殖民化于圆形戈比，Neogobius melanoostomus (Gobiidae) 由寄生虫在新环境中的波罗的海（南方波罗的海）

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ABSTRACT. The round goby (Neogobius melanostomus) is a non-indigenous species in the Baltic Sea, introduced to its waters (the Gulf of Gdańsk) from the Black, Azov, and Caspian Seas. For this reason, an attempt was made to determine the species’ parasitic fauna in its new environment. Within 1994–2000, a total of 201 round goby specimens caught in the Gulf of Gdańsk were examined. The parasites found represented protozoans (Trichodina domerguei domerguei), digeneans (Diplodistomum spp. metacercariae), cestodes (Bothriocephalus scorpioides, plerocercoids), nematodes (Hysterohylaeum aduncum L3, L4, and adults), and acanthocephalans (Echinorhynchus gadi and Pomphorhynchus laevis). The parasitic species found are common in the Gulf of Gdańsk. It should be emphasized that, since the round goby has only recently appeared in the Gulf, the parasitic fauna of this fish is not yet complete.

Key words: Baltic Sea, Neogobius melanostomus, parasites, round goby.

引言

圆形戈比（Neogobius melanostomus）在黑海、亚速海和里海中是外来物种。它被引入在早期1990年代与船只的压载水。并被观察到成功地在新环境中定居（Skóra and Stolarski 1993）。在生态系统中的食物链结构，戈比是第二类消费者的肉食性鱼类。鸟类和哺乳动物。在波罗的海，它们特别重要作为鳕鱼，一种最有商业价值的鱼类之一；圆戈比的占比高达70%的鳕鱼（Morawski 1978）。

波罗的海的文献中没有关于该物种寄生虫的出版物。从圆戈比，波罗的海（南方波罗的海）被其他四种戈比（Gobius niger, Pomatoschistus minutus, P. microps, Coryphopterus flavescens）寄生虫的群落中，其中有一部分已经存在
studied (Markowski 1933, 1935; Stryjecka-Trembaczewska 1953; Raabe 1959; Cichowlas 1961; Koter 1962; Soltynska 1964).

This paper describes the first study on the composition and quantitative aspects of the round goby parasitic fauna in the environment new for the fish.

MATERIALS AND METHODS

The fish were caught with fyke nets, trawls, and scoop nets in selected areas of the Gulf of Gdańsk: off Rewa, in the Gdynia marina, and off Orłowo.

To identify the parasites found, the techniques and procedures appropriate for the individual taxa were used. Ciliates were treated with 0.5% silver nitrate (AgNO₃), while helminths, fixed in a 19:1 mixture of glacial acetic acid and formalin, were stained with alum carmine, dehydrated in the alcohol series, cleared in creosote, and embedded in Canada balsam.

RESULTS

A total of 201 round goby specimens (6–23.2 cm, 68.2–191.2 g) were examined over April 1994-August 2000. The fish were found to host 6 parasitic taxa:

Ciliophora

*Trichodina domerguei domerguei* (Wallengren, 1897)

The protozoans were found to parasitise the skin and fins. The infection prevalence and mean intensity were 5.9% and 5 specimens, respectively.

Digenea

*Diplostomum* spp. (Rudolphi, 1819) metacercariae

The digeneans were located in the eye lenses. The infection prevalence and mean intensity were estimated at 8.1% and 2 specimens, respectively.

Cestoda

*Bothriocephalus scorpii* (Müller, 1776) plerocercoids

The intestine of two round goby individuals was found to host a total of two plerocercoids of the cestode.

Nematoda

*Hysterothylacium aduncum* (Rudolphi, 1802) *L₃, L₄* and adults

Among 28 nematode specimens found, 2 were identified as adults (non-ovigerous females), the remaining being classified as *L₃* and *L₄* larvae. The parasites were located in the intestine (*L₃, L₄* and adults) and in the body
cavity (L₃). The infection prevalence and mean intensity were 11.4% and 1.2 individuals, respectively.

**Acanthocephala**

*Echinorhynchus gadi* Müller, 1776

The acanthocephalan infection prevalence and mean intensity was 16.9% and 1.2 specimens, respectively. The parasites occurred in the intestine.

*Pomphorhynchus laevis* (Müller, 1776)

A total of 3 specimens of the acanthocephalan were found in the intestine of three round goby.

**DISCUSSION**

The round goby has become the most common gobiid in the Gulf of Gdańsk. Nevertheless, the number of parasites species the fish was found to host has much lower than that found in the round goby of, e.g. the Black and Azov Seas where as many as 56 taxa were recorded (Najdenova 1974). The low number of parasites is probably a result of the fact that this fish has only recently settled in the new environment and is still subjected to gradual colonisation by the local parasites. It is interesting to note that the round goby examined carried no parasitic species indigenous to the original range of this fish. Perhaps those parasites are not able to adapt to the conditions offered by the Gulf of Gdańsk, for instance they cannot find appropriate hosts. It is also possible that the parasites did not survive their migration, in the ships’ ballast water, to Europe.

Of the six parasites identified in the round goby living in the Gulf of Gdańsk, half (*Trichodina domerguei domerguei, Diplostomum spp., Pomphorhynchus laevis*) are freshwater species, while the remaining (*Bothriocephalus scorpii, Hysterothylacium aduncum, Echinorhynchus gadi*) are marine, although both types may occur in both types of habitats. Except for the acanthocephalan *Echinorhynchus gadi*, the parasites had already been recorded in other gobiids in the Gulf of Gdańsk (Markowski 1935, Raabe 1959, Cichowlas 1961, Koter 1962, Sołyńska 1964). The parasites found in this study have a wide range of hosts and are common in the Gulf in fish species belonging to other families as well (Rokicki 1975, Rokicki and Vojtkova 1994, Køie 1999, Morozinka-Gogol 1999, Rolbiecki *et al.* 1999). In this context, it is interesting to note that it was only the protozoan *Trichodina domerguei domerguei* that had been recorded in the round goby in the Black and Azov Seas. On the other hand, the cestode *Bothriocephalus scorpii* and the nematode *Hysterothylacium aduncum* were identified in the Azov Sea in other gobiid species, i.e. in *Pomatoschistus microps leoparicus* and *Mesogobius battrachoecephalus*, respectively (Najdenova 1974). Six other gobiids of the Black and Azov Seas were
found to host *Contracaecum* sp. larvae (not identified to species). Perhaps the nematode *Hysterothylacium aduncum* belonged to those.

It should be emphasized that, since the round goby has only recently settled in the Gulf of Gdańsk, and generally in the Baltic, the composition and quantitative aspects of its parasitic fauna are not yet complete. On the other hand, a new host species in the area is bound to affect the structure of the parasitic fauna in the ecosystem in question.

REFERENCES


