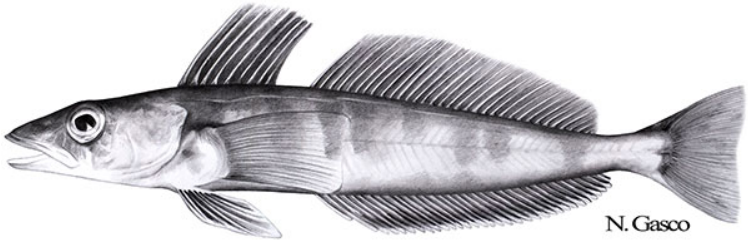
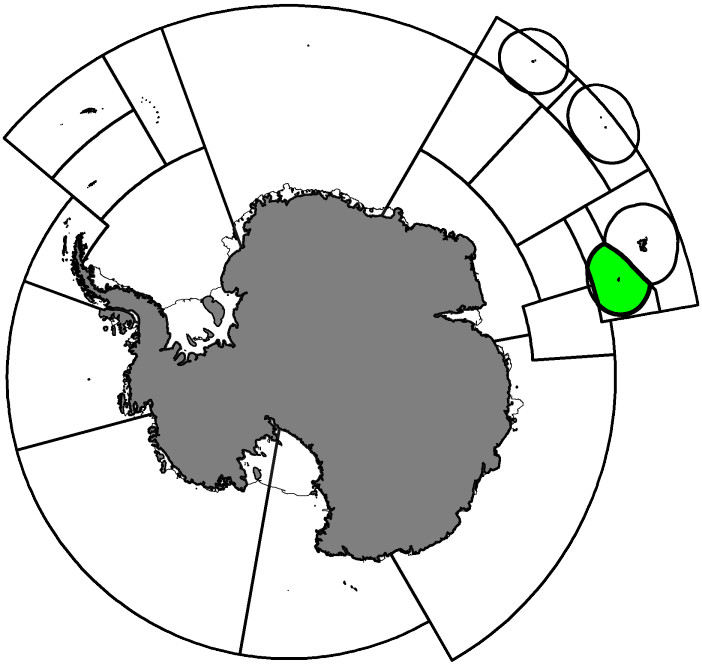
Stock Assessment Report 2024: *Champsocephalus gunnari* at Heard Island (Division 58.5.2)

CCAMLR Secretariat

14 March 2025



Mackerel icefish, *Champsocephalus gunnari* Lönnberg, 1905.



Map of the management areas within the CAMLR Convention Area. The region discussed in this report is shaded in green. Coastlines and ice shelves: UK Polar Data Centre/BAS and Natural Earth. Projection: EPSG 6932.

Stock Assessment Report 2024: *Champsocephalus gunnari*
Heard Island, Australian EEZ (Division 58.5.2)

1. Model configuration

The Heard Island and McDonald Islands fishery for mackerel icefish (*Champsocephalus gunnari*) in Division 58.5.2 was assessed in 2024 with the Generalised Yield Model using the *Grym* package in R (WG-FSA-IMAF-2024/36).

The specification for the assessment model used for management advice are provided in the Stock Annex.

2. Population structure and biomass

Using the data from the random stratified trawl survey (RSTS; WG-FSA-IMAF-2024/58), the distribution of length cohorts consisted of four year classes from 1+ to 4+ (Figure 1).

Table 1: Results generated from CMIX analyses for *Champsocephalus gunnari* from the 2024 random stratified trawl survey in Division 58.5.2.

	Mixture Components			
	1 (1+)	2 (2+)	3 (3+)	4 (4+)
Mean length (mm)	170	268	351	392
SD (mm)	12	15	17	19
Intercept of CV	6.8			
Slope of CV	0.03			
Total density (n.km^{-2})	2331	20339	226	260
SD (n.km^{-2})	3457	7568	154	177
Sum of observed densities	23221			
Sum of expected densities	23155			

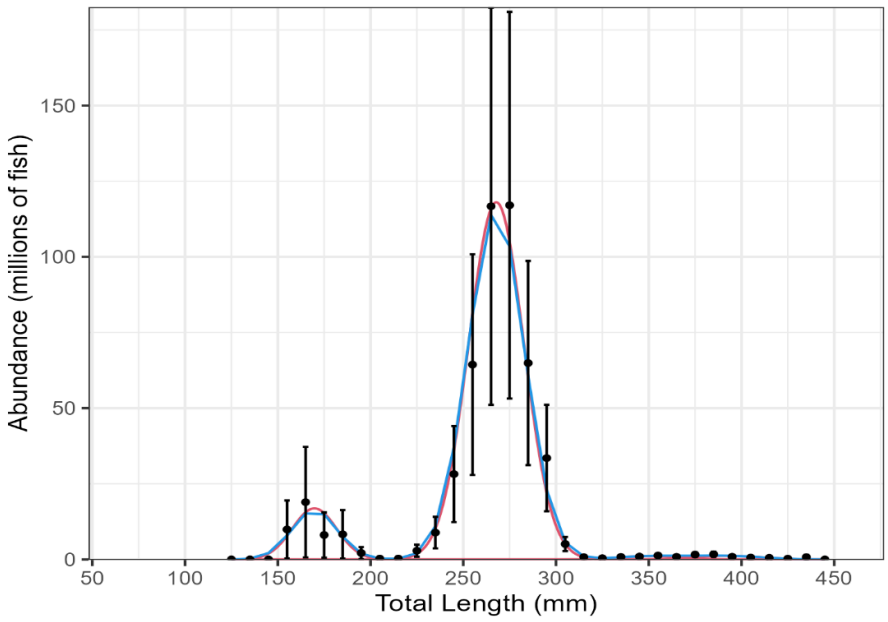


Figure 1: Size distribution of *Champsocephalus gunnari* from the 2024 random stratified trawl survey in Division 58.5.2 with standard errors. Cohorts were present in ages 1+ to 4+.

The biomass estimates with bootstrapped uncertainty for each icefish survey stratum and overall are shown in Table 2.

Few fish in the mackerel icefish population in Division 58.5.2 survive beyond age 4, with a drop in abundance between 3+ and 4+ cohorts observed in consecutive surveys (Welsford 2011, Welsford 2015). Consequently, the assessment scenarios only included the biomass estimated from the 1+ to 3+ cohorts, which means that 9 363 t of the overall 9 731 t lower 95% CI was used in the projection.

Table 2. Abundance (tonnes) of mackerel icefish in Division 58.5.2 estimated by bootstrapping hauls from the 2024 random stratified trawl survey. SE = standard error; Lower CI & Upper CI = lower and upper confidence intervals respectively; LOS 95% CI = lower one-sided 95% confidence interval.

Stratum	Mean	SE	Lower CI	Upper CI	LOS 95% CI
Gunnari Ridge	8 456	3 363	2 842	15 487	3 525
Plateau SE	5 501	2 232	1 935	10 381	2 307
Plateau W	2 094	792	716	3 631	905
Pooled	16 051	4 179	8 757	24 884	9 731

3. Yield estimates

The stock projections using the GYM indicated that catches of 1824 t in the 2024/25 season and 1723 t in the 2025/26 season satisfy the CCAMLR decision rules (Table 3).

Table 3. Target fishing mortality rate and annual yields of mackerel icefish in Division 58.5.2, estimated to ensure 75% escapement over a 2-year projection period for the 0+to 3+ cohorts in the Generalised Yield Model, using the parameters shown in the Stock Annex.

Scenario	Initial biomass estimate (t)	Target fishing mortality rate (yr^{-1})	Catch after RSTS	Yield (tonnes)	
				2024/25	2025/26
Grym	9 363	0.1488	0	1824	1723

Additional Resources

- Fishery Summary: pdf, html
- Fishery Report: pdf, html
- Species Description: pdf, html
- Stock Annex: pdf
- Fisheries Documents Browser