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# The Alabama Bass, *Micropterus henshalli* (Teleostei: Centrarchidae), from the Mobile River basin

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## Abstract

The Alabama Bass, *Micropterus henshalli*, was diagnosed as a subspecies of *Micropterus punctulatus* from the Mobile River basin, Alabama, Georgia, and Mississippi, USA, by Hubbs and Bailey (1940). The species has been introduced in the Chattahoochee River, as has the Spotted Bass, *Micropterus punctulatus*. *Micropterus henshalli* differs from *M. punctulatus*, with which it has been aligned, by having higher scales counts, a narrower head, smaller scale width, higher gill raker count, and a smaller tooth patch. It also has a narrower and more elongate body shape than does *M. punctulatus*. The Alabama Bass is relatively common in streams and rivers throughout the Mobile River basin.

**Key words:** Alabama, Spotted Bass, black bass, Alabama River

## Introduction

Anglers, game and fish agencies, and biologists have long recognized the distinctiveness of the Alabama Bass, although a thorough systemic analysis of this form was lacking. The form was first diagnosed as a subspecies of the Spotted Bass, *Micropterus punctulatus*, by Hubbs and Bailey (1940), who recognized it as having smaller scales and a more elongate body. They proposed that fish from the Escambia, Pascagoula, and Pearl rivers were intergrades with *M. punctulatus punctulatus*, but they had few specimens available for analysis. Gilbert (1973) examined specimens of Spotted Bass from the southeast and considered specimens from the lower Mobile Basin, below the Fall Line, to be intergrades between *M. p. punctulatus* and *M. p. henshalli*. Unfortunately, recent genetic analysis has not included Spotted Bass from the Mobile Basin (Near et al. 2003, Near et al. 2004). A study by Kassler et al. (2002) did include 10 specimens of 'Alabama spotted bass' from Jordan Lake, a reservoir on the Coosa River in Alabama, in their analysis of black bass species status using both morphological and genetic techniques. In their consensus tree 'Alabama spotted bass' was proposed as the sister taxon to *Micropterus coosae*. A cladistic analysis of *Micropterus* using morphometric characters indicated that *M. p. henshalli* grouped with *Micropterus salmoides* rather than with *M. punctulatus punctulatus*, suggesting distinctiveness of the form (Harbaugh 1994). Our objective is to provide morphological data to support the elevation of the Alabama Bass to species status.

## Material and methods

This study is based on meristic and mensural data on specimens from the Mobile Basin and surrounding drainages. The majority of specimens examined were collected via hook and line from 1996–2008; all of these

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specimens were photographed, and a sub-sample of specimens was vouchered in the Auburn University Museum and Learning Center (AUM), along with genetic samples. Photographs are available from the first author. Additional data were taken from museum specimens from potential intergrade zones. A total of 350 *Micropterus henshalli* and 202 *M. punctulatus* were examined. Counts and measurements were based on the methods in Hubbs and Lagler (1958) except as noted below. Measurements were taken with millimeter rulers and calipers to the nearest 0.1mm. The maximum width of one scale from each specimen was recorded. Scales measured were obtained from the left side of the fish just below the lateral line near the posterior edge of the pectoral fin. Skeletal preparations of some specimens were made to obtain accurate measurements of the skull and vertebral counts. Skull width is the distance across the dorsal portion of the skull between the outer tips of the postfrontal processes and across the dorsal portion of the skull at the narrowest point between the two orbital fossae. Scale and skull characteristics are presented as percentages of standard length. Tooth patch length was measured with calipers to the nearest 0.1 mm, and divided by specimen standard length. Institutional acronyms are from Leviton, et al. (1985).

**Specimens examined**
(number of specimens and range in SL in mm in parentheses):

***Micropterus punctulatus***

Chattahoochee River drainage

**Alabama. Barbour Co.**, Middle Fork Cowikee Creek, 1.6 km N Co. Rd. 89 (10, 184–291), 31 August 1998. **Chambers Co.**, Oseligee Creek, 6.4 km NE Lafayette (6, 210–238), 16 August 1998; (4, 203–223), 27 August 1998; (2, 187–195), 5 February 2008. Osanippa Creek, 1.6 km S Valley (3, 165–260), 19 August 1998; (3, 231–266), 26 August 1998; (6, 172–251), 27 August 1998. **Randolph Co.**, Wehadkee Creek, Highway 22, Rock Mills (2, 207–268), 26 July 1998; (2, 189–248), 29 July 1998.

**Georgia. Carroll Co.**, Snake Creek, 4.8 km E Whitesburg (6, 206–305), 2 September 1998. Whooping Creek, Highway 5 (1, 226), 10 August 1998; (2, 197–198), 11 August 1998. **Heard Co.**, Chattahoochee River, 8.0 km NE Centralhatchee (2, 233–345), 20 July 1998; (5, 225–318), 21 July 1998; (1, 212), 22 July 1998; (2, 163–164), 24 July 1998; (5, 146–291), 27 July 1998; (4, 207–310), 20 September 1998; (3, 182–307), 26 September 1998; (3, 170–258), 28 September 1998. Centralhatchee Creek, Highway 27 (6, 183–288), 25 July 1998; (2, 274–299), 28 September 1998; (2, 183–225), 1 November 1998. Hillabahatchee Creek, Ridley Farm, 8.0 km W. Franklin (1,307), 27 May 1997; (4, 215–276), 23 June 1998; (3, 218–259), 24 June 1998; (2, 242–245), 13 July 1998; (3, 205–263), 14 July 1998; (7, 178–268), 4 November 1998. Highway 34 (1, 306), 3 November 1998. **Harris Co**., Mountain Oak Creek, Highway 103 (3, 221–237), 18 August 1998.

Choctawhatchee River drainage

**Alabama. Dale Co.**, Choctawhatchee River, between U. S. Highway 84 and state Highway 12 (11, 172–278), 30 August 1998. Choctawhatchee River**,** Highway 12 (4,180–306), 5 July 1998. **Covington Co.**, Pigeon Creek, Highway 55 (12, 162–319), 21 August 1998.

Escambia River drainage

**Alabama. Conecuh Co.**, Conecuh River, U.S. Highway 84 at River Falls (1, 150), 14 August 1998. **Escambia Co.**, Burnt Corn Creek, Brewton, AUM 1772 (1, 161), 8 October 1937. Conecuh River, 2.6 km SSE Pollard, AU 4757 (1, 173), 15 September 1983.

Neches River drainage

**Texas**. **Cherokee-Rusk Co**. line, Angelina River near Ponta (1, 242), 17 October 1998. **Rusk Co.**, East fork of Angelina River near Ponta (1, 204), 17 October 1998 (not on map).

Pascagoula River drainage

**Alabama. Mobile Co**., Escatawpa River at Highway 96 (1,229), 19 August 1999. Escatawpa River at Highway 96, 12.8 km W Citronelle (1, 260), 18 August 1999.

**Mississippi. Clark Co**., Chickasawhay River at Shilenta (old bridge), TU 193283 (1, 53), 21 July 2000. **Newton Co**., Chunky Creek, Highway 513, 1.6 km S Chunky (5, 220–289), 2 December 1998. Highway 80, 1.6 km W Chunky (1, 276), 2 December 1998. **Wayne Co**., Cypress Creek, E. Janice AUM 27007 (1, 150), 23 September 1990. Chickasawhay River at U.S. Hwy 84, W Waynesboro, TU 193225 (1, 75), 21 July 2000.

Pearl River drainage

**Mississippi. Lawrence Co.**, Pearl River, 0.8 km above confluence with Coopers Creek, TU 135404 (2, 82–132), 17 May 1984. Pearl River, 1.6 km N Wanilla Water Park, TU 184156 (5, 60–108), 9 August 1997. Pearl River at mouth of Fair River, TU 175724 (4, 59–66), 12 August 1995. Pearl River at confluence of Silver Creek, TU 175796 (3, 53–55), 12 August 1995. Pearl River, 0.8 km N BM 209.2, TU 172225 (4, 78–82), 12 November 1994.

Perdido River drainage

**Alabama. Baldwin Co**., Styx River, Highway 68 (2, 246–267), 18 March 1999; (4, 187–261), 10 April 1999; (2, 178–192), 18 August 1999. Perdido River, Highway 31, 8.0 km W Atmore (1, 175), 14 November 1998; (3, 222–271), 27 November 1998.

Tennessee River drainage

**Alabama. Jackson Co.**, Tennessee River, Old dam steam plant, near Stevenson (6, 220–300), 26 June 1998. Widows Creek (8, 178–300), 11 October 1998. Coon Creek, Sand Mountain (4, 181–253), 20 August 1998. **Franklin Co.**, Tennessee River, Little Bear Creek, AUM 9719 (4, 111–205), 19–20 September 1973.

***Micropterus henshalli***

Alabama River drainage

**Alabama**. **Autauga Co.,** Little Mulberry Creek, Highway 14, 16 km E Selma (2, 146–238), 7 August 1998. **Autauga/Dallas Co.** Line**,** Mulberry Creek, Highway 83 (4, 151–253), 7 August 1998. **Dallas Co.,** Cedar Creek, Highway 41, 20.9 km S Selma (1, 183), 2 August 1998. Mush Creek, Highway 41, 14.3 km S Selma (10, 154–252), 2 August 1998. Oakmulgee Creek, Highway 14, 8.0 km W Selma (10, 191–302), 5 August 1998; (3, 194–242), 7 August 1998. Bogue Chitto Creek, Highway 22, 6.4 km W Orrville (8, 183–330), 7 August 1998. **Montgomery/Lowndes Co**. Line**,** Pintlalla Creek, Highway 42, 8.0 km S. Montgomery (9, 133–313), 2 August 1998. **Marengo Co**., Chickasaw Bogue Creek, Highway 39, 8.0 km E Linden (10, 146–270), 5 August 1998. **Monroe Co.,** Big Flat Creek, Highway 41 (4, 194–344), 7 July 1998; (4, 185–314), 8 July 1998; (1, 299), 10 July 1998. Big Flat Creek, 11.3 km N. Highway 41 (1, 295), 8 July 1998. Big Flat Creek, Highway 265, 4.8 km N Berice (2, 177–208), 4 August 1998. Randons Creek, Highway 1, 9.6 km S Perdue Hill (1, 232), 4 August 1998; (2, 321–324), 8 December 1998. **Monroe /Baldwin Co**. Line, Little River, Highway 59 (1, 340 mm), 8 December 1998. **Wilcox Co.,** Pine Barron Creek, U. S. Highway 21 (5, 195–248), 3 July 1998. Claiborne Lake, 3.2 km below Millers Ferry Dam (1, 325), 3 July 1998; (2, 230–262), 7 July 1998; (1, 310), 10 July 1998. Gravel Creek, Highway 41 (3, 183–234), 7 July 1998; (4, 187–313), 10 July 1998. Pursley Creek, Highway 41 (4, 199–239), 10 July 1998.

Cahaba River drainage

**Alabama. Jefferson Co**., Cahaba River, Highway 78 (3, 164–217), 25 September 1998.

Chattahoochee River drainage

**Alabama. Randolph Co.**, Wehadkee Creek, Highway 22, Rock Mills (2, 248–277), 26 July 1998; (1, 270), 24 August 1998; (5, 227–286), 25 August 1998; (1, 238), 1 November 1998.

**Georgia**. **Carroll Co**., Snake Creek, 4.8 km E Whitesburg (1, 281), 2 September 1998. Whooping Creek, at Highway 5 (1, 209), 11 August 1998. **Heard Co**., Chattahoochee River, 8.0 km NE Centralhatchee (1, 239), 27 July 1998; (1, 245), 28 September 1998. Centralhatchee Creek, Highway 27 (3, 216–312), 1 November 1998. Centralhatchee Creek, 1.6 km W Centralhatchee (1, 174), 30 July 1998. Hillabahatchee Creek, Ridley Farm, 8.0 km W Franklin (2, 229–309), 23 June 1998; (2, 162–273), 13 July 1998; (1, 255), 14 July 1998; (2, 237–286), 4 November 1998. Highway 34 (1, 305), 3 November 1998. **Lumpkin Co**., Chestatee River, U. S. Highway 19 (7, 247–301), 30 October 1998.

Coosa River drainage

**Alabama. Cherokee Co**., Terrapin Creek, Highway 9, 3.2 km S. Center (1, 176), 12 April 1999. Little River Canyon Park, Co. Rd. 275 (4, 296–433), 9 September 1998; (1,189), 1 October 1998; (3, 225–413), 12 April 1999. **Clay Co**., Hatchet Creek, junction of Co. Rd. 4 and State Highway 7 (2, 176–257), 31 July 1998; (4, 151–255), 6 August 1998; (1, 214), 13 April 1999; (3, 200–336), 7 April 1999; (1, 210), 13 April 1999; (3, 158–256), 9 August 1999. Hatchet Creek, Highway 148, 11.3 km W. Millersville (1,183), 8 August 1998. **Coosa Co**., Weogufka Creek, 3.4 km W. Moriah, Co. Rd. 29 (2, 272–327), 5 April 1999. 6.4 km W. Moriah, Co. Rd. 29 (6, 223–373), 6 April 1999; (4, 177–236), 12 August 1999. Swamp Creek, 8.0 km W. Rockford, Highway 22 (4, 196–256), 12 August 1999. Socapatoy Creek, 8.0 km S. Highway 280 (2, 206–329), 8 March 1999; (2, 208–331), 7 April 1999. Hatchet Creek, Highway 280 (2, 182–226), 16 August 1998. 1.6 km downstream from U. S. Highway 280 Bridge (6, 155–367), 13 August 1999**. Elmore Co.,** Coosa River, Weoka Creek, Highway 429 (1, 232), 19 March 1999. Coosa River, Wetumpka (5, 186–270), 2 July 1998; (2, 259–282), 6 July 1998; (3, 204–278), 11 July 1998;. (3, 214–343), 4 February 2008. Channahchee Creek, Highway 229 (1, 175), 28 February 1999. Channahchee Creek, Gold Mine Rd. (1, 285), 11 April 1999. **St. Clair Co**., Big Canoe Creek, 2.4 km W Ashville, Highway 36 (1, 168), 30 March 1999. Broken Arrow Creek, 2.4 km N junction with Coosa River (4, 146–230), 17 March 1999; (1, 185), 22 March 1999. **Talladega, Co**., Talladega Creek, Highway 77, Waldo (2, 227–288), 8 August 1998. Talladega Creek, Highway 21 (5, 201–333), 25 September 1998; (4, 270–322), 9 December 1998. Cheaha Creek, Hwy 93, 9.6 km N. Talladega (3, 242–265), 9 August 1998; (7, 162–298), 17 August 1998.

Tallapoosa River drainage

**Alabama. Cleburne Co.,** Tallapoosa River, Highway 46 (2, 317–347), 13 January 1999; (3, 235–325), 14 January 1999. Tallapoosa River, Highway 84 (1, 308), 13 January 1999. Tallapoosa River, Highway 84, 4.0 km Heflin (5, 263–330), 22 January 1999. **Lee Co.,** Sougahatchee Creek, Co. Rd. 188, 4.0 km N Loachapoka (2, 140–199), 6 February 2008. **Randolph Co.,** Little Tallapoosa River, Butlers Bridge, Butlers Community (1, 239), 9 January 1999; (1, 277), 11 January 1999; (1, 190), 14 January 1999. Little Tallapoosa River, Shelton's Bridge, 4.8 km N Woodland (2, 238–278), 22 January 1999. **Tallapoosa Co**., Tallapoosa River, 1.6 km N Horseshoe Bend National Park (4, 235–281), 22 June 1998; (10, 161–363), 9 August 1999. Tallapoosa River, 4.8 km N Horseshoe Bend National Park, (3, 287–342), 19 July 1998; (15, 219–360), 22 December 1998. Tallapoosa River, 1.6 km S confluence of Fox Creek (2, 208–330), 23 September 1998; (2, 239–246), 26 October 1998; (1, 229), 31 October 1998; (6, 214–303), 15 November 1998; (2, 259–303), 6 December 1998; (10, 186–335), 10 January 2008. Tallapoosa River, 3.2 km N. confluence of Jaybird Creek (4, 208–377), 9 November 1998; (1,463), 6 September 1999. Tallapoosa River, 4.8 km N Highway 280 (3, 182–314),

29 November 1998; (1, 204), 21 March 1999; (1, 262), 8 May 1999; (4, 212–290), 4 August 1999. Hillabee Creek, 1.6 km S. Highway 22 (2, 228–270), 27 February 1999. Hillabee Creek, Walls Farm, Champion Rd. (4, 178–369), 1 March 1999. Hillabee Creek, 1.6 km N. Highway 22 (3, 275–293), 20 March 1999; (1, 362), 9 April 1999. Elkahatchee Creek, Elkahatchee Rd. (1, 313), 11 March 1999. Sougahatchee Creek, Highway 49 (2, 199–289), 28 February 1999; (1, 293), 17 January 2008. Sandy Creek, Highway 50 (1, 235), 11 March 1999. Sandy Creek, Highway 89 (1, 226), 11 March 1999. Yes Lake, 3.2 km below Martin Dam (2, 231–258), 5 January 1999; (2, 246–302), 27 February 1999.

Tombigbee River drainage

**Alabama. Greene Co**., Tombigbee River, Brush Creek, Co. Rd. 133, 8.8 km SW Eutaw, AUM 26165 (1, 144), 10 September, 1989.

Warrior River drainage

**Alabama. Blount Co**., Locust Fork, at Highway 231, 3.2 km N Cleveland (5, 157–345), 24 September 1998. Horton's Mill Covered Bridge, Little Warrior River, 6.4 km N. Oneonta (2, 270–311), 24 September 1998. Calvert Prong of Little Warrior River, at Highway 33, 2.4 km SW Rosa (10, 208–351), 31 March 1999. **Winston Co**., Sipsey Fork, AUM 13236 (2, 163–204), 22–24 July 1971.

***Micropterus henshalli* Hubbs & Bailey 1940**
Alabama bass
Fig. 1

*Micropterus punctulatus henshalli*—Hubbs & Bailey 1940

**Holotype. Tallapoosa River drainage. Alabama. Macon Co**., UMMZ 118297, 113 mm SL, Uphapee Creek, 6.4 km E. Tuskegee, 27 June 1931, F. E. Guyton.

**Paratypes taken with holotype.** UMMZ 118297 (9), AUM 2980 (10).

**Additional paratypes**.

**FIGURE 1.** *Micropertus henshalli*, 24.4 cm SL, Tallapoosa River, Tallapoosa Co., Alabama (above); *Micropterus punctulatus*, 18.5 cm SL, Osanippa Creek, Chattahoochee River, Chambers Co., Alabama.

Coosa River drainage

**Alabama. Elmore Co.,** UMMZ 26269 (1) Wetumpka. **Talladega Co**., UMMZ 118289 (5) Talladega Creek, Coosa River, 8.0 km SW Talladega, 9 August 1936.

**Georgia. Floyd Co.**, UMMZ 88235 (1) trib., Coosa River, E Coosa, 1 September 1929. UMMZ 88248 (3) Armuchee Creek, Oostanaula River, Armuchee, 1 September 1929. **Polk Co**., UMMZ 88192 (11) trib., Coosa River, 8.0 km NW Cedartown, 31 August 1929. USNM 31142 (1) Etowah River near Rome.

**Tallapoosa River drainage. Alabama. Dallas Co.**, UMMZ 88843 (1) Alabama River, Selma, 18 September 1929. **Elmore Co.**, UMMZ 124135 (6) Line Creek, Tallapoosa River, near Montgomery, 7 October 1938. **Lowdes/Dallas Co.** line, UMMZ 88838 (3) trib., Alabama River, 18 September 1929. **Macon Co**., UMMZ 123949 (5) Opintlocco Creek, 4.8 km SE Tuskegee, 13 September 1937. **Tallapoosa Co**., AUM 2966 (1) Camp Hill, 7 October 1930.

Tombigbee River drainage

**Mississippi. Lee Co.**, UMMZ 104103 (1) Oldtown Creek, Tombigbee River drainage, 14 June 1937. **Monroe Co**., ISC B3-41 (6) Tombigbee River, 1.5 mi. N Amory, 16 August 1939.

Warrior River drainage

**Alabama. Jefferson Co**., ISC B39-86 (1) trib., 11.3 km SW Warrior, 4 September 1939.

**Diagnosis.** A species of *Micropterus* that differs from *Micropterus punctulatus* by a combination of the following characters: higher scale counts, including lateral line (modally 75 vs 65), scales above lateral line (modally 8 vs 7), scales below lateral line (modally 13 vs 11), scale rows around caudal peduncle (modally 29 vs 25); more rakers on first gill arch (modally 8 vs 7); smaller scale width (mean = 2.5% vs 3.2% SL); narrower skull (mean = 10.2 % vs 11.4 % SL postfrontal width and 7.0% vs 8.0 % SL interorbital width); and a smaller tooth patch (1.5% vs 1.9% SL). Lateral blotches of *M. henshalli* do not coalesce into a dark stripe on caudal peduncle as in *M. punctulatus*. Mid-lateral spots number 10–13 (96.3%) in *M. henshalli* vs 8–11 (84.5%) in *M. punctulatus*. Dorsolateral blotches do not touch first dorsal fin base as in *M. punctulatus* (Fig. 1). Dorsolateral blotches number 10–12 (88.5%) vs 7–10 (98.5%) in *M. punctulatus*.

**Description.** *Micropterus henshalli* is a large species of bass that attains weights of 4.0 kg (8 lbs.,15 oz.). Morphological and meristic measurements are given in Tables 1–5, and general body shape is illustrated in Fig. 1. Lateral-line scales 68 –84 (mean 75.3); scales above lateral line 7–9 (mean 7.9); scales below lateral line 11–15 (mean 13.3); scale rows around caudal peduncle 26–32 (mean 28.6). Rakers on first gill arch 7–8 (mean 7.9). Pectoral-fin rays 14–17 (mean 15.9). Narrow head and scales. Tongue tooth patch usually present; absent in 6 of 350 specimens examined. Dorsal-fin spines 9; dorsal-fin rays 12–14, usually 13; caudal-fin rays 16–17. Pyloric caeca are unbranched.

Body color above midline is usually light to medium green with bronze or golden shimmer. Below midline body is white or has brownish-green tint along upper portion. often with continuous or occasionally interrupted rows of dark green blotches. Venter uniformly white or with scattered pale spots. Lateral stripe dark green; often darker along caudal peduncle; composed of blotches most distinguishable along caudal peduncle. Dorsal botches usually 10–12 (88.5%). Dorsolateral blotches do not extend to first spine of dorsal fin. Fins translucent green to gray.

**Comparisons.** *Micropterus henshalli* differs from *M. punctulatus*, with which it has been confused, by a combination of scale count differences produced by having smaller scales overall, and by several other morphological traits (Table 1). Specifically, lateral-line scales 68–84, modally 75 vs 60–71, modally 65; scales above lateral line 7–9, modally 8 vs 5–7, modally 7; scales below lateral line 11–15, modally 13 vs 9–13, modally 11; scale rows around caudal peduncle 26–32, modally 29 vs 21–28, modally 25. Additionally, *M. henshalli* has a narrower head than *M. punctulatus* (postfrontal width modally 10.2 % SL vs 11.4 % SL; interorbital width modally 7.0% SL vs 8.0 % SL), as well as narrower scales (width modally 2.5% SL vs 3.2%

**TABLE 1.** Comparison of characteristics of *Micropterus henshalli* and *M. punctulatus*. Values for scale counts are modes with ranges in parentheses; others are means with ranges in parentheses. Measurements are presented as % standard length.

| Characteristics | *M. henshalli* | *M. punctulatus* |
|---|---|---|
| Lateral-line scales | 75 (68–84) | 65 (60–71) |
| Scales above LL | 8 (7–9) | 7 (5–7) |
| Scales below LL | 13 (11–15) | 11 (9–13) |
| Scale rows around caudal peduncle | 29 (26–32) | 25 (21–28) |
| Postfrontal width | 10.2 (9.5–11.5) | 11.4 (10.3–12.5) |
| Interorbital width | 7.0 (5.9 –8.3) | 8.0 (6.7–9.4) |
| Scale width | 2.5 (1.9–3.2) | 3.2 (2.7–4.2) |
| Gill rakers | 7.9 (7–8 ) | 6.9 (5–8) |
| Tooth patch | 1.5 (.43–2.5) | 1.9 (.53–2.6) |
| Pigment on caudal peduncle | series of blotches | solid dark line |
| Dorsolateral blotches touch 1st dorsal fin | No | Yes |

**TABLE 2.** Frequency distributions of scale and gill raker counts in *Micropterus henshalli* (n = 350) and *M. punctulatus* (n = 202) from the Southeastern United States.

Lateral-line scales

| | 59 | 60 | 61 | 62 | 63 | 64 | 65 | 66 | 67 | 68 | 69 | 70 | 71 | 72 | 73 | 74 | 75 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | Mean | n |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *M. henshalli** | | | | | | | | | | 2 | 3 | 9 | 17 | 18 | 48 | 47 | 46 | 41 | 25 | 33 | 19 | 16 | 9 | 6 | 6 | 5 | 75.3 | 350 |
| *M. punctulatus* | | 3 | 5 | 11 | 24 | 25 | 36 | 32 | 23 | 19 | 9 | 8 | 6 | | | | | | | | | | | | | | 65.5 | 202 |

*one individual with scale count of 54 not shown on table

Scales above lateral line

| | 5 | 6 | 7 | 8 | 9 | Mean | n |
|---|---|---|---|---|---|---|---|
| *M. henshalli* | | | 38 | 293 | 19 | 7.9 | 350 |
| *M. punctulatus* | 1 | 65 | 135 | 1 | | 6.7 | 202 |

Scales below lateral line

| | 9 | 10 | 11 | 12 | 13 | 14 | 15 | Mean | n |
|---|---|---|---|---|---|---|---|---|---|
| *M. henshalli* | | | 1 | 37 | 175 | 117 | 20 | 13.3 | 350 |
| *M. punctulatus* | 1 | 26 | 134 | 40 | 1 | | | 11.1 | 202 |

**TABLE 2**. (continued)

Scale rows around caudal peduncle

| | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | Mean | n |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *M. henshalli* | | | | | | 1 | 29 | 131 | 122 | 38 | 25 | 4 | 28.7 | 350 |
| *M. punctulatus* | 1 | 1 | 10 | 37 | 69 | 43 | 40 | 1 | | | | | 25.3 | 202 |

Rakers on first gill arch

| | 5 | 6 | 7 | 8 | Mean | n |
|---|---|---|---|---|---|---|
| *M. henshalli* | | | 37 | 313 | 7.9 | 350 |
| *M. punctulatus* | 8 | 25 | 156 | 12 | 6.9 | 202 |

SL). *Micropterus henshalli* has a higher gill-raker count than *M. punctulatus* (modally 8 vs 7) and has a proportionally smaller tooth patch (modally 1.5% SL vs 1.9% SL ). In addition, the lateral stripe of *M. henshalli* remains a series of distinguishable blotches to the caudal fin base, whereas the lateral stripe of *M. punctulatus* coalesces into a dark stripe. Mid-lateral spots number 10–13 (96.3%) in *M. henshalli* vs 8–11 (84.5%) in *M. punctulatus*. The dorsolateral blotches of *M. henshalli* do not touch the first dorsal fin base (89.5%), as they do in *M. punctulatus* (91.4%). Dorsolateral blotches number 10–12 (88.5%) vs 7–10 (98.5%) in *M. punctulatus*.

**TABLE 3.** Frequency distributions of scale and gill raker counts in *Micropterus henshalli* and *M. punctulatus* by drainage.

| | Lateral line scales | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 68 | 69 | 70 | 71 | 72 | 73 | 74 | 75 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | Mean | n |
| Coosa River | | 1 | 3 | 4 | 6 | 21 | 21 | 16 | 9 | 9 | 6 | 2 | 1 | 1 | | 1 | | 72.9 | 101 |
| Alabama River | 1 | | 2 | 9 | 8 | 12 | 19 | 20 | 13 | 5 | 8 | 1 | 3 | 3 | | | | 70.9 | 104 |
| Tallapoosa River | | | | 1 | 1 | 11 | 2 | 7 | 18 | 9 | 18 | 15 | 11 | 5 | 6 | 4 | 5 | 77.8 | 113 |
| Chattahoochee River Drainage | | | | | | | | | | | | | | | | | | | |
| Chestatee River (Lumpkin Co., Ga.) | | | | | | | | 1 | 1 | 2 | 1 | 1 | 1 | | | | | 77.4 | 7 |
| Chattahoochee River (Buford Dam to West Point Dam) | 1 | 2 | 4 | 3 | 3 | 4 | 5 | 2 | | | | | | | | 1 | | 72.4 | 25 |

Total= 350

*M. punctulatus*

| | 54 | 60 | 61 | 62 | 63 | 64 | 65 | 66 | 67 | 68 | 69 | 70 | 71 | Mean | n |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Tennessee River | 1 | | 1 | 2 | 3 | 1 | 5 | 3 | 3 | 2 | 1 | 1 | | 64.8 | 23 |
| Chunky Creek | | | | | | 1 | 1 | 1 | 2 | 1 | | | | 66.2 | 6 |
| Angelina River | | | | | | | 1 | | | | | 1 | | 67.5 | 2 |
| Escatawpa River | | | | | | 1 | 1 | | | | | | | 64.5 | 2 |
| Choctawhatchee River | | | 1 | | | 2 | 3 | 3 | 3 | 2 | 1 | | | 65.9 | 15 |
| Conecuh River | | | | | | 2 | | 5 | 2 | 2 | 1 | 1 | | 66.7 | 13 |
| Escambia River | | | 1 | | | | | | | | 1 | | | 65.0 | 2 |
| Perdido River | | | | | | 3 | 3 | 3 | 1 | | 2 | | | 65.8 | 12 |
| Chattahoochee River Drainage | | | | | | | | | | | | | | | |
| Chattahoochee River (Buford Dam to West Point Dam | | | | 3 | 8 | 5 | 14 | 8 | 10 | 11 | 3 | 3 | 6 | 66.3 | 71 |
| Chattahoochee River (below West Point Dam) | | 2 | 1 | 6 | 7 | 5 | 4 | 7 | 1 | 1 | | 1 | | 64.0 | 35 |
| Pearl River | | 1 | 1 | | 6 | 5 | 3 | 1 | | | | 1 | | 63.8 | 18 |
| Pascagoula River | | | | | | | 1 | 1 | 1 | | | | | 66.0 | 3 |

Total =202

**TABLE 3.** (continued.)

| | Scale rows above lateral line | | | | |
|---|---|---|---|---|---|
| *M. henshalli* | | | | | |
| | 7 | 8 | 9 | Mean | n |
| Coosa River | 13 | 83 | 5 | 7.9 | 101 |
| Alabama River | 11 | 88 | 5 | 7.9 | 104 |
| Tallapoosa River | 8 | 98 | 7 | 8.0 | 113 |
| Chattahoochee River Drainage | | | | | |
| Chestatee River (Lumpkin Co., Ga.) | | 6 | 1 | 8.1 | 7 |
| Chattahoochee River (West Point Dam to Buford Dam) | 6 | 18 | 1 | 7.6 | 25 |

Total=350

*M. punctulatus*

| | 5 | 6 | 7 | 8 | Mean | N |
|---|---|---|---|---|---|---|
| Tennessee River | 1 | 8 | 14 | | 6.5 | 23 |
| Chunky Creek | | 2 | 4 | | 6.6 | 6 |
| Angelina River | | 2 | | | 6.0 | 2 |
| Escatawpa River | | | 2 | | 7.0 | 2 |
| Choctawhatchee River | | 1 | 14 | | 6.9 | 15 |
| Conecuh River | | 2 | 11 | | 6.8 | 13 |
| Escambia River | | 1 | 1 | | 6.5 | 2 |
| Perdido River | | 9 | 3 | | 6.3 | 12 |
| Chattahoochee River Drainage | | | | | | |
| Chattahoochee River (West Point Dam to Buford Dam) | | 13 | 57 | 1 | 6.8 | 71 |
| Chattahoochee River (below West Point Dam) | | 19 | 16 | | 6.5 | 35 |
| Pearl River | | 7 | 11 | | 6.3 | 18 |
| Pascagoula River | | 1 | 2 | | 6.6 | 3 |

Total=202

**TABLE 3.** (continued)

Scale rows below lateral line

*M. henshalli*

| | 11 | 12 | 13 | 14 | 15 | Mean | n |
|---|---|---|---|---|---|---|---|
| Coosa River | | 15 | 44 | 35 | 5 | 13.0 | 101 |
| Alabama River | | 6 | 76 | 21 | 1 | 13.1 | 104 |
| Tallapoosa River | 1 | 10 | 37 | 52 | 13 | 13.5 | 113 |
| Chattahoochee River Drainage | | | | | | | |
| Chestatee River (Lumpkin Co., Ga.) | | | 3 | 4 | | 13.5 | 7 |
| Chattahoochee River (West Point Dam to Buford Dam) | | 6 | 15 | 5 | | 13.5 | 25 |
| | | | | | | Total=350 | |

*M. punctulatus*

| | 9 | 10 | 11 | 12 | 13 | Mean | n |
|---|---|---|---|---|---|---|---|
| Tennessee River | 1 | 3 | 15 | 3 | 1 | 11.0 | 23 |
| Chunky Creek | | | 4 | 2 | | 11.4 | 6 |
| Angelina River | | | 2 | | | 11.0 | 2 |
| Escatawpa River | | | 2 | | | 11.0 | 2 |
| Choctawhatchee River | | 2 | 6 | 7 | | 11.3 | 15 |
| Conecuh River | | | 13 | | | 11.0 | 13 |
| Escambia River | | | 2 | | | 11.0 | 2 |
| Perdido River | | 1 | 11 | | | 11.0 | 12 |
| Chattahoochee River Drainage | | | | | | | |
| Chattahoochee River (West Point Dam to Buford Dam) | | 5 | 40 | 26 | | 11.3 | 71 |
| Chattahoochee River (below West Point Dam) | | 12 | 22 | 1 | | 10.5 | 35 |
| Pearl River | | 2 | 15 | 1 | | 10.9 | 18 |
| Pascagoula River | | 1 | 2 | | | 10.6 | 3 |
| | | | | | | Total=202 | |

**TABLE 3.** (continued)

Scale rows around caudal peduncle

*M. henshalli*

| | 26 | 27 | 28 | 29 | 30 | 31 | 32 | Mean | n |
|---|---|---|---|---|---|---|---|---|---|
| Coosa River | 1 | 12 | 52 | 38 | 3 | 5 | | 28.4 | 101 |
| Alabama River | | 13 | 36 | 43 | 7 | 3 | 2 | 28.6 | 104 |
| Tallapoosa River | | 2 | 23 | 41 | 28 | 17 | 2 | 29.3 | 113 |
| Chattahoochee River Drainage | | | | | | | | | |
| Chestatee River (Lumpkin Co., Ga.) | | | 4 | 3 | | | | 28.4 | 7 |
| Chattahoochee River (West Point Dam to Buford Dam) | | 2 | 16 | 7 | | | | 28.2 | 25 |
| | | | | | | | | Total=350 | |

*M. punctulatus*

| | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | Mean | n |
|---|---|---|---|---|---|---|---|---|---|---|
| Tennessee River | 1 | 1 | 2 | 8 | 8 | 2 | 1 | | 24.3 | 23 |
| Chunky Creek | | | | 1 | 3 | 2 | | | 25.1 | 6 |
| Angelina River | | | 1 | 1 | | | | | 23.5 | 2 |
| Escatawpa River | | | | 1 | 1 | | | | 24.5 | 2 |
| Choctawhatchee River | | | | | 7 | 5 | 3 | | 25.7 | 15 |
| Conecuh River | | | | 4 | 6 | 3 | | | 24.9 | 13 |
| Escambia River | | | | | | 2 | | | 26.0 | 2 |
| Perdido River | | | | 2 | 6 | 2 | 2 | | 25.3 | 12 |
| Chattahoochee River Drainage | | | | | | | | | | |
| Chattahoochee River (West Point Dam to Buford Dam) | | | 1 | 5 | 16 | 18 | 31 | | 26.0 | 71 |
| Chattahoochee River (below West Point Dam) | | | 6 | 11 | 11 | 5 | 1 | 1 | 24.6 | 35 |
| Pearl River | | | | 4 | 10 | 3 | 1 | | 25.0 | 18 |
| Pascagoula River | | | | | 1 | 1 | 1 | | 26.0 | 3 |
| | | | | | | | | | Total=202 | |

**Etymology.** This species was named by Hubbs and Bailey (1940) for James L. Henshall, a bass angler.

**Remarks.** The presumed native distribution of *M. henshalli* is the Mobile Bay drainage (Fig. 2). This distribution agrees with a repeated pattern of endemism in the Mobile basin system, which is home to over 60 endemic fish species (Boschung and Mayden 2004).

Records of *M. henshalli* and *M. punctulatus* support the discussion in Williams and Burgess (1999) regarding bass introductions in the Chattahoochee River system. Both species are in the Chattahoochee River, often in syntopy. We believe our meristic data suggest interbreeding of *M. punctulatus* with *M. henshalli* and perhaps with *M. coosae* and *M. cataractae*. Some individuals from the Chattahoochee River don't fit the description of either *M. punctulatus* or *M. henshalli*, based on intermediate scale counts. Genetic work in this drainage could aid in understanding this variability.

Comparisons of growth, length and weights of Alabama and Spotted Bass are confounded by the inclusion of both species in datasets as well as a lack of separation of fish by habitat. In general, bass from reservoirs are thought to grow faster than those from riverine habitat (Boschung and Mayden 2004). The Alabama

state record Alabama Bass was captured in 1978 from Lewis Smith reservoir, on the Black Warrior River, and weighed 8 lbs, 15 oz. No length was given for this specimen: (http://www.outdooralabama.com/fishing/freshwater/fish/bassblack/spotted/).Although Hubbs and Bailey (1940) originally described *M. henshalli* as a subspecies of *M. punctulatus*, they cited a paucity of specimens from southeastern drainages as a factor limiting their understanding of variation in bass species from Alabama. We found no evidence of intergradation with *M. punctulatus* from coastal drainages in Alabama (Table 3), as suggested by Hubbs and Bailey (1940). Furthermore, we found no differences in meristic or morphological traits of *M. henshalli* found above or below the Fall Line (Table 4), as discussed by Gilbert (1973).

Further evidence of the distinctiveness of *M. henshalli* was provided by Harbaugh (1994) and Kassler et al. (2002) via analyses of phylogenetic relationships within *Micropterus.* Using characters derived from morphometric analysis and combined morphometric and meristic traits, Harbaugh's analysis (1994) produced phylogenetic trees linking *M. henshalli* with *Micropterus salmoides* rather than with *M. punctulatus*. In the analysis of Kassler et al. (2002), *M. henshalli* was linked to *M. coosae*. Distinguishing morphological traits of southeastern species of *Micropterus* are summarized in Table 5. Further studies of relationships within *Micropterus* that combine morphological and genetic data are needed to clarify sister-group relationships of *M. henshalli.*

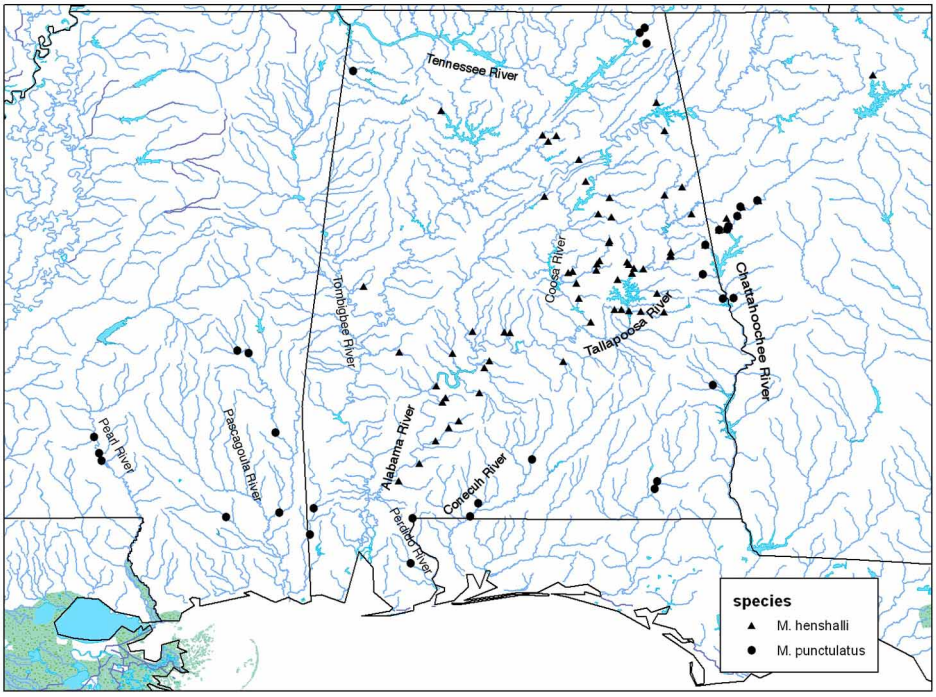


**FIGURE 2.** Distribution of Alabama bass, *Micropterus henshalli*, and spotted bass, *Micropterus punctulatus,* in Mobile Bay and adjacent drainages based on specimens examined.

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