1976, DA Etnier et al. 11, 37, 43
147. WPLPR 100 yds. upstream of Caney Creek, 15 November 1976, DA Etnier et al. 11, 30, 37, 43, 85
148. WPLPR 250 yds. downstream US 441, 15 November 1976, DA Etnier et al. 12, 43, 83, 90
149. WPLPR at head end of Large Island, about 2.0 mi. from Henderson Chapel, 15 November 1976, DA Etnier et al. 12, 43, 77, 83
150. MPLPR off county rd. 2421 (TN 416), Richardson Cove, 8.5 air mi. SE of Sevierville, 11 February 1977, DA Etnier and RT Bryant. 23, 25, 63, 79, 83, 84, 85
151. MPLPR off county rd. 2421 (TN 416), 5.0 air mi. SE of Sevierville, 11 February 1977, DA Etnier and RT Bryant. 11, 18, 20, 23, 63, 66, 87
152. Yellow Breeches Creek 0.5 air mi. upstream of Dunn Creek, 13.5 air mi. ESE of Sevierville, 2 October 1977, DA Etnier and WC Starnes, (WCS-TN/LP3). 11, 14, 18, 19, 20, 30, 48, 49, 58, 63, 65, 82, 83, 84
153. Dunn Creek 2.0 rd. mi. ESE of Jones Cove, 15.0 air mi. ESE of Sevierville, 2 October 1977, DA Etnier and WC Starnes, (WCS-TN/LP2). 11, 14, 18, 20, 23, 25, 28, 37, 63, 83, 84
154. Dunn Creek 2.3 air mi. W of Jones Cove, 11.0 air mi. ESE of Sevierville, 2 October 1977, DA Etnier and WC Starnes, (WCS-TN/LP1). 11, 14, 18, 19, 20, 23, 25, 28, 30, 43, 48, 72, 77, 82, 83
155. Dunn Creek at mouth of Yellow Breeches Creek, Jones Cove, 13.2 air mi. ESE of Sevierville, 2 October 1977, DA Etnier and WC Starnes, (WCS-TN/LP4). 11, 14, 19, 20, 31, 38, 43, 48, 58, 63, 83, 84
156. MPLPR off county rd. 2421 (TN 416), Richardson Cove, 7.7 air mi. ESE of Sevierville, 3 November 1979, DL Neiland and EJ McCullough, (DN 79-77). 11, 14, 20, 23, 25, 43, 63, 79, 82, 83, 85
157. WPLPR just upstream of second US 441 crossing, 3.0 air mi. S of Sevierville, 28 April 1980, BH Bauer, JL Harris, UT Ecology Class, (BHB 80-13). 12, 14, 17, 19, 30, 32, 43, 77, 81, 83, 84, 90
158. Middle Creek at Sevierville, 28 April 1980, BH Bauer, JL Harris, UT Ecology Class, (BHB 80-14). 12, 14, 15, 18, 19, 29, 43, 58, 72, 82, 84
159. WPLPR just upstream of second US 441 crossing, 3.0 air mi. S of Sevierville, 29 April 1980, BH Bauer, JL Harris, UT Ecology Class, (BHB 80-15). 1, 12, 17, 19, 43, 48, 77, 83
160. LPR at mouth of Middle Creek, Sevierville, 29 April 1980, BH Bauer, JL Harris, UT Ecology Class, (BHB 80-16). 12, 14, 19, 23, 29, 30, 31, 43, 63, 66, 83, 84, 87
161. MPLPR at county rd. 2421 (TN 416), upstream at island, 1 May 1980, BH Bauer, JL Harris, UT Ecology Class, (BHB 80-17). 11, 14, 15, 17, 20, 23, 25, 26, 30, 43, 48, 63, 65, 77, 83, 84, 87, 89

162. Middle Creek at US 411, Sevierville, 19 May 1980, BH Bauer, A Cady, UT Ecology Class, (BHB 80-23). 12, 14, 19, 29, 39, 43, 58, 59, 63, 66, 82, 84
163. Middle Creek at US 411, Sevierville, 19 May 1980, BH Bauer, A Cady, UT Ecology Class, (BHB 80-24). 12, 14, 19, 20, 29, 43, 58, 59, 63, 66, 82, 84
164. Middle Creek at US 411, Sevierville, 22 May 1980, BH Bauer, JL Harris, UT Ecology Class, (BHB 80-25). 9, 12, 14, 15, 19, 29, 39, 43, 59, 63, 82, 84
165. MPLPR at first bridge downstream of TN 73, 13 June 1980, Lee et al. 11, 28, 37, 77, 79, 84, 85, 88
166. MPLPR between Richardson Cove and Cherokee Hills, 3 July 1980, LA Greenberg and S Steigerwald, (LGSS 037). 14, 18, 20, 25, 84
167. LPR 0.25 mi. upstream of Murphy's Chapel United Methodist Church, 15 July 1980, Douglas et al. 1, 12, 14, 15, 20, 23, 25, 26, 30, 32, 63, 77, 83, 84, 88, 89, 90
168. MPLPR 1.0 mi. downstream of Laurel School at Richardson Cove Rd., 15 July 1980, Douglas et al. 14, 20, 23, 25, 30, 63, 77, 79, 83, 85
169. WPLPR about 0.25 mi. downstream from "Old Mill Pond," 15 July 1980, Douglas et al. 11, 14, 15, 19, 23, 26, 30, 43, 63, 66, 72, 77, 83, 84, 87
170. Dunn Creek 0.4 mi. upstream from Bethany Baptist Church on Jones Cove Rd., 11 August 1980, Douglas et al. 11, 14, 15, 20, 23, 25, 30, 32, 50, 77, 82, 83, 84
171. Dunn Creek at mouth of Yellow Breeches Creek and upstream about 100 yds., 24 September 1980, JR Dinkins et al. 11, 20, 23, 25, 28, 30, 58, 63, 77, 82, 83, 84
172. Yellow Breeches Creek 50 yds. upstream from confluence of Dunn Creek, 24 September 1980, JR Dinkins et al. 4, 9, 11, 14, 19, 20, 25, 50, 63, 66, 82, 83, 84
173. Dunn Creek 0.5 mi. downstream of Jones Cove, 2 October 1980, BR Swiney et al. 4, 11, 14, 19, 20, 23, 25, 28, 30, 43, 63, 77, 82, 83, 84
174. Dunn Creek 0.5 mi. E of Pearl Valley Church, 2 October 1980, BR Swiney et al. 11, 14, 19, 20, 23, 25, 30, 77, 82, 83, 84
175. Cove Creek 200 yds. upstream of Cove Creek Cascades, 22 October 1980, JR Dinkins et al. 11, 20, 23, 28, 85
176. WPLPR at US 411, W side of Sevierville, 23 October 1980, BH Bauer, DA Etnier, and UT Ichthyology Class, (BHB 80-41). 9, 12, 14, 15, 17, 18, 19, 20, 23, 25, 26, 29, 30, 43, 48, 49, 50, 59, 65, 66, 72, 77, 83, 84, 86, 87, 89
177. Gists Creek at third US 441 crossing W of Sevierville, 23 October 1980, BH Bauer, DA Etnier, and UT Ichthyology Class, (BHB 80-42). 12, 19, 29, 43, 49, 66, 69, 82
178. WPLPR at elevation 1,420 ft., GSMNP Headquarters, 25 September 1981, NPS (SE Moore et al.). 25, 28, 38, 77, 79, 80, 85
179. MPLPR at elevation 1,420 ft., upstream of Greenbrier Ranger Station, GSMNP, 8 September 1982, NPS (SE Moore et al.). 11, 37, 38, 43, 55, 63, 80

180. MPLPR upstream of the GSMNP boundary, 17 September 1984, NPS (SE Moore et al.). 11, 20, 23, 25, 30, 37, 43, 55, 63, 77, 83
181. LPR 200m downstream of dam at gravel company, SE end of Sevierville, 25 October 1984, DA Etnier and UT Ichthyology Class, (DAE 84-22). 12, 14, 15, 17, 18, 19, 20, 21, 23, 26, 29, 30, 31, 48, 58, 63, 65, 66, 74, 77, 83, 84, 87
182. WPLPR at Norton Creek Rd., 25 October 1984, DA Etnier and UT Ichthyology Class, (DAE 84-23). 11, 23, 28, 37, 79, 80, 84, 85
183. MPLPR 1.8 rd. mi. upstream of Richardson Cove on TN 416, 15 June 1985, DA Etnier et al., (DAE 85-69). 11, 14, 20, 23, 30, 37, 43, 63, 77, 79, 83, 85
184. MPLPR at Richardson Cove, 22 September 1988, DA Etnier et al., (DAE 88-46). 11, 14, 18, 20, 23, 25, 26, 30, 43, 63, 72, 77, 79, 83, 84, 85, 88, 89, 90
185. LPR downstream of US 441, Sevierville, 22 September 1988, DA Etnier et al., (DAE 88-47). 12, 15, 19, 23, 25, 29, 59, 66, 72, 84
186. MPLPR at US 321, upstream for about 200 m, GSMNP, 12 October 1988, DA Etnier et al., (DAE 88-56). 11, 14, 20, 23, 28, 30, 37, 43, 55, 63, 65, 79, 80, 84, 85
187. Dudley Creek at horse farm, 3.7 rd. mi. E of US 441 in Gatlinburg on TN 321, 12 October 1988, DA Etnier et al., (DAE 88-57). 11, 28, 37, 38, 39, 43, 62, 80
188. MPLPR at US 321, Greenbrier, GSMNP, 31 May 1990, NPS (DA Etnier, SE Moore, WC Starnes, RT Bryant et al.), (DAE 90-19). 11, 28, 37, 38, 43, 63, 79, 85
189. LPR at RM 10.0 at TN 416, 12 July 1990, TVA. 7, 9, 12, 13, 14, 15, 16, 17, 18, 19, 20, 23, 25, 26, 27, 30, 31, 32, 43, 48, 49, 50, 51, 58, 63, 65, 66, 69, 72, 74, 77, 80, 82, 83, 84, 86, 87, 88, 89, 90, 95
190. WPLPR at Sugarlands equipment depot, GSMNP, 5 October 1990, NPS (DA Etnier, SE Moore et al.), (DAE 90-63). 11, 20, 23, 25, 28, 25 x 28, 37, 43, 55, 62, 65, 79, 80, 84, 85
191. LPR 2.0 rd. mi. below junction of US 441 on TN 66, 21 October 1990, DA Etnier and UT Ichthyology Class, (DAE 90-65). 12, 14, 15, 17, 18, 19, 21, 26, 27, 29, 31, 41, 43, 49, 58, 81, 83, 87
192. WPLPR at Vulcan Materials Factory, between Pigeon Forge and Sevierville, 21 October 1990, DA Etnier and UT Ichthyology Class, (DAE 90-66). 12, 14, 15, 17, 18, 19, 23, 26, 29, 30, 43, 48, 63, 77, 81, 83, 84, 87
193. WPLPR at end of McGill Rd. and downstream about 150 m, Pigeon Forge, 28 October 1990, DA Etnier et al., (DAE 90-67). 11, 14, 15, 17, 18, 19, 20, 23, 25, 19 x 25, 29, 30, 39, 43, 48, 58, 65, 66, 77, 81, 82, 83, 84
194. WPLPR at mouth of Walden Creek, Pigeon Forge, 28 October 1990, DA Etnier et al., (DAE 90-68). 4, 11, 14, 17, 18, 19, 20, 21, 23, 25, 26, 30, 32, 43, 63, 65, 66, 72, 77, 81, 82, 83, 84, 85, 87, 90
195. WPLPR at end of Ashburn Rd. at Riverside Rd., Pigeon Forge, 28 October 1990, DA Etnier et al., (DAE 90-69). 4, 11, 14, 15, 18, 19, 20, 21, 23, 25, 26, 29, 30, 31, 32, 39, 43, 49, 58, 65, 66, 72, 77, 81, 82, 83, 84, 90

196. WPLPR at junction of Welcome Valley Rd. and New Era Rd., Apple Barn, Pigeon Forge, 28 October 1990, DA Etnier et al., (DAE 90-70). 11, 14, 15, 17, 18, 19, 20, 21, 23, 25, 26, 27, 29, 30, 31, 32, 43, 48, 49, 58, 59, 65, 66, 77, 81, 82, 83, 84, 87
197. Mill Creek downstream of where creek goes under rd. (downstream of Sue's Quilt Shop) and extends downstream about 125 m, 21 May 1991, DA, EA Etnier, PA Myer, CE Skelton, MH Hughes, CH Heacock, DJ Eisenhour, (DAE 91-16). 38, 55
198. Mill Creek at most downstream crossing of Mill Creek by Starkeytown Rd., 21 May 1991, DA, EA Etnier, PA Myer, CE Skelton, MH Hughes, CH Heacock, DJ Eisenhour, (DAE 91-19). 11, 38, 39, 80
199. Cove Creek at and upstream of Foothills Parkway, Wear Cove, 22 May 1991, DA Etnier and DJ Eisenhour, (DAE 91-23). 11, 20, 28, 38, 39, 65, 69, 85
200. Caney Creek near mouth from US 441 upstream 172 m, 30 May 1991, DA, MA Etnier, MH Hughes, DJ Eisenhour, BD Carter, JW Lotts, (DAE 91-30b). 11, 20, 23, 28, 38, 39, 43, 65
201. Machine Branch immediately downstream of confluence with Rymel Branch, Wear Cove, 30 May 1991, DA, MA Etnier, MH Hughes, DJ Eisenhour, BD Carter, JW Lotts, (DAE 91-31). 11, 20, 23, 28, 35, 38, 65, 66, 66 x 69, 85
202. Mill Creek at Starkeytown Rd. and 150 m downstream of pulloff, 31 May 1991 DA Etnier, MH Hughes, DJ Eisenhour, BD Carter, JW Lotts, JA Negus (DAE 91-32). 38, 39, 55, 80
203. Cove Creek at Mattox Cemetery Rd. and downstream of Foothills Parkway, Wear Cove, 31 May 1991 DA Etnier, MH Hughes, DJ Eisenhour, BD Carter, JW Lotts, JA Negus (DAE 91-33). 11, 28, 38, 39, 65, 66, 69, 74, 85
204. Cove Creek at and upstream of Foothills Parkway, Wear Cove, 5 June 1991, DA Etnier, DR Lindbom, JA Negus, CE Skelton, CH Heacock, MH Hughes. 11, 20, 28, 38, 39, 65, 66, 69, 85
205. Rymel Branch immediately upstream of confluence with Machine Branch, Wear Cove, 5 June 1991, MH Hughes, DR Lindbom, JA Negus (MHH 91.05). 11, 20, 23, 28, 38, 39, 65, 66, 85
206. LPR at RM 10.0, TN 416, 10 July 1991, TVA. 9, 14, 16, 31, 43, 49, 50, 51, 65, 66, 69, 72, 73, 74, 77, 84, 88, 89, 95
207. Caney Creek near mouth from US 441 upstream 172 m, 23 October 1991, DA Etnier, MH Hughes, PA Myer, JT Baxter, CH Heacock, BD Carter, (DAE 91-90). 11, 23, 28, 38, 39, 43
208. Mill Creek at Starkeytown Rd. and 150 m downstream of pulloff, 23 October 1991, DA Etnier, MH Hughes, PA Myer, JT Baxter, CH Heacock, BD Carter, (DAE 91-91). 11, 28, 33, 38, 39, 55, 80
209. Mill Creek downstream of where creek goes under rd. (downstream of Sue's Quilt Shop) and extends downstream about 125 m, 23 October 1991, DA Etnier, MH Hughes, PA Myer, JT Baxter, CH Heacock, BD Carter, (DAE 91-92). 38, 55
210. Mill Creek at most downstream crossing of Mill Creek by Starkeytown Rd., 23 October 1991, DA Etnier, MH Hughes, PA Myer, JT Baxter, CH Heacock, BD Carter, (DAE 91-93). 11, 28, 19 x 28, 33, 38, 39, 43, 80

211. Cove Creek at and upstream of Foothills Parkway, Wear Cove, 3 November 1991, MA Etnier and CE Skelton. 11, 28, 38, 39, 65, 66, 69, 85
212. Machine Branch immediately downstream of confluence with Rymel Branch, Wear Cove, 3 November 1991, DA, EA, MA Etnier, CE Skelton, PA Myer, MH Hughes, CH Heacock, (DAE 91-100). 11, 20, 23, 28, 38, 39, 65, 66, 66 x 69, 85
213. Rymel Branch immediately upstream of confluence with Machine Branch, Wear Cove, 3 November 1991, CH Heacock, PA Myer, MH Hughes, (DAE 91-102). 11, 28, 38, 39, 66
214. Cove Creek at Mattox Cemetery Rd. and downstream of Foothills Parkway, Wear Cove, 4 November 1991, DA, MA Etnier, PA Myer, MH Hughes, JT Baxter, CH Heacock, (DAE 91-104). 11, 20, 23, 28, 33, 35, 38, 39, 65, 66, 69, 75, 76, 75 x 76, 85
215. Dudley Creek at RM 0.35, upstream of Dudley Creek Rd. near the electrical power substation, 12 August 1992, RD Bivens, MT Fagg, CE Williams, J Habera, SJ Fraley, TWRA. 11, 20, 23, 28, 37, 38, 39, 42, 43, 55, 62, 65, 72, 80, 84, 85
216. MPLPR at 0.2 mi. upstream of Turkeypen Branch, at the bridge crossing just off TN 416, 27 August 1992, TWRA (MT Fagg, CE Williams, J Habera). 11, 14, 18, 20, 23, 25, 30, 37, 43, 48, 62, 63, 65, 72, 77, 79, 83, 84, 85, 88
217. WPLPR at parking area on bypass just after turnoff, 30 September 1992, DA, MA Etnier, MH Hughes, PA Myer, CH Heacock, CE Skelton, DR Lindbom, SJ Holdeman, AK Wales, (DAE 92-88). 11, 20, 23, 25, 28, 30, 37, 38, 43, 62, 65, 77, 79, 83, 84, 85
218. WPLPR at Wiley Oakley Rd., 30 m downstream of bridge and upstream 100m, 30 September 1992, DA, MA Etnier, MH Hughes, PA Myer, CH Heacock, CE Skelton, DR Lindbom, SJ Holdeman, AK Wales, (DAE 92-89). 11, 20, 23, 25, 28, 30, 37, 38, 43, 55, 62, 65, 77, 79, 80, 83, 84, 85
219. WPLPR at RM 14.2, 0.5 mi. downstream of Huskey Grove Rd., 30 September 1992, DA, MA Etnier, MH Hughes, PA Myer, CH Heacock, CE Skelton, DR Lindbom, SJ Holdeman, AK Wales, (DAE 92-90). 11, 18, 20, 23, 25, 28, 25 x 28, 30, 37, 43, 55, 62, 65, 77, 79, 80, 83, 84, 85
220. WPLPR at 0.5 mi. upstream of rd. separation, E of Pigeon Forge, 30 September 1992, DA, MA Etnier, MH Hughes, PA Myer, CH Heacock, CE Skelton, DR Lindbom, SJ Holdeman, AK Wales, (DAE 92-91). 4, 12, 18, 20, 23, 25, 28, 25 x 28, 30, 37, 38, 43, 48, 62, 65, 66, 72, 77, 79, 80, 82, 83, 84, 85
221. Webb Creek at RM 0.1, Pittman Center City Hall, 20 July 1993, TVA and TWRA. 11, 20, 23, 25, 28, 30, 37, 43, 48, 55, 63, 65, 72, 74, 80, 84, 85
222. Dunn Creek at RM 10.9, upstream of confluence with Matthew Creek, 21 July 1993, TWRA (RD Bivens, CE Williams, MT Fagg). 11, 20, 23, 28, 37, 38, 43, 55, 62, 80
223. Dunn Creek at RM 4.6 on Pearl Valley Rd. at Pearl Valley Church, 22 July 1993, TWRA (RD Bivens, CE Williams). 11, 14, 18, 19, 20, 23, 25, 26, 28, 29, 39, 43, 48, 55, 63, 65, 66, 77, 82, 83, 84
224. Dunn Creek at Rocky Flats Rd., 28 August 1994, DA Etnier, CH Heacock, JT Baxter, CE Skelton, (DAE 94-66). 11, 37, 38, 43, 55, 57, 62
225. Unnamed tributary to Ogle Spring Branch, 10 September 1994, DA Etnier, RB Evans, LD Bonds, CJ Paxton, CE Skelton, (DAE 94-76). 38, 39

226. Dunn Creek at 5229 and 5219 Mathis Branch Rd., 10 September 1994, DA Etnier, RB Evans, LD Bonds, CJ Paxton, CE Skelton, (DAE 94-75). 11, 20, 23, 28, 37, 38, 43, 55, 62, 80
227. Ogle Spring Branch at Rocky Flats Rd., 10 September 1994, DA Etnier, RB Evans, LD Bonds, CJ Paxton, CE Skelton, (DAE 94-74). 38, 55
228. Lindsay Creek 0.5 mi. SE of Pittman Center, 11 September 1994, JT Baxter, CE Skelton, SJ Fraley, RS Brown, JM Young, (DAE 94-77). 38, 39, 67, 69
229. Copeland Creek 0.35 mi. S of Pittman Center, 11 September 1994, JT Baxter, CE Skelton, SJ Fraley, RS Brown, JM Young, (DAE 94-78). 11, 38, 39, 43, 63, 80
230. Copeland Creek 0.2 mi. S of Pittman Center, 11 September 1994, JT Baxter, CE Skelton, SJ Fraley, RS Brown, JM Young, (DAE 94-79). 11, 20, 28, 38, 39, 43, 48, 63, 80, 84
231. Matthew Creek at old barn 100m upstream of second Matthew Creek ford on Mathis Rd., 24 September 1994, DA, EA Etnier, SJ Fraley, RB Evans, CE Skelton, CJ Paxton, (DAE 94-83). 38, 39, 62, 80
232. Second unnamed tributary to Matthew Creek at 100m downstream of footbridge at Mathis Rd., 24 September 1994, DA, EA Etnier, SJ Fraley, RB Evans, CE Skelton, CJ Paxton, (DAE 94-82). 38, 62, 80
233. Ogle Spring Branch just W of Sevier/Cocke County line, 0.5 mi. adjacent to pond and water wheel, 1 October 1994, RB Evans and CJ Paxton, (DAE 94-88). 38, 74
234. Unnamed tributary to Ogle Spring Branch at 100 yds. N on Apple Tree Rd., adjacent to open wooded area, 1 October 1994, RB Evans and CJ Paxton, (DAE 94-89). 38
235. Lindsay Creek 60 m downstream of crossing of Lindsay Creek and Tunis Branch Rd., 1 October 1994, JT Baxter and CJ Paxton, (DAE 94-96). 28, 38, 39, 56
236. Butler Branch at US 321, E to main Kobbly Knob entrance, just above intersection with Picadilly Lane, 1 October 1994, RB Evans and CJ Paxton, (DAE 94-90). 38
237. Warden Branch 100 m upstream of the confluence of Warden Branch and Webb Creek, 1 October 1994, RB Evans and CJ Paxton, (DAE 94-91). 28, 38
238. Mill Dam Branch 100 m downstream from tennis courts at Kobbly Knob Golf Course, 1 October 1994, RB Evans and CJ Paxton, (DAE 94-92). 38
239. Unnamed northern tributary to Webb Creek at 0.25 mi. W of Tuckaleechee Cavern sign, 1 October 1994, SJ Fraley and CJ Paxton, (DAE 94-95). 38, 39, 43, 69
240. Laurel Branch 0.35 mi. upstream from confluence with MPLPR, 1.0 mi. N of Pittman Center, 1 October 1994, JT Baxter and CJ Paxton, (DAE 94-97). 11, 37, 38, 55
241. MPLPR at mouth of Laurel Branch, Pittman Center, 8 October 1994, DA, EL Etnier et al., (DAE 94-98). 11, 14, 20, 23, 25, 28, 30, 37, 38, 43, 48, 55, 63, 65, 69, 71, 72, 77, 79, 80, 83, 79 x 83, 84, 85, 88
242. MPLPR 0.1 mi. from TN 416 off Emerts Cove Rd., Pittman Center, 9 October 1994, DA, EL Etnier et al., (DAE 94-99). 11, 14, 20, 25, 28, 25 x 28, 30, 19 x 30, 37, 38, 43, 48, 51, 55, 56, 65, 72, 77, 79, 80, 83, 84, 85, 88

243. Webb Creek at US 321 and Webb Creek Rd., 30 October 1994, NPS (DA Etnier, SE Moore et al.), (DAE 94-110). 11, 20, 23, 25, 28, 30, 28 x 30, 37, 43, 62, 63, 65, 72, 80, 84, 85
244. Webb Creek at Pittman Center School, 30 October 1994, NPS (DA Etnier, SE Moore et al.), (DAE 94-111). 11, 20, 23, 25, 28, 30, 37, 43, 55, 56, 62, 63, 72, 80, 85
245. Dunn Creek downstream of Foothills Parkway right-of-way, 1 November 1994, RB Evans, SJ Fraley, JT Baxter, JM Hammonds, (SJF 94-33). 11, 20, 28, 37, 38, 43, 55, 62, 80
246. Dunn Creek upstream of Foothills Parkway right-of-way, 1 November 1994, RB Evans, SJ Fraley, JT Baxter, JM Hammonds, (SJF 94-34). 11, 23, 37, 38, 55, 57, 62
247. LPR 3.5 rd. mi. upstream of French Broad River on TN 66, 4 April 1995, DA Etnier and UT Ecology Class, (DAE 95-10a). 14, 15, 18, 19, 23, 26, 27, 29, 31, 43, 48 and/or 49, 58, 59, 60, 63, 66, 69, 72, 77, 81, 83, 84, 89, 90
248. LPR 3.5 rd. mi. upstream of French Broad River on TN 66, 5 April 1995, DA Etnier and UT Ecology Class, (DAE 95-10b). 9, 14, 15, 18, 19, 26, 27, 29, 31, 34, 39, 43, 48 and/or 49, 58, 59, 60, 63, 65, 66, 67, 69, 72, 74, 77, 81, 83, 84, 87, 89, 90
249. EFLPR at RM 2.6, Harrisburg, 19 June 1996, TWRA. 12, 14, 18, 19, 20, 23, 25, 26, 30, 33, 39, 43, 48, 55, 58, 63, 65, 66, 69, 72, 77, 82, 83, 84
250. EFLPR at RM 5.0, Harrisburg, 25 July 1996, TVA. 9, 12, 14, 15, 18, 19, 20, 26, 27, 29, 30, 43, 49, 63, 66, 67, 69, 72, 77, 83, 84, 87, 89
251. LPR at RM 10.0 on TN 416, 14 October 1996, TVA. 3, 4, 12, 14, 15, 17, 18, 19, 20, 23, 25, 26, 30, 37, 42, 43, 48, 49, 63, 65, 66, 67, 69, 72, 74, 77, 83, 84, 87, 89, 90
252. Walden Creek at Eagle's Nest Campground, 31 March 1997, TVA (CF Saylor et al.). 11, 14, 15, 18, 19, 20, 21, 26, 27, 28, 29, 30, 32, 39, 43, 49, 58, 63, 65, 66, 67, 69, 73, 77, 81, 82, 83, 84, 89
253. Walker Camp Prong at elevation 4,280 ft., GSMNP, 14 May 1997, NPS (SE Moore et al.). 55, 57
254. Sugarland Branch at elevation 2,187 ft., GSMNP, 20 May 1997, NPS (S Hunter, B Miller, A Delashmit). 55
255. Bullhead Branch at elevation 1,731 ft., GSMNP, 20 May 1997, NPS (K Hining, A Holloway, A Neubauer). 37, 38, 39, 55, 62
256. Fighting Creek at elevation 1,953 ft., GSMNP, 23 May 1997, NPS (B Miller, K Hining, S Hunter, J Anderson). 38, 55
257. Two Mile Branch at elevation 1,953 ft., GSMNP, 27 May 1997, NPS (A Holloway, K Knapp, A Neubauer). 38, 55
258. Parton Branch at elevation 1,725 ft., GSMNP, 27 May 1997, NPS (B Miller, K Hining, S Hunter). 38, 55
259. Hickory Flats at elevation 2,360 ft., GSMNP, 27 May 1997, NPS (B Miller, K Hining, S Hunter). 55
260. Ash Hopper Branch at elevation 2,360 ft., GSMNP, 28 May 1997, NPS (A Holloway, D Latulipe, A Neubauer). 38, 39, 55

- 261. Spring Branch at mouth, GSMNP, 28 May 1997, NPS (A Holloway, D Latulipe, A Neubauer). 38, 39, 62
- 262. Right tributary of LeConte Creek at elevation 2,883 ft., GSMNP, 30 May 1997, NPS (A Holloway, D Latulipe, K Hining). 57
- 263. Left tributary of LeConte Creek at elevation 2,240 ft., GSMNP, 30 May 1997, NPS (A Holloway, D Latulipe, K Hining). 55
- 264. Grassy Branch at the GSMNP boundary, 30 May 1997, NPS (A Neubauer, S Hunter, J Anderson). 38, 55
- 265. Painter Branch at the GSMNP boundary, 30 May 1997, NPS (A Neubauer, S Hunter, J Anderson). 38
- 266. Roaring Fork at elevation 3,075 ft., GSMNP, 2 June 1997, NPS (B Miller, K Hining, J Anderson). 55
- 267. Enloe Hollow Branch at elevation 3,015 ft., GSMNP, 2 June 1997, NPS (A Delashmit, K Knapp, A Neubauer). 55
- 268. Surry Fork at elevation 3,154 ft., GSMNP, 2 June 1997, NPS (A Delashmit, K Knapp, A Neubauer). 55
- 269. Rocky Spur Branch at elevation 2,877 ft., GSMNP, 2 June 1997, NPS (B Miller, K Hining, J Anderson). 57
- 270. Road Prong at elevation 4,800 ft., GSMNP, 3 June 1997, NPS (SE Moore et al.). 57
- 271. Tomahawk Branch at elevation 4,540 ft., GSMNP, 3 June 1997, NPS (SE Moore et al.). 57
- 272. Dudley Creek at elevation 2,375 ft., GSMNP, 5 June 1997, NPS (D Latulipe and A Neubauer). 55
- 273. Grapeyard Branch at elevation 1,880 ft., GSMNP, 5 June 1997, NPS (D Latulipe and A Neubauer). 55
- 274. Duds Branch at mouth, GSMNP, 5 June 1997, NPS (D Latulipe and A Neubauer). 38
- 275. Baskins Creek at elevation 2,115 ft., GSMNP, 5 June 1997, NPS (J Anderson and K Hining). 38, 55
- 276. Falls Branch at elevation 2,079 ft., GSMNP, 5 June 1997, NPS (J Anderson and K Hining). 55
- 277. Little Dudley Creek at elevation 1,863 ft., GSMNP, 6 June 1997, NPS (B Miller and S Hunter). 55
- 278. Road Prong at elevation 3,740 ft., GSMNP, 10 June 1997, NPS (K Hining, A Delashmit, A Neubauer). 55, 57
- 279. LPR at RM 2.0, Catlettsburg, 7 August 1997, TWRA (RD Bivens and CE Williams), TVA (CF Saylor et al.). 1, 7, 9, 12, 14, 15, 16, 18, 19, 20, 23, 25, 26, 27, 28, 29, 31, 32, 34, 37, 40, 43, 44, 46, 47, 48, 49, 50, 51, 54, 58, 59, 63, 64, 66, 69, 72, 73, 74, 77, 81, 83, 84, 87, 89, 90, 94, 95

280. WPLPR along US 441, near RM 8.5, Pigeon Forge, 8 August 1997, TWRA (RD Bivens and CE Williams), TVA (CF Saylor et al.). 4, 9, 12, 14, 16, 17, 18, 19, 20, 21, 23, 25, 26, 27, 29, 30, 32, 42, 43, 48, 49, 50, 63, 65, 66, 72, 73, 77, 81, 82, 83, 84, 89, 90
281. LPR at TN 66, 2.0 rd. mi. downstream of US 441, 21 October 1998, DA Etnier and UT Ichthyology Class, (DAE 98-106). 12, 14, 15, 18, 19, 21, 26, 27, 40, 48, 49, 58, 59, 60, 61, 65, 66, 67, 69, 72, 74, 77, 81, 82, 83, 84, 89, 95
282. Gists Creek 200 m upstream of US 411/441, 21 October 1998, DA Etnier and UT Ichthyology Class, (DAE 98-107). 29, 34, 45, 49, 66, 69, 73, 74, 81, 84
283. EFLPR at RM 2.6, Harrisburg, 5 April 1999, TVA (C Underwood et al.). 12, 14, 15, 18, 19, 20, 23, 25, 26, 28, 29, 30, 31, 38, 39, 43, 48, 49, 58, 63, 65, 66, 67, 72, 77, 82, 83, 84
284. EFLPR at RM 5.0, Harrisburg, 20 April 1999, TVA (C Underwood et al.). 12, 14, 15, 18, 19, 20, 26, 27, 29, 30, 31, 38, 43, 48, 49, 50, 58, 63, 65, 66, 67, 72, 77, 83, 84
285. MPLPR at TN 416, 2.8 rd. mi. N of US 321, 12 June 1999, MH Doosey, JW Dowd, RB Nichols, B Brammel, (MHD-071). 11, 20, 23, 25, 39, 43, 48 and/or 49, 65, 72, 77, 84, 88, 89
286. MPLPR at the junction of Richardson Cove Rd. and TN 416, Richardson Cove, 12 June 1999, MH Doosey, JW Dowd, RB Nichols, B Brammel, (MHD-072). 7, 11, 14, 20, 23, 25, 39, 43, 48 and/or 49, 63, 65, 72, 82, 83, 84, 88, 89
287. Road Prong at elevation 3,740 ft., GSMNP, off Chimneys Trail about 50 m downstream of fourth footbridge, 14 June 1999, NPS (SE Moore et al.), (MHD-074). 57
288. Road Prong at elevation 3,480 ft., GSMNP, off Chimneys Trail about 90 m downstream of third footbridge, 14 June 1999, NPS (SE Moore et al.), (MHD-075). 55, 57
289. Walker Camp Prong at elevation 3,620 ft., 15 m upstream confluence with Trout Branch, GSMNP, 15 June 1999, NPS (SE Moore et al.), (MHD-076). 55, 57
290. Walker Camp Prong at elevation 4,180 ft., GSMNP, 15 June 1999, NPS (SE Moore et al.), (MHD-077). 55, 57
291. MPLPR at the GSMNP boundary, 18 June 1999, MH Doosey et al., (MHD-078). 11, 20, 25, 28, 43, 48 and/or 49, 55, 56, 62 and/or 63, 72, 77, 85, 88
292. MPLPR at the GSMNP boundary, 27 June 1999, MH Doosey and JW Dowd et al., (MHD-083). 11, 20, 23, 25, 28, 43, 48, 55, 72, 77, 79, 84, 88
293. MPLPR at the GSMNP boundary, 24 July 1999, MH Doosey and JW Dowd et al., (MHD-085). 11, 20, 23, 25, 43, 55, 72, 77, 88
294. MPLPR at junction of Richardson Cove Rd. and TN 416, Richardson Cove, 12 June 1999, MH Doosey and JW Dowd et al., (MHD-086). 11, 14, 23, 25, 43, 48 and/or 49, 72, 82, 83, 84, 88
295. Fighting Creek 200m upstream of confluence with WPLPR, GSMNP, 5 August 1999, NPS (MH Doosey, MA Kulp, JM Hammonds, BG Rau, JW Simmons), (MHD-088). 11, 20, 23, 28, 37, 38, 43, 55, 62, 80
296. MPLPR 0.6 mi. upstream of US 321, GSMNP, 8 August 1999, MH Doosey et al., (MHD-089). 11, 20, 23, 38, 43, 55, 62 and/or 63, 72, 77, 79, 80, 84, 85

297. WPLPR 6.5 rd. mi. upstream of the GSMNP Headquarters, 11 August 1999, NPS (SE Moore et al.), (MHD-089A). 55, 57
298. LPR at TN 66, 3.0 rd. mi. upstream of French Broad River, Sevierville, 7 October 1999, DA Etnier, JT Baxter, BA Moody, MH Doozey, UT Ichthyology Class, (DAE 99-87, MHD-104). 1, 12, 14, 15, 18, 19, 21, 23, 26, 27, 31, 32, 34, 43, 50, 58, 59, 60, 61, 65, 66, 67, 69, 72, 74, 77, 81, 82, 83, 84, 86, 87, 89, 90
299. Gists Creek at most western crossing with US 441, 10 January 2000, MHD, CA Walker, ML Beals, (MHD 00-01). 12, 18, 19, 29, 49, 69, 67 x 69, 84
300. Leatherwood Branch upstream of mouth, 1.8 air mi. WSW of Catlettsburg, 6 February 2000, MH Doozey and BA Moody, (MHD 00-02). 12, 19, 29, 34, 38, 59, 60, 66, 69, 67 x 69, 84
301. LPR at TN 66, 3.0 rd. mi. upstream of French Broad River, Sevierville, 9 February 2000, MH Doozey and CA Walker, (MHD 00-03). 12, 14, 15, 18, 21, 26, 29, 31, 34, 43, 48, 58, 59, 60, 66, 69, 81, 83, 84, 87
302. Kellum Creek at Terry Rd., 0.8 mi. E of TN 66, 11 February 2000, MH Doozey, JW Simmons, CW Hall, MA Cater, (MHD 00-04). 12, 15, 19, 29, 59, 66, 69, 74, 82, 84
303. Gists Creek at Old Sevierville Pike, downstream about 100m of Eagle's Landing Golf Course, 11 February 2000, MH Doozey, JW Simmons, CW Hall, MA Cater, (MHD 00-05). 18, 19, 29, 31, 34, 59, 60, 61, 66, 67, 68, 69, 84
304. Murphy Branch at Goose Gap Rd., about 0.1 mi. S of New Era Rd., 25 February 2000, MH Doozey, JW Simmons, BA Hines, JT Benson, (MHD 00-06). 12, 38, 39, 42, 66, 69, 82
305. Dunn Creek at Rocky Flats Rd., 2.8 rd mi. E of Henry Town Rd., Jones Cove, 19 April 2000, MH Doozey and JW Simmons, (MHD 00-11). 11, 20, 23, 28, 33, 37, 38, 43, 62, 80, 85
306. Dockery Branch at junction of Dockery Branch Rd. and Henry Town Rd., Jones Cove, 19 April 2000, MH Doozey and JW Simmons, (MHD 00-12). 33, 38, 39, 33 x 39
307. Norton Branch at New Era Rd., 0.2 rd mi. W of US 441, Pigeon Forge, 20 April 2000, MH Doozey and BA Moody, (MHD 00-13). 11, 15, 18, 19, 29, 35, 38, 39, 59, 67, 69, 82, 84
308. Clear Fork at Clear Fork Rd., from about 200 m upstream of confluence with Walden Creek to about 250m upstream, 26 April 2000, (MHD 00-14). 11, 14, 18, 19, 28, 30, 39, 43, 58, 63, 65, 82, 83, 84
309. Middle Creek at Goldrush Rd. to about 0.2 mi. upstream, behind McCarter Lumber Company, 1 May 2000, MH Doozey and BA Hines, (MHD 00-15). 12, 15, 18, 19, 29, 38, 42, 43, 49, 58, 59, 63, 66, 69, 74, 82, 84
310. Gists Creek at end of Davis Lane, about 0.5 mi. upstream of mouth, 1 May 2000, MH Doozey, BA Hines, JW Simmons (MHD 00-16). 7, 19, 26, 29, 31, 34, 49, 50, 58, 59, 60, 66, 68, 69, 82, 84
311. Injun Creek at Greenbrier Rd. and upstream about 250m, GSMNP, 15 May 2000, MH Doozey, (MHD 00-17). 11, 37, 38, 43, 55, 63
312. Rhododendron Creek at mouth and upstream about 400m, GSMNP, 15 May 2000, MH Doozey, (MHD 00-18). 37, 38, 55, 63

313. Fighting Creek at mouth and upstream about 500m, adjacent to the GSMNP Headquarters, 16 May 2000, MH Doosey and CL Sanders, (MHD 00-19). 11, 20, 23, 28, 37, 38, 39, 43, 55, 62, 80, 85
314. Sawmill Branch at first rd. crossing to government quarters, GSMNP Headquarters, 16 May 2000, MH Doosey and CL Sanders, (MHD 00-19A). 38
315. WPLPR at Chimney's Picnic Area, GSMNP, 17 May 2000, NPS (SE Moore et al.), (MHD 00-20). 11, 37, 55, 57
316. Copeland Creek at US 321 and upstream to the GSMNP boundary, 17 May 2000, MH Doosey and CL Sanders, (MHD 00-21). 11, 20, 23, 28, 38, 39, 43, 63, 80
317. Webb Creek at mouth and upstream to mouth of Lindsey Creek, Pittman Center, 18 May 2000, MH Doosey and JM Hammonds, (MHD 00-22). 18, 20, 23, 25, 28, 30, 37, 38, 43, 49, 55, 63, 65, 69, 72, 79, 80, 85
318. Bird Creek at Upper Middle Creek Rd., 1.25 air mi. WSW of Richardson Cove, 22 May 2000, MH Doosey, BA Hines, BG Rau, JE Detar, (MHD 00-23). 12, 14, 18, 19, 20, 29, 30, 31, 43, 50, 58, 65, 66, 67, 69, 72, 82, 83, 84
319. Injun Creek at elevation 2,300 ft., GSMNP, 23 May 2000, NPS (MH Doosey and JW Simmons), (MHD 00-24). 38, 55
320. Left Fork at mouth, GSMNP, 26 May 2000, NPS (MH Doosey, JE Detar, DE Bates), (MHD 00-25B). 38, 39, 80
321. Lindsey Creek just about mouth, GSMNP, 26 May 2000, NPS (MH Doosey, JE Detar, DE Bates), (MHD 00-25C). 38
322. Wilhite Creek at Wilhite Creek Rd., 0.8 mi. NE of Crockettville School, 27 May 2000, MH Doosey, BA Hines, JE Detar, (MHD 00-26). 11, 14, 19, 39, 63, 65, 82, 83, 84
323. EFLPR at mouth of Sharp Branch on Bethel Church Rd., about 3.0 mi. N of Richardson Cove, 29 May 2000, MH Doosey and BA Hines, (MHD 00-27). 4, 11, 14, 15, 19, 29, 48, 49, 58, 63, 65, 66, 83, 84
324. Roaring Fork at elevation 2,400 ft., GSMNP, 30 May 2000, NPS (SE Moore et al.), (MHD 00-28). 37, 55
325. Roaring Fork at elevation 2,070 ft., GSMNP, 30 May 2000, NPS (SE Moore et al.), (MHD 00-29). 37, 38, 55
326. Little Rhododendron Creek at mouth, GSMNP, 30 May 2000, NPS (MH Doosey and ML Dotson), (MHD 00-30). 38
327. Cannon Creek at elevation 2,810 ft., GSMNP, 31 May 2000, NPS (JE Detar and GP Shaffer), (MHD 00-30B). 55
328. Yellow Breeches Creek at mouth, Jones Cove, 5 June 2000, MH Doosey, BG Rau, DC Nolfi, JW Simmons, BA Hines, (MHD 00-33). 4, 11, 14, 18, 19, 20, 23, 25, 28, 29, 30, 39, 43, 50, 58, 63, 65, 66, 67, 82, 83, 84
329. Road Prong at elevation 3,480 ft., GSMNP, 7 June 2000, NPS (SE Moore et al.), (MHD 00-34). 55, 57

330. Road Prong at elevation 3,740 ft., GSMNP, 7 June 2000, NPS (SE Moore et al.), (MHD 00-35). 57
331. Walker Camp Prong at mouth of Trout Branch, GSMNP, 7 June 2000, NPS (SE Moore et al.), (MHD 00-36). 55, 57
332. LeConte Creek at elevation 1,940 ft. at Twin Creeks Natural Resources Area, GSMNP, 14-15 June 2000, NPS (SE Moore et al.), Trout Unlimited, Tennessee Technological University, (MHD 00-37). 37, 38, 55, 57
333. Dudley Creek at US 321, 0.2 rd mi. W of Glades Rd., 15 June 2000, MH Doosey, BG Rau, BA Hines, (MHD 00-38). 11, 28, 37, 38, 39, 43, 62, 65, 80, 85
334. Hills Creek at junction of Tudor Rd. and Old Hills Rd. near a farm pond, Pittman Center, 15 June 2000, MH Doosey, BG Rau, BA Hines, (MHD 00-39). 11, 28, 38, 39, 43, 69, 74
335. Walker Camp Prong at elevation 4180 ft, GSMNP, 16 June 2000, NPS (SE Moore et al.), (MHD 00-40). 55, 57
336. Soak Ash Creek at elevation 1,315 ft., 1.0 air mi. E of Pittman Center, GSMNP, 26 June 2000, NPS (MH Doosey and JE Detar), (MHD 00-41). 11, 20, 23, 28, 38, 39, 63, 80, 85
337. Noisy Creek at elevation 1,980 ft., 1.4 air mi. W of Spurgeon Church, GSMNP, 26 June 2000, NPS (BA Hines and LL Curry), (MHD 00-42). 38, 55
338. Timothy Creek at elevation 1,720 ft., 0.75 air mi. SW of Spurgeon Church, GSMNP, 26 June 2000, NPS (JW Simmons and DE Bates), (MHD 00-43). 11, 38
339. Little Bird Branch from mouth upstream to 1,760 ft. elevation, GSMNP, 27 June 2000, NPS (MH Doosey and BA Hines), (MHD 00-44A). 38, 55, 62
340. Bird Branch at elevation 1,840 ft., GSMNP, 27 June 2000, NPS (MH Doosey and BA Hines), (MHD 00-44B). 38, 55
341. Ramsey Creek at confluence with Redwine Creek, GSMNP, 27 June 2000, NPS (JW Simmons and DE Bates), (MHD 00-45A). 38, 55, 63
342. Texas Creek at elevation 1,860 ft., GSMNP, 27 June 2000, NPS (JW Simmons and DE Bates), (MHD 00-45B). 37, 38, 63
343. Little Laurel Branch at elevation 2,110 ft., GSMNP, 27 June 2000, NPS (GP Shaffer and ML Dotson), (MHD 00-46). 38
344. Long Branch from mouth upstream to 2,560 ft. elevation, GSMNP, 27 June 2000, NPS (BG Rau and LL Curry), (MHD 00-47A). 55
345. Ted's Branch at Greenbrier Rd., GSMNP, 27 June 2000, NPS (BG Rau and LL Curry), (MHD 00-47B). 38
346. LPR from mouth of West Prong to just above the confluence with French Broad River, about 5 river-miles, Sevierville, 5 July 2000, MH Doosey, JE Detar, GP Shaffer, BA Hines, TWRA (RD Bivens and BD Carter), (MHD 00-48). 1, 2, 6, 7, 9, 12, 14, 15, 16, 18, 19, 21, 25, 26, 27, 29, 30, 31, 32, 34, 41, 43, 44, 46, 47, 48, 49, 50, 51, 54, 58, 59, 60, 61, 63, 64, 65, 66, 69, 72, 74, 77, 81, 83, 84, 87, 89, 90, 95

347. Dunn Creek at Pearl Valley Church, 15 July 2000, MH Doosey, CL Sanders, DC Nolfi, (MHD 00-49). 11, 14, 18, 19, 20, 23, 25, 28, 43, 63, 65, 77, 83, 84
348. Walden Creek at junction of Wears Valley Rd. and Glen Huskey Rd. at Eagle's Nest Campground, 16 July 2000, MH Doosey, RB Nichols, JT Buchanan, JM Ratcliffe, RJ Lankford, (MHD 00-50). 4, 11, 14, 15, 18, 19, 20, 21, 23, 26, 29, 30, 31, 38, 43, 48, 49, 50, 58, 63, 65, 66, 67, 69, 72, 73, 74, 77, 81, 82, 83, 84, 87, 89
349. WPLPR just upstream of the GSMNP boundary, Gatlinburg, 17 July 2000, MH Doosey, BG Rau, BA Hines, DC Nolfi, (MHD 00-51). 11, 20, 23, 25, 28, 30, 37, 43, 55, 62, 79, 80, 85
350. Porter's Creek at confluence of Shutts and Boulevard Prong, elevation 2,700 ft., GSMNP, 18 July 2000, NPS (MH Doosey and BG Rau), (MHD 00-52). 55
351. Dunn Creek at junction of Chavis Rd. and Rocky Flats Rd., 19 July 2000, MH Doosey, BA Hines, JE Detar, (MHD 00-53). 11, 20, 23, 25, 28, 37, 38, 43, 55, 63, 65, 80, 83, 84, 85
352. Hills Creek at confluence with Buckhorn Creek, GSMNP, Pittman Center, 20 July 2000, NPS (GP Shaffer and BG Rau), (MHD 00-54). 11, 28, 38, 39, 43, 69
353. WPLPR at downstream end of Large Island at Henderson Rd., Pigeon Forge, 22 July 2000, MH Doosey, BG Rau, CL Sanders, LL Curry, ML Dotson, DC Nolfi, CA Walker, (MHD 00-55). 3, 4, 12, 14, 15, 18, 19, 20, 21, 23, 25, 26, 27, 30, 32, 43, 63, 65, 66, 69, 77, 81, 83, 84, 87
354. Woolly Tops Branch at elevation 2,370 ft., GSMNP, 25 July 2000, NPS (BA Hines and CL Sanders), (MHD 00-56A). 55
355. Kalanu Prong at elevation 2,700 ft., GSMNP, 25 July 2000, NPS (MH Doosey and BG Ragland), (MHD 00-56B). 55
356. False Gap Prong at elevation 2,530 ft., GSMNP, 27 July 2000, NPS (BA Hines and BG Rau), (MHD 00-57). 55
357. WPLPR at confluence with Dry Pond Branch, GSMNP, 27 July 2000, NPS (BA Hines, DC Nolfi, CL Sanders, BJ Ragland, JW Camp), (MHD 00-58). 11, 20, 23, 25, 28, 37, 38, 43, 55, 62, 65, 77, 80
358. Walden Creek at junction of Wears Valley Rd. and Glen Huskey Rd. at Eagle's Nest Campground, 27 August 2000, MH Doosey, RB Nichols, JT Buchanan, JW Simmons, MJ Melville, CA Berry, (MHD 00-59). 4, 11, 14, 15, 18, 19, 20, 21, 23, 26, 28, 29, 30, 38, 39, 43, 48, 49, 50, 58, 63, 65, 66, 67, 69, 72, 73, 74, 77, 81, 82, 83, 84, 87, 89
359. WPLPR about 250 m upstream of mouth and just downstream of US 441, Sevierville, 28 August 2000, MH Doosey and CA Walker, (MHD 00-60). 6, 16, 18, 19, 25, 43, 48, 59, 60, 61, 63, 65, 66, 69, 72, 77, 83, 84, 86, 87, 89
360. MPLPR at most downstream TN 416 crossing, Hodsden Bridge, E of Sevierville, 30 August 2000, MH Doosey, BP Keck, CA Walker, (MHD 00-61). 11, 14, 15, 19, 20, 23, 25, 26, 30, 31, 43, 48 and/or 49, 63, 65, 72, 83, 84, 88
361. Walden Creek at junction of Wears Valley Rd. and Walden Creek Rd., Pigeon Forge, 8 September 2000, MH Doosey, CA Walker, BA Hines, (MHD 00-62). 4, 11, 14, 15, 18, 19, 20, 21, 28, 29, 30, 43, 49, 63, 65, 66, 67, 69, 72, 77, 81, 83, 84

362. WPLPR on US 441/321, 2.2 rd mi. N of Gatlinburg Welcome Center, 21 September 2000, MH Dosey, CA Walker, CW Hall, (MHD 00-69). 11, 20, 23, 25, 28, 30, 37, 43, 62, 65, 72, 77, 79, 83, 84, 85
363. LPR just downstream of Sanders Island, near junction of TN 66 and Old Mill Rd., Sevierville, 5 October 2000, MH Dosey, BP Keck, UT Ichthyology Class, (MHD 00-71). 10, 12, 14, 15, 16, 18, 19, 20, 21, 23, 26, 27, 30, 31, 34, 43, 48, 58, 59, 61, 65, 66, 72, 74, 77, 81, 82, 83, 84, 87, 90
364. Dunn Creek at mouth of Yellow Breeches Creek, Jones Cove, 12 October 2000, MH Dosey, BA Hines, CA Walker, CW Hall, (MHD 00-72). 11, 14, 19, 20, 23, 25, 28, 30, 43, 58, 63, 65, 77, 82, 83, 84, 85
365. Bird Creek at TN 416, Richardson Cove, 12 October 2000, MH Dosey, BA Hines, CA Walker, CW Hall, (MHD 00-73). 11, 14, 15, 19, 20, 23, 25, 30, 65, 77, 84
366. Walden Creek at most western crossing of Little Valley Rd., 17 November 2000, MH Dosey and BA Hines, (MHD 00-81). 4, 11, 14, 15, 18, 19, 29, 39, 43, 48, 49, 50, 58, 63, 65, 66, 66 x 67, 69, 73, 82, 83, 84
367. Middle Creek at Goldrush Rd. to about 0.2 mi. upstream, behind McCarter Lumber Company, 29 November 2000, MH Dosey, BA Hines, JW Simmons, (MHD 00-82). 12, 18, 19, 29, 38, 42, 43, 50, 58, 59, 63, 66, 67, 69, 73, 74, 82, 84
368. Walden Creek at junction of Wears Valley Rd. and Walden Creek Rd., Pigeon Forge, 29 November 2000, MH Dosey, BA Hines, JW Simmons, (MHD 00-83). 4, 11, 14, 19, 43, 63, 77, 81, 82, 83, 84
369. LPR from TN 338 downstream to mouth, about 0.6 river miles, 11 December 2000, MH Dosey, BA Hines, JB Taylor, (MHD 00-84). 9, 18, 31, 34, 43, 45, 48, 49, 65, 66, 69, 71, 72, 73, 77
370. MPLPR at the junction of Richardson Cove Rd. and TN 416, Richardson Cove, 11 January 2001, MH Dosey and CA Walker, (MHD 01-01). 11, 14, 23, 25, 43, 63, 83, 84, 87
371. Cove Creek at picnic area on US 321/71, 0.7 rd. mi. N of Cove Creek Rd., Wears Cove, 8 February 2001, MH Dosey, CA Walker, BA Hines, (MHD 01-04). 11, 19, 20, 23, 28, 38, 43, 63, 65, 77, 83
372. LPR at mouth of WPLPR and downstream to new bridge construction on TN 66, 14 March 2001, MH Dosey, CA Walker, BA Hines, DA Etnier, TVA, TWRA, TDEC, (MHD 01-05). 4, 12, 14, 15, 16, 18, 19, 21, 25, 26, 27, 29, 30, 31, 32, 34, 43, 48, 49, 58, 59, 61, 63, 65, 66, 67, 72, 77, 81, 82, 83, 84, 87, 89, 90
373. WPLPR at RM 2.5, below old mill dam, just downstream of Park Rd., 24 March 2001, MH Dosey and NK Lujan, (MHD 01-06). 4, 12, 18, 19, 23, 25, 27, 31, 43, 48, 50, 59, 63, 65, 66, 69, 77, 81, 83, 84, 87, 90
374. Dudley Creek adjacent to US 321, Pittman Center, 31 March 2001, TDEC (JE Burr, R Noseworthy, K Brown, J DeBusk, R Toole, C Campbell). 11, 28, 37, 38, 39, 43, 55, 62, 80, 85
375. Matthew Creek at end of pavement on Mathis Rd., at mailbox for 4208 Mathis Rd., 10 April 2001, MH Dosey and BA Hines, (MHD 01-15). 38
376. Chucky Creek at third crossing with Barron Rd. on the Bob Barron property, Jones Cove, 10 April 2001, MH Dosey and BA Hines, (MHD 01-16). 11, 28, 33, 38, 39, 43, 80, 85

377. Bird Creek at Upper Middle Creek Rd., 1.25 air mi. WSW of Richardson Cove, 2 May 2001, MH Doozey, TDEC (LE Everett, JE Burr, JC Price, MJ Atchley), (MHD 01-17). 12, 14, 18, 19, 20, 23, 29, 30, 38, 39, 43, 48, 49, 50, 58, 65, 66, 67, 69, 72, 82, 83, 84
378. Wilhite Creek at RM 0.5, on Wilhite Creek Rd., 9 May 2001, TDEC (JE Burr, JC Price, MJ Atchley, LE Everett). 11, 14, 15, 18, 19, 20, 23, 28, 29, 38, 39, 42, 43, 48, 58, 63, 65, 66, 67, 77, 82, 84
379. WPLPR at RM 4.25, at the end of Caton Rd., about 2.5 air mi. S of Sevierville, 9 May 2001, MH Doozey and BA Hines, (MHD 01-20). 1, 18, 19, 23, 31, 63, 65, 66, 67, 69, 77, 81, 83, 84, 87, 88, 89
380. Middle Creek at the Sevier County Civic Center, Sevierville, 9 May 2001, MH Doozey and BA Hines, (MHD 01-21). 15, 19, 34, 48, 49, 59, 63, 65, 66, 67, 73, 81, 82, 83, 84
381. Dunn Creek at RM 0.6, upstream of Bethany Church on Ball Hollow Rd., 16 May 2001, TDEC (JE Burr, JC Price, MJ Atchley, LE Everett). 4, 14, 15, 18, 19, 20, 23, 25, 28, 29, 30, 38, 39, 43, 48, 49, 50, 58, 63, 65, 66, 67, 77, 82, 83, 84
382. LPR at the mouth of WPLPR, Sevierville, 23 May 2001, MH Doozey, BP Keck, UT Fisheries Science Class, TDEC (JE Burr et al.), (MHD 01-22). 1, 7, 11, 14, 15, 18, 19, 20, 23, 25, 26, 27, 29, 30, 31, 32, 34, 39, 43, 48, 49, 58, 59, 60, 63, 65, 66, 72, 74, 77, 81, 82, 83, 84, 86, 87, 88, 89, 90
383. Webb Creek at RM 1.4, upstream of Pine Brook Real Estate, S of US 321, 24 May 2001, TDEC (JE Burr, JC Price, MJ Atchley, LE Everett). 20, 23, 25, 28, 30, 37, 43, 63, 66, 69, 72, 79, 80, 84, 85
384. EFLPR at RM 1.6, Harrisburg, 6 June 2001, TDEC (JE Burr et al.). 3, 4, 14, 15, 18, 19, 20, 25, 26, 27, 28, 29, 30, 32, 38, 39, 42, 43, 49, 58, 63, 65, 66, 67, 72, 77, 83, 84
385. LPR upstream of mill dam at Sanders Island, 11 June 2001, TVA (EM Scott et al.). 6, 7, 9, 15, 16, 21, 27, 29, 31, 40, 41, 43, 44, 48, 49, 50, 51, 54, 61, 65, 66, 67, 69, 72, 73, 95
386. LPR at RM 8.2, near Cherokee Hills, 12 June 2001, TVA (EM Scott et al.) and TDEC (JE Burr et al.). 1, 2, 4, 7, 12, 14, 15, 16, 18, 19, 20, 21, 23, 25, 26, 27, 30, 31, 32, 43, 48, 49, 50, 58, 63, 65, 66, 72, 73, 77, 82, 83, 84, 87, 88, 89, 90
387. LPR at mouth of West Prong, Sevierville, 12 June 2001, TVA (EM Scott et al.) and TDEC (JE Burr et al.). 1, 12, 14, 15, 18, 19, 20, 21, 23, 26, 27, 30, 31, 34, 43, 48, 49, 63, 65, 77, 83, 84, 87, 89, 90
388. MPLPR at RM 12.0, just upstream of Red Bank Church, 13 June 2001, TVA (EM Scott et al.) and TDEC (JE Burr et al.). 1, 4, 11, 14, 15, 18, 19, 20, 21, 23, 25, 26, 27, 30, 31, 38, 43, 47, 48, 49, 50, 63, 65, 66, 69, 72, 77, 82, 83, 87, 88, 89, 90
389. WPLPR at RM 9.1, upstream of Pigeon Forge sewage treatment plant and US 441, 14 June 2001, TVA (EM Scott et al.) and TDEC (JE Burr et al.). 3, 4, 11, 14, 15, 18, 19, 20, 21, 23, 25, 26, 27, 28, 29, 30, 31, 32, 43, 48, 49, 50, 55, 58, 63, 65, 66, 69, 72, 77, 81, 82, 83, 84, 89, 90
390. Middle Creek at new Sevier County primary school, Sevierville, 19 June 2001, TVA (EM Scott et al.). 12, 15, 18, 19, 20, 29, 34, 35, 38, 39, 42, 43, 48, 49, 59, 60, 63, 66, 67, 69, 74, 84

391. Gists Creek at Old Sevierville Pike, downstream about 100 m of Eagle's Landing Golf Course, 19 June 2001, TVA (EM Scott et al.). 6, 9, 12, 15, 18, 19, 29, 34, 42, 43, 45, 48, 49, 50, 59, 60, 61, 66, 67, 68, 73, 74, 84
392. Webb Creek at Pittman Center City Hall, 20 June 2001, TVA (EM Scott et al.). 11, 14, 20, 23, 25, 28, 30, 37, 43, 63, 65, 79, 80, 85
393. Cove Creek at US 321, Wear Cove, 21 June 2001, TVA (EM Scott et al.). 11, 14, 19, 20, 23, 28, 39, 43, 49, 63, 65, 66, 69, 72, 77, 83, 84
394. Webb Creek at RM 0.1, Pittman Center, 26 June 2001, TVA (EM Scott et al.). 11, 20, 23, 25, 28, 30, 37, 43, 55, 63, 65, 69, 72, 79, 80, 85
395. Walden Creek at junction of Wears Valley Rd. and Glen Huskey Rd. at Eagle's Nest Campground, 27 June 2001, TVA (EM Scott et al.) and TDEC (JE Burr et al.). 11, 14, 15, 18, 19, 20, 21, 23, 29, 30, 39, 43, 48, 58, 63, 65, 66, 69, 73, 77, 81, 82, 83, 84
396. LPR at RM 10.0, 29 June 2001, TVA (EM Scott et al.) and TDEC (JE Burr et al.). 1, 7, 9, 12, 14, 15, 16, 19, 20, 21, 23, 25, 26, 27, 29, 30, 43, 45, 47, 48, 49, 51, 60, 63, 65, 66, 69, 72, 74, 77, 82, 83, 84, 87, 89, 90
397. LPR at RM 2.0, 11 July 2001, TVA (EM Scott et al.) and TDEC (JE Burr et al.). 1, 6, 7, 9, 12, 14, 15, 16, 18, 19, 20, 21, 23, 26, 27, 29, 30, 31, 32, 34, 40, 41, 43, 44, 48, 49, 50, 51, 54, 58, 59, 61, 63, 65, 66, 67, 69, 72, 73, 77, 81, 83, 84, 86, 87, 89, 90, 95
- 397a. Buck Fork at elevations 3,420 ft. and 4,300 ft., GSMNP, 11 July 2001, NPS (DC Nolfi and JW Dowd, Jr.). 55, 57
- 397b. Chapman Prong at elevation 3,490 ft., GSMNP, 11 July 2001, NPS (GP Shaffer and B Jones). 57
398. Cove Creek adjacent to Wear Valley Rd., 0.6 rd. mi. S of Valley View Rd., Wear Cove, 13 July 2001, MH Doosey, (MHD 01-23). 11, 20, 23, 28, 38, 39, 65, 66, 85
399. WPLPR at mouth of Caney Creek, 13 July 2001, MH Doosey, (MHD 01-24). 11, 18, 20, 23, 25, 28, 30, 38, 39, 42, 43, 48 and/or 49, 62, 65, 77, 83, 84, 85
400. MPLPR at mouth of Webb Creek, Pittman Center, 14 July 2001, MH Doosey, DC Nolfi, CA Berry, (MHD 01-25). 11, 20, 23, 25, 28, 37, 55, 63, 65, 79, 85
401. MPLPR at Richardson Cove Rd., 14 July 2001, MH Doosey, DC Nolfi, CA Berry, (MHD 01-26). 11, 14, 18, 20, 23, 25, 30, 43, 48, 58, 63, 65, 72, 77, 82, 83, 84, 87
402. LPR at Sanders Island, right channel and around lower island, 26 July 2001, MH Doosey, (MHD 01-38). 7, 9, 12, 14, 15, 16, 18, 19, 23, 26, 31, 43, 48, 63, 66, 72, 77, 81, 83, 84, 87, 89, 90
403. LPR at RM 3.0, about 2.8 rd. mi. upstream of French Broad River on TN 66, 3 August 2001, MH Doosey, (MHD 01-39). 12, 14, 16, 18, 19, 26, 30, 31, 34, 41, 43, 48, 59, 66, 67, 69, 72, 77, 81, 83, 84, 87, 89
404. LPR at end of Emert Rd., behind the Family Dollar store, RM 5.5, Sevierville, 4 August 2001, MH Doosey, (MHD 01-40). 7, 12, 14, 15, 16, 18, 19, 20, 23, 29, 32, 34, 43, 49, 63, 65, 66, 69, 72, 77, 81, 83, 84, 89, 90
405. LPR near junction of River's Edge Rd. and Old Newport Highway, 4 August 2001, MH Doosey, (MHD 01-41). 12, 14, 18, 19, 23, 25, 26, 43, 55, 63, 65, 66, 72, 77, 83, 84, 87, 88, 89

406. WPLPR at RM 8.5, 8 August 2001, TVA (EM Scott et al.) and TDEC (JE Burr et al.). 4, 11, 14, 15, 18, 19, 20, 21, 23, 25, 26, 27, 29, 30, 32, 35, 37, 43, 48, 49, 50, 58, 63, 65, 66, 72, 77, 81, 82, 83, 84, 90,
407. LPR at mouth of West Prong, Sevierville, 2 October 2001, MH Dosey, JB Taylor, JT Baxter, UT Ichthyology Class, TDEC (JE Burr et al.), (MHD 01-53). 1, 7, 12, 14, 15, 18, 19, 23, 25, 26, 27, 30, 32, 34, 43, 48, 49, 59, 60, 61, 63, 65, 66, 69, 72, 77, 81, 82, 83, 84, 86, 87, 89, 90

Appendix D
Museum Material

Table D1. List of museum material for West Prong Little Pigeon River, Sevier Co., TN. Columnar headings are museum acronyms: CU= Cornell University Ichthyology Collection, UMMZ= University of Michigan Museum of Zoology, UT= University of Tennessee Research Collection of Fishes, UAIC= University of Alabama Ichthyology Collection. Museum numbers are followed by the collection number in parentheses.

Species	CU	UMMZ	UT	Misc.
<i>Ichthyomyzon bdellium</i>			2.346(379)	UAIC 8942.01(159)
<i>Ichthyomyzon greeleyi</i>			2.329(353)	
<i>Lampetra appendix</i>	23464(36) 24602(38) 41888(49)		2.188(195) 2.211(280) 2.326(348) 2.326(353) 2.330(358) 2.326(361) 2.330(366) 2.345(373)	
<i>Campostoma anomalum</i>	23446(36) 28183(37) 24609(38) 38192(47) 41889(49) 46462(52) 55072(74b)	129241(11) 129266(13) 129310(19) 158305(20) 131322(22) 201818(43)	44.4447(187) 44.5111(190) 44.5161(193) 44.5333(199) 44.5338(201) 44.5313(203) 44.5470(208) 44.5302(210) 44.5313(214) 44.8613(307) 44.8627(308) 44.8663(313) 44.8642(366) 44.9015(371)	
<i>Campostoma oligolepis</i>	46577(50)		44.9022(373)	
<i>Cyprinella galactura</i>	26176(37) 24608(38) 41880(49) 72358(49) 46579(50)	129234(11) 129246(12) 129317(19) 158310(20) 131319(22)	44.2248(176) 44.5169(194) 44.8628(308)	
<i>Cyprinella spiloptera</i>	24618(38) 41875(49)	129318(19) 131317(22)	44.2250(176) 44.5167(193) 44.5167(195) 44.5167(196) 44.8614(307)	
<i>Erimystax insignis</i>	24598(38) 41881(49) 55074(74b)	129320(19) 177282(19)	44.5168(193) 44.5168(194) 44.5168(196)	
<i>Hybopsis amblops</i>	26181(37) 41873(49) 46578(50)	129322(19) 158306(20) 131313(22)	44.2242(176) 44.5165(193) 44.8615(307)	

Table D1. (continued)

Species	CU	UMMZ	UT	Misc.
<i>Hybopsis amblops</i>	55073(74b)		44.8629(308) 44.9023(308) 44.9023(379)	
<i>Luxilus chrysocephalus</i>	23448(36) 24610(38) 41890(49) 55078(74b)	129312(19) 131315(22)	44.2246(176) 44.5170(193) 44.8616(307) 44.8630(308) 44.9016(371) 44.9024(373) 44.9024(379)	
<i>Luxilus chrysocephalus</i> X <i>Notropis leuciodus</i>			44.5162(193)	
<i>Luxilus chrysocephalus</i> X <i>Notropis rubricroceus</i>			44.5474(210)	
<i>Luxilus coccogenis</i>	23449(36) 26178(37) 24603(38) 38195(47) 41876(49) 46576(50) 46461(52)	129236(11) 129247(12) 129261(13) 129311(19) 158308(20) 131316(22) 201820(43)	44.5106(190) 44.5158(193) 44.5334(199) 44.5339(201) 44.5339(212) 44.5334(214) 44.8669(313) 44.9019(371)	
<i>Lythrurus lirus</i>	41874(49) 53320(74b)	131314(22)	44.5171(194) 44.5171(195) 44.5171(196) 44.8585(252) 44.8288(280)	
<i>Nocomis micropogon</i>	23447(36) 26180(37) 24599(38) 46575(50) 46463(52)	129235(11) 129252(12) 129265(13) 129321(19) 158307(20) 131312(22) 201819(43)	44.2244(176) 44.5105(190) 44.5170(193) 44.5170(196) 44.5340(201) 44.5329(207) 44.5340(212) 44.8665(313) 44.9018(371) 44.9025(373) 44.9025(379)	
<i>Notropis atherinoides</i>	55081(74b)			
<i>Notropis leuciodus</i>	23451(36) 24604(38) 46574(50)	129239(11) 129250(12) 129313(13) 158309(20) 201872(34) 201821(43)	44.2249(176) 44.5108(190) 44.5163(193) 44.8289(280) 44.9026(373)	

Table D1. (continued)

Species	CU	UMMZ	UT	Misc.
<i>Notropis leuciodus</i> X <i>Notropis rubricroceus</i>		129238(11) 129251(12)	44.5109(190)	
<i>Notropis micropteryx</i>	41878(49)	129316(19)	44.5172(194) 44.8586(252) 44.8288(280)	
<i>Notropis photogenis</i>	24600(38) 41877(49)	129315(19)	44.5166(196) 44.9027(373)	
<i>Notropis rubricroceus</i>	38193(47) 46460(52) 55079(74b)	129237(11) 129248(12) 129262(13) 201868(32) 201822(43)	44.4448(187) 44.5110(190) 44.5335(199) 44.5341(201) 44.5314(203) 44.5471(208) 44.5471(210) 44.5341(212) 44.5314(214) 44.8631(308) 44.8666(313) 44.9019(371)	
<i>Notropis stramineus</i>	41886(49) 55080(74b)	131320(22)	44.5160(193) 44.5160(195) 44.5160(196) 44.8587(252) 44.8291(280) 44.8617(307)	
<i>Notropis telescopus</i>	23450(36) 26177(37) 24597(38) 41879(49) 46585(50)	129249(12) 129314(19) 158311(20) 131321(22) 201873(34)	44.8632(308)	
<i>Notropis volucellus</i>		129319(19) 131318(22) 201869(33)	44.5173(195) 44.5173(196) 44.9028(373) 44.9028(379)	
<i>Phenacobius uranops</i>		129325(19)	44.5174(194) 44.5174(195) 44.5174(196) 44.8588(252)	
<i>Phoxinus tennesseensis</i>			44.5472(202) 44.5472(210) 44.5450(214)	
<i>Pimephales promelas</i>			44.5342(201) 44.5451(214) 44.8618(307)	

Table D1. (continued)

Species	CU	UMMZ	UT	Misc.
<i>Rhinichthys cataractae</i>		129264(13) 201824(43)	44.4450(187) 44.5107(190) 44.8668(313)	
<i>Rhinichthys obtusus</i>		129263(13) 129273(14) 201823(43)	44.4449(187) 44.5336(199) 44.5343(201) 44.5310(202) 44.5310(208) 44.5458(212) 44.5453(214) 44.8619(307) 44.8667(313) 44.9020(371)	
<i>Semotilus atromaculatus</i>			44.4451(187) 44.5175(193) 44.5175(195) 44.5337(199) 44.5344(201) 44.5315(203) 44.5473(208) 44.5304(210) 44.5344(212) 44.5315(214) 44.8620(307) 44.8633(308) 44.8669(313)	
<i>Catostomus commersonii</i>		131310(22)		
<i>Hypentelium nigricans</i>	23452(36) 26179(37) 24613(38) 38196(47) 41891(49) 46580(50) 55076(74b)	129234(11) 129245(12) 129260(13) 129309(19) 158304(20)	45.772(187) 45.908(193) 45.908(194) 45.908(195) 45.961(207) 45.982(210) 45.1614(308) 45.1621(313) 45.1697(371) 45.1698(373)	
<i>Moxostoma duquesnii</i>	50369(49)	129307(19)	45.353(159) 45.909(193) 45.909(196) 45.1567(280) 45.1622(348) 45.1699(373)	

Table D1. (continued)

Species	CU	UMMZ	UT	Misc.
<i>Moxostoma erythrurum</i>	23453(36) 24615(38) 41892(49)	129308(19) 131309(22)	45.910(195) 45.910(196) 45.1623(348)	
<i>Ameiurus natalis</i>			48.401(176) 48.1008(348) 48.1028(366) 48.1053(373)	
<i>Noturus eleutherus</i>	23454(36)	129323(19)		
<i>Oncorhynchus mykiss</i>		129271(14)	31.123(202) 31.209(313)	
<i>Salvelinus fontinalis</i>		129272(14)		
<i>Fundulus catenatus</i>	24616(38) 55075(74b)	129324(19)	60.486(193) 60.486(195) 60.486(196) 60.681(308)	
<i>Fundulus notatus</i>			60.216(176) 60.485(196) 60.679(307) 60.712(373)	
<i>Cottus bairdii</i>		129259(12) 129269(13) 129270(13) 158319(20)	129.291(187) 129.342(190) 129.697(313)	
<i>Cottus carolinae</i>	23463(36) 26175(37) 46586(50)		129.344(194) 129.692(308) 129.724(373)	
<i>Ambloplites rupestris</i>	24614(38) 46465(52)		90.494(176) 90.1252(190) 90.1258(193) 90.1258(194) 90.1258(196) 90.1309(201) 90.1309(212) 90.1334(214) 90.2631(308) 90.2750(371) 90.2751(373) 90.2751(379)	
<i>Lepomis auritus</i>	55077(74b)	129243(11) 129257(12) 129334(19) 131326(22)	90.1259(193) 90.1259(194) 90.1259(195) 90.1259(196) 90.1310(201) 90.1337(212) 90.1310(213)	

Table D1. (continued)

Species	CU	UMMZ	UT	Misc.
<i>Lepomis auritus</i>			90.1335(214) 90.2621(252) 90.2629(307) 90.2752(373) 90.2752(379)	
<i>Lepomis auritus</i> X <i>Lepomis cyanellus</i>			90.2709(366)	
<i>Lepomis auritus</i> X <i>Lepomis macrochirus</i>			90.1338(212)	
<i>Lepomis macrochirus</i>			90.1306(199) 90.1304(203) 90.1304(214) 90.2630(307)	
<i>Lepomis megalotis</i>	24601(38)	129336(19) 131327(22)		
<i>Micropterus dolomieu</i>	24611(38)	129244(11) 129258(12) 129268(13) 129335(19) 158318(20) 131328(22)	90.1260(194) 90.1260(195)	
<i>Micropterus punctulatus</i>		131329(22)	90.2644(348)	
<i>Pomoxis annularis</i>			90.1334(214)	
<i>Pomoxis nigromaculatus</i>			90.1335(214)	
<i>Pomoxis annularis</i> X <i>Pomoxis nigromaculatus</i>			90.1336(214)	
<i>Etheostoma blennioides</i>	23457(36) 41882(49) 46582(50) 55069(74b)	129328(19) 158312(20) 131325(22)	91.3917(193) 91.3917(194) 91.3917(195) 91.3917(196) 91.5936(371) 91.5938(373) 91.5938(379)	
<i>Etheostoma chlorbranchium</i>		129253(12) 158315(20)	91.3899(190) 91.5436(362)	
<i>Etheostoma flabellare</i>	38194(47)	129242(11) 129267(13)	91.3483(187) 91.3900(190) 91.3809(202) 91.3999(208) 91.3997(210) 91.5710(313)	
<i>Etheostoma jessiae</i>	23456(36) 24606(38) 41884(49)	129329(19) 131312(20) 201871(33)	91.3916(196) 91.5939(373) 91.5939(379)	

Table D1. (continued)

Species	CU	UMMZ	UT	Misc.
<i>Etheostoma jessiae</i>	55070(74b)		91.5682(252)	
<i>Etheostoma kennicotti</i>		129330(19)	91.3918(193) 91.3918(194) 91.3918(195) 91.3918(196) 91.5693(307) 91.5697(308)	
<i>Etheostoma rufilineatum</i>	23459(36) 24605(38) 41883(49) 46581(50) 55068(74b)	129255(12) 129333(19) 158316(20)	91.3919(194) 91.5698(308) 91.5936(371) 91.5940(373) 91.5940(379)	
<i>Etheostoma simoterum</i>	23461(36) 24607(38) 24612(38) 41887(49) 55071(74b)	129256(12) 129327(19) 158314(20) 131324(22)	91.3901(190) 91.5694(307) 91.5699(308) 91.5941(373) 91.5941(379)	
<i>Etheostoma swannanoa</i>	37715(47) 46464(52)	129254(12) 158313(20)	91.3902(190) 91.3915(193) 91.3920(194) 91.4011(199) 91.4012(201) 91.4009(203) 91.4023(212) 91.4009(214) 91.5711(313)	
<i>Etheostoma vulneratum</i>	23460(36)	129332(19)	91.2111(176) 91.5737(359)	
<i>Etheostoma zonale</i>	23458(36)	129331(19)	91.3921(194) 91.3921(196) 91.5942(373) 91.5942(379)	
<i>Percina aurantiaca</i>			91.5943(379)	
<i>Percina caprodes</i>	23455(36) 24617(38) 41885(49) 46584(50)	158317(20)	91.5944(379)	
<i>Percina evides</i>	24684(36)		91.3922(194) 91.3922(195) 91.5945(373)	
<i>Percina macrocephala</i>	24685(36)	129326(19) 201870(33)		
<i>Percina sciera</i>	41871(49)			

Table D2. List of museum material for Middle Prong Little Pigeon River, Sevier Co., TN. Columnar headings are museum acronyms: CU= Cornell University Ichthyology Collection, UMMZ= University of Michigan Museum of Zoology, UT=University of Tennessee Research Collection of Fishes, UAIC=University of Alabama Ichthyology Collection. Museum numbers are followed by the collection number in parentheses.

Species	CU	UMMZ	UT	Misc.
<i>Ichthyomyzon greeleyi</i>			2.40(*)	
<i>Campostoma anomalum</i>	21875(35) 37690(45) 54932(74a)	129226(9) 129230(10) 129278(16) 129296(18) 201800(41) 201807(42) 183804(44)	44.4440(186) 44.6191(229) 44.6196(230) 44.6230(240) 44.6236(241) 44.6325(243) 44.6325(244) 44.8642(311) 44.8801(316) 44.6325(317)	UAIC 5837.01(156) UAIC 6225.01(161)
<i>Campostoma oligolepis</i>			44.9021(318) 44.9021(377)	
<i>Cyprinella galactura</i>	65084(166)	129222(9) 129272(16) 129290(18)	44.4443(186) 44.6238(241)	UAIC 5837.04(156) UAIC 6225.04(161)
<i>Cyprinella spiloptera</i>				UAIC 6225.05(161)
<i>Hybopsis amblops</i>	65086(166)	129297(18)	44.8670(317)	
<i>Luxilus chrysocephalus</i>		129291(18)		
<i>Luxilus chrysocephalus</i> X <i>Notropis telescopus</i>			44.6246(242)	
<i>Luxilus coccogenis</i>	21876(35) 37695(45) 65083(166)	129221(19) 129280(16) 129299(18) 201801(41) 201809(42) 183806(44)	44.4442(186) 44.6197(230) 44.6326(243) 44.8664(316) 44.6326(317)	UAIC 5837.03(156) UAIC 6225.03(161)
<i>Nocomis micropogon</i>	21877(35) 37692(45)	129225(9) 129277(16) 129299(18) 201808(42) 183805(44)	44.4441(186) 44.6242(241) 44.6331(243) 44.6331(244) 44.8665(316) 44.6331(317)	UAIC 5837.02(156) UAIC 6225.02(161)
<i>Notropis leuciodus</i>	50595(35) 37693(45) 54936(74a) 65085(166)	129223(9) 129281(16) 129293(18) 201810(42)	44.6241(241) 44.6329(243) 44.6327(317)	UAIC 5837.05(156)
<i>Notropis leuciodus</i> X <i>Notropis rubricroceus</i>			44.6247(242)	
<i>Notropis photogenis</i>		129292(18)		

Table D2. (continued)

Species	CU	UMMZ	UT	Misc.
<i>Notropis rubricroceus</i>	37694(45)	129220(9) 201802(41) 201811(42) 183807(44)	44.4444(186) 44.6198(230) 44.6221(235) 44.6221(237) 44.6239(241) 44.6328(243) 44.6328(317) 44.8666(318)	
<i>Notropis rubricroceus</i> X <i>Notropis telescopus</i>			44.6330(243)	
<i>Notropis telescopus</i>	21878(35) 50597(45)	129224(9) 129282(16) 129294(18)	44.4445(186) 44.6240(241) 44.6329(243) 44.6329(317)	UAIC 6225.06(161)
<i>Notropis volucellus</i>		129205(18)		
<i>Phenacobius uranops</i>		129298(18)		
<i>Rhinichthys cataractae</i>		129232(10) 201804(41) 201812(42) 183808(44)	44.4446(186) 44.6232(240) 44.6244(241) 44.6244(242) 44.6332(243) 44.6332(244) 44.8644(311) 44.6332(317)	
<i>Rhinichthys obtusus</i>		129231(10) 129285(17) 201803(41)	44.6194(228) 44.6192(229) 44.6199(230) 44.6224(235) 44.6222(237) 44.6223(238) 44.6228(239) 44.6231(240) 44.6243(241) 44.6243(242) 44.8643(311) 44.8667(316) 44.6194(317)	
<i>Semotilus atromaculatus</i>			44.6195(228) 44.6193(229) 44.6200(230) 44.6225(235) 44.6229(239)	
<i>Hypentelium nigricans</i>	54933(74)	129219(9) 129275(16) 129288(18)	45.771(186) 45.1166(229) 45.1167(230)	UAIC 5837.06(156) UAIC 6225.07(161)

Table D2. (continued)

Species	CU	UMMZ	UT	Misc.
<i>Hypentelium nigricans</i>			45.1176(238) 45.1179(241) 45.1199(243) 45.1199(244) 45.1618(311) 45.1199(317)	
<i>Moxostoma duquesnii</i>		129276(16) 129286(18)	45.1168(230) 45.1180(241)	
<i>Moxostoma erythrurum</i>		129287(18)		
<i>Ictalurus punctatus</i>			48.811(242)	
<i>Oncorhynchus mykiss</i>		129233(10) 183803(44)	31.179(240) 31.181(244) 31.208(311)	
<i>Salmo trutta</i>			31.182(244)	
<i>Cottus bairdii</i>			129.486(244)	
<i>Cottus carolinae</i>	37696(45) 38512(45) 54935(74a)	201806(41) 201813(42) 183812(44)	129.290(186) 129.473(229) 129.474(230) 129.479(241) 129.487(243) 129.487(244) 129.694(311) 129.698(317)	UAIC 5837.11(156) UAIC 6225.13(161)
<i>Ambloplites rupestris</i>		129228(9) 129305(18)	90.1097(186) 90.1639(241) 90.2640(317)	
<i>Lepomis auritus</i>			90.1635(228)	
<i>Lepomis macrochirus</i>			90.1634(228) 90.1638(239) 90.1640(241) 90.2641(317)	
<i>Lepomis microlophus</i>			90.1641(241)	
<i>Micropterus dolomieu</i>		129229(9) 129284(16) 129306(18)	90.1642(241) 90.2642(317)	
<i>Micropterus salmoides</i>			90.2643(334)	
<i>Etheostoma blennioides</i>	37688(45)	129304(18)	91.4524(241)	UAIC 6225.08(161)
<i>Etheostoma chlorbranchium</i>		129303(18) 183822(40) 183809(44)	91.3479(186) 91.4525(241) 91.5712(317)	UAIC 5837.07(156)
<i>Etheostoma chlorbranchium</i> X <i>Etheostoma rufilineatum</i>			91.4526(241)	
<i>Etheostoma flabellare</i>		129283(16) 201805(41) 183810(44)	91.3480(186) 91.4517(229) 91.4518(230)	

Table D2. (continued)

Species	CU	UMMZ	UT	Misc.
<i>Etheostoma flabellare</i>			91.4527(241) 91.4574(243) 91.4574(244) 91.4574(317)	
<i>Etheostoma kennicotti</i>				UAIC 5837.08(156)
<i>Etheostoma rufilineatum</i>	37689(45) 54934(74a)	129227(9) 129302(18)	91.4528(241) 91.4528(242)	UAIC 5837.09(156) UAIC 6225.09(161)
<i>Etheostoma simoterum</i>	37691(45) 65088(166)	129301(18)	91.3482(186) 91.4519(230) 91.4529(241)	UAIC 6225.10(161)
<i>Etheostoma swannanoa</i>	37631(45)	183813(44)	91.3481(186) 91.4530(241) 91.4532(242) 91.5713(317)	UAIC 5837.10(156)
<i>Etheostoma zonale</i>			91.5878(370)	UAIC 6225.11(161)
<i>Percina aurantiaca</i>		129300(8) 129300(18)	91.4531(241)	
<i>Percina caprodes</i>				UAIC 6225.12(161)

Table D3. List of museum material for East Fork Little Pigeon River, Sevier Co., TN. Columnar headings are museum acronyms: CU=Cornell University Ichthyology Collection, UMMZ=University of Michigan Museum of Zoology, UT=University of Tennessee Research Collection of Fishes. Museum numbers are followed by the collection number in parentheses.

Species	CU	UMMZ	UT
<i>Lampetra appendix</i>			2.325(323) 2.325(328)
<i>Campostoma anomalum</i>	72322(75)	131385(24) 131400(25)	44.6182(224) 44.6201(226) 44.8621(305) 44.8661(322) 44.8661(323) 44.8621(328) 44.8971(376)
<i>Cyprinella galactura</i>	72328(75)	131379(24) 131404(25) 201933(26)	44.8879(283) 44.8654(322) 44.8654(323) 44.8654(328)
<i>Cyprinella spiloptera</i>	72329(75)	201934(26)	44.8880(283) 44.8662(323)
<i>Hybopsis amblops</i>	72321(75)	131383(24) 131395(25)	44.8881(284) 44.8655(328)
<i>Luxilus chrysocephalus</i>	72327(75)		44.8882(283) 44.8882(284) 44.8656(322) 44.8656(323) 44.8656(328)
<i>Luxilus coccogenis</i>	72336(75)	131378(24) 131405(25)	44.6202(226) 44.8622(305) 44.8622(328)
<i>Nocomis micropogon</i>		131384(24) 131396(25)	44.6203(226) 44.8624(305) 44.8624(328)
<i>Notropis leuciodus</i>	72320(75)	131380(24) 131402(25)	44.8883(283) 44.8657(328)
<i>Notropis leuciodus</i> X <i>Notropis rubricroceus</i>		131401(25)	
<i>Notropis micropteryx</i>			44.8885(283) 44.8885(284)
<i>Notropis photogenis</i>			44.8884(284)
<i>Notropis rubricroceus</i>		131381(24) 131403(25)	44.6204(226) 44.8623(305) 44.8623(328) 44.8886(283) 44.8971(376)

Table D3. (continued)

Species	CU	UMMZ	UT
<i>Notropis stramineus</i>			44.8887(283) 44.8887(284) 44.8658(323) 44.8658(328)
<i>Notropis telescopus</i>		131382(24) 131406(25)	44.8889(284) 44.8659(328)
<i>Notropis volucellus</i>	72323(75)		44.8888(283) 44.8888(284)
<i>Phoxinus tennesseensis</i>			44.8592(305) 44.8592(306) 44.8973(376)
<i>Phoxinus tennesseensis</i> X <i>Semotilus atromaculatus</i>			44.8626(306)
<i>Rhinichthys cataractae</i>		131397(25)	44.6184(224) 44.6206(226) 44.8625(305)
<i>Rhinichthys obtusus</i>		131278(21) 131398(25)	44.6183(224) 44.6189(225) 44.6205(226) 44.6188(227) 44.6208(231) 44.6207(232) 44.6220(233) 44.6226(234) 44.6227(236) 44.8593(305) 44.8593(306) 44.8974(376)
<i>Semotilus atromaculatus</i>		131399(25)	44.6190(225) 44.6209(231) 44.8594(306) 44.8660(322) 44.8660(328) 44.8975(376)
<i>Catostomus commersonnii</i>		131393(25)	
<i>Hypentelium nigricans</i>	72330(75)	131376(24) 131394(25)	45.1169(226) 45.1676(284) 45.1613(305) 45.1613(328) 45.1694(376)
<i>Moxostoma duquesnii</i>		201907(26)	45.1677(283) 45.1619(323)
<i>Moxostoma erythrurum</i>	76190(75)	131377(24)	45.1678(283) 45.1620(323)
<i>Ameiurus natalis</i>			48.1007(328)

Table D3. (continued)

Species	CU	UMMZ	UT
<i>Noturus</i> sp. cf. <i>elegans</i>		131386(24)	
<i>Oncorhynchus mykiss</i>			31.175(224) 31.177(227)
<i>Salvelinus fontinalis</i>			31.176(224)
<i>Fundulus catenatus</i>			60.697(283) 60.686(323) 60.686(328)
<i>Cottus bairdii</i>		131279(21) 131392(24) 131413(25)	129.471(224) 129.475(226) 129.477(231) 129.476(232) 129.691(305)
<i>Cottus carolinae</i>	72318(75)	201904(30)	129.696(322) 129.696(323) 129.696(328)
<i>Ambloplites rupestris</i>			90.2637(322) 90.2637(323) 90.2637(328)
<i>Lepomis auritus</i>			90.2638(323) 90.2638(328)
<i>Lepomis cyanellus</i>			90.2639(328)
<i>Micropterus dolomieu</i>		131391(24) 131412(25)	
<i>Micropterus salmoides</i>			90.1637(233)
<i>Etheostoma blennioides</i>		131388(24) 131411(25)	91.5852(284)
<i>Etheostoma flabellare</i>		131407(25)	91.4520(226) 91.4522(231) 91.4521(232) 91.5695(305) 91.5916(376)
<i>Etheostoma jessiae</i>	72325(75)	201903(30)	
<i>Etheostoma kennicotti</i>		131387(24)	91.5853(283) 91.5707(322) 91.5707(328)
<i>Etheostoma rufilineatum</i>	72319(75)	131389(24) 131409(25)	91.5854(284) 91.5696(305) 91.5708(322) 91.5708(323) 91.5708(328) 91.5917(376)
<i>Etheostoma simoterum</i>	72324(75)	131390(24) 131408(25) 201908(26)	91.5708(322) 91.5708(323) 91.5708(328)
<i>Etheostoma swannanoa</i>		131410(25)	91.5696(305)

Table D4. List of museum material for Little Pigeon River proper, Sevier Co., TN. Columnar headings are museum acronyms: CU= Cornell University Ichthyology Collection, UMMZ= University of Michigan Museum of Zoology, UT=University of Tennessee Research Collection of Fishes, FLMNH=Florida Museum of Natural History, UAIC=University of Alabama Ichthyology Collection. Museum numbers are followed by the collection number in parentheses.

Species	CU	UMMZ	UT	Misc.
<i>Ichthyomyzon bdellium</i>			2.315(298) 2.315(346)	
<i>Ichthyomyzon castaneus</i>			2.326(346)	
<i>Lampetra appendix</i>			2.341(372)	
<i>Lepisosteus osseus</i>			25.87(346)	
<i>Dorosoma cepedianum</i>			29.212(369)	
<i>Dorosoma petenense</i>			29.207(363)	
<i>Campostoma anomalum</i>	40122(39) 38179(46) 63203(60)	131346(23)	44.6409(189) 44.8432(298) 44.8449(299) 44.8560(300) 44.8449(302) 44.8569(304) 44.8634(309) 44.8432(372)	FLMNH 16024(76)
<i>Campostoma oligolepis</i>	63207(60)	131341(23)	44.6410(189) 44.8433(298)	FLMNH 16029(76)
<i>Cyprinella spiloptera</i>	40110(39)	131342(23) 201902(29)	44.6411(189) 44.8434(298) 44.8582(302) 44.8635(309)	FLMNH 16033(76)
<i>Erimystax insignis</i>	38513(46) 63205(60)	131335(23)	44.6412(189)	FLMNH 16025(76)
<i>Hybopsis amblops</i>	63204(60)	131334(23)	44.6413(189) 44.8435(298) 44.8450(299) 44.8636(309)	UAIC 6224.01(158)
<i>Luxilus chrysocephalus</i>	38190(46)	131343(23)	44.8436(298) 44.8451(299) 44.8561(300) 44.8583(302) 44.8637(309) 44.8451(310)	FLMNH 16027(76) UAIC 6224.02(158)
<i>Luxilus coccogenis</i>	40116(39) 38182(46)	131340(23)	44.6414(189)	FLMNH 16028(76)
<i>Lythrurus lirus</i>			44.5171(281) 44.8351(298)	
<i>Nocomis micropogon</i>	40124(39) 38188(46) 63206(60)	131333(23)	44.6415(189) 44.8437(298)	FLMNH 16026(76)

Table D4. (continued)

Species	CU	UMMZ	UT	Misc.
<i>Notropis leuciodus</i>	50594(39) 38187(46) 63208(60)	131344(23)	44.6416(189)	FLMNH 16030(76)
<i>Notropis micropteryx</i>	40109(39)	131338(23)	44.6418(189) 44.8438(298) 44.8640(310)	FLMNH 16032(76)
<i>Notropis photogenis</i>		131337(23) 207901(29)	44.8350(298) 44.8350(372)	FLMNH 16031(76)
<i>Notropis stramineus</i>			44.2066(160) 44.8452(299) 44.8562(300) 44.8584(302) 44.8579(303) 44.8638(309) 44.8579(310)	
<i>Notropis telescopus</i>	40108(39) 38186(46) 63209(60)	131345(23)	44.6419(189)	
<i>Notropis volucellus</i>		131339(23)	44.2067(160) 44.6420(189) 44.5176(191) 44.8439(298) 44.8580(303) 44.8580(310)	FLMNH 16034(76)
<i>Phenacobius uranops</i>			44.6421(189) 44.8440(298) 44.8440(371)	
<i>Pimephales notatus</i>			44.8349(298) 44.8563(300) 44.8581(303) 44.8641(310)	
<i>Rhinichthys obtusus</i>		131336(23)	44.8564(300) 44.8570(304)	
<i>Semotilus atromaculatus</i>			44.8571(304)	
<i>Carpionodes cyprinus</i>			45.1516(281)	
<i>Carpionodes velifer</i>			45.911(191) 45.1624(346)	
<i>Catostomus commersonnii</i>			45.1604(304) 45.1615(309)	
<i>Hypentelium nigricans</i>	40112(39) 38185(46) 63210(60)	131332(23)	45.1558(298) 45.1616(309) 45.1660(369)	FLMNH 16022(76)
<i>Minytrema melanops</i>			45.1517(282) 45.1661(369)	
<i>Moxostoma carinatum</i>			45.1625(346)	

Table D4. (continued)

Species	CU	UMMZ	UT	Misc.
<i>Moxostoma duquesnii</i>		131331(23)	45.1603(301) 45.1662(369)	FLMNH 16023(76)
<i>Moxostoma erythrurum</i>		131330(23)	45.1589(299) 45.1617(309) 45.1589(310)	
<i>Ameiurus natalis</i>	40117(39)		48.989(298) 48.1002(310) 48.1009(346) 48.1052(367)	
<i>Noturus eleutherus</i>	40113(39) 38189(46)			
<i>Fundulus catenatus</i>		131347(23)	60.659(298) 60.682(309) 60.684(310)	UAIC 6224.03(158)
<i>Fundulus notatus</i>			60.598(281) 60.660(298) 60.676(300) 60.676(302) 60.683(309) 60.685(310)	
<i>Gambusia affinis</i>			61.232(298)	
<i>Labidesthes sicculus</i>			158.208(298)	
<i>Cottus carolinae</i>	40121(39) 38191(46) 63211(46)	131355(23)	129.493(189) 129.693(309)	
<i>Morone chrysops</i>			85.100(346)	
<i>Ambloplites rupestris</i>		131353(23)	90.1694(189)	
<i>Lepomis auritus</i>			90.2622(300) 90.2622(302) 90.2615(304) 90.2632(309) 90.2615(310)	FLMNH 16040(76)
<i>Lepomis cyanellus</i>			90.2745(367)	
<i>Lepomis cyanellus</i> X <i>Lepomis macrochirus</i>			90.2586(299) 90.2611(300)	
<i>Lepomis gulosus</i>			90.2619(303) 90.2635(310)	
<i>Lepomis macrochirus</i>			90.2585(299) 90.2610(300) 90.2610(302) 90.2616(304) 90.2633(309) 90.2585(310)	FLMNH 16041(76)
<i>Lepomis microlophus</i>			90.2710(369)	

Table D4. (continued)

Species	CU	UMMZ	UT	Misc.
<i>Micropterus dolomieu</i>		131352(23)		FLMNH 16042(76)
<i>Micropterus punctulatus</i>			90.2711(369)	
<i>Micropterus salmoides</i>	40115(39)		90.2620(302) 90.2634(309)	
<i>Etheostoma blennioides</i>	40114(39)		91.4606(189)	FLMNH 16035(76)
<i>Etheostoma camurum</i>			91.111(61)	
<i>Etheostoma jessiae</i>	38184(46)	131350(23)		
<i>Etheostoma kennicotti</i>			91.4607(189) 91.5681(302) 91.5678(304) 91.5678(310) 91.5700(309)	UAIC 6224.04(158)
<i>Etheostoma rufilineatum</i>	40123(39) 38180(46) 63212(60)	131351(23)	91.4608(189)	FLMNH 16037(76)
<i>Etheostoma simoterum</i>	40120(39) 38183(46)	131349(23)	91.1968(160) 91.4609(189) 91.5606(299) 91.5677(300) 91.5606(302) 91.5701(309) 91.5606(310)	FLMNH 16038(76) UAIC 6224.05(158)
<i>Etheostoma vulneratum</i>	40111(39)		91.5553(298)	FLMNH 16036(76)
<i>Etheostoma zonale</i>	40118(39)		91.4611(189)	FLMNH 16039(76)
<i>Percina caprodes</i>	40119(39) 38181(46)	131348(23)	91.4612(189)	
<i>Aplodinotus grunniens</i>	25545(39)			

Vita

Michael H. Doosey was born on 6 May 1976, in New Brunswick, New Jersey. He attended public school in Monroe Township, New Jersey, and graduated from Monroe Township Public High School in 1994. He graduated from The Richard Stockton College of New Jersey in 1998, with the Bachelor of Science degree with a major in Marine Science. In 1999, he enrolled at the University of Tennessee, Knoxville, and received the Master of Science degree with a major in Wildlife and Fisheries Science in 2001.

He is engaged to be married to Megan N. Solan of Brick, New Jersey, on 26 April 2002.

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