Common Name: BLUENOSE SHINER

Scientific Name: *Pteronotropis welaka* Evermann and Kendall

Other Commonly Used Names: none

Previously Used Scientific Names: *Notropis welaka*

Family: Cyprinidae

Rarity Ranks: G3G4/S1

State Legal Status: Threatened

Federal Legal Status: Not Listed

Description: The bluenose shiner is a slender minnow with a compressed body, a pointed snout and a terminal to subterminal mouth. Adults reach 53 mm (2.1 in) standard length. The first ray of the dorsal fin (i.e., the origin) is distinctly posterior to the first ray of the pelvic fin. There are 3-13 pored scales on the lateral line, 8-9 anal fin rays, and a typical pharyngeal tooth count formula of 1-4-4-1 (occasionally 0-4-4-0). A wide, dark lateral stripe runs along the length of the body between the snout and the caudal spot and is often flecked with silvery scales in both males and females. A thin, light-yellow stripe runs just above the black lateral stripe. The oblong caudal spot extends onto the median rays of the caudal fin and is bordered above and below by de-pigmented areas. The dorsum is dusky olive-brown and the venter is pale. This species exhibits striking sexual dimorphism, which includes a bright blue snout and greatly enlarged dorsal, pelvic, and anal fins on breeding males. The dorsal fin becomes black with a pale band near its base and the anal and pelvic fins turn white to golden yellow with contrasting black pigment within the middle of each fin. These characteristics develop gradually with age and many

males will exhibit only partial development of nuptial male morphology and color patterns (e.g., a blue snout, but not greatly enlarged fins). Some sources report that females also develop some blue on their snout, but other studies have reported that they do not.

Similar Species: While nuptial male bluenose shiners are distinctive, non-reproductive individuals (see photo below) can be easily confused with several co-occurring minnow species. The ironcolor shiner (*Notropis chalybaeus*) differs in having a less prominent caudal spot, a 2-4-4-2 pharyngeal tooth count formula, and a dorsal fin origin that is positioned directly over its pelvic fin origin. The redeye chub (*Notropis harperi)* differs in having a small barbel and a 0-4-4-0 pharyngeal tooth count formula. The redeye chub also lacks pigment on its chin, which is an excellent character for sorting this species from the bluenose shiner in the field. The taillight shiner (*Notropis maculatus*) differs in having a distinctly rounded caudal spot, a 0-4-4-0 pharyngeal tooth count formula and a narrower lateral stripe. The bluenose shiner co-occurs with one congener, the Apalachee shiner (*Pteronotropis grandipinnis*) in Georgia. The Apalachee shiner is much more common and has a broader lateral band, a higher anal fin ray count (usually 10), and a completely pored lateral line.

Habitat: Bluenose shiners are primarily found in small to medium-size streams, inhabiting pools with slow current and moderate to deep water. They are strongly associated with aquatic vegetation, including bur-reed (*Sparganium*), arrowhead (*Sagittaria*), and bladderwort (*Utricularia*). A 2004-2005 survey in Georgia captured bluenose shiners in sites with relatively high conductivity and in sites that were within or near the largest stream in the watershed. Their occurrence in relatively large streams in Georgia contrasts with their distribution in Mississippi, where the species is usually collected in small, headwater streams.

Diet: One study found that the bluenose shiner includes large amounts of filamentous algae in its diet. However, this study was based on very few specimens and more information is needed.

Life History: The bluenose shiner has a protracted reproductive season extending from May to August and perhaps as late as September. This species is among the handful of minnows known to lay eggs in the saucer–shaped nests constructed by male sunfishes. Evidence for nest association includes observations of reproductive individuals in and around sunfish nests and the collection of bluenose shiner eggs from sunfish nests. The occurrence of distinct size-classes of oocytes within females suggests that individuals spawn multiple clutches of eggs throughout the extended breeding season. Length-frequency data from a study in south Mississippi indicates a relatively short life span of one to two years. However, data from other populations suggest a life span of up to 3 years.

Survey Recommendations: This species is difficult to collect because of its rarity and because of its occurrence in deep, densely vegetated habitats over soft-sediments. Seining and dip-netting are effective methods, especially when targeting aquatic vegetation. Nonetheless, a 2004-2005 survey for the bluenose shiner in GA found that more than 20

seine hauls are needed to ensure a high probability of detecting the bluenose shiner when it is present within a site. Backpack electrofishing is rarely a feasible method because of the difficulty of wading through soft sediments and deep water while wearing chest-waders.

Range: The bluenose shiner occurs below the Fall Line in the Apalachicola River drainage and westward to the Pearl River drainage in Mississippi and Louisiana. A disjunct population is also known from the St. Johns River drainage in Florida. In Georgia, the bluenose shiner is known from tributaries to the Flint River system in southwest Georgia. Check the Fishes of Georgia Webpage for a watershed-level distribution map.

Threats: Small range size and the isolated nature of each population make the bluenose shiner vulnerable to extirpation from Georgia. Specific threats include sedimentation and nutrient run-off from agricultural areas. Excessive water withdrawal is also a significant threat to stream habitat quality in southwest Georgia, particularly during extreme drought periods.

Georgia Conservation Status: A targeted survey for the bluenose shiner was carried out in the Flint River system during 2004-2005. Thirty-nine sites were sampled, including all five historical sites and additional randomly-selected sites throughout historical watersheds. The bluenose shiner was detected at 5 of 39 sites (13%). Additional non-random sampling downstream of occupied sites and examination of museum specimens resulted in additional occurrences in the mainstem of Spring Creek and an Ichawaynochaway Creek tributary. Overall, the species was documented from nine-sites in the early to mid-2000s. These sites are clustered in the Spring Creek, Ichawaynochaway Creek, and Pennahatchee Creek systems.

Conservation and Management Recommendations: Conserving populations of the bluenose shiner depends on protecting habitat quality in Coastal Plain streams that may frequently be overlooked as important habitats for rare aquatic species. Special care must be taken to protect streams from unnecessary runoff, contamination by pesticides or fertilizers, and streambank disturbance. These streams must also be protected from excessive water withdrawals (for irrigation, for example) that diminish streamflow, especially during dry periods.

Selected References:

Albanese, B., J.T. Peterson, B.J. Freeman, and D.A. Weiler. 2007. Accounting for incomplete detection when estimating site occupancy of bluenose shiner (*Pteronotropis welaka)* in southwest Georgia. Southeastern Naturalist 6(4): 657-668.

Boschung, H.T. and R.L. Mayden. 2004. Fishes of Alabama. Smithsonian Books, Washington, DC. 736 pp.

Fletcher, D.E. 1999. Male ontogeny and size-related variation in mass allocation of bluenose shiners (*Pteronotropis welaka*). Copeia 1999: 479-486.

Johnston, C.E., and C.L. Knight. 1999. Life-history traits of the bluenose shiner, *Pteronotropis welaka*. Copeia 1999: 200-205.

Lee, S. L., C. R. Gilbert, C. H. Hocutt, R. E. Jenkins, D. E. McAllister, and J. R.Stauffer. 1980. Atlas of North American fishes. North Carolina State Mus. Nat. Hist. 867pp.

Mettee, M. F., P. E. O'Neil, and J. M. Pierson. 1996. Fishes of Alabama and the Mobile Basin. Oxmoor House, Birmingham. 820pp.

Page, L. M. and B. M. Burr. 1991. A field guide to freshwater fishes of North America north of Mexico. Houghton Mifflin, Boston. 432pp.

Pritchard, P. C. H. 1978. Rare and endangered biota of Florida. Vol. 4. Fishes. C. R. Gilbert, ed. Univ. Florida Press, Gainesville. 58pp.

Ross, S.T. Inland Fishes of Mississippi. University Press of Mississippi Press. Jackson, MS. 624 pp.

Author of Account: Brett Albanese and Byron J. Freeman

Date Compiled or Updated:
B. Freeman, 1999: Original account
K. Owers, January 30th, 2009: Added picture, updated status and ranks, added fish atlas link, converted to new format, minor edits to text.
B. Albanese, February 10, 2009: general update of entire account
Z. Abouhamdan, April 2016: updated link

Museum specimen of a non-breeding adult collected from Spring Creek, Georgia

Muesum specimen of a nuptial male collected from Wolf Creek, Georgia.