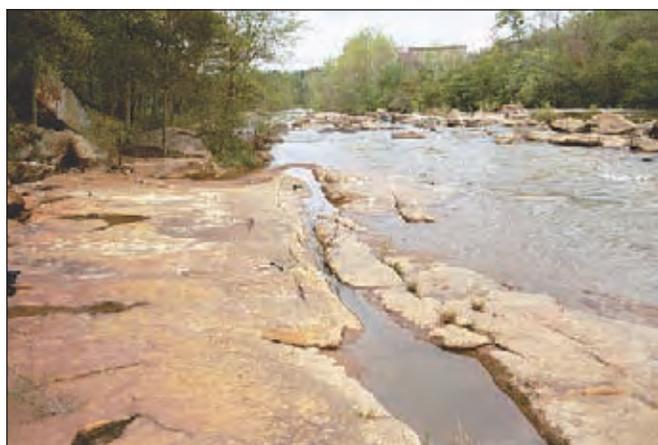


# Biological Monitoring and Assessment of Watersheds in Rockdale County, Georgia, May–August 2003



Open-File Report 2005-1214

*Prepared in cooperation with the*  
**Rockdale County Department of Water Resources**

**U.S. Department of the Interior**  
**U.S. Geological Survey**

Cover photographs:

Left photograph and top right photograph: Yellow River at hydroelectric dam  
(about 1,000 feet downstream of Georgia Highway 20) in Milstead, Georgia.  
Photographs by Lester J. Williams, U.S. Geological Survey.

Bottom right photograph: U.S. Geological Survey personnel collecting fishes at  
Little Haynes Creek at Dial Mill Road.  
Photograph by Alan Cressler, U.S. Geological Survey.

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By M. Brian Gregory

Prepared in cooperation with the  
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**U.S. Department of the Interior  
U.S. Geological Survey**

**U.S. Department of the Interior**  
Gale A. Norton, Secretary

**U.S. Geological Survey**  
Charles G. Groat, Director

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# Contents

Abstract .....	1
Introduction .....	1
Purpose and Scope .....	3
Description of Study Area .....	3
Methods of Investigation .....	3
Site Selection .....	3
Habitat Characterization .....	4
Invertebrate Community Characterization .....	4
Fish Community Characterization .....	5
Stream Use Classification and Integrity Classes .....	6
Results .....	6
Big Haynes Creek Watershed .....	6
Fixed Site (Reference Site)—Little Haynes Creek at Dial Mill Road .....	7
Habitat Scores .....	7
Invertebrate Community .....	7
Fish Community .....	7
Random Site—Big Haynes Creek at Pleasant Hill Road .....	7
Habitat Scores .....	7
Invertebrate Community .....	7
Fish Community .....	7
Yellow River Watershed .....	14
Fixed Site—Tributary to Yellow River at County Road 411 .....	14
Habitat Scores .....	14
Invertebrate Community .....	14
Fish Community .....	15
Random Site—Tributary to Yellow River at Dennard Road .....	15
Habitat Scores .....	15
Invertebrate Community .....	15
Fish Community .....	15
Snapping Shoals Creek Watershed .....	16
Fixed Site—Snapping Shoals Creek at Honey Creek Road .....	16
Habitat Scores .....	16
Invertebrate Community .....	16
Fish Community .....	16
Random Site—Snapping Shoals Creek at Flat Shoals Road .....	17
Habitat Scores .....	17
Invertebrate Community .....	17
Fish Community .....	17
Honey Creek Watershed .....	18
Fixed Site—Honey Creek at Flat Shoals Road .....	18
Habitat Scores .....	18
Invertebrate Community .....	18
Fish Community .....	18
Random Site—Honey Creek at Honey Creek Road .....	19
Habitat Scores .....	19
Invertebrate Community .....	19
Fish Community .....	19

South River Watershed .....	20
Fixed Site—Tributary to South River at Flat Bridge Road .....	20
Habitat Scores .....	20
Invertebrate Community .....	20
Fish Community .....	21
Random Site—Jackson Creek above Rock Creek .....	21
Habitat Scores .....	21
Invertebrate Community .....	21
Fish Community .....	21
Use Classification and Integrity Classes .....	21
References Cited .....	22
Glossary .....	23
Appendix A. Summary of Invertebrate Community Data .....	27
Appendix B. Summary of Fish Community Data .....	37

## Figures

### 1.–6. Maps Showing—

1. Rockdale County, Georgia, with continuous water-quality monitoring stations and biological monitoring sites sampled during May–August 2003 .....	2
2. Big Haynes Creek watershed in Rockdale County, Georgia, with continuous water-quality monitoring stations, biological monitoring sites sampled during 2003, and Georgia Environmental Protection Division 303(d) listed stream segments as of 2002 .....	6
3. Yellow River watershed in Rockdale County, Georgia, with continuous water-quality monitoring stations, biological monitoring sites sampled during 2003, and Georgia Environmental Protection Division 303(d) listed stream segments as of 2002 .....	14
4. Snapping Shoals Creek watershed in Rockdale County, Georgia, with continuous water-quality monitoring stations, biological monitoring sites sampled during 2003, and Georgia Environmental Protection Division 303(d) listed stream segments as of 2002 .....	16
5. Honey Creek watershed in Rockdale County, Georgia, with continuous water-quality monitoring stations, biological monitoring sites sampled during 2003, and Georgia Environmental Protection Division 303(d) listed stream segments as of 2002 .....	18
6. South River watershed in Rockdale County, Georgia, with continuous water-quality monitoring stations, biological monitoring sites sampled during 2003, and Georgia Environmental Protection Division 303(d) listed stream segments as of 2002 .....	20

## Tables

1. Watershed names, station numbers, station names, site types, and locations of biological monitoring sites sampled in Rockdale County, Georgia, May–August 2003 .....	4
2. Station numbers, station names, drainage areas, stream widths, reach lengths, and data collection activities at biological monitoring sites in Rockdale County, Georgia, May–August 2003 ..	5
3. Visual habitat assessment scores at monitoring sites in Rockdale County, Georgia, June–August 2003 .....	8
4. Summary of invertebrate community data from monitoring sites in Rockdale County, Georgia, May–June 2003 .....	9
5. Indices of the invertebrate community and Ecological Condition Scores at monitoring sites in Rockdale County, Georgia, May–June 2003 .....	10
6. Number of fishes collected at monitoring sites in Rockdale County, Georgia, June–August 2003 .....	11
7. Fish indices and index of biotic-integrity scores at monitoring sites in Rockdale County, Georgia, June–August 2003 .....	12

# Biological Monitoring and Assessment of Watersheds in Rockdale County, Georgia, May–August 2003

By M. Brian Gregory

## Abstract

The U.S. Geological Survey, in cooperation with the Rockdale County Department of Water Resources assessed the ecological conditions in selected stream reaches during 2003 as part of the county's ongoing long-term, water-quality monitoring program. These assessments included characterization of the condition of aquatic habitats, aquatic invertebrate communities, and fish communities at five fixed monitoring stations and five randomly selected monitoring stations distributed among the five major watersheds draining Rockdale County, Georgia. Ecological data collected during stream surveys were applied to indices recommended by the State of Georgia for conducting biomonitoring and biological assessments in the Piedmont Ecoregion of Georgia.

Based on the invertebrate and habitat assessments conducted during summer 2003, Ecological Condition Scores were calculated. These scores were based on the total numbers of points accumulated at a site and ranged from 35 at the reference stream reach located on Little Haynes Creek to 15 at Snapping Shoals Creek at Flat Shoals Road. Ecological Condition Scores were based on the percentage of each site's score as compared to the reference site. Ecological Condition Scores are linked by the Georgia Environmental Protection Division to general assessment categories, which have corresponding legal implications defined by the Clean Water Act. Most Rockdale County streams assessed during 2003 were rated as "fair" or "partially supporting" the stream's designated water use. Only one stream, Jackson Creek above Rock Creek, was rated as "good" and therefore "supporting" its designated water use; conversely, only one stream, Snapping Shoals Creek at Flat Shoals Road, was rated as "poor" and therefore "not supporting" its designated water use.

Fish community data were used to rank streams based on index of biotic integrity scores calculated from data collected by the Georgia Department of Natural Resources. Based on these scores, fish communities were assigned to integrity classes. Integrity classes in streams assessed during 2003 ranged from "good" at the reference site to "very poor" or "poor" at eight other sites. One stream in Rockdale County, Honey Creek at Honey Creek Road, was rated as "fair" based on fish community data collected during 2003.

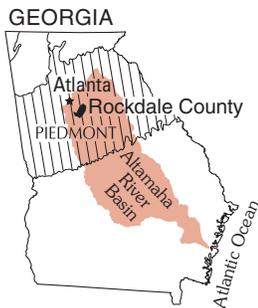
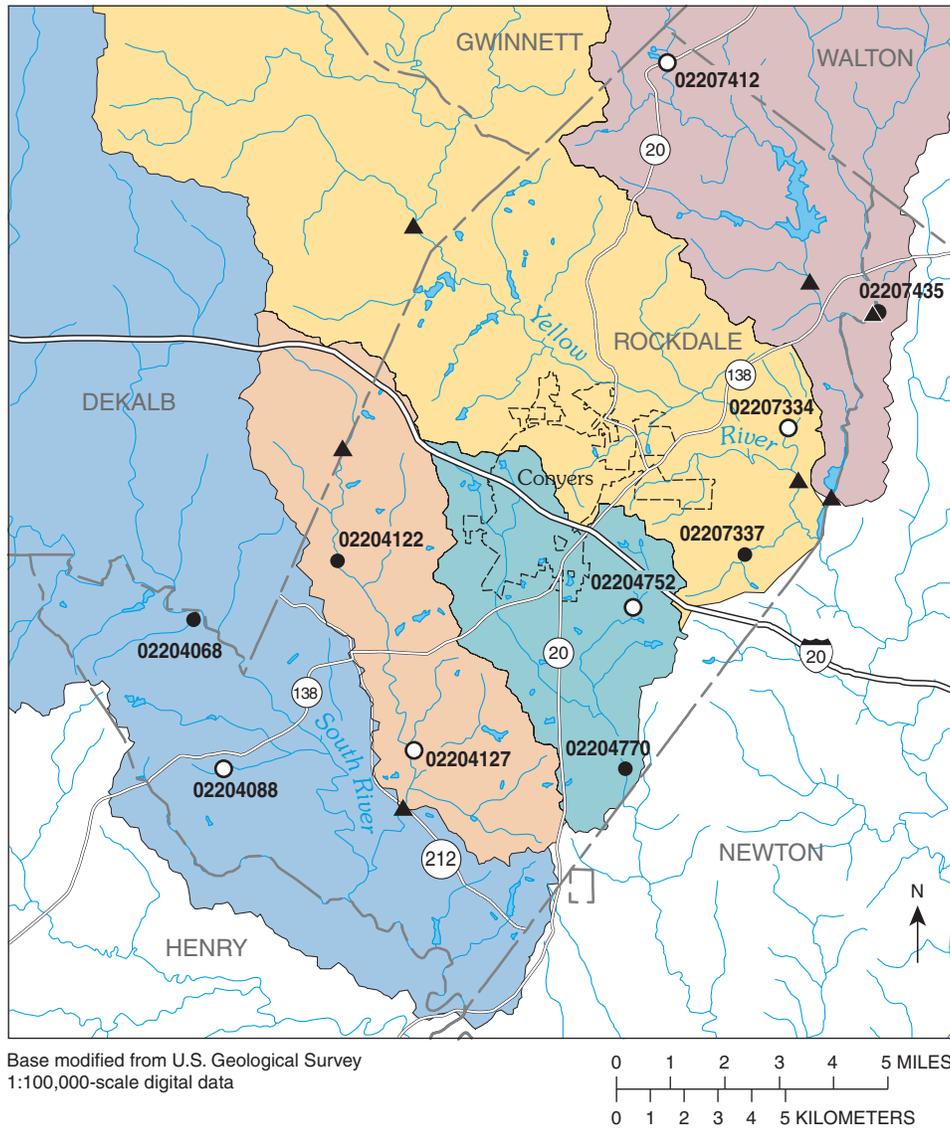
## Introduction

Rockdale County (fig. 1) is about 35 miles southeast of Atlanta, Georgia, and is part of the rapidly-growing 20-county Metropolitan Atlanta area. Like much of the Metropolitan Atlanta area, the population of Rockdale County has increased substantially during the past 35 years, with its population more than quadrupling from about 18,000 in 1970 to 74,100 in 2003 (Atlanta Regional Commission, 2004). During the 1990s, Rockdale County's population increased by about 30 percent and is expected to double by the year 2025 (Metropolitan North Georgia Water Planning District/Jordan Jones and Goulding, 2002).

The rapid population growth and development within Rockdale County have created challenges in terms of water use and water-use planning, such as how to provide adequate drinking-water supplies and wastewater treatment while maintaining acceptable water quality in streams. During 2002, ten river and stream segments and one reservoir in Rockdale County were listed by the Georgia Environmental Protection Division's (GaEPD) 303(d) list of "impaired" water bodies (Georgia Environmental Protection Division, 2002b) (figs. 2–6). To balance Rockdale County's water use and water-use planning objectives, as well as to comply with State environmental regulations, Rockdale County conducted a watershed characterization and impact assessment study (Rockdale County Department of Water Resources/Tetra Tech, 2001). The conclusions of that study outlined several important issues related to water quality in Rockdale County and stated that "the highest priority restoration and protection issues that the County must address are biological and habitat impacts, elevated fecal-coliform bacteria [densities], sediment/turbidity, phosphorus load/eutrophication, and flooding" (Rockdale County Department of Water Resources/Tetra Tech, 2001).

Pursuant to the goals of providing adequate drinking-water-supplies and wastewater treatment, maintaining acceptable water quality in streams, and addressing the aforementioned high-priority water-quality issues, a diverse Stakeholder Committee created a comprehensive watershed management plan (Rockdale County Department of Water Resources/Tetra Tech, 2002). This plan suggested a rigorous, long-term water-quality monitoring program that also contained a biological monitoring component.

2 Biological Monitoring and Assessment of Watersheds in Rockdale County, Georgia, May–August 2003



**EXPLANATION**

- |                  |                       |  |
|------------------|-----------------------|--|
| <b>Watershed</b> |                       | <b>▲ Continuous water-quality-monitoring station</b> |
|                  | Big Haynes Creek      | <b>Biological monitoring site and number</b>         |
|                  | Yellow River          |  |
|                  | Snapping Shoals Creek |  |
|                  | Honey Creek           |  |
|                  | South River           |  |
|                  |                       | ● Fixed  |
|                  |                       | ○ Randomly chosen                                    |

**Figure 1.** Rockdale County, Georgia, with continuous water-quality monitoring stations and biological monitoring sites sampled during May–August 2003.

The U.S. Geological Survey (USGS), in cooperation with the Rockdale County Department of Water Resources (RCDWR), is providing streamflow, water-quality, and biological data for this monitoring program. Collection of data began during fall 2002 in the five major watersheds in Rockdale County and is ongoing as of spring 2005.

## Purpose and Scope

This report presents results of the summer 2003 biological monitoring component of the ongoing water-quality monitoring program conducted by the USGS in cooperation with the RCDWR. These data collection activities were designed to be coordinated with Rockdale County's Watershed Monitoring Plan that will be submitted by the RCDWR to the GaEPD. The biological monitoring component of this project is intended to complement ongoing water-quality sampling efforts by providing the county with ecological data (habitat, invertebrate community, and fish community) in selected stream reaches using protocols and methods recommended by the GaEPD. This document is intended to report specific data values and the results of the application of these values to indices recommended by the GaEPD for conducting biomonitoring studies. Additional interpretations of the biomonitoring data are beyond the scope of this report.

## Description of Study Area

Rockdale County encompasses about 131 square miles ( $\text{mi}^2$ ) in the Upland Georgia Subsection of the Piedmont physiographic province (Clark and Zisa, 1976) (fig. 1). This physiographic province is characterized by gently rolling topography with altitudes ranging from about 700 to 900 feet (ft) (NGVD 29). The ecoregional classification of this area has been described as Southern Outer Piedmont (Griffith and others, 2001). The climate is temperate humid, receiving an average of between 46 and 56 inches annual precipitation, having between 190–230 frost-free days per year, and having mean minimum/maximum temperatures from 31 to 54 degrees Fahrenheit ( $^{\circ}\text{F}$ ) during winter and 67 to 90  $^{\circ}\text{F}$  during summer. Potential natural vegetation of this region has been described as oak-hickory-pine forest (Griffith and others, 2001).

The stream valleys in Rockdale County are relatively deep and narrow, generally lying 100–200 ft below the narrow, rounded stream divides (Wharton, 1978). Large areas of exposed granite rocks are common in this part of Georgia and many segments of Rockdale County's small streams and rivers create spectacular scenery and unique aquatic habitats as they flow across these exposed areas of rock. The drainage system of Rockdale County is comprised of five major watersheds that are dissected by numerous small headwater tributary streams, many of which originate in adjacent counties and flow into Rockdale County (fig. 1). With the exception of the Snapping Shoals Creek watershed, all of Rockdale County's watersheds originate outside of the county's political boundaries. All streams draining Rockdale County are part of the Altamaha River drainage, which flows into the Atlantic Ocean.

During 2003, land use in Rockdale County was predominately low-density residential areas, which comprised about 48 percent of the total land use within the county. High-density residential, commercial, and industrial land uses combined represented about 8 percent of land uses in the county, whereas lands classified as "vacant areas" comprised about 24 percent of the county (Kent Asher, Rockdale County Department of Zoning and Landuse, written commun., 2003). Urban land-use types are concentrated along the Interstate 20 corridor, which runs in an east-west direction through the county and near the ridge dividing the Yellow River watershed from the Snapping Shoals Creek and Honey Creek watersheds. A large percentage of Rockdale County's urban land uses are concentrated near the city of Conyers, which lies mainly in the Snapping Shoals Creek and Yellow River watersheds. Residential land uses and vacant areas are more common in the outlying areas, generally to the north and south of the Interstate 20 corridor.

## Methods of Investigation

Rockdale County's watershed monitoring plan (Rockdale County Department of Water Resources/Tetra Tech, 2002) addresses Rockdale County's biological monitoring needs. This plan recommended sampling nine sites throughout the county's five major watersheds. However, this plan was modified to include one additional fixed reference site for present and future countywide biomonitoring activities.

## Site Selection

One fixed site and one randomly selected site was chosen in each of the five major watersheds. The random site was chosen by assigning numbers to potential sampling sites in each watershed and using a random number generator to select potential sampling sites and alternate sites. Site visits were conducted to determine if sites were suitable for sampling. Alternate sites were selected if, after reconnaissance, it was determined that stream conditions precluded the use of biomonitoring protocols. The fixed sites are to be sampled annually, whereas the randomly selected sites were sampled only during 2003 and will not be sampled again unless the same site is reselected by the random site selection process in later years. Locality information for all monitoring sites sampled during 2003 is reported in table 1 and shown in figures 1–6.

After sampling locations were determined, stream reaches were designated by marking a section of the stream about 35 times the stream's mean width. These reaches were selected to include the full range of habitat types present at the site. Efforts were made to locate these reaches upstream of bridge crossings to minimize localized influence from highways. However, depending on specific conditions within the reach, some sampling locations were located downstream of bridge crossings. Mean stream widths, reach lengths, and dates of collection activities during 2003 are reported in table 2.

#### 4 Biological Monitoring and Assessment of Watersheds in Rockdale County, Georgia, May–August 2003

**Table 1.** Watershed names, station numbers, station names, site types, and locations of biological monitoring sites sampled in Rockdale County, Georgia, May–August 2003.

[USGS, U.S. Geological Survey; °, degree; ', minute; ", second]

Watershed	USGS station number	USGS site name	Site type	Location	
				Latitude	Longitude
Big Haynes Creek	02207435	Little Haynes Creek at Dial Mill Road (reference site)	Fixed	33°42'40"	83°54'51"
	02207412	Big Haynes Creek at Pleasant Hill Road	Random	33°46'40"	83°58'46"
Yellow River	02207337	Tributary to Yellow River at County Road 411	Fixed	33°38'50"	83°57'19"
	02207334	Tributary to Yellow River at Dennard Road	Random	33°40'51"	83°56'24"
Snapping Shoals Creek	02204770	Snapping Shoals Creek at Honey Creek Road	Fixed	33°35'27"	83°59'33"
	02204752	Snapping Shoals Creek at Flat Shoals Road	Random	33°38'00"	83°59'25"
Honey Creek	02204122	Honey Creek at Flat Shoals Road	Fixed	33°38'41"	84°05'08"
	02204127	Honey Creek at Honey Creek Road	Random	33°35'44"	84°03'42"
South River	02204068	Tributary to South River at Flat Bridge Road	Fixed	33°37'46"	84°07'56"
	02204088	Jackson Creek above Rock Creek	Random	33°35'26"	84°07'19"

### Habitat Characterization

Stream habitat visual assessments were conducted during June–August 2003 and consisted of applying the procedures suggested by the GaEPD (2002a). A team of three biologists conducted habitat assessments where they subjectively assessed 10 habitat parameters by scoring them on a scale from 1 to 20, with a score of 20 indicating the best possible habitat conditions and a score of 1 indicating the poorest possible habitat conditions. Habitat parameters assessed included the epifaunal substrate, pool substrate, pool variability, channel alterations, sediment deposition, channel sinuosity, channel flow status, bank vegetation, bank stability, and riparian-zone condition. Habitat parameter scores for each parameter were averaged for each biologist to obtain an average parameter score. Averaged scores for each of the ten parameters at a site were summed to yield a site score. The habitat site scores and the invertebrate community scores were summed to yield the Ecological Condition Score (ECS) for each site. A description of each habitat parameter is given in the glossary.

### Invertebrate Community Characterization

Aquatic macroinvertebrates were sampled during May and June 2003 using protocols recommended by the GaEPD (2002a). These protocols include semiquantitative sampling using D-frame aquatic nets to sample multiple habitats within a stream reach. Habitat types sampled included riffles in slow- and fast-moving water, woody debris/snags, sand, undercut bank/root mats, and leaf packs. Sampling consisted of taking about 20 “jabs” or “kicks” at a site. A jab consists of a quick upward/forward thrusting motion and is primarily used in macrophyte beds, woody debris, snags, and root mats, whereas a kick consists of kicking or disturbing the substrate upstream of a stationary net

and is used in cobble, gravel, and sand substrates in areas of faster flows. Both a jab and a kick sample a linear distance of about 3 ft. Three additional jabs were taken in macrophyte beds if present in the stream. If a particular habitat type was not present at a stream (excluding macrophytes) then the sampling effort that would have been expended in the absent habitat type was distributed among the other habitat types present in the stream. In addition, a 15-minute visual search was conducted within habitat types that were underrepresented in the multihabitat sample such as large boulders or logs. Both the multihabitat “jab” sample and the visual-search sample from each site were preserved separately and treated as separate samples. Samples were preserved in 10 percent formalin and identified by a regional expert (Pennington and Associates, Cookeville, Tennessee) using standard taxonomic keys. Invertebrates were identified to lowest practical taxonomic level, usually to the genus or species level.

Due to the low numbers of individual invertebrates collected in the visual samples, the visual sample counts were added to the semiquantitative counts to yield information about the status of aquatic invertebrate communities at each site. Tolerance values developed for the southeastern U.S. and information pertaining to the invertebrate’s functional feeding status (North Carolina Department of Environment and Natural Resources, 2003), if known, were used in the application of these data to six invertebrate indices recommended for use by the GaEPD in the Piedmont Ecoregion of Georgia (see table 5 footnotes and glossary for explanation of indices). At each site, invertebrate index scores were summed and added to the total habitat score, which yielded the total points for a site on which the ECS was calculated (see worksheet on page 79 of 2003 draft Standard Operating Procedure; Georgia Environmental Protection Division, 2002a). Appendix A contains a complete list of invertebrate taxa and numbers of organisms found in both the multihabitat and visual samples.

**Table 2.** Station numbers, station names, drainage areas, stream widths, reach lengths, and data collection activities at biological monitoring sites in Rockdale County, Georgia, May–August 2003.

[USGS, U.S. Geological Survey]

USGS station number	USGS site name	Drainage area (square miles)	Mean channel width (feet)	Reach length assessed (feet) <sup>1</sup>	Ecological assessment activities <sup>2</sup> (date sampled)
02207435	Little Haynes Creek at Dial Mill Road (reference site)	25.1	49	1,640	Fish community (8/14/2003) Invertebrate community (6/6/2003) Habitat (8/14/2003)
02207412	Big Haynes Creek at Pleasant Hill Road	33.2	49	1,640	Fish community (8/13/2003) Invertebrate community (6/6/2003) Habitat (8/13/2003)
02207337	Tributary to Yellow River at County Road 411	1.4	11	396	Fish community (6/12/2003) Invertebrate community (6/6/2003) Habitat (6/12/2003)
02207334	Tributary to Yellow River at Dennard Road	1.6	9	324	Fish community (6/11/2003) Invertebrate community (6/5/2003) Habitat (6/11/2003)
02204770	Snapping Shoals Creek at Honey Creek Road	15.1	25	895	Fish community (6/23/2003) Invertebrate community (6/5/2003) Habitat (6/23/2003)
02204752	Snapping Shoals Creek at Flat Shoals Road	2.4	12	436	Fish community (6/12/2003) Invertebrate community (6/2/2003) Habitat (6/12/2003)
02204122	Honey Creek at Flat Shoals Road	9.6	18	639	Fish community (6/22/2003) Invertebrate community (6/2/2003) Habitat (6/22/2003)
02204127	Honey Creek at Honey Creek Road	18.5	25	895	Fish community (7/23/2003) Invertebrate community (6/02/2003) Habitat (7/23/2003)
02204068	Tributary to South River at Flat Bridge Road	1.2	7	298	Fish community (6/12/2003) Invertebrate community (6/2/2003) Habitat (6/12/2003)
02204088	Jackson Creek above Rock Creek	0.6	8	262	Fish community (6/12/2003) Invertebrate community (5/30/2003) Habitat (6/12/2003)

<sup>1</sup>Reach lengths were designated as approximately 35 times mean channel widths<sup>2</sup>Data collection protocols used were taken from draft versions of the Standard Operating Procedures Freshwater Macroinvertebrate Biological Assessment (Georgia Environmental Protection Division, 2002a) and Standard Operating Procedures for Conducting Biomonitoring on Fish Communities in the Piedmont Ecoregion of Georgia (Georgia Department of Natural Resources, 2000).

## Fish Community Characterization

Fishes were sampled during June and August 2003 using protocols recommended by the Georgia Department of Natural Resources (GaDNR) (2000). Collections were made in the designated reaches using a single-pass electrofishing method with backpack electrofishing gear (Smith-Root®, model 12-B), dip-nets, and seines (1/8-inch mesh size). Teams of 4–8 persons equipped with 1–2 backpack units were used depending on the habitat conditions, stream width, and reach length sampled. Fishes were collected from all habitats present in the reach.

Specimens were identified, measured, weighed, and external anomalies noted in the field by a regional taxonomic specialist. Most fishes were released; however, selected specimens and fishes that expired due to handling stresses were retained as vouchers and for museum collections. All retained specimens have been accessioned at the Georgia Museum of Natural History in Athens, Georgia.

Fish species counts from each site were applied to indices suggested by GaDNR (2000). The calculated indices were compared to regional values determined for streams in the Piedmont Ecoregion. Individual indices were scored and summed to yield

## 6 Biological Monitoring and Assessment of Watersheds in Rockdale County, Georgia, May–August 2003

a fish index of biotic integrity (IBI) for each site. Ecoregion IBI scores are based on data collected at regional reference sites by the GaDNR and do not include data collected from Rockdale County's reference site to rate the condition of a stream's fish community. Adjustments were made for streams of differing sizes according to the GaDNR (2000) protocol. A complete list of species collected at each site with corresponding length and weight data are reported in appendix B.

### Stream Use Classification and Integrity Classes

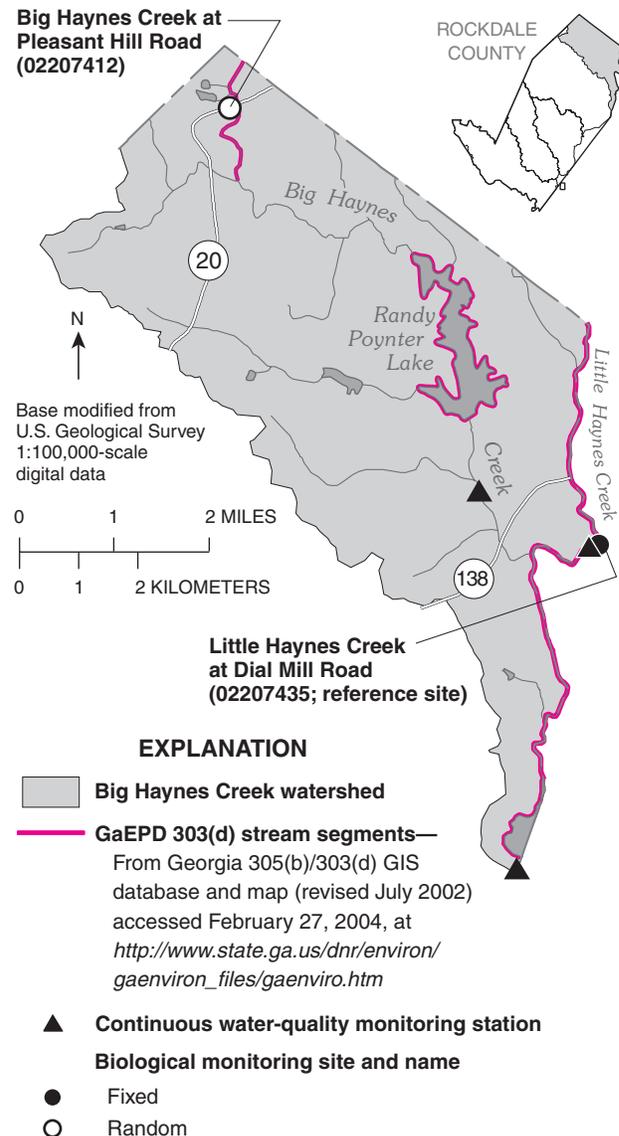
Ecological Condition Scores calculated from the sum of habitat and invertebrate scores were matched to Ecological Condition Categories based on descriptions extracted and modified from several U.S. Environmental Protection Agency Rapid Bioassessment Procedures (Plafkin and others, 1989; Ohio Environmental Protection Agency, 1987) and published in Georgia's Standard Operating Procedures for Freshwater Macroinvertebrate Biological Assessment (Georgia Environmental Protection Division, 2002a). These Ecological Condition Categories range from very good to very poor with corresponding water-use classifications that range from supporting, partially supporting, or not supporting, based on the percent of comparability between the assessed site and the reference site. Fish IBI scores calculated from fish indices were applied to one of five integrity classes recommended by the GaDNR (2000) and modified from Karr (1981) and Schleiger (2000). Integrity classes are categorical assessments based on a site's IBI score and describe the stream as excellent, good, fair, poor, and very poor. Fish IBI scores do not have corresponding water-use classifications.

## Results

### Big Haynes Creek Watershed

Big Haynes Creek watershed drains about 25 mi<sup>2</sup> (19 percent) of Rockdale County (fig. 1). The Big Haynes Creek watershed also drains portions of Gwinnett, Walton, and Newton Counties and has a 33-square-mile drainage at the Rockdale-Newton County line where it flows out of Rockdale County. Conditions associated with low-density residential and agricultural lands in the watershed have been identified as potential stressors to Big Haynes Creek and its tributaries (Rockdale County Department of Water Resources/Tetra Tech, 2002). Segments of Big Haynes Creek, Little Haynes Creek, and Randy Poynter Lake (formerly Black Shoals Reservoir) were listed as impaired by the GaEPD (fig. 2) due to excessive fecal coliform densities, which are believed to be due to urban sources (Georgia Environmental Protection Division, 2002b).

Even though sections of Little Haynes Creek have been listed on Georgia's 303(d) list of impaired streams, the biological reference site was located just upstream from the Dial Mill Road crossing. This location was based on several factors including low levels of urban development in the watershed, high-quality aquatic habitats present in the stream segment, and Rockdale County's plan to limit future urban development in this watershed (Kent Asher, Rockdale County Department of Zoning and Landuse, written commun., 2003).



**Figure 2.** Big Haynes Creek watershed in Rockdale County, Georgia, with continuous water-quality monitoring stations, biological monitoring sites sampled during 2003, and Georgia Environmental Protection Division (GaEPD) 303(d) listed stream segments as of 2002.

## Fixed Site (Reference Site)—Little Haynes Creek at Dial Mill Road

### Habitat Scores

Little Haynes Creek drains an area of 25.1 mi<sup>2</sup> and has a mean channel width of 49 ft (table 2). The 1,640-foot stream reach was comprised of riffles, runs, and pools with substrates that consisted of bedrock, cobble, and gravel. Little evidence of channel alteration was evident, and the degree of embeddedness and sediment deposition were generally low relative to other streams accessed in Rockdale County during 2003. Stream banks in this reach were stable and well-vegetated. The riparian areas on both banks were intact and wooded. Bank stability, especially along the right bank, received the lowest score of all habitat parameters, whereas stream velocity/depth combinations received the highest scores. Habitat parameter scores at Little Haynes Creek were the highest of all streams sampled during 2003 and ranged from 10.5 to 20 points out of 20 possible points. Total habitat score is 166 (table 3).

### Invertebrate Community

Two hundred and fourteen individual invertebrates representing 34 distinct taxa were collected from this stream reach (appendix A). Dipteran taxa, specifically blackfly larvae (*Simulium* sp.) (table 4), dominated the aquatic invertebrate community. Other common invertebrates included 11 taxa of midge larvae (*Chironomidae* sp.), 4 taxa of mayfly larvae (order: Ephemeroptera) and 4 taxa of caddisfly larvae (order: Trichoptera) (appendix A). Shredders, or invertebrates that feed on or colonize coarse particulate organic matter, composed about 14 percent of the sample (table 5). Ecological Condition Scores for other sites assessed during this study are based on this score.

### Fish Community

The sample collected at Little Haynes Creek included 514 individual fishes represented by 23 species (table 6). The fish community included six nonnative individuals as well as four species considered sensitive to perturbations in habitat and water quality (tables 6 and 7). Minnows (Cyprinids) were the most common family of fishes collected (41.3 percent). Sunfishes of the genus *Lepomis* were the most common genera of fishes and composed about 32 percent of the sample. The most commonly collected species were bluegill sunfish (*Lepomis macrochirus*), Altamaha shiner (*Cyprinella xaenura*), and blackbanded darter (*Percina nigrofasciata*). From a functional feeding perspective, insectivores dominated the fish community at Little Haynes Creek, whereas top carnivores composed only 5 percent of the community. Insectivorous cyprinids composed about 35 percent of the total fish community at Little Haynes Creek (table 7). External anomalies were not noted on any fish collected at this site during 2003. Fish IBI score is 44 (table 7) and in the range of “good” streams but just slightly lower than

the range of scores for potential regional reference sites (48–52 or excellent) in the Piedmont Ecoregion of Georgia (Patty Langford, Georgia Department of Natural Resources, written commun., 2004).

## Random Site—Big Haynes Creek at Pleasant Hill Road

### Habitat Scores

Big Haynes Creek at Pleasant Hill Road drains 33.2 mi<sup>2</sup> and has a mean channel width of 49 ft (table 2). A 1,640-foot reach was assessed and consisted of pools and abundant riffles and runs, flowing over predominately bedrock substrate. Cobble and gravel substrates also were common throughout the sampled reach. Little evidence of channel alteration was present and embeddedness and sediment deposition generally were low. Stream banks were stable and vegetated and the riparian areas on both banks were intact. Channel-flow status (see footnote table 3) was scored the lowest of all parameters, whereas stream velocity/depth combinations were scored the highest. Habitat scores ranged from 8.3 to 20 points out of 20 possible points. Total habitat score is 165.6 (table 3).

### Invertebrate Community

Six hundred and fifteen individual invertebrates representing 33 distinct taxa of organisms were collected from this stream reach. Dipteran taxa, specifically blackfly larvae (*Simulium* sp.) (table 4), dominated the aquatic invertebrate samples. Other common invertebrates included eight taxa of midge larvae (*Chironomidae* sp.), five taxa of mayfly larvae (order: Ephemeroptera), and six taxa of caddisfly larvae (order: Trichoptera) (appendix A). Only 5 percent of the invertebrate sample collected was composed of individual belonging to the shredding feeding guild (table 5).

### Fish Community

The sample collected at the reach at Big Haynes Creek at Pleasant Hill Road contained 191 individual fishes. These individuals were represented by 11 species including 1 nonnative species and 2 species that are considered sensitive to perturbations in habitat and water quality (tables 6 and 7). Cyprinids were the most common family of fishes collected and composed 60.2 percent of the sample. The most commonly collected species were Altamaha shiner (*Cyprinella xaenura*), snail bullhead (*Ameiurus brunneus*), and bluehead chub (*Nocomis leptoccephalus*). From a functional feeding perspective, the fish community at Big Haynes Creek was dominated by insectivores, comprising 48 percent of the community and omnivores, comprising 32 percent of the total fish community. Top carnivores composed about 1 percent of the fishes collected. Fish IBI score is 22 (table 7).

**Table 3.** Visual habitat assessment scores at monitoring sites in Rockdale County, Georgia, June–August 2003.

Watershed	Big Haynes Creek		Yellow River		Snapping Shoals Creek		Honey Creek		South River	
U.S. Geological Survey site name	Little Haynes Creek at Dial Mill Road (reference site)	Big Haynes Creek at Pleasant Hill Road	Tributary to Yellow River at County Road 411	Tributary to Yellow River at Dennard Road	Snapping Shoals at Honey Creek Road	Snapping Shoals Creek at Flat Shoals Road	Honey Creek at Flat Shoals Road	Honey Creek at Honey Creek Road	Tributary to South River at Flat Bridge Road	Jackson Creek above Rock Creek
U.S. Geological Survey station number	02207435	02207412	02207337	02207334	02204770	02204752	02204122	02204127	02204068	02204088
<b>Visual habitat parameters<sup>1</sup></b>	Average scores									
Epifaunal substrate/instream cover <sup>2</sup>	18	18	12.3	7.3	7	18	11	13	2	13.5
Embeddedness <sup>3</sup>	16	17.7	9.3	16	1.5	8	4	2	1	15
Velocity/depth combinations <sup>4</sup>	20	20	13.7	14.3	18	15	15	15	6	10
Channel alteration <sup>5</sup>	16	15.7	15	13.7	12.5	13	10.5	11	14.3	16
Sediment deposition <sup>6</sup>	17	18	9.7	14	6.5	7	4.5	4.5	3	14.5
Frequency of riffles <sup>7</sup>	17	19	18	7.7	5	4	6.5	0	1.3	17.5
Channel flow status <sup>8</sup>	10.5	8.3	7.7	8.3	11	10	10.5	10	15.3	7.5
Bank vegetative protection <sup>9</sup>	<b>18.5</b>	<b>15.6</b>	<b>16.6</b>	<b>19.4</b>	<b>8</b>	<b>2</b>	<b>4</b>	<b>7</b>	<b>3.4</b>	<b>11</b>
Left bank	9	7.3	8.3	9.7	4	1	2	4.5	1.7	5.5
Right bank	9.5	8.3	8.3	9.7	4	1	2	2.5	1.7	5.5
Bank stability <sup>10</sup>	<b>15</b>	<b>17.3</b>	<b>15.4</b>	<b>16.6</b>	<b>8</b>	<b>0</b>	<b>9</b>	<b>7</b>	<b>14</b>	<b>13.5</b>
Left bank	9	8.3	7.7	8.3	4	0	5	4.5	7	6.5
Right bank	6	9	7.7	8.3	4	0	4	2.5	7	7
Riparian vegetative zone <sup>11</sup>	18	16	20	13.3	15	6	15	4	18	14.5
Left bank	9	7	10	6.3	9	5	9	3.5	9	10
Right bank	9	9	10	7	6	1	6	0.5	9	4.5
<b>TOTAL SCORE</b>	<b>166</b>	<b>165.6</b>	<b>137.7</b>	<b>130.6</b>	<b>92.5</b>	<b>83</b>	<b>90</b>	<b>73.5</b>	<b>78.3</b>	<b>133</b>

<sup>1</sup>Habitat parameter scores range from 0 to 20 with a score of 20 generally indicating the best, or most ideal, or natural conditions whereas 0 would generally indicate the most disturbed conditions. Bank parameter scores range from 0 to 10 for each bank for a total of 20 possible points.

<sup>2</sup>Availability of substrates and/or structures used as refugia for aquatic organisms. These can be fallen trees/large woody debris, deep pools, shallow pools, overhanging vegetation, undercut banks, root mats, macrophytes, or deep riffles.

<sup>3</sup>Degree to which cobble, boulders, and other large substrate are surrounded by sediment.

<sup>4</sup>The combination of velocity and depth in the stream. Four combinations are possible (1) slow-deep, (2) slow-shallow, (3) fast-deep, and (4) fast-shallow.

<sup>5</sup>Large-scale alteration of stream that affects sinuosity or that may cause scouring.

<sup>6</sup>Amount of sediment that has accumulated on the stream bottom as a result of deposition.

<sup>7</sup>Estimate of frequency of riffles in sampling reach. Distance between riffles divided by average width of stream.

<sup>8</sup>Percentage of the stream channel inundated at baseflow.

<sup>9</sup>Percentage of stream bank that is covered by vegetation; bold is total of left and right banks.

<sup>10</sup>The potential for detachment of soil from upper and lower stream banks; bold is total of left and right banks.

<sup>11</sup>The width of natural vegetation from the edge of the upper streambank away from the stream channel.

**Table 4.** Summary of invertebrate community data from monitoring sites in Rockdale County, Georgia, May–June 2003.

<b>Watershed</b>	<b>Big Haynes Creek</b>				<b>Yellow River</b>				<b>Snapping Shoals Creek</b>				<b>Honey Creek</b>				<b>South River</b>			
<b>U.S. Geological Survey site name</b>	<b>Little Haynes Creek at Dial Mill Road (reference site)</b>		<b>Big Haynes Creek at Pleasant Hill Road</b>		<b>Tributary to Yellow River at County Road 411</b>		<b>Tributary to Yellow River at Dennard Road</b>		<b>Snapping Shoals at Honey Creek Road</b>		<b>Snapping Shoals Creek at Flat Shoals Road</b>		<b>Honey Creek at Flat Shoals Road</b>		<b>Honey Creek at Honey Creek Road</b>		<b>Tributary to South River at Flat Bridge Road</b>		<b>Jackson Creek above Rock Creek</b>	
<b>U.S. Geological Survey station number</b>	<b>2207435</b>		<b>2207412</b>		<b>2207337</b>		<b>2207334</b>		<b>2204770</b>		<b>2204752</b>		<b>2204122</b>		<b>2204127</b>		<b>2204068</b>		<b>2204088</b>	
	Count	Percent	Count	Percent	Count	Percent	Count	Percent	Count	Percent	Count	Percent	Count	Percent	Count	Percent	Count	Percent	Count	Percent
<b>Taxa</b>																				
<b>Phylum</b>																				
<b>Nematoda (roundworms)</b>	0	0	0	0	0	0	1	.3	0	0	0	0	0	0	0	0	0	0	0	0
<b>Mollusca</b>																				
Pelecypoda (clams, mussels)	0	0	5	.8	0	0	3	.9	0	0	0	0	3	1.4	50	9.1	6	1.5	1	.1
Gastropoda (snails)	0	0	0	0	0	0	0	0	0	0	3	.8	0	0	0	0	0	0	2	.2
<b>Annelida</b>																				
Oligochaeta (aquatic earthworms)	0	0	0	0	1	.2	0	0	0	0	4	1.0	0	0	2	.4	0	0	0	0
Branchiobdellida (crayfish parasites)	0	0	0	0	0	0	5	1.5	0	0	0	0	0	0	0	0	0	0	0	0
<b>Arthropoda</b>																				
Ostracoda (seed shrimp)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Amphipoda (scuds)	1	.5	0	0	0	0	2	.6	3	.2	0	0	2	.9	0	0	0	0	0	0
Decapoda (crayfishes)	1	.5	1	.2	0	0	1	.3	4	.3	1	.3	2	.9	0	0	0	0	0	0
<b>Insecta</b>																				
Collembola	1	.5	0	0	3	.6	0	0	0	0	0	0	0	0	0	0	1	.3	8	.8
Ephemeroptera (mayflies)	33	15.4	60	9.8	7	1.4	2	.6	22	1.6	1	.3	21	10	53	9.7	90	23.2	218	21.2
Odonata (dragonflies, damselflies)	5	2.3	3	.5	2	.4	0	0	12	.9	14	3.5	12	5.7	1	.2	7	1.8	12	1.2
Plecoptera (stoneflies)	15	7.0	2	.3	10	2.1	0	0	0	0	0	0	13	6.2	57	10.4	23	5.9	27	2.6
Hemiptera (true bugs)	0	0	0	0	7	1.4	0	0	0	0	2	.5	0	0	3	.5	4	1.0	5	.5
Megaloptera (dobsonflies)	0	0	0	0	7	1.4	1	.3	5	.4	0	0	2	.9	2	.4	5	1.3	12	1.2
Trichoptera (caddisflies)	48	22.4	101	16.4	69	14.2	78	22.8	503	35.8	45	11.4	42	19.9	46	8.4	67	17.3	252	24.5
Coleoptera (beetles)	9	4.2	10	1.6	20	4.1	0	0	19	1.4	4	1.0	1	.5	9	1.6	13	3.4	58	5.6
Diptera (true flies)	101	47.2	433	70.4	361	74.1	249	72.8	837	59.6	321	81.3	113	53.6	324	59.2	172	44.3	433	42.1
<b>Chordata</b>																				
Caudata <sup>1</sup>	0	0	0	0	0	0	0	0	0	0	2	.5	2	.9	0	0	2	.5	2	.2
<b>TOTAL</b>	<b>214</b>	<b>100</b>	<b>615</b>	<b>100</b>	<b>487</b>	<b>100</b>	<b>342</b>	<b>100</b>	<b>1,405</b>	<b>100</b>	<b>395</b>	<b>100</b>	<b>211</b>	<b>100</b>	<b>547</b>	<b>100</b>	<b>388</b>	<b>100</b>	<b>1,028</b>	<b>100</b>

<sup>1</sup>Not included in percent calculation.

**Table 5.** Indices of the invertebrate community and Ecological Condition Scores at monitoring sites in Rockdale County, Georgia, May–June 2003.

[USGS, U.S. Geological Survey; +, plus; No., number; %, percent; ref., reference; NA, not applicable].

Watershed	USGS site name	USGS station number	Taxa richness <sup>1</sup>			Ephemeroptera, Plecoptera and Trichoptera index <sup>2</sup>			Indicator Assemblage Index <sup>3</sup>		Percent contribution of dominant taxon <sup>4</sup>			North Carolina Biotic Index <sup>5</sup>			Contribution of shredding taxa <sup>6</sup>			Habitat <sup>7</sup> (from table 3)			Total points (habitat + invertebrates)	Ecological condition <sup>8</sup>
			No. of unique taxa	% of ref.	Score	Index	% of ref.	Score	Index	Score	Percent	% of ref.	Score	Index	% of ref.	Score	Percent	% of ref.	Score	Index	% of ref.	Score	Score	% of ref.
Big Haynes Creek	Little Haynes Creek at Dial Mill Road (reference site)	02207435	34	NA	5	11	NA	5	NA	5	26	NA	5	5.44	NA	5	14	NA	5	166.0	NA	5	35	NA
	Big Haynes Creek at Pleasant Hill Road	02207412	33	0.97	5	12	109	5	62	1	61	233	0	5.75	106	5	5	37	3	165.6	100	5	24	69
Yellow River	Tributary to Yellow River at County Road 411	02207337	39	1.15	5	12	109	5	51	1	54	207	0	5.01	92	5	64	459	5	137.7	80	3	24	69
	Tributary to Yellow River at Dennard Road	02207334	30	0.88	5	4	36	0	58	1	24	90	0	7.38	136	5	11	81	3	130.6	80	3	17	49
Snapping Shoals Creek	Snapping Shoals at Honey Creek Road	02204770	34	1.00	5	11	100	5	81	5	30	117	0	5.98	110	5	20	144	5	92.5	60	0	25	71
	Snapping Shoals Creek at Flat Shoals Road	02204752	33	0.97	5	5	45	0	42	0	28	109	0	6.95	128	5	40	288	5	83.0	50	0	15	43
Honey Creek	Honey Creek at Flat Shoals Road	02204122	29	0.85	5	6	55	1	84	5	14	55	0	6.22	114	5	32	228	5	90.0	50	0	21	60
	Honey Creek at Honey Creek Road	02204127	31	0.91	5	8	73	3	71	3	47	181	0	6.97	128	5	52	375	5	73.5	40	0	21	60
South River	Tributary to South River at Flat Bridge Road	02204068	46	1.35	5	9	82	3	<sup>9</sup> 105	5	19	73	0	5.44	100	5	29	209	5	78.3	50	0	23	66
	Jackson Creek above Rock Creek	02204088	55	1.62	5	20	182	5	<sup>9</sup> 109	5	17	64	0	4.74	87	5	21	151	5	133.0	80	3	28	80

<sup>1</sup>Taxa richness is the number of distinct organisms present in the sample. Taxa is defined as a unique organism identified to the smallest possible taxonomic group (i.e., species, genera, family, etc.). Taxa richness generally decreases with decreasing water-quality and habitat conditions.

<sup>2</sup>Ephemeroptera, Plecoptera and Trichoptera (EPT) Index is a the number or organisms in the orders Ephemeroptera, Plecoptera and Trichoptera. EPT taxa are generally more sensitive to environmental perturbations and numbers will decrease with decreasing water-quality and habitat conditions.

<sup>3</sup>Indicator Assemblage Index (IAI) is a metric that measures change in the relative abundance of selected tolerant and intolerant organisms. Values range from 0 to greater than 1.0 and an IAI score of around 1.0 indicates little change from reference conditions. (IAI= $0.50(\%EPTb/\%EPTa+\%CAa/\%CAb)$  where % EPT is proportion of community composed of Ephemeroptera, Plecoptera and Trichoptera and CA is proportion of community composed of chironomids and annelids, and b and a are potential impacted and reference sites, respectively).

<sup>4</sup>Percent contribution of dominant taxa is the ratio of the number of organisms in the numerically dominant taxa to the total number of invertebrates in the sample. A community dominated by relatively few taxa is generally indicative of environmental stress.

<sup>5</sup>North Carolina Biotic Index (NCBI) is a modification of the Hilsenhoff Biotic Index developed to detect impairment in stream communities. Tolerance values for each species ranges from 0–10 and increases as water quality decreases. (NCBI= $\sum(Xi)/n$  where Xi is the number of individuals in each taxon, t is tolerance value for each taxon in the sample, n is number of individuals in the sample.

<sup>6</sup>Percent shredders is the relative number of individuals that feed on or colonize coarse particular organic matter.

<sup>7</sup>Habitat scores are categorical values assigned to metrics based on the metrics similarity between an investigated site and a least-impaired reference site.

<sup>8</sup>Ecological Condition Score is a metric derived by comparing the sum of all invertebrate indices and the habitat score for a site of interest to the sum of those same metrics at a reference site. The ecological condition of a site is considered “very good” if it is at least 83 percent similar to the reference site, “good” if it is from 82 to 74 percent similar, “fair” if it is from 73 to 49 percent similar, “poor” if it is from 48 to 25 percent similar and “very poor” if it is less than 25 percent similar.

<sup>9</sup>Alternative scoring used since IAI >1. Chironomid and annelids ratio between sites and reference site were 0.89 at site 2204088 and 0.93 at site 2204068 so each site was scored 5, according to Georgia Environmental Protection Division (2002a).

**Table 6.** Number of fishes collected at monitoring sites in Rockdale County, Georgia, June–August 2003.

[USGS, U.S. Geological Survey; o, omnivore; p, piscavore; i, insectivore; g, generalist; \*, nonnative species]

Watershed	Big Haynes Creek				Yellow River				Snapping Shoals Creek				Honey Creek				South River			
	USGS site name		USGS station number		USGS site name		USGS station number		USGS site name		USGS station number		USGS site name		USGS station number		USGS site name		USGS station number	
	Count	Percent	Count	Percent	Count	Percent	Count	Percent	Count	Percent	Count	Percent	Count	Percent	Count	Percent	Count	Percent	Count	Percent
<b>FAMILY NAME</b> ( <i>scientific name</i> /common name)																				
<b>Clupeidae</b>																				
<i>Dorosoma cepedianum</i> /gizzard shad (o)																				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.9	0	0	0	0
<b>Esocidae</b>																				
<i>Esox niger</i> /redfin pickerel (p)																				
	3	.6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Cyprinidae</b>																				
<i>Cyprinella callisema</i> /Ocmulgee shiner (i)																				
	1	.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<i>Cyprinella xaenura</i> /Altamaha shiner (i)																				
	85	16.5	87	45.6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<i>Hybopsis rubrifrons</i> /rosyface chub (i)																				
	1	.2	0	0	0	0	0	0	0	0	0	0	0	5	4.5	0	0	0	0	0
<i>Nocomis leptocephalus</i> /bluehead chub (o)																				
	31	6	24	12.6	16	21.6	0	0	7	12.3	6	5.8	26	20.8	13	11.6	36	55.4	19	20.4
<i>Notemigonus crysoleucas</i> /golden shiner (o)*																				
	1	.2	0	0	2	2.7	0	0	0	0	1	.9	0	0	0	0	0	0	0	0
<i>Notropis hudsonius</i> /spottail shiner (i)																				
	41	7.9	4	2.1	11	14.9	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<i>Notropis longirostris</i> /longnose shiner (i)																				
	1	.2	0	0	0	0	0	0	0	0	0	0	4	3.2	2	1.8	0	0	0	0
<i>Notropis lutipinnis</i> /yellowfin shiner (i)																				
	51	9.9	0	0	0	0	1	.7	3	5.3	6	5.8	25	20	6	5.4	6	9.2	34	36.6
<i>Semotilus atromatulatus</i> /creek chub (g)																				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	34	36.6
<b>Catostomidae</b>																				
<i>Scartomyzon rupiscartes</i> /striped jumprock (i)																				
	12	2.3	1	.5	3	4.1	1	.7	1	1.8	0	0	1	.8	0	0	0	0	2	2.2
<i>Moxostoma sp. cf. anisurum</i> /silver redhorse (i)																				
	0	0	0	0	0	0	13	8.6	1	1.8	0	0	0	0	0	0	0	0	0	0
<b>Ictaluridae</b>																				
<i>Ameiurus brunneus</i> /snail bullhead (o)																				
	35	6.8	30	15.7	1	1.4	0	0	0	0	1	.9	0	0	0	0	0	0	0	0
<i>Ameiurus natalis</i> /yellow bullhead (g)																				
	0	0	0	0	0	0	3	2	0	0	7	6.7	0	0	1	.9	0	0	0	0
<i>Ameiurus nebulosus</i> /brown bullhead (o)																				
	0	0	0	0	0	0	1	.7	2	8.5	0	0	0	0	1	.9	0	0	0	0
<i>Ictalurus punctatus</i> /channel catfish (g)																				
	0	0	1	.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<i>Noturus insignis</i> /speckled madtom (i)																				
	9	1.8	0	0	0	0	0	0	0	0	0	0	0	0	2	1.8	0	0	0	0
<b>Poeciliidae</b>																				
<i>Gambusia holbrooki</i> /mosquitofish (o)																				
	0	0	7	3.7	0	0	4	2.6	0	0	0	0	1	.8	0	0	0	0	0	0
<b>Centrarchidae</b>																				
<i>Lepomis auritus</i> /redbreast sunfish (i)																				
	29	5.6	13	6.8	0	0	91	59.9	6	10.5	4	3.9	13	10.4	15	13.4	10	15.4	2	2.2
<i>Lepomis cyanellus</i> /green sunfish (i)*																				
	4	.8	0	0	0	0	1	.7	0	0	6	5.8	0	0	2	1.8	0	0	0	0
<i>Lepomis gulosus</i> /warmouth (p)																				
	7	1.4	0	0	0	0	1	.7	0	0	0	0	1	.8	0	0	3	4.6	0	0
<i>Lepomis macrochirus</i> /bluegill sunfish (i)																				
	122	23.7	17	8.9	38	51.4	35	23	35	61.4	70	67.3	42	33.6	47	42	9	13.9	0	0
<i>Lepomis microlophus</i> /reardear sunfish (i)																				
	1	.2	0	0	0	0	0	0	1	1.8	0	0	0	0	3	2.7	1	1.5	0	0
<i>Micropterus punctulatus</i> /spotted bass (p)*																				
	1	.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<i>Micropterus salmoides</i> /largemouth bass (p)																				
	11	2.1	1	.5	2	2.7	1	.7	0	0	3	2.9	4	3.2	7	6.3	0	0	2	2.2
<i>Pomoxis nigromaculatus</i> /black crappie (p)																				
	1	.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Percidae</b>																				
<i>Etheostoma inscriptum</i> /turquoise darter (i)																				
	4	.8	6	3.1	0	0	0	0	0	0	0	0	8	6.4	1	.9	0	0	0	0
<i>Percina nigrofasciata</i> /blackbanded darter (i)																				
	62	12.1	0	0	1	1.4	0	0	1	1.8	0	0	0	0	6	5.4	0	0	0	0
<i>Perca flavescens</i> /yellow perch (p)*																				
	1	.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>INDIVIDUAL TOTAL</b>																				
	<b>514</b>		<b>191</b>		<b>74</b>		<b>152</b>		<b>57</b>		<b>104</b>		<b>125</b>		<b>112</b>		<b>65</b>		<b>93</b>	
<b>SPECIES TOTAL</b>																				
	<b>23</b>		<b>11</b>		<b>8</b>		<b>11</b>		<b>9</b>		<b>9</b>		<b>10</b>		<b>15</b>		<b>6</b>		<b>6</b>	

**Table 7.** Fish indices and index of biotic-integrity scores at monitoring sites in Rockdale County, Georgia, June–August 2003.

[USGS, U.S. Geological Survey; NA, not available; mi<sup>2</sup>, square mile; IBI, index of biotic integrity; \*, metrics are those suggested by the State of Georgia for conducting biomonitoring studies in the Piedmont Ecoregion of Georgia (GaDNR, 2000)]

Watershed	USGS site name	USGS station number	Drainage area (mi <sup>2</sup> )	Shocking time (seconds)	Reach length (feet)	Catch per unit effort (fish per second)	Individuals in sample	Introduced individuals	Introduced or tolerant individuals	Number of species	Native fish species		Benthic invertivore species		Native sunfish ( <i>Lepomis</i> sp.) species*		Native minnow ( <i>Cyprinidae</i> ) species*		Native sucker ( <i>Catostomidae</i> ) species*	
											Count	Score	Count	Score	Count	Score	Count	Score	Count	Score
Big Haynes Creek	Little Haynes Creek at Dial Mill Road (reference site)	02207435	25.1	3,922	1,640	7.65	513	6	11	23	20	5	3	5	4	5	8	5	1	1
	Big Haynes Creek at Pleasant Hill Road	02207412	33.2	2,608	1,640	13.65	191	1	8	11	10	1	1	1	2	1	3	1	1	1
Yellow River	Tributary to Yellow River at County Road 411	02207337	1.4	995	397	13.65	74	0	2	8	8	3	1	2	1	1	3	5	1	3
	Tributary to Yellow River at Dennard Road	02207334	1.6	706	324	4.64	152	1	10	11	10	3	0	2	3	3	2	3	1	3
Snapping Shoals Creek	Snapping Shoals at Honey Creek Road	02204770	15.1	970	889	17.02	57	0	2	9	9	1	1	1	3	5	2	1	2	5
	Snapping Shoals Creek at Flat Shoals Road	02204752	2.4	682	436	6.56	104	6	20	9	8	3	0	1	2	3	3	3	0	1
Honey Creek	Honey Creek at Flat Shoals Road	02204122	9.6	1,035	640	8.28	125	0	1	10	10	3	1	1	3	3	3	3	1	3
	Honey Creek at Honey Creek Road	02204127	18.5	1,322	895	11.80	112	2	6	15	14	3	3	5	3	3	4	3	0	1
South River	Tributary to South River at Flat Bridge Road	02204068	1.2	438	262	6.74	65	0	0	6	6	1	0	1	4	5	2	3	0	1
	Jackson Creek above Rock Creek	02204088	0.6	549	299	5.90	93	0	34	6	6	1	0	1	1	1	3	5	1	3

**Table 7.** Fish indices and index of biotic-integrity scores at monitoring sites in Rockdale County, Georgia, June–August 2003—Continued.

[USGS, U.S. Geological Survey; NA, not available; mi<sup>2</sup>, square mile; IBI, index of biotic integrity; \*, metrics are those suggested by the State of Georgia for conducting biomonitoring studies in the Piedmont Ecoregion of Georgia (GaDNR, 2000)]

Watershed	USGS site name	USGS station number	Drainage area (mi <sup>2</sup> )	Intolerant species* (basin greater than 20 mi <sup>2</sup> )		Sensitive species* (basin less than 20 mi <sup>2</sup> )		Evenness		Proportion of individuals												Individuals collected per 200 meters* (basin greater than 10 mi <sup>2</sup> )		Native simple lithophilic spawning species* (basin less than 10 mi <sup>2</sup> )		Fish IBI			
				Count	Score	Count	Score	Index	Score	As omnivores* (basin less than 20 mi <sup>2</sup> )		As sunfish ( <i>Lepomis</i> sp.) species* (basin greater than 20 mi <sup>2</sup> )		As insectivorous cyprinids*		As top carnivores* (basin greater than 10 mi <sup>2</sup> )		As pioneer species* (basin less than 10 mi <sup>2</sup> )		As simple lithophilic spawners* (basin greater than 10 mi <sup>2</sup> )		With external anomalies*		Index	Score		Count	Score	Score
										Percent	Score	Percent	Score	Percent	Score	Percent	Score	Percent	Score	Percent	Score	Percent	Score						
Big Haynes Creek	Little Haynes Creek at Dial Mill Road (reference site)	02207435	25.1	2	3	4	NA	74.7	5	13	NA	32	3	35	3	5	5	16	NA	34	3	0	0	202.8	1	7	NA	44	
	Big Haynes Creek at Pleasant Hill Road	02207412	33.2	1	1	2	NA	70.9	5	32	NA	16	5	48	3	1	1	13	NA	6	1	0	0	73.2	1	3	NA	22	
Yellow River	Tributary to Yellow River at County Road 411	02207337	1.4	0	NA	0	1	67.2	3	26	3	51	NA	18	1	3	NA	22	5	20	NA	0	0	119.0	1	3	3	31	
	Tributary to Yellow River at Dennard Road	02207334	1.6	0	NA	0	1	51.2	3	12	5	84	NA	1	1	1	NA	9	5	1	NA	0	0	286.9	1	2	1	31	
Snapping Shoals Creek	Snapping Shoals at Honey Creek Road	02204770	15.1	1	NA	0	1	61.5	3	16	3	74	NA	05	1	0	1	18	NA	11	1	2	0	40.6	1	4	NA	24	
	Snapping Shoals Creek at Flat Shoals Road	02204752	2.4	0	NA	0	1	57.3	1	8	5	77	NA	7	1	3	NA	12	5	6	NA	0	0	126.3	1	1	1	26	
Honey Creek	Honey Creek at Flat Shoals Road	02204122	9.6	0	NA	1	1	76.5	5	22	3	45	NA	23	1	4	NA	41	5	30	NA	1	0	127.2	1	4	3	32	
	Honey Creek at Honey Creek Road	02204127	18.5	0	NA	2	3	73.5	5	13	5	60	NA	12	1	6	5	17	NA	18	1	0	0	77.7	1	5	NA	36	
South River	Tributary to South River at Flat Bridge Road	02204068	1.2	0	NA	0	1	73.4	5	55	1	35	NA	9	1	5	NA	65	3	9	NA	0	0	161.5	1	1	1	24	
	Jackson Creek above Rock Creek	02204088	0.6	0	NA	0	1	72.9	5	20	3	2	NA	37	3	2	NA	94	1	39	NA	0	0	129.7	1	2	1	26	

## Yellow River Watershed

The Yellow River is the largest of Rockdale County’s major watersheds and drains portions of Dekalb and Gwinnett Counties. The Yellow River watershed drains about 41 mi<sup>2</sup> (31 percent) of Rockdale County and about 340 mi<sup>2</sup> at the Rockdale–Newton County Line (fig. 1 and table 2). In addition to low-density residential and agricultural lands, Rockdale County identified industrial, commercial, and other residential land uses near the city of Conyers as potential stressors to the Yellow River and its tributaries (Rockdale County Department of Water Resources/Tetra Tech, 2002). The GaEPD listed a segment of Boar Tusk Creek, a tributary to the Yellow River, as impaired due to elevated pH, whereas it listed the entire main-stem section of the Yellow River in Rockdale as impaired due to excessive fecal coliform densities (fig. 3)—both impairments are believed to be due to urban sources (Georgia Environmental Protection Division, 2002b).

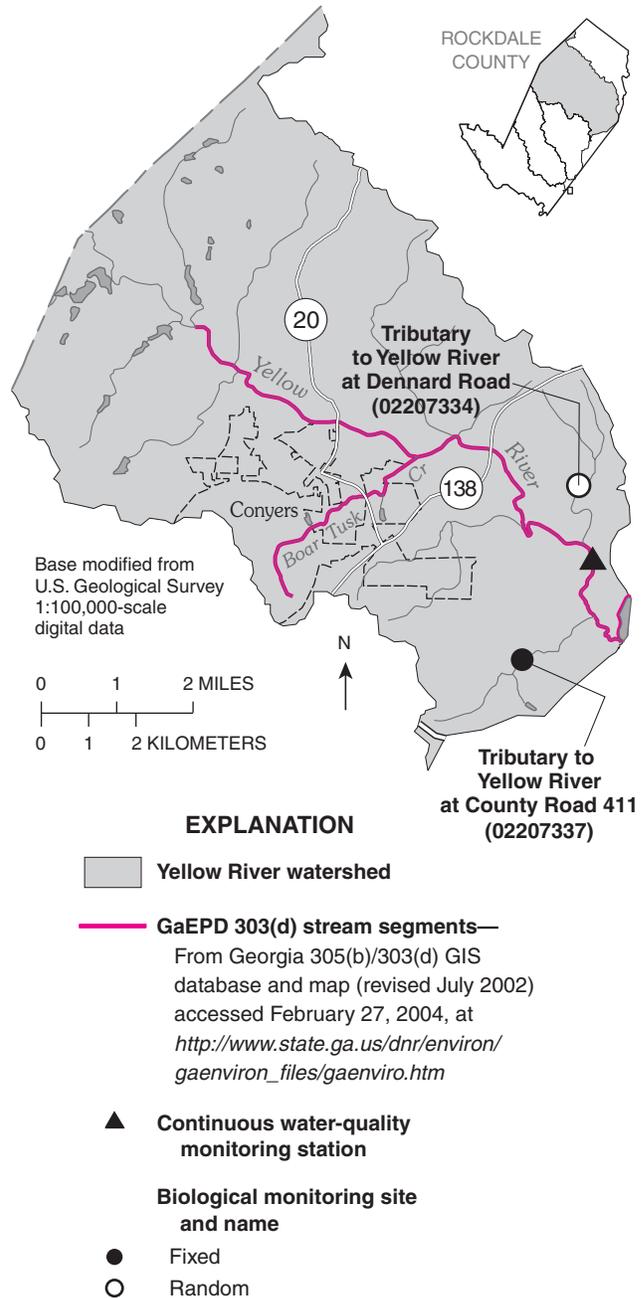
### Fixed Site—Tributary to Yellow River at County Road 411

#### Habitat Scores

The tributary to Yellow River at County Road 411 is a relatively small stream, with a mean channel width of 11 ft and draining only 1.4 mi<sup>2</sup> (table 2). A 396-foot reach was assessed and consisted of riffles, with runs, and small pools flowing over bedrock and boulders with some cobble and gravel substrates present in the reach. Little evidence of channel alteration was observed and embeddedness and sediment deposition generally were low. Stream banks were stable and vegetated, and riparian areas on both banks were intact. Channel-flow status was consistently scored the lowest of the habitat parameters, whereas intactness of riparian vegetation was scored the highest. Total habitat score is 137.7 (table 3).

#### Invertebrate Community

Four hundred and eighty-seven individual invertebrates representing 39 distinct taxa were collected from this stream reach. Dipteran taxa, which composed 74.1 percent of the entire sample (table 4), dominated the aquatic invertebrate community. Other common groups of invertebrates included eight additional taxa of midge larvae and five taxa of caddisfly larvae (order: Trichoptera) (appendix A). Shredders composed about 64 percent of the sample collected (table 5).



**Figure 3.** Yellow River watershed in Rockdale County, Georgia, with continuous water-quality monitoring stations, biological monitoring sites sampled during 2003, and Georgia Environmental Protection Division (GaEPD) 303(d) listed stream segments as of 2002.

## Fish Community

The sample collected from the tributary to Yellow River at County Road 411 included 74 individual fishes, representing 8 species. All species collected are native, and none is considered sensitive to perturbations in habitat and water quality (tables 6 and 7). Sunfishes (Centrarchids) were the most common family of fishes collected, composing 54.1 percent of the sample. The bluegill sunfish (*Lepomis macrochirus*) was the most common species and composed about 51 percent of the entire fish sample. Other common species included bluehead chub (*Nocomis leptocephalus*) and spottail shiner (*Notropis hudsonius*). From a functional feeding perspective, insectivorous cyprinids (composing 18 percent of the community) and omnivores (composing 26 percent of the community) (table 7) dominated the fish community at this tributary. Top carnivores composed about 3 percent of the community. External anomalies were not noted on any fishes collected. Fish IBI score is 31 (table 7).

## Random Site—Tributary to Yellow River at Dennard Road

### Habitat Scores

The tributary to the Yellow River at Dennard Road drains 1.6 mi<sup>2</sup> and has an average stream width of 9 ft (table 2). A 324-foot stream reach was assessed and was composed of only a few small riffle areas, a rather large, deep pool area, and a large bedrock outcrop. Some cobble and gravel substrates were present in this reach. Evidence was noted of channel alteration, and embeddedness and sediment deposition were generally low. Stream banks were somewhat eroded in places, but mostly vegetated with the riparian areas on both banks rela-

tively intact. Frequency of riffles and epifaunal substrate and instream cover were the parameters that scored the lowest in this reach, whereas bank vegetative protection scored the highest. Individual habitat parameter scores at this tributary ranged from 7.3 to 19.4 out of 20 possible points. Total habitat score is 130.6 (table 3).

### Invertebrate Community

Three hundred and forty-two individual invertebrates representing 30 taxa of organisms were collected from this stream reach. Dipteran taxa (table 4) dominated the aquatic invertebrate community. Other common invertebrates included 16 additional taxa of midge larvae (order: Chironomidae) and 3 taxa of caddisfly larvae (order: Trichoptera) (appendix A). Shredding invertebrates composed about 11 percent of the sample (table 5).

### Fish Community

The sample collected at the tributary to Yellow River at Dennard Road included 152 individuals represented by 11 species. One species, the green sunfish (*Lepomis cyanellus*), is a nonnative species. Sensitive species were not collected from this reach (tables 6 and 7). Sunfishes (Centrarchids) were the most common family of fishes collected composing 85 percent of the sample. *Lepomis* were the most common genera composing about 84 percent of the sample. Redbreast sunfish (*Lepomis auritus*) and bluegill sunfish (*Lepomis macrochirus*) were the most commonly collected species. From a functional feeding perspective, 1 percent of the fish community was classified as insectivorous cyprinids, 12 percent as omnivores, and 1 percent as top carnivores. No fishes collected had any external anomalies. Fish IBI score is 31 (table 7).

### Snapping Shoals Creek Watershed

Snapping Shoals Creek watershed is the smallest of Rockdale County’s major watersheds and the only major watershed in Rockdale County that originates entirely within the political boundaries of Rockdale County. The Snapping Shoals Creek watershed drains about 17 mi<sup>2</sup> (13 percent) of Rockdale County (fig. 1). Commercial, industrial, and residential development near the city of Conyers and along the I-20 corridor have been identified by Rockdale County in its Watershed Monitoring Plan as potential stressor to Snapping Shoals Creek and its tributaries. GaEPD listed segments of Snapping Shoals Creek and Almand Branch as impaired (fig. 4) because of excessive fecal coliform densities, which are believed to be caused by urban sources in the watershed (Georgia Environmental Protection Division, 2002a).

### Fixed Site—Snapping Shoals Creek at Honey Creek Road

#### Habitat Scores

Snapping Shoals Creek at Honey Creek Road drains about 15 mi<sup>2</sup> and has a mean channel width of 25 ft (table 2). An 895-foot reach was assessed and is composed predominately of run-type habitat with only small sized gravel and sand substrates with a few small areas of highly embedded riffles. Some evidence of channel alterations was observed, stream banks were unstable, and vegetative cover was relatively low. The lowest scoring habitat parameter was embeddedness in the riffles areas, whereas the stream velocity/depth combination scored the highest. Habitat parameter scores ranged from 1.5 to 18 points of 20 possible points. Total habitat score is 92.5 (table 3).

#### Invertebrate Community

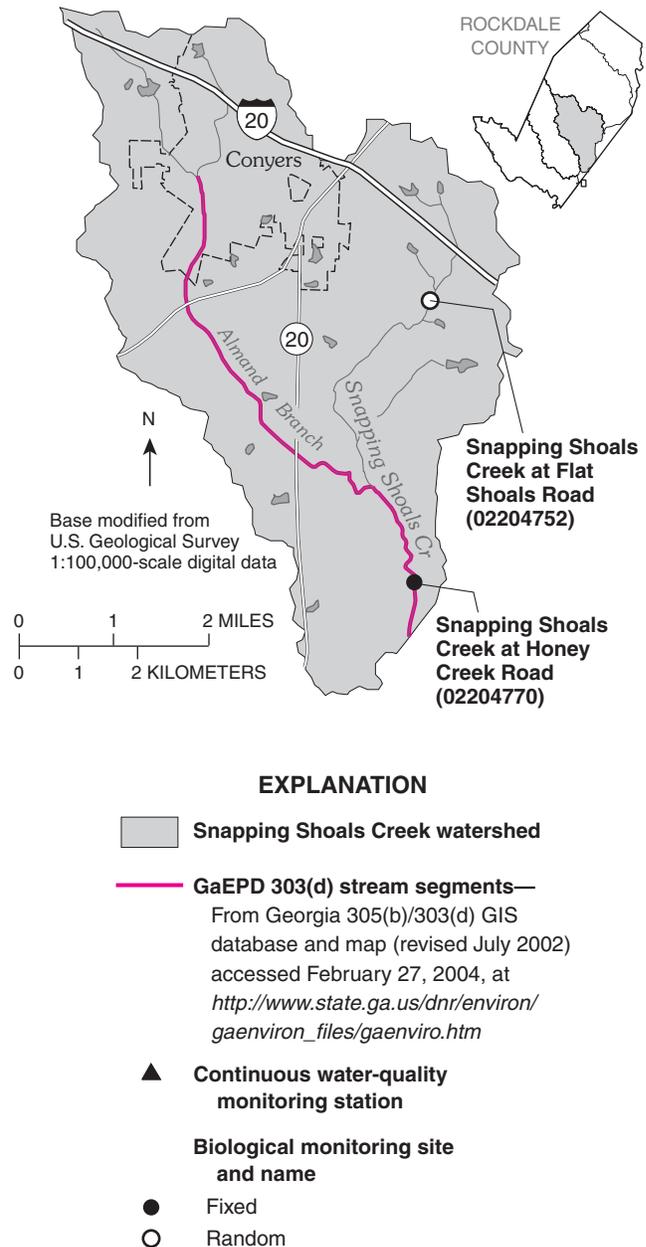
Fourteen hundred and five individual invertebrates representing 34 distinct groups were collected from this stream reach. A single genera of caddisfly larvae (*Chematopsyche* sp.) (appendix A) dominated the aquatic invertebrate community. Other common invertebrates included 13 taxa of midge larvae (*Chironomidae* spp.) (appendix A). Shredding taxa composed about 20 percent of the sample collected (table 5).

#### Fish Community

The sample collected at Snapping Shoals Creek at Honey Creek Road was comprised of 57 individuals, which consisted of 9 species. All of these are considered to be native species and not sensitive to perturbations in habitat or water quality (tables 6 and 7). Sunfishes (Centrarchids) were the most common family of fishes collected composing 74 percent of the sample.

The most commonly collected species were bluegill sunfish (*Lepomis macrochirus*), bluehead chub (*Nocomis leptoccephalus*), and redbreast sunfish (*Lepomis auritus*) (table 6). From a functional feeding perspective, the fish community at Snapping

Shoals Creek at Honey Creek Road was dominated by insectivorous cyprinids and omnivores (table 7). No top carnivores were collected, and external anomalies were noted on about 2 percent of individuals collected. Fish IBI score is 24 (table 7).



**Figure 4.** Snapping Shoals Creek watershed in Rockdale County, Georgia, with continuous water-quality monitoring stations, biological monitoring sites sampled during 2003, and Georgia Environmental Protection Division (GaEPD) 303(d) listed stream segments as of 2002.

## Random Site—Snapping Shoals Creek at Flat Shoals Road

### Habitat Scores

Snapping Shoals Creek at Flat Shoals Road drains 2.4 mi<sup>2</sup> and has a mean channel width of 12 ft (table 2). A 436-foot reach was assessed and was composed of a few small areas of embedded riffles, but was predominately run habitat with small-sized gravel and sand substrates. There was no evidence of substantial channel alteration. However, stream banks were highly unstable, had little vegetation, and had a narrow riparian zone. Bank vegetation protection, bank stability, and riparian-zone vegetation all scored low, whereas epifaunal substrate/instream cover scored the highest of the habitat parameters (table 3). Habitat scores at Snapping Shoals Creek at Flat Shoals Road ranged from 0 to 18 points out of 20 possible points. Total habitat score is 83 (table 3).

### Invertebrate Community

Three hundred and ninety-five individual invertebrates representing 33 distinct taxa of organisms were collected from this stream reach (table 4). Two individual salamanders (order: Caudata) were collected in the invertebrate samples. A single species of midge larva (*Polypedilum illinoense*) (appendix A)

dominated the aquatic invertebrate community. Other common invertebrates included blackfly larvae (*Simulium* sp.) and 16 additional taxa of midge larvae (*Chironomidae* spp.). Of the functional feeding groups, shredders composed about 40 percent of the sample collected (table 5).

### Fish Community

The sample collected at Snapping Shoals Creek at Flat Shoals Road was composed of 104 individuals and 9 species, of which only 1 species, the green sunfish (*Lepomis cyanellus*), is nonnative (tables 6 and 7). No sensitive species were collected from this reach. Sunfishes (Centrarchids) were the most common family of fishes collected, composing 79.9 percent of the sample. Sunfishes of the genera *Lepomis* were the most common group, composing 77 percent of the sample. The most commonly collected species were bluegill sunfish (*Lepomis macrochirus*), yellow bullhead (*Ameiurus natalis*), yellowfin shiner (*Notropis lutipinnis*), and green sunfish (*Lepomis cyanellus*) (table 6). From a functional feeding perspective, the fish community at Snapping Shoals Creek was comprised of 7 percent insectivorous cyprinids, 8 percent omnivores, and 3 percent top carnivores (table 7). The feeding habits of most of the fish species were unclassified according to the GaDNR (2000). External anomalies were not noted on any fishes collected. Fish IBI score is 26 (table 7).

## Honey Creek Watershed

The Honey Creek watershed drains about 22 mi<sup>2</sup> (17 percent) of Rockdale County including a small area of DeKalb County and drains a total of 27.6 mi<sup>2</sup> at its confluence with the South River just downstream of Ga. Highway 212 (fig. 1 and table 2). Low-density residential and agricultural lands have been identified by Rockdale County as potential stressors to Honey Creek and its tributaries (Rockdale County Department of Water Resources/Tetra Tech, 2002). McClain Branch and the entire main-stem section of Honey Creek were included on the 303(d) list by the GaEPD (fig. 5) due to excessive fecal coliform densities that are believed to be due to nonpoint sources in the watershed (Georgia Environmental Protection Division, 2002b).

### Fixed Site—Honey Creek at Flat Shoals Road

#### Habitat Scores

Honey Creek at Flat Shoals Road drains an area of 9.6 mi<sup>2</sup> and has a mean channel width of 18 ft (table 2). A 639-foot reach was assessed and was composed predominately of runs with of small areas of highly embedded riffles and small pools. Little evidence of channel alteration was noted; however, embeddedness and sediment deposition generally were high (scored low). Stream banks were unstable and lacked vegetative cover. The riparian areas on both banks were partially wooded. Embeddedness and bank vegetative protection scored the lowest, whereas velocity/depth combination and riparian vegetative cover scored the highest. Habitat scores at Honey Creek at Flat Shoals Road ranged from 4 to 15 points out of 20 possible points. Total habitat score is 90 (table 3).

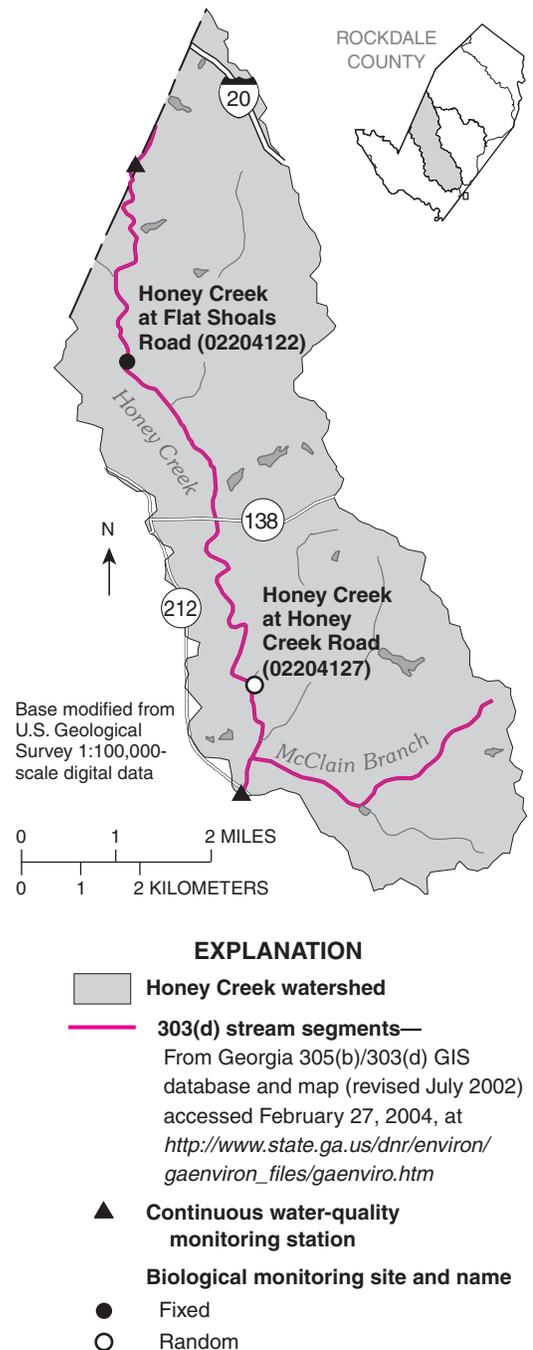
#### Invertebrate Community

Two hundred and eleven individual invertebrates representing 29 distinct taxa of organisms were collected from this stream reach. Two species of caddisfly larvae, *Cheumatopsyche* sp. and *Hydropsyche betteni*, dominated the aquatic invertebrate community. Other common invertebrates included 10 taxa of midge larvae (*Chironomidae*), which composed about 41.8 percent of the sample (appendix A). Shredding taxa composed about 32 percent of the sample collected (table 5 and appendix A).

#### Fish Community

The sample collected at Honey Creek at Flat Shoals Road included 125 individuals and 10 species, none of which is considered to be nonnative, and only 1 species is considered sensitive to perturbations in habitat and water quality (tables 6 and 7). Sunfishes (Centrarchids) were the most common family of fishes collected and composed 48 percent of the sample. *Lepomis* were the most common genera, composing 44.8 percent of the sample. The most commonly collected species were bluegill sunfish (*Lepomis macrochirus*), redbreast sunfish (*Lepomis auritus*), bluehead chub (*Nocomis leptocephalus*), and yellowfin shiner (*Notropis lutipinnis*). A complete species list with abun-

dances is shown in table 6. From a functional feeding perspective, omnivores (22 percent) dominated the fish community at the sampled reach at Flat Shoals Road, whereas top carnivores composed only 4 percent of the fish community (table 7). External anomalies were noted on about 1 percent of fishes collected. Fish IBI score is 32 (table 7).



**Figure 5.** Honey Creek watershed in Rockdale County, Georgia, with continuous water-quality monitoring stations, biological monitoring sites sampled during 2003, and Georgia Environmental Protection Division (GaEPD) 303(d) listed stream segments as of 2002.

## Random Site—Honey Creek at Honey Creek Road

### Habitat Scores

Honey Creek at Honey Creek Road drains 18.5 mi<sup>2</sup> and has a mean width of 25 ft (table 2). An 895-foot reach was assessed and was characterized principally as a run with no riffle habitat present. Substrate consisted of small gravel and sand. Some evidence of channel alteration was noted, and large amounts of sediment were present in the channel. Stream banks were somewhat unstable and only partially vegetated, whereas the riparian areas on both banks consisted of only narrow wooded areas. The highest scoring habitat parameter was stream velocity and depth combinations, whereas the lowest scoring habitat parameter was frequency of riffles. Habitat parameter scores at Honey Creek ranged from 0 to 15 points of 20 possible points. Total habitat score is 73.5, the lowest of all streams assessed during 2003 (table 3).

### Invertebrate Community

Five hundred and forty-seven individual invertebrates representing 31 distinct taxa of organisms were collected from this stream reach. A single species of midge larva (*Polypedilum*

*illinoense*) dominated the aquatic invertebrate community. Other common invertebrates included nine additional taxa of midge larvae (*Chironomidae* spp.) and caddisfly larvae (*Cheumatopsyche* sp.) (appendix A). Shredders comprised 52 percent of the sample collected (table 5).

### Fish Community

The sample collected at Honey Creek at Honey Creek Road included 112 individuals and 15 species, of which 2 are considered to be nonnative and 2 are considered sensitive to perturbations in habitat and water quality (tables 6 and 7). Sunfishes (Centrarchids) were the most common family of fishes collected, composing 66.1 percent of the sample. Sunfishes of the genera *Lepomis* were the most common group, composing about 59.8 percent of the sample. The most commonly collected species were bluegill sunfish (*Lepomis macrochirus*), redbreast sunfish (*Lepomis auritus*), and bluehead chubs (*Nocomis leptcephalus*). A complete species list with abundances is shown in table 6. From a functional feeding perspective, insectivores (81 percent) and omnivores (13 percent) dominated the fish community at Honey Creek at Honey Creek Road. Top carnivores represented only 6 percent of the community. External anomalies were not noted on any fishes collected. Fish IBI score is 36 (table 7).

## South River Watershed

South River watershed drains about 28.1 mi<sup>2</sup> (21.5 percent) of Rockdale County (fig. 1 and table 2). The upstream portion of the watershed also drains portions of Clayton, Dekalb, Fulton, and Henry Counties. The South River watershed drains a total of 247 mi<sup>2</sup> at its most downstream point in Rockdale County where Henry, Newton, and Rockdale county lines meet. Rockdale County identified low-density residential and agricultural lands as potential stressor to South River and its tributaries (Rockdale County Department of Water Resources/Tetra Tech, 2002). The entire reach of the South River has been 303(d) listed by the GaEPD (fig. 6) due to excessive fecal coliform densities that are believed to be due to urban sources and combined sewage overflows upstream of Rockdale County (Georgia Environmental Protection Division, 2002b).

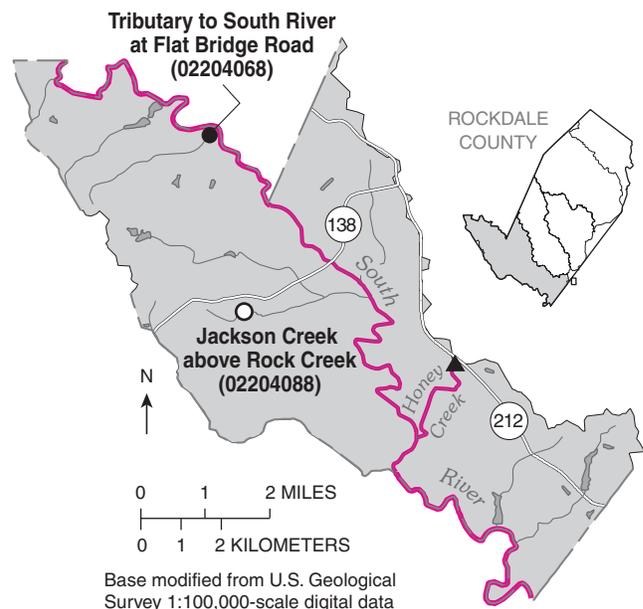
### Fixed Site—Tributary to South River at Flat Bridge Road

#### Habitat Scores

The tributary to the South River drains 1.2 mi<sup>2</sup> and had a mean width of 7 ft (table 2). A 298-foot reach was assessed and was composed of a few embedded riffles, with runs flowing over sand and small gravel substrates. Little evidence of channel alteration was noted; however, embeddedness and sediment deposition generally were high. Stream banks were relatively stable, and riparian areas on both banks were intact. The highest scoring habitat parameter was riparian vegetative cover, whereas embeddedness and frequency of riffles scored the lowest. Habitat parameter scores ranged from 1 to 18 points of 20 possible points. Total habitat score is 78.3 (table 3).

#### Invertebrate Community

Three hundred and eighty-eight individual invertebrates representing 46 distinct taxa of organisms were collected from this stream reach. The midge larva (*Polypedilum flavum*) dominated the aquatic invertebrate community. Other common invertebrates included four taxa of mayfly larvae (order: Ephemeroptera) and three taxa of caddisfly larvae (order: Trichoptera) (appendix A). Shredders composed about 29 percent of the sample collected (table 5).



#### EXPLANATION

- South River watershed
- GaEPD 303(d) stream segments—  
From Georgia 305(b)/303(d) GIS database and map (revised July 2002) accessed February 27, 2004, at [http://www.state.ga.us/dnr/enviro/gaenviron\\_files/gaenviro.htm](http://www.state.ga.us/dnr/enviro/gaenviron_files/gaenviro.htm)
- Continuous water-quality monitoring station
- Biological monitoring site and name**
- Fixed
- Random

**Figure 6.** South River watershed in Rockdale County, Georgia, with continuous water-quality monitoring stations, biological monitoring sites sampled during 2003, and Georgia Environmental Protection Division (GaEPD) 303(d) listed stream segments as of 2002.

## Fish Community

The sample collected at the South River included only 65 individuals and 6 species, of which all are native species and none is species sensitive to perturbations in habitat and water quality (tables 6 and 7). Shiners (Cyprinids) were the most common family of fishes collected and composed 64.6 percent of the sample. *Nocomis* were the most common group composing 55.4 percent of the sample. The most commonly collected species were bluehead chubs (*Nocomis leptocephalus*), red-breast sunfish (*Lepomis auritus*), and bluegill sunfish (*Lepomis macrochirus*). From a functional feeding perspective, omnivores (55 percent) dominated the fish community at the tributary to the South River, whereas top carnivores composed about 5 percent of the community (table 7). No fishes collected had external anomalies. Fish IBI score is 24 (table 7).

## Random Site—Jackson Creek above Rock Creek

### Habitat Scores

Jackson Creek above Rock Creek drains 0.6 mi<sup>2</sup> and has a mean width of 8 ft (table 2). A 262-foot reach was assessed and was comprised of frequent riffles, with runs, and pools flowing over bedrock, cobble, and gravel substrates. Little evidence of channel alteration was present, and embeddedness and sediment deposition were generally low. Stream banks were somewhat stable, with moderate vegetative cover; the riparian area on the left bank was relatively intact, whereas the riparian area on the right bank was only partially intact. The highest scoring habitat parameter was frequency of riffles, whereas channel flow status scored the lowest. Habitat parameter scores at Jackson Creek ranged from 7.5 to 17.5 points of 20 possible points. Total habitat score is 133 (table 3).

### Invertebrate Community

One thousand and twenty-eight individual invertebrates representing 55 distinct groups of organisms were collected from this stream reach. This site was particularly well balanced in terms of its invertebrate community. The aquatic invertebrate community was dominated by several groups of aquatic organisms including mayflies, *Baetis pluto* and *Polypedilum flavum*, and several taxa of caddisfly larvae (*Hydropsychidae* spp.) (appendix A). Other common invertebrates included two species of midges (*Rheotanytarsus* sp.) and (*Tvetenia bavarica*). Shredders composed about 21 percent of the sample collected (table 5).

## Fish Community

The sample collected at Jackson Creek included 93 individuals and 6 species. No nonnative or sensitive species were collected (tables 6 and 7). Shiners (Cyprinids) were the most common family of fishes collected representing 93.5 percent of the sample. The most commonly collected species were yellowfin shiner (*Notropis lutipinnis*), creek chub (*Semotilus atromatullatus*), and bluehead chub (*Nocomis leptocephalus*). From a functional feeding perspective, insectivorous cyprinids (37 percent) and omnivores (20 percent) dominated the fish community at Jackson Creek. Top carnivores composed about 2 percent of the community. No fishes collected had any external anomalies. Fish IBI score is 26 (table 7). Salamanders (order: Caudata) were collected with the invertebrate samples at this site. It should be also noted that the watershed area for this site was smaller than the minimum size recommended for use in the calculation of fish IBI scores by the GaDNR (2000); however, data from this site were included for comparative purposes only.

## Use Classification and Integrity Classes

Total points accumulated at sites based on habitat and invertebrate community indices were highest (35) at the Little Haynes Creek reference site. Total points accumulated at the comparative sites ranged from 15 for Snapping Shoals Creek at Flat Shoals Road to 28 for Jackson Creek above Rock Creek. These scores corresponded to Ecological Condition Scores of 43 and 80 percent of the reference site's score, respectively (table 8). Based on the Ecological Condition Scores, corresponding assessment categories for these stream reaches ranged from poor to good, although most of the assessed streams were in the fair category. Only one stream, Snapping Shoals Creek at Flat Shoals Road, was assessed as being in poor condition and therefore not supporting the stream's designated water use.

Integrity classes based on fish IBI scores ranged from very poor to good with half of stream reaches assessed being rated as poor. Only the reference site was rated as good based on its integrity classification (table 8). Integrity classes based on fish IBI scores do not have a corresponding water-use classification.

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# Glossary

## B

**bank parameter scores** Georgia Environmental Protection Division habitat assessment parameter. Score of a specific attribute of a stream bank such as bank vegetative protection, bank stability, and riparian vegetation. Scores range from 0 to 10 for each bank for a total of 20 possible points.

**bank stability** Georgia Environmental Protection Division habitat assessment parameter that scores the potential for soil to detach from the upper and lower banks and move into the stream.

**bank vegetation protection** Georgia Environmental Protection Division habitat assessment parameter. Scores are based on the percentage of stream bank that is covered by vegetation.

**boulder** Streambed material between 256 millimeters and 512 millimeters in size (Wentworth, 1922).

## C

**channel alteration** Georgia Environmental Protection Division habitat assessment parameter. Large-scale alteration of stream that may affect sinuosity or that may cause scouring.

**channel flow status** Georgia Environmental Protection Division habitat assessment parameter. A measure of the degree to which a stream's channel is filled with water at baseflow. The vegetation line is used as reference point from which estimates are made. This parameter is expected to vary seasonally.

**cobble** Streambed material between 64 millimeters and 256 millimeters in size (Wentworth, 1922).

## D

**dominant taxa, percent contribution of** The ratio of the number of organisms in the numerically dominant taxa to the total number of invertebrates in the sample. A community dominated by relatively few taxa is generally indicative of environmental stress.

## E

**Ecological Condition Score (ECS)** A metric derived by comparing the sum of all invertebrate indices and the habitat score for a site of interest to the sum of those same metrics at a reference site. The ecological condition of a site is considered "very good" if it is at least 83 percent similar to the reference site, "good" if it is from 82 to 74 percent similar, "fair" if it is from 73 to 49 percent similar, "poor" if it is from 48 to 25 percent similar and "very poor" if it is less than 25 percent similar.

**embeddedness in run areas** Georgia Environmental Protection Division habitat assessment parameter. Embeddedness is a measure of the degree to which cobble, boulders, and other large substrate are surrounded by sediment. The Georgia Environmental Protection Division scores the amount of fine sediments in the

run areas of a stream as an indication of the suitability of the stream for macroinvertebrate habitat and/or fish spawning areas.

**Ephemeroptera, Plecoptera and Trichoptera (EPT) Index** is number of organisms in the orders Ephemeroptera, Plecoptera and Trichoptera. EPT taxa are generally more sensitive to environmental perturbations and numbers will decrease with decreasing water-quality and habitat conditions.

**epifaunal substrate/available cover** Georgia Environmental Protection Division habitat assessment parameter. Substrates and/or structures used as refugia for aquatic organisms. These can be fallen trees/large woody debris, deep pools, shallow pools, overhanging vegetation, undercut banks, root mats, macrophytes, or deep riffles.

**evenness** A measurement of the equity of the proportion of each species in the sample and is measured by comparing the observed diversity in a sample to a theoretical diversity value. Evenness values approaching 100 indicate a more diverse community while smaller values indicate less diversity.

**external anomalies** Deformities, eroded fins, lesions, and/or tumors often found on fish and cause by bacterial, viral, fungal infections, neoplastic diseases, and chemical pollution.

## F

**fine sediments** Streambed materials smaller than 0.063 millimeter usually consisting of silt, clay, marl, muck and small pieces of organic detritus (Wentworth, 1922).

**frequency of riffles** Georgia Environmental Protection Division habitat assessment parameter. Riffles are shallower areas of a stream that typically consist of larger substrates and higher current velocities. The frequency of riffles in streams is scored by the Georgia Bioassessment Protocol to indicate high-quality habitat and a more diverse stream community.

## G

**gravel** Streambed material between 2 millimeters and 64 millimeters in size (Wentworth, 1922).

## H

**habitat parameter scores** Georgia Environmental Protection Division habitat assessment protocol terminology used to describe a scoring system whereby 10 physical attributes of a stream's habitat conditions are scored on a scale ranging from 0 to 20 with a score of 20 generally indicating the best, or most ideal, or natural conditions, whereas 0 generally indicates the most disturbed conditions. The sum of these 10 parameter scores is used to indicate the general condition of the stream in terms of its habitat.

**habitat score** Categorical value assigned to an index based on the number of points given to a specific element of the stream's habitat. The habitat score is a general reflection of the degree of similarity between an investigated site and a least-impaired reference site.

I

**Index of Biotic Integrity (IBI)** A numerical score that is reflective of a stream's ability to support and maintain a balanced, integrated, and adaptive community of organisms that is similar in diversity and functional organization to that of the natural habitat of the region. The IBI for fish communities was first developed by Karr (1981) and was composed of 12 individual fish metrics that were assigned a score based on that metric's similarity to or difference from the same metric calculated from data collected at a reference site. The Georgia Department of Natural Resources has adapted the Karr's original fish IBI for use in streams of Georgia (Georgia Department of Natural Resources, 2000).

**Indicator Assemblage Index (IAI)** A metric that measures change in the relative abundance of selected tolerant and intolerant organisms. Values range from 0 to greater than 1.0 and an IAI score of around 1.0 indicates little change from reference conditions.  $(IAI = 0.50(\% EPT_b / \% EPT_a + \% CA_a / \% CA_b))$  where % EPT is proportion of community composed of Ephemeroptera, Plecoptera and Trichoptera and CA (chironomids and annelids) is proportion of community composed of chironomids and annelids, and b and a are potential impacted and reference sites, respectively).

**intolerant species** Fish species designated as intolerant to environmental degradation caused by stressors such as chemical pollution, sedimentation, and flow, habitat, and riparian-zone modifications.

J

**jab sampling** Invertebrate sampling technique recommended by the Georgia Environmental Protection Division habitat assessment protocol. Taking a jab sample involves using a D-frame net to make quick upward/forward thrusting motions into a specific habitat type. Jab sampling is primarily used to sample macrophyte beds, woody debris, snags, and root mats. One jab should sample a linear distance of about 3 feet.

K

**kick sampling** Invertebrate sampling technique recommended by the Georgia Environmental Protection Division habitat assessment protocol that involves using a D-frame net and kicking or disturbing the substrate upstream of a stationary net. Kick sampling is used in cobble, gravel, and sand substrates where higher current velocities will carry material into the net. One kick should sample a linear distance of about 3 feet upstream of the net.

L

**lithophilic spawner** A species of fish that reproduces by broadcasting its eggs over the stream bottoms where they develop in the interstices of sand, gravel, and cobble substrates.

A lithophilic species typically prefers clean, silt-free substrates to reproduce.

N

**North Carolina Biotic Index (NCBI)** A modification of the Hilsenhoff Biotic Index developed to detect water-quality impairment in streams by assigning tolerance values to each invertebrate species collected and finding the weighted average of tolerance value for the stream community. Tolerance values for invertebrates range from 0 to 10 with 0 indicating an intolerant (sensitive) species and 10 indicating a tolerant species. The NCBI value generally increases as the number of tolerant species increases and water quality decreases (see tolerance value).  $(NCBI = \text{Sum of } X_i) / n$  where  $X_i$  is the number of individuals in each taxon,  $t$  is tolerance value for each taxon in the sample,  $n$  is number of individuals in the sample.

P

**pioneer species** Species of fishes that are the first to reestablish populations in small streams that have been affected by temporal disturbances or environmental degradation.

**pool** Deeper areas of a stream generally associated with bends or curves in the stream and typically associated with lower current velocities and smaller sediment sizes.

R

**riparian vegetation zone width** Georgia Environmental Protection Division habitat assessment parameter. The riparian vegetation is that which is found along the bank of the stream. The Georgia Bioassessment Protocol scores this habitat parameter based on its width and the degree to which it has been affected by human activities.

S

**sand** Streambed material between 0.063 millimeters and 2 millimeters in size (Wentworth, 1922).

**sediment deposition** Georgia Environmental Protection Division habitat assessment parameter. Refers to the amount of sediment that has accumulated in a stream's channel. High levels of sediment result in increased deposition and is generally unstable and unsuitable for many types of organisms.

**sensitive species** Species expected to be found in smaller piedmont streams also known as intolerants or headwater intolerants. This metric is used only in stream with drainages less than 20 square miles.

**shredders, percent of** The relative number of individuals in a sample that feed on or colonize coarse particular organic matter.

**silt** Streambed material smaller than 0.0063 millimeters in size (Wentworth, 1922).

**T**

**taxon** (plural – **taxa**) A unique organism identified to the smallest possible taxonomic group such as species, genera, or family.

**taxa richness** The number of distinct organisms present in the sample. Taxa richness generally decreases with decreasing water-quality and habitat conditions.

**tolerance value** A numerical assessment of the relative ability of a species of invertebrate to endure degradations in water quality. Tolerance values range from 0 (extremely sensitive organism) to 10 (tolerant organism).

**R**

**riffle** Relatively shallow areas of a stream where water flows swiftly over completely or partially submerged obstructions to produce surface turbulence. Riffles usually have coarser substrates than runs and pools.

**run** Area of a stream with moderate depth and little or no surface turbulence. Velocities in runs may be high or low.

**V**

**velocity/depth combinations** Georgia Environmental Protection Division habitat assessment parameter which scores a stream based on the combinations of velocity and depth in the stream. Four combinations are possible (1) slow-deep, (2) slow-shallow, (3) fast-deep, (4) fast-shallow. Deep water is considered to be greater than 0.5 meters; fast water is considered to be greater than 0.3 meters per second.



## **Appendix A. Summary of Invertebrate Community Data**



**Appendix A.** Tolerance values, functional feeding groups, and number of invertebrates collected in multihabitat and visual samples at monitoring sites in Rockdale County, Georgia, summer 2003.

[USGS, U.S. Geological Survey; MH, multihabitat sample; TV, tolerance value; FFG, functional feeding group; FC, filter-collectors; CG, collector gatherers; SC, scraper-collectors; P, predators; SH, shredders]

Watershed	Big Haynes Creek				Yellow River				Snapping Shoals Creek				Honey Creek				South River			
USGS site name	Little Haynes Creek at Dial Mill Road (reference site)		Big Haynes Creek at Pleasant Hill Road		Tributary to Yellow River at County Road 411		Tributary to Yellow River at Dennard Road		Snapping Shoals at Honey Creek Road		Snapping Shoals Creek at Flat Shoals Road		Honey Creek at Flat Shoals Road		Honey Creek at Honey Creek Road		Tributary to South River at Flat Bridge Road		Jackson Creek above Rock Creek	
USGS station number	2207435		2207412		2207337		2207334		2204770		2204752		2204122		2204127		2204068		2204088	
Sample type	MH	Visual	MH	Visual	MH	Visual	MH	Visual	MH	Visual	MH	Visual	MH	Visual	MH	Visual	MH	Visual	MH	Visual
<b>Taxa</b>																				
	TV																			
	FFG																			
<b>NEMATODA</b>	6.02							1												
<b>MOLLUSCA</b>																				
<b>Petecypoda</b>																				
<b>Veneroida</b>																				
Corbiculidae																				
<i>Corbicula fluminea</i>	6.12	FC			2								3	45	5	4	2			
Sphaeriidae	8	FC																		
<i>Sphaerium</i> sp.	7.58	FC		2	1		3													1
<b>Gastropoda</b>																				
<b>Polmonata</b>																				
Physidae																				
<i>Physella</i> sp.	8.84	CG										2								2
Planorbidae	6	SC																		
<i>Menetus dilatatus</i>	8.23	SC										1								
<b>ANNELIDA</b>																				
<b>Oligochaeta</b>	1	CG																		
Haplotaxidae																				
Lumbricidae		CG				1						1	3		2					
<b>Branchiobdellida</b>																				
Branchiobdellidae								5												
<b>CRUSTACEA</b>																				
<b>Malacostraca</b>								2												
<b>Amphipoda</b>																				
Talitridae																				
<i>Hyaella azteca</i>	7.75	CG	1				2			3			2							
<b>Decapoda</b>																				
Cambaridae	7.5		1						1	3			1							
<i>Cambarus</i> sp.	7.62	P					1				1									
<i>Procambarus</i> sp.	7	SH		1									1							

**Appendix A.** Tolerance values, functional feeding groups, and number of invertebrates collected in multihabitat and visual samples at monitoring sites in Rockdale County, Georgia, summer 2003.—Continued

[USGS, U.S. Geological Survey; MH, multihabitat sample; TV, tolerance value; FFG, functional feeding group; FC, filter-collectors; CG, collector gatherers; SC, scraper-collectors; P, predators; SH, shredders]

Watershed	Big Haynes Creek				Yellow River		Snapping Shoals Creek		Honey Creek		South River				
USGS site name	Little Haynes Creek at Dial Mill Road (reference site)		Big Haynes Creek at Pleasant Hill Road		Tributary to Yellow River at County Road 411	Tributary to Yellow River at Dennard Road	Snapping Shoals at Honey Creek Road	Snapping Shoals Creek at Flat Shoals Road	Honey Creek at Flat Shoals Road	Honey Creek at Honey Creek Road	Tributary to South River at Flat Bridge Road	Jackson Creek above Rock Creek			
USGS station number	2207435		2207412		2207337	2207334	2204770	2204752	2204122	2204127	2204068	2204088			
Sample type	MH	Visual	MH	Visual	MH	Visual	MH	Visual	MH	Visual	MH	Visual			
<b>Taxa</b>	<b>TV</b>		<b>FFG</b>												
<b>INSECTA</b>															
<b>Collembola</b>			1								1	8			
Isotomidae	1				3										
<b>Ephemeroptera</b>															
Baetidae	4	CG	5						5	2	3				
<i>Baetis</i> sp.	4	CG	4	33	2							11			
<i>Baetis c.f. flavistriga</i>	7	CG			1		1								
<i>Baetis intercalaris</i>	7	CG					3								
<i>Baetis pluto</i>	4.28										171				
<i>Centroptilum</i> sp.	6.6	CG					4								
<i>Plauditus</i> sp.	4	CG	6		1										
<i>Pseudocloeon</i> sp.	4.02	CG	9	7			4								
Caenidae	7	CG													
<i>Caenis</i> sp.	7.41	CG			2										
Ephemerellidae	1	SC													
<i>Serratella</i> sp.	1	SC			3						2				
Ephemeridae	4	CG													
<i>Hexagenia</i> sp.	4.9	CG									1				
Heptageniidae	4	SC							0						
<i>Stenonema</i> sp.	4	SC	6	1	5	1	2	1	6	4	1				
<i>Stenonema modestum</i>	5.5	SC							13	7	38	8	54	10	28
Isonychiidae	2	FC													
<i>Isonychia</i> sp.	3.45	FC	11	2					1		21	1	3		
Leptophlebiidae	2	CG													
<i>Habrophlebiodes</i> sp.	1										2				
<b>Odonata</b>															
Aeshnidae	3	P					1								
<i>Boyeria</i> sp.	3	P									1				

**Appendix A.** Tolerance values, functional feeding groups, and number of invertebrates collected in multihabitat and visual samples at monitoring sites in Rockdale County, Georgia, summer 2003.—Continued

[USGS, U.S. Geological Survey; MH, multihabitat sample; TV, tolerance value; FFG, functional feeding group; FC, filter-collectors; CG, collector gatherers; SC, scraper-collectors; P, predators; SH, shredders]

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USGS station number	2207435	2207412	2207337	2207334	2204770	2204752	2204122	2204127	2204068	2204088
Sample type	MH	Visual	MH	Visual	MH	Visual	MH	Visual	MH	Visual
<b>Taxa</b>	<b>TV</b>	<b>FFG</b>								
<i>Boyeria grafiana</i>	6.05	P							1	
<i>Boyeria vinosa</i>	5.89	P	3	2		5 1	5 2	1	2	2
Calopterygidae		P								
<i>Calopteryx</i> sp.	7.78	P							1	1
Coenagrionidae	9	P					4 1			
<i>Argia</i> sp.	8.17	P	1			2 1	2 7			
Cordulegastridae	3	P								
<i>Cordulegaster</i> sp.	5.73	P								1
Corduliidae	5	P								
<i>Macromia</i> sp.	6.16	P					1			
Gomphidae	1	P						1		
<i>Lanthus</i> sp.	1.77	P		1						7
<i>Gomphus</i> sp.	5.8	P	1						1 1	
<i>Hagenius brevistylus</i>	3.99	P						1		1
<i>Progomphus obscurus</i>	8.22	P		1	1	1 2	1			
<b>Plecoptera</b>										
Nemouridae	2	SH								
<i>Amphinemura</i> sp.	3.33	SH		1						
Peltoperlidae		SH								
<i>Peltoperla</i> sp.										1
<i>Tallaperla</i> sp.	1.18	SH					1			
Perlidae	1	P		5						22
<i>Acroneuria abnormis</i>	2.06	P	1		3				3	1 1
<i>Neoperla</i> sp.	1.49	P								
<i>Perlesta placida</i> sp. gp.	4.72	P	10 3	1 1			11 1	38 17	6 4	
Perlodidae	2	P								
<i>Isoperla</i> sp.		P		1						1 1
Pteronarcidae	1.74	SH								
<i>Pteronarcys (Allonarcys)</i> sp.	1.67	SH	1							



**Appendix A.** Tolerance values, functional feeding groups, and number of invertebrates collected in multihabitat and visual samples at monitoring sites in Rockdale County, Georgia, summer 2003.—Continued

[USGS, U.S. Geological Survey; MH, multihabitat sample; TV, tolerance value; FFG, functional feeding group; FC, filter-collectors; CG, collector gatherers; SC, scraper-collectors; P, predators; SH, shredders]

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USGS station number	2207435	2207412	2207337	2207334	2204770	2204752	2204122	2204127	2204068	2204088			
Sample type	MH Visual	MH Visual	MH Visual	MH Visual	MH Visual	MH Visual	MH Visual	MH Visual	MH Visual	MH Visual			
<b>Taxa</b>	<b>TV</b>	<b>FFG</b>											
<i>Rhyacophila torva</i>	1.59									8			
<b>Coleoptera</b>													
Dryopidae	5												
<i>Helichus basalis</i>	4	SC	1										
Dytiscidae	5	P											
<i>Rhantus</i> sp.	3.61									1			
Elmidae	5	CG											
<i>Ancyronyx variegata</i>	6.49	SC	1	4	1	8	6	1	1				
<i>Macronychus glabratus</i>	4.58	SH	1	1	3	13	2	3	1	1			
<i>Microcylloepus pusillus</i>	2.11	SC			1					3	9	2	
<i>Oulimnius latiusculus</i>	1.78	CG			3							12	
<i>Promoresia tardella</i>	0	SC										8	
<i>Stenelmis</i> sp.	5.1	SC		2	1			2		1	4		
Dytiscidae	5	P											
<i>Hydroporus</i> sp.	8.62	PI								1			
Gyrinidae		P											
<i>Dineutus</i> sp.	5.54	P	1	5						2	1		
Hydrophilidae		P								5			
<i>Sperchopsis</i> sp.										1			
<i>Tropisternus</i> sp.	9.68	P									1		
Psephenidae	4	SC								1			
<i>Ectopria</i> sp.	4	SC										5	
Ptilodactylidae		SH											
<i>Anchytarsus bicolor</i>	3.64	SH									1	9	
Staphylinidae		P		1									
<b>Diptera</b>													
Ceratopogonidae	5	P		1									
Chironomidae			2	3	4	7	3	12	5	2	5	2	3
<i>Ablabesmyia mallochi</i>	7.19	P				19	2		5	8		2	2

**Appendix A.** Tolerance values, functional feeding groups, and number of invertebrates collected in multihabitat and visual samples at monitoring sites in Rockdale County, Georgia, summer 2003.—Continued

[USGS, U.S. Geological Survey; MH, multihabitat sample; TV, tolerance value; FFG, functional feeding group; FC, filter-collectors; CG, collector gatherers; SC, scraper-collectors; P, predators; SH, shredders]

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USGS station number	2207435	2207412	2207337	2207334	2204770	2204752	2204122	2204127	2204068	2204088									
Sample type	MH Visual	MH Visual	MH Visual	MH Visual	MH Visual	MH Visual	MH Visual	MH Visual	MH Visual	MH Visual									
Taxa	TV	FFG																	
<i>Ablabesmyia rhamphe</i> gp.	6	P	5																
<i>Brillia flavifrons</i>	5.18	SH	2	4	14	50	66	1	1	17	2	3	6	2	17	1			
<i>Cardiocladius obscurus</i>	5.87	P	13		1														
<i>Chironomus</i> sp.	9.63	CG			81	13													
<i>Cladopelma</i> sp.	3.49	CG			10														
<i>Conchapelopia</i> sp.	8.42	P	1	5		5	12	6	14	9	8	4		12					
<i>Cricotopus</i> sp.	7	CG	2																
<i>Cricotopus binctus</i>	8.54	CG	1																
<i>Cryptochironomus</i> sp.	6.4	P			1														
<i>Dicrotendipes</i> sp.	8.1	CG			2	1													
<i>Eukiefferiella claripennis</i> gp.	5.58	CG	3																
<i>Limnophyes</i> sp.	7.43	CG											2						
<i>Microtendipes pedellus</i> gp.	5.53	CG			24					3	1			1					
<i>Orthocladius</i> sp.	4	CG	2																
<i>Parametriocnemus</i> sp.	4	CG	1	1	10			1	1			1	12	12	2				
<i>Paratendipes</i> sp.	5.11	CG			7			1	1	3	1	3							
<i>Phaenopsectra</i> sp.	6.5	SC			2			2			3	1	1						
<i>Polypedilum fallax</i>	6.39	SH	6																
<i>Polypedilum flavum</i>	4.93	SH	19	16	261	1	2	1	50	61	15	28	20	2	5	10	74	162	3
<i>Polypedilum halterale</i>	7.31	SH			2														
<i>Polypedilum illinoense</i>	9	SH	6	8	22	31	18	25	84	28	22	1	225	33	21	6	7	1	
<i>Procladius</i> sp.	9.1	P			7														
<i>Pseudorthocladius</i> sp.	1.51	CG																	
<i>Rheocricotopus robacki</i>	7.28	CG	1					7	6	1									
<i>Rheotanytarsus</i> sp.	5.89	FC	6	5	1	14	7	18	53	235	3	11	4	2		17	4	51	

**Appendix A.** Tolerance values, functional feeding groups, and number of invertebrates collected in multihabitat and visual samples at monitoring sites in Rockdale County, Georgia, summer 2003.—Continued

[USGS, U.S. Geological Survey; MH, multihabitat sample; TV, tolerance value; FFG, functional feeding group; FC, filter-collectors; CG, collector gatherers; SC, scraper-collectors; P, predators; SH, shredders]

Watershed		Big Haynes Creek				Yellow River				Snapping Shoals Creek				Honey Creek				South River			
USGS site name		Little Haynes Creek at Dial Mill Road (reference site)		Big Haynes Creek at Pleasant Hill Road		Tributary to Yellow River at County Road 411		Tributary to Yellow River at Dennard Road		Snapping Shoals at Honey Creek Road		Snapping Shoals Creek at Flat Shoals Road		Honey Creek at Flat Shoals Road		Honey Creek at Honey Creek Road		Tributary to South River at Flat Bridge Road		Jackson Creek above Rock Creek	
USGS station number		2207435		2207412		2207337		2207334		2204770		2204752		2204122		2204127		2204068		2204088	
Sample type		MH	Visual	MH	Visual	MH	Visual	MH	Visual	MH	Visual	MH	Visual	MH	Visual	MH	Visual	MH	Visual	MH	Visual
<b>Taxa</b>	<b>TV</b>	<b>FFG</b>																			
<i>Robackia demeijerei</i>	3.74	CG	2																		
<i>Saetheria tylus</i>	7.07	CG	2																		
<i>Smittia</i> sp.	6	CG	1																		
<i>Stenochironomus</i> sp.	6.45	SH	1																		
<i>Stictochironomus devinctus</i>		CG	1																		
<i>Tanytarsus</i> sp.	9.19	FC	10 1 1 1																		
<i>Thienemamiella xena</i>	5.86	CG	1 3																		
<i>Tvetenia bavarica</i> gp.	6.35	CG	1 1		2				3		1						24 7				
<i>Xylotopus par</i>	5.99	SH			2		1				1		3		1						
Dixidae		CG																			
<i>Dixa</i> sp.	2.55	CG	8																		
<i>Dixella</i> sp.		CG	1 1																		
Empididae	7.57	P	1																		
<i>Hemerodromia</i> sp.	6	P	2 1																		
Muscidae			1																		
Simuliidae	6	FC																			
<i>Simulium</i> sp.	6	FC	56	360	13	16	6	154	53	59	30	24	1	16	10	101	10				
Tabanidae	7	PI																			
<i>Chrysops</i> sp.	7	PI	1																		
Tipulidae	3	SH																			
<i>Antocha</i> sp.	4.25	CG	1	1																	
<i>Hexatoma</i> sp.	4.31	P	1																		
<i>Tipula</i> sp.	7.33	SH	1																		
<b>CHORDATA</b>																					
<b>Caudata</b>																					
2 2 2 2																					
<b>TOTAL</b>		<b>200</b>	<b>15</b>	<b>559</b>	<b>56</b>	<b>467</b>	<b>20</b>	<b>271</b>	<b>73</b>	<b>700</b>	<b>705</b>	<b>222</b>	<b>175</b>	<b>195</b>	<b>18</b>	<b>407</b>	<b>140</b>	<b>341</b>	<b>49</b>	<b>966</b>	<b>64</b>



## **Appendix B. Summary of Fish Community Data**



**Appendix B.** Species names, common names, lengths, and weights of fishes collected at monitoring sites in Rockdale County, Georgia, May–August 2003.

[ID, identification; USGS, U.S. Geological Survey; TL, total length; mm, millimeter; do., ditto; F, field; L, lab; NA, not available]

ID number	USGS station number	Collection date	Species	Common name	Count	ID lab or field	TL (mm)	Weight (gram)
Little Haynes Creek at Dial Mill Road								
1	2207435	August 14, 2003	<i>Ameiurus brunneus</i>	snail bullhead	1	F	285	316
2	do.	do.	do.	do.	1	F	202	108
3	do.	do.	do.	do.	1	F	108	14
4	do.	do.	do.	do.	1	F	182	82
5	do.	do.	do.	do.	1	F	240	154
6	do.	do.	do.	do.	1	F	66	4
7	do.	do.	do.	do.	1	F	91	8
8	do.	do.	do.	do.	1	F	210	114
9	do.	do.	do.	do.	1	F	200	116
10	do.	do.	do.	do.	1	F	185	68
11	do.	do.	do.	do.	1	F	160	48
12	do.	do.	do.	do.	1	F	161	58
13	do.	do.	do.	do.	1	F	120	20
14	do.	do.	do.	do.	1	F	104	12
15	do.	do.	do.	do.	1	F	119	20
16	do.	do.	do.	do.	1	F	100	12
17	do.	do.	do.	do.	1	F	95	10
18	do.	do.	do.	do.	1	F	95	10
19	do.	do.	do.	do.	1	F	50	1.5
20	do.	do.	do.	do.	1	F	48	1.5
21	do.	do.	do.	do.	1	F	45	1.9
22	do.	do.	do.	do.	1	F	60	2.6
23	do.	do.	do.	do.	1	F	55	2
24	do.	do.	do.	do.	1	F	38	0.6
25	do.	do.	do.	do.	1	F	78	5.7
26	do.	do.	<i>Cyprinella callisema</i>	Ocmulgee shiner	1	L	82	5.1
27	do.	do.	<i>Cyprinella xaenura</i>	Altamaha shiner	1	L	56	1.7
28	do.	do.	do.	do.	1	F	60	2
29	do.	do.	do.	do.	1	L	63	2.2
30	do.	do.	do.	do.	1	L	64	2.2
31	do.	do.	do.	do.	1	F	66	2.6
32	do.	do.	do.	do.	1	F	68	2.7
33	do.	do.	do.	do.	1	F	70	3
34	do.	do.	do.	do.	1	F	76	3.9
35	do.	do.	do.	do.	1	F	66	4
36	do.	do.	do.	do.	1	F	68	4
37	do.	do.	do.	do.	1	F	68	4
38	do.	do.	do.	do.	1	F	70	4
39	do.	do.	do.	do.	1	F	70	4
40	do.	do.	do.	do.	1	F	74	4
41	do.	do.	do.	do.	1	F	74	4
42	do.	do.	do.	do.	1	F	75	4
43	do.	do.	do.	do.	1	F	80	4
44	do.	do.	do.	do.	1	L	77	4.5
45	do.	do.	do.	do.	1	L	78	4.6
46	do.	do.	do.	do.	1	L	85	5.4
47	do.	do.	do.	do.	1	F	70	5.5
48	do.	do.	do.	do.	1	F	75	6
49	do.	do.	do.	do.	1	F	80	6
50	do.	do.	do.	do.	1	F	80	6
51	do.	do.	do.	do.	1	F	80	6
52	do.	do.	do.	do.	1	F	83	6
53	do.	do.	do.	do.	1	F	90	6
54	do.	do.	do.	do.	1	L	90	7.2
55	do.	do.	do.	do.	1	F	95	7.5
56	do.	do.	do.	do.	1	F	90	7.7
57	do.	do.	do.	do.	1	F	88	8
58	do.	do.	do.	do.	1	F	92	8

40 Biological Monitoring and Assessment of Watersheds in Rockdale County, Georgia, May–August 2003

Appendix B. Species names, common names, lengths, and weights of fishes collected at monitoring sites in Rockdale County, Georgia, May–August 2003.—Continued

[ID, identification; USGS, U.S. Geological Survey; TL, total length; mm, millimeter; do., ditto; F, field; L, lab; NA, not available]

ID number	USGS station number	Collection date	Species	Common name	Count	ID lab or field	TL (mm)	Weight (gram)
Little Haynes Creek at Dial Mill Road—continued								
59	2207435	August 14, 2003	<i>Cyprinella xanura</i>	Altamaha shiner	1	F	72	9
60	do.	do.	do.	do.	1	F	118	14
61	do.	do.	do.	do.	1	F	110	16
62	do.	do.	<i>Esox niger</i>	chain pickerel	1	F	220	58
63	do.	do.	do.	do.	1	F	248	82
64	do.	do.	do.	do.	1	F	268	100
65	do.	do.	<i>Etheostoma inscriptum</i>	turquoise darter	1	L	73	4.5
66	do.	do.	do.	do.	1	L	64	2.7
67	do.	do.	do.	do.	1	L	55	1.8
68	do.	do.	do.	do.	1	L	36	0.5
69	do.	do.	<i>Hybopsis rubrifrons</i>	rosyface chub	1	F	75	3.3
70	do.	do.	<i>Lepomis auritus</i>	redbreast sunfish	1	L	71	6.4
71	do.	do.	do.	do.	1	F	75	7.5
72	do.	do.	do.	do.	1	F	85	9.2
73	do.	do.	do.	do.	1	L	84	9.3
74	do.	do.	do.	do.	1	F	88	10
75	do.	do.	do.	do.	1	F	87	12
76	do.	do.	do.	do.	1	F	88	14
77	do.	do.	do.	do.	1	F	90	14
78	do.	do.	do.	do.	1	F	90	14
79	do.	do.	do.	do.	1	F	90	14
80	do.	do.	do.	do.	1	F	100	18
81	do.	do.	do.	do.	1	F	105	24
82	do.	do.	do.	do.	1	F	109	24
83	do.	do.	do.	do.	1	F	120	30
84	do.	do.	do.	do.	1	F	125	32
85	do.	do.	do.	do.	1	F	126	36
86	do.	do.	do.	do.	1	F	65	4.2
87	do.	do.	do.	do.	1	F	140	52
88	do.	do.	do.	do.	1	F	175	74
89	do.	do.	do.	do.	1	F	130	96
90	do.	do.	<i>Lepomis cyanellus</i>	green sunfish	1	L	56	3.4
91	do.	do.	do.	do.	1	F	74	7
92	do.	do.	do.	do.	1	F	65	6
93	do.	do.	do.	do.	1	F	97	18
94	do.	do.	<i>Lepomis gulosus</i>	warmouth	1	F	110	28
95	do.	do.	do.	do.	1	F	85	12
96	do.	do.	do.	do.	1	F	130	52
97	do.	do.	do.	do.	1	F	156	84
98	do.	do.	do.	do.	1	F	114	30
99	do.	do.	do.	do.	1	F	105	22
100	do.	do.	do.	do.	1	F	75	7.2
101	do.	do.	<i>Lepomis macrochirus</i>	bluegill sunfish	1	F	70	6
102	do.	do.	do.	do.	1	F	70	6
103	do.	do.	do.	do.	1	F	71	8
104	do.	do.	do.	do.	1	F	80	8
105	do.	do.	do.	do.	1	F	74	8
106	do.	do.	do.	do.	1	F	79	8.2
107	do.	do.	do.	do.	1	F	77	10
108	do.	do.	do.	do.	1	F	25	1
109	do.	do.	do.	do.	1	F	85	10
110	do.	do.	do.	do.	1	F	85	10
111	do.	do.	do.	do.	1	F	90	10
112	do.	do.	do.	do.	1	F	82	10
113	do.	do.	do.	do.	1	F	90	12
114	do.	do.	do.	do.	1	F	87	12
115	do.	do.	do.	do.	1	F	90	12
116	do.	do.	do.	do.	1	F	89	12
117	do.	do.	do.	do.	1	F	86	12

**Appendix B.** Species names, common names, lengths, and weights of fishes collected at monitoring sites in Rockdale County, Georgia, May–August 2003.—Continued

[ID, identification; USGS, U.S. Geological Survey; TL, total length; mm, millimeter; do., ditto; F, field; L, lab; NA, not available]

ID number	USGS station number	Collection date	Species	Common name	Count	ID lab or field	TL (mm)	Weight (gram)
Little Haynes Creek at Dial Mill Road—continued								
118	2207435	August 14, 2003	<i>Lepomis macrochirus</i>	bluegill sunfish	1	F	91	12
119	do.	do.	do.	do.	1	F	90	14
120	do.	do.	do.	do.	1	F	91	14
121	do.	do.	do.	do.	1	F	92	14
122	do.	do.	do.	do.	1	F	95	14
123	do.	do.	do.	do.	1	F	95	14
124	do.	do.	do.	do.	1	F	95	14
125	do.	do.	do.	do.	1	F	91	14
126	do.	do.	do.	do.	1	F	93	14
127	do.	do.	do.	do.	1	F	90	14
128	do.	do.	do.	do.	1	F	95	16
129	do.	do.	do.	do.	1	F	98	16
130	do.	do.	do.	do.	1	F	98	16
131	do.	do.	do.	do.	1	F	96	16
132	do.	do.	do.	do.	1	F	94	16
133	do.	do.	do.	do.	1	F	98	16
134	do.	do.	do.	do.	1	F	100	16
135	do.	do.	do.	do.	1	F	105	18
136	do.	do.	do.	do.	1	F	100	18
137	do.	do.	do.	do.	1	F	106	20
138	do.	do.	do.	do.	1	F	105	22
139	do.	do.	do.	do.	1	F	110	22
140	do.	do.	do.	do.	1	F	110	24
141	do.	do.	do.	do.	1	F	115	26
142	do.	do.	do.	do.	1	F	115	28
143	do.	do.	do.	do.	1	F	65	3.2
144	do.	do.	do.	do.	1	F	65	4.3
145	do.	do.	<i>Lepomis microlophus</i>	redeer sunfish	1	F	98	12
146	do.	do.	<i>Micropterus punctulatus</i>	spotted bass	1	F	296	364
147	do.	do.	<i>Micropterus salmoides</i>	largemouth bass	1	L	72	4.2
148	do.	do.	do.	do.	1	L	49	1.6
149	do.	do.	do.	do.	1	L	62	3.3
150	do.	do.	do.	do.	1	L	77	5.5
151	do.	do.	do.	do.	1	L	60	2.8
152	do.	do.	do.	do.	1	L	48	2.4
153	do.	do.	do.	do.	1	L	52	1.8
154	do.	do.	do.	do.	1	L	175	73.6
155	do.	do.	do.	do.	1	L	133	33.2
156	do.	do.	do.	do.	1	L	93	10.9
157	do.	do.	do.	do.	1	L	80	5.4
158	do.	do.	<i>Nocomis leptcephalus</i>	bluehead chub	1	L	131	26.6
159	do.	do.	do.	do.	1	L	99	11.6
160	do.	do.	do.	do.	1	L	112	16.8
161	do.	do.	do.	do.	1	L	88	8.9
162	do.	do.	do.	do.	1	L	71	4.8
163	do.	do.	do.	do.	1	L	105	14.9
164	do.	do.	do.	do.	1	L	108	14.5
165	do.	do.	do.	do.	1	L	74	4.4
166	do.	do.	do.	do.	1	L	32	0.4
167	do.	do.	do.	do.	1	L	108	15.5
168	do.	do.	do.	do.	1	F	135	30
169	do.	do.	do.	do.	1	F	113	18
170	do.	do.	do.	do.	1	F	125	24
171	do.	do.	do.	do.	1	F	105	14
172	do.	do.	do.	do.	1	F	120	22
173	do.	do.	do.	do.	1	F	118	22
174	do.	do.	do.	do.	1	F	94	10
175	do.	do.	do.	do.	1	F	94	10
176	do.	do.	do.	do.	1	F	101	12

42 Biological Monitoring and Assessment of Watersheds in Rockdale County, Georgia, May–August 2003

Appendix B. Species names, common names, lengths, and weights of fishes collected at monitoring sites in Rockdale County, Georgia, May–August 2003.—Continued

[ID, identification; USGS, U.S. Geological Survey; TL, total length; mm, millimeter; do., ditto; F, field; L, lab; NA, not available]

ID number	USGS station number	Collection date	Species	Common name	Count	ID lab or field	TL (mm)	Weight (gram)
Little Haynes Creek at Dial Mill Road—continued								
177	2207435	August 14, 2003	<i>Nocomis leptocephalus</i>	bluehead chub	1	F	90	10
178	do.	do.	do.	do.	1	F	105	14
179	do.	do.	do.	do.	1	F	90	10
180	do.	do.	do.	do.	1	F	78	6
181	do.	do.	do.	do.	1	F	99	12
182	do.	do.	do.	do.	1	F	116	12
183	do.	do.	do.	do.	1	F	77	8
184	do.	do.	do.	do.	1	F	115	18
185	do.	do.	do.	do.	1	F	105	14
186	do.	do.	do.	do.	1	F	104	12
187	do.	do.	do.	do.	1	F	120	22
188	do.	do.	do.	do.	1	F	109	16
189	do.	do.	<i>Notemigonus crysoleucas</i>	golden shiner	1	L	56	1.6
190	do.	do.	<i>Notropis hudsonius</i>	spottail shiner	1	F	85	6
191	do.	do.	do.	do.	1	F	86	6
192	do.	do.	do.	do.	1	F	90	6
193	do.	do.	do.	do.	1	F	90	6
194	do.	do.	do.	do.	1	F	91	6
195	do.	do.	do.	do.	1	F	93	6
196	do.	do.	do.	do.	1	F	90	8
197	do.	do.	do.	do.	1	F	97	8
198	do.	do.	do.	do.	1	F	97	8
199	do.	do.	do.	do.	1	F	100	8
200	do.	do.	do.	do.	1	F	100	8
201	do.	do.	do.	do.	1	F	100	8
202	do.	do.	do.	do.	1	F	100	8
203	do.	do.	do.	do.	1	F	105	10
204	do.	do.	do.	do.	1	F	110	12
205	do.	do.	do.	do.	1	F	110	12
206	do.	do.	do.	do.	1	F	115	14
207	do.	do.	do.	do.	1	F	115	16
208	do.	do.	do.	do.	1	F	115	16
209	do.	do.	do.	do.	1	F	120	16
210	do.	do.	do.	do.	1	F	121	16
211	do.	do.	do.	do.	1	F	125	18
212	do.	do.	do.	do.	1	F	125	20
213	do.	do.	do.	do.	1	F	100	8
214	do.	do.	do.	do.	1	L	110	13.1
215	do.	do.	do.	do.	1	L	84	5.3
216	do.	do.	do.	do.	1	L	89	6
217	do.	do.	do.	do.	1	L	94	6.5
218	do.	do.	do.	do.	1	L	94	6.8
219	do.	do.	do.	do.	1	L	97	7.8
220	do.	do.	do.	do.	1	L	100	8.5
221	do.	do.	do.	do.	1	L	100	8.5
222	do.	do.	do.	do.	1	L	101	8.6
223	do.	do.	<i>Notropis longirostris</i>	longnose shiner	1	L	53	1.6
224	do.	do.	<i>Notropis lutipinnis</i>	yellowfin shiner	1	L	40	0.5
225	do.	do.	do.	do.	1	L	41	0.6
226	do.	do.	do.	do.	1	L	41	0.6
227	do.	do.	do.	do.	1	L	46	0.8
228	do.	do.	do.	do.	1	L	48	0.8
229	do.	do.	do.	do.	1	L	48	0.9
230	do.	do.	do.	do.	1	L	48	1
231	do.	do.	do.	do.	1	L	49	1
232	do.	do.	do.	do.	1	F	60	1.1
233	do.	do.	do.	do.	1	L	48	1.1
234	do.	do.	do.	do.	1	L	51	1.1
235	do.	do.	do.	do.	1	F	50	1.2

**Appendix B.** Species names, common names, lengths, and weights of fishes collected at monitoring sites in Rockdale County, Georgia, May–August 2003.—Continued

[ID, identification; USGS, U.S. Geological Survey; TL, total length; mm, millimeter; do., ditto; F, field; L, lab; NA, not available]

ID number	USGS station number	Collection date	Species	Common name	Count	ID lab or field	TL (mm)	Weight (gram)
Little Haynes Creek at Dial Mill Road—continued								
236	2207435	August 14, 2003	<i>Notropis lutipinnis</i>	yellowfin shiner	1	L	50	1.2
237	do.	do.	do.	do.	1	L	50	1.2
238	do.	do.	do.	do.	1	L	52	1.3
239	do.	do.	do.	do.	1	L	55	1.3
240	do.	do.	do.	do.	1	F	55	1.4
241	do.	do.	do.	do.	1	F	55	1.4
242	do.	do.	do.	do.	1	F	52	1.5
243	do.	do.	do.	do.	1	F	52	1.5
244	do.	do.	do.	do.	1	F	52	1.5
245	do.	do.	do.	do.	1	L	53	1.5
246	do.	do.	do.	do.	1	F	55	1.8
247	do.	do.	do.	do.	1	L	55	1.8
248	do.	do.	do.	do.	1	F	56	2
249	do.	do.	do.	do.	1	F	56	2
250	do.	do.	do.	do.	1	L	57	2.1
251	do.	do.	do.	do.	1	F	61	2.3
252	do.	do.	do.	do.	1	L	64	2.3
253	do.	do.	do.	do.	1	F	67	4
254	do.	do.	<i>Noturus insignis</i>	speckled madtom	1	L	127	16.8
255	do.	do.	do.	do.	1	F	77	4.4
256	do.	do.	do.	do.	1	F	114	16
257	do.	do.	do.	do.	1	F	99	8
258	do.	do.	do.	do.	1	F	105	12
259	do.	do.	do.	do.	1	F	90	7.3
260	do.	do.	do.	do.	1	F	88	7.9
261	do.	do.	do.	do.	1	F	80	5
262	do.	do.	do.	do.	1	F	88	6.9
263	do.	do.	<i>Perca flavescens</i>	yellow perch	1	L	61	1.9
264	do.	do.	<i>Percina nigrofasciata</i>	blackbanded darter	1	L	97	10.2
265	do.	do.	do.	do.	1	L	95	8
266	do.	do.	do.	do.	1	L	95	10.4
267	do.	do.	do.	do.	1	L	92	7.8
268	do.	do.	do.	do.	1	L	91	8.3
269	do.	do.	do.	do.	1	L	88	7.2
270	do.	do.	do.	do.	1	L	88	7.1
271	do.	do.	do.	do.	1	L	87	7
272	do.	do.	do.	do.	1	L	80	5
273	do.	do.	do.	do.	1	L	78	4.7
274	do.	do.	do.	do.	1	L	77	4.4
275	do.	do.	do.	do.	1	L	75	3.7
276	do.	do.	do.	do.	1	L	71	3.5
277	do.	do.	do.	do.	1	L	69	2.9
278	do.	do.	do.	do.	1	L	65	2.4
279	do.	do.	do.	do.	1	L	64	2.4
280	do.	do.	do.	do.	1	L	63	2.1
281	do.	do.	do.	do.	1	L	61	1.8
282	do.	do.	do.	do.	1	L	57	1.5
283	do.	do.	do.	do.	1	L	54	1.3
284	do.	do.	do.	do.	1	L	52	1
285	do.	do.	do.	do.	1	L	51	1
286	do.	do.	do.	do.	1	L	50	1
287	do.	do.	do.	do.	1	L	48	0.9
288	do.	do.	do.	do.	1	L	41	0.5
289	do.	do.	do.	do.	1	L	40	0.5
290	do.	do.	do.	do.	1	F	98	10
291	do.	do.	do.	do.	1	F	93	8
292	do.	do.	do.	do.	1	F	91	8
293	do.	do.	do.	do.	1	F	90	6
294	do.	do.	do.	do.	1	F	87	8

44 Biological Monitoring and Assessment of Watersheds in Rockdale County, Georgia, May–August 2003

Appendix B. Species names, common names, lengths, and weights of fishes collected at monitoring sites in Rockdale County, Georgia, May–August 2003.—Continued

[ID, identification; USGS, U.S. Geological Survey; TL, total length; mm, millimeter; do., ditto; F, field; L, lab; NA, not available]

ID number	USGS station number	Collection date	Species	Common name	Count	ID lab or field	TL (mm)	Weight (gram)
Little Haynes Creek at Dial Mill Road—continued								
295	2207435	August 14, 2003	<i>Pomoxis nigromaculatus</i>	black crappie	1	F	165	54
296	do.	do.	<i>Scartomyzon rupiscartes</i>	striped jumprock	1	L	166	52.6
297	do.	do.	do.	do.	1	L	160	48.6
298	do.	do.	do.	do.	1	L	40	0.6
299	do.	do.	do.	do.	1	F	230	162
300	do.	do.	do.	do.	1	F	240	162
301	do.	do.	do.	do.	1	F	220	140
302	do.	do.	do.	do.	1	F	195	92
303	do.	do.	do.	do.	1	F	200	88
304	do.	do.	do.	do.	1	F	172	58
305	do.	do.	do.	do.	1	F	200	90
306	do.	do.	do.	do.	1	F	186	70
307	do.	do.	do.	do.	1	F	188	82
308	do.	do.	<i>Ameiurus brunneus</i>	snail bullhead	10	F	NA	408
309	do.	do.	<i>Cyprinella xaenura</i>	Altamaha shiner	50	F	NA	254.5
310	do.	do.	<i>Lepomis auritus</i>	redbreast sunfish	9	F	NA	282
311	do.	do.	<i>Lepomis macrochirus</i>	bluegill sunfish	78	F	NA	810
312	do.	do.	<i>Notropis hudsonius</i>	spottail shiner	8	F	NA	84
313	do.	do.	<i>Notropis lutipinnis</i>	yellowfin shiner	21	F	NA	16.1
314	do.	do.	<i>Percina nigrofasciata</i>	blackbanded darter	31	F	NA	144.4
Big Haynes Creek at Pleasant Hill Road								
315	2207412	August 13, 2003	<i>Ameiurus brunneus</i>	snail bullhead	1	L	245	209.4
316	do.	do.	do.	do.	1	L	183	67
317	do.	do.	do.	do.	1	L	150	40.8
318	do.	do.	do.	do.	1	L	25	0.2
319	do.	do.	do.	do.	1	L	25	0.2
320	do.	do.	do.	do.	1	L	23	0.2
321	do.	do.	do.	do.	1	L	26	0.4
322	do.	do.	do.	do.	1	L	25	0.2
323	do.	do.	do.	do.	1	L	28	0.3
324	do.	do.	do.	do.	1	F	165	50
325	do.	do.	do.	do.	1	F	167	70
326	do.	do.	do.	do.	1	F	157	50
327	do.	do.	do.	do.	1	F	128	24
328	do.	do.	do.	do.	1	F	120	22
329	do.	do.	do.	do.	1	F	157	64
330	do.	do.	do.	do.	1	F	180	82
331	do.	do.	do.	do.	1	F	162	56
332	do.	do.	do.	do.	1	F	142	36
333	do.	do.	do.	do.	1	F	205	120
334	do.	do.	do.	do.	1	F	145	38
335	do.	do.	do.	do.	1	F	122	26
336	do.	do.	do.	do.	1	F	120	22
337	do.	do.	do.	do.	1	F	160	60
338	do.	do.	do.	do.	1	F	175	78
339	do.	do.	do.	do.	1	F	82	8
340	do.	do.	do.	do.	1	F	220	182
341	do.	do.	do.	do.	1	F	110	16
342	do.	do.	do.	do.	1	F	90	10
343	do.	do.	do.	do.	1	F	145	34
344	do.	do.	do.	do.	1	F	175	76
345	do.	do.	<i>Cyprinella xaenura</i>	Altamaha shiner	1	L	115	18.6
346	do.	do.	do.	do.	1	L	110	17.2
347	do.	do.	do.	do.	1	L	93	8.6
348	do.	do.	do.	do.	1	L	78	5.4
349	do.	do.	do.	do.	1	L	85	6.1
350	do.	do.	do.	do.	1	L	100	11.9
351	do.	do.	do.	do.	1	L	124	20

**Appendix B.** Species names, common names, lengths, and weights of fishes collected at monitoring sites in Rockdale County, Georgia, May–August 2003.—Continued

[ID, identification; USGS, U.S. Geological Survey; TL, total length; mm, millimeter; do., ditto; F, field; L, lab; NA, not available]

ID number	USGS station number	Collection date	Species	Common name	Count	ID lab or field	TL (mm)	Weight (gram)
Big Haynes Creek at Pleasant Hill Road—continued								
352	2207412	August 13, 2003	<i>Cyprinella xaenura</i>	Altamaha shiner	1	L	118	19.7
353	do.	do.	do.	do.	1	L	100	10.6
354	do.	do.	do.	do.	1	L	83	6.3
355	do.	do.	do.	do.	1	L	83	5.5
356	do.	do.	do.	do.	1	L	110	13.8
357	do.	do.	do.	do.	1	L	116	17.1
358	do.	do.	do.	do.	1	L	85	5.8
359	do.	do.	do.	do.	1	L	79	5.9
360	do.	do.	do.	do.	1	L	120	18
361	do.	do.	do.	do.	1	L	89	7.8
362	do.	do.	do.	do.	1	L	77	4.9
363	do.	do.	do.	do.	1	L	120	16.4
364	do.	do.	do.	do.	1	L	109	13.7
365	do.	do.	do.	do.	1	L	90	8.4
366	do.	do.	do.	do.	1	L	75	4.1
367	do.	do.	do.	do.	1	L	90	8.7
368	do.	do.	do.	do.	1	L	74	4
369	do.	do.	do.	do.	1	L	75	4.5
370	do.	do.	do.	do.	1	L	85	6.9
371	do.	do.	do.	do.	1	L	120	21.1
372	do.	do.	do.	do.	1	L	90	7.7
373	do.	do.	do.	do.	1	L	91	8.9
374	do.	do.	do.	do.	1	L	110	9.5
375	do.	do.	do.	do.	1	L	89	8.14
376	do.	do.	do.	do.	1	L	81	6.3
377	do.	do.	do.	do.	1	L	88	7.5
378	do.	do.	do.	do.	1	L	84	6.4
379	do.	do.	do.	do.	1	L	73	4.2
380	do.	do.	do.	do.	1	L	70	3.4
381	do.	do.	do.	do.	1	L	90	8.8
382	do.	do.	do.	do.	1	F	117	16
383	do.	do.	do.	do.	1	F	107	16
384	do.	do.	do.	do.	1	F	95	10
385	do.	do.	do.	do.	1	F	110	14
386	do.	do.	do.	do.	1	F	95	10
387	do.	do.	do.	do.	1	F	120	18
388	do.	do.	do.	do.	1	F	100	12
389	do.	do.	do.	do.	1	F	91	10
390	do.	do.	do.	do.	1	F	115	16
391	do.	do.	do.	do.	1	F	116	18
392	do.	do.	do.	do.	1	F	80	6
393	do.	do.	do.	do.	1	F	72	4
394	do.	do.	do.	do.	1	F	95	10
395	do.	do.	do.	do.	1	F	90	10
396	do.	do.	do.	do.	1	F	77	4
397	do.	do.	do.	do.	1	F	96	8
398	do.	do.	do.	do.	1	F	119	16
399	do.	do.	do.	do.	1	F	116	16
400	do.	do.	do.	do.	1	F	87	6
401	do.	do.	do.	do.	1	F	111	16
402	do.	do.	do.	do.	1	F	70	4
403	do.	do.	do.	do.	1	F	75	6
404	do.	do.	do.	do.	1	F	109	14
405	do.	do.	do.	do.	1	F	89	8
406	do.	do.	do.	do.	1	F	70	4
407	do.	do.	do.	do.	1	F	115	16
408	do.	do.	do.	do.	1	F	77	6
409	do.	do.	do.	do.	1	F	85	6

46 Biological Monitoring and Assessment of Watersheds in Rockdale County, Georgia, May–August 2003

Appendix B. Species names, common names, lengths, and weights of fishes collected at monitoring sites in Rockdale County, Georgia, May–August 2003.—Continued

[ID, identification; USGS, U.S. Geological Survey; TL, total length; mm, millimeter; do., ditto; F, field; L, lab; NA, not available]

ID number	USGS station number	Collection date	Species	Common name	Count	ID lab or field	TL (mm)	Weight (gram)
Big Haynes Creek at Pleasant Hill Road—continued								
410	2207412	August 13, 2003	<i>Cyprinella xanura</i>	Altamaha shiner	1	F	77	6
411	do.	do.	do.	do.	1	F	70	4
412	do.	do.	do.	do.	1	F	75	6
413	do.	do.	<i>Etheostoma inscriptum</i>	turquoise darter	1	L	67	3.9
414	do.	do.	do.	do.	1	L	71	4.4
415	do.	do.	do.	do.	1	F	72	4
416	do.	do.	do.	do.	1	F	58	2.1
417	do.	do.	do.	do.	1	F	65	4
418	do.	do.	do.	do.	1	F	62	4
419	do.	do.	<i>Gambusia holbrooki</i>	mosquitofish	1	L	46	1.6
420	do.	do.	do.	do.	1	L	46	1.5
421	do.	do.	do.	do.	1	L	40	1.1
422	do.	do.	do.	do.	1	L	33	0.5
423	do.	do.	do.	do.	1	L	29	0.2
424	do.	do.	do.	do.	1	L	29	0.2
425	do.	do.	do.	do.	1	L	31	0.4
426	do.	do.	<i>Ictalurus punctatus</i>	channel catfish	1	F	65	2.5
427	do.	do.	<i>Lepomis auritus</i>	redbreast sunfish	1	L	32	0.5
428	do.	do.	do.	do.	1	F	137	40
429	do.	do.	do.	do.	1	F	150	48
430	do.	do.	do.	do.	1	F	105	22
431	do.	do.	do.	do.	1	F	135	38
432	do.	do.	do.	do.	1	F	110	20
433	do.	do.	do.	do.	1	F	140	52
434	do.	do.	do.	do.	1	F	105	18
435	do.	do.	do.	do.	1	F	145	50
436	do.	do.	do.	do.	1	F	85	12
437	do.	do.	do.	do.	1	F	98	14
438	do.	do.	do.	do.	1	F	95	16
439	do.	do.	do.	do.	1	F	99	18
440	do.	do.	<i>Lepomis macrochirus</i>	bluegill sunfish	1	L	26	0.3
441	do.	do.	do.	do.	1	L	37	0.8
442	do.	do.	do.	do.	1	L	39	0.9
443	do.	do.	do.	do.	1	L	34	0.6
444	do.	do.	do.	do.	1	F	100	18
445	do.	do.	do.	do.	1	F	76	8
446	do.	do.	do.	do.	1	F	75	8
447	do.	do.	do.	do.	1	F	115	20
448	do.	do.	do.	do.	1	F	60	4
449	do.	do.	do.	do.	1	F	75	6
450	do.	do.	do.	do.	1	F	105	20
451	do.	do.	do.	do.	1	F	105	18
452	do.	do.	do.	do.	1	F	65	4
453	do.	do.	do.	do.	1	F	93	14
454	do.	do.	do.	do.	1	F	66	4
455	do.	do.	do.	do.	1	F	85	10
456	do.	do.	do.	do.	1	F	34	0.6
457	do.	do.	<i>Micropterus salmoides</i>	largemouth bass	1	L	40	0.8
458	do.	do.	<i>Nocomis leptocephalus</i>	bluehead chub	1	F	140	32
459	do.	do.	do.	do.	1	F	95	12
460	do.	do.	do.	do.	1	F	112	12
461	do.	do.	do.	do.	1	F	196	90
462	do.	do.	do.	do.	1	F	85	8
463	do.	do.	do.	do.	1	F	110	16
464	do.	do.	do.	do.	1	F	90	10
465	do.	do.	do.	do.	1	F	111	14
466	do.	do.	do.	do.	1	F	120	22
467	do.	do.	do.	do.	1	F	145	40

**Appendix B.** Species names, common names, lengths, and weights of fishes collected at monitoring sites in Rockdale County, Georgia, May–August 2003.—Continued

[ID, identification; USGS, U.S. Geological Survey; TL, total length; mm, millimeter; do., ditto; F, field; L, lab; NA, not available]

ID number	USGS station number	Collection date	Species	Common name	Count	ID lab or field	TL (mm)	Weight (gram)
Big Haynes Creek at Pleasant Hill Road—continued								
468	2207412	August 13, 2003	<i>Nocomis leptocephalus</i>	bluehead chub	1	F	90	10
469	do.	do.	do.	do.	1	F	105	16
470	do.	do.	do.	do.	1	F	110	16
471	do.	do.	do.	do.	1	F	112	16
472	do.	do.	do.	do.	1	F	95	10
473	do.	do.	do.	do.	1	F	122	18
474	do.	do.	do.	do.	1	F	113	16
475	do.	do.	do.	do.	1	F	90	8
476	do.	do.	do.	do.	1	F	95	10
477	do.	do.	do.	do.	1	F	90	10
478	do.	do.	do.	do.	1	F	80	8
479	do.	do.	do.	do.	1	F	105	14
480	do.	do.	do.	do.	1	F	95	12
481	do.	do.	do.	do.	1	F	107	16
482	do.	do.	<i>Notropis hudsonius</i>	spottail shiner	1	L	118	16.4
483	do.	do.	do.	do.	1	L	116	15.6
484	do.	do.	do.	do.	1	L	117	13.3
485	do.	do.	do.	do.	1	L	116	14
486	do.	do.	<i>Scartomyzon rupiscartes</i>	striped jumprock	1	L	147	40
487	do.	do.	<i>Cyprinella xaenura</i>	Altamaha shiner	19	F	NA	187.5
488	do.	do.	<i>Nocomis leptocephalus</i>	bluehead chub	61	F	NA	1,157.3
Tributary to Yellow River at County Road 411								
489	02207337	June 12, 2003	<i>Ameiurus brunneus</i>	snail bullhead	1	L	162	61.7
490	do.	do.	<i>Lepomis macrochirus</i>	bluegill sunfish	1	L	59	3.2
491	do.	do.	do.	do.	1	L	44	1.3
492	do.	do.	do.	do.	1	L	45	1.4
493	do.	do.	do.	do.	1	F	88	8.9
494	do.	do.	do.	do.	1	F	75	3.8
495	do.	do.	do.	do.	1	F	69	1.7
496	do.	do.	do.	do.	1	F	56	2.8
497	do.	do.	do.	do.	1	F	70	5.1
498	do.	do.	do.	do.	1	F	37	0.6
499	do.	do.	do.	do.	1	F	43	0.9
500	do.	do.	do.	do.	1	F	73	5.4
501	do.	do.	do.	do.	1	F	56	2.8
502	do.	do.	do.	do.	1	F	55	2.4
503	do.	do.	do.	do.	1	F	95	12.9
504	do.	do.	do.	do.	1	F	78	6.9
505	do.	do.	do.	do.	1	F	75	6.2
506	do.	do.	do.	do.	1	F	50	1.6
507	do.	do.	do.	do.	1	F	45	1.1
508	do.	do.	do.	do.	1	F	59	2.8
509	do.	do.	do.	do.	1	F	61	2.7
510	do.	do.	do.	do.	1	F	58	2.5
511	do.	do.	do.	do.	1	F	58	2.6
512	do.	do.	do.	do.	1	F	48	1.6
513	do.	do.	do.	do.	1	F	43	1
514	do.	do.	do.	do.	1	F	48	1.6
515	do.	do.	do.	do.	1	F	59	2.8
516	do.	do.	do.	do.	1	F	58	2.5
517	do.	do.	do.	do.	1	F	49	2.6
518	do.	do.	do.	do.	1	F	55	2
519	do.	do.	do.	do.	1	F	50	1.4
520	do.	do.	do.	do.	1	F	40	0.8
521	do.	do.	do.	do.	1	F	59	3.2
522	do.	do.	do.	do.	1	F	49	1.9
523	do.	do.	do.	do.	1	F	49	1.5
524	do.	do.	do.	do.	1	F	38	0.8

48 Biological Monitoring and Assessment of Watersheds in Rockdale County, Georgia, May–August 2003

Appendix B. Species names, common names, lengths, and weights of fishes collected at monitoring sites in Rockdale County, Georgia, May–August 2003.—Continued

[ID, identification; USGS, U.S. Geological Survey; TL, total length; mm, millimeter; do., ditto; F, field; L, lab; NA, not available]

ID number	USGS station number	Collection date	Species	Common name	Count	ID lab or field	TL (mm)	Weight (gram)
Tributary to Yellow River at County Road 411—continued								
525	02207337	June 12, 2003	<i>Lepomis macrochirus</i>	bluegill sunfish	1	F	65	3.4
526	do.	do.	do.	do.	1	F	63	3.5
527	do.	do.	do.	do.	1	F	42	1
528	do.	do.	<i>Micropterus salmoides</i>	largemouth bass	1	L	32	0.5
529	do.	do.	do.	do.	1	L	110	16.1
530	do.	do.	<i>Nocomis leptocephalus</i>	bluehead chub	1	L	136	37.5
531	do.	do.	do.	do.	1	L	116	22.8
532	do.	do.	do.	do.	1	L	98	12.3
533	do.	do.	do.	do.	1	F	90	8.9
534	do.	do.	do.	do.	1	F	115	17.3
535	do.	do.	do.	do.	1	F	101	14.8
536	do.	do.	do.	do.	1	F	87	8.1
537	do.	do.	do.	do.	1	F	90	8.6
538	do.	do.	do.	do.	1	F	147	36.9
539	do.	do.	do.	do.	1	F	130	25
540	do.	do.	do.	do.	1	F	123	21
541	do.	do.	do.	do.	1	F	125	18.4
542	do.	do.	do.	do.	1	F	118	16.8
543	do.	do.	do.	do.	1	F	90	6.2
544	do.	do.	do.	do.	1	F	95	9.3
545	do.	do.	do.	do.	1	F	85	7.7
546	do.	do.	<i>Notemigonus crysoleucas</i>	golden shiner	1	L	77	4.6
547	do.	do.	do.	do.	1	L	78	4
548	do.	do.	<i>Notropis lutipinnis</i>	yellowfin shiner	1	L	40	0.7
549	do.	do.	do.	do.	1	L	75	6.1
550	do.	do.	do.	do.	1	L	65	3.2
551	do.	do.	do.	do.	1	L	73	5.2
552	do.	do.	do.	do.	1	L	65	3.1
553	do.	do.	do.	do.	1	L	73	4.5
554	do.	do.	do.	do.	1	L	63	2.6
555	do.	do.	do.	do.	1	L	72	4.8
556	do.	do.	do.	do.	1	F	75	4.5
557	do.	do.	do.	do.	1	F	75	4.3
558	do.	do.	do.	do.	1	F	66	3.1
559	do.	do.	<i>Percina nigrofasciata</i>	blackbanded darter	1	L	75	4.4
560	do.	do.	<i>Scartomyzon rupiscartes</i>	striped jumprock	1	L	152	40.3
561	do.	do.	do.	do.	1	L	148	34.6
562	do.	do.	do.	do.	1	L	85	7.8
Tributary to Yellow River at Denard Road								
563	2207334	June 11, 2003	<i>Ameiurus natalis</i>	yellow bullhead	1	L	159	51.4
564	do.	do.	do.	do.	1	L	117	23.1
565	do.	do.	do.	do.	1	L	122	24.5
566	do.	do.	<i>Ameiurus nebulosus</i>	brown bullhead	1	L	128	24.3
567	do.	do.	<i>Gambusia holbrooki</i>	mosquitofish	1	L	54	2.1
568	do.	do.	do.	do.	1	L	47	1.5
569	do.	do.	do.	do.	1	L	46	1.3
570	do.	do.	do.	do.	1	L	43	0.9
571	do.	do.	<i>Lepomis auritus</i>	redbreast sunfish	1	L	117	32.7
572	do.	do.	do.	do.	1	L	102	23.1
573	do.	do.	do.	do.	1	L	98	21
574	do.	do.	do.	do.	1	L	126	36.6
575	do.	do.	do.	do.	1	L	109	24.7
576	do.	do.	do.	do.	1	L	97	17.8
577	do.	do.	do.	do.	1	L	73	7.4
578	do.	do.	do.	do.	1	L	82	11.6
579	do.	do.	do.	do.	1	L	90	14.3
580	do.	do.	do.	do.	1	L	79	9.5
581	do.	do.	do.	do.	1	L	78	10.5

**Appendix B.** Species names, common names, lengths, and weights of fishes collected at monitoring sites in Rockdale County, Georgia, May–August 2003.—Continued

[ID, identification; USGS, U.S. Geological Survey; TL, total length; mm, millimeter; do., ditto; F, field; L, lab; NA, not available]

ID number	USGS station number	Collection date	Species	Common name	Count	ID lab or field	TL (mm)	Weight (gram)
Tributary to Yellow River at Denard Road—continued								
582	2207334	June 11, 2003	<i>Lepomis auritus</i>	redbreast sunfish	1	L	61	4.3
583	do.	do.	do.	do.	1	L	83	10.9
584	do.	do.	do.	do.	1	L	65	4.6
585	do.	do.	do.	do.	1	L	60	3.6
586	do.	do.	do.	do.	1	L	70	6.4
587	do.	do.	do.	do.	1	L	77	9.2
588	do.	do.	do.	do.	1	L	67	5.9
589	do.	do.	do.	do.	1	L	64	5
590	do.	do.	do.	do.	1	L	83	10.9
591	do.	do.	do.	do.	1	L	81	9.8
592	do.	do.	do.	do.	1	L	70	6.1
593	do.	do.	do.	do.	1	L	78	9.8
594	do.	do.	do.	do.	1	L	72	7
595	do.	do.	do.	do.	1	F	111	22
596	do.	do.	do.	do.	1	F	108	23
597	do.	do.	do.	do.	1	F	124	32
598	do.	do.	do.	do.	1	F	151	65
599	do.	do.	do.	do.	1	F	135	49
600	do.	do.	do.	do.	1	F	160	89
601	do.	do.	do.	do.	1	F	140	54
602	do.	do.	do.	do.	1	F	126	43
603	do.	do.	do.	do.	1	F	127	37
604	do.	do.	do.	do.	1	F	132	39
605	do.	do.	do.	do.	1	F	138	54
606	do.	do.	do.	do.	1	F	114	30
607	do.	do.	do.	do.	1	F	133	40
608	do.	do.	do.	do.	1	F	143	63
609	do.	do.	do.	do.	1	F	135	43
610	do.	do.	do.	do.	1	F	143	59
611	do.	do.	do.	do.	1	F	143	54
612	do.	do.	do.	do.	1	F	108	21
613	do.	do.	do.	do.	1	F	117	29
614	do.	do.	do.	do.	1	F	121	32
615	do.	do.	do.	do.	1	F	150	62
616	do.	do.	do.	do.	1	F	120	42
617	do.	do.	do.	do.	1	F	107	19
618	do.	do.	do.	do.	1	F	91	16
619	do.	do.	do.	do.	1	F	122	35
620	do.	do.	do.	do.	1	F	115	25
621	do.	do.	do.	do.	1	F	137	55
622	do.	do.	do.	do.	1	F	109	20
623	do.	do.	do.	do.	1	F	99	17
624	do.	do.	do.	do.	1	F	94	16
625	do.	do.	do.	do.	1	F	186	124
626	do.	do.	do.	do.	1	F	153	65
627	do.	do.	do.	do.	1	F	124	34
628	do.	do.	do.	do.	1	F	150	63
629	do.	do.	do.	do.	1	F	122	32
630	do.	do.	do.	do.	1	F	147	58
631	do.	do.	do.	do.	1	F	76	7.1
632	do.	do.	do.	do.	1	F	100	16
633	do.	do.	do.	do.	1	F	108	25
634	do.	do.	do.	do.	1	F	106	23
635	do.	do.	do.	do.	1	F	158	75
636	do.	do.	do.	do.	1	F	147	52
637	do.	do.	do.	do.	1	F	127	35
638	do.	do.	do.	do.	1	F	107	20
639	do.	do.	do.	do.	1	F	107	24

50 Biological Monitoring and Assessment of Watersheds in Rockdale County, Georgia, May–August 2003

Appendix B. Species names, common names, lengths, and weights of fishes collected at monitoring sites in Rockdale County, Georgia, May–August 2003.—Continued

[ID, identification; USGS, U.S. Geological Survey; TL, total length; mm, millimeter; do., ditto; F, field; L, lab; NA, not available]

ID number	USGS station number	Collection date	Species	Common name	Count	ID lab or field	TL (mm)	Weight (gram)
Tributary to Yellow River at Denard Road—continued								
640	2207334	June 11, 2003	<i>Lepomis auritus</i>	redbreast sunfish	1	F	112	24
641	do.	do.	do.	do.	1	F	83	9.3
642	do.	do.	do.	do.	1	F	92	12
643	do.	do.	do.	do.	1	F	98	16
644	do.	do.	do.	do.	1	F	85	9.8
645	do.	do.	do.	do.	1	F	91	12
646	do.	do.	do.	do.	1	F	76	6.9
647	do.	do.	do.	do.	1	F	90	12
648	do.	do.	do.	do.	1	F	80	7.7
649	do.	do.	do.	do.	1	F	73	6.2
650	do.	do.	<i>Lepomis cyanellus</i>	green sunfish	1	L	78	91
651	do.	do.	<i>Lepomis gulosus</i>	warmouth	1	F	150	73
652	do.	do.	<i>Lepomis macrochirus</i>	bluegill sunfish	1	L	104	18.1
653	do.	do.	do.	do.	1	L	93	12.7
654	do.	do.	do.	do.	1	L	72	5.5
655	do.	do.	do.	do.	1	L	88	11.3
656	do.	do.	do.	do.	1	L	70	5.2
657	do.	do.	do.	do.	1	L	69	5.5
658	do.	do.	do.	do.	1	L	58	3.5
659	do.	do.	do.	do.	1	L	63	3.7
660	do.	do.	do.	do.	1	L	59	3.2
661	do.	do.	do.	do.	1	L	73	6.5
662	do.	do.	do.	do.	1	L	65	4.5
663	do.	do.	do.	do.	1	L	65	4.1
664	do.	do.	do.	do.	1	L	65	4.6
665	do.	do.	do.	do.	1	L	62	4.5
666	do.	do.	do.	do.	1	L	88	11.4
667	do.	do.	do.	do.	1	L	84	8.9
668	do.	do.	do.	do.	1	L	66	4
669	do.	do.	do.	do.	1	L	84	11.1
670	do.	do.	do.	do.	1	L	89	10.6
671	do.	do.	do.	do.	1	L	56	3
672	do.	do.	do.	do.	1	F	75	6.2
673	do.	do.	do.	do.	1	F	83	8
674	do.	do.	do.	do.	1	F	92	11
675	do.	do.	do.	do.	1	F	69	4.2
676	do.	do.	do.	do.	1	F	79	6.5
677	do.	do.	do.	do.	1	F	95	13
678	do.	do.	do.	do.	1	F	83	7.7
679	do.	do.	do.	do.	1	F	120	26
680	do.	do.	do.	do.	1	F	108	16.1
681	do.	do.	do.	do.	1	F	79	7.2
682	do.	do.	do.	do.	1	F	90	11
683	do.	do.	do.	do.	1	F	82	8.1
684	do.	do.	<i>Micropterus salmoides</i>	largemouth bass	1	L	50	1.4
685	do.	do.	do.	do.	1	L	142	39.1
686	do.	do.	do.	do.	1	L	103	15.8
687	do.	do.	do.	do.	1	L	95	11.3
688	do.	do.	do.	do.	1	L	100	13.2
689	do.	do.	do.	do.	1	L	100	13.9
690	do.	do.	do.	do.	1	L	102	14
691	do.	do.	do.	do.	1	L	87	8.7
692	do.	do.	do.	do.	1	L	77	5.8
693	do.	do.	do.	do.	1	L	80	6.8
694	do.	do.	do.	do.	1	F	109	16.3
695	do.	do.	do.	do.	1	F	114	15
696	do.	do.	do.	do.	1	F	104	12.8
697	do.	do.	do.	do.	1	F	135	23

**Appendix B.** Species names, common names, lengths, and weights of fishes collected at monitoring sites in Rockdale County, Georgia, May–August 2003.—Continued

[ID, identification; USGS, U.S. Geological Survey; TL, total length; mm, millimeter; do., ditto; F, field; L, lab; NA, not available]

ID number	USGS station number	Collection date	Species	Common name	Count	ID lab or field	TL (mm)	Weight (gram)
Tributary to Yellow River at Denard Road—continued								
698	2207334	June 11, 2003	<i>Notropis lutipinnis</i>	yellowfin shiner	1	L	75	4.9
699	do.	do.	<i>Scartomyzon rupiscartes</i>	striped jumprock	1	L	184	63.9
700	do.	do.	<i>Lepomis auritus</i>	redbreast sunfish	12	F	NA	86
701	do.	do.	<i>Lepomis macrochirus</i>	bluegill sunfish	3	F	NA	12.1
Snapping Shoals Creek at Honey Creek Road								
702	2204770	June 23, 2003	<i>Ameiurus nebulosus</i>	brown bullhead	1	L	398	NA
703	do.	do.	do.	do.	1	L	386	NA
704	do.	do.	<i>Lepomis auritus</i>	redbreast sunfish	1	F	163	95
705	do.	do.	do.	do.	1	F	112	26
706	do.	do.	do.	do.	1	F	104	21
707	do.	do.	do.	do.	1	F	130	36
708	do.	do.	do.	do.	1	F	118	31
709	do.	do.	do.	do.	1	F	63	3.8
710	do.	do.	<i>Lepomis macrochirus</i>	bluegill sunfish	1	L	61	3.7
711	do.	do.	do.	do.	1	L	50	2.1
712	do.	do.	do.	do.	1	F	118	28
713	do.	do.	do.	do.	1	F	100	17
714	do.	do.	do.	do.	1	F	109	21
715	do.	do.	do.	do.	1	F	96	15
716	do.	do.	do.	do.	1	F	50	1.7
717	do.	do.	do.	do.	1	F	103	20
718	do.	do.	do.	do.	1	F	77	7.8
719	do.	do.	do.	do.	1	F	79	8
720	do.	do.	do.	do.	1	F	61	4
721	do.	do.	do.	do.	1	F	84	9.5
722	do.	do.	do.	do.	1	F	75	7.2
723	do.	do.	do.	do.	1	F	114	24
724	do.	do.	do.	do.	1	F	107	22
725	do.	do.	do.	do.	1	F	57	3
726	do.	do.	do.	do.	1	F	51	2
727	do.	do.	do.	do.	1	F	70	4.9
728	do.	do.	do.	do.	1	F	127	38
729	do.	do.	do.	do.	1	F	85	11
730	do.	do.	do.	do.	1	F	82	8.9
731	do.	do.	do.	do.	1	F	70	5.3
732	do.	do.	do.	do.	1	F	64	3.5
733	do.	do.	do.	do.	1	F	75	6.9
734	do.	do.	do.	do.	1	F	52	2.1
735	do.	do.	do.	do.	1	F	77	7
736	do.	do.	do.	do.	1	F	85	10.9
737	do.	do.	do.	do.	1	F	67	4.4
738	do.	do.	do.	do.	1	F	48	1.6
739	do.	do.	do.	do.	1	F	57	2.6
740	do.	do.	do.	do.	1	F	55	2.5
741	do.	do.	do.	do.	1	F	43	1.1
742	do.	do.	do.	do.	1	F	57	2.3
743	do.	do.	do.	do.	1	F	64	3.2
744	do.	do.	do.	do.	1	F	49	1.6
745	do.	do.	<i>Lepomis microlophus</i>	redeer sunfish	1	F	60	3.1
746	do.	do.	<i>Moxostoma sp. cf. anisurum</i>	silver redbhorse	1	F	310	NA
747	do.	do.	<i>Nocomis leptocephalus</i>	bluehead chub	1	L	67	4.1
748	do.	do.	do.	do.	1	F	160	NA
749	do.	do.	do.	do.	1	F	137	34
750	do.	do.	do.	do.	1	F	140	37
751	do.	do.	do.	do.	1	F	131	30
752	do.	do.	do.	do.	1	F	118	20
753	do.	do.	do.	do.	1	F	116	19

52 Biological Monitoring and Assessment of Watersheds in Rockdale County, Georgia, May–August 2003

**Appendix B.** Species names, common names, lengths, and weights of fishes collected at monitoring sites in Rockdale County, Georgia, May–August 2003.—Continued

[ID, identification; USGS, U.S. Geological Survey; TL, total length; mm, millimeter; do., ditto; F, field; L, lab; NA, not available]

ID number	USGS station number	Collection date	Species	Common name	Count	ID lab or field	TL (mm)	Weight (gram)
Snapping Shoals Creek at Honey Creek Road—continued								
754	2204770	June 23, 2003	<i>Notropis lutipinnis</i>	yellowfin shiner	1	L	70	4.5
755	do.	do.	do.	do.	1	L	57	2.3
756	do.	do.	do.	do.	1	L	67	3.9
757	do.	do.	<i>Percina nigrofasciata</i>	blackbanded darter	1	L	92	9.5
758	do.	do.	<i>Scartomyzon rupiscartes</i>	striped jumprock	1	L	206	104.2
Snapping Shoals Creek at Flat Shoals Road								
759	2204752	June 12, 2003	<i>Ameiurus brunneus</i>	snail bullhead	1	L	142	29.4
760	do.	do.	<i>Ameiurus natalis</i>	yellow bullhead	1	L	142	38.2
761	do.	do.	do.	do.	1	L	123	23.4
762	do.	do.	do.	do.	1	L	156	47.8
763	do.	do.	do.	do.	1	L	165	59.5
764	do.	do.	do.	do.	1	L	139	33.7
765	do.	do.	do.	do.	1	L	188	84.9
766	do.	do.	do.	do.	1	L	122	165
767	do.	do.	<i>Lepomis auritus</i>	redbreast sunfish	1	F	163	94
768	do.	do.	do.	do.	1	F	112	24
769	do.	do.	do.	do.	1	F	111	18.2
770	do.	do.	do.	do.	1	F	86	12
771	do.	do.	<i>Lepomis cyanellus</i>	green sunfish	1	F	116	30
772	do.	do.	do.	do.	1	F	158	90
773	do.	do.	do.	do.	1	F	127	38
774	do.	do.	do.	do.	1	F	153	77
775	do.	do.	do.	do.	1	F	91	16
776	do.	do.	do.	do.	1	F	125	34
777	do.	do.	<i>Lepomis macrochirus</i>	bluegill sunfish	1	L	78	6.2
778	do.	do.	do.	do.	1	L	45	1.2
779	do.	do.	do.	do.	1	L	41	0.8
780	do.	do.	do.	do.	1	L	62	2.6
781	do.	do.	do.	do.	1	L	57	2.3
782	do.	do.	do.	do.	1	L	60	2.5
783	do.	do.	do.	do.	1	L	34	0.5
784	do.	do.	do.	do.	1	L	60	2.8
785	do.	do.	do.	do.	1	L	49	1.5
786	do.	do.	do.	do.	1	L	65	3.7
787	do.	do.	do.	do.	1	L	61	2.9
788	do.	do.	do.	do.	1	L	48	1.5
789	do.	do.	do.	do.	1	L	65	3.3
790	do.	do.	do.	do.	1	L	52	1.7
791	do.	do.	do.	do.	1	L	57	1.9
792	do.	do.	do.	do.	1	L	49	1.5
793	do.	do.	do.	do.	1	L	49	1.7
794	do.	do.	do.	do.	1	L	59	2.6
795	do.	do.	do.	do.	1	L	63	3.6
796	do.	do.	do.	do.	1	L	48	1.5
797	do.	do.	do.	do.	1	L	45	1.2
798	do.	do.	do.	do.	1	L	45	0.8
799	do.	do.	do.	do.	1	L	46	1.3
800	do.	do.	do.	do.	1	L	69	4.7
801	do.	do.	do.	do.	1	L	55	2.1
802	do.	do.	do.	do.	1	L	63	3.2
803	do.	do.	do.	do.	1	L	46	1.4
804	do.	do.	do.	do.	1	L	60	2.7
805	do.	do.	do.	do.	1	L	50	1.5
806	do.	do.	do.	do.	1	L	58	2.8
807	do.	do.	do.	do.	1	L	57	2.3
808	do.	do.	do.	do.	1	L	62	3.2
809	do.	do.	do.	do.	1	L	53	1.6
810	do.	do.	do.	do.	1	L	49	1.6

**Appendix B.** Species names, common names, lengths, and weights of fishes collected at monitoring sites in Rockdale County, Georgia, May–August 2003.—Continued

[ID, identification; USGS, U.S. Geological Survey; TL, total length; mm, millimeter; do., ditto; F, field; L, lab; NA, not available]

ID number	USGS station number	Collection date	Species	Common name	Count	ID lab or field	TL (mm)	Weight (gram)
Snapping Shoals Creek at Flat Shoals Road—continued								
811	2204752	June 12, 2003	<i>Lepomis macrochirus</i>	bluegill sunfish	1	L	37	0.7
812	do.	do.	do.	do.	1	L	59	2.3
813	do.	do.	do.	do.	1	L	50	1.6
814	do.	do.	do.	do.	1	L	56	2.2
815	do.	do.	do.	do.	1	L	51	1.6
816	do.	do.	do.	do.	1	L	50	1.6
817	do.	do.	do.	do.	1	L	44	1
818	do.	do.	do.	do.	1	L	53	2.4
819	do.	do.	do.	do.	1	L	50	1.5
820	do.	do.	do.	do.	1	L	68	3.9
821	do.	do.	do.	do.	1	L	45	1.2
822	do.	do.	do.	do.	1	L	43	1.2
823	do.	do.	do.	do.	1	L	50	1.5
824	do.	do.	do.	do.	1	L	67	3.4
825	do.	do.	do.	do.	1	F	76	6.9
826	do.	do.	do.	do.	1	F	111	19.6
827	do.	do.	do.	do.	1	F	83	9.9
828	do.	do.	do.	do.	1	F	68	4.4
829	do.	do.	do.	do.	1	F	95	12.6
830	do.	do.	do.	do.	1	F	100	16
831	do.	do.	do.	do.	1	F	65	4.3
832	do.	do.	do.	do.	1	F	138	51
833	do.	do.	do.	do.	1	F	61	3.2
834	do.	do.	do.	do.	1	F	125	38.4
835	do.	do.	do.	do.	1	F	115	19.7
836	do.	do.	do.	do.	1	F	159	86
837	do.	do.	do.	do.	1	F	123	33
838	do.	do.	do.	do.	1	F	87	15
839	do.	do.	do.	do.	1	F	86	12
840	do.	do.	do.	do.	1	F	138	53
841	do.	do.	do.	do.	1	F	92	15
842	do.	do.	do.	do.	1	F	57	2.6
843	do.	do.	do.	do.	1	F	66	3.6
844	do.	do.	do.	do.	1	F	62	3.4
845	do.	do.	do.	do.	1	F	59	3.1
846	do.	do.	do.	do.	1	F	49	1.7
847	do.	do.	<i>Micropterus salmoides</i>	largemouth bass	1	L	92	8.1
848	do.	do.	do.	do.	1	L	40	0.6
849	do.	do.	do.	do.	1	L	36	0.5
850	do.	do.	<i>Nocomis leptocephalus</i>	bluehead chub	1	L	139	36.5
851	do.	do.	do.	do.	1	L	132	33.2
852	do.	do.	do.	do.	1	L	122	22.4
853	do.	do.	do.	do.	1	L	117	21.2
854	do.	do.	do.	do.	1	L	59	2.2
855	do.	do.	do.	do.	1	L	65	3.1
856	do.	do.	<i>Notemigonus crysoleucas</i>	golden shiner	1	L	83	5.1
857	do.	do.	<i>Notropis lutipinnis</i>	yellowfin shiner	1	L	68	3.2
858	do.	do.	do.	do.	1	L	58	2
859	do.	do.	do.	do.	1	L	53	1.5
860	do.	do.	do.	do.	1	L	54	1.6
861	do.	do.	do.	do.	1	L	59	1.8
862	do.	do.	do.	do.	1	L	52	1.2

54 Biological Monitoring and Assessment of Watersheds in Rockdale County, Georgia, May–August 2003

Appendix B. Species names, common names, lengths, and weights of fishes collected at monitoring sites in Rockdale County, Georgia, May–August 2003.—Continued

[ID, identification; USGS, U.S. Geological Survey; TL, total length; mm, millimeter; do., ditto; F, field; L, lab; NA, not available]

ID number	USGS station number	Collection date	Species	Common name	Count	ID lab or field	TL (mm)	Weight (gram)
Honey Creek at Flat Shoals Road								
863	2204122	June 22, 2003	<i>Etheostoma inscriptum</i>	turquoise darter	1	L	57	2.5
864	do.	do.	do.	do.	1	L	63	3.2
865	do.	do.	do.	do.	1	L	45	1.5
866	do.	do.	do.	do.	1	L	49	1.6
867	do.	do.	do.	do.	1	L	53	2.1
868	do.	do.	do.	do.	1	L	47	1.5
869	do.	do.	do.	do.	1	L	52	1.8
870	do.	do.	do.	do.	1	L	56	2.7
871	do.	do.	<i>Gambusia holbrooki</i>	mosquitofish	1	L	37	0.6
872	do.	do.	<i>Lepomis auritus</i>	redbreast sunfish	1	F	152	61.7
873	do.	do.	do.	do.	1	F	94	14.5
874	do.	do.	do.	do.	1	F	128	35
875	do.	do.	do.	do.	1	F	138	49
876	do.	do.	do.	do.	1	F	156	75
877	do.	do.	do.	do.	1	F	170	93
878	do.	do.	do.	do.	1	F	105	21
879	do.	do.	do.	do.	1	F	115	29
880	do.	do.	do.	do.	1	F	154	76
881	do.	do.	do.	do.	1	F	123	25.7
882	do.	do.	do.	do.	1	F	71	5.8
883	do.	do.	do.	do.	1	F	109	23
884	do.	do.	do.	do.	1	F	113	28
885	do.	do.	<i>Lepomis gulosus</i>	warmouth	1	F	72	7.1
886	do.	do.	<i>Lepomis macrochirus</i>	bluegill sunfish	1	L	64	4.3
887	do.	do.	do.	do.	1	L	49	2
888	do.	do.	do.	do.	1	L	60	3.3
889	do.	do.	do.	do.	1	L	50	2.2
890	do.	do.	do.	do.	1	F	61	2.9
891	do.	do.	do.	do.	1	F	59	2.6
892	do.	do.	do.	do.	1	F	51	1.9
893	do.	do.	do.	do.	1	F	48	1.6
894	do.	do.	do.	do.	1	F	70	4.8
895	do.	do.	do.	do.	1	F	83	8.9
896	do.	do.	do.	do.	1	F	49	1.6
897	do.	do.	do.	do.	1	F	53	1.7
898	do.	do.	do.	do.	1	F	100	18
899	do.	do.	do.	do.	1	F	90	11
900	do.	do.	do.	do.	1	F	116	24
901	do.	do.	do.	do.	1	F	72	5.8
902	do.	do.	do.	do.	1	F	94	12
903	do.	do.	do.	do.	1	F	95	13
904	do.	do.	do.	do.	1	F	45	1.1
905	do.	do.	do.	do.	1	F	80	8
906	do.	do.	do.	do.	1	F	125	36
907	do.	do.	do.	do.	1	F	82	9
908	do.	do.	do.	do.	1	F	59	2.7
909	do.	do.	do.	do.	1	F	70	4.6
910	do.	do.	do.	do.	1	F	63	3.5
911	do.	do.	do.	do.	1	F	51	2.6
912	do.	do.	do.	do.	1	F	84	7.1
913	do.	do.	do.	do.	1	F	61	3.2
914	do.	do.	do.	do.	1	F	104	16
915	do.	do.	do.	do.	1	F	73	5.9
916	do.	do.	do.	do.	1	F	73	5.9
917	do.	do.	do.	do.	1	F	85	9.8
918	do.	do.	do.	do.	1	F	63	3
919	do.	do.	do.	do.	1	F	63	3.6
920	do.	do.	do.	do.	1	F	98	13
921	do.	do.	do.	do.	1	F	56	2.2

**Appendix B.** Species names, common names, lengths, and weights of fishes collected at monitoring sites in Rockdale County, Georgia, May–August 2003.—Continued

[ID, identification; USGS, U.S. Geological Survey; TL, total length; mm, millimeter; do., ditto; F, field; L, lab; NA, not available]

ID number	USGS station number	Collection date	Species	Common name	Count	ID lab or field	TL (mm)	Weight (gram)
Honey Creek at Flat Shoals Road—continued								
922	2204122	June 22, 2003	<i>Lepomis macrochirus</i>	bluegill sunfish	1	F	60	2.3
923	do.	do.	do.	do.	1	F	75	6.6
924	do.	do.	do.	do.	1	F	64	4
925	do.	do.	do.	do.	1	F	71	5.5
926	do.	do.	do.	do.	1	F	89	15
927	do.	do.	do.	do.	1	F	80	7.6
928	do.	do.	<i>Micropterus salmoides</i>	largemouth bass	1	L	131	29.5
929	do.	do.	do.	do.	1	L	132	28.8
930	do.	do.	do.	do.	1	L	85	7.8
931	do.	do.	do.	do.	1	L	34	0.5
932	do.	do.	<i>Nocomis leptcephalus</i>	bluehead chub	1	L	59	2.5
933	do.	do.	do.	do.	1	L	210	116.6
934	do.	do.	do.	do.	1	L	71	4.1
935	do.	do.	do.	do.	1	L	93	9.9
936	do.	do.	do.	do.	1	L	70	4.1
937	do.	do.	do.	do.	1	L	55	2.2
938	do.	do.	do.	do.	1	F	137	32
939	do.	do.	do.	do.	1	F	212	106
940	do.	do.	do.	do.	1	F	83	7.2
941	do.	do.	do.	do.	1	F	159	55
942	do.	do.	do.	do.	1	F	124	22.8
943	do.	do.	do.	do.	1	F	174	53
944	do.	do.	do.	do.	1	F	131	26
945	do.	do.	do.	do.	1	F	133	33
946	do.	do.	do.	do.	1	F	130	29
947	do.	do.	do.	do.	1	F	150	46
948	do.	do.	do.	do.	1	F	132	26
949	do.	do.	do.	do.	1	F	127	32
950	do.	do.	do.	do.	1	F	129	26
951	do.	do.	do.	do.	1	F	70	3.5
952	do.	do.	do.	do.	1	F	114	19
953	do.	do.	do.	do.	1	F	98	10
954	do.	do.	do.	do.	1	F	112	18
955	do.	do.	do.	do.	1	F	112	17
956	do.	do.	do.	do.	1	F	133	29
957	do.	do.	do.	do.	1	F	93	9.1
958	do.	do.	<i>Notropis longirostris</i>	longnose shiner	1	L	56	1.8
959	do.	do.	do.	do.	1	L	47	0.9
960	do.	do.	do.	do.	1	L	58	2.2
961	do.	do.	do.	do.	1	L	52	1.4
962	do.	do.	<i>Notropis lutipinnis</i>	yellowfin shiner	1	L	40	0.8
963	do.	do.	do.	do.	1	L	56	1.8
964	do.	do.	do.	do.	1	L	53	1.9
965	do.	do.	do.	do.	1	L	56	2
966	do.	do.	do.	do.	1	L	56	2.1
967	do.	do.	do.	do.	1	L	56	2.1
968	do.	do.	do.	do.	1	L	55	2.2
969	do.	do.	do.	do.	1	L	57	2.2
970	do.	do.	do.	do.	1	F	61	2.3
971	do.	do.	do.	do.	1	L	59	2.7
972	do.	do.	do.	do.	1	L	64	2.8
973	do.	do.	do.	do.	1	L	66	3.1
974	do.	do.	do.	do.	1	L	68	3.6
975	do.	do.	do.	do.	1	L	69	3.6
976	do.	do.	do.	do.	1	L	71	3.8
977	do.	do.	do.	do.	1	L	72	4.5
978	do.	do.	do.	do.	1	L	73	4.6
979	do.	do.	do.	do.	1	F	78	4.6
980	do.	do.	do.	do.	1	L	76	5.3
981	do.	do.	do.	do.	1	L	78	5.7

56 Biological Monitoring and Assessment of Watersheds in Rockdale County, Georgia, May–August 2003

**Appendix B.** Species names, common names, lengths, and weights of fishes collected at monitoring sites in Rockdale County, Georgia, May–August 2003.—Continued

[ID, identification; USGS, U.S. Geological Survey; TL, total length; mm, millimeter; do., ditto; F, field; L, lab; NA, not available]

ID number	USGS station number	Collection date	Species	Common name	Count	ID lab or field	TL (mm)	Weight (gram)
Honey Creek at Flat Shoals Road—continued								
982	2204122	June 22, 2003	<i>Notropis lutipinnis</i>	yellowfin shiner	1	L	80	6
983	do.	do.	do.	do.	1	L	78	6.1
984	do.	do.	do.	do.	1	F	81	7.4
985	do.	do.	do.	do.	1	F	84	6.2
986	do.	do.	do.	do.	1	F	78	4.9
987	do.	do.	<i>Scartomyzon rupiscartes</i>	striped jumprock	1	L	194	76.6
Honey Creek at Honey Creek Road								
988	2204127	July 23, 2003	<i>Ameiurus natalis</i>	yellow bullhead	1	L	122	23
989	do.	do.	<i>Ameiurus nebulosus</i>	brown bullhead	1	L	280	226.8
990	do.	do.	<i>Dorosoma cepedianum</i>	gizzard shad	1	L	44	0.8
991	do.	do.	<i>Etheostoma inscriptum</i>	turquoise darter	1	L	53	1.8
992	do.	do.	<i>Hybopsis rubrifrons</i>	rosyface chub	1	L	94	7.8
993	do.	do.	do.	do.	1	L	92	7.9
994	do.	do.	do.	do.	1	L	91	7.5
995	do.	do.	do.	do.	1	L	74	3.5
996	do.	do.	do.	do.	1	L	57	1.5
997	do.	do.	<i>Lepomis auritus</i>	redbreast sunfish	1	F	149	31
998	do.	do.	do.	do.	1	F	112	12
999	do.	do.	do.	do.	1	F	140	27
1000	do.	do.	do.	do.	1	F	147	32
1001	do.	do.	do.	do.	1	F	89	6.3
1002	do.	do.	do.	do.	1	F	152	33
1003	do.	do.	do.	do.	1	F	127	18
1004	do.	do.	do.	do.	1	F	111	13
1005	do.	do.	do.	do.	1	F	184	120
1006	do.	do.	do.	do.	1	F	122	26
1007	do.	do.	do.	do.	1	F	129	28
1008	do.	do.	do.	do.	1	F	187	90
1009	do.	do.	do.	do.	1	F	129	28
1010	do.	do.	do.	do.	1	F	77	6
1011	do.	do.	do.	do.	1	F	98	8
1012	do.	do.	<i>Lepomis cyanellus</i>	green sunfish	1	F	105	11.5
1013	do.	do.	do.	do.	1	F	137	23
1014	do.	do.	<i>Lepomis macrochirus</i>	bluegill sunfish	1	L	140	51.3
1015	do.	do.	do.	do.	1	L	103	12.1
1016	do.	do.	do.	do.	1	L	70	4.6
1017	do.	do.	do.	do.	1	L	45	1.1
1018	do.	do.	do.	do.	1	L	46	1.5
1019	do.	do.	do.	do.	1	L	58	2.8
1020	do.	do.	do.	do.	1	L	51	2
1021	do.	do.	do.	do.	1	L	52	2.1
1022	do.	do.	do.	do.	1	L	39	0.9
1023	do.	do.	do.	do.	1	F	78	3.9
1024	do.	do.	do.	do.	1	F	128	17.1
1025	do.	do.	do.	do.	1	F	103	10
1026	do.	do.	do.	do.	1	F	95	6.7
1027	do.	do.	do.	do.	1	F	106	10
1028	do.	do.	do.	do.	1	F	53	1.1
1029	do.	do.	do.	do.	1	F	76	3
1030	do.	do.	do.	do.	1	F	52	0.9
1031	do.	do.	do.	do.	1	F	102	8.6
1032	do.	do.	do.	do.	1	F	116	13.6
1033	do.	do.	do.	do.	1	F	100	6.8
1034	do.	do.	do.	do.	1	F	79	3.7
1035	do.	do.	do.	do.	1	F	98	6.8
1036	do.	do.	do.	do.	1	F	87	5.4
1037	do.	do.	do.	do.	1	F	80	4
1038	do.	do.	do.	do.	1	F	81	4.2

**Appendix B.** Species names, common names, lengths, and weights of fishes collected at monitoring sites in Rockdale County, Georgia, May–August 2003.—Continued

[ID, identification; USGS, U.S. Geological Survey; TL, total length; mm, millimeter; do., ditto; F, field; L, lab; NA, not available]

ID number	USGS station number	Collection date	Species	Common name	Count	ID lab or field	TL (mm)	Weight (gram)
Honey Creek at Honey Creek Road—continued								
1039	2204127	July 23, 2003	<i>Lepomis macrochirus</i>	bluegill sunfish	1	F	88	6
1040	do.	do.	do.	do.	1	F	53	1.2
1041	do.	do.	do.	do.	1	F	112	10.9
1042	do.	do.	do.	do.	1	F	115	11.6
1043	do.	do.	do.	do.	1	F	72	4
1044	do.	do.	do.	do.	1	F	78	3.2
1045	do.	do.	do.	do.	1	F	62	1.8
1046	do.	do.	do.	do.	1	F	91	5.7
1047	do.	do.	do.	do.	1	F	114	10.2
1048	do.	do.	do.	do.	1	F	110	9.6
1049	do.	do.	do.	do.	1	F	142	25
1050	do.	do.	do.	do.	1	F	121	11.8
1051	do.	do.	do.	do.	1	F	60	1.5
1052	do.	do.	do.	do.	1	F	101	8.9
1053	do.	do.	do.	do.	1	F	83	4.3
1054	do.	do.	do.	do.	1	F	132	23
1055	do.	do.	do.	do.	1	F	83	4.7
1056	do.	do.	do.	do.	1	F	64	2.1
1057	do.	do.	do.	do.	1	F	142	NA
1058	do.	do.	do.	do.	1	F	131	20.4
1059	do.	do.	do.	do.	1	F	89	5.2
1060	do.	do.	do.	do.	1	F	57	1.5
1061	do.	do.	<i>Lepomis microlophus</i>	redeer sunfish	1	F	158	34
1062	do.	do.	do.	do.	1	F	220	196
1063	do.	do.	do.	do.	1	F	99	8
1064	do.	do.	<i>Micropterus salmoides</i>	largemouth bass	1	L	180	84.2
1065	do.	do.	do.	do.	1	L	156	56
1066	do.	do.	do.	do.	1	L	126	18.7
1067	do.	do.	do.	do.	1	L	103	12.5
1068	do.	do.	do.	do.	1	L	102	12.5
1069	do.	do.	do.	do.	1	L	38	0.7
1070	do.	do.	do.	do.	1	F	278	28
1071	do.	do.	<i>Nocomis leptocephalus</i>	bluehead chub	1	L	70	3.6
1072	do.	do.	do.	do.	1	F	124	10
1073	do.	do.	do.	do.	1	F	85	2.3
1074	do.	do.	do.	do.	1	F	120	10
1075	do.	do.	do.	do.	1	F	109	8.7
1076	do.	do.	do.	do.	1	F	114	12
1077	do.	do.	do.	do.	1	F	152	28
1078	do.	do.	do.	do.	1	F	115	9.5
1079	do.	do.	do.	do.	1	F	134	110
1080	do.	do.	do.	do.	1	F	124	12
1081	do.	do.	do.	do.	1	F	92	4.1
1082	do.	do.	do.	do.	1	F	85	2.3
1083	do.	do.	do.	do.	1	F	90	4.8
1084	do.	do.	<i>Notropis longirostris</i>	longnose shiner	1	L	59	2.1
1085	do.	do.	do.	do.	1	L	40	0.5
1086	do.	do.	<i>Notropis lutipinnis</i>	yellowfin shiner	1	L	80	5.6
1087	do.	do.	do.	do.	1	L	69	3.7
1088	do.	do.	do.	do.	1	L	69	3.9
1089	do.	do.	do.	do.	1	L	62	2.3
1090	do.	do.	do.	do.	1	L	62	2.3
1091	do.	do.	do.	do.	1	L	63	2.3
1092	do.	do.	<i>Noturus insignis</i>	speckled madtom	1	L	107	15.8
1093	do.	do.	do.	do.	1	L	106	14.4

58 Biological Monitoring and Assessment of Watersheds in Rockdale County, Georgia, May–August 2003

Appendix B. Species names, common names, lengths, and weights of fishes collected at monitoring sites in Rockdale County, Georgia, May–August 2003.—Continued

[ID, identification; USGS, U.S. Geological Survey; TL, total length; mm, millimeter; do., ditto; F, field; L, lab; NA, not available]

ID number	USGS station number	Collection date	Species	Common name	Count	ID lab or field	TL (mm)	Weight (gram)
Honey Creek at Honey Creek Road—continued								
1094	2204127	July 23, 2003	<i>Percina nigrofasciata</i>	blackbanded darter	1	L	76	4.2
1095	do.	do.	do.	do.	1	L	80	5.4
1096	do.	do.	do.	do.	1	L	78	5
1097	do.	do.	do.	do.	1	L	73	3.6
1098	do.	do.	do.	do.	1	L	64	2.3
1099	do.	do.	do.	do.	1	L	61	2
Tributary to South River at Flat Bridge Road								
1414	2204068	June 12, 2003	<i>Notropis lutipinnis</i>	yellowfin shiner	1	L	54	1.8
1415	do.	do.	do.	do.	1	L	52	1.6
1416	do.	do.	do.	do.	1	L	48	1.3
1417	do.	do.	do.	do.	1	L	52	2.2
1418	do.	do.	do.	do.	1	L	54	1.9
1419	do.	do.	do.	do.	1	L	52	1.5
1420	do.	do.	<i>Nocomis leptocephalus</i>	bluehead chub	1	L	117	21.3
1421	do.	do.	do.	do.	1	L	108	17
1422	do.	do.	do.	do.	1	L	106	16.1
1423	do.	do.	do.	do.	1	L	108	16.3
1424	do.	do.	do.	do.	1	L	96	11
1425	do.	do.	do.	do.	1	L	102	14.9
1426	do.	do.	do.	do.	1	L	104	15.8
1427	do.	do.	do.	do.	1	L	100	13
1428	do.	do.	do.	do.	1	L	68	4
1429	do.	do.	do.	do.	1	L	91	10.3
1430	do.	do.	do.	do.	1	L	85	7.6
1431	do.	do.	do.	do.	1	L	82	7.5
1432	do.	do.	do.	do.	1	L	73	4.8
1433	do.	do.	do.	do.	1	L	80	6.6
1434	do.	do.	do.	do.	1	L	67	3.6
1435	do.	do.	do.	do.	1	L	69	4
1436	do.	do.	do.	do.	1	L	66	3
1437	do.	do.	do.	do.	1	L	70	4
1438	do.	do.	do.	do.	1	L	60	2.5
1439	do.	do.	do.	do.	1	L	75	4.9
1440	do.	do.	do.	do.	1	L	68	3.5
1441	do.	do.	do.	do.	1	L	77	6.1
1442	do.	do.	do.	do.	1	L	69	3.9
1443	do.	do.	do.	do.	1	L	59	2.4
1444	do.	do.	do.	do.	1	L	50	1.5
1445	do.	do.	do.	do.	1	L	57	2.2
1446	do.	do.	do.	do.	1	L	59	2.4
1447	do.	do.	do.	do.	1	L	58	2.5
1448	do.	do.	do.	do.	1	L	61	2.9
1449	do.	do.	do.	do.	1	L	65	2.9
1450	do.	do.	do.	do.	1	L	72	4
1451	do.	do.	do.	do.	1	L	53	1.8
1452	do.	do.	do.	do.	1	L	62	2.8
1453	do.	do.	do.	do.	1	L	72	4.6
1454	do.	do.	do.	do.	1	L	70	3.8
1455	do.	do.	do.	do.	1	L	65	3.4
1456	do.	do.	<i>Lepomis auritus</i>	redbreast sunfish	1	L	54	2.6
1457	do.	do.	do.	do.	1	L	45	1.6
1458	do.	do.	<i>Lepomis gulosus</i>	warmouth	1	L	51	2.7
1459	do.	do.	do.	do.	1	L	55	2.3
1460	do.	do.	do.	do.	1	L	65	3.5
1461	do.	do.	<i>Lepomis macrochirus</i>	bluegill sunfish	1	L	37	0.7
1462	do.	do.	do.	do.	1	L	45	1.2
1463	do.	do.	do.	do.	1	L	48	1.4
1464	do.	do.	<i>Lepomis microlophus</i>	reardear sunfish	1	L	53	1.8

**Appendix B.** Species names, common names, lengths, and weights of fishes collected at monitoring sites in Rockdale County, Georgia, May–August 2003.—Continued

[ID, identification; USGS, U.S. Geological Survey; TL, total length; mm, millimeter; do., ditto; F, field; L, lab; NA, not available]

ID number	USGS station number	Collection date	Species	Common name	Count	ID lab or field	TL (mm)	Weight (gram)
Tributary to South River at Flat Bridge Road—continued								
1465	2204068	June 12, 2003	<i>Lepomis macrochirus</i>	bluegill sunfish	1	F	68	4.3
1466	do.	do.	<i>Lepomis auritus</i>	redbreast sunfish	1	F	55	2.6
1467	do.	do.	do.	do.	1	F	97	14
1468	do.	do.	<i>Lepomis macrochirus</i>	bluegill sunfish	1	F	40	1.5
1469	do.	do.	do.	do.	1	F	42	1.3
1470	do.	do.	<i>Lepomis auritus</i>	redbreast sunfish	1	F	67	5.1
1471	do.	do.	do.	do.	1	F	56	2
1472	do.	do.	do.	do.	1	F	71	6.4
1473	do.	do.	<i>Lepomis macrochirus</i>	bluegill sunfish	1	F	46	1.6
1474	do.	do.	<i>Lepomis auritus</i>	redbreast sunfish	1	F	82	9.1
1475	do.	do.	<i>Lepomis macrochirus</i>	bluegill sunfish	1	F	41	2.1
1476	do.	do.	<i>Lepomis auritus</i>	redbreast sunfish	1	F	56	2.1
1477	do.	do.	do.	do.	1	F	61	3.3
1478	do.	do.	<i>Lepomis macrochirus</i>	bluegill sunfish	1	F	68	5.8
Jackson Creek above Rock Creek								
1479	2204088	June 12, 2003	<i>Notropis lutipinnis</i>	yellowfin shiner	1	L	42	0.8
1480	do.	do.	do.	do.	1	L	46	1.1
1481	do.	do.	do.	do.	1	L	45	0.9
1482	do.	do.	do.	do.	1	L	56	1.9
1483	do.	do.	do.	do.	1	L	49	1.5
1484	do.	do.	do.	do.	1	L	42	0.8
1485	do.	do.	do.	do.	1	L	45	1
1486	do.	do.	do.	do.	1	L	42	0.8
1487	do.	do.	do.	do.	1	L	48	1.1
1488	do.	do.	do.	do.	1	L	66	3.1
1489	do.	do.	do.	do.	1	L	62	3.1
1490	do.	do.	do.	do.	1	L	39	0.6
1491	do.	do.	do.	do.	1	L	42	0.7
1492	do.	do.	do.	do.	1	L	51	1.6
1493	do.	do.	do.	do.	1	L	43	0.9
1494	do.	do.	do.	do.	1	L	48	1.5
1495	do.	do.	do.	do.	1	L	45	0.9
1496	do.	do.	do.	do.	1	L	51	1.3
1497	do.	do.	do.	do.	1	L	62	2.5
1498	do.	do.	do.	do.	1	L	43	0.9
1499	do.	do.	do.	do.	1	L	46	1.1
1500	do.	do.	do.	do.	1	L	54	1.5
1501	do.	do.	do.	do.	1	L	48	1.1
1502	do.	do.	do.	do.	1	L	52	1.5
1503	do.	do.	do.	do.	1	L	54	1.9
1504	do.	do.	do.	do.	1	L	51	1.6
1505	do.	do.	do.	do.	1	L	40	0.7
1506	do.	do.	do.	do.	1	L	44	0.9
1507	do.	do.	do.	do.	1	L	53	1.3
1508	do.	do.	do.	do.	1	L	61	2.7
1509	do.	do.	do.	do.	1	L	52	1.6
1510	do.	do.	do.	do.	1	L	40	1
1511	do.	do.	do.	do.	1	L	50	1.5
1512	do.	do.	do.	do.	1	L	45	1
1513	do.	do.	<i>Scartomyzon rupiscartes</i>	striped jumprock	1	L	90	7.5
1514	do.	do.	do.	do.	1	L	85	6.1
1515	do.	do.	<i>Micropterus salmoides</i>	largemouth bass	1	L	33	0.5
1516	do.	do.	do.	do.	1	L	33	0.4
1517	do.	do.	<i>Nocomis leptocephalus</i>	bluehead chub	1	L	126	25
1518	do.	do.	do.	do.	1	L	94	12.1
1519	do.	do.	do.	do.	1	L	67	3
1520	do.	do.	do.	do.	1	L	76	5.4
1521	do.	do.	do.	do.	1	L	71	3.9

60 Biological Monitoring and Assessment of Watersheds in Rockdale County, Georgia, May–August 2003

**Appendix B.** Species names, common names, lengths, and weights of fishes collected at monitoring sites in Rockdale County, Georgia, May–August 2003.—Continued

[ID, identification; USGS, U.S. Geological Survey; TL, total length; mm, millimeter; do., ditto; F, field; L, lab; NA, not available]

ID number	USGS station number	Collection date	Species	Common name	Count	ID lab or field	TL (mm)	Weight (gram)
Jackson Creek above Rock Creek—continued								
1522	2204088	June 12, 2003	<i>Nocomis leptocephalus</i>	bluehead chub	1	L	82	6.3
1523	do.	do.	do.	do.	1	L	73	5.9
1524	do.	do.	do.	do.	1	L	61	2.7
1525	do.	do.	do.	do.	1	L	54	1.9
1526	do.	do.	do.	do.	1	L	72	4
1527	do.	do.	do.	do.	1	L	98	12.3
1528	do.	do.	do.	do.	1	L	110	17.4
1529	do.	do.	do.	do.	1	L	101	15.1
1530	do.	do.	do.	do.	1	L	74	4.2
1531	do.	do.	do.	do.	1	L	64	3.2
1532	do.	do.	do.	do.	1	L	103	12.9
1533	do.	do.	do.	do.	1	L	92	9.4
1534	do.	do.	do.	do.	1	L	63	2.8
1535	do.	do.	do.	do.	1	L	68	3.6
1536	do.	do.	<i>Semotilus atromatulus</i>	creek chub	1	L	103	15.3
1537	do.	do.	do.	do.	1	L	123	25.3
1538	do.	do.	do.	do.	1	L	99	14.1
1539	do.	do.	do.	do.	1	L	95	10.9
1540	do.	do.	do.	do.	1	L	47	1.3
1541	do.	do.	do.	do.	1	L	99	13.7
1542	do.	do.	do.	do.	1	L	58	2.3
1543	do.	do.	do.	do.	1	L	96	12.4
1544	do.	do.	do.	do.	1	L	77	6.6
1545	do.	do.	do.	do.	1	L	77	5.7
1546	do.	do.	do.	do.	1	L	68	4
1547	do.	do.	do.	do.	1	L	52	1.9
1548	do.	do.	do.	do.	1	L	81	7.4
1549	do.	do.	do.	do.	1	L	60	2.8
1550	do.	do.	do.	do.	1	L	95	14.4
1551	do.	do.	do.	do.	1	L	68	4.4
1552	do.	do.	do.	do.	1	L	73	5.1
1553	do.	do.	do.	do.	1	L	77	6.6
1554	do.	do.	do.	do.	1	L	74	6.4
1555	do.	do.	do.	do.	1	L	65	3.6
1556	do.	do.	do.	do.	1	L	46	1.3
1557	do.	do.	do.	do.	1	L	62	3
1558	do.	do.	do.	do.	1	L	53	1.9
1559	do.	do.	do.	do.	1	L	62	3.8
1560	do.	do.	do.	do.	1	L	73	4.9
1561	do.	do.	do.	do.	1	L	76	4.8
1562	do.	do.	do.	do.	1	L	89	7.1
1563	do.	do.	do.	do.	1	L	58	2.5
1564	do.	do.	do.	do.	1	L	58	2.7
1565	do.	do.	do.	do.	1	L	62	3
1566	do.	do.	do.	do.	1	L	56	2.2
1567	do.	do.	do.	do.	1	L	75	5.7
1568	do.	do.	do.	do.	1	L	58	2.5
1569	do.	do.	do.	do.	1	L	54	2.2
1570	do.	do.	<i>Lepomis auritus</i>	redbreast sunfish	1	F	65	4.4
1571	do.	do.	do.	do.	1	F	65	7.9

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