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Antarctic Fishes

ON THE PRESENCE OF FISHES IN ANTARCTIC KRILL CATCHES
WYSTĘPOWANIE RYB W ANTARKTYCZNYCH POŁOWACH KRYLA

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The paper presented deals with fishes occurring in krill catches in the Antarctic. Species composition, frequency of occurrence in catches, and geographical distribution of fishes are discussed.

INTRODUCTION

Observations on the presence of fishes in krill catches were carried out during the First and Second Polish Scientific Expeditions to the Antarctic, organised by the Sea Fisheries Institute in collaboration with the Polish Academy of Sciences' Institute of Ecology and the "Odra", "Gryf" and "Dalmor" deep-sea fisheries companies.

Although both the amounts and frequency of occurrence of fishes in the catches were very low, it has been decided to discuss the topic, the discussion being treated as a contribution to the studies on the Antarctic fishes zoogeography.

COLLECTION OF MATERIALS

The discussion is based on materials collected from January through March 1976 on board MT "Tazar" (Krzeptowski et al., 1976) and from February through April 1977 on board RV "Profesor Siedlecki" (Wolnomiejski et. al., 1977). In both periods, krill were being caught within the depth range of 10-80 m small-mesh trawls of a special

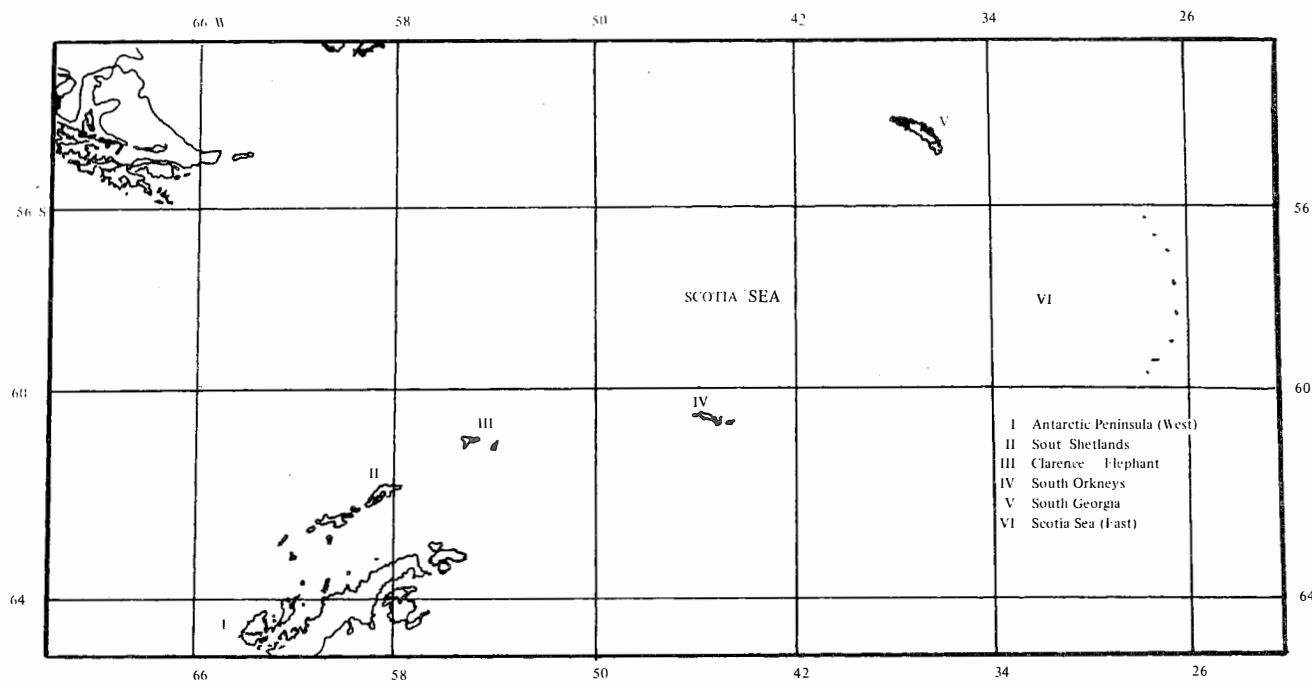


Fig. 1. Regions covered by studies presented

construction. The following authors were consulted when identifying the fishes caught: Andryasev, 1965; Norman, 1938; Nybelin, 1951; Regan, 1913.

The studies were carried out off the western Antarctic Peninsula, South Shetlands, and off the islands surrounding the Scotia Sea from the east and south as presented in Fig. 1.

DISCUSSION OF RESULTS

Of the total number of 156 krill hauls of MT "Tazar", 68 (43.6%) were found to contain fishes as well. During the RV "Profesor Siedlecki" cruise, 33 (39.3%) hauls of the 84 analysed ones were found to contain fishes.

Since the two expeditions had taken place in the corresponding seasons and the percentage contributions of hauls containing fish were similar, it was decided to discuss the findings of the two cruises jointly. Thus the fishes were found to be present in 101 out of 240 hauls examined. Although the fish-containing hauls made up 42.1% of the total number, amounts of fishes present were low, ranging from a few to several individuals. It was only in a few hauls taken mainly off the South Georgia, that the fishes contributed in a significant way to the total catch, their amount reaching several kilograms.

Usually from one to 3–4 fish species per haul were revealed. A total number of 20 species of 7 families was identified in the two cruises. They are summarised in Table 1, their occurrence frequency being stated as well. The data presented indicate a fairly high diversity in distribution of the species concerned over the regions studied. Thus, for instance, *Dissostichus mawsoni*, *Champsocephalus gunnari*, *Notolepis coatsi*, and *Myctophidae* were recorded from almost entire area covered while *Pleurogramma antarctica* and *Notothenia rossi marmorata* occurred only off the western Antarctic Peninsula. Similar were the trends in the distribution of *Tromatomus hansonii* and *Paraliparis gracilis*, the species having been noted off the South Georgia only. The analysis of data presented in Table 1 shows the regions off the South Georgia, South Orkneys, and West Antarctic Peninsula to be the richest in fish species. The fishes appeared most frequently in hauls obtained from off the Antarctic Peninsula and South Orkneys, while they were most rare off Clarence.

The species found most frequently are briefly characterised below:

- *Notothenia gibberifrons*. The species of a high commercial value, observed fairly often off the South Georgia in numbers ranging from few to several individuals per haul. They were 36–47 cm long (l.t.) with maturing gonads, feeding intensively, krill being the fundamental component of their food.
- *Notothenia larseni*. The species of no commercial value owing to small size of individuals (7–20 cm). Fairly frequent in catches, mainly off the South Georgia, more seldom off the South Orkneys; up to several hundred individuals per haul. Caught mainly at night. The species' staple food consists of krill and -- to a lower degree -- of amphipods.

Table 1

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Fish species and their occurrence in krill catches

Families and species Region	Antarctic Peninsula (West) I	South Shetlands II	Clarence and Elephant III	South Orkneys IV	South Georgia V	Scotia Sea (East) VI
Notothenidae						
1. <i>Notothenia rossi marmorata</i>	1					
2. <i>Notothenia gibberifrons</i>				3	15	
3. <i>Notothenia larseni</i>				2	16	
4. <i>Notothenia corriceps</i>		I				
5. <i>Notothenia macrocephala</i>					1	
6. <i>Notothenia sp.</i>	3			1		
7. <i>Dissostichus mawsoni</i>	15	1			1	
8. <i>Trematomus hansonii</i>					1	
9. <i>Pleuragramma antarctica</i>	4					
Chaenichthyidae						
10. <i>Champsocephalus gunnari</i>	3			2	22	
11. <i>Chaenocephalus aceratus</i>	1			2	2	
12. <i>Pseudochaenichthys georgianus</i>	1			1	4	
13. <i>Chionodraco kathlenae</i>		8		1		
14. <i>Cryodraco antarcticus</i>	1		1	2		
juveniles non det.	2			1		
Myctophidae						
15. <i>Protomyctophum bollini</i>	4				1	
16. <i>Gymnoscopelus braurei</i>					1	
17. <i>Myctophidae n.d.</i>	5	7			8	3
Liparidae						
18. <i>Paraliparis gracilis</i>				I		
Alepidosauridae						
19. <i>Eugnatosaurus vorax</i>	3	1	1	1		
Sudidae						
20. <i>Notolepis coatsi</i>	3	2	1	2		2
Trichiuridae						
21. <i>Paradiplospinus antarcticus</i>				2	3	2
Total no. of hauls	37	26	7	15	144	11
No. of hauls containing fishes	22	14	2	9	49	5

- *Dissostichus mawsoni*. The largest fish (up to 200 cm) among the Antarctic ichthyofauna. However, the catches examined contained only juveniles the size of which ranged within 10--13 cm. It is worth mentioning that those juveniles were found mainly west of the Antarctic Peninsula.
- *Champscephalus gunnari*. A commercially valuable species. Most often found off the South Georgia and sporadically off the Antarctic Peninsula. The numbers were low and did not exceed several individuals per haul. Only exceptionally more substantial amounts (50-70 kg) were noted from 2 hauls taken off the South Georgia. Individuals of a 6-8 cm length range occurred off the Antarctic Peninsula, while an 18-35 cm range was characteristic of the fishes caught off the South Georgia. The fishes were feeding intensively, krill being the predominating food component.
- Chaenocephalus aceratus* and *Pseudochaenichthys georgianus* were extremely seldom encountered in the krill catches, their presence being recorded mainly off the South Orkneys and South Georgia.

It should be emphasised that the catches obtained from the region West off the Antarctic Peninsula and the South Orkneys often yielded juvenile white-blooded fishes and *Notothenia spp.* Due to their small size (ca 4 cm), those individuals were impossible to identify to the species level.

One can suppose, basing on the data presented, that a small contribution of fishes to the catch resulted from their considerable dispersion, which was confirmed by echo-sounding records showing no clear concentration of fish within the depth range concerned.

REFERENCES

- Andryasev A.P., 1965: A general review of the Antarctic Fish Fauna. Monogr. Biol. XV.
- Krzepkowski M., Linkowski T., Rembiszewski M., 1976: Ichtiologiczno-rybacka charakterystyka łowisk. Sprawozdanie z badań przyrodniczych Pierwszej Polskiej Ekspedycji na wody Antarktydy na statkach r/v "Profesor Siedlecki" i m/t „Tazar”, 1975-1976 (Oceanografia, biologia, hydroakustyka). [Ichthyological and exploatational description of fishing grounds. Report on the biological studies conducted during the First Polish Antarctic Expedition on board RV "Profesor Siedlecki" and m/t "Tazar" 1975-1976 (Oceanography, biology, hydroacoustics)] Morski Instytut Rybacki: 1-158.
- Norman J.R., 1938: Coast Fishes. Part III. The Antarctic Zone. Discovery Reports, XVIII: 1-105.
- Nybelin O., 1951: Subantarctic and Antarctic Fishes. Scientific Results of the "Brateg" Expedition 1947-1948. Bergen: 1-32.
- Regan C.T., 1913: The Antarctic Fishes of the Scottish. National Antarctic Expedition. -- Trans. Roy. Soc., Edinburgh, 49: 229-292.
- Wolnomiejski N., Witek Z., Czykieta H., Chłapowski K., Sitek S., 1977: Biologiczna charakterystyka kryla i innych składników biocenozy wód antarktycznych. [Biological characteristics of krill and other components of the Antarctic waters biocenosis.] (in prep.).

WYSTĘPOWANIE RYB W ANTARKTYCZNYCH POŁOWACH KRYLA

Streszczenie

W latach 1976–1977 prowadzono obserwacje nad występowaniem ryb w połowach krylowych w rejonie atlantyckiego sektora Antarktydy.

W badanym materiale wyróżniono 20 gatunków ryb należących do 7 rodzin. Największą ilość gatunków zaobserwowano w rejonie Półwyspu Antarktycznego (West), Południowych Orkadów i Południowej Georgii.

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ПРИЛОВ РЫБЫ В АНТАРКТИЧЕСКИХ УЛОВАХ КРИЛЯ

Р е з ю м е

В 1976–1977 гг. проводили наблюдения над приловом рыбы в уловах криля в атлантическом секторе Антарктиды.

В исследуемом материале выделено 20 видов рыб, принадлежащих к 7 семействам. Наибольшее количество видов отмечено в уловах в районе Антарктического полуострова, Южного Оркадаса и Южной Георгии.

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