

PYGMY WHITEFISH

Prosopium coulteri Eigenmann and Eigenmann, 1892
(Salmonidae)

Global rank G5 (12Sep1996)

State rank S4 (24Jun1996)

State rank reasons

Disjunct population, overall abundance and trends unknown, but appears stable and locally abundant. Few threats. Isolated populations are vulnerable to local perturbations, especially the introduction of exotic predators.

Taxonomy

Various, unrelated fishes around the world are called whitefishes. In North America, the name applies to species in the subfamily Coregoninae.

General description

Smallest member of the subfamily Coregoninae. Species has a long, cylindrical body with a short snout that is broadly rounded when seen from above. Typically, brownish with somewhat greenish tints above; silvery sides with white belly. Distinguishing characteristics include single flap between nostril openings, notch in adipose eyelid and small pelvic axillary process. Juveniles have 7-14 large, round parr marks (Mecklenburg et al. 2002). Spawning fish develop nuptial tubercles on the head, back sides and pectoral fins. The ventral fins of both sexes also turn orange while spawning (Heard and Hartman 1965). In Alaska, appearance similar to round whitefish (*Prosopium cylindraceum*).

Length (cm) up to 28

Reproduction

Spawns at night, late fall and early winter, October-December depending on the region. Female fecundity ranges from 200-1000 eggs (Heard and Hartman 1965). In British Columbia, matures in 2nd or 3rd year, lives up to 9 years (McPhail and Lindsey 1970). In Alaska, both males and females mature at age one or two, sometimes as small as 6 cm (Heard and Hartman 1965, Bird and Roberson 1979).

Ecology

Species is considered a glacial relict and one of the most primitive of coregonines (Weisel et al. 1973). Has the greatest discontinuous range of any freshwater fish in North America (Eschmeyer and Bailey 1955 in Heard and Hartman 1965). Characterized by slow growth, low fecundity and



short life cycle. Frequently found in large schools of several thousand fish in both rivers and lakes. Occurs sympatrically with other species of whitefish (Mackay 2000).

Migration

In some regions moves to shallower spawning areas (Morrow 1980).

Food

Crustaceans, chironomids, ostracods, pontoporeia, copepods, and fish eggs.

Phenology

Feeds diurnally. Nocturnal spawner during late fall and early winter (November to January in Alaska; Morrow 1980).

Global habitat

Common in lakes and flowing waters of clear or silted rivers of mountainous country; in Lake Superior found at depths of 18-89 m; in western lakes, occurs in waters usually less than 6 m deep, not changing depth seasonally (Lee et al. 1980).

State habitat

In the Naknek system, Alaska, found at depths to 168 m but also abundant in the shallows (Heard and Hartman 1965). Spawns over coarse gravel in shallow areas in streams or lakes.

Global range

Three disjunct areas: Lake Superior, Ontario and Michigan; Yukon River drainage, Yukon, to Columbia River drainage, western Montana and Washington; Chignik, Naknek, and Wood river drainages, southwestern Alaska; abundant except in Lake Superior where uncommon (Page and Burr 1991). Previously found only in North America; within the past decade has also been found on the Chukotski Peninsula in Russia (Chereshnev and Skopets 1992).

State range

Disjunct distribution. Found in both lakes and streams in the Chignik, Naknek, and Wood River systems in southwestern Alaska (Morrow 1980) and in Tazlina, Klutina, and Tonsina lakes in the Copper River system in southcentral Alaska (Bird and Roberson 1979, Mecklenburg et al. 2002).

Global abundance

Unknown, but locally abundant in some areas. Alberta, Canada population appears to be small and scattered (Mackay 2000). Appear to be more abundant in the Naknek River system in Alaska than anywhere else they have been studied (Heard and Hartman 1965).

State abundance

Overall abundance statewide unknown. Is the most abundant species in some lakes of the Naknek system, Southwest Alaska (Heard and Hartman 1965).

State trend

Unknown, but likely stable.

Global protection

Species does not receive special protection in Canada other than general protections provided by the Fisheries Act. In the United States, listed as a species of special concern in Wisconsin and Washington (Johnson 1987 in MacKay 2000, Hallock and Mongillo 1998).

State protection

Protected where it occurs in Glacier Bay, Lake Clark, Wrangell-St. Elias, Yukon-Charlie, and Katmai National Parks and in the Alaska Peninsula National Wildlife Refuge.

Global threats

Potential threat of habitat loss through either siltation of spawning streams or lake shoreline, or through decreased water quality and siltation as a result of poor forest management practice and development. Construction of roads, bridges and other in-stream structures near spawning areas could result in abandonment of spawning areas or disruption of spawning migration. Other threats include the use of piscicides and exotic fish introductions (Hallock and Mongillo 1998)

State threats

Relatively few threats in state due to remote distribution. Should a perturbation occur that effects the population, recolonization is unlikely due to isolated populations and non-migratory life history. Species is potentially vulnerable to changes in environmental conditions and could be influenced by disruptions in the food web dynamics through introduction of exotic species such as mussels or shrimp (pers. comm. J. Miller, US Fish and Wildlife Service 2004).

Global research needs

Current needs include better information on biology, limiting factors and habitat requirements (Mackay 2000).

State research needs

Documentation and mapping of species entire range in Alaska is needed. Obtain local information and knowledge about current and historical distribution and population trends, and potentially human use.

Global inventory needs

Current needs include better information on distribution (Mackay 2000).

State inventory needs

Current information is needed on distribution, population size, age structure, and trends, both locally and throughout entire Alaskan range.

Global conservation and management needs

Protection from exotic fish introductions is needed. Consider listing as a vulnerable in Alberta, Canada (Mackay 2000).

State conservation and management needs

Prevent the introduction of non-indigenous species into spawning lakes. Establish monitoring protocols and conduct surveys to confirm distribution and that occurrence and relative abundance remains stable.

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State Conservation Status, Element Ecology & Life History

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Global Element Ecology and Life History

Author: Hammerson, G., September 1993.

