Falkland Islands Fisheries Department


# Vessel Units

# Allowable Effort

# Allowable Catch

# 2026

***Summary and Recommendations***

For citation purposes this publication should be referenced as follows:

FIFD. 2025. Vessel Units, Allowable Effort, and Allowable Catch 2026. Summary and Recommendations. Fisheries Department, Directorate of Natural Resources, Falkland Islands Government.

# Contents

# 1. Foreword and summary

The 2025 Licensing Advice document (Vessel Units, Allowable Effort, and Allowable Catch) summarizes licensing advice for all regulated fisheries in Falkland Islands Conservation Zones for 2025 apart from the B-licenced *Illex* fishery. Current licencing advices are based on data through the end of 2024 for finfish, toothfish and skates, and through the end of first season 2025 for calamari. Summary tables of the licencing advice are presented at the end of the report.

Stock assessments, committee papers, and survey data that inform the licencing advice standards are published as separate reports and are available on the Falkland Islands Fisheries Department website: https://www.falklands.gov.fk/fisheries/ (publications).

Falkland calamari *Doryteuthis* (*Loligo*) *gahi* 1st season 2025 was stopped about six days early for concerns about small squid sizes. The season thereby obtained the lowest catch and CPUE for 1st seasons since 2020, but above the median for 1st seasons since 2004. Accordingly, allowable effort is set with the premise of full seasons in 2026, and Vessel Units were calculated as the average of the past three years: 27.01. However, with the three most recent 2nd seasons closed respectively early (2023), not even opened for stock conservation (2024), and currently mediocre (2025), continued precautionary monitoring of the *D. gahi* population status is indicated.

Finfish licence (A, G, W) allocations have, since 2022, been based on a protocol adjusting TAE by target proportion, TAC proportion, and stock abundance factors. These adjustment factors were developed largely in response to the high rates of non-allocated hake (*Merluccius* spp.) bycatch taken under G and W licences. With hake bycatches having decreased (effectively in response to these measures), that protocol has become increasingly restrictive on A licence despite A licence not evidently fishing worse than before, either in terms of taking allocated catch or avoiding non-allocated bycatch. For 2025, the proposal was therefore adopted to 'freeze' A, G and W licence allocations at the same level as the year before, pending re-evaluation of the TAE protocol. As re-evaluation of the TAE protocol continues to be in progress, the licence allocation freeze remains in place. A, G and W licence Total Allowable Effort in 2026 will be therefore be the same as in 2024 and 2025.

Patagonian toothfish (*Dissostichus eleginoides*) catch in the target longline fishery obtained 1,040.4 tonnes in 2024, while toothfish bycatches in calamari (11.8 tonnes) and finfish trawls (137.9 tonnes) increased in 2024 for the second consecutive year, but still well below their peaks in 2017 and 2016. The current assessment estimates a spawning stock biomass (SSB) of 12,361 tonnes toothfish and a $SSB_{2024}/SSB_0$ ratio of 0.498 – the $SSB_{2024}/SSB_0$ ratio being higher than last year's estimate and above the upper target reference point of 0.45. However, $SSB/SSB_0$ projections under the current TAC still showed a decrease below 0.45 within ten years, and a TAC increase could therefore not be proposed in accordance with the Harvest Control Rules. The TAC for 2026 is maintained at 1040 tonnes.

Skate (Rajiformes) total catch in 2024 of 2,017 tonnes was the highest since 2018. Skate target fishing (F licence) has not been resumed since 2020. Given the hiatus in skate target fishing, and the change in regulatory trawl mesh size since the last skate target fishery, the previously implemented Vessel Unit protocol for F licence was discontinued again for 2026. Instead, the same recommendation as last year was applied by default: that a skate TAC of 500 tonnes may be allocated, on condition of use of the new regulatory trawl mesh, an approved fishing plan, and continuance of the exclusion zone to skate target fishing south of 51°S latitude.

Southern blue whiting (*Micromesistius australis*) in-zone commercial catches in 2024 were the second-highest of the last five years at 152.7 tonnes, but far below the long-term average. Of this catch total, 103.3 tonnes were reported under A licence, 41.6 tonnes under W licence, 7.6 tonnes under C licence, and 0.3 tonnes under G licence. Prospective S licence fishing was not taken up in 2024. Accordingly, the statutory S licence TAC of 2,000 metric tonnes is rolled forward again for 2026, but may be augmented if an approved joint commercial-exploratory fishery is reprised this year or next year.

We are grateful to the scientific observers of the FIFD for data collection and to data management staff for processing catch reports from fishing vessels. We also thank our local and overseas-partner fishing companies for their cooperation in providing timely and informative fisheries data.

# 2. *Doryteuthis gahi* (*Loligo*) – Falkland calamari

## 2.1. Management and stock trends

The targeted fishery for Falkland calamari (*Doryteuthis gahi* – colloquially *Loligo*) is managed through two levels of control: 1) season schedule and 2) total biomass to a minimum escapement threshold per season. Season schedules are currently set as: 1st season (C licence), 64/65 days opening from late February; 2nd season (X licence), 64 days from late July. Since 2013 a flexible option also allows vessels to defer as many as 6 fishing days for bad weather or mechanical issues, which are then added back as compensatory days at the end of the season. In either 1st or 2nd season the minimum escapement threshold is set at 10,000 tonnes biomass (Barton 2002, Arkhipkin et al. 2008). If in-season depletion models project that calamari biomass will fall below 10,000 tonnes, the fishery may be suspended or stopped before the scheduled end date of the season.

With the use of these controls, actual Vessel Units (VU) play a nominal role in determining the effort allocation to the Falkland calamari fishery. As long as no significant decline in stock biomass is anticipated, all licenced vessels can expect to fish for the duration of the season (except vessels restricted to fixed proportions of the season based on their replacement categories; see below). Vessel allocations are calculated from 1st seasons, given the schedule for publishing licencing advice. Four of the last five 1st seasons were among the five highest for catch and CPUE since at least 2004, when catch management was assumed by the FIFD – although the most recent 1st season is closer to median (Skeljo and Winter 2025). Concurrently abundant biomasses are reflected in zero to low risks of season-end escapement failure (Table 2.1).

Table 2.1. Catches, estimated biomass, escapement risks, and VU allocations of Falkland calamari 1st seasons 2021-2025.

| Year | 1st season calamari catch (t) | 1st season calamari biomass (t)[a] | Risk of <10,000 t escapement | Total VU allocation |
|---|---|---|---|---|
| 2021 | 59,499 | 165,172 | 0.000 | |
| 2022 | 56,080 | 274,651 | 0.000 | |
| 2023 | 52,704 | 190,210 | 0.000 | 27.01 |
| 2024 | 47,588 | 177,576 | 0.000 | |
| 2025 | 37,492 | 83,179 | 0.001 | |

a: Biomass estimate at the start of the season, plus in-season immigration. (Calculation differs from last year, when the pre-season survey biomass estimate plus in-season immigration was used).

## 2.2. Vessel units and q-values.

As in previous years (e.g., Section 2 in FIFD 2024), the total VU allocation for 2026 was set as the average of the preceding three years (Table 2.1). Given that this procedure has been followed for a number of years, the total VU allocation at this point is essentially a fixed value of 27.01.

Total VU allocation was partitioned among licenced vessels in proportion to the GT category-averaged catchability coefficients (q values). Catchability coefficients represent the efficiency of a vessel at fishing (Arreguín-Sánchez 1996), and are calculated as catch per unit effort per available biomass. To smooth variations within seasons, catchability coefficients

were averaged over the most recent three years 2023 to 2025 (Table 2.2). Since 2016 catchability coefficients have been calculated only on unsubstituted vessels, i.e. excluding vessels that had been entered as short-term substitutes for logistic or mechanical reasons. Substitute vessels may be less experienced in the fishery and therefore have lower catch efficiency independently of their GT category.

Table 2.2. Parameters for average q-value calculations. Trends were visualized for the five years 2021 - 2025; q averages were calculated for the most recent three years 2023 – 2025.

| Parameter | GT Cat | Year | | | | | 3-year average |
|---|---|---|---|---|---|---|---|
| | | 2021 | 2022 | 2023 | 2024 | 2025 | |
| Biomass | | 165,172 | 274,651 | 190,210 | 177,576 | 83,179 | |
| Catch (t) | 4 | 15946.3 | 15864.5 | 14653.7 | 12936.4 | 9031.2 | |
| | 5 | 15570.2 | 14902.5 | 14461.9 | 9585.1 | 6964.8 | |
| | 6 | 19196.3 | 17752.6 | 16632.9 | 18881.4 | 18726.1 | |
| | 7 | 8450.5 | 7561.0 | 6464.9 | 5986.7 | 2469.5 | |
| Fishing days | 4 | 283 | 299 | 307 | 295 | 222 | |
| | 5 | 217 | 242 | 184 | 183 | 167 | |
| | 6 | 273 | 307 | 351 | 371 | 441 | |
| | 7 | 110 | 115 | 115 | 115 | 57 | |
| CPUE (t day$^{-1}$) | 4 | 56.3 | 53.1 | 47.7 | 43.9 | 40.7 | |
| | 5 | 71.8 | 61.6 | 57.6 | 52.4 | 41.7 | |
| | 6 | 70.3 | 57.8 | 58.4 | 50.9 | 42.5 | |
| | 7 | 76.8 | 65.7 | 56.2 | 52.1 | 43.3 | |
| Catchability (q) | 4 | 3.41e-4 | 1.93e-4 | 2.51e-4 | 2.47e-4 | 4.89e-4 | 3.29e-4 |
| | 5 | 4.34e-4 | 2.24e-4 | 3.03e-4 | 2.95e-4 | 5.01e-4 | 3.66e-4 |
| | 6 | 4.26e-4 | 2.11e-4 | 3.07e-4 | 2.87e-4 | 5.10e-4 | 3.68e-4 |
| | 7 | 4.65e-4 | 2.39e-4 | 2.96e-4 | 2.93e-4 | 5.21e-4 | 3.70e-4 |

Table 2.3. VU allocations per vessel.

| Vessel Callsign | GT category | GT avg. q | VU allocation |
|---|---|---|---|
| EAPW | 6 | 3.68e-4 | 1.76 |
| ZDLC1 | 4 | 3.29e-4 | 1.57 |
| ZDLC4 | 4 | 3.29e-4 | 1.57 |
| ZDLD4 | 5 | 3.66e-4 | 1.75 |
| ZDLE1 | 6 | 3.68e-4 | 1.76 |
| ZDLF2 [a] | 6 | 3.58e-4 | [a] 1.71 |
| ZDLM3 [b] | 4 | 3.03e-4 | [b] 1.44 |
| ZDLO1 | 6 | 3.68e-4 | 1.76 |
| ZDLP1 [c] | 5 | 3.32e-4 | [c] 1.59 |
| ZDLR1 | 6 | 3.68e-4 | 1.76 |
| ZDLS3 | 5 | 3.66e-4 | 1.75 |
| ZDLS4 | 6 | 3.68e-4 | 1.76 |
| ZDLT4 | 6 | 3.68e-4 | 1.76 |
| ZDLW3 | 4 | 3.29e-4 | 1.57 |
| ZDLZ | 7 | 3.70e-4 | 1.77 |
| ZDLZ1 | 6 | 3.68e-4 | 1.76 |
| | | | 27.01 |

[a] Refit to category 6 from category 5, restricted to 1.73/1.78 of the season (FIFD 2024).
[b] Replacing a category 3 vessel, restricted to 1.32/1.44 of the season (FIFD 2019).
[c] Three-way replacement, restricted to 1.65/1.82 of the season (2025).

One category 5 vessel was refit to category 6, and is restricted to 97% of the season to offset its higher fishing capacity. One category 4 vessel has been licenced to replace a category 3 vessel since 2019, and is restricted to 92% of the season to offset its higher fishing capacity. A category 5 vessel is restricted to 91% of the season following a 3-way replacement (Table 2.3). By agreement in the Fisheries Advisory Committee (Winter and Ross 2022a, b), allocation restrictions for inter-category vessel replacements are kept to fixed percentages going forward.

Note that in contrast to the two previous years, the 3-year average has reverted to higher catchability q, and therefore VU allocation, for the larger category 6 vessels than category 5 vessels (Table 2.2, Table 2.3). The coefficient of variation (standard deviation / mean) among GT category VUs (here, cf. Table 2.3, cv (1.57, 1.75, 1.76, 1.77) = 0.0557) has decreased each of the last seven years, indicating that GT categories have been getting progressively less differentiated in their catch power.

## 2.3. References.


Arkhipkin, A.I., Middleton, D.A.J., Barton, J. 2008. Management and conservation of a short-lived fishery resource: *Loligo gahi* around the Falkland Islands. American Fisheries Society Symposium 49:1243-1252.

Arreguín-Sánchez, F. 1996. Catchability: a key parameter for fish stock assessment. Reviews in Fish Biology and Fisheries 6:221-242.

Barton, J. 2002. Fisheries and fisheries management in Falkland Islands Conservation Zones. Aquatic Conservation: Marine and Freshwater Ecosystems 12:127-135.

FIFD. 2019. Vessel Units, Allowable Effort, and Allowable Catch 2020. Part I. Summary and recommendations. Fisheries Dept., Directorate of Natural Resources, Falkland Islands Government, 21 p.

FIFD. 2024. Vessel Units, Allowable Effort, and Allowable Catch 2025. Summary and Recommendations. Fisheries Dept., Directorate of Natural Resources, Falkland Islands Government, 20 p.

Skeljo, F., Winter, A. 2025. 2025 1st Season Stock Assessment of Falkland calamari (*Doryteuthis gahi*). Technical Document, Falkland Islands Fisheries Department. 35 p.

Winter, A., Ross, S. 2022a. VU options for permanent vessel replacement in the Falkland Islands calamari (*Doryteuthis gahi*) fishery. Fisheries Advisory Committee paper, June 2022, 3 p.

Winter, A., Ross, S. 2022b. VU options for permanent vessel replacement in the Falkland Islands calamari (*Doryteuthis gahi*) fishery. Fisheries Advisory Committee paper, September 2022, 3 p.

# 3. Finfish

## 3.1. Introduction

Finfish trawl catch in the Falkland Islands is allocated by three licences: A (unrestricted finfish), G (*Illex* squid and restricted finfish), and W (restricted finfish). Specialized fisheries for toothfish, skates and surimi are separately allocated by L, F and S licences. In 2024, catch of major commercial species by A, G and W licences totalled 66973.3 tonnes (Table 3.1), slightly lower than the year before.

Table 3.1. Catches in 2024 of commercial species targeted by finfish licences. Licence A/G means the vessel declared both A and G licences on a given fishing day.

| Species | Catch by Licence (tonnes) | | | | Total |
|---|---|---|---|---|---|
| | A | A/G | G | W | |
| Common hake | 48462.2 | 777.8 | 4222.6 | 387.5 | 53850.1 |
| Southern hake | 20.9 | 0.0 | 0.0 | 25.0 | 46.0 |
| *Illex* squid | 169.0 | 2348.5 | 5085.5 | 43.8 | 7646.8 |
| Southern blue whiting | 103.3 | 0.0 | 0.3 | 41.6 | 145.1 |
| Hoki | 686.6 | 0.1 | 67.9 | 1713.0 | 2467.6 |
| Red cod | 644.9 | 27.3 | 68.5 | 90.5 | 831.2 |
| Kingclip | 849.3 | 52.7 | 196.0 | 44.7 | 1142.5 |
| Rock cod | 535.1 | 23.0 | 178.6 | 107.3 | 844.0 |
| | 51471.3 | 3229.2 | 9819.3 | 2453.5 | 66973.3 |

Finfish licence allocations for 2022 – 2024 had been set by Total Allowable Effort (TAE) adjusted with target proportion, TAC proportion, and stock abundance factors (FIFD 2021, 2022, 2023). The same allocation algorithms as before were initially calculated for 2025, but the TAC proportion factor was found to become increasingly contra-indicative for A licence as this factor decreases not because A licence is fishing worse, but because G and W licences are fishing better at avoiding non-allocated hake bycatches (Winter et al. 2024). It was therefore proposed to the fishing industry (Fisheries Advisory Committee, June 2024) that instead of implementing the calculated finfish allocations for 2025 (Winter and Ramos 2024), to 'freeze' the 2025 finfish allocations at the same level as 2024 pending a more comprehensive revision of the finfish allocation protocol (Winter et al. 2024). This measure was adopted for 2025, and has now been reiterated for 2026 as finfish revision continues to be in progress (Winter et al. 2025).

Accordingly, finfish Vessel Units (VU) are set the same for 2026 as they are for 2025 and 2024 (FI Gazette 2024).

## 3.2. Vessel Units and Fishing Time

Vessel Units (VU), originally a calculation of catchability ×biomass × effort, represent a metric of the fishing effort expected to yield a standard level of catch of the target species. VUs are then used to apportion the total effort allocation into fishing time. A, G and W-licence VUs were reiterated from 2024 to 2026 (Table 3.2).

Table 3.2. Vessel Units comparing 2021 to 2026.

| Licence | 2021 VU | 2022 VU | 2023 VU | 2024 VU | 2025 VU | 2026 VU |
|---|---|---|---|---|---|---|
| A | 12.20 | 22.39 | 23.93 | 22.83 | 22.83 | 22.83 |
| G | 12.77 | 7.34 | 11.26 | 10.14 | 10.14 | 10.14 |
| W | 14.27 | 4.01 | 3.60 | 6.07 | 6.07 | 6.07 |

VUs are translated to fishing time (vessel-days or vessel-months) by the vessel-units per month (VUMs), which are a function of catchability and available fish biomass. In the current TAE/TAC formulation VUMs are considered practically constant, as finfish catchability is assumed to not fundamentally change, and available fish biomass is calculated in relation to the allowed catch (Winter and Ramos 2023, 2024). Differences in fishing time allocated for years since 2021 are therefore directly proportional to VU differences from 2021 (Table 3.2):

Table 3.3. Fishing effort VUM and allocated fishing time in vessel-months by GT category, for A licence, 2017 to 2026.

| GT category | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 |
|---|---|---|---|---|---|---|---|---|---|---|
| Fishing effort VUM | | | | | | | | | | |
| 3 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 |
| 4 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 |
| 5 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 |
| 6 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 |
| 7 | | | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 |
| Fishing time vessel-months | | | | | | | | | | |
| 3 | 26.5 | 26.6 | 26.6 | 26.6 | 26.6 | 48.7 | 52.0 | 49.6 | 49.6 | 49.6 |
| 4 | 26.5 | 26.6 | 26.6 | 26.6 | 26.6 | 48.7 | 52.0 | 49.6 | 49.6 | 49.6 |
| 5 | 26.5 | 26.6 | 26.6 | 26.6 | 26.6 | 48.7 | 52.0 | 49.6 | 49.6 | 49.6 |
| 6 | 26.5 | 26.6 | 26.6 | 26.6 | 26.6 | 48.7 | 52.0 | 49.6 | 49.6 | 49.6 |
| 7 | | | 26.6 | 26.6 | 26.6 | 48.7 | 52.0 | 49.6 | 49.6 | 49.6 |

Table 3.4. Fishing effort VUM and allocated fishing time in vessel-months by GT category, for G licence, 2017 to 2026.

| GT category | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 |
|---|---|---|---|---|---|---|---|---|---|---|
| Fishing effort VUM | | | | | | | | | | |
| 3 | 0.40 | 0.40 | 0.38 | 0.38 | 0.38 | 0.38 | 0.38 | 0.38 | 0.38 | 0.38 |
| 4 | 0.68 | 0.68 | 0.73 | 0.73 | 0.73 | 0.73 | 0.73 | 0.73 | 0.73 | 0.73 |
| 5 | 0.96 | 0.96 | 1.07 | 1.07 | 1.07 | 1.07 | 1.07 | 1.07 | 1.07 | 1.07 |
| 6 | 1.25 | 1.25 | 1.42 | 1.42 | 1.42 | 1.42 | 1.42 | 1.42 | 1.42 | 1.42 |
| 7 | | | 1.76 | 1.76 | 1.76 | 1.76 | 1.76 | 1.76 | 1.76 | 1.76 |
| Fishing time vessel-months | | | | | | | | | | |
| 3 | 44.8 | 38.1 | 40.0 | 35.2 | 33.4 | 19.3 | 29.6 | 26.7 | 26.7 | 26.7 |
| 4 | 26.3 | 22.4 | 21.0 | 18.5 | 17.5 | 10.1 | 15.4 | 13.9 | 13.9 | 13.9 |
| 5 | 18.7 | 15.9 | 14.3 | 12.6 | 11.9 | 6.9 | 10.5 | 9.5 | 9.5 | 9.5 |
| 6 | 14.5 | 12.3 | 10.8 | 9.5 | 9.0 | 5.2 | 7.9 | 7.1 | 7.1 | 7.1 |
| 7 | | | 8.7 | 7.7 | 7.3 | 4.2 | 6.4 | 5.8 | 5.8 | 5.8 |

Table 3.5. Fishing effort VUM and allocated fishing time in vessel-months by GT category, for W licence, 2017 to 2026.

| GT category | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 |
|---|---|---|---|---|---|---|---|---|---|---|
| Fishing effort VUM | | | | | | | | | | |
| 3 | 0.31 | 0.31 | 0.40 | 0.40 | 0.40 | 0.40 | 0.40 | 0.40 | 0.40 | 0.40 |
| 4 | 0.49 | 0.49 | 0.56 | 0.56 | 0.56 | 0.56 | 0.56 | 0.56 | 0.56 | 0.56 |
| 5 | 0.66 | 0.66 | 0.72 | 0.72 | 0.72 | 0.72 | 0.72 | 0.72 | 0.72 | 0.72 |
| 6 | 0.84 | 0.84 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 |
| 7 | | | 1.03 | 1.03 | 1.03 | 1.03 | 1.03 | 1.03 | 1.03 | 1.03 |
| Fishing time vessel-months | | | | | | | | | | |
| 3 | 64.0 | 54.4 | 42.5 | 37.4 | 35.5 | 10.0 | 09.0 | 15.2 | 15.2 | 15.2 |
| 4 | 41.2 | 35.0 | 30.5 | 26.9 | 25.4 | 7.2 | 06.4 | 10.8 | 10.8 | 10.8 |
| 5 | 30.3 | 25.8 | 23.8 | 21.0 | 19.9 | 5.6 | 05.0 | 08.4 | 08.4 | 8.4 |
| 6 | 24.0 | 20.4 | 19.5 | 17.2 | 16.3 | 4.6 | 04.1 | 06.9 | 06.9 | 6.9 |
| 7 | | | 16.5 | 14.5 | 13.8 | 3.9 | 03.5 | 05.9 | 05.9 | 5.9 |

Note that GT categories are equalized for A licence, as previous analyses (FIFD 2018) showed no statistically significant correlation between GT and VU of individual vessels under A licence. Also note that VUM and vessel-months per category are alternate (not additive) total outcomes, for example, the W-licence fishery could be taken entirely by Category 3 vessels fishing a total of 15.2 vessel-months or by Category 4 vessels fishing a total of 10.8 vessel-months or by Category 5 vessels fishing a total of 8.4 vessel months, etc.; or any fractional combination of these categories.

For summary purposes (H. Guille, Njord Consulting Ltd, pers. comm.), a nominal total of allocated fishing days has also been calculated for each licence, defined as the vessel-days equivalent to the vessel-months (×30.5), average-weighted by the number of fishing days per GT category actually carried out in the preceding year 2024 (Tables 3.6, 3.7, 3.8). Note that in this case the nominal totals do differ from the year before (FIFD 2024), as realized numbers of fishing days per GT category were not the same in 2024 as in 2023.

Table 3.6. A licence summary of vessel days and fishing days. V-months / v-days are equivalent to Table 3.3.

| GT category | 2026 | | 2024 |
|---|---|---|---|
| | v-months | v-days | fishing days |
| 3 | 49.6 | 1513.7 | 459 |
| 4 | 49.6 | 1513.7 | 454 |
| 5 | 49.6 | 1513.7 | 466 |
| 6 | 49.6 | 1513.7 | 31 |
| 7 | 49.6 | 1513.7 | 0 |

Table 3.7. G licence summary of vessel days and fishing days. V-months / v-days are equivalent to Table 3.4.

| GT category | 2026 | | 2024 |
|---|---|---|---|
| | v-months | v-days | fishing days |
| 3 | 26.7 | 813.9 | 105 |
| 4 | 13.9 | 423.7 | 164 |
| 5 | 9.5 | 289.0 | 107 |
| 6 | 7.1 | 217.8 | 1 |
| 7 | 5.8 | 175.7 | 0 |

Table 3.8. W licence summary of vessel days and fishing days. V-months / v-days are equivalent to Table 3.5.

| GT category | 2026 | | 2024 |
|---|---|---|---|
| | v-months | v-days | fishing days |
| 3 | 15.2 | 462.8 | 33 |
| 4 | 10.8 | 330.6 | 42 |
| 5 | 8.4 | 257.1 | 26 |
| 6 | 6.9 | 210.4 | 0 |
| 7 | 5.9 | 179.7 | 0 |

Summary A days =

$$\frac{(1513.7 \times 459) + (1513.7 \times 454) + (1513.7 \times 466) + (1513.7 \times 31) + (1513.7 \times 0)}{(459 + 454 + 466 + 31 + 0)}$$

= 1513.7

Summary G days =

$$\frac{(813.9 \times 105) + (423.7 \times 164) + (289.0 \times 107) + (217.8 \times 1) + (175.7 \times 0)}{(105 + 164 + 107 + 1 + 0)}$$

= 493.6

Summary W days =

$$\frac{(462.8 \times 33) + (330.6 \times 42) + (257.1 \times 26) + (210.4 \times 0) + (179.7 \times 0)}{(33 + 42 + 26 + 0 + 0)}$$

= 354.9

### 3.3. References


Falkland Islands Fisheries Department (FIFD). 2018. Vessel Units, Allowable Effort, and Allowable Catch 2019. Summary and recommendations. Fisheries Dept., Directorate of Natural Resources, Falkland Islands Government, 21 p.

Falkland Islands Fisheries Department (FIFD). 2021. Vessel Units, Allowable Effort, and Allowable Catch 2022. Summary and recommendations. Fisheries Dept., Directorate of Natural Resources, Falkland Islands Government, 19 p.

Falkland Islands Fisheries Department (FIFD). 2022. Vessel Units, Allowable Effort, and Allowable Catch 2023. Summary and recommendations. Fisheries Dept., Directorate of Natural Resources, Falkland Islands Government, 18 p.

Falkland Islands Fisheries Department (FIFD). 2023. Vessel Units, Allowable Effort, and Allowable Catch 2024. Summary and recommendations. Fisheries Dept., Directorate of Natural Resources, Falkland Islands Government, 19 p.

Falkland Islands Fisheries Department (FIFD). 2024. Vessel Units, Allowable Effort, and Allowable Catch 2025. Summary and recommendations. Fisheries Dept., Directorate of Natural Resources, Falkland Islands Government, 20 p.

Falkland Islands Gazette (2024). Volume 133, No. 15. Notices No. 68, 69, 70.

Winter, A., Ramos, J.E. 2023. Finfish licencing advice 2024. Fisheries Advisory Committee paper, June 2023, 16 p.

Winter, A., Ramos, J.E. 2024. Finfish licencing advice 2025. I. Calculations. Fisheries Advisory Committee paper, June 2024, 20 p.

Winter, A., Clausen, A.P., Jenkins, M. 2024. Finfish licencing advice 2025 II. Management options. Fisheries Advisory Committee paper, June 2024, 5 p.

Winter, A., Jenkins, M., Wilson, J. 2025. Finfish Licencing Advice 2026. Fisheries Advisory Committee paper, June 2025, 3 p.

# 4. *Dissostichus eleginoides* – Patagonian toothfish

## 4.1. Introduction

The targeted longline fishery for Patagonian toothfish (*Dissostichus eleginoides*) is listed under L licence and managed through total allowable catch (TAC). Besides the targeted longline fishery, toothfish are bycatch in finfish and calamari trawl fisheries. In the finfish fishery, toothfish are a commercially valuable bycatch; in the calamari fishery, toothfish are typically discarded due to the small size of the specimens.

Toothfish stock assessment is conducted using an integrated model implemented in CASAL software (Bull *et al.* 2012). The model integrates catch, effort, and tag recapture data reported by fisheries, with toothfish age, length and maturity data collected by observers during the commercial trips and research surveys. Toothfish tag-release and tag-recapture data were introduced into the model for the first time in the 2023 assessment; tag-recapture data were used as an index of absolute abundance, thus reducing model reliance on the commercial CPUE data. The main observations used to inform the model are catch-at-age data for Spanish-system longline, umbrella-system longline, finfish trawl and calamari trawl fisheries, catch-at-age data for groundfish survey and calamari pre-season survey, CPUE data for Spanish- and umbrella-system longline, and tag-recapture data for the umbrella-system longline. CPUE is standardized across several covariates (individual vessel, month, soak time, depth, and fishing area).

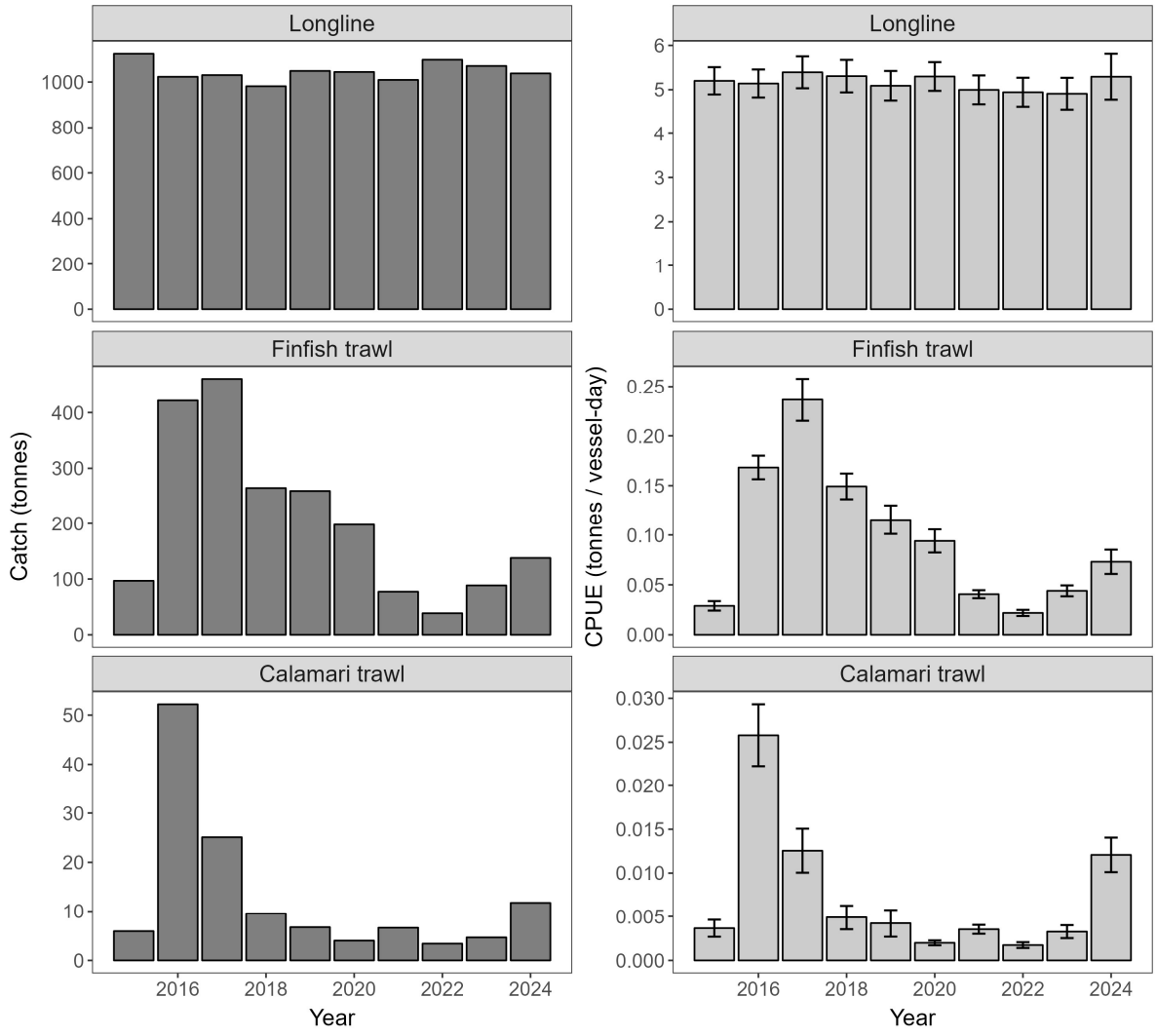

Figure 4.1 [previous page]. Time series of toothfish catches (left) and observed CPUE (right) for longline, finfish trawl and calamari trawl fisheries. Error bars are 95% confidence intervals of the mean observed CPUE.

In 2024, a total of 1,194.7 t of toothfish was caught in the FCZ, with 1040.4 t (87.1%) taken by the targeted longline fishery, 137.9 t (11.5%) by finfish trawl and 11.8 t (1.0%) by the calamari trawl fishery. A further 4.7 t (0.4%) was caught during research surveys. Toothfish bycatch in finfish and calamari trawl fisheries increased for a second consecutive year, although it is still well below the 2016-2017 peak (Figure 1).

### 4.2. Stock assessment estimates

Model estimates (with 95% credible intervals) of initial spawning stock biomass ($SSB_0$), current spawning stock biomass ($SSB_{2024}$) and current spawning stock biomass relative to $SSB_0$ ($SSB_{2024}/SSB_0$) are given in Table 4.1. Compared to the previous assessment, the current model resulted in a slightly higher estimate of absolute SSB and a lower estimate of relative SSB across the time series; however, differences were never more than a few percent in any year. The SBB ratio in the most recent year was almost the same in the current ($SSB_{2024}/SSB_0$ = 0.498) and the previous assessment ($SSB_{2023}/SSB_0$ = 0.491). This was not unexpected, as there were no major changes to the model structure or assumptions compared to the previous year, and the data updates through 2024 didn't suggest notably different trends. A comparative analysis indicated that 2024 CPUE data favoured slightly more optimistic estimates of the SSB ratio, catch-at-age data had almost negligible effect, and tag recapture data favoured slightly more pessimistic estimates. Deterministic MSY was estimated at 1,720 t, similar to the 2024 assessment (1,699 t).

Table 4.1. Model estimates (with 95% credible intervals) of $SSB_0$, $SSB_{2024}$ and $SSB_{2024}/SSB_0$.

| $SSB_0$ | $SSB_{2024}$ | $SSB_{2024}/SSB_0$ |
|---|---|---|
| 24,813 (23,191 - 27,219) | 12,361 (10,841 - 14,823) | 0.498 (0.467 - 0.549) |

The future projections of $SSB/SSB_0$ in the current assessment were similar to those in the previous assessment (Skeljo and Winter 2024), with an anticipated drop from the *expansion range* to the *target range*. The projected drop is a response to a series of weak recruitments estimated by the model (below-average YCS in 2018-2020) and supported by an independent analysis (Lee *et al.* 2021). However, the projection was slightly more optimistic than in the previous assessment, with stock projected to remain below the *expansion range* for a shorter period (2032-2040 compared to 2029-2045 in the previous assessment). This change is partially due to a higher estimate of $SSB_{current}/SSB_0$ in the current model. The model estimate was the starting point for the projections, and everything else being the same, it would take the projected $SSB/SSB_0$ longer to drop below 0.45 when starting from a higher $SSB_{current}/SSB_0$ value. The projected $SSB/SSB_0$ recovery to the *expansion range* earlier than in the previous assessment is likely due to a slightly higher estimated recruitment strength in 2021 (last year with model-estimated YCS in the current model) compared to 2020 (last year with model-estimated YCS in the previous model).

Given the influence of recent recruitment strengths on model projections, close monitoring of juvenile toothfish abundance during research surveys and commercial calamari

fishing seasons needs to be emphasised. Protection of high recruitment age-0 cohorts while on the shelf via spatiotemporal management of the calamari trawl fishery has been proposed (Skeljo 2023), and a protocol was established in early 2024. However, no noticeable recruitment of age-0 toothfish into calamari fishery grounds occurred in 2024 or 2025, and the protocol has not been tested in practice yet.

### 4.3. Management advice

Management advice is based on the harvest control rules (HCR) established for the Falkland Islands toothfish longline fishery (Farrugia and Winter 2018). The estimated $SSB_{2024}/SSB_0$ ratio of 0.498 was above *the upper target reference point* (0.45), i.e. in the *expansion range*; projections from the current model indicated that the $SSB/SSB_0$ ratio will drop and remain in the *target range* during 2032-2040. The year 2024 was the fifth consecutive year with $SSB_{current}/SSB_0$ estimated to be in the *expansion range;* however, since $SSB/SSB_0$ projections under the current TAC showed a decrease below 0.45 within ten years, no alteration of TAC was anticipated by HCR at this point.

The recommendation is to maintain the toothfish annual TAC in the longline fishery at its current level of 1,040 tonnes.

### 4.4. References

Bull, B., Francis, R.I.C.C., Dunn, A., McKenzie, A., Gilbert, D.J., Smith, M.H., Bian, R., Fu, D. 2012. CASAL (C++ algorithmic stock assessment laboratory): CASAL User Manual v2.30-2012/03/21. NIWA Technical Report 135, 275 p.

Lee, B., Arkhipkin, A., Randhawa, H. 2021. Environmental drivers of Patagonian toothfish (*Dissostichus eleginoides*) spatial-temporal patterns during an ontogenetic migration on the Patagonian Shelf. Estuarine, Coastal and Shelf Science 259, 107473.

Farrugia, T.J., Winter, A. 2018. 2017 Stock Assessment Report for Patagonian toothfish, Fisheries Report SA-2017-TOO. Fisheries Department, Directorate of Natural Resources, Falkland Islands Government, 35 p.

Skeljo F. 2023. Patagonian toothfish (*Dissostichus eleginoides*) bycatch in the calamari trawl fishery (2012 - 2021). Fisheries Report BY-2023-TOO. Fisheries Department, Directorate of Natural Resources, Falkland Islands Government, 50 p.

Skeljo, F., Winter, A. 2024. Stock assessment of Patagonian toothfish (*Dissostichus eleginoides*) in the Falkland Islands to 2023. Fisheries Report SA-2023-TOO. Fisheries Department, Directorate of Natural Resources, Falkland Islands Government, 46 p.

# 5. Rajiformes – Skates

## 5.1. Management and stock trends

Skate (Rajiformes) are since 1994 licenced separately from other groundfish trawl fisheries in the Falkland Islands (F licence). The skate fishery has been regulated by total allowable effort (TAE) of licenced vessels. A large proportion of skate catch is routinely taken in finfish trawls, while skate-licenced vessels may take large amounts of groundfish other than skate.

Total catch of skate in 2024 was the highest since 2018, and non-target skate catch was the highest since 2017 (Figure 5.1). 2024 was also the fourth consecutive year on record with a complete absence of skate catch under target (F) licence, which had been decreasing continually since 2014 (Figure 5.1). A new catch / effort-based stock assessment was again not calculated in 2025. Most skate in 2024 was caught under finfish (A, G and W) licences, but representing no more than low single-digit percentages of the total commercial catches of these licences (Table 5.1). The most recent stock assessment (Winter 2018) showed stable trends of the skate stock, while reviews of the skate assemblage (Arkhipkin et al. 2012, Winter et al. 2015) noted high population abundance, species diversity, and habitat structure. In contrast, an analysis of skate surveys indicated that since 2013 (the latest year examined by Winter et al. 2015) skate biomass in Falkland Islands waters may have decreased by 45% to 70% overall, with most individual species showing declines (Winter 2022, Winter and Arkhipkin 2023).

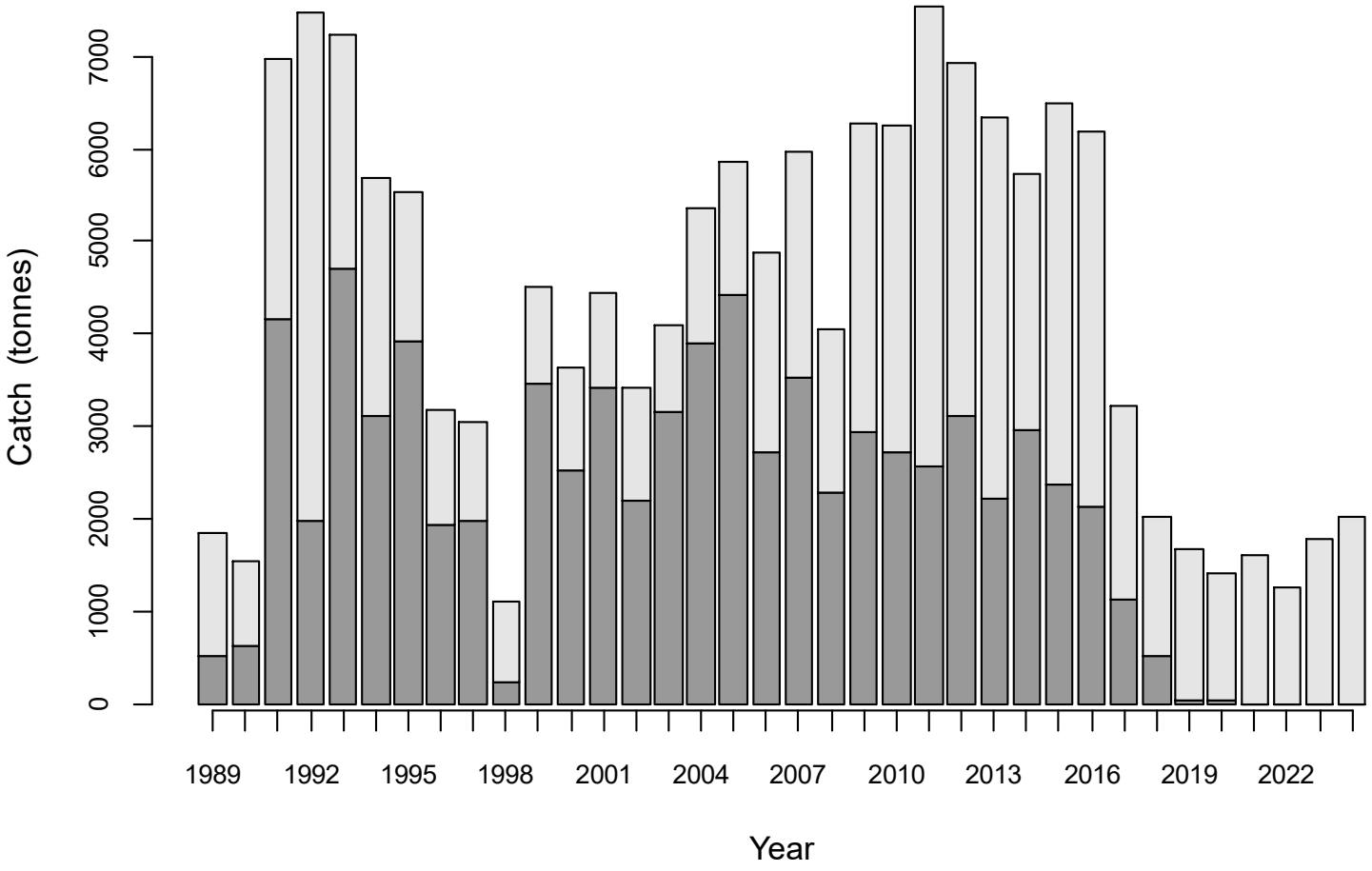


Figure 5.1. Target-licence catches (dark) and all catches (light grey) of skates, 1989 to 2024.

Table 5.1. Skate catch by fishing licence in 2024, and percentage that skate represented of each licence's total commercial catch. Licence A/G means the vessel declared both A and G licences on a given fishing day. Percentages of commercial catch exclude jig fishing (B and O licences), as jig fishing never catches skate.

| Licence | Tonnes | % of commercial species catch |
|---|---|---|
| A | 1670.1 | 3.1 |
| A/G | 33.4 | 1.0 |
| B* | 0.0 | – |
| C | 8.6 | < 0.1 |
| E | 4.3 | 0.2 |
| G | 123.0 | 1.2 |
| L | 42.9 | 3.7 |
| O* | 78.4 | 0.5 |
| W | 56.3 | 2.2 |
| Total | 2017.1 | 1.5 |

* Excluding jig fishing.

## 5.2. Allowable effort and catch

The general aim of Licencing Advice is to maintain fisheries at sustainable catch levels while mitigating year-to-year fluctuations in allocated effort. Vessel Units (VU) are therefore calculated over three-year rolling averages (FIFD 2023). However, the speculative use of F licence in recent years has made the VU protocol impractical. Before ceasing completely in 2021, 59 fishing days under F licence were recorded in 2020, of which only 2 reported >50% skate in the catch and only 12 reported even >10% skate in the catch. The year before, in 2019, a total of 27 fishing days were recorded under F licence, of which 9 reported >50% skate in the catch and 13 reported >10% skate in the catch. Furthermore, a regulatory minimum codend mesh size of 400 mm for skate target trawling, established in 2021 (Arkhipkin et al. 2021) (and thus never used commercially) would prevent any straightforward catch-per-unit-effort comparison with previous years.

The skate survey analysis recommended that with as much as 70% reduction of biomass, a precautionary limit on catch should be 30% of the most recent calculated MSY, which after deduction of bycatch, would leave approximately 500 tonnes TAC for F licence (Winter 2022). As no skate target fishing is being taken in 2025, and no more recent stock assessment data are available, the 500 tonne TAC is continued for next year. Fishing this 500 tonne TAC should require use of the regulatory 400 mm mesh trawl codend, and should continue to be excluded from south of 51°S latitude, established as a skate conservation area since 1996 (Agnew et al. 1999).

As noted above, setting a corresponding fishing days allocation is impeded by the lack of comparability with previous skate trawl effort using smaller mesh. For 2023, a nominal maximum effort allocation of 114 days was set based on previous years (FIFD 2022). For 2024, 2025, and now 2026, the 114-day effort allocation is continued by default, but in practice, any resumption of F licence skate target fishing in 2026 will require an approved fishing plan.

## 5.3. References

Agnew, D.J., Nolan, C.P., Pompert, J. 1999. Management of the Falkland Islands skate and ray fishery. In: Case studies of the Management of Elasmobranch Fisheries (R. Shotton, ed.), FAO, Rome, pp. 268-284.

Arkhipkin, A., Brickle, P., Laptikhovsky, V., Pompert, J., Winter, A. 2012. Skate assemblage on the eastern Patagonian Shelf and Slope: structure, diversity and abundance. Journal of Fish Biology 80:1704-1726.

Arkhipkin, A., Skeljo, F., Wallace, J., Derbyshire, C., Goyot, L., Trevizan, T., Winter, A. 2021. Industry-collaborative mesh trials to reduce bycatch in the Falkland Islands skate trawl fishery (Southwest Atlantic). ICES Journal of Marine Science 80: 578–590.

FIFD. 2022. Vessel Units, Allowable Effort, and Allowable Catch 2022. Summary and recommendations. Fisheries Dept., Directorate of Natural Resources, Falkland Islands Government, 18 p.

FIFD. 2023. Vessel Units, Allowable Effort, and Allowable Catch 2024. Summary and Recommendations. Fisheries Dept., Directorate of Natural Resources, Falkland Islands Government, 19 p.

Winter, A. 2018. Stock assessment – skates (Rajidae). Technical Report, Falkland Islands Fisheries Department. 14 p.

Winter, A. 2022. Survey estimation of skate biomass. Fisheries Advisory Committee paper, September 2022, 15 p.

Winter, A., Arkhipkin, A. 2023. Opportunistic survey analyses reveal a recent decline of skate (Rajiformes) biomass in Falkland Islands waters. Fishes 8, 24.

Winter, A., Pompert, J., Arkhipkin, A., Brewin, P. 2015. Interannual variability in the skate assemblage on the South Patagonian shelf and slope. Journal of Fish Biology 87: 1449-1468.

# 6. Quick reference guide to VUM/GT Categories

### 6.1. Falkland calamari fishery (C, X)

VU = 27.01 – allows for a standard fleet of 16 vessels.

### 6.2. Finfish fishery (A, G, W)

**VU allocations** for 2021 to 2026.

| Licence | 2021 VU | 2022 VU | 2023 VU | 2024 VU | 2025 VU | 2026 VU |
|---|---|---|---|---|---|---|
| A | 12.20 | 22.39 | 23.93 | 22.83 | 22.83 | 22.83 |
| G | 12.77 | 7.34 | 11.26 | 10.14 | 10.14 | 10.14 |
| W | 14.27 | 4.01 | 3.60 | 6.07 | 6.07 | 6.07 |

**A licence.** Fishing effort VUM and fishing time vessel-months.

| GT category | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 |
|---|---|---|---|---|---|---|---|---|---|---|
| Fishing effort VUM | | | | | | | | | | |
| 3 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 |
| 4 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 |
| 5 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 |
| 6 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 |
| 7 | | | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 |
| Fishing time vessel-months | | | | | | | | | | |
| 3 | 26.5 | 26.6 | 26.6 | 26.6 | 26.6 | 48.7 | 52.0 | 49.6 | 49.6 | 49.6 |
| 4 | 26.5 | 26.6 | 26.6 | 26.6 | 26.6 | 48.7 | 52.0 | 49.6 | 49.6 | 49.6 |
| 5 | 26.5 | 26.6 | 26.6 | 26.6 | 26.6 | 48.7 | 52.0 | 49.6 | 49.6 | 49.6 |
| 6 | 26.5 | 26.6 | 26.6 | 26.6 | 26.6 | 48.7 | 52.0 | 49.6 | 49.6 | 49.6 |
| 7 | | | 26.6 | 26.6 | 26.6 | 48.7 | 52.0 | 49.6 | 49.6 | 49.6 |

**G licence.** Fishing effort VUM and fishing time vessel-months.

| GT category | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 |
|---|---|---|---|---|---|---|---|---|---|---|
| Fishing effort VUM | | | | | | | | | | |
| 3 | 0.40 | 0.40 | 0.38 | 0.38 | 0.38 | 0.38 | 0.38 | 0.38 | 0.38 | 0.38 |
| 4 | 0.68 | 0.68 | 0.73 | 0.73 | 0.73 | 0.73 | 0.73 | 0.73 | 0.73 | 0.73 |
| 5 | 0.96 | 0.96 | 1.07 | 1.07 | 1.07 | 1.07 | 1.07 | 1.07 | 1.07 | 1.07 |
| 6 | 1.25 | 1.25 | 1.42 | 1.42 | 1.42 | 1.42 | 1.42 | 1.42 | 1.42 | 1.42 |
| 7 | | | 1.76 | 1.76 | 1.76 | 1.76 | 1.76 | 1.76 | 1.76 | 1.76 |
| Fishing time vessel-months | | | | | | | | | | |
| 3 | 44.8 | 38.1 | 40.0 | 35.2 | 33.4 | 19.3 | 29.6 | 26.7 | 26.7 | 26.7 |
| 4 | 26.3 | 22.4 | 21.0 | 18.5 | 17.5 | 10.1 | 15.4 | 13.9 | 13.9 | 13.9 |
| 5 | 18.7 | 15.9 | 14.3 | 12.6 | 11.9 | 6.9 | 10.5 | 9.5 | 9.5 | 9.5 |
| 6 | 14.5 | 12.3 | 10.8 | 9.5 | 9.0 | 5.2 | 7.9 | 7.1 | 7.1 | 7.1 |
| 7 | | | 8.7 | 7.7 | 7.3 | 4.2 | 6.4 | 5.8 | 5.8 | 5.8 |

**W licence.** Fishing effort VUM and fishing time vessel-months.

| GT category | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 |
|---|---|---|---|---|---|---|---|---|---|---|
| Fishing effort VUM | | | | | | | | | | |
| 3 | 0.31 | 0.31 | 0.40 | 0.40 | 0.40 | 0.40 | 0.40 | 0.40 | 0.40 | 0.40 |
| 4 | 0.49 | 0.49 | 0.56 | 0.56 | 0.56 | 0.56 | 0.56 | 0.56 | 0.56 | 0.56 |
| 5 | 0.66 | 0.66 | 0.72 | 0.72 | 0.72 | 0.72 | 0.72 | 0.72 | 0.72 | 0.72 |
| 6 | 0.84 | 0.84 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 |
| 7 | | | 1.03 | 1.03 | 1.03 | 1.03 | 1.03 | 1.03 | 1.03 | 1.03 |
| Fishing time vessel-months | | | | | | | | | | |
| 3 | 64.0 | 54.4 | 42.5 | 37.4 | 35.5 | 10.0 | 9.0 | 15.2 | 15.2 | 15.2 |
| 4 | 41.2 | 35.0 | 30.5 | 26.9 | 25.4 | 7.2 | 6.4 | 10.8 | 10.8 | 10.8 |
| 5 | 30.3 | 25.8 | 23.8 | 21.0 | 19.9 | 5.6 | 5.0 | 8.4 | 8.4 | 8.4 |
| 6 | 24.0 | 20.4 | 19.5 | 17.2 | 16.3 | 4.6 | 4.1 | 6.9 | 6.9 | 6.9 |
| 7 | | | 16.5 | 14.5 | 13.8 | 3.9 | 3.5 | 5.9 | 5.9 | 5.9 |

### 6.3. Toothfish longline fishery (L)

TAC – 1,040 tonnes.

### 6.4. Skate fishery (F)

TAC – 500 tonnes, maximum 114 vessel-days pursuant to an approved fishing plan.

### 6.5. Restricted finfish – Pelagic fishery (S)

TAC for southern blue whiting – 2,000 tonnes plus FIFD-approved exploratory fishing.