

Round goby (*Neogobius melanostomus*)



A. Male, spawning-array. B: The characteristic black spot on the dorsal fin.
 C. Round goby, a common food-fish around the Black and Caspian Seas.
 Photo: A and C: © Gustaf Almqvist, Swedish Board of Fisheries,
 B: Agnes Karlson, University of Stockholm

Common names in English	Round goby. Black-spotted goby.
... and in other languages	Estonian: Ümarmudil. Finnish: Mustakitatokko. German: Schwarzmundgrundel. Kruglyak-Grundel. Lithuanian: Juodademis gobis. Polish: Babka bycza. Swedish: Svartmunnad smörbult.
Scientific name	<i>Neogobius melanostomus</i>
Organism group	Fish (Pisces). Gobies (Gobiidae).
Size and appearance	This fish is a yellowish-greyish brown colour, with darker blotches. When spawning or guarding nest sites, the males are completely black. The species generally has a fairly short lifespan (about four years on average, although it can live several years longer than that), and therefore grows to no more than around 25 cm in length (usually 10–17 cm). However, size and longevity appear to depend on the habitat. In many freshwater habitats and at sheltered sites, fish of this species seem to spawn at a younger age and consequently to grow more slowly and die earlier.
May be confused with	Other gobies, e.g. the native black goby (<i>Gobius niger</i>). Most round gobies, however, have a distinct black spot at the back of their first dorsal fin, a feature not found in black gobies.
Geographical origin	Ponto-Caspian region (Caspian and Black Seas). The origins of the round gobies found in the Baltic can be traced genetically to the Black Sea.
First observed in Swedish waters	Has not yet been recorded in Swedish waters, but is present in Finnish sea areas (discovered in the Archipelago Sea in 2005). According to Swedish scientists, it is only a matter of time before the species reaches Sweden. It may possibly already have done so, for example with a ship travelling to a Swedish port. Someone may perhaps already have caught a round goby, but mistaken it for an ordinary sculpin or a black goby.

Occurrence in Swedish seas and coastal areas	Has not yet been recorded in Swedish waters (see above).
Occurrence in other sea areas	<i>Neogobius melanostomus</i> was discovered in the Baltic in 1990, near the port town of Gdynia in the Gulf of Gdańsk. It had in all probability been introduced to the area in ballast water (as eggs or larvae). Between 1999 and 2001 the species was found further east in the Gulf of Gdańsk, and later (in 2002) it was reported off the port city of Klaipeda in Lithuania and also (the same year) in Pärnu Bay (the Estonian part of the Gulf of Riga). The round goby has also been discovered in German waters (first observed in 1999) and in European rivers. Today the species occurs along most of the southern and eastern coasts of the Baltic Sea proper, from Germany to the Gulf of Finland. It has also spread to central Europe via the Danube, with observations at least as far upstream as Vienna. In the Great Lakes of the United States and Canada the species occurred as early as 1990.
Probable means of introduction	Most likely in ballast water. In theory it could also migrate via rivers and canals, but this is unlikely, given that this fish is a poor swimmer.
Habitat(s) in which species occurs	The round goby lives mainly on shallow rocky or mixed rocky and soft substrates, but may be found at depths of up to 20–30 m in the late spring and summer. The majority of individuals overwinter in deeper waters – in the Gulf of Gdańsk, for example, probably at depths of 40–70 m – but in late spring they migrate to shallower inshore areas, where they subsequently spawn throughout the summer. The species feeds mainly on bivalves (with a particular liking for zebra mussels <i>Dreissena polymorpha</i> and, in the Baltic, common mussels <i>Mytilus edulis</i> and Baltic tellins <i>Macoma baltica</i>), and on benthic crustaceans. It can be very aggressive towards other fish species, particularly when the males are guarding eggs and young. Round gobies prefer to reside behind rocks and among vegetation. The species can tolerate a range of salinities, from fresh water (it is also found in rivers) to marine conditions. It can cope with water temperatures from around 4°C to at least 20°C, and probably appreciably higher.
Ecological effects	<i>Neogobius melanostomus</i> competes with other bottom-dwelling fish, e.g. flounder (<i>Platichthys flesus</i>), for food and space. It is a highly adaptable species, and can reproduce rapidly under a variety of environmental conditions, being tolerant of both fresh and salt water. These are important characteristics, typical of species that become invasive. The fact that the round goby is currently spreading in the Baltic is a cause for concern, since it could prove a serious threat to native fish species and ecosystems. There is nothing to suggest any slowing of its spread; the question, rather, is how rapid it will be, and how far into the Baltic Sea area this species will penetrate.
Other effects	The round goby may outcompete other, commercially important fish species. Conversely, it is also a prey species for fish such as cod (<i>Gadus morhua</i>), perch (<i>Perca fluviatilis</i>) and turbot (<i>Psetta maxima</i>). This newcomer to the Baltic may even have supplied a previously missing link in the bioaccumulation of persistent toxic pollutants. There are theories that toxic substances that have accumulated in common mussels could now be transferred to cod (and ultimately to humans) via this species.
Additional information	In the Gulf of Gdańsk, the round goby is now very widespread and has become, along with sticklebacks, the commonest inshore fish species in the area. It has begun to attract the interest of anglers, and may in time assume some significance as a food fish. Round the Black and Caspian Seas it has long been common as a food fish, particularly canned in a tomato sauce.

FIND OUT MORE

- Swedish Board of Fisheries (2006): Invasion biology: a Baltic fish perspective.
<http://www.fiskeriverket.se/index3.htm?http://www.fiskeriverket.se/publikationer/finfo/finfo.htm>
- North European and Baltic Network on Invasive Alien Species: *Neogobius melanostomus*
<http://www.nobanis.org/speciesInfo.asp?taxaID=1751>
-  412 kB: North European and Baltic Network on Invasive Alien Species: *Neogobius melanostomus* Fact Sheet
http://www.nobanis.org/files/factsheets/Neogobius_melanostomus.pdf
- Stacja Morska (Hel Marine Station, (Dr. Krzysztof E. Skóra): *Neogobius melanostomus*
<http://hel.hel.univ.gda.pl/english/Neogobius.htm>
- Baltic Sea Alien Species Database: *Neogobius melanostomus*
<http://www.ku.lt/nemo/neogob.html>
http://www.ku.lt/nemo/directory_details.php?sp_name=Neogobius+melanostomus
- Eesti Meerinstitut: *Neogobius melanostomus*
<http://www.sea.ee/Sektorid/merebioloogia/MASE/Fish.htm>
-  220 kB: Gollasch Consulting: Skóra, Olenin & Gollasch: *Neogobius melanostomus*
<http://www.gollaschconsulting.de/download/Neogobius.pdf>
- Aquatic Invasions (2006): The round goby *Neogobius melanostomus* first recorded in the Netherlands
<http://www.aquaticinvasions.ru/2006/index.html>
- Aquatic Invasions (2006): The round goby *Neogobius melanostomus* is colonising the NE Baltic Sea
<http://www.aquaticinvasions.ru/2006/index.html>
- Aquatic Invasions: The invasive aquatic species of Europe in 2005: Round goby
http://www.aquaticinvasions.ru/most_invasive_2005.html
- Caspian Environment Programme: *Neogobius melanostomus*
<http://www.caspianenvironment.org/biodb/eng/fishes/Neogobius%20melanostomus/main.htm>
- European Nature Information System Database (EUNIS): *Neogobius melanostomus*
<http://eunis.eea.europa.eu/species-factsheet.jsp?idSpecies=10273&idSpeciesLink=10273>
- FishBase: *Neogobius melanostomus*
<http://www.fishbase.org/Summary/SpeciesSummary.php?id=12019>
- Global Invasive Species Database: *Neogobius melanostomus*
<http://www.issg.org/database/species/ecology.asp?si=657&fr=1&sts=>
- Invasive Species (invasive.org): Round goby
<http://www.invasive.org/browse/subject.cfm?sub=12252>
-  768 kB: US Army Corps of Engineers, Environmental Laboratory: *Neogobius melanostomus*
http://el.erdc.usace.army.mil/ansrp/neogobius_melanostomus.pdf
- University of Wisconsin Sea Grant: *Neogobius melanostomus*
<http://www.seagrant.wisc.edu/greatlakesfish/froundgoby1.html>
- Minnesota SeaGrant: Round gobies invade North America
<http://www.seagrant.umn.edu/exotics/goby.html>
- Redpath Museum & McGill School of Environment: *Neogobius melanostomus*
<http://www.redpath-staff.mcgill.ca/ricciardi/neogobius.html>
- SeaGrant: Nab the Aquatic Invader: Gabby "the lowlife" round goby
http://www.sgnis.org/kids/suspect_gabby.html

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<http://www.fiskeriverket.se/>
- © Agnes Karlson, Stockholms universitet
<http://www.ecology.su.se/staff/personal.asp?id=145>

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