

(Greene/Pickens/Tuscaloosa County, Alabama) in the Tombigbee drainage; a short reach of the Alabama River and Bogue Chitto Creek (Dallas County, Alabama); Chewacla Creek (Macon County, Alabama) in the Tallapoosa drainage; Coosa River (Dead River) below Weiss Dam (Cherokee County, Alabama) and tributaries Kelly Creek (Shelby County, Alabama), Big Canoe Creek (St. Clair County, Alabama), Terrapin Creek (Cherokee County, Alabama), and Conasauga River (Murray/Whitfield County, Georgia) (Alabama Department of Conservation and Natural Resources/U.S. Fish and Wildlife Service collection records, 1998, 1999; Evans 2001; Feminella and Gangloff 2000; Hartfield and Bowker 1992; Hartfield and Jones 1989, 1990; Herod *et al.* 2001; Jones 1991; Jones and Majure 1999; McGregor 1993, 1999; McGregor *et al.* 1996; Miller 2000; Miller and Hartfield, 1988; Pierson, 1991a, b; Yokley 2001). The southern clubshell is relatively common in localized reaches of the Buttahatchee and Sipsey Rivers. Average density at four sites in the Coosa River below Weiss Dam was 0.19/square meter (Herod *et al.* 2001). It is rare to uncommon in other occupied streams.

**Dark Pigtoe (*Pleurobema furvum* (Conrad 1834))**

The dark pigtoe is a small to medium-sized mussel, occasionally reaching 60 mm (2.4 in) in length. The shell is oval in outline, and moderately inflated. Beaks are located in the anterior portion of the shell. The posterior ridge is abruptly rounded and terminates in a broadly rounded, subcentral, posterior point. The periostracum is dark, reddish brown with numerous and closely spaced, dark growth lines. The hinge plate is wide and the teeth are heavy and large, especially in older specimens. The nacre approaches white in the umbos, and is highly iridescent on the posterior margin. This species is gravid in June and releases glochidia in peach to pink-colored conglutinates (Haag and Warren 1997). The largescale stoneroller (*Camptostoma oligolepis*), Alabama shiner, blacktail shiner, creek chub (*Semotilus atromaculatus*), and blackspotted topminnow have been confirmed as suitable hosts (Haag and Warren 1997).

The historic distribution of the dark pigtoe was probably restricted to the Black Warrior River system above the fall line (natural contour that marks a drop in land level). Since listing, the presence of the dark pigtoe has been confirmed in the Black Warrior River drainage from Sipsey Fork and its tributaries Caney, Brown, Rush, and

Capsey Creeks (Winston/Lawrence County, Alabama); and from the North River and its tributary Clear Creek (Fayette County, Alabama) (Alabama Malacological Research Center, *in litt.*, 1996; Dodd *et al.* 1986; McGregor 1992; Pierson 1992a; Shepard *et al.* 1998; Vittor and Associates 1993; Warren and Haag 1994). Badly weathered shells have also been found in the Locust Fork of the Black Warrior River near the Jefferson-Blount County line. Populations are small and localized. Highest densities measured during field surveys have been from the Sipsey Fork and its headwater tributaries in Bankhead National Forest, where quantitative samples from selected sites estimated dark pigtoe densities from 0 to 4.8/10 m<sup>2</sup> (Warren and Haag 1994).

**Southern Pigtoe (*Pleurobema georgianum* (Lea 1841))**

The southern pigtoe is a small to medium-sized mussel occasionally exceeding 60 mm (2.4 in) in length. The shell is elliptical to oval in outline and somewhat compressed. The posterior slope is smoothly rounded. The pseudocardinal teeth (protrusions on the dorsal interior surface of the shell) are small but well-developed, and the nacre is white. The periostracum is yellow to yellow-brown. Growth lines are numerous and may be dark brown. Small specimens may have green spots at the growth lines along the posterior ridge and near the umbo. Host fish are Alabama shiner, blacktail shiner, and tricolor shiner (P. Johnson pers. comm. 2002).

The historic range of the southern pigtoe included the Coosa River and its tributaries in Alabama, Georgia, and Tennessee. The species is currently known to survive in the Conasauga River (Murray/Whitfield County, Georgia, Bradley County, Tennessee), Holly Creek (Murray County, Georgia), Shoal Creek (Cleburne County, Alabama), Big Canoe Creek (St. Clair County, Alabama), and Cheaha Creek (Talladega County, Alabama) (Evans 2001, Feminella and Gangloff 2000, Johnson and Evans, 2000; Pierson 1992b, 1993; Williams and Hughes 1998). Populations are small and localized.

**Triangular Kidneyshell (*Ptychobranchius greeni* (Conrad 1834))**

The triangular kidneyshell is oval to elliptical in outline, and may approach 100 mm (4.0 in) in length. The shell is generally compressed, and may be flattened ventral to the umbos. The posterior ridge is broadly rounded and terminates in a broad round point post-ventrally. The pseudocardinal teeth are

heavy, and the laterals are heavy, gently curved and short. The periostracum is straw-yellow in young specimens, but becomes yellow-brown in older ones. It may have fine and wavy, or wide and broken, green rays anterior to the posterior ridge.

Gravid triangular kidneyshell females were observed in March 1994 and April 1996. Glochidia are packaged into conglutinates that mimic small aquatic fly larvae (Hartfield and Hartfield 1996) or fish eggs (Haag and Warren 1997). Suitable fish hosts have been identified as Warrior darter (*Etheostoma bellator*), Tuskaloosa darter, blackbanded darter and logperch (Haag and Warren 1997).

The historic range of the triangular kidneyshell included the Black Warrior, Cahaba, Alabama, and Coosa Rivers and tributaries in Alabama, Georgia, and Tennessee. The species has disappeared from the Alabama River, and from the primary channels of the Black Warrior and Coosa Rivers. Triangular kidneyshell is currently known to inhabit the Sipsey Fork and tributaries (Winston/Lawrence County, Alabama) and Locust Fork (Blount County, Alabama) of the Black Warrior; Cahaba River (Bibb County, Alabama); and Coosa tributaries Shoal Creek (Cleburne County, Alabama), Kelly Creek (Shelby County, Alabama), Big Canoe Creek (St. Clair County, Alabama), Conasauga River (Murray/Whitfield County, Georgia, Bradley County, Tennessee), Holly Creek (Murray County, Georgia), Coosawattee River (Gordon County, Georgia), and Oostanaula River (Floyd/Gordon County, Georgia). Populations are small and localized (Dodd *et al.* 1986, Evans 2001, Feminella and Gangloff 2000, Haag and Warren 1997, Johnson and Evans 2000, McGregor 1992, McGregor *et al.* 2000, Shepard *et al.* 1994, 1998; Warren and Haag 1994, Williams and Hughes 1998).

**Southern Acornshell (*Epioblasma othcaloogensis* (Lea 1857))**

The southern acornshell is a small mussel that may grow up to 30 mm (1.2 in) in shell length. The shells are round to oval in outline and sexually dimorphic, with a swollen posterior ridge in females. The periostracum is smooth, shiny, and yellow in color. Life history and host fish are unknown.

Historically, the southern acornshell occurred in the upper Coosa River system and the Cahaba River above the fall line in Alabama, Georgia, and Tennessee. The most recent records for the southern acornshell were from tributaries of the Coosa River in the early 1970s, and the Cahaba in the 1930s (58 FR 14330). It was our determination at the time of listing, with