Sandhills Chub

Semotilus lumbee

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DESCRIPTION

Taxonomy and Basic Description

The Sandhills Chub, a member of the cyprinid family, belongs to the genus *Semotilus*. There are 4 species of *Semotilus*, 2 of which occur in South Carolina (Creek Chub and Sandhills Chub). Fish in the genus *Semotilus* are large minnows characterized by a robust body, large head, and a dark blotch or smudge in their dorsal fin. They also have a very small barbel in a groove above the upper lip near the corner of their mouth except in the Lumbee River where the barbel is absent. The Sandhills Chub has relatively fine scales, a diffuse black lateral stripe, and a pinkish wash to the body in breeding season. Sandhills Chubs can attain lengths of 240 mm (9.4 inches) (Rohde et al. 1994).

Status

The Sandhills Chub is a state species of special concern in North Carolina and South Carolina, the only states where it occurs. Over its entire range, the Sandhills Chub is ranked vulnerable (G3/G4) (Natureserve 2013). In North Carolina, the Sandhills Chub is considered vulnerable (S3), and in South Carolina it is considered imperiled (S2) (NatureServe 2013). In an assessment of s\Southeastern fishes, the Sandhills Chub was considered vulnerable to imperilment (Warren et al. 2000).

POPULATION SIZE AND DISTRIBUTION

The Sandhills Chub occurs in the headwaters of Coastal Plain streams in the Sandhills region of south-central North Carolina and north-central South Carolina (NatureServe 2013). In South Carolina, it is almost wholly restricted to the Carolina Sandhills ecoregion in headwater streams of the upper Lynches River, Pee Dee River, and Wateree River drainages.

Sandhills Chub populations are currently stable in a small range of streams in the Carolinas. However, this species is extremely vulnerable due to its limited range. Based on South Carolina Stream Assessment (2006-2011) data, the mean statewide density estimate for Sandhills Chub in wadeable streams was 0.04 (95% confidence interval: 0.0008 – 0.08) per 100 m^2.

HABITAT OR NATURAL COMMUNITY REQUIREMENTS

The Sandhills Chub occurs in both small headwater streams and moderate-sized streams in the Sandhills of the Carolinas. It is generally associated with clean gravel and/or sand substrates (Rohde and Arndt 1991; Rohde et al. 1994).

CHALLENGES

The Sandhills Chub is threatened by the same anthropogenic disturbances that challenge all aquatic fauna. However, due to its limited distribution, it is especially vulnerable to development as the Sandhills region of South Carolina is under constant development pressure. Habitat modifications in this region that impact the Sandhills Chub and other species include agriculture, residential development, and tourism. Damming headwater streams to create ponds for golf courses eliminates important lotic habitats; the new lentic environments favor competing and often predatory species such as Bluegill and Largemouth Bass. Poor agricultural, silvicultural, and road construction practices often lead to stream siltation and non-point source water pollution (Walters 1995). Unregulated use of motor vehicles in the stream bottoms also results in stream siltation and destruction of fish habitat. Sandhills Chubs inhabit small headwater streams that are easily disrupted, but also easily protected.

CONSERVATION ACCOMPLISHMENTS

South Carolina Stream Assessment data have facilitated the calculation of standardized abundance (density) estimates for this species at multiple spatial strata including statewide, river basin, level-IV ecoregion, and “ecobasin” (ecoregion x river basin). These estimates, for the first time, provide an objective measure of current population status that will serve as a baseline for following future population trends and gauging the effectiveness of conservation actions.

Educational materials have been developed in order to raise public awareness of nongame species and their ecological importance to the natural history of South Carolina’s aquatic habitats, including:

- The Reel Art program creates a topic for secondary school students and judges the artists’ submissions (e.g. a list of the Piedmont Fishes of SC to select from as subjects for drawing or painting).
- We compiled information and photographs for the development of nongame fish description web pages which are currently in development.
- We developed the Blackwater River Guide and interactive Powerpoint.
    - http://www.dnr.sc.gov/education/pdf/BlackwaterInteractivePoster.pdf
    - http://www.dnr.sc.gov/education/pdf/BlackwaterRivEdGuide.pdf
- We developed and printed the Fish Species of Concern Coloring Book (2009).
    - http://www.dnr.sc.gov/aquaticed/pdf/SCFishesofConcernColoringBook.pdf

CONSERVATION RECOMMENDATIONS

- Use South Carolina Stream Assessment decision-support GIS modeling tools to identify levels and spatial distributions of critical habitat factors to sustain the species in geographic areas of interest.
- Use South Carolina Stream Assessment decision-support GIS modeling tools to identify priority regions and watersheds at greatest risk of decline in stream integrity.
- Describe life history and habitat requirements for the Sandhills Chub.
- Resample known locations to determine the population status of the Sandhills Chub and expand monitoring efforts within the Sandhills National Wildlife Refuge (NWR) in order to quantify the population within the refuge.
- Protect critical habitats for the Sandhills Chub 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 in other areas that contain available habitat for the Sandhills Chub.
- Encourage responsible land use planning.
- Consider species needs when participating in the environmental permit review process.
- Continue to develop educational materials in order to raise public awareness of nongame fish species and their ecological importance to the natural history of South Carolina's aquatic habitats.
- Educate off-road motor vehicle operators of the negative effects 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 this species. Methods that protect water quality are also likely to protect this species and others. In the event that more protective BMPs are implemented, population studies of this fish could assist in determining the effectiveness of those measures.

LITERATURE CITED

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