

THE FISHERY FOR *PATAGONOTO THEN BREVICAUDA GUNTHERI* IN CCAMLR SUBAREA 48.3

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Abstract

Fine-scale data supplied to CCAMLR for 1987/88 showed that the catches of *Patagonotothen brevicauda guntheri* were five times greater in the South Georgia area than at Shag Rocks. Previous survey data and reports to the CCAMLR Working Group on Fish Stock Assessment indicated that this species was only ever caught at Shag Rocks. Therefore the South Georgia catches were almost certainly of another species. The small size of *P.b. guntheri* means that they can only be caught with net meshes so small that they would also catch undersized individuals of other, larger species. Survey results suggest that such fishing is likely to have a significant effect on other species. *P.b. guntheri* has been reported as a by-catch of other fisheries; this suggests that illegal nets were used.

Résumé

Les données à échelle précise fournies à la CCAMLR pour 1987/88 ont révélé que les captures de *Patagonotothen brevicauda guntheri* sont cinq fois plus importantes dans la zone de la Géorgie du Sud qu'aux îlots Shag. D'anciennes données de campagnes et des rapports fournis au Groupe de travail de la CCAMLR chargé de l'évaluation des stocks de poissons indiquent que cette espèce n'a jamais été capturée qu'aux îlots Shag. Il semble donc que les captures de Géorgie du Sud aient concerné une autre espèce. Vu sa taille modeste, *P.b. guntheri* ne peut être capturé qu'à l'aide de filets à très petites mailles, entraînant assurément la capture d'individus inférieurs à la taille légale, appartenant à d'autres espèces plus grandes. Les résultats des campagnes d'étude révèlent qu'une telle pêche risque d'affecter sensiblement d'autres espèces. La déclaration de *P.b. guntheri* en tant que capture accessoire d'autres pêcheries laisse présumer que des filets illégaux ont été utilisés.

Резюме

Представленные в АНТКОМ мелкомасштабные данные за 1987/88 гг. свидетельствуют о том, что общий вылов *Patagonotothen brevicauda guntheri* в районе Южной Георгии в пять раз превышал общий вылов этого вида в районе скал Шаг. По данным ранее проведенных съемок и сведениям, содержащимся в отчетах, представленных Рабочей группе АНТКОМа по оценке рыбных запасов, этот вид вылавливался исключительно в районе скал Шаг. Следовательно, в районе Южной Георгии скорее всего были получены уловы

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другого вида. В связи с тем, что особи вида *P.b. guntheri* характеризуются небольшим размером, их промысел можно вести только сетями с такой мелкой ячейкой, которая также удерживает молодь других, более крупных видов рыб. По результатам съемки можно предположить, что такой промысел, вероятно, будет оказывать значительное влияние на прочие виды. Поступали сведения о присутствии особей вида *P.b. guntheri* в приловах при промысле других видов рыб. В связи с этим можно предположить, что использовались запрещенные типы сетей.

Resumen

De la información a escala fina suministrada a la CCRVMA para el período 1987/88, se desprende que las capturas de *Patagonotothen brevicauda guntheri* fueron cinco veces superiores en el área de Georgia del Sur que en las Rocas Cormorán. La información recogida por las prospecciones anteriores y la enviada al Grupo de Trabajo para la Evaluación de las Poblaciones de Peces de la CCRVMA, ha indicado que esta especie había sido capturada sólo en el área de las Rocas Cormorán. Por ende, las capturas en Georgia del Sur eran, seguramente, de otras especies. Debido al pequeño tamaño de *P.b. guntheri*, sólo se le puede capturar con redes de malla tan pequeñas que, irremediamente, capturarán también ejemplares juveniles de otras especies de mayor tamaño. Los resultados de las prospecciones indican que una pesquería de este tipo tendría un gran impacto en otras especies. Se ha notificado la pesca de *P.b. guntheri* en las capturas secundarias de otras pesquerías, lo que insinúa que se utilizaron redes ilegales para tales efectos.

1. INTRODUCTION

During the past ten years there has been a fishery for *Patagonotothen brevicauda guntheri* in CCAMLR Subarea 48.3 (South Georgia) resulting in reported annual catches of between five and thirty-five thousand tonnes. The only biomass estimate available is from the Spanish trawl survey in 1986/87 (Balguerías, 1989). The reported catches are listed in Table 1.

In 1988 CCAMLR introduced Conservation Measure 12/VII which limited the total catch for the season to 13 000 tonnes. In the following year the total allowable catch (TAC) was set at 12 000 tonnes (Conservation Measure 16/VIII). At the end of the fishing season catch and effort data, which include location and amount of catches by fine-scale rectangle (half a degree of latitude by one degree of longitude) and ten-day period, are required to be sent to CCAMLR.

P.b. guntheri are small fish, rarely growing larger than 20 cm. They are not covered by any of the minimum mesh regulations included in Conservation Measure 2/III.

The only nation fishing for *P.b. guntheri* is the USSR and they have reported that directed fishing on this species is only undertaken in the Shag Rocks region of Subarea 48.3 (SC-CAMLR-VII, p. 165 and SC-CAMLR-VIII, p. 276).

We have analysed the fine-scale data that have been supplied to CCAMLR in order to provide further information on the fishery.

2. FINE-SCALE DATA ON THE *P.B. GUNTHERI* FISHERY

At the time of preparation of this report the only season for which fine-scale data were available was 1988. Records related to the *P.b. guntheri* fishery are summarised in Tables 2 to 4.

The Shag Rocks region of Subarea 48.3 may be conveniently described by a rectangle extending from latitude 53° to 54°S and longitude 40° to 44°W. There are no reports of *P.b. guntheri* being taken as by-catch in the krill fishery.

3. DISTRIBUTION OF CATCHES

The breakdown of catches within the two regions, Shag Rocks and South Georgia is given in Table 5.

These results indicate that approximately five times as much *P.b. guntheri* were caught around South Georgia as at Shag Rocks. This is at variance with information reported in the CCAMLR Working Group on Fish Stock Assessment Reports which states that the species is only taken at Shag Rocks (SC-CAMLR-VII, p. 165 and SC-CAMLR-VIII, p. 276).

Examination of survey data supports this information. Data from all trawl surveys in Subarea 48.3, whether using bottom or pelagic trawls, indicates that *P.b. guntheri* is only ever found around Shag Rocks (e.g., Balguerías, 1989; Parkes *et al.*, 1989 and 1990). The catches from South Georgia that are reported to be of *P.b. guntheri* are not of that species, and are, therefore, almost certainly of some other species.

4. BY-CATCHES IN THE *P.B. GUNTHERI* FISHERY

In the directed fishery for *P.b. guntheri* the proportion of the target species in the catches is high. However, there are some situations when large catches of other species have been reported. For example, catches from bottom trawls (Table 3) during February 1988 around South Georgia indicate that the icefish *Champsocephalus gunnari* made up one quarter of the catch. While it is understandable that by-catches will be made it must be remembered that they are being made using gear designed for the target species.

P.b. guntheri are small fish and rarely grow larger than 20 cm (Figure 1). In order to catch fish of this size it would be necessary to use a mesh considerable finer than that permitted under Conservation Measure 2/III for other species. A net operating with a mesh as fine as this is likely to catch large numbers of small fish of other species and hence the by-catch species are likely to be dominated by small individuals. Of particular concern is *Dissostichus eleginoides* at Shag Rocks. Results from a recent survey show that large numbers of small individuals of this species (Figure 2) are present in the area and hence a fishery directed at *P.b. guntheri* is likely to have a significant effect on them.

5. *P.B. GUNTHERI* AS A BY-CATCH SPECIES

Significant catches of *P.b. guntheri* have been reported from other directed fisheries. For example, in the directed fishery for *C. gunnari* the proportion of *P.b. guntheri* in the total reported for the two species includes an average of almost a quarter of *P.b. guntheri* as by-catch. This must be viewed with considerable concern because the minimum mesh size

permitted for *C. gunnari* is 80 mm which, providing the provisions of Conservation Measure 2/III section 2 are complied with, would not retain even large *P.b. guntheri*. The only way in which such large by-catches could be made would be by the use of an illegal mesh or a device to obstruct or diminish the size of the meshes.

6. CONCLUSIONS

Our analyses based on the fine-scale data reported to CCAMLR lead us to the following conclusions.

- (i) Since survey results indicated that *P.b. guntheri* are not found at South Georgia, reported catches of this species in South Georgia waters must be in error, due to either misidentification of species or to misreporting of the location of capture.
- (ii) At Shag Rocks where *P.b. guntheri* are known to be present, the fishery is currently catching a significant proportion of small fish of other species.
- (iii) Significant by-catches of *P.b. guntheri* in other target fisheries indicates that nets that contravene Conservation Measure 2/III are being used.

REFERENCES

- BALGUERIAS, E. 1989. Informe de resultados 'Antártida 8611' biología pesquera. Resultados de L. Campaña 'Antártida 866'. *Publ. Espec. Inst. Oceanogr.*, 2: 267-483. Madrid.
- PARKES, G.B., I. EVERSON, J. SOSINSKI, Z. CIELNIASZEK and J. SZLAKOWSKI. 1989. *Report of the Joint UK/Polish Fish Stock Assessment Survey Around South Georgia, February 1989*. SC-CAMLR-VIII, document WG-FSA-89/6.
- PARKES, G.B., I. EVERSON, J. ANDERSON, Z. CIELNIASZEK, J. SZLAKOWSKI and R. TRACZYK. 1990. *Report of the UK/Polish Survey Around South Georgia and Shag Rocks in January 1990*. SC-CAMLR-IX, document WG-FSA-90/11.

Table 1: Reported catches of *P.b. guntheri*.

Split-Year	Reported Landings (tonnes)	Biomass Estimate (tonnes)
1979	15 011	-
1980	7 381	-
1981	36 758	-
1982	31 351	-
1983	5 029	-
1984	10 586	-
1985	11 923	-
1986	16 002	-
1987	8 810	81 000
1988	13 424	-
1989	13 016	-

Table 2: CCAMLR fine-scale data relevant to *P.b. guntheri* from midwater trawls. (Coordinates of locations within the Shag Rocks area are underlined; ANI - *Champscephalus gunnari*; NOG - *Notothenia gibberifrons*, NOT - *Patagonotothen brevicauda guntheri*, LXX - Myctophidae).

Date	Target Species	Lat. (°S)	Long. (°W)	ANI	NOG	NOT	LXX	Other
1987								
Aug 21-31	ANI	<u>54</u>	<u>37</u>	25	10	5		39
Dec 1-10	NOT	<u>54</u>	<u>40</u>	0	0	374	0	0
11-20	LXX	<u>54</u>	<u>41</u>	0	0	0	210	0
21-31	LXX	<u>54</u>	<u>41</u>	1808	182	313	2994	396
1988								
Jan 1-10	ANI	<u>54</u>	<u>41</u>	242	0	228	69	4
	NOT	<u>54</u>	<u>38</u>	20	0	795	0	0
11-20	ANI	<u>54</u>	<u>41</u>	2408	21	357	130	88
21-31	ANI	<u>54</u>	<u>41</u>	1929	0	407	0	103
Feb 1-10	ANI	<u>54</u>	<u>38</u>	1165	0	136	0	76
11-20	ANI	<u>54</u>	<u>38</u>	1423	0	0	0	0
21-28	ANI	<u>54</u>	<u>38</u>	2256	86	0	0	54
Mar 1-10	LXX	<u>54</u>	<u>38</u>	0	0	10	230	0

Table 3: CCAMLR fine-scale data relevant to *P.b. guntheri* from bottom trawls. (For species codes used see Table 2).

Date	Target Species	Lat. (°S)	Long. (°W)	ANI	NOG	NOT	LXX	Other
1987								
Aug 21-31	ANI	54	37	904	4	13		
Dec 1-10	NOT	<u>54</u>	<u>40</u>	0	0	60	0	0
11-20	NOT	<u>54</u>	<u>40</u>	33	0	403	8	96
21-31								
1988								
Jan 1-10	NOT	54	38	94	0	2266	0	2
	ANI	54	38	602	125	70	0	9
11-20	NOT	54	38	0	182	716	0	6
21-31	NOT	54	38	0	214	272	0	133
Feb 1-10	NOT	54	38	281	0	1000	0	0
	NOT	54	38	244	0	795	0	0
11-20	NOT	54	38	0	0	1026	0	0
	NOT	54	38	0	0	1539	0	31
21-28	NOT	54	38	202	0	818	0	0
Mar 1-10	NOT	54	38	409	0	1671	0	0

Table 4: CCAMLR fine-scale data relevant to *P.b. guntheri* where fishing gear is not specified. (For species codes used see Table 2).

Date	Target Species	Lat. (°S)	Long. (°W)	ANI	NOG	NOT	LXX	Other
1987								
Nov 1-10	ANI	54	38	38	0	14	0	0
11-20	ANI	54	38	79	0	29	0	0
21-30	ANI	54	38	15	0	7	0	0
Dec 11-20	ANI	54	41	6		4	0	2
21-31	ANI	<u>54</u>	<u>41</u>	178	0	96	0	53

Table 5: Catches of major fish species at South Georgia and Shag Rocks. NB: These data apply only to data records which include *P.b. guntheri*. (For species codes used see Table 2).

Species:	ANI	NOG	NOT	LXX	Other
Shag Rocks	6604	203	2242	3411	745
South Georgia	7757	621	11182	230	350

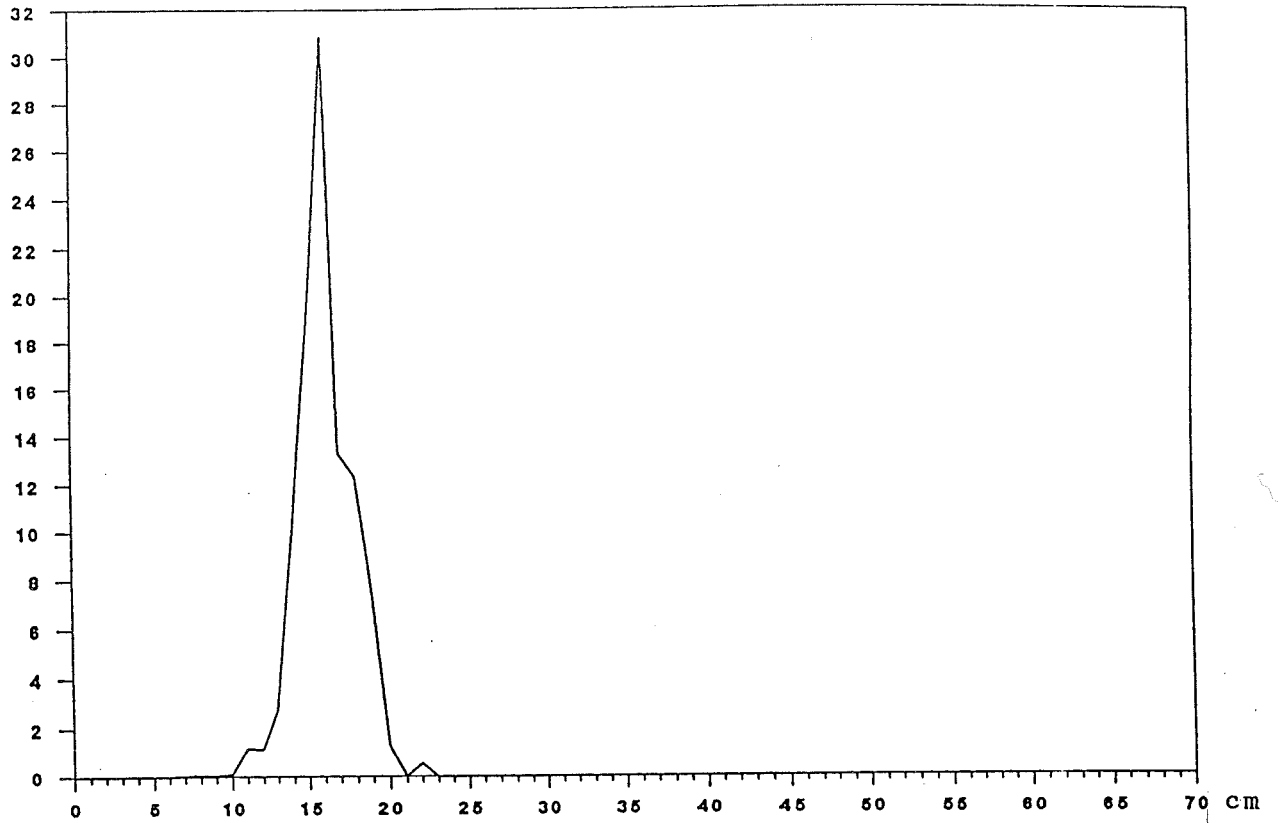


Figure 1: Size frequency distribution of *P.b. guntheri* at Shag Rocks from the UK survey in 1990 (Parkes *et al.*, 1990).

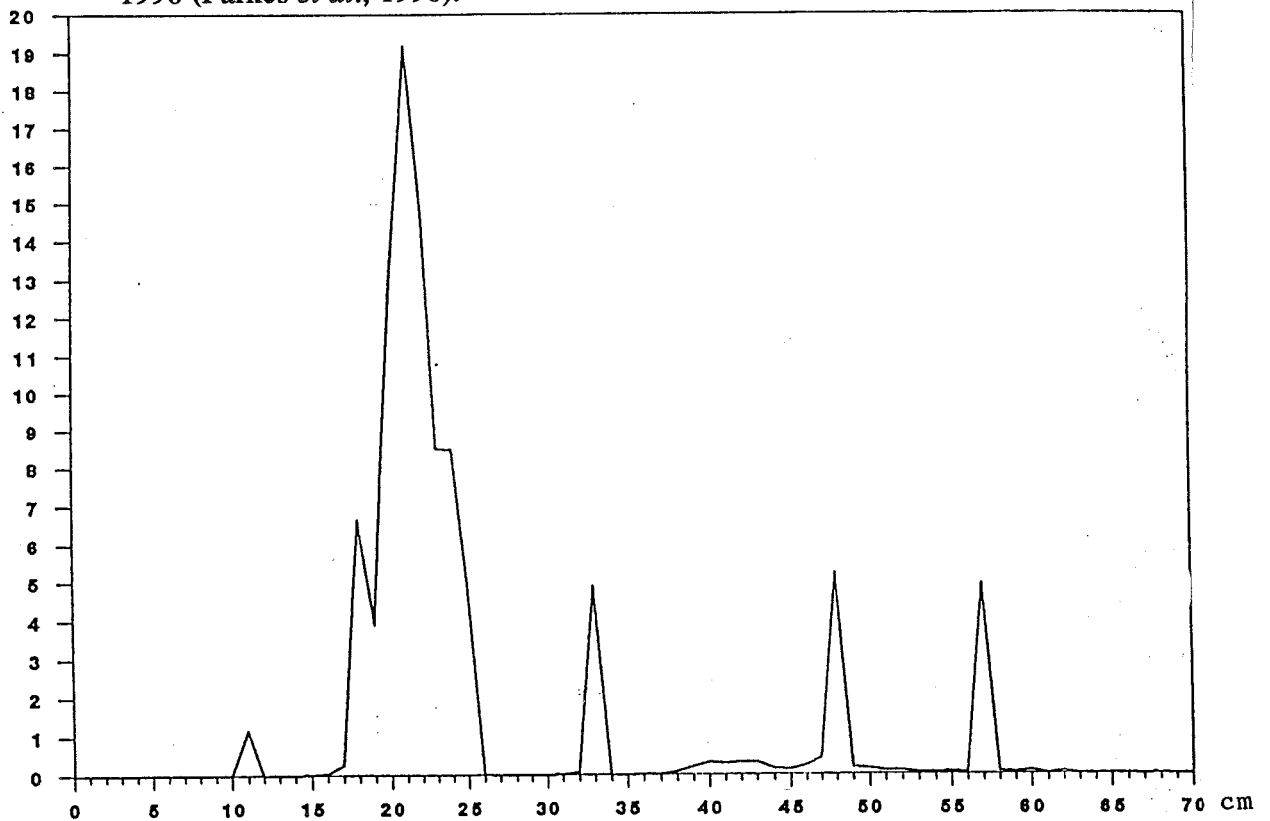


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