

High Conservation Priority – Piedmont Species

Greenhead Shiner *Notropis chlorocephalus*

Santee Chub *Cyprinella zanema*

Carolina Darter *Etheostoma collis*

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DESCRIPTION

Taxonomy and Basic Description

The greenhead shiner is a member of the family Cyprinidae; this large family of carps and minnows is distributed nationwide (Rohde et al. 1994). The genus *Notropis* (true



shiners) contains approximately 93 species; it is the largest genus of American cyprinids (Jenkins and Burkhead 1993), and the second largest genus of freshwater fishes in North America (Rohde et al. 1994). In South Carolina, there are 16 species of *Notropis*. The greenhead shiner is probably most closely related to the yellowfin shiner, *N. lutipinnis*, which is found in other portions of the Santee River drainage as well as the Savannah River drainage (Page and Burr 1991). The greenhead shiner will reach a length of 64 mm (2.5 inches) (Eddy and Underhill 1979). It is olivaceous, dusted with black specks and has a dusky lateral band. The mouth is relatively large and oblique (Blair et al. 1957). It is very similar to the yellowfin shiner; however, greenhead shiner breeding males are red with bright white fins (Page and Burr 1991).



The Santee chub is also a member of the family Cyprinidae. Containing 29 species, *Cyprinella* is the second largest genus of American cyprinids (Jenkins and Burkhead 1993). Members of the genus *Cyprinella* are distinguished from other cyprinids by their large, vertical diamond shaped scales and a black blotch in the dorsal fin (Rohde et al. 1994). In South Carolina, there are eight species of *Cyprinella*. The Santee chub is

probably most closely related to the “thinlip” chub; these two species share similar habitat types (Rohde et al. 1994). The Santee chub can reach a length of 75 mm (3 inches) (Page and Burr 1991). This chub has a slender, fusiform body, a long snout, and exhibits dark cross-hatching on the back and sides. Breeding males are silvery with yellow fins and black streaks on dorsal and caudal fins (Rohde et al. 1994).

The Carolina darter is a member of the perch family, Percidae. It is classified in the subgenus *Hololepis*, which contains three species in South Carolina (Rohde et al. 1994). It is a resident of the Yadkin, Pee Dee and Catawba drainages in North and South Carolina (Cloutman 1979). Carolina darters reach a length of 60 mm (2.4 inches) (Rohde et al. 1994). The fish has a small head and mouth with a highly arched, incomplete lateral line (Kuehne and Barbour 1983). The

brown-spotted sides are marked with a median dark stripe that breaks into blotches on the peduncle (Eddy and Underhill 1979). A primary basicaudal spot has two spots of lesser intensity above and below (Rohde et al. 1994). Breeding males do not develop bright colors but may have breeding tubercles on the pelvic fin spine and rays as well as on all anal fin rays (Kuehne and Barbour 1983).



Status

The greenhead shiner is listed as a fish of special concern in South Carolina and currently considered stable within its range (Warren et al. 2000), and apparently secure in North Carolina (NatureServe 2004).

The Santee Chub is currently stable throughout its range (Warren et al. 2000) and considered vulnerable in North Carolina (NatureServe 2004).

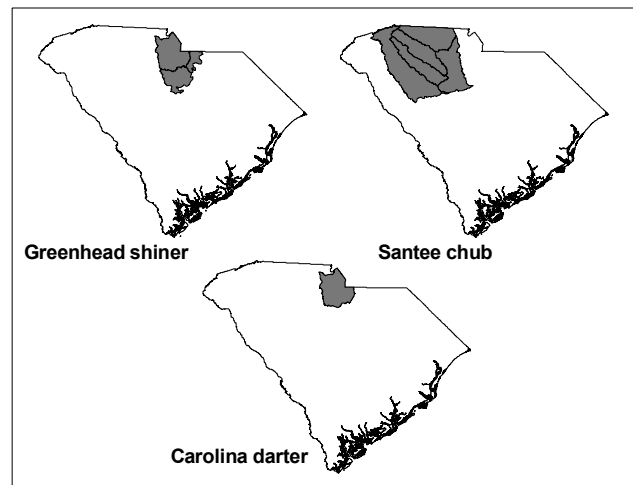
The Carolina darter is a federal species of concern, listed as a species of special concern in South Carolina and North Carolina, and was identified as a species vulnerable to imperilment in a recent assessment of southeastern freshwater fishes (Warren et al. 2000). The species is considered vulnerable (S3) in North Carolina and imperiled (S2) in Virginia (NatureServe 2004; Rohde et al. 1994).

POPULATION DISTRIBUTION AND SIZE

Distribution

The greenhead shiner is endemic to the Catawba River basin of the Santee drainage, occurring in both North Carolina and South Carolina (Rohde et al. 1994). There is also a population in the upper Lynches River, which may represent a distinct form of the greenhead shiner (F. Rohde, pers. comm.).

The Santee chub is restricted to the Santee River drainage within South Carolina, primarily in the piedmont and Blue Ridge foothills (Rohde et al. 1994). A few populations of Santee chub found in the coastal plain represent an undescribed species known as the “thinlip” chub. Outside of South Carolina, “thinlip” chub is also found in the Cape Fear River drainage of North Carolina (F. Rohde, pers. comm.).



The Carolina darter exists only in the piedmont region from south-central Virginia through North Carolina into north-central South Carolina. The range in South Carolina is restricted to the Catawba River basin (F. Rohde, pers. comm.).

Population Size and Trend

Population size and trend information for greenhead shiner is not known within South Carolina. However, Warren et al. (2000) classified this species as stable within its range. Population size and status information for the Santee chub is also unknown.

Population size and trend information for the Carolina darter is not known. Detailed survey and inventory for range and abundance of the Carolina darter are needed, since it may be a species that is disappearing (Kuehne and Barbour 1983). This species is known from a few dozen localities in Virginia, North Carolina and South Carolina, but has not been collected from several of those locations in recent surveys (NatureServe 2004). However, this species may be more widespread than presently documented (F. Rohde, pers. comm.). A great deal of additional survey effort is needed. Jenkins and Burkhead (1993) reported six to eight locations for this species in Virginia, but some of these are believed to be extirpated.

HABITAT AND NATURAL COMMUNITY REQUIREMENTS

The greenhead shiner inhabits rocky, flowing pools within clear headwater streams, creeks and small rivers in the Piedmont ecoregion of South Carolina (Page and Burr 1991). The Santee chub inhabits small to medium sized streams with sand and rocky runs or current-swept pools (Rohde et al. 1994). This species seems to be able to tolerate more turbid and warm waters than its close relative, the big-eye chub, *Hybopsis amblops* (Page and Burr 1991). The Carolina darter inhabits small to moderate sized streams in areas of low current velocity. Habitat substrates preferred by this species are usually characterized by mud, sand and sometimes bedrock. This darter seems to be tolerant of fine sediments covering the substrate it inhabits (Kuehne and Barbour 1983; Rohde et al. 1994).

CHALLENGES

The greenhead shiner is rare in South Carolina. Because its distribution is limited to the upper Catawba River system and the upper Lynches River within South Carolina, this species is vulnerable to development within the Catawba River and Lynches River systems. Conservation efforts within South Carolina are important to the global preservation of this species.

The Santee chub is often locally abundant in piedmont South Carolina and believed to be currently stable, but its limited distribution is cause for concern. The major threats to this species are deforestation, loss of riparian cover, siltation and impoundments. Conservation efforts within South Carolina are important to the global conservation of this species.

Geographic isolation of the Carolina darter makes it extremely vulnerable to development, pollution and habitat alterations. Due to the precarious status throughout its range, any

environmental threat should be a concern to the species' well being. Conservation efforts within South Carolina are critical to the global conservation of the species.

CONSERVATION ACCOMPLISHMENTS

There are currently no conservation accomplishments known at this time for these species.

CONSERVATION RECOMMENDATIONS

- Determine statewide distribution, population status, life history and habitat requirements for the greenhead shiner, the Santee chub and the Carolina darter with statewide stream surveys.
- Identify streams with healthy greenhead shiner populations and intact critical habitat in the Catawba River and Lynches River and their tributaries. Protect these areas, once identified.
- Conduct a genetic study of the greenhead shiner and its close relative, the yellowfin shiner, to resolve taxonomic questions, including a comparison of the Catawba River and Lynches River greenhead shiner forms.
- Identify streams with healthy Santee chub populations and intact critical habitat in the Broad River and its tributaries. Protect these areas, once identified.
- Conduct a genetic study of the Santee chub and its close relatives, the thicklip and "thinlip" chubs, to resolve taxonomic questions.
- Identify streams with healthy Carolina darter populations and intact critical habitat in the Catawba River basin tributaries. Protect these areas, once identified.
- Conduct traditional taxonomic studies and genetic studies to identify differences between the *Etheostoma collis collis* and *Etheostoma saludae* forms.
- Protect critical habitats from future development and further habitat degradation by following best management practices and protecting and purchasing riparian areas.
- Promote land stewardship practices through educational programs both within critical habitats with healthy populations and other areas that contain available habitat.
- Encourage responsible landuse planning.
- Consider species needs when participating in the environmental permit review process.
- Develop a Non-Game Fishes of South Carolina poster and other educational materials in order to raise public awareness of nongame species and their ecological importance to the natural history of South Carolina's aquatic habitats.
- Educate motor vehicle operators of the negative affects of crossing streams at multiple locations and using stream bottoms as trails.

MEASURES OF SUCCESS

Determining the distribution, life history, habitat needs and southeastern population structure and trends would represent a measure of success for these species. Methods that protect water quality are also likely to protect most of these species. Genetic resolution for all three species will allow for more specific management protocols.