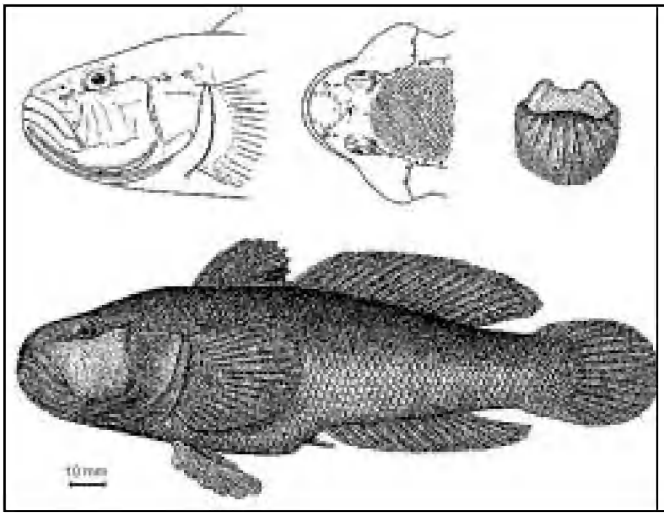
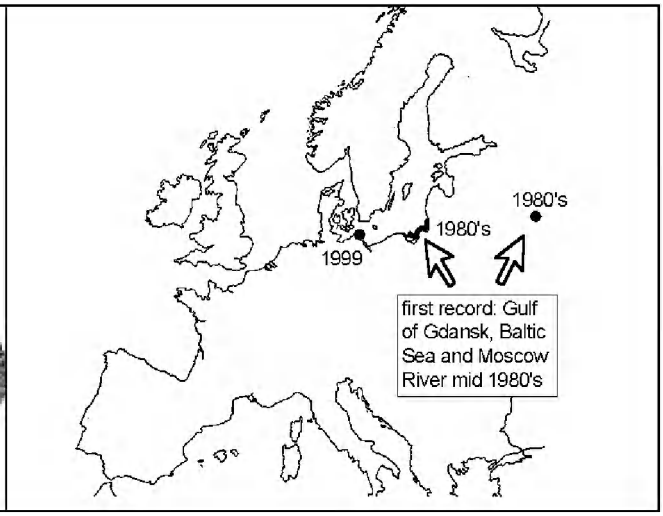
Neogobius melanostomus (Pallas, 1811) Gobiidae, Osteichtys

Common names: Black spotted goby (English), Schwarzmundgrundel (German), Babka bycza, babka kraçla (Polish)

Estuarine and freshwater gobiid fish



Neogobius melanostomus (after [10]).



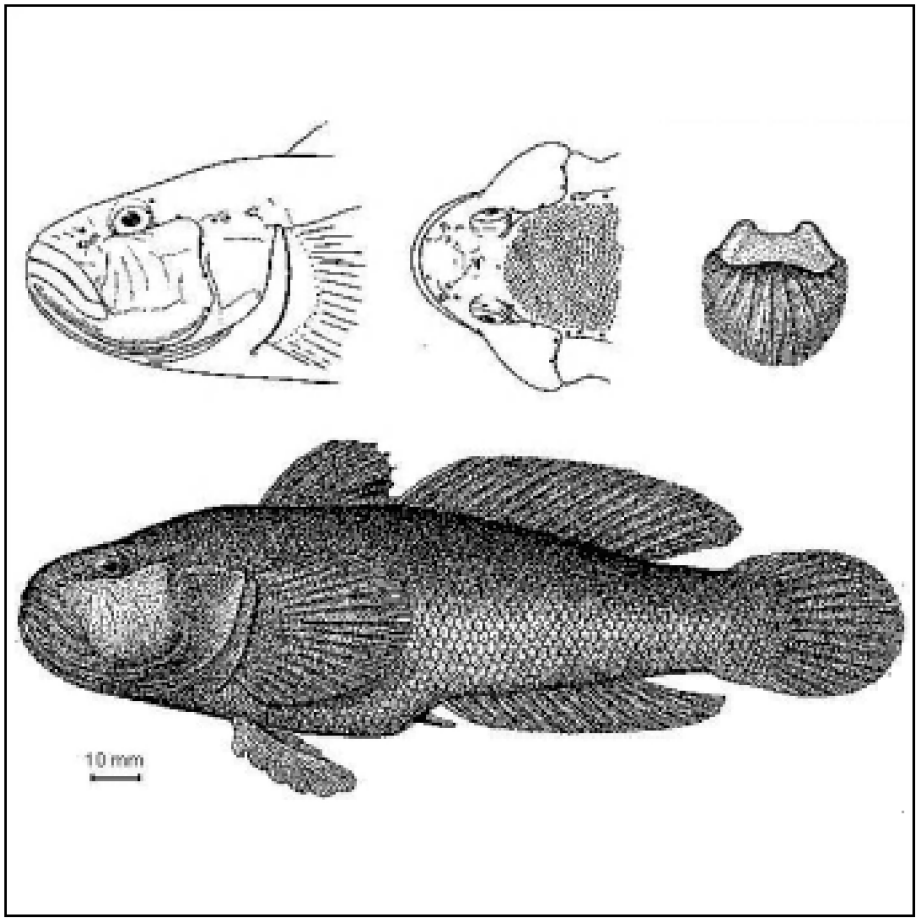
Known coastal distribution of. *Neogobius melanostomus*

Impact: * = possibly harmful, ** = harmful, *** = very harmful, ? = not known, $ = beneficial

Resources/Environment			**Uses of the Sea**		
Commercial stocks	***	Competition for space and food	Fisheries	$	Changes catch composition in commercial fishing. *Neogobius* is a target species for fishing in the Black and Caspian Seas.
Other biota	** ** $	Reducing stocks of native molluscs and crustaceans. Changes in food chain. New, additional food source for other fish and waterfowl.	Aquaculture	?	
Human health	?		Water abstractions	?	
Water quality	?		Aquatic transport	?	
Habitat modification	?		Tourism	$	recreational fishing.

Vulnerable habitats: Lakes (connected to the sea), rivers, enclosed brackish water bays and estuaries with solid man-made constructions such as breakwaters and hard bottom or macrophyte habitats. The species is potentially capable of becoming established in the whole Baltic and all adjacent lakes, rivers and estuaries. The species could therefore establish in Europe and world wide.

Biology: Spawns up to six times per year from April to September; in culture may spawn every 18-20 days. Males became sexually mature at 3-4 years, females at 2-3 years. Females of 7 to 15 cm in length can produce 300-5000 eggs. The eggs are about 3.9 x 2.2 mm in size, ovoid and have a sharp apex. The eggs are placed under or between stones or other hard substrates. Males protect embryos and juveniles. Life span: up to 4 years, males die after the spawning season.



Neogobius melanostomus

Neogobius melanostomus (Pallas, 1811) Gobiidae, Osteichtys

Common names: Strogil (Bulgarian), Schwarzmundgrundel, Kruglyak - Grundel (German), Round goby, Black spotted goby (English), Gobie â taches noires (French), Babka bycza, babka kragla (Polish), Guvid, Stronghil, Babca neagrâ (Romanian), Bychok - kruglyak, Chornorotyj bychok (Russian), Gobio pintato (Spanish)

Main synonyms: *Gobius melanostomus* Pallas 1811, *Gobius (Apollonia) melanostomus* Pallas 1811.

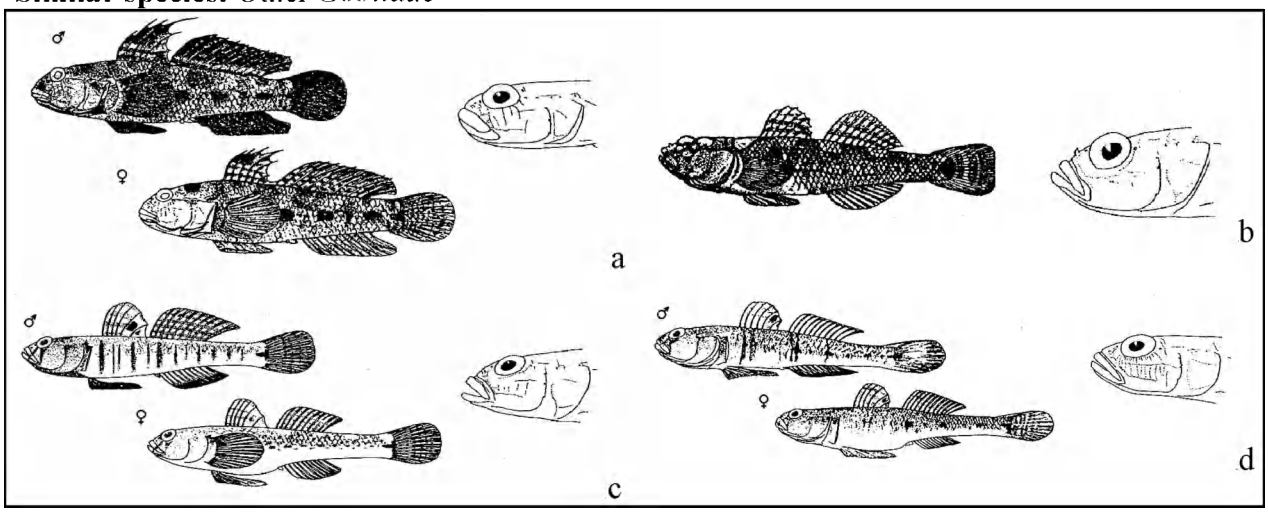
Identification: Body elongate, oblate in the posterior part. Nape scaled completely, scales cycloid on middle and anterior nape. Head depth-width relation 0.9-1.2. Inter-orbit four fifths to almost equalling eye diameter. Angle of jaws below anterior quarter of eye. Snout 1.1-1.4 orbit. Upper lip narrowing slightly to rear, with about half lateral preorbital area. Pelvic disc 0.6-0.8 abdomen length, anterior membrane width very shallow, rounded, lateral lobes, if evident at all. Caudal peduncle depth about two thirds own length. D1 VI (V-VII); D2 I + 14-16 (13-16): A I + 11-13 (11-14); P 18-19 (17-20). Scales in lateral series 49-55 (45-58). Vertebrae 32-33 (31-34) [3, 4]. Colour: yellowish-grey, with lateral blotches; first dorsal fin with large black spot in posterior part; breeding males black, with median fins white-edged. Size: up to 22 cm in native areas [3], up to 24.6 cm in Gulf of Gdansk [5]. A Caspian Sea sub-species of the same species, *Neogobius melanostomus affinis* (Eichwald, 1931), grows up to 25 cm. It slightly differs from the species under consideration (*Neogobius melanostomus melanostomus)* by having the second dorsal fin rising towards its end, and black rounded dots on pectoral fins [4]

Generalised life history: Lives up to 4 years, males die after the spawning season. Males became sexually mature at 3-4 years, females at 2-3 years. It spawns up to six times per year from April to September; in culture it may spawn every 18-20 days [3, 5].

Reproduction: When between 7 to 15 cm in length, they produce 300-5000 eggs per female [3]. The eggs are about 3.9 x 2.2 mm in size, ovoid and have a sharp apex. The eggs are placed under or between stones. Males protect embryos and juveniles.

Relative abundance: Several individuals per 1 m^2 may be found in the most favourable habitats, e.g. among rocks forming a breakwater (Gulf of Gdansk, Baltic Sea) [5]. Most of the gobiid catches in the Sea of Azov and Black Sea consist of this species [3]. After intentional introduction to the Aral Sea the catches reached 50,000 tonnes in the most prolific years during the 1950s [1].

Similar species: Other *Gobiidae*



a) *Gobius niger*, b) *Gobiusculus* flavescens, c) *Pomatoschistus minutus,* d) *P. microps* [after 3].

Worldwide distribution: Native to the coasts and estuaries of the Black, Azov, Caspian and Marmara Seas [3, 4]. Introduced to Moscow River [7], Baltic Sea [6] and the Great Lakes of North America [2] and intentionally to the Aral Sea [1].

World-wide distribution of *Neogobius melanostomus*:

Range Expansion in Europe: In mid-1980s the species was unintentionally introduced to the Baltic Sea (Gulf of Gdansk) [5] and Moscow river [7]. In the Baltic Sea the spread westwards continued and in 1999 the species was reported from the coasts of the German island Rügen (Winkler pers.com).

Invasion patterns: Invasion biology of this species is poorly known. Surprisingly, *N. melanostomus* has been introduced at the same time, mid-1980s, to three completely separated areas of the world (Central Russia, Baltic Sea and Great Lakes). The abundance of this species increases remarkably during few years from the time of introduction if there are suitable habitats (breakwaters, macrophytes, etc.), sufficient food supply (e.g. bivalves, crustaceans, and fish fry) and low pressure caused by fishery and natural predators (e.g. cod, pike, eel, and seals, harbour porpoise).

Abiotic factors:

Temperature	The temperature tolerance is from 0–30 °C, but it mainly occurs in warm temperate waters.
Salinity	Prefers brackish waters (Baltic Sea: with salinities up to 7 ppt), but occurs also in fresh waters.
Oxygen	Able to tolerate low oxygen content in water for several days.
Preferred depth	Prefers shallow waters (0,1-30 m).

Further likely areas for colonisation: Its potential to spread is expected to all temperate fresh and slightly saline waters (estuaries and brackish seas).

Main vectors: Since the species has no pelagic ova or larvae it may be assumed that it can be captured into ship's ballast water as fry or even as adult form. Another likely vector is incidental escapes (releases) from aquariums. The commercial interest in this species is limited, but it cannot be ruled out that specimens may be imported in the future for pleasure fishing.

Control measures/management options: A prevention of the further spread of *Neogobius melanostomus* can only be achieved by the recommended mid-ocean exchange or other suitable treatment of the ballast water and by antifouling treatment of floating objects.

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