

Crested Sculpin to Leatherfin Lump sucker

Crested Sculpin (*Blepsias bilobus*)

Cuvier, 1829

Family Hemitripterae

Note: Except for the geographic range data, all information is from areas outside of the study area.

Colloquial Name: None within U.S. Chukchi and Beaufort Seas.

Ecological Role: Unknown, but given what is known about the species distribution and abundance, likely to be minor with respect to marine ecosystem function in the Chukchi Sea.

Physical Description/Attributes: Compressed body densely covered in prickles; orange-brown to olive green with darker blotches dorsally, or white with olive to black mottling. For specific diagnostic characteristics, see *Fishes of Alaska* (Meckenburg and others, 2002, p. 509) [1]. Swim bladder: Absent [2]. Antifreeze glycoproteins in blood serum: Unknown.

Range: U.S. Chukchi Sea [3]. Elsewhere in Alaska, Bering Sea, and Aleutian Islands from Amchitka Island along coasts to southern British Columbia near Port Hardy. Worldwide, Seas of Okhotsk and Japan [3].



Crested Sculpin (*Blepsias bilobus*), 128 mm TL, eastern Chukchi Sea, 2007. Photograph by C.W. Mecklenburg, Point Stephens Research.

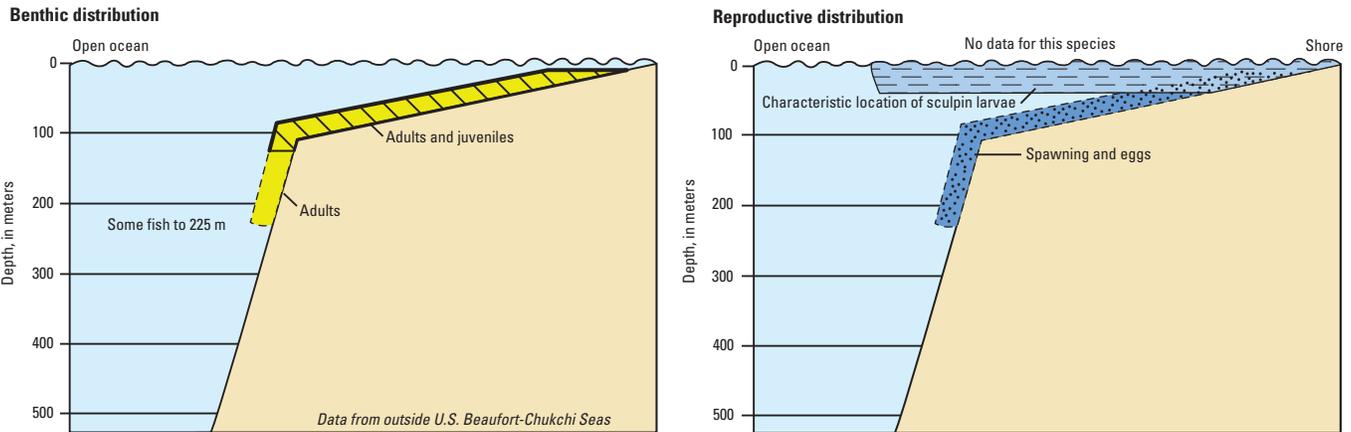
Relative Abundance: *Uncommon in U.S. Chukchi Sea.* [6]. Elsewhere, common in Sea of Japan and eastern Bering Sea north to about St. Lawrence Island [3, 7, 8].



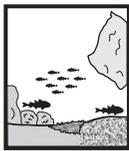
Geographic distribution of Crested Sculpin (*Blepsias bilobus*) within Arctic Outer Continental Shelf Planning Areas [4] based on review of published literature and specimens from historical and recent collections [3, 5].

Depth Range: 4–250 m [9, 15], typically less than 120 m [1]. Juveniles collected at the shallower depths and near the surface [9].

Blepsias bilobus
Crested Sculpin



Benthic and reproductive distribution of Crested Sculpin (*Blepsias bilobus*).



Habitats and Life History

Eggs—Size: Unknown. Time to hatching: Unknown. Habitat: Likely benthic [10].

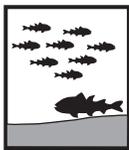
Larvae—Size at hatching: Unknown. Size at juvenile transformation: Unknown. Days to juvenile transformation: Unknown. Habitat: Pelagic [10].

Juveniles—Age and size: Unknown. Habitat: Benthic, nearshore to upper slope [1]; over bare bottoms, bedrock, and among kelp and eelgrass [11].

Adults—Age and size at first maturity: Unknown. Maximum age: Unknown. Maximum size: 27 cm TL [1]. Habitat: Benthic [1–3], nearshore to upper slope [1]; over bare bottoms, bedrock, and among kelp and eelgrass [11]

Substrate—At least bedrock [11].

Physical/chemical—Temperature: -1.4–11.4 °C [15]. Salinity: Marine.



Behavior

Diel—Unknown.

Seasonal—Unknown.

Reproductive—Unknown.

Schooling—Unknown.

Feeding—Unknown.



Populations or Stocks

There have been no studies.



Reproduction

Mode—Probably oviparous [10].

Spawning season—Unknown.

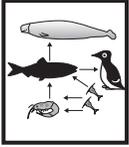
Fecundity—Unknown.



Food and Feeding

Food items—Amphipods and Walleye Pollock (*Gadus chalcogrammus*) in Russia [13]. Small invertebrates in general for members of the Hemitripterae family [2].

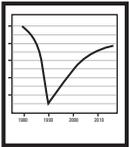
Trophic level—4.13 standard error ± 0.74 [13].



Biological Interactions

Predators—Great Sculpin [14].

Competitors—Likely other sculpins, as well as flatfishes, gadids, and eelpouts.



Resilience

Unknown.



Traditional and Cultural Importance

None reported.



Commercial Fisheries

Currently, Crested Sculpin are not commercially harvested.



Potential Effects of Climate Change

This Boreal Pacific species could be expected to increase in abundance and become more widespread in the Chukchi Sea, and perhaps to expand its distribution to the Beaufort Sea.



Areas for Future Research [B]

Little is known about the ecology and life history of this species. Research needs include: (1) depth and location of pelagic larvae, (2) depth, location, and timing of young-of-the-year benthic recruitment, (3) preferred depth ranges for juveniles and adults, (4) spawning season, (5) seasonal and ontogenetic movements, (6) population studies, (7) prey, and (8) predators.

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- Love, M.S., Mecklenburg, C.W., Mecklenburg, T.A., and Thorsteinson, L.K., 2005, Resource inventory of marine and estuarine fishes of the West Coast and Alaska—A checklist of North Pacific and Arctic Ocean species from Baja California to the Alaska-Yukon border: Seattle, Washington, U.S. Department of the Interior, U.S. Geological Survey, Biological Resources Division, OCS Study MMS 2005-030 and USGS/NBII 2005-001, 276 p. [9]

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Eyeshade Sculpin (*Nautichthys pribilovius*)

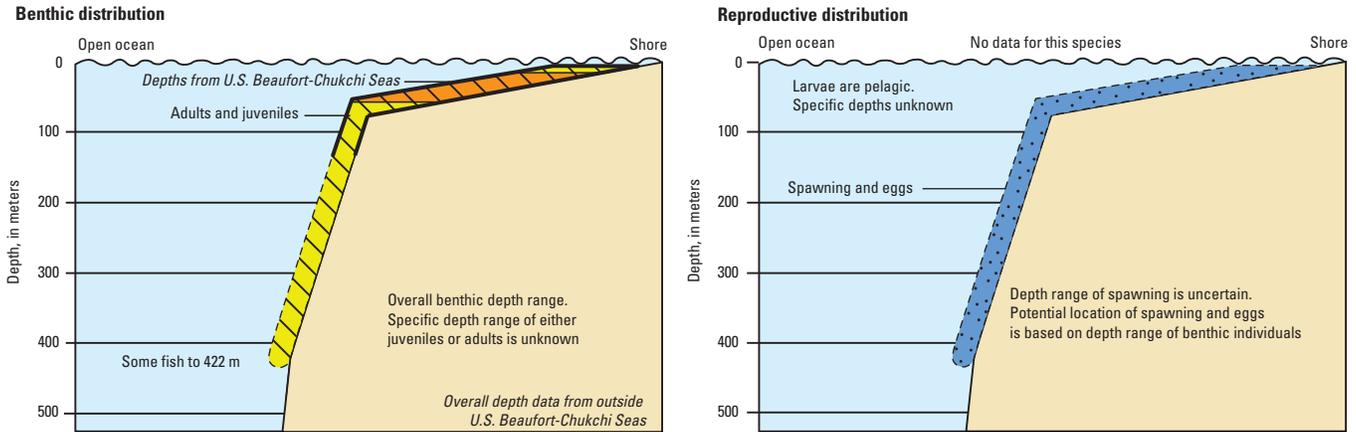
(Jordan & Gilbert, 1898)

Family Hemitripterae**Colloquial Name:** *None within U.S. Chukchi and Beaufort Seas.***Ecological Role:** Unlikely to be of significant importance in regional foods webs.**Physical Description/Attributes:** Brown to gray-brown body with vague dark blotches and covered with prickles that extend onto dorsal and pectoral fins; black bar from eye diagonally downward on cheek. For specific diagnostic characteristics, see *Fishes of Alaska* (Mecklenburg and others, 2002, p. 512) [1]. Swim bladder: Absent [2]. Antifreeze glycoproteins in blood serum: Unknown.**Range:** *U.S. Chukchi Sea and western U.S. Beaufort Sea* [3, 4]. Elsewhere in Alaska, in Bering Sea and Aleutian Islands from Attu Island to southeastern Alaska at Steamer Bay. Worldwide, Gulf of Anadyr to Commander Islands and to Seas of Okhotsk and Japan [1, 3].**Relative Abundance:** *Common in eastern Chukchi Sea* [4, 7] and *more common in Bering Strait and southeastern Chukchi Sea* [6] and eastern Bering Sea [8] but rare in Sea of Japan [9] and U.S. Beaufort Sea.Eyeshade Sculpin (*Nautichthys pribilovius*), 109 mm TL, Bering Strait, 2007. Photograph by C.W. Mecklenburg, Point Stephens Research.

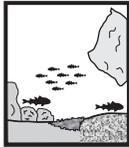
Geographic distribution of Eyeshade Sculpin (*Nautichthys pribilovius*) within Arctic Outer Continental Shelf Planning Areas [5] based on review of published literature and specimens from historical and recent collections [1, 3, 4, 6].

Depth Range: 11 m [4] to 422 m, typically less than 135 m in Bering Sea and Gulf of Alaska [1]. Documented at depths of 11–53 m [4] in the U.S. Chukchi Sea and 24–53 m in the U.S. Beaufort Sea [4].

Nautichthys pribilovius
Eyeshade Sculpin



Benthic and reproductive distribution of Eyeshade Sculpin (*Nautichthys pribilovius*).



Habitats and Life History

Eggs—Size: 2.5–2.7 mm [10]. Time to hatching: Unknown. Habitat: Likely benthic based on life history of the Sailfin Sculpin (*Nautichthys oculofasciatus*) [11].

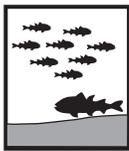
Larvae—Size at hatching: Unknown. Size at juvenile transformation: Unknown. Days to juvenile transformation: Unknown. Habitat: Likely pelagic based on life history of Sailfin Sculpin [11].

Juveniles—Age and size: Unknown. Habitat: Benthic [1].

Adults—Age and size at first maturity: Unknown. Maximum Age: Unknown. Maximum size: As long as 10.9 cm TL [1]. Habitat: Benthic [1].

Substrate—Shell hash, gravel, sand, mud and rock in U.S. Chukchi Sea [6].

Physical/chemical—Temperature: -1.7–11.4 °C [4, 6, 12]. Prefers temperatures greater than 0 °C [10]. Salinity: Marine to slightly estuarine [13].



Behavior

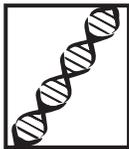
Diel—Unknown.

Seasonal—Unknown.

Reproductive—Unknown.

Schooling—Unknown.

Feeding—Unknown.



Populations or Stocks

There have been no studies.



Reproduction

Mode—Oviparous [10].

Spawning season—Unknown.

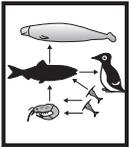
Fecundity—50 eggs [10].



Food and Feeding

Food items—Unknown. Small invertebrates in general for members of the Hemitripterae family [2].

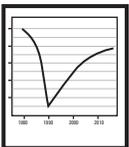
Trophic level—3.62 standard error 0.65 [14].



Biological Interactions

Predators—Unknown.

Competitors—Unknown.



Resilience

Unknown. No data.



Traditional and Cultural Importance

None reported.



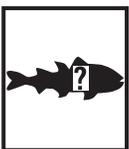
Commercial Fisheries

Currently, Eyeshade Sculpin are not commercially harvested.



Potential Effects of Climate Change

A predominantly Boreal Pacific species [3], Eyeshade Sculpin are apt to become more abundant in the Chukchi and Beaufort Seas as water temperatures increase. A range expansion in the Beaufort Sea also is likely.



Areas for Future Research [B]

Little is known about the biology and ecology of this species from the region. Research needs include: (1) depth and location of pelagic larvae, (2) depth, location, and timing of young-of-the-year Demersal recruitment, (3) preferred depth ranges for juveniles and adults, (4) spawning season, (5) seasonal and ontogenetic movements, (6) population studies, (7) prey, and (8) predators.

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Mecklenburg, C.W., Møller, P.R., and Steinke, D., 2011, Biodiversity of Arctic marine fishes—Taxonomy and zoogeography: *Marine Biodiversity*, v. 41, no. 1, p. 109–140 and Online Resource 1. [3]

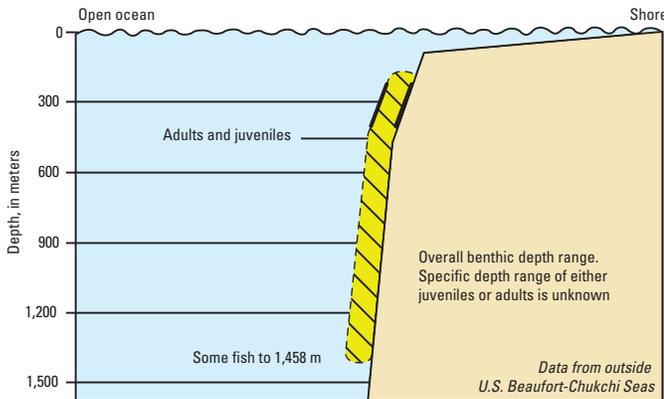
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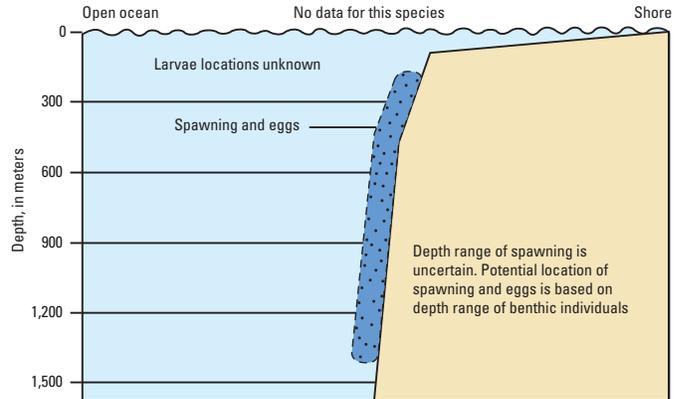
Depth Range: Upper continental slopes at 159–2,476 m [6], mainly 170–400 m in Barents Sea [1].

Cottunculus microps
Polar Sculpin

Benthic distribution



Reproductive distribution



Benthic and reproductive distribution of Polar Sculpin (*Cottunculus microps*).



Habitats and Life History

Eggs—Size: 3–5 mm [1]. Time to hatching: Unknown. Habitat: Benthic [9].

Larvae—Size at hatching: Size at juvenile transformation: Days to juvenile transformation: Habitat: Unknown.

Juveniles—Age and size: Unknown. Habitat: Benthic, deep troughs, and upper parts of continental slope [3].

Adults—Age and size at first maturity: Unknown. Maximum age: 8–10 years [1]. Maximum size: As long as 33 cm TL (mainly 6–16 cm) and 0.7 kg [1]. Habitat: Benthic, deep troughs, and upper parts of continental slope [3].

Substrate—Mud, soft bottoms [1, 3].

Physical/chemical—Temperature: -0.4–1.9 °C in Baffin Bay [10]. Typically temperatures greater than 0 °C [1].

Salinity: Prefers high salinity (34.5–35 ppt) [1].



Behavior

Diel—Unknown.

Seasonal—Unknown.

Reproductive—Adults of this family typically guard their eggs [7].

Schooling—Unknown. **Feeding**—Unknown.



Populations or Stocks

There have been no studies.



Reproduction

Mode—Oviparous [7].

Spawning season—Summer–autumn in Barents Sea [1].

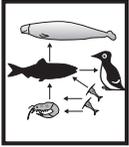
Fecundity—125–435 eggs [1].



Food and Feeding

Food items—Benthic invertebrates such as pantopods, amphipods, gammarids, polychaetes, mysids, mollusks, etc. [1, 11].

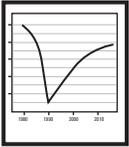
Trophic level—3.41 standard error 0.39 [12].



Biological Interactions

Predators—Greenland halibut in Barents Sea [13].

Competitors—Juveniles would likely be consumed by a range of benthic feeders, such as flatfishes, cods, sculpins, and poachers.



Resilience

Low, minimum population doubling time: 4.5–14 years (Fecundity = 66) [12].



Traditional and Cultural Importance

None reported.



Commercial Fisheries

Currently, Polar Sculpin are not commercially harvested.



Potential Effects of Climate Change

Unknown.



Areas for Future Research [B]

Little is known about the ecology and life history of this species. Research needs include: (1) depth and location of pelagic larvae, (2) depth, location, and timing of young-of-the-year benthic recruitment, (3) preferred depth ranges for juveniles and adults, (4) spawning season, (5) seasonal and ontogenetic movements, (6) population studies, (7) prey, and (8) predators.

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Smoothcheek Sculpin (*Eurymen gyrinus*)

Gilbert & Burke, 1912

Family Psychrolutidae

Colloquial Name: None within U.S. Chukchi and Beaufort Seas.

Ecological Role: Scarcity within U.S. Chukchi Sea waters and absence from the U.S. Beaufort Sea suggests a minor ecological role.

Physical Description/Attributes: Tadpole-shaped body with moveable skin over a clear, gelatinous layer. Color is highly variable according to habitat [1]. For specific diagnostic characteristics, see *Fishes of Alaska* (Mecklenburg and others, 2002, p. 517) [1]. Swim bladder: Absent [1]. Antifreeze glycoproteins in blood serum: Unknown.

Range: U.S. Chukchi Sea to 70°26'N, 164°38'W [2]. Elsewhere in Alaska, Bering Sea south to Aleutian Islands and to western Gulf of Alaska at Kodiak Island. Worldwide, Seas of Japan and Okhotsk and Pacific coast of Honshu, and off Japan to Commander Islands [1].

Relative Abundance: Rare in U.S. Chukchi Sea and absent from U.S. Beaufort Sea [1, 2, 4]; typically caught in shallow waters, but rarely sampled by research investigations. Rare in Sea of Japan [5].



Smoothcheek Sculpin (*Eurymen gyrinus*), 111 mm TL, northern Bering Sea, 2007. Photograph by C.W. Mecklenburg, Point Stephens Research.

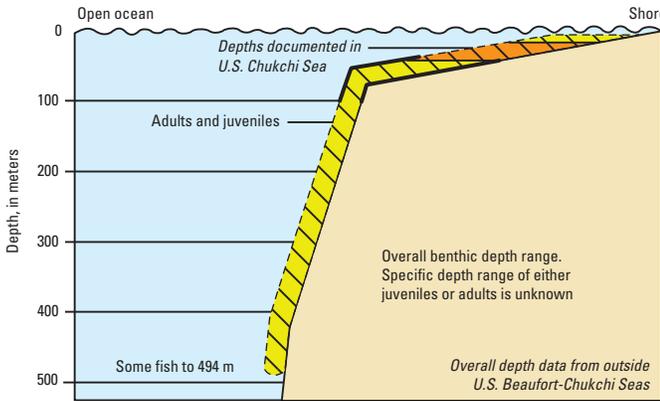


Geographic distribution of Smoothcheek Sculpin (*Eurymen gyrinus*) within Arctic Outer Continental Shelf Planning Areas [3] based on review of published literature and specimens from historical and recent collections [1, 2, 4].

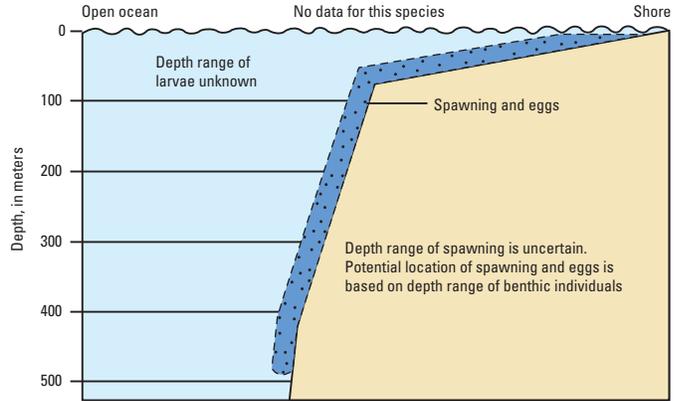
Depth Range: 2–174 m [2, 6], typically 40–100 m in the Pacific Ocean off the northern Kuril Islands, Russia [7]. *Found at depths of 17–44 m in the U.S. Chukchi Sea* [2].

Eurymen gyrinus
Smoothcheek Sculpin

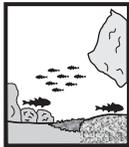
Benthic distribution



Reproductive distribution



Benthic and reproductive distribution of Smoothcheek Sculpin (*Eurymen gyrinus*).



Habitats and Life History

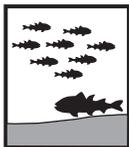
Eggs—Size: Unknown. Time to hatching: Unknown. Habitat: Likely benthic, like the more well-known members of the family Psychrolutidae [8].

Larvae—Size at hatching: Unknown. Size at juvenile transformation: Unknown. Days to juvenile transformation: Unknown. Habitat: Unknown.

Juveniles—Age and size: Unknown. Habitat: Benthic [1]. Adults: Age and size at first maturity: Unknown. Maximum age: Unknown. Maximum size: As long as 38.8 cm TL [1]. Habitat: Benthic [1].

Substrate—Unknown.

Physical/chemical—Temperature: Unknown. Salinity: Marine [1].



Behavior

Diel—Unknown.

Seasonal—Unknown.

Reproductive—Adults of this family typically guard their eggs [8].

Schooling—Unknown.

Feeding—Unknown.



Populations or Stocks

There have been no studies.



Reproduction

Mode—Oviparous [8].

Spawning season—Unknown.

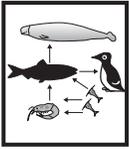
Fecundity—Unknown.



Food and Feeding

Food items—Unknown.

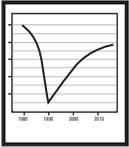
Trophic level—3.41 standard error 0.46 [9].



Biological Interactions

Predators—Unknown.

Competitors—Unknown.



Resilience

Low, minimum population doubling time: 4.5–14 years (Preliminary *K* or Fecundity) [9].



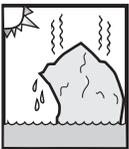
Traditional and Cultural Importance

None reported.



Commercial Fisheries

Currently, Smoothcheek Sculpin are not commercially harvested.



Potential Effects of Climate Change

It is likely that warming Arctic waters would allow this species to penetrate farther into the U.S. Chukchi Sea and perhaps into the U.S. Beaufort Sea.



Areas for Future Research [B]

Little is known about the ecology and life history of this species. Research needs include: (1) depth and location of pelagic larvae, (2) depth, location, and timing of young-of-the-year benthic recruitment, (3) preferred depth ranges for juveniles and adults, (4) spawning season, (5) seasonal and ontogenetic movements, (6) population studies, (7) prey, and (8) predators.

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Alligatorfish (*Aspidophoroides monoptygius*)

(Bloch, 1786)

Family Agonidae

Note: *Except for physical description, relative abundance, and geographic range data, all information is from areas outside of the study area.*

Note on taxonomy: *The Alaskan population was described and named as a distinct species, *Aspidophoroides bartoni* (Gilbert, 1896), to which the common name Aleutian Alligatorfish has been applied [1]. Recent genetic and morphological data confirm that they are the same species [1, 2].*

Colloquial Name: *None within U.S. Chukchi and Beaufort Seas.*

Ecological Role: Current information about the occurrence of this fish is limited in the U.S. Chukchi and Beaufort Seas. It is unlikely to represent a significant prey resource in regional food webs.

Physical Description/Attributes: Brownish to olive green with a slender body covered with bony plates; faint dark bands on sides and back; and a white belly. For specific diagnostic characteristics, see *Fishes of Alaska* (Mecklenburg and others, 2002, p. 553) [1]. Swim bladder absent [3]. Antifreeze glycoproteins in blood serum: Unknown.

Range: *U.S. Chukchi Sea northward to Point Barrow and Beaufort Sea eastward to about 71°N, 151°W [2, 4]. Elsewhere in Alaska, in Bering Sea and Aleutian Islands, to Prince William Sound and Gulf of Alaska [1]. Worldwide, in western Pacific from Sea of Japan and Sea of Okhotsk to Gulf of Anadyr, and western Atlantic Ocean from northwestern Greenland to New Jersey [1, 2].*



Alligatorfish (*Aspidophoroides monoptygius*), 84 mm TL, Chukchi Sea, 2007. Photograph by C.W. Mecklenburg, Point Stephens Research.

Relative Abundance: Common in U.S. Chukchi Sea [2, 4, 6, 7]. In Alaska, common in eastern Bering Sea, and along the western end of the Alaska Peninsula [8–10]. Worldwide, common in nearshore waters off Kamchatka, Russia [11].

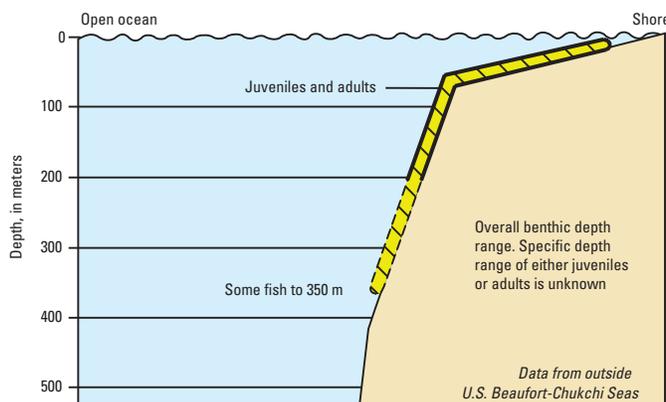


Geographic distribution of Alligatorfish (*Aspidophoroides monopterygius*) within Arctic Outer Continental Shelf Planning Areas [5] based on review of published literature and specimens from historical and recent collections [1, 2, 4].

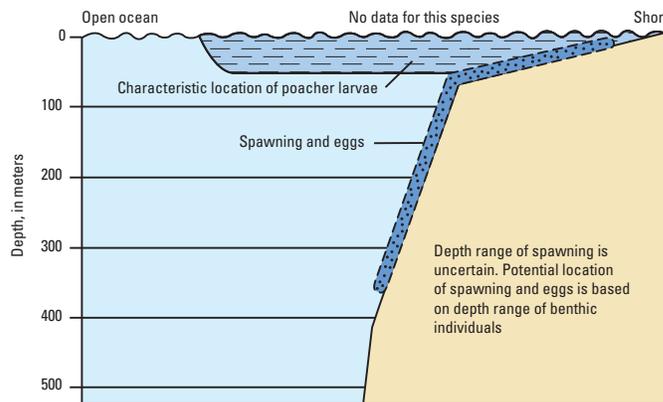
Depth Range: Overall range is 8–337 m, but almost entirely less than 200 m [1]. Depth range of larvae is unknown. In general, poacher larvae are abundant in near-surface waters, and over continental shelf and upper slope [12–14]. Depth range of juveniles is unknown.

Aspidophoroides monopterygius
Alligatorfish

Benthic distribution



Reproductive distribution



Benthic reproductive distribution of Alligatorfish (*Aspidophoroides monopterygius*).



Habitats and Life History

Eggs—Size: Unknown. Time to hatching: Unknown. Habitat: Demersal and adhesive (probably on sand and mud) [3].

Larvae—Size at hatching: Unknown. Size at juvenile transformation: 29.0 mm in western North Atlantic [15]. Days to juvenile transformation: Unknown. Habitat: Pelagic although distance from shore and depth in water column are unknown for this species; in general poacher larvae are abundant in near-surface waters, over continental shelf and shallow slope waters [12–14].

Juveniles—Age and size: Unknown. Habitat: Demersal [1, 3, 16], although fish to at least 4.1 cm TL are occasionally found in midwaters [17].

Adults—Age and size at first maturity: Unknown. Maximum age: At least 6 years. Females grow larger and may have a slightly longer life span [18]. Maximum size: 17.8 cm TL [1]. Habitat: Demersal [3, 16].

Substrate—Juveniles and adults live on sand and mud [1, 19].

Physical/chemical—Temperature: Between at least -1.7–12.2 °C. [19, 20]. Salinity: All life stages live in marine waters. [19–21].



Behavior

Diel—Unidentified poacher larvae have migrated into slightly deeper waters at night in southeastern Alaska [13].

Seasonal—Off Kamchatka, found in relatively shallow waters during summer and during winters in deeper waters on the edge of the continental shelf [11].

Reproductive—Unknown.

Schooling—Unlikely. Other poacher species are solitary [16, 22].

Feeding—Unknown.



Populations or Stocks

There have been no studies.

**Reproduction**

Mode—Separate sexes, oviparous [23].

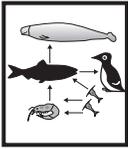
Spawning season—Poorly known. November to January in Atlantic Ocean [24].

Fecundity—Poorly known. One “medium-sized” Alligatorfish in Atlantic Ocean specimen contained about 600 eggs [19].

**Food and Feeding**

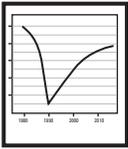
Food items—Benthic individuals eat mostly zoobenthos, including crustaceans (for example, amphipods, isopods, cumaceans) and polychaetes [25, 26], although midwater animals such as pteropods are also consumed [26]. Food habits of larvae are unknown.

Trophic level—3.5 (standard error 0.43) [27].

**Biological Interactions**

Predators—Cannibalism has not been reported. Bering Sea, Kamchatka Peninsula and northern Kuril Island, Russia, predators include Flathead Sole, Great Sculpin, Plain Sculpin, Pacific Cod, Pacific halibut, and Sablefish [28–34]. Of these species, only great and plain sculpins and Pacific Halibut inhabit the U.S. Chukchi Sea, and Great Sculpin and Pacific Halibut are rarely found there.

Competitors—Presumably other zoobenthic feeders such as Arctic Cod, Walleye Pollock, other poachers, eelpouts, and sculpins.

**Resilience**

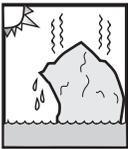
Medium, minimum population doubling time is 1.4–4.4 years (Preliminary *K* or Fecundity) [27].

**Traditional and Cultural Importance**

None reported.

**Commercial Fisheries**

Currently, Alligatorfish are not commercially harvested.

**Potential Effects of Climate Change**

Alligatorfish are common in marine waters of Arctic Alaska in temperatures 1.1–2.5 °C. Warming could lead to increased patterns of abundance and that could lead to increased competition with other fishes that feed on small benthic organisms. This would potentially, include Arctic Cod, Walleye Pollock, other poachers, and sculpins.

**Areas for Future Research [B]**

Little is known about the ecology and life history of this species. Research needs in the study area include:

- (1) depth and location of pelagic larvae, (2) depth, location, and timing of young-of-the-year benthic recruitment, (3) preferred depth ranges for juveniles and adults, (4) spawning season, (5) seasonal and ontogenetic movements, (6) population studies, (7) prey, and (8) predators.

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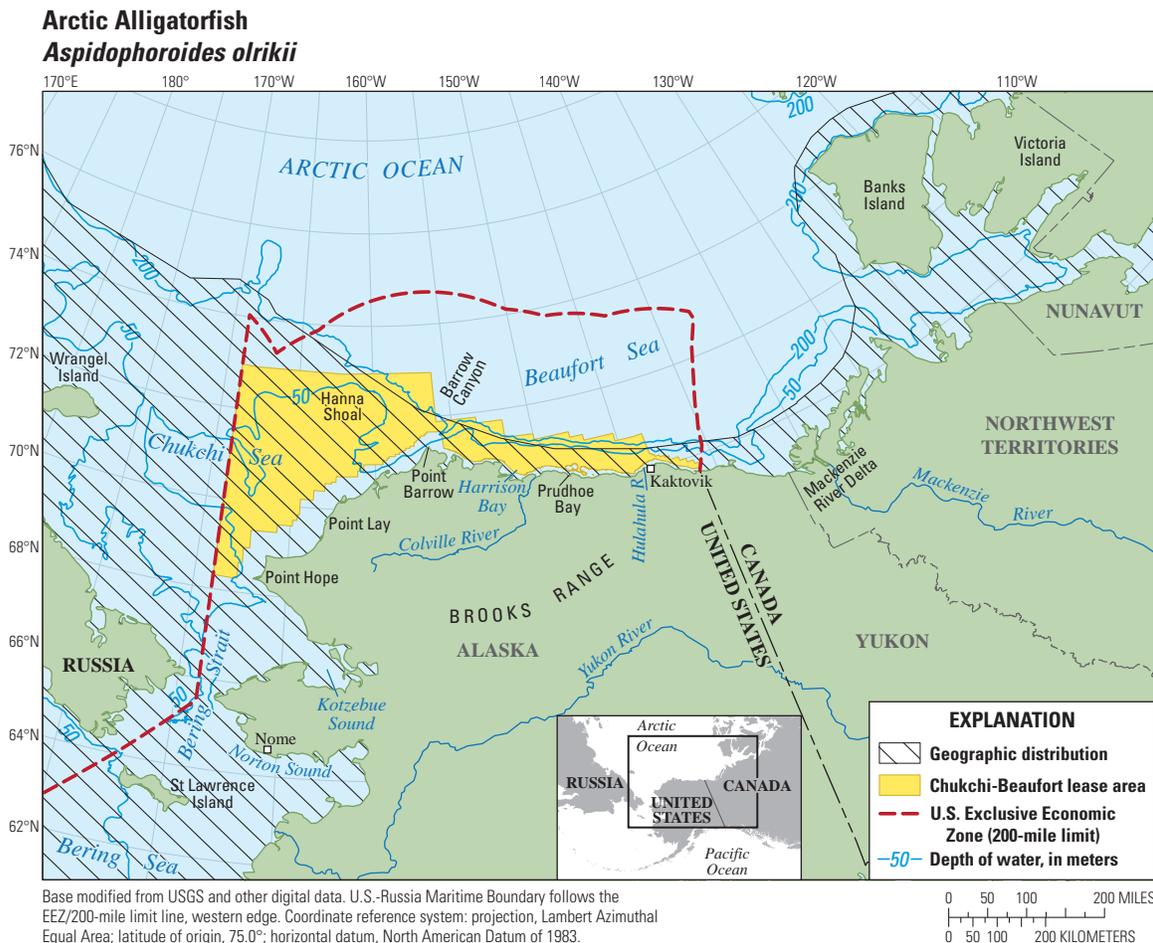
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Arctic Alligatorfish (*Aspidophoroides olrikii*)

Lütken, 1877

Family Agonidae**Colloquial Name:** *None within U.S. Chukchi and Beaufort Seas.***Ecological Role:** Largely unknown. Species information regarding biology and ecology is not available. Although this species appears to be common in the U.S. Chukchi and Beaufort Seas, it does not school and its biomass is likely to be relatively low. Thus, this species is unlikely to represent a significant prey resource to birds, mammals, and larger fishes.**Physical Description/Attributes:** Brownish to olive green on back and sides and white on belly. Caudal fin has a white margin and center [1]. Males have a chalky white blotch on dorsal fin [2]. For specific diagnostic characteristics, see *Fishes of Alaska* (Mecklenburg and others, 2002, p. 552) [1]. Swim bladder: Absent [3]. Antifreeze glycoproteins in blood serum: Unknown.**Range:** *In U.S. Beaufort Sea and northward to at least 71°55'N, 175°18'W in U.S. Chukchi Sea* [4]. Elsewhere in Alaska, south through the Bering Sea to northern Gulf of Alaska in Prince William Sound [5]. Worldwide, practically circumpolar in Arctic Ocean, from southern Barents Sea and White Sea eastward to west Greenland but not Canadian high Arctic archipelago; south in western Atlantic Ocean to Newfoundland [1, 2, 4, 5].**Relative Abundance:** *Common throughout U.S. Chukchi Sea and U.S. Beaufort Seas* [1, 2, 4, 7, 8]. Reports of presence between Herschel Island and Franklin Bay, Canada [9–11] and numerous unpublished museum specimens from Alaska eastward to Hudson Bay indicate this species is common in Arctic Canadian waters [2].

Arctic Alligatorfish (*Aspidophoroides olrikii*), 61 mm TL, Chukchi Sea, 2004. Photograph by B.A. Sheiko and C.W. Mecklenburg, Russian Academy of Sciences and Point Stephens Research.

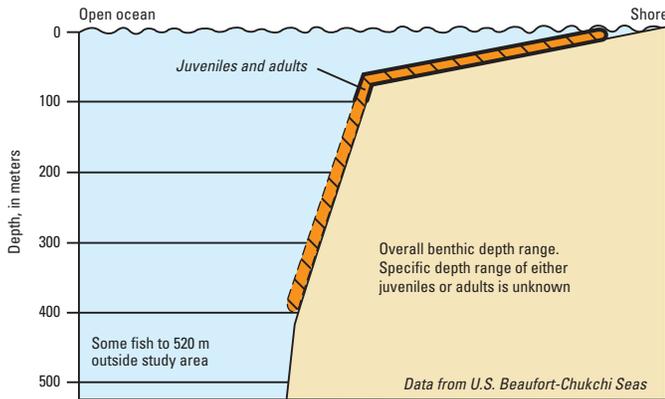


Geographic distribution of Arctic Alligatorfish (*Aspidophoroides olrikii*) within Arctic Outer Continental Shelf Planning Areas [6] based on review of published literature and specimens from historical and recent collections [1, 2, 5].

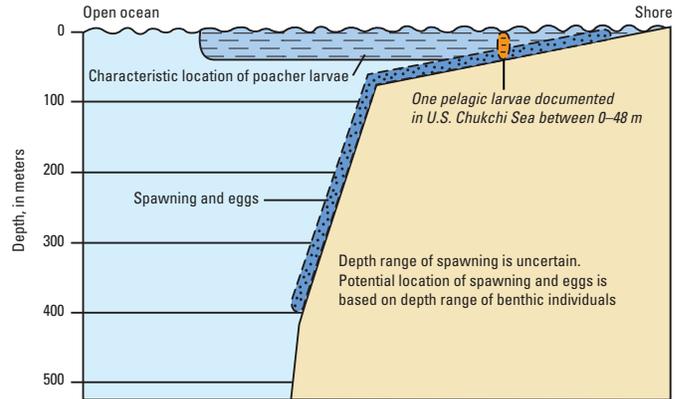
Depth Range: As deep as 400 m in U.S. Chukchi and Beaufort Seas [7], usually less than 100 m [1, 4, 5, 8, 12]. Elsewhere, overall depth range is 3–520 m [2]. Depth range of pelagic juveniles and larvae is poorly known. *One pelagic larva documented between 48 m and surface in the U.S. Chukchi Sea* [13]. Off Oregon and California, poacher larvae are abundant in near-surface waters, over the continental shelf and upper slope waters [14–16].

Aspidophoroides olrikii
Arctic Alligatorfish

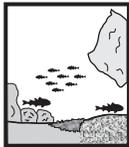
Benthic distribution



Reproductive distribution



Benthic and reproductive distribution of Arctic Alligatorfish (*Aspidophoroides olrikii*).



Habitats and Life History

Eggs—Size: 0.75–1.5 mm [17]. Time to hatching: Unknown. Habitat: Demersal and adhesive (probably on sand and mud) [3].

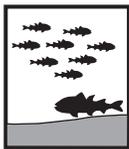
Larvae—Size at hatching: Unknown. Size at juvenile transformation: 2.5–6.2 cm TL [7, 12, 18]. Days to juvenile transformation: 2–3 months [3]. Habitat: Pelagic although distance from shore and depth in water column are unknown for this species, in general poacher larvae are abundant in near-surface waters, over continental shelf and shallow slope waters [14–16].

Juveniles—Age and size: Unknown. Habitat: Demersal [3, 19].

Adults—Age and size at first maturity: Age unknown. About 62 mm off Russia [12]. Maximum age: Unknown. Maximum size: 10 cm TL [2]. Habitat: Demersal [1, 3, 19].

Substrate—Sand and mud bottoms; also lives around rocks [4, 12, 20].

Physical/chemical—Temperature: Juveniles and adults at least -1.8–7.9 °C [2, 21–23], prefers around 0 °C [24]. Salinity: Marine and estuarine waters as brackish as 20 ppt [12, 25], prefers 33–35 ppt [24].



Behavior

Diel—Unidentified poacher larvae have migrated into slightly deeper waters at night in southeastern Alaska [15].

Seasonal—Unknown.

Reproductive—Unknown.

Schooling—Unlikely. Other poacher species are solitary [19, 26].

Feeding—Unknown.



Populations or Stocks

There have been no studies.



Reproduction

Mode—Separate sexes, oviparous [27].

Spawning season—Unknown.

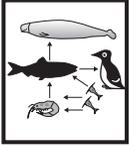
Fecundity—At least 110–260 eggs [7, 12].



Food and Feeding

Food items—A few fish examined in the U.S. Chukchi and Beaufort seas had eaten gammarid amphipods, polychaetes, and clam siphons [7, 28], whereas fish in the Russian Arctic consumed amphipods, isopods, ostracods, and nemerteans [12]. Food habits of larvae are unknown.

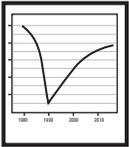
Trophic level—3.3 standard error 0.49 [29].



Biological Interactions

Predators—Unknown.

Competitors—Presumably a wide range of other zoobenthic feeders such as Arctic Cod, Walleye Pollock, other poachers, eelpouts, and sculpins.



Resilience

Medium, minimum population doubling time: 1.4–4.4 years (assuming $t_m = 2-4$; Fecundity <2,000) [21]



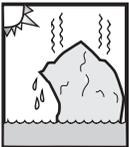
Traditional and Cultural Importance

None reported.



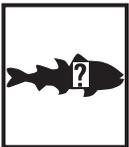
Commercial Fisheries

Currently, Arctic Alligatorfish are not commercially harvested.



Potential Effects of Climate Change

This is a predominantly Arctic species; thus, the distribution of Arctic Alligatorfish would be expected to shift northwards with warming temperatures.



Areas for Future Research [B]

Little is known about the ecology and life history of this species. Research needs in the study area include: (1) depth and location of pelagic larvae; (2) depth, location, and timing of young-of-the-year benthic recruitment, (3) preferred depth ranges for juveniles and adults, (4) spawning season, (5) seasonal and ontogenetic movement,; (6) population studies, (7) prey, and (8) predators.

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Fourhorn Poacher (*Hypsagonus quadricornis*)

(Valenciennes, 1829)

Family Agonidae

Note: Except for geographic range data, all information is from areas outside of the study area.

Colloquial Name: None within U.S. Chukchi and Beaufort Seas.

Ecological Role: Current information about the occurrence of this fish is limited in the U.S. Chukchi Sea. Its rare occurrence suggests it is not important in local or regional food webs.

Physical Description/Attributes: Reddish brown and bony-plated with cryptic coloration of white, yellow, red, and brown bands and blotches, and a dark vertical band along margin of caudal fin. For specific diagnostic characteristics, see *Fishes of Alaska* (Mecklenburg and others, 2002, p. 531) [1]. Swim bladder: Absent [2]. Antifreeze glycoproteins in blood serum: Unknown.

Range: From Bering Strait to northeastern Chukchi Sea west of Point Lay [3]. Found in the U.S. Chukchi Sea for the first time in 2007 in a region, which had been extensively sampled, this boreal species could be new to the Arctic [3, 4]. Elsewhere, from Commander–Aleutian Islands chain and southern Bering Sea southward to Puget Sound, Washington, and to Sea of Okhotsk and northern Sea of Japan [1, 3–7].

Relative Abundance: Rare in U.S. Chukchi Sea [3]. Elsewhere in Alaska, rare north of 57°N in Bering Sea [3]. Common around the Aleutian Islands, Pribilof Islands, and eastward to Cook Inlet, Gulf of Alaska, southward to Puget Sound, Washington, and around the Kuril Islands and Kamchatka Peninsula, Russia.



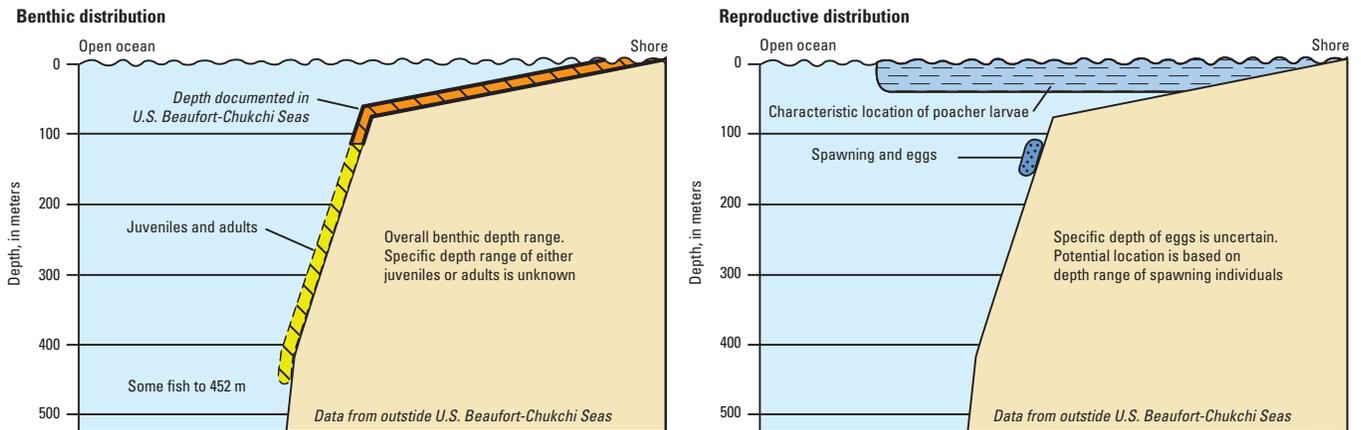
Fourhorn Poacher (*Hypsagonus quadricornis*), 103 mm TL, Bering Strait, 2007. Photograph by C.W. Mecklenburg, Point Stephens Research.



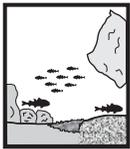
Geographic distribution of Fourhorn Poacher (*Hypsagonus quadricornis*) within Arctic Outer Continental Shelf Planning Areas [8] based on review of published literature and specimens from historical and recent collections [3, 4].

Depth Range: From intertidal zone to 452 m [1], but most abundant at less than 200 m [1, 5, 9, 10]. Occurs at depths less than 110 m in northern Bering Sea and U.S. Chukchi Sea [4]. In the Pacific Ocean off the northern Kuril Islands, spawning occurs at depths of 110–150 m [10]. Depth range of juveniles is unknown. Depth range of larvae is unknown. In general, poacher larvae are abundant in near-surface waters, over continental shelf and upper slope [11–13].

Hypsagonus quadricornis
Fourhorn Poacher



Benthic and reproductive distribution of Fourhorn Poacher (*Hypsagonus quadricornis*).



Habitats and Life History

Eggs—Size: 1.5–3.1 mm [10]. Time to hatching: Unknown. Habitat: Demersal and adhesive [2].

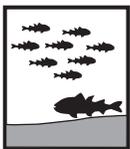
Larvae—Size at hatching: 6.4 mm [14]. Size at juvenile transformation: 14 mm [14]. Days to juvenile transformation: Unknown. Habitat: Pelagic [2]. In general, poacher larvae are abundant in near-surface waters, over continental shelf and shallow slope waters [11–13].

Juveniles—Age and size: Unknown. Habitat: Demersal and live over both high and low relief sea floors [2, 7, 10, 15].

Adults—Age and size at first maturity: Off the Kuril Islands, most fish mature by 3 years at 6.5 to 7.5 cm TL, although some males may mature a year earlier [10]. Males and females grow to same length and have similar life spans [10]. Maximum age: At least 7 years old. Maximum size: 12.0 cm TL [10]. Habitat: Demersal and live over both high and low relief sea floors [2, 7, 10, 15].

Substrate—On silty, rocky sand, gravel, and pebble bottoms [1, 4].

Physical/chemical—Temperature: -1.2 °C [4] to 10 °C. Salinity: Marine (or occasionally estuarine [7, 15]).



Behavior

Diel—Unidentified poacher larvae have migrated into slightly deeper waters at night in southeastern Alaska [12].

Seasonal—Off Kamchatka, found in relatively shallow waters during summer; winters deeper on the edge of the continental shelf [5].

Reproductive—Unknown.

Schooling—Unlikely. Other poacher species are solitary [16, 17].

Feeding—Can use pectoral fins to lift up rocks and shells to look for prey [14].



Populations or Stocks

There have been no studies.



Reproduction

Mode—Separate sexes, oviparous. Fertilization is external [2].

Spawning season—Poorly known. Spawning occurs at least during July and August [10].

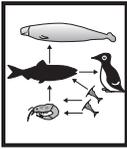
Fecundity—Poorly known. 57–921 eggs, spawned in a single batch [10].



Food and Feeding

Food items—In general, poachers feed on crustaceans and polychaetes [2]. Off the Kuril Islands, polychaetes, gammarid, and caprellid amphipods are the most important foods. However, in fishes over 10 cm (4.0 in.) long, shrimps, limpets, and small fishes (mainly sculpins) are of increasing importance [10]. Food habits of larvae are unknown.

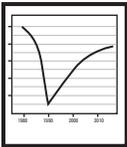
Trophic level—3.19 (standard error: 0.37) [18].



Biological Interactions

Predators—Cannibalism has not been reported. Predators include Pacific Cod and Whiteblotched Skates [19, 20].

Competitors—Presumably other zoobenthos feeders such as Arctic Cod, Walleye Pollock, other poachers, eelpouts, and sculpins.



Resilience

High, minimum population doubling time: less than 15 months (Preliminary *K* or Fecundity) [18].



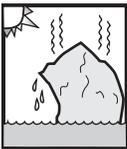
Traditional and Cultural Importance

None reported.



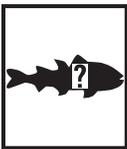
Commercial Fisheries

Currently, Fourhorn Poacher are not commercially harvested.



Potential Effects of Climate Change

Fourhorn Poacher are found primarily in the southeastern Chukchi Sea. Warming, associated with climate change, could increase this species abundance in conjunction with a range extension to the north. Potential effects include changes in competition with other marine fishes that feed on small benthic organisms, including Arctic Cod, Walleye Pollock, other poachers, flatfishes, and sculpins.



Areas for Future Research [B]

Little is known about the ecology and life history of this species in the Chukchi Sea. Research needs include: (1) depth and location of pelagic larvae, (2) depth, location, and timing of young-of-the-year benthic recruitment, (3) preferred depth ranges for juveniles and adults, (4) spawning season, (5) seasonal and ontogenetic movements, (6) population studies, (7) prey, and (8) predators.

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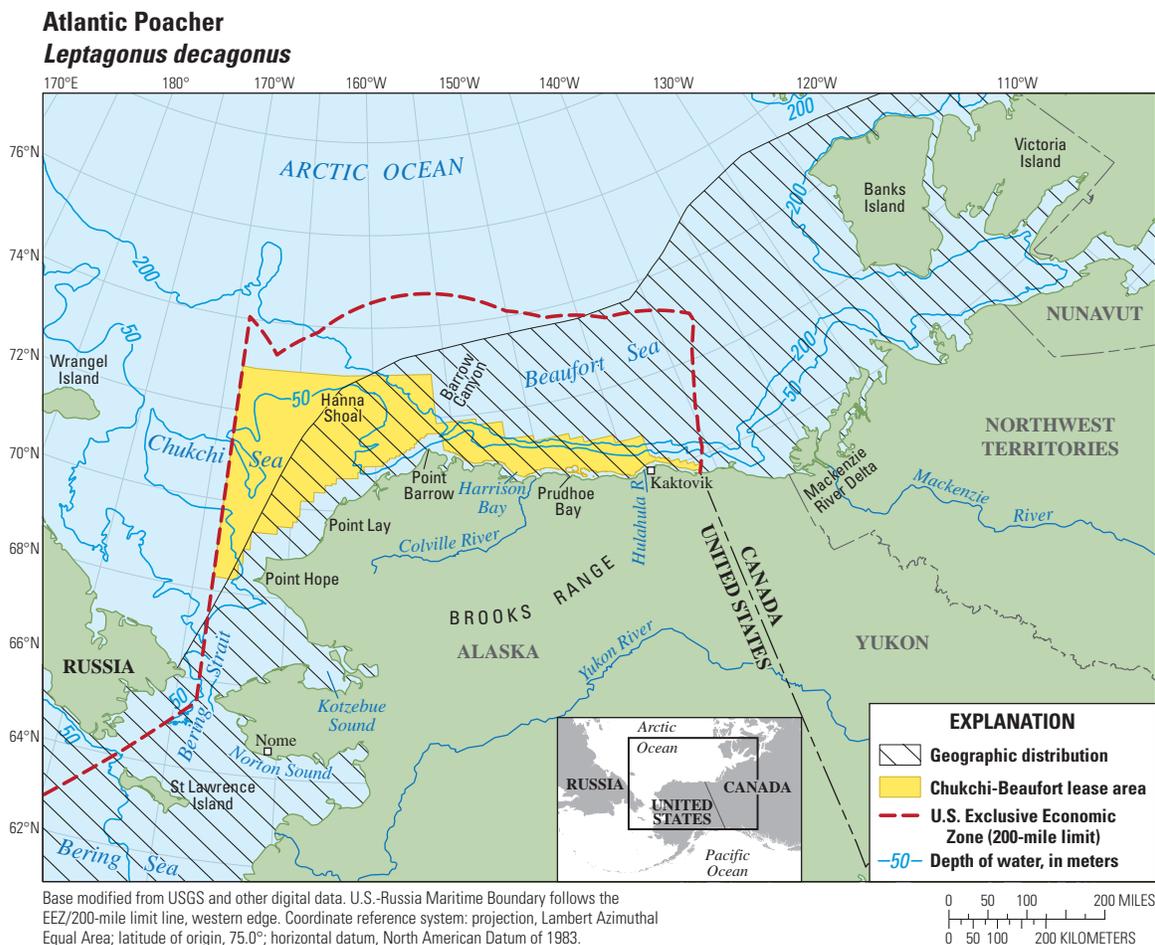
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Atlantic Poacher (*Leptagonus decagonus*)

(Bloch & Schneider, 1801)

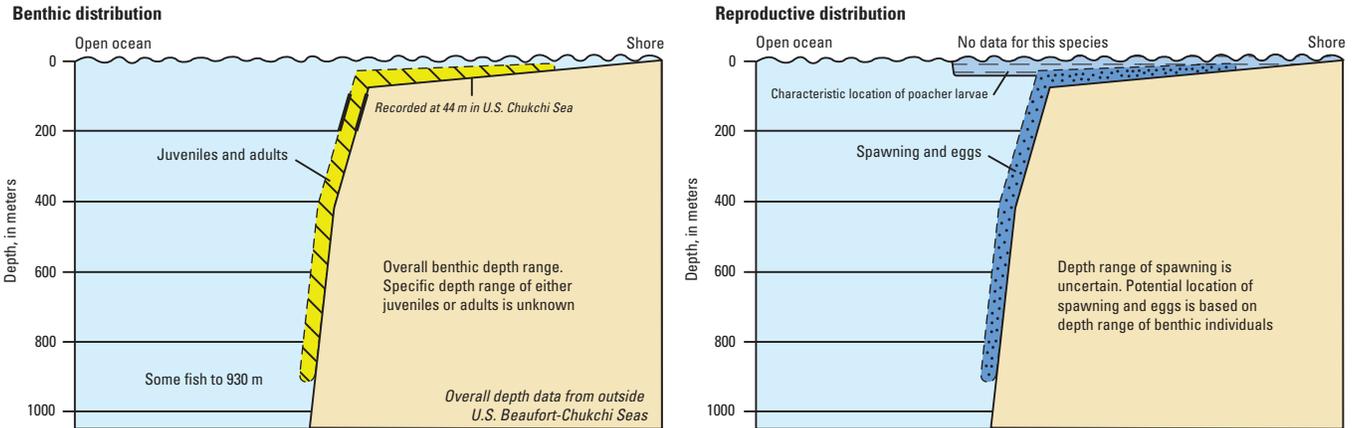
Family Agonidae

Colloquial Name: *None within U.S. Chukchi and Beaufort Seas.***Ecological Role:** Current information about occurrence is limited in the U.S. Chukchi and Beaufort Seas. The Atlantic Poacher is unlikely to represent a significant prey resource to higher-level organisms or role in regional food webs.**Physical Description/Attributes:** A yellowish gray fish with vague grayish brown bands and patches. Pectoral and caudal fins are brownish black toward tips. For species diagnostic characteristics, see *Fishes of Alaska* (Mecklenburg and others, 2002, p. 537) [1]. Swim bladder: Absent [2]. Antifreeze glycoproteins in blood serum: Unknown.**Range:** *U.S. Chukchi and Beaufort Seas* [1, 3]. Elsewhere in Alaska, south to Bristol Bay in Bering Sea. Worldwide, nearly circumpolar from Laptev Sea east to western North Atlantic; in Atlantic Ocean to Newfoundland; and in Pacific Ocean there is an isolated population in Sea of Okhotsk [1, 4, 5].**Relative Abundance:** *Uncommon in U.S. Chukchi and Beaufort Seas* [1, 3]. Elsewhere, common at least in western Barents Sea [8] and rare around much of Greenland [9].Atlantic Poacher (*Leptagonus decagonus*), 150 mm TL, off northeastern Sakhalin Island, Russia, Sea of Okhotsk, 2003. Photograph by B.A. Sheiko, Russian Academy of Sciences.

Geographic distribution of Atlantic Poacher (*Leptagonus decagonus*) within Arctic Outer Continental Shelf Planning Areas [6] based on review of published literature and specimens from historical and recent collections [1, 3, 7].

Depth Range: Overall range is 24–930 m, but usually between 100–200 m [1, 3]. Documented in U.S. Chukchi Sea at 44–59 m [1, 5]. Depth range of juveniles is unknown. Depth range of larvae is unknown. In general, abundant in near-surface waters, over continental shelf and shallow slope waters [10–12].

Leptagonus decagonus
Atlantic Poacher



Benthic and reproductive distribution of Atlantic Poacher (*Leptagonus decagonus*).



Habitats and Life History

Eggs—Size: 1.5–2.0 mm [13]. Time to hatching: Unknown. Habitat: Demersal and adhesive (probably on sand and mud) [2].

Larvae—Size at hatching: Unknown. Size at juvenile transformation: About 28 mm TL [14]. Days to juvenile transformation: 2–3 months for poachers in general [2]. Habitat: Pelagic [2], although distance from shore and depth in water column are unknown for this species, in general poacher larvae are abundant in near-surface waters, over continental shelf and shallow slope waters [10–12].

Juveniles—Age and size: Unknown. Habitat: Demersal [1, 5].

Adults—Age and size at first maturity: Unknown. Maximum age: Unknown. Maximum size: 22.6 cm TL [1, 15]. Habitat: Demersal [1, 5].

Substrate—Both juveniles and adults live on sand and mud [1, 5].

Physical/chemical—Temperature: Documented -1.7–7.4 °C [5, 13–15]. Salinity: Mainly marine but occasionally found at 27.4 ppt [1, 5]. In U.S. Chukchi Sea, recorded at 32.58 psu [5].



Behavior

Diel—Unidentified poacher larvae migrated into slightly deeper waters at night in southeastern Alaska [11].

Seasonal—Unknown.

Reproductive—Unknown.

Schooling—Unlikely. Other poacher species are solitary [16, 17].

Feeding—Unknown.

Feeding Behavior—Unknown.



Populations or Stocks

There have been no studies.



Reproduction

Mode—Separate sexes, oviparous. Fertilization is external [2].

Spawning season—Poorly known. At least from May to July [13].

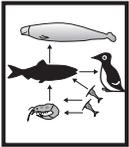
Fecundity—Poorly known. 480–1,750 eggs [13].



Food and Feeding

Food items—Food habits of larvae are unknown. Adults and juveniles feed on water column crustaceans (such as, copepods), benthic crustaceans, and polychaetes [13].

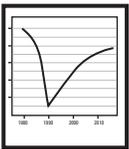
Trophic level—3.21 standard error 0.36. Based on food items [18].



Biological Interactions

Predators—Cannibalism has not been reported and is unlikely. Predators are poorly known. In the Canadian Arctic, they are occasionally eaten by bearded seals [19].

Competitors—Presumably other zoobenthic feeders such as Arctic Cod, Walleye Pollock, other poachers, eelpouts, flatfish, and sculpins.



Resilience

Medium, minimum population doubling time: 1.4–4.4 years (Fecundity = 1,088) [18].



Traditional and Cultural Importance

None reported.



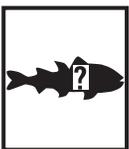
Commercial Fisheries

Currently, Atlantic Poacher are not commercially harvested.



Potential Effects of Climate Change

This species is widely distributed in the Chukchi and Beaufort Seas, as well as southward to the eastern Bering Sea and eastward to the North Atlantic. Climate effects will likely result in changes in abundance and competition with other marine fishes.



Areas for Future Research [B]

Little is known about the ecology and life history from the region. Research needs include: (1) depth and location of pelagic larvae, (2) depth, location, and timing of young-of-the-year benthic recruitment, (3) preferred depth ranges for juveniles and adults (4) spawning season (5) seasonal and ontogenetic movements, (6) population studies, (7) prey, and (8) predators.

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Bering Poacher (*Ocella dodecaedron*)

(Tilesius, 1813)

Family Agonidae

Note: Except for geographic range data, all information is from areas outside of the study area.

Colloquial Name: None within U.S. Chukchi and Beaufort Seas.

Ecological Role: Current information about this species occurrence in the U.S. Chukchi and Beaufort Seas is very limited. The Bering Poacher is unlikely to represent a significant prey resource to other fish or higher trophic level organisms.

Physical Description/Attributes: Brownish olive on the back and sides, and light tan or ivory white on the underside. Males have orange pectoral fins and those of females are translucent; pelvic fin membranes in males are black and in females are white [1]. For specific diagnostic characteristics, see *Fishes of Alaska* (Mecklenburg and others, 2002, p. 536) [2]. Swim bladder: Absent [3]. Antifreeze glycoproteins in blood serum: Unknown.

Range: Eastern Chukchi Sea [4]. Elsewhere in Alaska, from Port Clarence (northeastern Bering Sea near Bering Strait) [4] to western Gulf of Alaska [2]. Worldwide, Sea of Japan northward from Peter the Great Bay, Sea of Okhotsk, and Kuril Islands to Pacific Ocean off Kamchatka Peninsula, Russia, and western Bering Sea at Gulf of Anadyr [2].

Relative Abundance: Rare in U.S. Chukchi Sea [2, 4, 6, 7]. Elsewhere in Alaska, common in southeastern [8, 9] but rare in northern Bering Sea [4]. There appears to be a northward shift in the southeastern Bering Sea [10]. Worldwide, common at least in Sea of Japan [11] and around Kamchatka Peninsula, Russia [12].



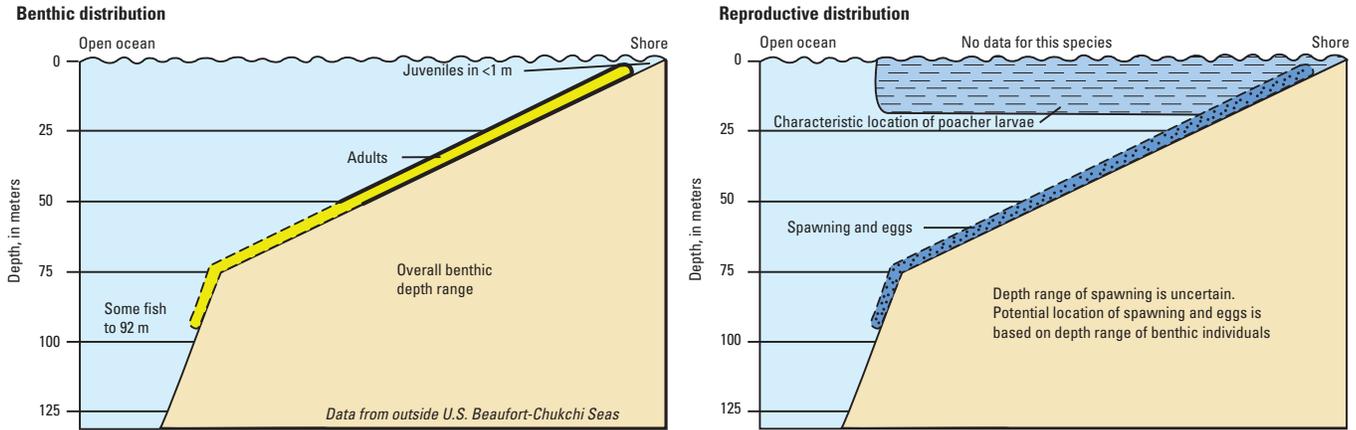
Bering Poacher (*Ocella dodecaedron*), 107 mm TL, Norton Sound, Bering Sea, 2002. Photograph by C.W. Mecklenburg, Point Stephens Research.



Geographic distribution of Bering Poacher (*Ocella dodecaedron*) within Arctic Outer Continental Shelf Planning Areas [5] based on review of published literature and specimens from historical and recent collections [4, 6].

Depth Range: Overall range is 5–92 m, mainly less than 50 m [12–14]. A record from 375 m [13] is likely in error. Juveniles may live in less than 1 m [15]. Depth range of larvae unknown. In general, poacher larvae are abundant in near-surface waters, over continental shelf and shallow slope waters [16–18].

Ocella dodecaedron
Bering Poacher



Benthic and reproductive distribution of Bering Poacher (*Ocella dodecaedron*).



Habitats and Life History

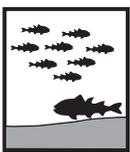
Eggs—Size: Unknown. Time to hatching: Unknown. Habitat: Benthic and adhesive (probably on sand and mud) [3].

Larvae—Size at hatching: Unknown. Size at juvenile transformation: Unknown. Days to juvenile transformation: 2–3 months [3]. Habitat: Pelagic, although distance from shore and depth in water column are unknown for this species, in general, poacher larvae are abundant in near-surface waters, over continental shelf and shallow slope waters [16–18].

Juveniles—Age and size: Unknown. Habitat: Benthic [3, 19].

Adults—Age and size at first maturity: Unknown. Maximum age: At least 9 years. Females are larger at age than males [1]. Maximum size: As long as 23 cm TL [20]. Habitat: Benthic [3, 19]. Substrate: Both juveniles and adults live on sand and mud [21].

Physical/chemical—Temperature: -1.5–15 °C [6, 12, 22]. In southeastern Bering Sea, mainly 2.2–5.5 °C [22]. Salinity: All life stages live in marine waters [12, 22] and occasionally estuaries [6].



Behavior

Diel—Unidentified poacher larvae have migrated into slightly deeper waters at night in southeastern Alaska [17].

Seasonal—Off Kamchatka Peninsula, Russia, found in relatively shallow waters during the summer; during winters found deeper on the edge of the continental shelf [12].

Reproductive—Unknown for this family [3].

Schooling—Unlikely. Other poacher species are solitary [19, 23].

Feeding—Unknown.



Populations or Stocks

There have been no studies.



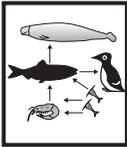
Reproduction

Mode—Separate sexes, oviparous. Fertilization is external [3].
Spawning season—Poorly known. Spawning occurs in the spring [1, 21].
Fecundity—400–4,575 eggs [1, 21].



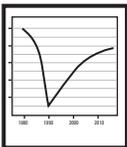
Food and Feeding

Food items—In eastern Bering Sea, off Kamchatka Peninsula, Russia, and in Sea of Japan, small epibenthic crustaceans (for example, mysids, amphipods, isopods, and shrimps) and polychaetes [1, 20, 24]. Food habits of larvae are unknown.
Trophic level—4.0 [10].



Biological Interactions

Predators—Pacific Cod and Plain Sculpin in eastern Bering Sea and off Kamchatka Peninsula, Russia. Cannibalism has not been reported and is unlikely [25, 26].
Competitors—Presumably a wide range of other zoobenthic feeders such as Arctic Cod, Walleye Pollock, other poachers, eelpouts, and sculpins.



Resilience

Medium, minimum population doubling time: 1.4–4.4 years (Preliminary *K* or Fecundity) [27].



Traditional and Cultural Importance

None reported.



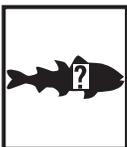
Commercial Fisheries

Currently, Bering Poacher are not commercially harvested.



Potential Effects of Climate Change

Bering Poacher is a Boreal Pacific species [4] and may be expected to expand its distribution northward and become more abundant in the Chukchi Sea as the climate continues to warm. It already appears to be moving northward in the eastern Bering Sea, perhaps in response to warming water temperatures [10]. This may increase competition with other fishes that feed on small benthic organisms, including Arctic Cod, Walleye Pollock, other poachers, and sculpins.



Areas for Future Research [B]

Little is known about the biology and ecology of this species. Research needs include: (1) depth and location of pelagic larvae, (2) depth, location, and timing of young-of-the-year benthic recruitment, (3) preferred depth ranges for juveniles and adults, (4) spawning season, (5) seasonal and ontogenetic movements, (6) population studies, (7) prey, and (8) predators.

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Tubenose Poacher (*Pallasina barbata*)

(Steindachner, 1876)



Family Agonidae

Note on taxonomy: *The eastern Pacific form is treated by Russian authors as a separate species, Pallasina aix (Starks, 1896), although other taxonomists have given evidence for it being the same as P. barbata [1].*

Tubenose Poacher (*Pallasina barbata*), 138 mm TL, eastern Chukchi Sea, 2007. Photograph by C.W. Mecklenburg, Point Stephens Research.

Colloquial Name: *None within U.S. Chukchi and Beaufort Seas.*

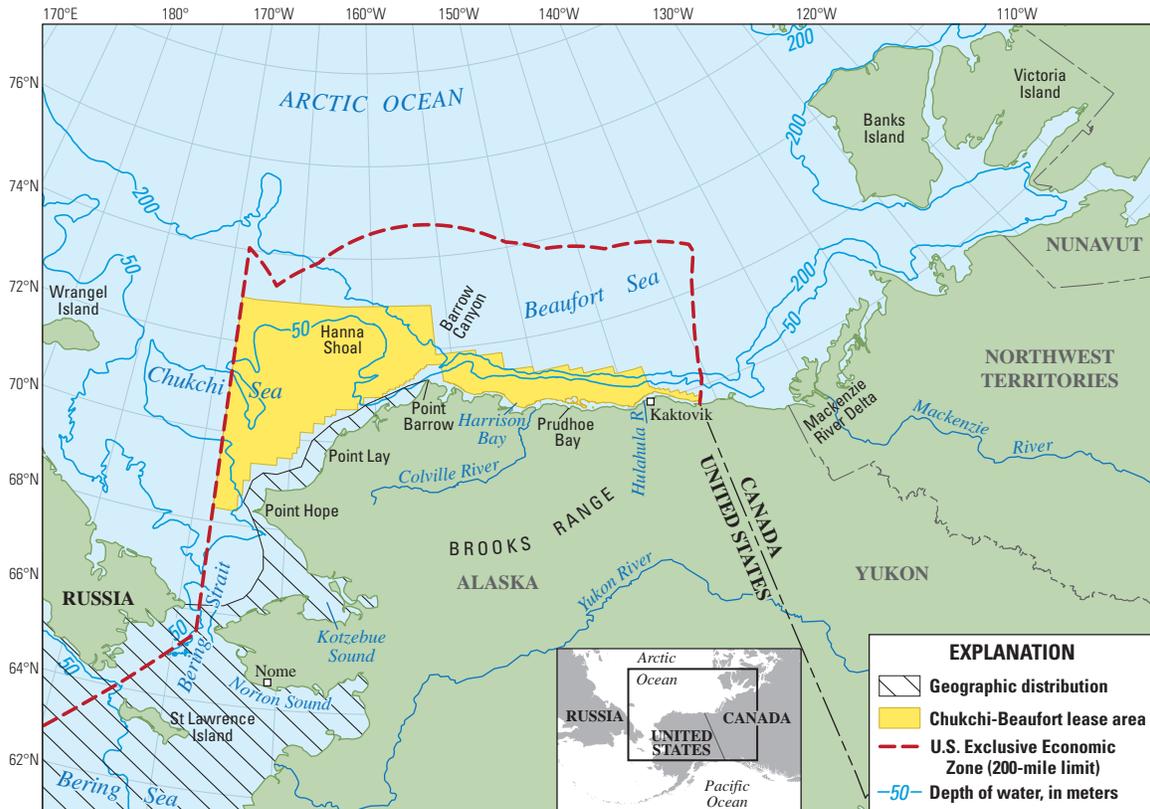
Ecological Role: Largely unknown. Current information about the occurrence of this fish in the U.S. Chukchi and Beaufort Seas is limited. The Tubenose Poacher is unlikely to represent a significant prey resource for many higher level organisms.

Physical Description/Attributes: An elongate, slender fish with gray to brownish back and sides and white underside. For specific diagnostic characteristics, see *Fishes of Alaska*, (Mecklenburg and others, 2002, p. 533) [1]. Swim bladder: Absent [2]. Antifreeze glycoproteins in blood serum: Unknown.

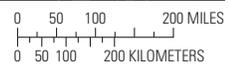
Range: *U.S. Chukchi Sea as far northward to Point Barrow, Alaska [3]. Elsewhere in Alaska, along coast southward from Bering Strait [1]. Worldwide, from Sea of Japan off Korea, to Sea of Okhotsk, and Pacific Ocean off Kuril Islands south to Bodega Bay, central California [1, 4–8].*

Relative Abundance: *Rare in U.S. Chukchi Sea [3, 10, 11]. Elsewhere in Alaska, common in Bering Sea from Norton Sound southwards [10]. Worldwide, common in Pacific Ocean from Sea of Japan and Sea of Okhotsk, and southwards to Puget Sound [4–8].*

**Tubenose Poacher
*Pallasina barbata***



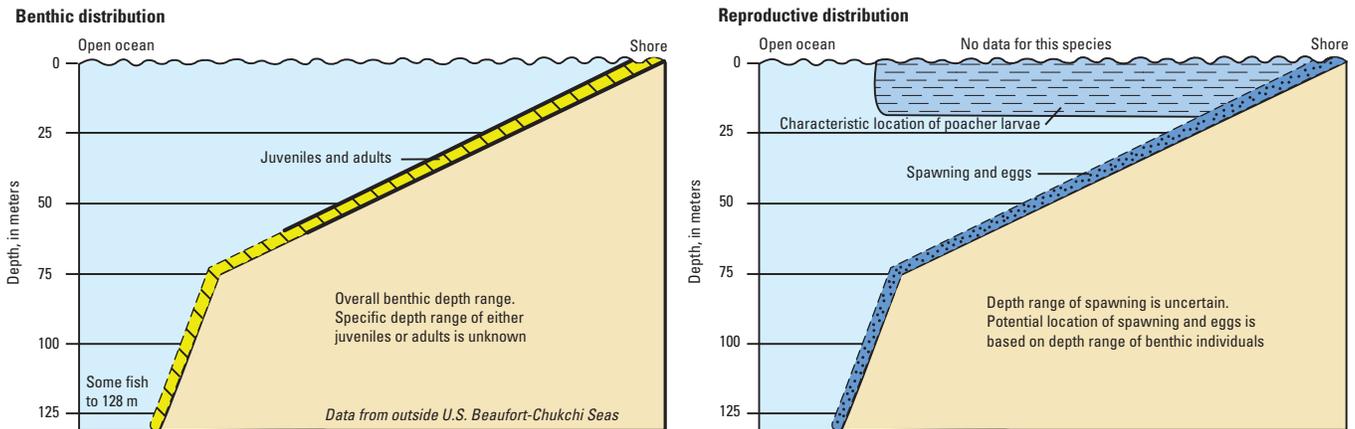
Base modified from USGS and other digital data. U.S.-Russia Maritime Boundary follows the EEZ/200-mile limit line, western edge. Coordinate reference system: projection, Lambert Azimuthal Equal Area; latitude of origin, 75.0°; horizontal datum, North American Datum of 1983.



Geographic distribution of Tubenose Poacher (*Pallasina barbata*) within Arctic Outer Continental Shelf Planning Areas [9] based on review of published literature and specimens from historical and recent collections [1, 3, 10].

Depth Range: Intertidal zone, including tide pools, to 128 m [10]. Most abundant in shallow nearshore waters down to 60 m [4, 8, 10, 12–14]. Depth range of juveniles is unknown. Depth range of larvae is unknown. In general, poacher larvae are abundant in near-surface waters, over continental shelf and upper slope [15–17]. Overall spawning depth is unknown but has been observed in shallow, nearshore waters [12, 13].

Pallasina barbata
Tubenose Poacher



Benthic and reproductive distribution of Tubenose Poacher (*Pallasina barbata*).



Habitats and Life History

Eggs—Size: Unknown. Time to hatching: Unknown, though larvae have been caught in Barkley Sound, British Columbia, in April [18]. Habitat: Benthic and adhesive (probably on sand and mud) [2].

Larvae—Size at hatching: Unknown. Size at juvenile transformation: 2–3 cm TL [4, 18, 19]. Days to juvenile transformation: 2–3 months [2]. Habitat: Pelagic, although distance from shore and depth in water column are unknown for this species, in general poacher larvae are abundant in near-surface waters, over continental shelf and shallow slope waters [15–17].

Juveniles—Age: Unknown. Size: 2–3 cm TL [4, 18, 19] to 9 cm TL [13]. Habitat: Demersal and shallow (often intertidal) [4, 10, 18, 19].

Adults—Age and size at first maturity: Age unknown. May mature at about 9 cm TL [13]. Maximum age: At least 5 years [20]. Maximum size: 20.8 cm TL [1]. Habitat: Benthic and shallow (often intertidal) [1, 4, 10, 18, 19]. Generally, a structure-oriented fish [12, 21]. Common in eelgrass beds, although they also inhabit kelp stands, rocky outcrops, and shell hash sea floors [8, 11–13].

Substrate—Shell hash, sand and gravel bottoms [1, 11].

Physical/chemical—Temperature: Documented off Kamchatka Peninsula, Russia, at 0–12 °C [14], and in Bering Strait at 10.5 °C [11]. Salinity: Marine and estuarine [14], found at 30.62 salinity units in U.S. Bering Strait [11].



Behavior

Diel—Unidentified poacher larvae migrated into slightly deeper waters at night in southeastern Alaska [16].

Seasonal—Off Kamchatka Peninsula, Russia, found in relatively shallow waters during summer and during winter in deeper waters on the edge of continental shelf [14].

Reproductive—During summer months, adults move into shallow waters to spawn [12, 13].

Schooling—Unlikely. Other poacher species are solitary [22, 23].

Feeding—Unknown.



Populations or Stocks

There have been no studies.



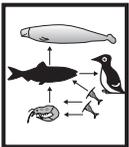
Reproduction

Mode—Separate sexes, oviparous. Fertilization is external [2].
Spawning season—Spawning occurs during the summer [12, 13].
Fecundity—Unknown.



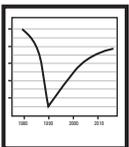
Food and Feeding

Food items—Small benthic and epibenthic crustaceans dominate the diet. Mysids are important, as are euphausiids, caprellid amphipods, and copepods. Polychaetes and shrimps also are consumed [5, 12, 13, 20, 24]. Food habits of larvae are unknown.
Trophic level—3.23 (standard error 0.41) [25].



Biological Interactions

Predators—Cannibalism has not been reported. Off Kamchatka Peninsula, this species is eaten by great sculpin [26].
Competitors—Presumably a wide range of other zoobenthic feeders such as Arctic Cod, Walleye Pollock, other poachers, eelpouts, and sculpins.



Resilience

Medium, minimum population doubling time: 1.4–4.4 years (Preliminary *K* or Fecundity) [25].



Traditional and Cultural Importance

None reported.



Commercial Fisheries

Currently, Tubenose Poacher are not commercially harvested.



Potential Effects of Climate Change

The expected result of climate warming would be an increased abundance of this species in the Chukchi Sea. An eventual expansion of range into the Beaufort Sea also would be expected. These changes would result in increased interactions and competition with other fishes that feed on small benthic organisms. Major competitors would potentially include: Arctic Cod, Walleye Pollock, other poachers, and sculpins.



Areas for Future Research [B]

Little is known about the biology and ecology of this species from the region. Research needs include: (1) depth and location of pelagic larvae, (2) depth, location, and timing of young-of-the-year benthic recruitment, (3) preferred depth ranges for juveniles and adults, (4) spawning season, (5) seasonal and ontogenetic movements, (6) population studies, (7) prey, and (8) predators.

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Veteran Poacher (*Podothecus veternus*)

Jordan & Starks, 1895

Family Agonidae

Note on taxonomy: Because of historical confusion of *P. veternus* with *P. accipenserinus*, geographic and bathymetric ranges for the species are not well known [1].

Colloquial Name: None within U.S. Chukchi and Beaufort Seas.

Ecological Role: Largely unknown. Current information about the occurrence of this fish is limited but the species is common in coastal waters near Point Barrow. Species information regarding the biology and ecology is not available. The veteran poacher is unlikely to represent a significant prey resource to higher-level organisms but may be locally and seasonally important.

Physical Description/Attributes: Brown back and sides marked by dark vertical bands, white on chest and belly. For specific diagnostic characteristics, see *Fishes of Alaska* (Mecklenburg and others, 2002, p. 542) [1]. Swim bladder: Absent [2]. Antifreeze glycoproteins in blood serum: Unknown.

Range: Eastern Chukchi Sea northward to 71°23'N, 160°15'W [3] eastward to western Beaufort Sea at Cooper Island [4]. One unconfirmed record from the U.S. Beaufort Sea [3]. Elsewhere in Alaska, to eastern Bering Sea at Norton Sound and near St. Matthew Island. Worldwide, Seas of Okhotsk and Japan [1].

Relative Abundance: Common in U.S. Chukchi Sea [3]. Elsewhere in Alaska, common in northern Bering Sea, absent from southern Bering Sea [1]. Rare in Sea of Japan [7].



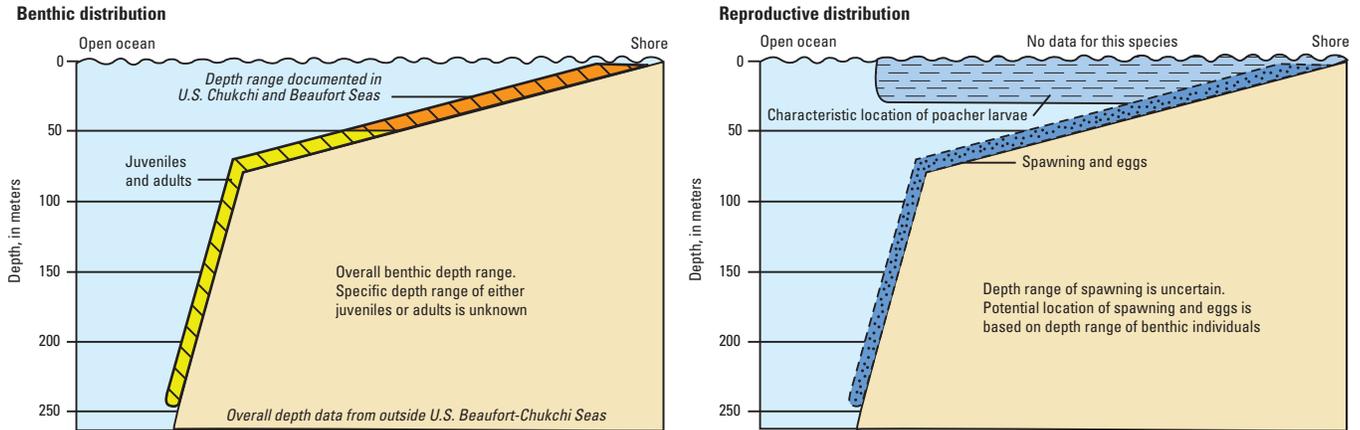
Veteran Poacher (*Podothecus veternus*), 172 mm TL, northeastern Bering Sea, 2006. Photograph by C.W. Mecklenburg, Point Stephens Research.



Geographic distribution of Veteran Poacher (*Podothecus veternus*) within Arctic Outer Continental Shelf Planning Areas [5] based on review of published literature and specimens from historical and recent collections [3, 6].

Depth Range: Documented in U.S. Chukchi 41–48 m [8]. Elsewhere, overall range is intertidal to 240 m [6]. Depth range of juveniles is unknown. Depth range of larvae is unknown. In general, poacher larvae are abundant in near-surface waters, over continental shelf and shallow slope waters [9–11].

Podotheucus veternus
Veteran Poacher



Benthic and reproductive distribution of Veteran Poacher (*Podotheucus veternus*).



Habitats and Life History

Eggs—Size: Unknown. Time to hatching: Unknown. Habitat: Demersal and adhesive (probably on sand and mud) [2].

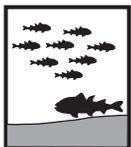
Larvae—Size at hatching: Unknown. Size at juvenile transformation: Unknown. Days to juvenile transformation: For poachers in general, 2–3 months [2]. Habitat: Pelagic. Although distance from shore and depth in water column are unknown for this species, in general poacher, larvae are abundant in near-surface waters, over continental shelf and shallow slope waters [9–11].

Juveniles—Age and size: Unknown. Habitat: Demersal [2].

Adults—Age and size at first maturity: Unknown. Maximum age: Unknown. Maximum size: 28.5 cm TL [1]. Habitat: Demersal [2].

Substrate—Shell hash and mud [8].

Physical/chemical—Temperature: -1.8–10.5 °C [8, 12] Salinity: All life stages live in marine waters [2].



Behavior

Diel—Unidentified poacher larvae have migrated into slightly deeper waters at night in southeastern Alaska [10].

Seasonal—Unknown.

Reproductive—Unknown for this family [2].

Schooling—Unlikely. Other poacher species are solitary [13, 14].

Feeding—Unknown.



Populations or Stocks

There have been no studies.



Reproduction

Mode—Separate sexes, oviparous. Fertilization is external [2].

Spawning season—Unknown.

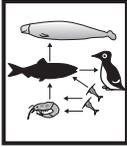
Fecundity—Unknown.



Food and Feeding

Food items—Unknown.

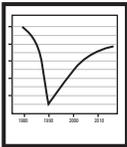
Trophic level—3.31 standard error 0.46. Based on size and trophics of closest relatives [15].



Biological Interactions

Predators—Unknown.

Competitors—Presumably other zoobenthic feeders such as Arctic Cod, Walleye Pollock, other poachers, eelpouts, and sculpins.



Resilience

Medium, minimum population doubling time: 1.4–4.4 years (Preliminary *K* or Fecundity) [15].



Traditional and Cultural Importance

None reported.



Commercial Fisheries

Currently, Veteran Poacher are not commercially harvested.



Potential Effects of Climate Change

Climate change would likely increase the abundance of this species in the study area. This may increase competition with other fishes that feed on small benthic organisms, including Arctic Cod, Walleye Pollock, other poachers, and sculpins.



Areas for Future Research [B]

Little is known about the ecology and life history of this species. Research needs include: (1) depth and location of pelagic larvae, (2) depth, location, and timing of young-of-the-year benthic recruitment, (3) preferred depth ranges for juveniles and adults, (4) spawning season, (5) seasonal and ontogenetic movements, (6) population studies, (7) prey, and (8) predators. The veteran poacher may be an important prey of migratory birds and mammals in the ice lead along northwest Alaska during spring.

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Pimpled Lump sucker (*Eumicrotremus andriashevi*)

Perminov, 1936

Family Cyclopteridae

Note: Except for geographic range data, all information is from areas outside of the study area.

Colloquial Name: None within U.S. Chukchi and Beaufort Seas.

Ecological Role: A rare species that likely is of little ecological significance in the U.S. Chukchi Sea.

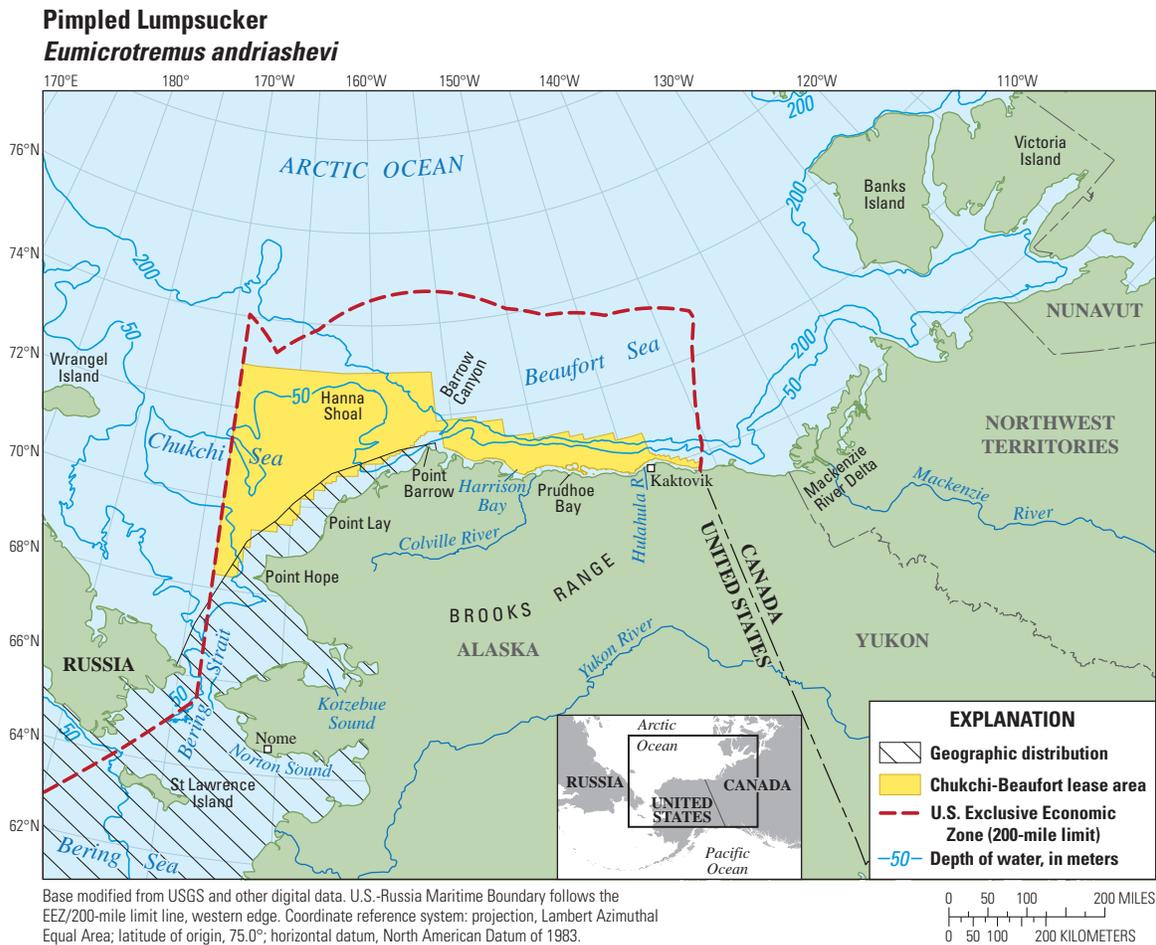
Physical Description/Attributes: Globose body with short tails and a disk on the underside, formed by modified pelvic fins, for clinging to rocks and other objects. Head and body covered in spiny tubercles. Color in life not reported. For specific diagnostic characteristics, see *Fishes of Alaska* (Mecklenburg and others, 2002, p. 568) [1]. Swim bladder: Absent [2]. Antifreeze glycoproteins in blood serum: Unknown.

Range: U.S. Chukchi Sea. Elsewhere in Alaska, eastern Bering Sea as far southward as St. Matthew Island. Worldwide, western Bering Sea southward to Karaginskiy Bay [3].

Relative Abundance: Uncommon in U.S. Chukchi Sea [1, 5, 6].



Pimpled Lump sucker (*Eumicrotremus andriashevi*), 56 mm TL, Chukchi Sea, 1991 (preserved specimen, University of Alaska Museum of the North 4592). Photograph by C.W. Mecklenburg, Point Stephens Research.

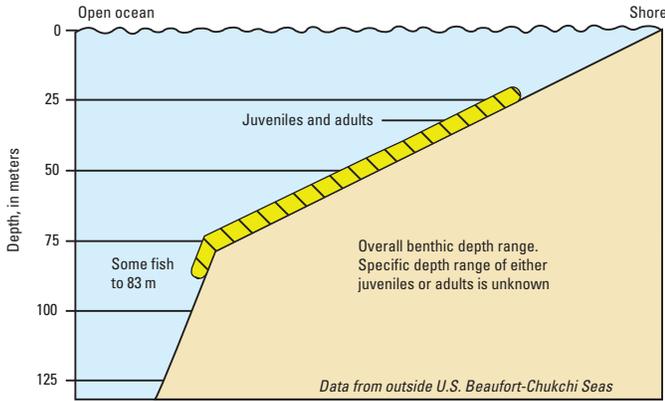


Geographic distribution of Pimpled Lump sucker (*Eumicrotremus andriashevi*) within Arctic Outer Continental Shelf Planning Areas [4] based on review of published literature and specimens from historical and recent collections [1, 3, 5].

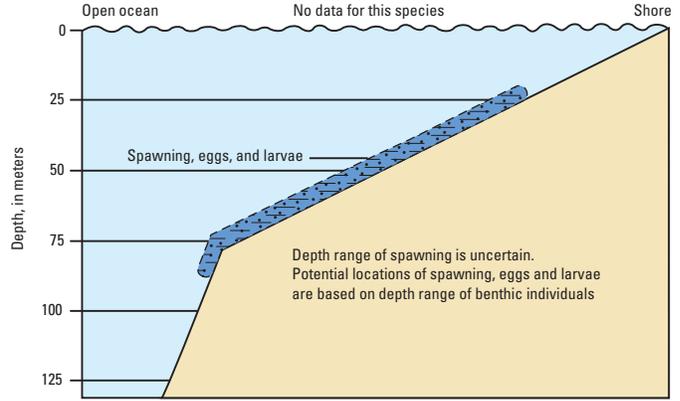
Depth Range: Benthic, at depths of 20–93 m [5]. Specific spawning depth unknown. In general, most lumpstickers spawn in shallow coastal waters [2].

Eumicrotremus andriashevi
Pimpled Lump sucker

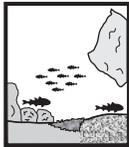
Benthic distribution



Reproductive distribution



Benthic and reproductive distribution of Pimpled Lump sucker (*Eumicrotremus andriashevi*).



Habitats and Life History

Eggs—Size: Unknown. Time to hatching: Unknown. Habitat: Benthic [1, 2].

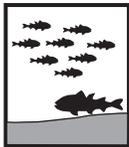
Larvae—Size at hatching: Unknown. Size at juvenile transformation: Unknown. Days to juvenile transformation: Unknown. Habitat: Likely benthic [2].

Juveniles—Age and size: Unknown. Habitat: Benthic [2].

Adults—Age and size at first maturity: Unknown. Maximum age: Unknown. Maximum size: As long as 9.7 cm TL [1]. Habitat: Benthic [1, 2].

Substrate—Mud, sand, and pebble bottoms [1].

Physical/chemical—Temperature: -1.6–2.8 °C [5]. Salinity: Unknown.



Behavior

Unknown for pimpled lump sucker. All behavior given is for lumpstickers in general.

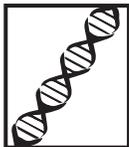
Diel—Known to inflate their bodies by swallowing air or water in what is likely a defensive reaction.

Seasonal—Unknown.

Reproductive—After spawning male lumpstickers guard the eggs [2].

Schooling—Unknown.

Feeding—Feeds on slow moving prey [2].



Populations or Stocks

There have been no studies.



Reproduction

Mode—Oviparous.

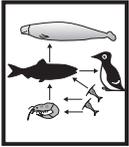
Spawning season—Unknown.

Fecundity—Unknown.



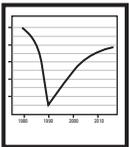
Food and Feeding

Food items—Unknown.
Trophic level—3.15 standard error 0.31 [7].



Biological Interactions

Predators—Unknown.
Competitors—Likely sculpins, poachers, and flatfishes.



Resilience

Medium, minimum population doubling time: 1.4–4.4 years (assuming Fecundity <1,000) [7].



Traditional and Cultural Importance

None reported.



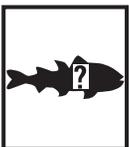
Commercial Fisheries

Currently, Pimpled Lumpsucker are not commercially harvested.



Potential Effects of Climate Change

Unknown.



Areas for Future Research [B]

Little is known about the ecology of this species. Research needs include: (1) depth and location of pelagic larvae, (2) depth, location, and timing of young-of-the-year benthic recruitment, (3) preferred depth ranges for juveniles and adults, (4) spawning season, (5) seasonal and ontogenetic movements, (6) population studies, (7) prey, and (8) predators.

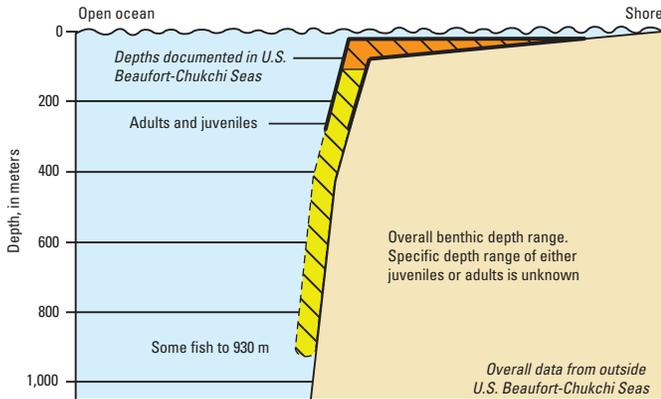
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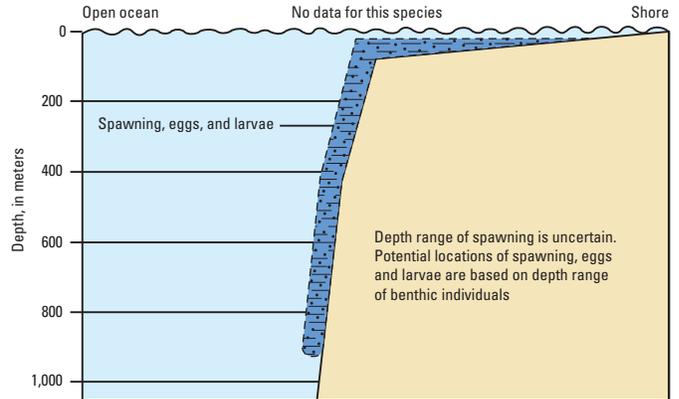
Depth Range: 50–930 m, typically less than 275 m [1]. Documented in U.S. Beaufort Sea from 50–110 m [7]. A juvenile was taken at 41 m in U.S. Beaufort Sea [3]. Specific spawning depth unknown. In general, most lumpstickers spawn in shallow coastal waters [2].

Eumicrotremus derjugini
Leatherfin Lumpstickers

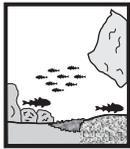
Benthic distribution



Reproductive distribution



Benthic and reproductive distribution of Leatherfin Lumpstickers (*Eumicrotremus derjugini*).



Habitats and Life History

Eggs—Size: 4.0–5.0 mm [8]. Females can contain two size classes of eggs at one time [7]. Time to hatching: Unknown. In Barents Sea, eggs laid in autumn hatch the following summer [9]. Habitat: Benthic [1, 2].

Larvae—Size at hatching: Unknown. Size at juvenile transformation: Unknown. Days to juvenile transformation: Unknown. Habitat: Unknown, likely benthic [2].

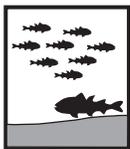
Juveniles—Age and size: Unknown. One juvenile from U.S. Beaufort Sea was 10.1 mm SL, 14.2 mm TL [3].

Habitat: Benthic [2]. In Barents Sea, they remain in coastal areas until about 1 year old and up to 3–4 cm [2, 9].

Adults—Age and size at first maturity: Unknown. Over 6.5 cm TL for females in U.S. Beaufort Sea [7].

Maximum age: Unknown. Maximum size: 12.7 cm TL [1]. Habitat: Benthic [2, 10, 11]. Substrate—Mud, gravel, stony bottoms [1, 10].

Physical/chemical—Temperature: Poorly documented; -2–0 °F [11]. Salinity: Marine [10].



Behavior

Diel—Unknown. In general, lumpstickers are known to inflate their bodies by swallowing air or water in what is likely a defensive reaction.

Seasonal—Unknown.

Reproductive—Unknown. In general, after spawning male lumpstickers guard the eggs [2].

Schooling—Unknown.

Feeding—Feeds on slow moving prey [2].



Populations or Stocks

There have been no studies.



Reproduction

Mode—Oviparous.

Spawning season—Unknown. Autumn in Barents Sea [9]. Females taken off Russia during August and September contained large eggs [10].

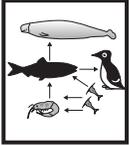
Fecundity—Unknown.



Food and Feeding

Food items—*In U.S. Beaufort Sea, primarily hyperiid amphipods and gammarid amphipods, mysids, and polychaetes* [7].

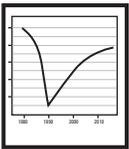
Trophic level—3.25 standard error 0.34 [12].



Biological Interactions

Predators—Thick-billed Murres in the Canadian Arctic [13].

Competitors—Likely sculpins, poachers, and flatfishes.



Resilience

High, minimum population doubling time is less than 15 months (Preliminary *K* or Fecundity) [12].



Traditional and Cultural Importance

None reported.



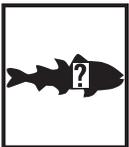
Commercial Fisheries

Currently, Leatherfin Lumpsucker are not commercially harvested.



Potential Effects of Climate Change

Unknown.



Areas for Future Research [B]

Little is known about the ecology of this species. Research needs include: (1) depth and location of pelagic larvae, (2) depth, location, and timing of young-of-the-year benthic recruitment, (3) preferred depth ranges for juveniles and adults, (4) spawning season, (5) seasonal and ontogenetic movements, (6) population studies, (7) prey, and (8) predators.

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