

ALASKA BLACKFISH

Dallia pectoralis Bean, 1880
(Esocidae)

Global rank G5 (13Sep1996)
State rank S5 (24Jun1996)

State rank reasons

Apparently abundant in areas where it occurs, especially in Yukon-Kuskokwim River(s) delta area; overall population and trend unknown. Threats are minimal. Taken as food in the lower Yukon/Kuskokwim Rivers; harvest is currently not documented.

Taxonomy

The relationship of *Dallia* to other esociforms is not settled. Most classifications place *Dallia* in the Umbridae, but it has at times been classified in a separate family, the Dalliidae. External morphometry suggests that *Dallia* is more similar to pikes (genus *Esox*). Evidence from a phylogenetic analysis using DNA sequencing (Lopez et al. 2000) suggests *Dallia* should be classified in the family Esocidae.

General description

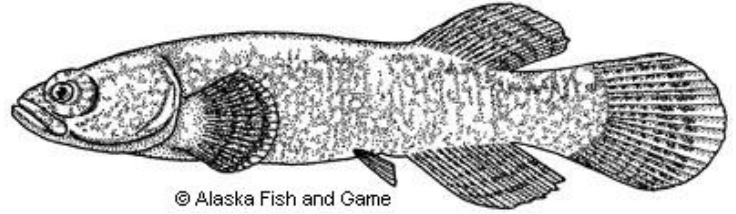
Small fish with an elongate body, short snout, large mouth, broad, flat head, small pelvic fins, dorsal and anal fins positioned posteriorly and large paddle-like pectoral and caudal fins. Color is typically dark green or brown dorsally, pale ventrally, irregular bars or blotches on side with dark brownish speckling throughout body and fins. Mature males have a reddish fringe along dorsal, caudal and anal fins. Male pelvic fins extend beyond the posterior edge of the anal fin (Armstrong 1994, Mecklenburg et al. 2002).

Length: Up to 35cm total length. Rarely exceeds 20cm in most areas; males slightly larger than females (Mecklenburg et al. 2002). Weight: Mature fish range from 5-90g. Varies by sex and location.

Length (cm) 35
Weight (g) 90

Reproduction

Spawns in spring and summer, beginning soon after ice breakup in May and continuing into July in interior Alaska. Female deposits eggs over extended period. Eggs demersal, sticky, hatch in 10 days at temperatures of 12-13 C. Sexually mature at age 2+ to 3+ years.



Ecology

Can breathe atmospheric oxygen and survive in poorly oxygenated water unsuitable for other fish. Usually abundant wherever it occurs. This species is the nearest freshwater fish to being endemic to Alaska; known for their hardiness and their ability to survive at low oxygen levels and partial freezing.

Migration

Apparently does not make extensive movements; migrations appear limited to inshore or upstream movements to spawning grounds in spring and (presumably) reverse migrations to deeper water in fall (Morrow 1980).

Food

Eats almost exclusively small invertebrates. Small individuals eat mostly copepods and Cladocera, shifting as they grow larger to insect larvae, snails, and rarely small fishes (Scott and Crossman 1973, Morrow 1980).

Global habitat

Like other esociformes, mudminnows occur only in fresh waters of the Northern Hemisphere. Usually in weed-choked lowland swamps and ponds, also in streams, rivers, and large lakes where vegetation is abundant; most abundant in tundra regions but does occur in forested areas. Sluggish bottom dweller, hides in vegetation. Likely spawns in swampy potholes, in vegetation at bottom of shallow ponds and quiet streams.

State habitat

Key habitats are tundra fresh waters, low-lying lakes and interconnected waterways typical of river delta areas in western and northern Alaska. Habitats are likely in near pristine condition except where they occur near villages.

Global range

Lowlands of eastern Siberia, Bering Sea islands (St. Lawrence, St. Matthew, Nunivak), and Alaska Colville River Delta west and south to central Alaska Peninsula near Chignik. Upstream in the Yukon-Tanana drainage almost to Fairbanks. Introduced on St. Paul Island and in the

Anchorage area. Common to abundant (Page and Burr 1991). Range possibly limited by lake chub, *Couesius plumbeus* (Lindsey and McPhail 1986).

State range

Colville River Delta west and south to central Alaska Peninsula near Chignik, mostly in lowland waters. Also occurs on St. Lawrence, St. Matthew and Nunivak Islands. Known occurrences include Alagnak and Wood Rivers. Upstream in the Yukon-Tanana drainage almost to Fairbanks. Introduced to St. Paul Island in the Pribilofs and accidentally introduced near Anchorage. Common to abundant (Page and Burr 1991).

Global abundance

Relatively abundant within its restricted range in Eastern Chukotka. Abundant in lowland lake and interconnected waterways, especially in the Yukon-Kuskokwim delta area.

State abundance

Abundant in lowland lakes and interconnected waterways, especially in the Yukon-Kuskokwim delta area.

State trend

Unknown, but likely stable.

State protection

Habitat is protected where species occurs in Denali National Park, Yukon Delta, Togiak, Nowitna, Koyukuk National Wildlife Refuges and other reserves.

State threat

Few threats affect this species, as it occurs in relatively pristine and remote environments. Five PAHs (toxic hydrocarbons) and the PCB Aroclor were found in blackfish tissues from St. Lawrence Island near Northeast Cape, where in 1969 180,000 gallons of diesel fuel were spilled at a Formerly Used Defense Site (Houston et al. 2000). Currently harvested in subsistence fisheries throughout its Alaskan range. Fall et al. (1996) found blackfish utilized in several communities of Bristol Bay, AK and estimated low harvest rates. Used as human or dog food and as bait for Pike (*Esox lucius*) fishing. During the winter, shrews and minks feed on blackfish that come to the surface at holes in frozen-over lakes. Also known prey of yellow-billed loon (*Gavia adamsii*) (North 1994). Subjected to strong competition for food where it co-occurs with charr (*Salvelinus* spp.) (Gudkov 1998).

State research needs

There is a general lack of information on this species, including life history, maturity, population dynamics, migration patterns, distribution, trophic ecology, and habitat characterization. Threats and other limiting factors are unknown. Human use is currently not monitored.

Global inventory needs

Overall population size is unknown.

State inventory needs

Little information available on species abundance and population trends. Monitoring protocols for this species should be developed (perhaps using mark-recapture techniques) to attain an accurate estimate of overall Alaska population size. Monitoring should continue on an annual basis. Species full range in the state is not well understood and needs study. Identification of important spawning areas on Yukon, Kuskokwim and Susitna rivers needed. Subsistence harvest should be monitored on Yukon and Kuskokwim rivers.

Global conservation and management needs:

There is a need to document current usage which would include obtaining local knowledge on species distribution, abundance, and harvest; developing protocols to monitor age structure of harvest; and involving community members in the harvesting process.

State conservation and management needs

Document current usage, including obtaining local knowledge on species distribution, abundance, and harvest; developing protocols to monitor age structure of harvest; and involving community members in the harvesting process.

LITERATURE CITED

- Armstrong, R.H. 1994. Alaska blackfish. Wildlife notebook series. Anchorage, AK: Alaska Department of Fish and Game.
- Fall, J.A., M.B. Chythlook, J.C. Schichnes and J.M. Morris. 1996. An overview of the harvest and use of freshwater fish by the communities of the Bristol bay region, southwest Alaska. Technical Paper No.166. Anchorage, AK: Alaska Department of Fish and Game.
- Gudkov, P.K. 1998. Bering Sea *Dallia pectoralis* in the Chukchi Peninsula. Journal of Ichthyology 8(2):199-203.

Houston, L., M.D. Kelly and E. Major. 2000. Tier II Ecological Assessment for Northeast Cape, St. Lawrence Island, Alaska. Report for Montgomery Watson, Anchorage, Alaska.

Lindsey, C. and J. McPhail. 1986. Zoogeography of fishes of the Yukon and Mackenzie Basins. Pages 639-674 In: C.H. Hocutt and E.O. Wiley (eds.). 1986. The Zoogeography of North American Freshwater Fishes.

Lopez, J.A., P. Bentzen, and T.W. Pietsch. 2000. Phylogenetic relationships of esocoid fishes (*Teleostei*) based on partial cytochrome b and 16S mitochondrial DNA sequences. *Copeia* 2000:420-431.

Mecklenburg, C.W., T.A. Mecklenburg and L.K. Thorsteinson. 2002. Fishes of Alaska. American Fisheries Society. Bethesda, MD.

Morrow, J.E. 1980. The freshwater fishes of Alaska. Alaska Northwest Publishing Co., Anchorage, AK. 248 pp.

North, M.R. 1994. Yellow-billed loon (*Gavia adamsii*). In: A. Poole A. and F. Gill (eds). The Birds of North America, No.121. Philadelphia: The Academy of Natural Sciences; Washington, D.C.: The American Ornithologists' Union.

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

Scott, W.B., and E.J. Crossman. 1973. Freshwater fishes of Canada. Fish. Res. Board Canada Bull. 184. Ottawa, Ontario, Canada. 966 pp.

Acknowledgements

State Conservation Status, Element Ecology & Life History

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State Conservation Status, Element Ecology & Life History Edition Date: 23Mar2005



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Life history and Global level information were obtained from the on-line database, NatureServe Explorer (www.natureserve.org/explorer). In many cases, life history and Global information were updated for this species account by Alaska Natural Heritage Program zoologist, Tracey Gotthardt. All Global level modifications will be sent to NatureServe to update the on-line version.

Global Element Ecology & Life History Edition Date: 07May1993

Global Element Ecology & Life History

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