

## 20. Resources in the Antarctic

Resources in the Antarctic are managed under a convention administered by the Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR). The 2010/11 fishing season started on 1 December 2010 and will end on 30 November 2011. Members' fishing vessels operated in the fisheries targeting icefish (*Champsocephalus gunnari*), toothfish (*Dissostichus eleginoides* and/or *D. mawsoni*) and krill (*Euphausia superba*); no directed fishing occurred on crabs (*Paralomis* spp.) during the season. The reported data are the totals up to 24 September 2011, but at that time fishing was still in progress in some areas at the time of the meeting. The Secretariat monitored a total of 130 catch limits for target species and by-catch species in SSRUs, SSRU groups, management areas, divisions and subareas. This included forecasting fishery closures once the catch of a managed species exceeded 50% of its catch limit. As of 24 September 2011, 16 fishing areas including five fisheries, had been closed by the Secretariat in 2010/11, and all of these closures were triggered by catches of *Dissostichus* spp. approaching their respective catch limits. Catch limit overruns (i.e. the catch exceeded the catch limit) occurred for *Dissostichus* spp. in Division 58.4.1 (SSRU E: overrun 6 tonnes, total catch 113% of the limit; whole fishery: overrun 6 tonnes, total catch 103% of the limit), Division 58.4.2 (SSRU E: overrun 96 tonnes, total catch 339% of the limit; whole fishery: overrun 66 tonnes, total catch 194% of the limit), Subarea 88.1 (SSRUs J and L: overrun 54 tonnes, total catch 114% of the limit; whole fishery: overrun 32 tonnes, total catch 101% of the limit), and Subarea 88.2 (SSRUs C, D, F and G, overrun 2 tonnes, total catch 101% of the limit).

### 20.1. Toothfish (*Dissostichus* spp.)

In 2010/11, 12 Members States fished for toothfish in Subareas 48.2, 48.3, 48.4, 48.6, 88.1, 88.2 and 88.3, and in Divisions 58.4.1, 58.4.2, 58.4.3a, 58.4.3b, 58.4.4b, 58.5.1, 58.5.2, 58.6 and 58.7. The reported total catch to 24 September was 11,254 tonnes.

#### 20.1.1. Patagonian toothfish (*Dissostichus eleginoides*) in Subarea 48.3, South Georgia

**FISHERIES:** Longline fishing for *Dissostichus eleginoides* began in the early 1990s. Annual catches are in generally in the range 3,000 to 5,000 t. There was significant illegal fishing in the mid to late 1990s, exceeding the catch of the legal fishery in some years. In 2004, the Commission agreed to subdivide Subarea 48.3 into one area containing the South Georgia–Shag Rocks (SGSR) stock and other areas, to the north and west, that do not include the SGSR stock. Within the SGSR area, the Commission defined three Management Areas (A, B and C) (CM 41-02/A). There has been no significant IUU catch since the 2000/01 season. The catch limits in the 2010/11 season for Management Areas A, B and C were 900 and 2,100 tonnes respectively, with an overall catch limit for SGSR of 3,000 tonnes. The total declared catch was 1,788 tonnes, with catches in Management Areas B and C 571 tonnes and 1,215 tonnes respectively (in addition, 2 tonnes were taken during a research survey). The fishing season in both management areas commenced on 21 April 2011 (CM 41-02) and both areas remained open to fishing during the prescribed season. Tagging of toothfish continued at a rate of 1.3 fish per tonne with a total of 2,910 fish tagged (with 524 recaptures). The catch limit in 2010/11 was 3,000 tonnes and the recorded catch was 1,788 tonnes.

**SOURCE OF MANAGEMENT ADVICE:** The main management advisory body is the CCAMLR. Assessments are carried out biennially. During the 2011 meeting of WG-FSA an assessment has been carried out. Also cetacean depredation on longlines was taken into account, which results in an increase between 2% and 3.6% over the reported figures depending on the year, for the 2003/04 season onwards. The assessment is based on an integrated assessment (CASAL) that uses catch at length, CPUE and tagging data. CASAL two-fleet model structure was used and assumptions are detailed in the WG-FSA Report (2011).

**REFERENCE POINTS:**  $SSB_{t+35years} \geq 50\% SSB_0$ ; probability of SSB dropping below 20% of  $SSB_0 < 0.1$ .

**STOCK STATUS:** There is genetic separation between Subarea 48.3 and the Patagonian Shelf (FAO Area 41) (Shaw et al., 2004). The SGSR stock, occurring within management areas A, B and C is genetically separate from fish taken in the extreme north and west of Subarea 48.3. All assessments consider only the SGSR stock. The stock in Subarea 48.3 is considered fully exploited.  $SSB_{current} > 50\% SSB_0$

**RECENT MANAGEMENT ADVICE:** The catch limit is set on 2,600 tonnes, subdivided for the Management Areas: A is 0 tonnes, B is 780 tonnes and C is 1,820 tonnes in each season, for 2011/12 and 2012/13 fishing seasons. By-catch limits and move-on rules are included in the annual conservation measure established for this fishery (CM 41-02).

**STECF COMMENTS:** STECF has no comments.

### **20.1.2. Toofish (*Dissostichus eleginoides* en *D. mawsoni*) in Subarea 48.4, South Sandwich Islands**

**FISHERIES:** The fishery for *Dissostichus eleginoides* in Subarea 48.4 was initiated as a new fishery in 1992/93 following notifications from Chile and the USA, and the adoption of CM 44/XI, which set a precautionary catch limit for *D. eleginoides* of 240 tonnes for that season. Subsequently, the USA withdrew from the fishery and the Chilean longline vessel abandoned fishing after one week of poor catches. In addition, a Bulgarian-flagged longliner fished in November and December 1992 and reported a catch of 39 tonnes of *D. eleginoides*. Haul-by-haul data from the Chilean and Bulgarian vessels were submitted to CCAMLR and on basis of these data the Commission adopted a precautionary catch limit for *D. eleginoides* of 28 tonnes per season. In addition, the taking of *D. mawsoni* was prohibited, other than for scientific research purposes. These limits remained in force until 2004. In 2004/05, the UK conducted a pilot tagging program using a fishing vessel. This tagging program was carried forward till 2007/08. The experiment resulted in a CASAL assessment of toothfish in the northern part of Subarea 48.4 in 2009. In 2008, the Commission agreed to a continuation of the tagging experiment initiated in 2004/05 and to dividing Subarea 48.4 into a northern area (Subarea 48.4 North) and a southern area (Subarea 48.4 South), with a directed longline fishery on *D. eleginoides* in Subarea 48.4 North and *Dissostichus* spp. in Subarea 48.4 South. The catch limits in 2010/11 for Subarea 48.4 North were 40 tonnes for *D. eleginoides* and the continued prohibition of the taking of *D. mawsoni* other than for scientific research purposes, and for Subarea 48.4 South an experimental precautionary catch limit of 30 tonnes for *D. eleginoides* and *D. mawsoni* combined. The fishing season was from 1 December 2010 to 30 November 2011 and both areas remained opened to fishing during the prescribed season. The reported catch of *Dissostichus* spp. in the Northern Area and Southern Area was 37 tonnes and 17 tonnes respectively.

**SOURCE OF MANAGEMENT ADVICE:** The main management advisory body is CCAMLR. For Subarea 48.4 North an updated assessment for *D. eleginoides* was performed using CASAL software. The model incorporated catch-at-length data from 2004/05 to 2010/11, with the exception of 2008/09 for which catch-at-age data was used based on ageing of a random sample of otoliths collected during the 2008/09 season. CASAL model structure and assumptions are detailed in the WG-FSA Report (2011). For Subarea 48.4 South a three-year tagging experiment was completed in 2010/11 in Subarea 48.4 South. No full assessment is currently available. Due to reduced catches and low tag returns realised in the last year of the experiment, the UK proposed to extend the tagging experiment for a fourth year in Subarea 48.4 South in 2011/12, carrying forward the original proposal objectives from 2009.

**REFERENCE POINTS:**  $SSB_{t+35\text{years}} \geq 50\% SSB_0$ ; probability of SSB dropping below 20% of  $SSB_0 < 0.1$ .

**STOCK STATUS:** For Subarea 48.4  $B_0$  was estimated at 1550 ton. For Subarea 48.4 Petersen estimates from tag recaptures to date suggest a vulnerable population of approximately 600 tonnes for *D. mawsoni*. Limited tag recaptures of *D. eleginoides* suggest a vulnerable biomass in the region of 150 to 350 tonnes.

**RECENT MANAGEMENT ADVICE:** For Subarea 48.4 North a catch limit of 48 tonnes for *D. eleginoides* was set, with the continued prohibition of the taking of *D. mawsoni* other than for scientific research purposes and the maintenance of catch limits for by-catch species, with a limit for macrourids of 7.5 tonnes and a limit for rajids of 2.5 tonnes. For Subarea 48.4 South a catch limit of 33 tonnes for *D. eleginoides* and *D. mawsoni* combined and the maintenance of a move-on rule for by-catch species, with a macrourid trigger of 150 kg and a trigger for rajids set at 5% of the catch of *Dissostichus* spp. (CM 41-03).

**STECF COMMENTS:** STECF has no comments.

### **20.1.3. Patagonian toofish (*Dissostichus eleginoides*) in Division 58.5.1., Kerguelen Islands**

**FISHERIES:** The fishery for *Dissostichus eleginoides* operates in the French EEZ around the Kerguelen Islands in Division 58.5.1. The fishery began in 1984/85 as a trawl fishery targeting *D. eleginoides*, however,

trawling targeting other species between 1979 and 1984 caught small amounts of toothfish as by-catch. Trawling continued to 2000/01; a longline fishery began in 1991/92 and continues to the present. The fishery is active throughout most of the year and only longlining is currently permitted in this fishery. The catch limit of *D. eleginoides* set by France in its EEZ in Division 58.5.1 for 2010/11 was 5,100 tonnes, and this was allocated to seven longliners. The catch for the current season reported to October 2011 was 2,906 tonnes. The estimated IUU catch for the 2010/11 season was zero inside the French EEZ. Some IUU fishing may have occurred outside the EEZ. The IUU catch of *D. eleginoides* in 2010/11 was not estimated.

**SOURCE OF MANAGEMENT ADVICE:** The fishery inside the EEZ of the Kerguelen Islands is managed by France. CCAMLR provides general management advice for Division 58.5.1. France informed that the development of a stock assessment model using CASAL is ongoing, and it intends to present the model to a future meeting of WG-FSA. It reviewed a preliminary assessment (CASAL, with catch, CPUE and length-frequency data from the commercial fishery from 1979 onwards).

**REFERENCE POINTS:** Assessment of appropriate levels of future catch has not been based on the CCAMLR decision rules.

**STOCK STATUS:** *D. eleginoides* occurs throughout the Kerguelen Islands shelf, from shallow waters (<10 m) to at least 2,000 m depth. As fish grow, they move to deeper waters, and are recruited to the trawl fishery on the slopes of the shelf and subsequently to the longline fishery in deeper waters. A general east-west deep-sea movement of adult fish occurs and spawning is restricted to the westerly zone early in winter each year. Tagging experiments at Heard Island (Division 58.5.2) show long-distance movements of sub-adult/adult fish between zones (Heard to Kerguelen and also Crozet), but the proportion of exchange between stocks is unknown.

**RECENT MANAGEMENT ADVICE:** The outcome of the preliminary stock assessment could not be used for management advice. The advice from CCAMLR is that biological parameters should be estimated, a stock assessment should be developed and areas of high bycatch should be avoided. No new information was available on the state of fish stocks in Division 58.5.1 outside areas of national jurisdiction, it was therefore recommended that the prohibition of directed fishing for *D. eleginoides*, described in CM 32-13, remains in force.

**STECF COMMENTS:** STECF has no comments.

#### **20.1.4. Patagonian toothfish (*Dissostichus eleginoides*) in Subarea 58.5.2., Heard and McDonald Islands**

**FISHERIES:** From 1996/97 to 2001/02 the fishery was a trawl fishery, only in recent seasons the fishery has been prosecuted by trawl, longline and pot. The longline fishery was active from April 2011 and the trawl fishery was active throughout the whole season. The catch limit of *Dissostichus eleginoides* in Division 58.5.2 for the 2010/11 season was 2,550 tonnes (CM 41-08) for the period from 1 December 2010 to 30 November 2011. The catch by October 2011 was 1,676 tonnes, of this 1,122 tonnes was taken by longline, 521 tonnes by trawl and 33 tonnes by pot. There has been no evidence of IUU fishing in Division 58.5.2 since 2006/07.

**SOURCE OF MANAGEMENT ADVICE:** The main management advisory body is CCAMLR. There is also a 200 mile EEZ around Heard and McDonald Islands administered by Australia. A preliminary assessment was performed and is based on an integrated assessment (CASAL) that uses catch at length, CPUE and tagging data. CASAL model structure and assumptions are detailed in the WG-FSA Report (2011).

**REFERENCE POINTS:**  $SSB_{t+35years} \geq 50\% SSB_0$ ; probability of SSB dropping below 20% of  $SSB_0 < 0.1$

**STOCK STATUS:** *D. eleginoides* occurs throughout the Heard Island and McDonald Islands Plateau, from shallow depths near Heard Island to at least 1,800 m depth around the periphery of the plateau. Genetic studies have demonstrated that the population at Heard Island and McDonald Islands is distinct from those at distant locations such as South Georgia and Macquarie Island, but that within the Indian Ocean sector there appears to be no distinction between fish at Heard, Kerguelen, Crozet or Marion/Prince Edward Islands. This, combined with results from tagging data which show movement of some fish from Heard Island to Kerguelen and Crozet Islands suggests that a metapopulation of *D. eleginoides* may exist in the Indian Ocean sector. The current stock status at 2011 was estimated at 63% of  $B_0$ .

**RECENT MANAGEMENT ADVICE:** The catch limit for *D. eleginoides* in Division 58.5.2 west of 79°20'E was set at 2,730 tonnes for 2011/12 and 2012/13.

**STECF COMMENTS:** STECF has no comments.

#### **20.1.5. Patagonian toothfish (*Dissostichus eleginoides*) in Subarea 58.6, Crozet Islands**

**FISHERIES:** The fishery for *Dissostichus eleginoides* operated in the French EEZ around the Crozet Islands in Subarea 58.6. The fishery has been conducted using longlines from 1996/97 to the present. The catch limit set by France in its EEZ in Subarea 58.6 for 2010/11 was 700 tonnes, and this was allocated to seven longliners. The catch for the current season reported to October 2011 was 551 tonnes. Fishing trials with trawlers have not been continued. The fishery was active all year. A high level of depredation on *D. eleginoides* catches from killer whales (*Orcinus orca*) is the main reason why fishers avoid the area. There was no evidence of IUU fishing in 2008/09 and 2009/10. The IUU catch of *D. eleginoides* in 2010/11 was not estimated

**SOURCE OF MANAGEMENT ADVICE:** The fishery inside the EEZ of the Crozet Islands is managed by France. CCAMLR provides general management advice for Subarea 58.6. No new information was available to the CCAMLR Scientific Committee in 2011.

**REFERENCE POINTS:** Assessment of appropriate levels of future catch has not been based on the CCAMLR decision rules.

**STOCK STATUS:** Tagging has been carried out since 2006, so far 4 353 fish have been tagged from commercial longliners at Crozet. Of the tagged fish, 197 were recaptured; 182 from French tagging and 15 from tagging at Heard Island.

**RECENT MANAGEMENT ADVICE:** The Commission encouraged the estimation of biological parameters for *D. eleginoides* in Subarea 58.6 (French EEZ), in order to develop a stock assessment for this area, and encouraged France to continue its tagging program in Subarea 58.6. No new information was available on the state of fish stocks in Subarea 58.6 outside areas of national jurisdiction. Therefore the prohibition of directed fishing for *D. eleginoides*, described in CM 32-11, remains in force.

**STECF COMMENTS:** STECF has no comments.

#### **20.1.6. Patagonian toothfish (*Dissostichus eleginoides*) in Subarea 58.6 and 58.7, Prince Edward and Marion Islands**

**FISHERIES:** A licensed fishery within the South African EEZ at the Prince Edward Islands started in October 1996. Part of the South African EEZ is outside the CAMLR Convention Area (Area 51) and part falls within Subareas 58.6 and 58.7 and Division 58.4.4. Most fishing in the South African EEZ takes place to the north and the east of the Prince Edward Islands in Subareas 58.6 and 58.7 and Area 51, and this Fishery Report focuses on Subareas 58.6 and 58.7. Up to seven operators have been licensed by South Africa to fish in any one year. However, since 2001/02, only two licensed vessels have fished each season, and only one vessel has been active since 2005/06. A second vessel entered the fishery late 2010. The catch limit of *D. eleginoides* in the South African EEZ for 2010/11 was 440 tonnes for the period 1 December 2010 to 30 November 2011. The catch reported for Subareas 58.6 and 58.7 as of 5 October 2010 was respectively 68 and 108 tonnes (+ 129 tonnes in Area 51), all of which was taken by trotlines. There was no evidence of IUU catch in recent seasons.

**SOURCE OF MANAGEMENT ADVICE:** The fishery in the waters adjacent to Prince Edward and Marion Islands is managed by the Republic of South Africa. Subarea 58.6 also includes the Crozet Islands to the east of the Prince Edward Islands. The assessment was reviewed in 2007. The adoption of the operational management procedure (OMP) as a basis for management is currently being considered by South Africa, but is being hampered by the fact that the fishery has moved from Spanish to trot gear since 2009 and only trot-line gear was used in 2011. A requirement for a portion of the catch to be taken by Spanish longline gear will be implemented in 2012 to enhance CPUE comparisons between these gear types and to continue the historic CPUE series that is based on Spanish longline gear.

**REFERENCE POINTS:** Assessment of appropriate levels of future catch has not been based on the CCAMLR decision rules.

**STOCK STATUS:** The South African EEZ around the Prince Edward Islands is mainly in Subarea 58.7, but extends east into Subarea 58.6, south into Division 58.4.4, and north of the Convention Area into Area 51. However, there are currently no fishing grounds in the southern half of the South African EEZ. The majority of

the fishery occurs down to about 1,500 m, but fishing depths in excess of 2,000 m have been recorded. Subarea 58.6 also includes the Crozet Islands to the east of the Prince Edward Islands. The current stock assessments did not consider the possibility that these island groups share the same toothfish stock.

**RECENT MANAGEMENT ADVICE:** The Commission noted that a revised operational management procedure to form the basis for management advice is under development by national scientists. It was unable to provide management advice for the fishery in the South African EEZ at the Prince Edward Islands. The catch limit of *D. eleginoides* in the South African EEZ for 2011/12 is likely to be 320 tonnes. No new information was available on the state of fish stocks in Subareas 58.6 and 58.7 and Division 58.4.4 outside areas of national jurisdiction. Therefore, the prohibition of directed fishing for *D. eleginoides*, described in CMs 32-10, 32-11 and 32-12, remains in force.

**STECF COMMENTS:** STECF has no comments.

#### **20.1.7. Patagonian toothfish (*Dissostichus eleginoides*) and Antarctic toothfish (*D. mawsoni*) exploratory fishery in Subarea 48.6**

**FISHERIES:** The longline fishery for *Dissostichus* spp. in Subarea 48.6 began as a new fishery in 1996/97 (CM 114/XV). In 1999, the Commission agreed that high levels of IUU fishing for *Dissostichus* spp. in the Convention Area had rendered it unrealistic to consider this fishery as 'new', and the fishery was re-classified as exploratory. Licensed longline vessels have fished the exploratory fishery for *Dissostichus* spp. in Subarea 48.6 since 2003/04, and the dominant species in the catches in recent seasons was *D. mawsoni*. In 2010/11, the exploratory fishery for *Dissostichus* spp. in Subarea 48.6 was limited to Japanese, Korean and South African flagged vessels using longlines only, and no more than one vessel per country was permitted to fish at any one time (CM 41-04). The precautionary catch limit for *Dissostichus* spp. was 200 tonnes north of 60°S (SSRUs A and G1) and 200 tonnes south of 60°S (SSRUs B–F). The fishing season was from 1 December 2010 to 30 November 2011 and the total reported catch was 393 tonnes. In 2010/11, the SSRUs south of 60°S were closed on 7 February 2011 (final reported catch: 197 tonnes). The SSRUs north of 60°S were closed on 19 April 2011 (final reported catch: 196 tonnes). Consequentially the fishery was also closed on 19 April 2011 with a final reported catch of 393 tonnes (catch limit for *Dissostichus* spp.: 400 tonnes), 34 tonnes *D. eleginoides* and 359 tonnes *D. mawsoni*. There is no information to derive an estimate of the level of IUU fishing in Subarea 48.6.

**SCOURCE OF MANAGEMENT ADVICE:** The main management advisory body is CCAMLR. In 2010, the Commission required each vessel catching more than 2 tonnes of *Dissostichus* spp. in an exploratory fishery to achieve a minimum tag overlap statistic of 50% in 2010/11 and of 60% from 2011/12 onwards (Annex 41-01/C). All vessels fishing in Subarea 48.6 in 2010/11 achieved a tag overlap statistic greater than 50% (range 53 to 95%).

**REFERENCE POINTS:** None available for this fishery.

**STOCK STATUS:** No data are available on the stock structure of fish in this fishery.

**RECENT MANAGEMENT ADVICE:** The fishery is currently conducted as a CCAMLR Exploratory Fishery. Catch limits are therefore set at a level not substantially above that necessary to obtain the information specified in the Exploratory Fishery's Data Collection Plan. The Commission agreed that it could provide no new advice on catch limits for this subarea and noted the recommendations for increasing the research requirements in this fishery. The possibility of obtaining a Peterson estimate of *Dissostichus* spp. biomass from tag recaptures in Subarea 48.6 will be investigated in the intersessional period. The Exploratory Fishery will continue in 2011/12 with the precautionary catch limit for *Dissostichus* spp. of 200 tonnes north of 60°S and 200 tonnes south of 60°S for longline fishery by Japan, Republic of Korea, Norway, Russia and South Africa. No more than one vessel per country shall fish at any one time.

**STECF COMMENTS:** STECF has no comments.

#### **20.1.8. Patagonian toothfish (*Dissostichus eleginoides*) and Antarctic toothfish (*D. mawsoni*) exploratory fishery Division 58.4.1.**

**FISHERIES:** The exploratory longline fishery for *Dissostichus* spp. in Division 58.4.1 was first agreed by the Commission in 1998/99 (CM 166/XVII), and licensed longline vessels first operated in this fishery in 2004/05. The target species is *D. mawsoni*. In 2010/11, the exploratory fishery for *Dissostichus* spp. in Division 58.4.1

was limited to Japanese, Korean, New Zealand and Spanish vessels using longlines only (CM 41-11). The precautionary catch limit for *Dissostichus* spp. was 210 tonnes and the following

limits applied to SSRUs: 100 tonnes in SSRU C; 50 tonnes in SSRU E and 60 tonnes in SSRU G. Five other SSRUs (A, B, D, F and H) were closed to fishing. The catch limits for by-catch species were defined in CM 33-03. The fishing season was from 1 December 2010 to 30 November 2011. In 2010/11, three vessels fished in SSRUs C, E and G. SSRU E was closed on 11 February 2011 (final reported catch: 56 tonnes), and SSRU G was closed on 12 February 2011 (final reported catch: 59 tonnes). SSRU C, and consequently the fishery, was closed on 12 March 2011 (final reported catch: 100 tonnes). The final reported catch of the whole fishery was 216 tonnes (catch limit for *Dissostichus* spp. was 210 tonnes): <1 ton *D. eleginoides* and 359 tonnes *D. mawsoni*. IUU fishing in Division 58.4.1 was first detected in 2005/06, and high levels of IUU fishing in 2005/06, 2006/07 and 2009/10 resulted in the total removals being well in excess of the catch limits. The IUU catch of *Dissostichus* spp. in 2010/11 was not estimated.

**SCOURCE OF MANAGEMENT ADVICE:** The main management advisory body is CCAMLR. In 2010, the Commission required each vessel catching more than 2 tonnes of *Dissostichus* spp. in an exploratory fishery to achieve a minimum tag overlap statistic of 50% in 2010/11 and of 60% from 2011/12 onwards (Annex 41-01/C). All vessels fishing in Division 58.4.1 in 2010/11 achieved a tag overlap statistic greater than 50% (range 52 to 74%).

**REFERENCE POINTS:** None available for this fishery.

**STOCK STATUS:** Unknown.

**RECENT MANAGEMENT ADVICE:** The fishery is currently conducted as a CCAMLR Exploratory Fishery. Catch limits are therefore set at a level not substantially above that necessary to obtain the information specified in the Exploratory Fishery's Data Collection Plan. The precautionary catch limit for *Dissostichus* spp. was 210 tonnes in 2010/11 and exploratory fishing will continue in 2011/12 under the same precautionary catch limit, 100 tonnes in SSRU C, 50 tonnes in SSRU E and 60 tonnes SSRU G (CM 41-11) and shall be limited to longline fishery only by Japan (1 vessel), Republic of Korea (2 vessels), New Zealand (3 vessels), Russia (2 vessels), South Africa (1 vessel) and Spain (1 vessel).

**STECF COMMENTS:** STECF has no comments.

#### **20.1.9. Patagonian toothfish (*Dissostichus eleginoides*) and Antarctic toothfish (*D. mawsoni*) exploratory fishery in Division 58.4.2.**

**FISHERIES:** Licensed longline vessels have fished the exploratory fishery for *Dissostichus* spp. in Division 58.4.2 since 2003/04, and the target species is *D. mawsoni*. In 2010/11, the exploratory fishery for *Dissostichus* spp. in Division 58.4.2 was limited to Japanese, Korean, New Zealand, South African and Spanish vessels using longlines only (CM 41-05). The precautionary catch limit for *Dissostichus* spp. was 70 tonnes, of which no more than 30 tonnes could be taken in SSRU A and no more than 40 tonnes could be taken in SSRU E. The other SSRUs (B, C and D) were closed to fishing. The fishing season was from 1 December 2010 to 30 November 2011. In 2010/11, one vessel fished in SSRU E and reported a total catch of 136 tonnes of *D. mawsoni*. SSRU E was closed on 24 February 2011 (final reported catch: 136 tonnes), and consequently the fishery, was closed on 25 February 2011. The IUU catch of *Dissostichus* spp. in 2010/11 was not estimated.

**SCOURCE OF MANAGEMENT ADVICE:** The main management advisory body is CCAMLR. In 2010, the Commission required each vessel catching more than 2 tonnes of *Dissostichus* spp. in an exploratory fishery to achieve a minimum tag overlap statistic of 50% in 2010/11 and of 60% from 2011/12 onwards (Annex 41-01/C). The vessel fishing in Division 58.4.2 in 2010/11 achieved a tag overlap statistic greater than 50% (64%).

**REFERENCE POINTS:** None available for this fishery.

**STOCK STATUS:** Unknown.

**RECENT MANAGEMENT ADVICE:** The fishery is currently conducted as a CCAMLR Exploratory Fishery. Catch limits are therefore set at a level not substantially above that necessary to obtain the information specified in the Exploratory Fishery's Data Collection Plan. No new advice could be provided on catch limits for this division for 2011/12 and 2012/13. The precautionary catch limit for *Dissostichus* spp. in 2011/12 is set at 70 tonnes (CM 41-05), with 30 tonnes in SSRU A, 0 tonnes in SSRUs B-D and 40 tonnes in SSRU E. Catches taken in research fisheries according to CM 24-01 shall be included as part of the precautionary catch

limit. The exploratory fishery shall be conducted by Japan, Republic of Korea, New Zealand, South Africa and Spain (one vessel for each country) using longlines only.

**STECF COMMENTS:** STECF has no comments.

**20.1.10. Patagonian toothfish (*Dissostichus eleginoides*) and Antarctic toothfish (*D. mawsoni*) exploratory fishery in Division 58.4.3a, Elan Bank**

**FISHERIES:** In 2001, the boundaries of Division 58.4.3 were rearranged on the basis of ecological considerations, and two new divisions were formed: Division 58.4.3a (Elan Bank) and Division 58.4.3b (BANZARE Bank). The Commission agreed to exploratory fisheries for *Dissostichus* spp. in each of these new divisions, outside areas of national jurisdiction. In 2010/11, the exploratory fishery for *Dissostichus* spp. in Division 58.4.3a was limited to one Japanese vessel using longlines only (CM 41-06). The precautionary catch limit for *Dissostichus* spp. was limited to 86 tonnes. The fishing season was from 1 May to 31 August 2011 and fishing was permitted outside the prescribed season provided that each vessel demonstrated its capacity to comply with the requirements for longline weighting outlined in CM 24-02. The vessel reported a total catch of 4 tonnes of *D. eleginoides*. The IUU catch of *Dissostichus* spp. in 2010/11 was not estimated.

**SCOURCE OF MANAGEMENT ADVICE:** The main management advisory body is CCAMLR.

**REFERENCE POINTS:** None available for this fishery.

**STOCK STATUS:** No data are available on the stock structure of fish in this fishery.

**RECENT MANAGEMENT ADVICE:** The fishery is currently conducted as a CCAMLR Exploratory Fishery. Catch limits are therefore set at a level not substantially above that necessary to obtain the information specified in the Exploratory Fishery's Data Collection Plan. No new advice could be provided on catch limits for this division for 2011/12 and 2012/13. The precautionary catch limit for *Dissostichus* spp. is set at 86 tonnes in 2011/12. The exploratory fisheries shall be conducted by one vessel of France, Japan and South Africa, using longlines only.

**STECF COMMENTS:** STECF has no comments.

**20.1.11. Patagonian toothfish (*Dissostichus eleginoides*) and Antarctic toothfish (*D. mawsoni*) exploratory fisheries in Subareas 88.1 and 88.2, Ross Sea**

**FISHERIES:** In 2005 the Subareas 88.1 and 88.2 were split into two areas for the purposes of stock assessment: (i) the Ross Sea (Subarea 88.1 and SSRUs 882A–B), and (ii) SSRU 882E. The catch limits for the Subarea 88.1 and 88.2 SSRUs in the Ross Sea were changed as part of a three-year experiment starting in 2005/06. The SSRUs between 150°E and 170°E (881A, D, E, F) and between 170°W and 150°W (882A–B) were closed to fishing to ensure that effort was retained in the area of the experiment. To assist administration of the SSRUs, the catch limits for SSRUs 881B, C and G were amalgamated into a 'north' region and those for SSRUs 881H, I and K were amalgamated into a 'slope' region. Within Subarea 88.2, SSRU 882E was treated as a separate SSRU with its own catch limit, whilst SSRUs 882C, D, F and G were amalgamated with a single catch limit. However, in each of the closed SSRUs and prior to 2008/09, a nominal catch of up to 10 tonnes of *Dissostichus* spp. remained permissible under the research fishing exemption; these fishing research catch limits were removed in 2008. SSRU J was subdivided into two SSRUs (SSRU J and SSRU M) in 2008, and the catch limits for SSRUs 881J and L were amalgamated to assist administration. In 2010/11, the exploratory fishery for *Dissostichus* spp. in Subarea 88.1 was limited to Japanese, Korean, New Zealand, Russian, Spanish, UK and Uruguayan vessels using longlines only (CM 41-09). The precautionary catch limit for *Dissostichus* spp. was 2,850 tonnes applied as follows: 372 tonnes total could be taken in SSRUs B, C and G; 2 104 tonnes total in SSRUs H, I and K; 374 tonnes in SSRUs J and M. Five SSRUs (A, D, E, F and M) were closed to fishing. The catch limits for by-catch species were defined in CMs 33-03 and 41-09. The fishing season was from 1 December 2010 to 31 August 2011. In Subarea 88.2, the exploratory fishery for *Dissostichus* spp. was limited to Korean, New Zealand, Russian, Spanish, UK and Uruguayan vessels using longlines only (CM 41-10). The precautionary catch limit for *Dissostichus* spp. was 575 tonnes south of 65°S, applied as follows: 214 tonnes total could be taken in SSRUs C, D and F; and 361 tonnes in SSRU E. Two SSRUs (A and B) were closed to fishing. The catch limits for by-catch species were defined in CMs 33-03 and 41-10. The fishing season was from 1 December 2010 to 31 August 2011. In 2010/11, five Members and 16 vessels fished in the exploratory fishery in Subarea 88.1 between December 2010 and January 2011. The fishery was closed on 14 January 2011.

and the total reported catch of *Dissostichus* spp. was 2,882 tonnes (101% of the limit) of which 2 tonnes of *D. eleginoides* and 2,880 tonnes of *D. mawsoni*. The following SSRUs were closed during the course of fishing:

- SSRUs B, C and G closed on 10 December 2010, triggered by the catch of *Dissostichus* spp. (total catch 349 tonnes; 94% of the catch limit)
- SSRUs J and L closed on 9 January 2011, triggered by the catch of *Dissostichus* spp. (total catch 428 tonnes; 114% of the catch limit)
- SSRUs H, I and K closed on 14 January 2011, triggered by the catch of *Dissostichus* spp. (total catch 2105 tonnes; 100% of the catch limit).

Five Members and 12 vessels fished in the exploratory fishery in Subarea 88.2 between December 2010 and February 2011. The fishery closed on 8 February 2011 and the total reported catch of *Dissostichus* spp. was 576 tonnes, including 10 tonnes taken during research fishing in SSRU A (100% of the limit). The following SSRUs were closed during the course of fishing:

- SSRUs C, D, F and G closed on 8 February 2011, triggered by the catch of *Dissostichus* spp. (total catch 216 tonnes; 101% of the catch limit)
- SSRU E closed on 8 February 2011, triggered by the catch of *Dissostichus* spp. (total catch 350 tonnes; 97% of the catch limit).

The IUU catch of *Dissostichus* spp. in 2010/11 was not estimated.

**SCOURCE OF MANAGEMENT ADVICE:** The main management advisory body is CCAMLR. The assessment is based on an integrated assessment (CASAL) that uses catch at age by sex, CPUE and tagging data. CASAL model structure and assumptions are detailed in the WG-FSA Report 2011.

**REFERENCE POINTS:**  $SSB_{t+35\text{years}} \geq 50\% SSB_0$ ; probability of SSB dropping below 20% of  $SSB_0 < 0.1$ . Ross Sea: spawning stock abundance ( $B_0$ ) were 62,080 tonnes (95% credible interval (CI) 56,020–70,090 tonnes), and current ( $B_{2009}$ ) biomass was estimated as 80%  $B_0$  (95% CI 78–82%). SSRU 882E: spawning stock abundance ( $B_0$ ) were 7 540 tonnes (95% CI 5 870–10 020 tonnes), and current ( $B_{2009}$ ) biomass was estimated as 81%  $B_0$  (95% CI 75–86%).

**STOCK STATUS:** The stocks in Subareas 88.1 and 88.2 are considered fully exploited.

**RECENT MANAGEMENT ADVICE:** The precautionary catch limits for *Dissostichus* spp. in Subarea 88.1 is 3,282 tonnes and that the allocation used to set the 2009/10 catch limits for SSRUs in Subarea 88.1 be continued for 2011/2012, 428 tonnes in the north (SSRUs 881B, C, G), 2,423 tonnes on the slope (SSRUs 881H, I, K) and 431 tonnes on the shelf (SSRUs 881J and L). The exploratory fisheries shall be conducted by Japan (1 vessel), Republic of Korea (6 vessels), New Zealand (4 vessels), Norway (1 vessel), Russia (5 vessels), Spain (1 vessel) and UK (2 vessels) using longlines only. For SSRUs 882C–G a total catch limit of 530 tonnes was set of which 406 tonnes were assigned to the region between 65° and 70°50'S (SSRU 882H) and the remaining 124 tonnes to the region south of 70°50'S (SSRUs 882C–G). The exploratory fisheries shall be conducted by the Republic of Korea (6 vessels), New Zealand (4 vessels), Norway (1 vessel), Russia (5 vessels), Spain (1 vessel) and UK (2 vessels) using longlines only.

**STECF COMMENTS:** STECF has no comments.

#### **20.1.12. Patagonian toothfish (*Dissostichus eleginoides*) and Antarctic toothfish (*D. mawsoni*) closed fishery in Division 58.4.3b, Banzare Bank**

**FISHERIES:** In 2001, the boundaries of Division 58.4.3 were rearranged on the basis of ecological considerations, and two new divisions were formed: Division 58.4.3a (Elan Bank) and Division 58.4.3b (BANZARE Bank). The Commission agreed to exploratory fisheries for *Dissostichus* spp. in each of these new divisions, outside areas of national jurisdiction. In 2007, the division was subdivided into SSRUs A (north of 60°S) and B (south of 60°S). In 2008, SSRU A was further subdivided into SSRUs A, C, D and E. Since 2009/10, operations in this fishery have been limited to research fishing only, in accordance with CM 24-01. In 2010/11, there was limited to research fishing for *Dissostichus* spp. in Division 58.4.3b and was conducted by one Japanese vessel using longlines only, in accordance with CM 24-01 (CM 41-07), and reported a total catch of 11 tonnes of *Dissostichus* spp (2 tonnes of *D. eleginoides* and 9 tonnes of *D. mawsoni*). The IUU catch of *Dissostichus* spp. in 2010/11 was not estimated



**SCOURCE OF MANAGEMENT ADVICE:** The main management advisory body is CCAMLR.

**REFERENCE POINTS:** Precautionary exploitation rate of 0.01, which is consistent with assumption that the current status of this potentially depleted stock is 30%  $B_0$  under the GYM resulting in a precautionary research catch limit of 41 tonnes.

**STOCK STATUS:** Not available until such time as available data on the current status of the stock on Banzare Bank, historical fishing data, the results of past surveys and current research, and estimates of past and ongoing IUU removals, have been fully analysed and reviewed.

**RECENT MANAGEMENT ADVICE:** The fishery is currently conducted as part of exploratory fisheries with overall catch limits greater than zero. The Japanese research on BANZARE Bank may proceed in 2011/12, limited to 48 sets in specific locations, with a catch limit of 40 tonnes, subject to the recommendations in the WG-FSA 2011 report.

**STECF COMMENTS:** STECF has no comments.

**20.1.13. Patagonian toothfish (*Dissostichus eleginoides*) and Antarctic toothfish (*D. mawsoni*) closed fisheries in Divisions 58.4.4a and 58.4.4b, Ob and Lena Bank**

**FISHERIES:** The longline fishery for *Dissostichus* spp. in Divisions 58.4.4a and 58.4.4b began as a new fishery in 1997/98 (CM 138/XVI). These divisions were managed as a single area and a catch limit for *Dissostichus* spp. applied to fishing north of 60°S, and in waters outside areas of national jurisdiction. Following the Commission's recognition that high levels of IUU fishing for *Dissostichus* spp. in the Convention Area had rendered it unrealistic to consider this fishery as 'new', the fishery was reclassified as exploratory in 1999. In 1999, the divisions were subdivided into SSRUs A, B, C and D. In 2002, the Commission expressed concern regarding the low levels of stocks of *Dissostichus* spp. in Divisions 58.4.4a and 58.4.4b and the high levels of IUU fishing in that region. Consequently, the Commission prohibited directed fishing for *Dissostichus* spp. in these divisions and the fishery for *Dissostichus* spp. was closed (CM 32-10). In 2010/11, a Japanese-flagged longliner conducted research fishing in accordance with a research plan submitted under CM 24-01. The vessel caught 35 tonnes of *D. eleginoides*. The IUU catch of *Dissostichus* spp. in 2010/11 was not estimated.

**SCOURCE OF MANAGEMENT ADVICE:** The main management advisory body is CCAMLR.

**REFERENCE POINTS:** The fishery is currently conducted as part of exploratory fisheries with overall catch limits greater than zero.

**STOCK STATUS:** Unknown

**RECENT MANAGEMENT ADVICE:** The Japanese research on BANZARE Bank may proceed in 2011/12, limited to 71 sets in specific locations, with a catch limit of 70 tonnes, subject to the recommendations in the WG-FSA 2011 report.

**STECF COMMENTS:** STECF has no comments.

**20.1.14. Patagonian toothfish (*Dissostichus eleginoides*) and Antarctic toothfish (*D. mawsoni*) closed fisheries in Subarea 88.3.**

**FISHERIES:** There is a prohibition of directed fisheries on toothfish (*Dissostichus* spp.) in Subarea 88.3 (CM 32-16), other than for scientific research purposes in accordance with Conservation Measure 24-01, from 1 December 2003 until the fishery is reopened by the Commission based on the advice of the Scientific Committee. In 2010/11, a Russian-flagged longliner conducted research fishing in accordance with a research plan submitted under CM 24-01. The vessel caught 5 tonnes of *D. mawsoni*.

**SCOURCE OF MANAGEMENT ADVICE:** The main management advisory body is CCAMLR.

**REFERENCE POINTS:** The fishery is currently conducted as part of exploratory fisheries with overall catch limits greater than zero.

**STOCK STATUS:** No data are available on the stock structure of fish in this fishery.

**RECENT MANAGEMENT ADVICE:** The Russian research in Subarea 88.3 may proceed in 2011/12, in locations spatially concentrated within the area in which toothfish are most abundant and tag recaptures are most likely. The catch limit is set at 65 tonnes, subject to the recommendations in the WG-FSA 2011 report.

**STECF COMMENTS:** STECF has no comments.

#### **20.1.15. Patagonian toothfish (*Dissostichus eleginoides*) other closed fisheries**

**FISHERIES:** There is a prohibition of directed fisheries Patagonia toothfish (*Dissostichus eleginoides*) in:

- Subarea 48.5 from 1 December 2010 to 30 November 2011 (CM 32-09).
- Division 58.6 except for waters adjacent to the Prince Edward Islands and the Crozet Islands (CM 32-11), other than for scientific research purposes in accordance with Conservation Measure 24-01, from 1 December 2002 until the fishery is reopened by the Commission based on the advice of the Scientific Committee.
- Division 58.7 except for waters adjacent to the Prince Edward Islands (CM 32-12), other than for scientific research purposes in accordance with Conservation Measure 24-01, from 7 November 1998 until the fishery is reopened by the Commission based on the advice of the Scientific Committee.
- Division 58.5.1 outside areas of national jurisdiction (CM 32-13), other than for scientific research purposes in accordance with Conservation Measure 24-01, from 1 December 2003 until the fishery is reopened by the Commission based on the advice of the Scientific Committee.
- Division 58.5.2 east of 79°20'E and outside the EEZ to the west of 79°20'E (CM 32-14), other than for scientific research purposes in accordance with Conservation Measure 24-01, from 1 December 2003 until the fishery is reopened by the Commission based on the advice of the Scientific Committee.
- Subarea 88.2 north of 65°S (CM 32-15), other than for scientific research (10 tonnes of *Dissostichus* spp. in 2011/12 by Russia) purposes in accordance with Conservation Measure 24-01, from 1 December 2003 until the fishery is reopened by the Commission based on the advice of the Scientific Committee.

**SOURCE OF MANAGEMENT ADVICE:** The main management advisory body is CCAMLR.

**REFERENCE POINTS:** None available for this fishery.

**STOCK STATUS:** No data are available on the stock structure of fish in this fishery.

**RECENT MANAGEMENT ADVICE:** For Subarea For these fish species and subsequent areas there was no new advice.

**STECF COMMENTS:** STECF has no comments

#### **20.2. Icefish (*Champsocephalus gunnari*)**

In 2010/11, two Members fished for icefish by trawling in Subarea 48.3 and Division 58.5.2 and the catch reported to 24 September was 11 tonnes (378 tonnes in 2009/2010 and 1,916 tonnes in 2008/09).

##### **20.2.1. Icefish (*Champsocephalus gunnari*) in Division 58.5.2, Heard and McDonald Islands**

**FISHERIES:** The trawl fishery for *Champsocephalus gunnari* in Division 58.5.2 has caught 1 tonnes from a catch limit of 78 tonnes in 2010/11 to 9 October 2011 (CM 42-02). There has been no evidence of IUU activity in this fishery.

**SOURCE OF MANAGEMENT ADVICE:** The main management advisory body is CCAMLR. Advice was based on a single short term (2 year) Generalised Yield Model (GYM) projection of age 2+ using survey-derived estimates of current biomass. New data was available from a *C. gunnari* survey in Division 58.5.2

conducted during 2010 and 2011. The 2008 to 2011 Australian bottom trawl surveys had sampled a large cohort, which dominated the population structure in 2010 as the 4+ year class, but appears to have declined rapidly over the past year. A new 1+ and 2+ cohort was also detected.

**REFERENCE POINTS:**  $SSB_{t+2years} \geq 75\% SSB_{current}$ . When the stock assessment indicates a stock biomass (represented by the lower one-sided 95% confidence limit of the survey biomass estimate) of less than 1,000 tonnes, or the decision rules indicated a catch limit of less than 100 tonnes, a commercial catch limit is not set, but a 30 tonnes combined research and by-catch limit applies.

**STOCK STATUS:** Stock level is highly variable and dependent on recruitment. A responsive management strategy, using a short term (2 year) assessment approach based on the results of groundfish surveys has been used since 2000. There is evidence of cyclic behaviour in adult population size, with a peak in the fishery every three years.

**RECENT MANAGEMENT ADVICE:** As the assessment for catch in 2011/12 indicates a lower one-sided 95% of biomass less than 1,000 tonnes, the advice of the Commission is a catch limit for *C. gunnari* in 2011/12 of 0 tonnes, with a 30 tonne research and by-catch limit pending the results of a planned survey in 2011/12 (CM 42-02).

**STECF COMMENTS:** STECF has no comments.

#### 20.2.2. Icefish (*Chamsocephalus gunnari*) in Subarea 48.3, South Georgia

**FISHERIES:** In Subarea 48.3, a pelagic or semi-pelagic trawl fishery targets *Chamsocephalus gunnari*. In 2010/11, the fishing season was from 1 December 2010 to 30 November 2011, with a catch limit for *C. gunnari* of 2,305 tonnes (CM 42-01). Limited commercial fishing was conducted by one vessel in February and one vessel in September/October 2011 but with zero catches. A total catch of 10 tonnes was reported from the research survey. There has been no evidence of IUU activity in this fishery.

**SCOURCE OF MANAGEMENT ADVICE:** The main management advisory body is CCAMLR. No new estimates of standing stock were available from acoustic surveys. Previous acoustic investigations have demonstrated that *C. gunnari* of all sizes/ages spend time in midwater and reinforced the belief that a bottom trawl survey significantly underestimates *C. gunnari* biomass. In January/February 2011, the UK undertook a random stratified bottom trawl survey of the South Georgia and Shag Rocks shelves. The survey employed the same trawl gear and survey design as previous UK surveys in Subarea 48.3. The growth parameters were those used by CCAMLR in previous years, while the length-weight parameters were updated according to the 2011 survey results.

**REFERENCE POINTS:**  $SSB_{t+2years} \geq 75\% SSB_{current}$ .

**STOCK STATUS:** Stock level is highly variable and dependent on recruitment. A responsive management strategy, using a short term (2 year) assessment approach based on the results of groundfish surveys has been used since 2000. An estimate of the one-sided lower 95% CI of biomass was calculated for the assessment, using 10 separate estimates each using 500 000 bootstrap samples, and is tabled below. The estimated mean value of the standing stock was 49,353 tonnes in January 2011. The one-sided lower 95% CI was 31,373 tonnes.

**RECENT MANAGEMENT ADVICE:** The catch limit for *C. gunnari* is set at 3,072 tonnes in 2011/12 based on the outcome of the single short-term assessment.

**STECF COMMENTS:** STECF has no comments.

### 20.3. Other finfish species in the Convention Area

#### 20.3.1. Other finfish species closed fisheries

**FISHERIES:** There is a prohibition of directed fisheries on finfish, other than toothfish (*Dissostichus* spp.) and icefish (*Chamsocephalus gunnari*):

- for finfish in Subarea 48.1, the Peninsula area (CM 32-02), other than for scientific research purposes, from 7 November 1998 until the fishery is by the Commission based on the advice of the Scientific Committee.

- for finfish in Subarea 48.2, around South Orkneys (CM 32-03), other than for scientific research purposes, from 7 November 1998 until the fishery is reopened by the Commission based on the advice of the Scientific Committee.
- on *Nototothenia rossii* in Subarea 48.1, the Peninsula area (CM 32-04), by-catches in fisheries directed to other species shall be kept to the level allowing the optimum recruitment to the stock.
- on *Nototothenia rossii* in Subarea 48.2, around South Orkneys (CM 32-05), by-catches in fisheries directed to other species shall be kept to the level allowing the optimum recruitment to the stock.
- on *Nototothenia rossii* around Subarea 48.3, South Georgia Islands (32-06), by-catches in fisheries directed to other species shall be kept to the level allowing the optimum recruitment to the stock.
- on *Gobionotothen gibberifrons*, *Chaenocephalus aceratus*, *Pseudochaenichthys georgianus*, *Lepidonotothen squamifrons* and *Patagonotothen guntheri* in Subarea 48.3, South Georgia Islands (CM 32-07) until the fishery is reopened by the Commission based on the advice of the Scientific Committee.
- for *Lepidonotothen squamifrons* in Division 58.4.4, Ob and Lena Banks (CM 32-08), other than for scientific research purposes, from 8 November 1997 until the fishery is reopened by the Commission based on the advice of the Scientific Committee.
- for *Electrona carlsbergi* in Subarea 48.3, South Georgia Islands (CM 32-17), other than for scientific research purposes, from 1 December 2003 until the fishery is reopened by the Commission based on the advice of the Scientific Committee; or a research plan for an exploratory fishery is submitted and approved by the Scientific Committee consistent with Conservation Measure 24-01.

**SCOURCE OF MANAGEMENT ADVICE:** The main management advisory body is CCAMLR.

**REFERENCE POINTS:** Not applicable.

**STOCK STATUS:** Not applicable.

**RECENT MANAGEMENT ADVICE:** For these fish species and subsequent areas there was no new advice.

**STECF COMMENTS:** STECF has no comments.

## 20.4. Elasmobranchs

### 20.4.1. Skates and Rays (Rajidae) in Subarea 48.3, South Georgia

**FISHERIES:** No data on bycatch of skates and rays were provided at the Scientific Committee 2011 for the fishing season 2010/11. STATLANT data shows that bycatch of skates and rays in Subarea 48.3 during fishing season was less than 10 tonnes.

**SCOURCE OF MANAGEMENT ADVICE:** The main management advisory body is CCAMLR. A preliminary assessment of rajid populations in Subarea 48.3 using a surplus production model implemented in a Bayesian framework was presented in 2007. A rajid tagging program has been under way for four years in Subarea 48.3. The Working Group noted that there were currently insufficient data to inform the assessment and that the results were strongly dependent on the informative priors for the two catchability parameters, and the intrinsic rate of increase,  $r$ .

**REFERENCE POINTS:** None available for this fishery.

**STOCK STATUS:** No data are available on the stock structure of fish in this fishery.

**RECENT MANAGEMENT ADVICE:** No new advise on skates and rays in Subarea 48.3 due to insufficient information.

**STECF COMMENTS:** STECF has no comments.

#### **20.4.2. Skates and Rays (Rajidae) in Division 58.5.2, Heard and McDonald Islands**

**FISHERIES:** There was no directed fishing allowed for any species other than *Dissostichus eleginoides* and *Champscephalus gunnari* in Statistical Division 58.5.2 in the 2010/11 fishing season. No data on bycatch of skates and rays were provided at the Scientific Committee 2011 for the fishing season 2010/11. STATLANT data shows that bycatch of skates and rays in Division 58.5.2 during fishing season 2009/10 was approximately 25 tonnes.

**SOURCE OF MANAGEMENT ADVICE:** The main management advisory body is CCAMLR.

**REFERENCE POINTS:** None available for this fishery.

**STOCK STATUS:** No data are available on the stock structure of fish in this fishery.

**RECENT MANAGEMENT ADVICE:** No new information and no new advice for skates and rays in Division 58.5.2.

**STECF COMMENTS:** STECF has no comments.

#### **20.4.3. Sharks in the Convention Area**

**FISHERIES:** Directed fishing on shark species in the Convention Area, for purposes other than scientific research, is prohibited (32-18). This prohibition shall apply until such time as the Scientific Committee has investigated and reported on the potential impacts of this fishing activity and the Commission has agreed on the basis of advice from the Scientific Committee that such fishing may occur in the Convention Area. Any bycatch of shark, especially juveniles and gravid females, taken accidentally in other fisheries, shall, as far as possible, be released alive. No data on bycatch of sharks were provided at the Scientific Committee for the fishing season 2010/11. STATLANT data show that bycatch of sharks during 2009/10 was less than 5 tonnes.

**SOURCE OF MANAGEMENT ADVICE:** The main management advisory body is CCAMLR.

**REFERENCE POINTS:** None available for this fishery.

**STOCK STATUS:** No data are available on the stock structure of fish in this fishery.

**RECENT MANAGEMENT ADVICE:** For these fish species and subsequent areas there was no new advice and CM 32-18 is retained until sufficient information is acquired for its revision..

**STECF COMMENTS:** STECF has no comments.

### **20.5. Crabs (*Paralomis* spp.)**

During the fishing season 2010/11 there were no directed fisheries on crabs within the Convention Area, and no notifications of intention to fish for crabs in 2011/12 have been received by CCAMLR.

#### **20.5.1. Crabs (*Paralomis* spp.) Subarea 48.3**

**FISHERIES:** Crabs were not harvested during 2010/11 in Subarea 48.3, and no notifications of intention to fish for crabs in 2011/12 have been received by CCAMLR.

**SOURCE OF MANAGEMENT ADVICE:** The main management advisory body is CCAMLR. The WG-FSA 2011 reviewed the information currently available on the biology and ecology of the lithodid crabs at South Georgia and provided an overview of the development of a management regime for them. Considerable gaps in knowledge of the biology, ecology and demography of the lithodid species at South Georgia are highlighted with uncertainty surrounding estimates of biomass, growth rates and survivorship of discards of the targeted species. The review reported that recent analyses suggest that the current precautionary catch limit of 1,600 tonnes may not be sustainable in the long term if it were reached consistently. It was noted that apart from 2009/10, there has been very little commercial interest in the fishery. Low market value and interest, coupled with the very high level of discarding, are likely to render the fishery commercially unviable.

**REFERENCE POINTS:** No precautionary reference points have been proposed for this stock.

**STOCK STATUS:** Unknown; unexploited.

**RECENT MANAGEMENT ADVICE:** Reflecting on the high level of discarding and uncertainty surrounding discard mortality, it was decided that the crab fishery in Subarea 48.3 be closed.

**STECF COMMENTS:** STECF has no comments.

#### **20.5.2. Crabs (*Paralomis* spp.) exploratory fishery in Subarea 48.2**

**FISHERIES:** An exploratory fishery for crabs in Subarea 48.2 was carried out for the first time during the 2009/10 season. The fishery was prosecuted in accordance with the requirements of CM 52-02, and a total of 79,140 pot hours and 17 sets were completed. Only three *Paralomis formosa* were captured, and it was concluded that the crab fishery in Subarea 48.2 was not likely to be viable. Crabs were not harvested during 2010/11 in Subarea 48.2, and no notifications of intention to fish for crabs in 2011/12 have been received by CCAMLR.

**SCOURCE OF MANAGEMENT ADVICE:** The main management advisory body is CCAMLR.

**REFERENCE POINTS:** No precautionary reference points have been proposed for this stock.

**STOCK STATUS:** Unknown; unexploited.

**RECENT MANAGEMENT ADVICE:** CM 52-02 stays in force with a catch limit of 250 tonnes.

**STECF COMMENTS:** STECF has no comments.

### **20.6. Krill (*Euphausia superba*)**

The krill fishery operated only in Area 48 during the 2010/11 season. Different fishing gears are used: conventional trawls and continuously pumped trawls. The reported total catch to 24 September was 179,131 tonnes.

#### **20.6.1. Krill (*Euphausia superba*) Area 48**

**FISHERIES:** In 2010/12, six Members with a total of 13 vessel fished for krill in Area 48 with about 2/3 taken in Subarea 48.2. The reported total catch to 24 September was 179,131 tonnes, 9,158 tonnes from 48.1, 116,552 tonnes from 48.2 and 53,421 tonnes from 48.3.

**SCOURCE OF MANAGEMENT ADVICE:** The main management advisory body is CCAMLR. Advice on the overall catch limit is based on a long term (10 year) Generalised Yield Model (GYM) projection using survey-derived estimates of current biomass and recruitment variability. An integrated assessment method has been proposed as alternative assessment method.

**REFERENCE POINTS:** The probability of SSB dropping below 20% of  $SSB_0 > 0.1$  (even in the absence of fishing). This would result in a  $\gamma$  being equal to 0 and hence a modification of this part of the decision rule may be required provided that the objectives in Article II can still be met. Given also the potential impact of climate change on recruitment variability, that both the recruitment variability and the specification of the current decision rule relating to the maintenance of stable recruitment should be investigated.

**STOCK STATUS:** The  $B_0$  estimate using the full SDWBA model for Subareas 48.1, 48.2, 48.3 and 48.4 was 60.3 million tonnes with a sampling CV of 12.8%, and this represented the best estimate of krill biomass derived from the CCAMLR-2000 Survey.

**RECENT MANAGEMENT ADVICE:** In the absence of additional information, the advice remains to be consistent with the precautionary approach and to void concentration of the catch as the trigger level is approached, a spatial allocation of the trigger level (620,000 tonnes) by subarea is required. Until new information is available CM 51-01 and CM 51-07 are retained until sufficient information is acquired for their revisions.

**STECF COMMENTS:** STECF has no comments.

#### **20.6.2. Krill (*Euphausia superba*) Area 58.4.1**

**FISHERIES:** The total catch limit for *Euphausia superba* in Division 58.4.1 is 440 000 tonnes in any fishing season. The total catch is further subdivided into two subdivisions within Division 58.4.1 as follows: west of

115°E, 277 000 tonnes; and east of 115°E, 163 000 tonnes. There was no directed fishing on krill in Division 58.4.1 in 2010/11.

**SOURCE OF MANAGEMENT ADVICE:** The main management advisory body is CCAMLR.

**REFERENCE POINTS:** None available for this fishery.

**STOCK STATUS:**

**RECENT MANAGEMENT ADVICE:** There was no new advice for *Euphausia superba* in Division 58.4.1 and CM 51-02 is retained until sufficient information is acquired for its revision.

**STECF COMMENTS:** STECF has no comments.

### **20.6.3. Krill (*Euphausia superba*) Area 58.4.2**

**FISHERIES:** The total catch limit for *Euphausia superba* in Division 58.4.2 is 2,645 million tonnes in any fishing season. The total catch limit is further subdivided into two subdivisions within Statistical Division 58.4.2 as follows: west of 55°E, 1,448 million tonnes; and east of 55°E, 1,080 million tonnes. Until the Commission has defined an allocation of this total catch limit between smaller management units, as the Scientific Committee may advise, the total catch in Division 58.4.2 is limited to 260,000 tonnes west of 55°E and 192 000 tonnes east of 55°E in any fishing season (CM 51-03). The fishing season begins on 1 December and finishes on 30 November of the following year. There was no directed fishing on krill in Division 58.4.2 in 2010/11.

**SOURCE OF MANAGEMENT ADVICE:** The main management advisory body is CCAMLR.

**REFERENCE POINTS:** None available for this fishery.

**STOCK STATUS:** An estimate of  $B_0$  for Division 58.4.2 was in 2007 produced using the new simplified SDWBA model for target strength and species identification, being 28.75 million tonnes with a CV of 16.18%. This biomass was subdivided as agreed by the Scientific Committee and precautionary catch limits for the two subdivisions were calculated, Western subdivision (30–55°E) a  $B_0$  of 16.17 million tonnes with a CV of 18.36% and a precautionary catch of 1,448 million tonnes, and for the Eastern subdivision (55–80°E) a  $B_0$  of 11.61 million tonnes with a CV of 29.82% and a precautionary catch of 1,080 million tonnes. Until the Commission has defined an allocation of this total catch limit between smaller management units, the total catch in Division 58.4.2 shall be limited to 260,000 tonnes west of 55°E and 192,000 tonnes east of 55°E in any fishing season. On that base Conservation Measure 51-03 was re-written to reflect these changes in the precautionary catch limit and its subdivision.

**RECENT MANAGEMENT ADVICE:** There was no new advice formed for *Euphausia superba* in Division 58.4.2 and CM 51-03 is retained until sufficient information is acquired for its revision.

**STECF COMMENTS:** STECF has no comments.

### **20.6.4. Krill (*Euphausia superba*) Area 88**

**FISHERIES:**

**SOURCE OF MANAGEMENT ADVICE:** The main management advisory body is CCAMLR.

**REFERENCE POINTS:** None available for this fishery.

**STOCK STATUS:** Catch limits have not been set in Area 88 and the Scientific Committee recommended that the development of krill fishing in Area 88 should be considered exploratory fisheries, since only limited information exists on the distribution and abundance of krill or predators.

**RECENT MANAGEMENT ADVICE:** There was no new advice formed for *Euphausia superba* in Area 88 and CM 51-04 is retained until sufficient information is acquired for its revision.

**STECF COMMENTS:** STECF has no comments.

## **20.7. Squid (*Martialia hyadesi*)**

### **20.7.1. Squid (*Martialia hyadesi*) Subarea 48.3**

**FISHERIES:** No target fishery for squid (*Martialia hyadesi*) was carried out in the last seasons and no new request has been submitted to CCAMLR to continue exploratory fishing in the 2011/12 season.

**SCOURCE OF MANAGEMENT ADVICE:** The main management advisory body is CCAMLR.

**REFERENCE POINTS:** None available for this fishery.

**STOCK STATUS:** No data are available on the stock structure of fish in this fishery.

**RECENT MANAGEMENT ADVICE:** The CCAMLR advise is that the existing Conservation Measure 61-01 on *M. hyadesi* should remain in force.

**STECF COMMENTS:** STECF has no comments.