

**Fishery Report: *Champscephalus gunnari* (ANI)
South Georgia (Subarea 48.3)**

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Throughout this report the CCAMLR fishing season is represented by the year in which that season ended, e.g. 2012 represents the 2011/12 CCAMLR fishing season (from 1 December 2011 to 30 November 2012).

**FISHERY REPORT: *CHAMPSOCEPHALUS GUNNARI* (AND)
SOUTH GEORGIA (SUBAREA 48.3)**

1. Details of the fishery

1.1 Reported catch

1. In Subarea 48.3, a pelagic trawl fishery targets *Champscephalus gunnari* (Table 1) and the limits on this fishery are described in Conservation Measure (CM) 42-01. In 2012, the fishing season was from 1 December 2011 to 30 November 2012 and the catch limit for *C. gunnari* was 3 072 tonnes. Commercial fishing was conducted by two vessels and the total reported catch was 546 tonnes to date, although the fishery is still open and a third vessel has just entered the fishery.

Table 1: Catch history for *Champscephalus gunnari* in Subarea 48.3.
(Source: STATLANT data for past seasons, and catch and effort reports for current season.)

Season	Reported effort (number of vessels)	Catch limit (tonnes)	Reported catch (tonnes)
1977	-	-	93 595
1978	-	-	7 472
1979	-	-	809
1980	-	-	8 795
1981	-	-	27 903
1982	-	-	54 040
1983	-	-	178 824
1984	-	-	35 743
1985	-	-	628
1986	-	-	21 008
1987	-	-	80 586
1988	1	35 000	36 054
1989	-	0	3
1990	-	8 000	8 135
1991	-	26 000	44
1992	-	0	5
1993	-	9 200	0
1994	-	9 200	13
1995	-	0	10
1996	-	1 000	0
1997	-	1 300	0
1998	1	4 520	6
1999	1	4 840	265
2000	2	4 036	4 114
2001	5	6 760	960
2002	5	5 557	2 667
2003	4	2 181	1 986
2004	7	2 887	2 683
2005	7	3 574	200
2006	5	2 244	2 169
2007	5	4 337	4 345

(continued)

Table 1 (continued)

Season	Reported effort (number of vessels)	Catch limit (tonnes)	Reported catch (tonnes)
2008	5	2 462	2 491
2009	5	3 834	1 834
2010	2	1 548	12*
2011	1	2 305	10*
2012	2	3 072	546**

* Catch in 2009/10 and 2010/11 was from the research surveys in those years.

** Fishery still open.

1.2 IUU catch

2. There has been no evidence of IUU activity in this fishery.

1.3 Size distribution of the catches

3. Length frequencies for *C. gunnari* from 1987 to 2011 are presented in Figure 1. These length-frequency distributions of catches are unweighted and the interannual variability shown in the figure may reflect differences in the fished population but are also likely to be biased by changes in factors such as the characteristics/number of vessels in the fishery and the spatial and temporal distribution of fishing. A description of how length data are used in assessments is provided in the relevant section of this report.

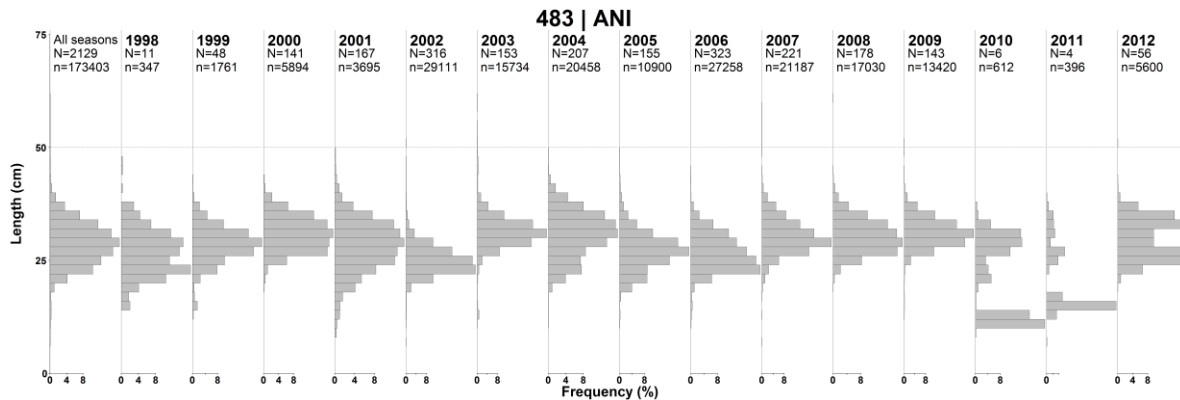


Figure 1: Length frequencies for *Champsocephalus gunnari* in Subarea 48.3 from observer data showing the number of hauls (N) and the number of fish measured (n) in each year at the top of each panel. Note that in 2010 and 2011 all data are from research hauls.

2. Stocks and areas

4. Within Subarea 48.3, *C. gunnari* is restricted to the shelf area generally shallower than 350 m. Differences in length distribution have been noted between Shag Rocks and South Georgia, although these differences are not thought to represent separate stocks for purposes

of stock assessment. *C. gunnari* is considered a semi-pelagic species, young (0+ and 1+) fish are found in the pelagic zone, but with increased age (size) fish become more demersal in habit.

3. Parameter estimation

3.1 Estimation methods

Acoustic surveys

5. Previous acoustic studies have demonstrated that *C. gunnari* of all sizes/ages spend time in the midwater and indicated that a bottom trawl survey would significantly underestimate *C. gunnari* biomass (see WG-FSA-SAM-04/20). In 2012 there were no new estimates of standing stock available from acoustic surveys.

Trawl surveys

6. In January 2012, the UK undertook a random stratified bottom trawl survey of the Shag Rocks shelf (WG-FSA-12/37). The survey employed the same trawl gear and survey design as previous UK surveys in Subarea 48.3, however, this was not a full biomass survey and so no further information was available to the assessment. The trawl survey caught 15 tonnes of *C. gunnari*.

3.2 Parameter values

Fixed parameters

7. The Working Group used a length-based assessment for icefish in Subarea 48.3, following the methodology presented in WG-FSA-10/37. The growth parameters were those used by CCAMLR in previous years (SC-CAMLR-XXVI, Annex 5, Appendix O, Table 5) and the length–weight parameters were updated according to the 2011 survey results (WG-FSA-11/29). The full details of the 2011 assessment, which includes the second year projection, are given in the 2011 Fishery Report for this fishery.

4. Stock assessment

8. The Working Group recalled that the use of the length-based model to set catch limits for *C. gunnari* in Subarea 48.3 was endorsed at the 2010 meeting (SC-CAMLR-XXIX, Annex 8, paragraph 5.164). The assessment uses survey data on length densities and biomass density without the need to identify age-specific cohorts.

9. A single short-term projection of yield (tonnes) for 2012 (year 1) and 2013 (year 2) was completed in WG-FSA-11/30 and produced catch limits of 3 072 tonnes and 2 933 tonnes respectively.

5. By-catch of fish and invertebrates

5.1 By-catch removals

10. Catches of by-catch species (*Gobionotothen gibberifrons*, *Notothenia rossii*, *Lepidonotothen squamifrons*, *Pseudochaenichthys georgianus* and *Chaenocephalus aceratus*) are reported in fine-scale data, and their respective catch limits, are summarised in Table 2.

11. In 2012 (to 24 September 2012) 24 tonnes of *L. squamifrons* and 90.6 tonnes of *Patagonotothen guntheri* have been caught as by-catch in the commercial fishery. In addition, the UK survey made the following catches of these species in January 2012: 0.2 tonnes of *G. gibberifrons*, 0.09 tonnes of *N. rossii*, 0.6 tonnes of *L. squamifrons*, 0.06 tonnes of *P. georgianus*, 0.08 tonnes *C. aceratus* and 9.6 tonnes of *P. guntheri*.

Table 2: Catch history for by-catch species (*Gobionotothen gibberifrons*, *Notothenia rossii*, *Lepidonotothen squamifrons*, *Pseudochaenichthys georgianus* and *Chaenocephalus aceratus*) and catch limits in the fishery for *Champscephalus gunnari* in Subarea 48.3 (see CM 33-01 for details). (Source: fine-scale data.)

Season	<i>Gobionotothen gibberifrons</i> (tonnes)		<i>Notothenia rossii</i> (tonnes)		<i>Lepidonotothen squamifrons</i> (tonnes)		<i>Pseudochaenichthys georgianus</i> (tonnes)		<i>Chaenocephalus aceratus</i> (tonnes)	
	Limit	Reported	Limit	Reported	Limit	Reported	Limit	Reported	Limit	Reported
1999	1470	0	300	0	300	0	300	<1	2200	<1
2000	1470	0	300	0	300	0	300	0	2200	0
2001	1470	<1	300	0	300	0	300	6	2200	<1
2002	1470	<1	300	<1	300	0	300	5	2200	5
2003	1470	0	300	0	300	0	300	5	2200	<1
2004	1470	0	300	0	300	0	300	3	2200	<1
2005	1470	<1	300	<1	300	<1	300	25	2200	1
2006	1470	0	300	1	300	0	300	6	2200	<1
2007	1470	<1	300	<1	300	0	300	<1	2200	0
2008	1470	<1	300	<1	300	0	300	<1	2200	<1
2009	1470	<1	300	<1	300	0	300	<1	2200	<1
2010	1470	<1	300	<1	300	0	300	<1	2200	0
2011	1470	0	300	<1	300	0	300	<1	2200	0
2012	1470	<1	300	0	300	24	300	<1	2200	0

5.2 Mitigation measures

12. The by-catch limits are set out in CM 33-01 and specific by-catch related move-on rules are included in CM 42-01, paragraph 6.

6. Incidental mortality of birds and mammals

6.1 Incidental mortality reported

13. There were no seabird or marine mammal mortalities observed in 2012 to date (Table 3).

Table 3: Number of seabirds killed in the trawl fishery in Subarea 48.3. DIC – *Thalassarche chrysostoma*, DIM – *Thalassarche melanophrys*, PRO – *Procellaria aequinoctialis*.

Fishing season	Trawls observed	DIC	DIM	PRO	Other
2001	315	5	46	41	
2002	431		18	49	1
2003	182	1	7	28	
2004	221	1	26	59	1
2005	253		9	1	1
2006	457	1	11	20	1
2007	111	1	2	3	
2008	206			3	2
2009	154		6	5	
2010	14			1	1
2011	5				
2012	70				

6.2 Identification of levels of risk

14. The level of risk of incidental mortality of seabirds in Subarea 48.3 remains at category 5 (high) (SC-CAMLR-XXX, Annex 8, paragraph 8.1).

6.3 Mitigation measures

15. CM 25-03 applies to this fishery.

16. CM 42-01 has a further mitigation measure that, should any vessel catch a total of 20 seabirds, it shall cease fishing and shall be excluded from further participation in the fishery in that year.

7. Ecosystem implications/effects

17. The current pelagic trawl fishery for *C. gunnari* in Subarea 48.3 has minimal impact on the benthic ecosystem. There is a small by-catch of other icefish species, but this is typically much smaller than the catch limits for these species (Table 2). *Champscephalus gunnari* play an important role in the ecosystem of the South Georgia shelf as predators of krill, *Themisto gaudichaudii* and other euphausiids, and as prey species of fur seals and gentoo penguins (WG-FSA-08/30). Icefish may also be consumed by juvenile toothfish in years of high icefish abundance at Shag Rocks.

18. Estimates of icefish standing stock have been shown to vary in relation to krill abundance at South Georgia, and in years of poor krill availability, icefish condition is poorer and larger quantities are likely to be consumed by both fur seals and gentoo penguins, which are normally krill-dependent predators.

19. In January 2009, South Georgia was subject to an ecosystem anomaly (WG-EMM-09/23) driven by increased sea-surface temperature which caused a rapid and marked decline in krill abundance in the region. This, in turn, had an impact on predator performance, including significant changes to icefish diet which was dominated by the amphipod *T. gaudichaudii* rather than krill, and is likely in part to have resulted in the decrease in yield in 2008/09.

20. The krill anomaly did not last for the whole of 2009, and krill had returned by the end of the year. Samples taken on the 2010 survey indicated that adult icefish at Shag Rocks and the southeast of South Georgia were feeding primarily on krill. In 2011 the diets of icefish sampled were dominated by krill and other euphausiids, with amphipods much less important in the diet than in previous years.

8. Harvest controls and management advice

8.1 Conservation measures

21. The limits on the fishery for *C. gunnari* in Subarea 48.3 are defined in CM 42-01. The limits in force, and the Working Group's advice to the Scientific Committee for the forthcoming season, are summarised in Table 4.

Table 4: Limits on the fishery for *Champscephalus gunnari* in Subarea 48.3 in force (CM 42-01) and advice to the Scientific Committee for 2013.

Element	Limits in force	Advice for 2012/13
Access (gear)	Trawling only Bottom trawl prohibited	Carry forward
Access (area)	Fishing prohibited within 12 n miles of South Georgia from 1 March to 31 May.	Carry forward
Catch limit	3 072 tonnes	Revise
Move-on rule	Move on if >100 kg caught of which >10% by number are <240 mm TL.	Carry forward
Season	1 December to 30 November	Carry forward
By-catch	By-catch rates as in CM 33-01 to apply, plus move-on rule.	Carry forward
Mitigation	In accordance with CM 25-03. Use of net binding and additional weights to codend. Limit of 20 seabirds per vessel.	Carry forward
Seabirds	Any vessel catching 20 seabirds to cease fishing.	Carry forward
Observers	Each vessel to carry at least one CCAMLR scientific observer and may include one additional scientific observer.	Carry forward
Data	Five-day catch and effort reporting Haul-by-haul catch and effort data Biological data reported by the CCAMLR scientific observer.	Carry forward Carry forward Carry forward
Target species	<i>Champscephalus gunnari</i> By-catch is any species other than <i>C. gunnari</i> .	Carry forward

(continued)

Table 4 (continued)

Element	Limits in force	Advice for 2012/13
Research	No requirement.	Carry forward
Environmental protection	Regulated by CM 26-01. No offal discharge.	Carry forward

8.2 Management advice

22. The Working Group recommended that the catch limit for *C. gunnari* should be set at 2 933 tonnes in 2012/13 based on the outcome of the short-term assessment presented in WG-FSA-11/30.