# Species Description 2024: *Champsocephalus gunnari*

CCAMLR Secretariat

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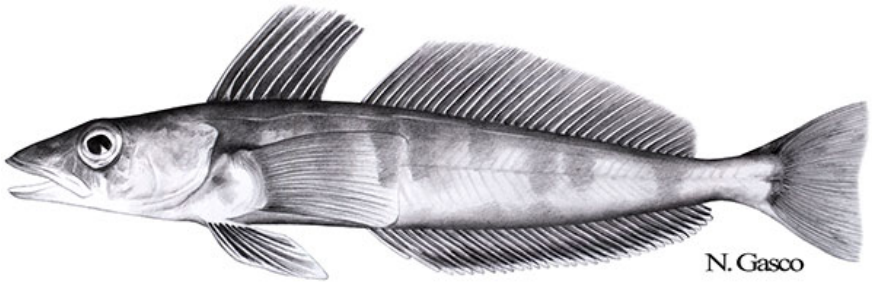
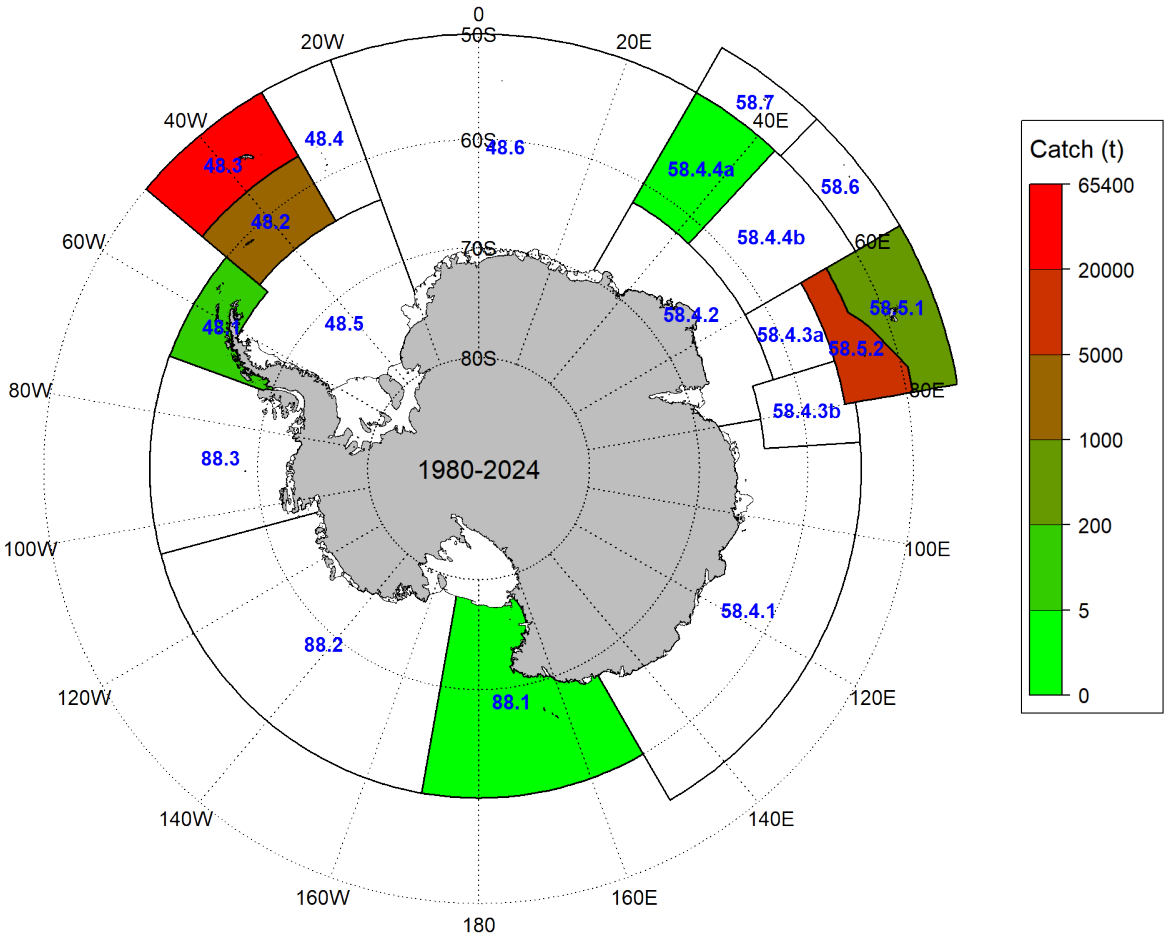



Mackerel icefish, *Champsocephalus gunnari* Lönnberg, 1905.

## Distribution of reported catch




Distribution of cumulative reported catch of *Champsocephalus gunnari* at the ASD scale. (Source: C1 data). Coastlines and ice shelves: UK Polar Data Centre/BAS and Natural Earth. Projection: EPSG 6932.

## Life-history

*Champsocephalus gunnari* (Mackerel icefish), belong to the notothenioid family Channichthyidae (ice fish, white-blooded fish). Antarctic fish in general have a lower erythrocyte number and haemoglobin concentration than fish from temperate and tropical waters. Icefish are an extreme case and lack haemoglobin completely, lack myoglobin in five species, and have a vestigial number of erythrocytes or erythrocyte-like cells only. Mackerel icefish are endemic to the Southern Ocean and confined to the island shelves of the sub-Antarctic and the Antarctic Peninsula.

Spawning takes place in shallow water, with eggs laid on the seafloor. Larvae are pelagic and may be caught in coastal areas during late winter. Mackerel icefish is considered a semi-pelagic species; young (0+ and 1+) fish are found strictly in the pelagic zone, while adult fish move more towards the demersal zone. Icefish predators include Antarctic fur seals (*Arctocephalus gazella*) and gentoo penguins (*Pygoscelis papua*). Fisheries for Mackerel icefish take place in Subarea 48.3 and Division 58.5.2.

In **Subarea 48.3**, *C. gunnari* is restricted to the shelf area, generally shallower than 350m, all around the Subarea 48.3 islands, forming large aggregations. Differences in length distribution have been noted between islands, although these differences are not thought to represent separate stocks for stock assessment purposes.

In **Division 58.5.2**, *C. gunnari* is most abundant at depths of less than 350m in the waters surrounding Heard Island. In this area they grow to a maximum length of around 45cm and a maximum age of 6 years. Size at first maturity for females is 26.5cm and for males is 28.5cm total length. High abundances have also been observed in a non-contiguous area at Shell Bank to the northeast of the islands. The Heard Plateau and Shell Bank populations have different size structures and recruitment patterns.

## Parameter estimates

### In Subarea 48.3

The biological parameters used in the Subarea 48.3 stock assessment are shown in Table 1.

Table 1: Biological parameters assumed for *Champsocephalus gunnari* in Subarea 48.3.

| Component | Parameter | Value | Unit |
|---|---|---|---|
| Natural mortality | M | 0.71 | /y |
| VBGF | K | 0.17 | /y |
| | t0 | -0.58 | y |
| | L_inf | 557 | mm |
| Length to weight | A | 5.13 x 10-10 | kg/mm |
| | B | 3.442 | |

### In Division 58.5.2

The biological parameters used in the Division 58.5.2 stock assessment are shown in Table 2.

Table 2: Biological parameters assumed for *Champsocephalus gunnari* in Division 58.5.2.

| Component | Parameter | Value | Unit |
|---|---|---|---|
| Natural mortality | M | 0.4 | /y |
| VBGF | K | 0.294 | /y |
| | t0 | 0.066 | y |
| | L_inf | 559.1 | mm |
| Length to weight | A | 3.406 x 10-9 | kg/mm |
| | B | 3.09 | |

## Relevant Conservation Measures

In addition to Conservation Measures that apply to all Areas and all Species, the following Conservation Measures apply:

| Description | Species | Area | Conservation Measure |
|---|---|---|---|
| Mesh size for *Champsocephalus gunnari* | *Champsocephalus gunnari* | All Areas | CM 22-03 |
| Limits on the fishery for *Champsocephalus gunnari* in Statistical Subarea 48.3 in the 2023/24 and 2024/25 seasons | *Champsocephalus gunnari* | Subarea 48.3 | CM 42-01 |
| Limits on the fishery for *Champsocephalus gunnari* in Statistical Division 58.5.2 in the 2023/24 and 2024/25 seasons | *Champsocephalus gunnari* | Division 58.5.2 | CM 42-02 |

## Additional Resources

- Fishery Summary for Subarea 48.3: pdf, html
- Fishery Summary for Division 58.5.2: pdf, html
- Fisheries Documents Browser