

Appendix A: Fish

Finescale Dace

Chrosomus neogaeus

Federal Listing

State Listing SC

Global Rank

State Rank S3

Regional Status



Photo by John Lyons

Justification (Reason for Concern in NH)

Finescale dace are vulnerable to habitat alterations that reduce summer base flows and riparian cover. Populations upstream of dams are also vulnerable to artificial water level fluctuations, especially during the spawning season. The extent of their distribution in New Hampshire is not well understood. Although aquatic habitats in northern New Hampshire are under less pressure from development than those of southern New Hampshire, there may be certain regions that are important for the persistence of the species, which has somewhat limited dispersal abilities. Finescale dace populations are vulnerable to introductions of large predatory fish species, including bass, pike, and sunfish. The brightly colored breeding males, in particular, are not well adapted to avoiding predatory fish (Stasiak and Cunningham 2006). As a species adapted to cold climates, the range of the finescale dace may be reduced in the future due to the effects of climate change.

Distribution

The finescale dace has a northern distribution in North America, inhabiting most of Canada, with isolated populations in the upper Mississippi River watershed, northern New York, Vermont, New Hampshire, and Maine. In New Hampshire, finescale dace populations occur north of the White Mountains, in the Androscoggin and Connecticut River watersheds (Scarola 1987).

Habitat

Finescale dace prefer lower gradient, cool headwater streams and small ponds with sluggish flow and ample cover from over hanging shrubs or aquatic vegetation (Scott and Crossman 1974). They tend to thrive in areas with a history of beaver activity. Individuals may be found in rivers or streams with higher gradients and flow, but they are assumed to have either washed out of or dispersed from areas of more suitable habitat upstream.

The finescale dace is a carnivorous minnow species. Its large jaws are adapted to feeding on insects, insect larvae, crustaceans, and snails. Finescale dace are non-territorial and may be observed foraging in small groups in the slower flowing sections of small streams and rivers. They are particularly well adapted to living in streams with beaver dams in various states of activity. This habitat may offer protection from large predacious fish species, with which finescale dace rarely coexist (Stasiak and Cunningham 2006).

Breeding takes place in areas of structure, such as exposed tree roots below an undercut bank, or a submerged tree branch, where the male uses its large pectoral fin to guide the female toward the substrate to deposit her eggs. Spawning takes place in small groups just after ice out. They are one

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of the first minnow species to spawn in early spring (Stasiak and Cunningham 2006). Adapted to thick ice cover and low oxygen levels, finescale dace are well suited to living in northern climates. Individuals may reach up to 6 years of age and 5 inches in length.

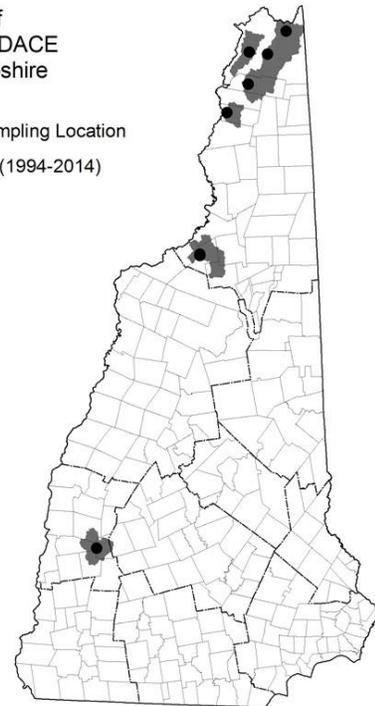
Where finescale dace overlap with northern redbelly dace, hybridization may occur. The offspring tend to be all female and diploid, meaning that they contain a full set of chromosomes from each parent. The hybrids are able to reproduce clonally and they share characteristics from both species, including a more omnivorous diet (Scott and Crossman 1974). Northern redbelly dace usually spawn about two weeks later than finescale dace in warmer water temperatures (19°C/67°F for redbelly dace and 16°C/60°F for finescale dace). Hybridization occurs in areas where rapid temperature increases in spring may cause more overlap between the spawning seasons of the two species.

NH Wildlife Action Plan Habitats

- Coldwater Rivers and Streams
- Lakes and Ponds with Coldwater Habitat
- Warmwater Lakes and Ponds

Distribution of FINESCALE DACE in New Hampshire

- Fish Sampling Location
- Current (1994-2014)



Distribution Map

Current Species and Habitat Condition in New Hampshire

There are only nine sites where finescale dace have been recorded in New Hampshire. These records must be viewed with caution due to similarities in appearance with northern redbelly dace. More information is needed to evaluate finescale dace population status and trends.

Population Management Status

There are no current population management projects specifically targeting finescale dace.

Regulatory Protection (for explanations, see Appendix I)

- Harvest permit - season/take regulations

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Quality of Habitat

Finescale dace are found north of the White Mountains, where aquatic habitats are relatively intact. Populations in ponds upstream of dams are vulnerable to water level fluctuations. The dam at Scotts Bog, a shallow wetland in the town of Pittsburg where finescale dace have been documented, was recently reconstructed. Follow up surveys should be done to see how this reconstruction project may have impacted the finescale dace population upstream of the dam. Finescale dace populations in ponds, including Matthews Pond in Colebrook and Round Pond in Pittsburg, are particularly vulnerable to introduced fish species.

Habitat Protection Status

Habitat Management Status

There are no current habitat management projects specifically targeting finescale dace.

Threats to this Species or Habitat in NH

Threat rankings were calculated by groups of taxonomic or habitat experts using a multistep process (details in Chapter 4). Each threat was ranked for these factors: Spatial Extent, Severity, Immediacy, Certainty, and Reversibility (ability to address the threat). These combined scores produced one overall threat score. Only threats that received a “medium” or “high” score have accompanying text in this profile. Threats that have a low spatial extent, are unlikely to occur in the next ten years, or there is uncertainty in the data will be ranked lower due to these factors.

Mortality from subsidized or introduced predators (Black Bass; pickerel; sunfish) (Threat Rank: High)

Fish species including largemouth bass, smallmouth bass, black crappie, and northern pike are often illegally introduced into waterbodies by anglers to create new fishing opportunities. These introductions can significantly alter the species composition of a lake or pond.

Introductions of predator fish species have been implicated in an overall loss of minnow species diversity throughout the northeast (Whittier et al. 1997)

List of Lower Ranking Threats:

Habitat degradation from water level management

Habitat loss and degradation due to shoreline development

Actions to benefit this Species or Habitat in NH

Prevent fish species introductions

Primary Threat Addressed: Mortality from subsidized or introduced predators (Black Bass; pickerel; sunfish)

Specific Threat (IUCN Threat Levels): Invasive & other problematic species, genes & diseases / Invasive non-native/alien species/diseases / Named species

Objective:

Prevent the introduction of predatory game fish, which alter the composition of native fish communities.

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General Strategy:

Species introductions are notoriously hard to prevent. An angler determined to create a new fishing opportunity by stocking a few fish into a waterbody is hard to deter. Education on the ecological damage that can be caused by introducing nonnative species into a waterbody will help prevent some, but not all deliberate species introductions. In some cases, anglers invested in the existing fishery may make the best advocates against new species introductions. However, outreach efforts will not persuade everyone, so laws, penalties, and adequate funding for enforcement are the last line of defense against species introductions. It is important that penalties are severe enough and the presence of law enforcement is noticeable enough to act as a deterrent. New species introductions are inevitable, but the rate and overall extent of introductions may be contained.

Political Location:

Watershed Location:

Distribution surveys

Objective:

Map the distribution of fish species of conservation concern.

General Strategy:

Continue to conduct surveys to monitor the distributions of fish species of concern in New Hampshire.

Political Location:

Watershed Location:

Water level management

Primary Threat Addressed: Habitat degradation from water level management

Specific Threat (IUCN Threat Levels): Natural system modifications

Objective:

Reduce the aquatic habitat impacts associated with artificial water level fluctuation at dams.

General Strategy:

Work with dam managers to achieve water level fluctuations that mimic natural flow regimes. Practices such as rapid changes in water level, excessive winter drawdown, and reducing downstream flow to refill a waterbody should be avoided. Engaging stakeholders, including shorefront property owners, boaters, anglers, and hydropower project owners is critical to changing long established water level management traditions. The NHDES Dam Bureau is the lead on dam management issues in New Hampshire. The best strategy for improving water level management practices for fish and wildlife is to work with the Dam Bureau to identify opportunities to create more natural water level fluctuations at a certain dams and then make slow incremental changes. This allows stakeholders to adjust to the changes and make comments when conflicts arise.

Political Location:

Watershed Location:

Life history research

Objective:

Study the life histories of fish species of conservation concern in New Hampshire.

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General Strategy:

There is a lack of basic information on the reproductive behavior, foraging habits, habitat requirements, seasonal movement patterns and other aspects of the life history of many lesser known fish species of concern in New Hampshire. A better understanding of these species would aid in the assessment of potential threats and the development of appropriate management actions. Also of interest is their ecological role in aquatic communities and their potential use as indicators for water quality or intact habitat.

Political Location:

Watershed Location:

References, Data Sources and Authors

Data Sources

Published literature was used to define the species global distribution and habitat descriptions. NHFG unpublished data and historical biological surveys provided locations of finescale dace in New Hampshire. The NHFG maintains a database of fish survey records.

Data Quality

Surveys targeting sites with historic records of finescale dace were conducted in 2011. Finescale dace have also been captured during electrofishing surveys for brook trout. There are still large gaps in the distribution data for finescale dace.

There is little information available on the status of finescale dace populations in New Hampshire. There are only 9 confirmed records and identification is questionable due to similarities in appearance with redbelly dace. Finescale dace are likely more widespread than survey records indicate. Their preferred habitat of beaver ponds and wetland streams in northern New Hampshire is not well represented in the NHFG fish survey database.

2015 Authors:

Matthew Carpenter, NHFG, Benjamin Nugent, NHFG

2005 Authors:

Literature

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Scott, W., and E. Crossman. 1973. Freshwater Fishes of Canada. Fisheries Research Board of Canada.

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