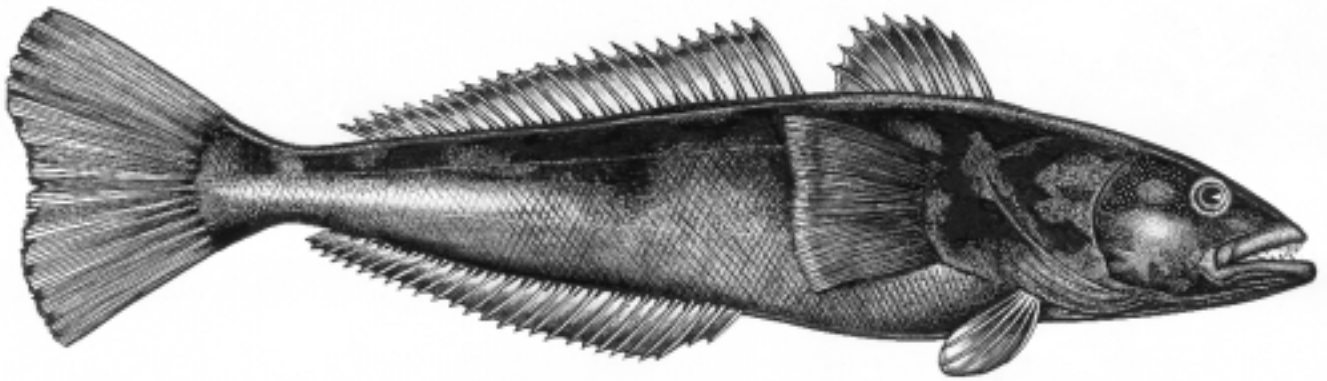


P A T A G O N I A N



T O O T H F I S H

ARE CONSERVATION AND TRADE MEASURES WORKING?

M. Lack and G. Sant

TRAFFIC
B U L L E T I N

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Dissostichus eleginoides
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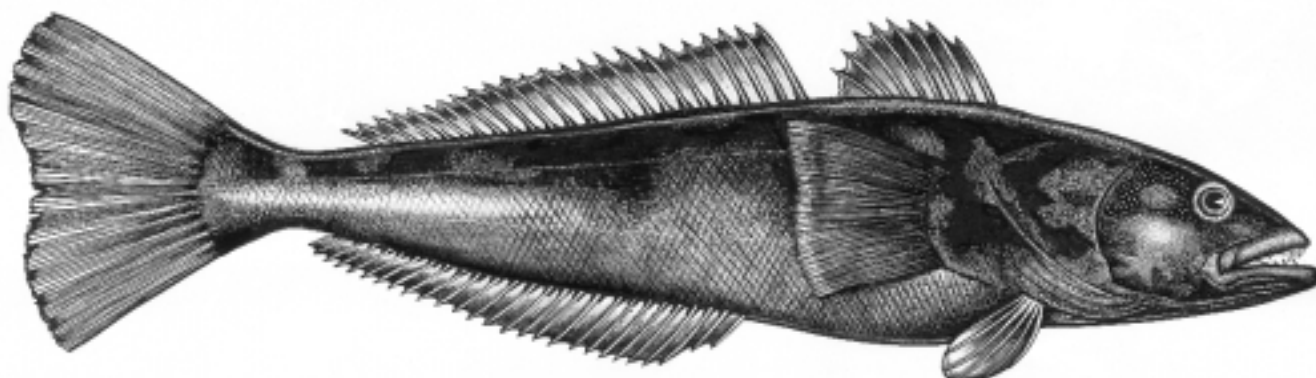


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P A T A G O N I A N



T O O T H F I S H

ARE CONSERVATION AND TRADE MEASURES WORKING?

M. Lack and G. Sant

The fishery for Patagonian Toothfish, concentrated in the Southern Ocean, has come under increased pressure in recent years. This pressure arises largely from illegal, unreported and unregulated (IUU) fishing that undermines the effectiveness of management of the species by the Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR). The high market value of Patagonian Toothfish for food and the decline in fish stocks worldwide, together with the remoteness of the main fishing grounds and the resultant difficulties and high cost associated with effective surveillance and the relatively low risk of being detected, have provided the ideal circumstances for IUU fishing. Initiatives such as increased surveillance by coastal States, the use of satellite monitoring systems and the introduction of a Catch Documentation Scheme may be contributing to a reduction in IUU fishing for Patagonian Toothfish. However, even “minimum” estimates of IUU catch indicate that around one-third of catch in the CCAMLR Area in the late 1990s was IUU catch. The nature of the IUU fishery makes it increasingly difficult to estimate the size of the catch. Trade information is potentially the most reliable indicator of total catch of this species. However, uncertainty also surrounds that information. While the absolute level of IUU catch is uncertain, there is little doubt that it remains a significant issue for the Patagonian Toothfish fishery. The trade analysis in this paper suggests that the global IUU catch (both inside and outside the CCAMLR Area) in 2000 could be up to four times that estimated by CCAMLR and may account for up to half of the total trade estimated by the authors for that year. CCAMLR Members and other States involved in the catch and trade of this species must now urgently consider all available options if the fishery is to be brought under control and the threat to Patagonian Toothfish populations removed.

Illustration of Patagonian Toothfish by Bruce Mahalski

INTRODUCTION

The Patagonian Toothfish *Dissostichus eleginoides* is a large, demersal, predatory species that can grow to over 2 m in length and live for more than 50 years. It lives in deep water (down to 2500-3000 m), but the smaller juveniles are mostly found in shallower water. These are reproductively mature by the time they reach 70-95 cm in length, which seems to correspond to 6-9 years of age. The species exhibits a relatively low fecundity, ranging from 48 000 to 500 000 eggs (per fish, per spawning season) varying with fish length and location (Kock, 2000). The long life span, late sexual maturity and low fecundity of the Patagonian Toothfish make it vulnerable to overfishing. The species is found widely in sub-Antarctic and cool temperate waters off southern South America and the islands and submarine plateaus of the southern Atlantic and Indian Oceans (Australian Antarctic Division, 2001). Significant populations are known to exist in the Exclusive Economic Zones (EEZs) of, and waters adjacent to, sub-Antarctic islands under the sovereignty of Australia, France, New Zealand, South Africa and the UK and in the EEZs of Chile and Argentina. A fishery also operates in the EEZ of Peru but its current extent is unknown since catch data have not been reported to CCAMLR in recent years.

The sustainability of the Patagonian Toothfish fishery is at risk, largely due to the impact of IUU fishing (Box 1). IUU fishing undermines the effectiveness of conservation measures used by CCAMLR. CCAMLR was established in 1982 under the Convention on the Conservation of Antarctic Marine Living Resources, itself negotiated by the Parties to the Antarctic Treaty. CCAMLR is responsible, among other things, for the conservation of fisheries resources in the Southern Ocean.

B O X 1 W H A T I S I U U F I S H I N G ?

IUU (Illegal, Unreported and Unregulated) fishing is defined as follows:

Illegal fishing refers to activities:

- conducted by national or foreign vessels in waters under the jurisdiction of a State, without the permission of that State, or in contravention of its laws and regulations;
- conducted by vessels flying the flag of States that are parties to a relevant regional fisheries management organization but operate in contravention of the conservation and management measures adopted by that organization and by which the States are bound, or relevant provisions of the applicable international law; or
- in violation of national laws or international obligations, including those undertaken by co-operating States to a relevant regional fisheries management organization.

Unreported fishing refers to fishing activities:

- which have not been reported, or have been misreported, to the relevant national authority, in contravention of national laws and regulations; or
- undertaken in the area of competence of a relevant regional fisheries management organization which have not been reported or have been misreported, in contravention of the reporting procedures of that organization.



Management measures have not prevented an increase in IUU toothfish catch in 2000.

Photograph: Greenpeace/Grace

Unregulated fishing refers to fishing activities¹:

- in the area of application of a relevant regional fisheries management organization that are conducted by vessels without nationality, or by those flying the flag of a State not party to that organization, or by a fishing entity, in a manner that is not consistent with or contravenes the conservation and management measures of that organization; or
- in areas or for fish stocks in relation to which there are no applicable conservation or management measures and where such fishing activities are conducted in a manner inconsistent with State responsibilities for the conservation of living marine resources under international law.

¹Certain unregulated fishing may take place in a manner that is not in violation of applicable international law.

Source: FAO, 2001b

In 1997, CCAMLR recognized formally that IUU fishing for Patagonian Toothfish was a serious challenge to the credibility and effectiveness of its conservation regime. However, four years later, despite the implementation of a range of conservation and management measures, CCAMLR clearly has much still to do to address this concern.

Both the Patagonian Toothfish and the Antarctic Toothfish *Dissostichus mawsoni* occur in the CCAMLR Area (Figure 1). While Patagonian Toothfish are caught both inside and outside the Area, the Antarctic Toothfish is found only inside CCAMLR waters (Kock, 1992). Patagonian Toothfish comprises over 95% of the annual reported catch of these two species in the CCAMLR Area. Total catch of 1090 t of Antarctic Toothfish has been reported in the last 10 years. This article focuses on catch and trade of Patagonian Toothfish, however it is acknowledged that some data include small quantities of Antarctic Toothfish.

This article outlines the conservation framework for Patagonian Toothfish, the current state of the fishery and the extent and pattern of trade in this species. The trade analysis is used to estimate the level of IUU fishing. Conservation initiatives by CCAMLR, in particular the

Catch Documentation Scheme (CDS) introduced in May 2000, are discussed. The potential role of other international efforts to eliminate IUU fishing are also described. Recommendations are made to improve upon existing arrangements.

METHODS

The reported catch of Patagonian Toothfish, estimates of IUU catch in the CCAMLR Area and estimated IUU landings have been provided by CCAMLR. Trade data have been compiled by TRAFFIC offices largely from official government trade statistics of importing and exporting countries. Where these data have been augmented by data from other sources this is indicated.

Analysis of the trade data prior to 1998 is problematic. This is due to a lack of consistency arising largely from the absence of harmonized trade codes for *Dissostichus* spp. Since 1998 the number of countries that record Patagonian Toothfish trade data according to the Harmonized Commodity Description and Coding System (HCDCS) has gradually increased but the data do

not yet provide a definitive picture of world trade. Of the major trading countries, trade data for *Dissostichus* spp. are available for some or all of the 1998-2000 period for Australia, Canada, Chile, European Union (EU) Member States, Japan and the USA. These countries report data for at least two categories of *Dissostichus* spp. products that can be broadly defined as “frozen fillets” and “frozen other”. The latter category includes the headed and gutted product together with all other forms apart from fillets. Canada and the USA also identify a category of “fresh” toothfish. The USA is the only country known to identify trade in Patagonian Toothfish and Antarctic Toothfish separately.

Comparison of catch and trade data requires that processed product weights be expressed as whole fish or “green weight”. The conversion factors used by the CCAMLR Scientific Committee of 1.7 for headed and gutted product and 2.2 for fillets have been used for this purpose. Since the “frozen other” product includes product other than headed and gutted it is acknowledged that the application of a conversion factor of 1.7 to determine the green weight equivalent of “frozen other” product may result in discrepancies. For example, the inclusion of Patagonian Toothfish heads, in the “frozen other”, can lead to overestimation of the green weight equivalent. Where data permitted, allowance has been made for such anomalies.

CCAMLR reports annual catch data for the period 1 July to 30 June while most trade data is reported for the calendar year. Catches of Patagonian Toothfish are generally concentrated between May and July. Since much of this catch is taken in remote areas a time lag is likely between the catch and product entering the import market. Therefore catch data have been compared with the later calendar year trade data.

THE PATAGONIAN TOOTHFISH FISHERY

Large-scale fishing of Patagonian Toothfish began in the early 1990s following the collapse of Austral Hake *Merluccius australis polylepis* and Golden Kingclip *Genypterus blacodes* fisheries in Chilean waters and the decline in fish stocks in many northern hemisphere fisheries. By the mid-90s Patagonian Toothfish was a highly prized catch, branded “white gold” by industrial long-range fishing fleets (ISOFISH, 1999).

Within the CCAMLR Area most reported catch of Patagonian Toothfish is taken in waters around the islands of Kerguelen and Crozet (France), South Georgia (UK) and Heard and Macdonald Islands (Australia). Most catch is taken by longline with some by bottom trawling. Longlining for Patagonian Toothfish in the Australian EEZ has been prohibited in order to avoid the impact of longlining on seabirds.

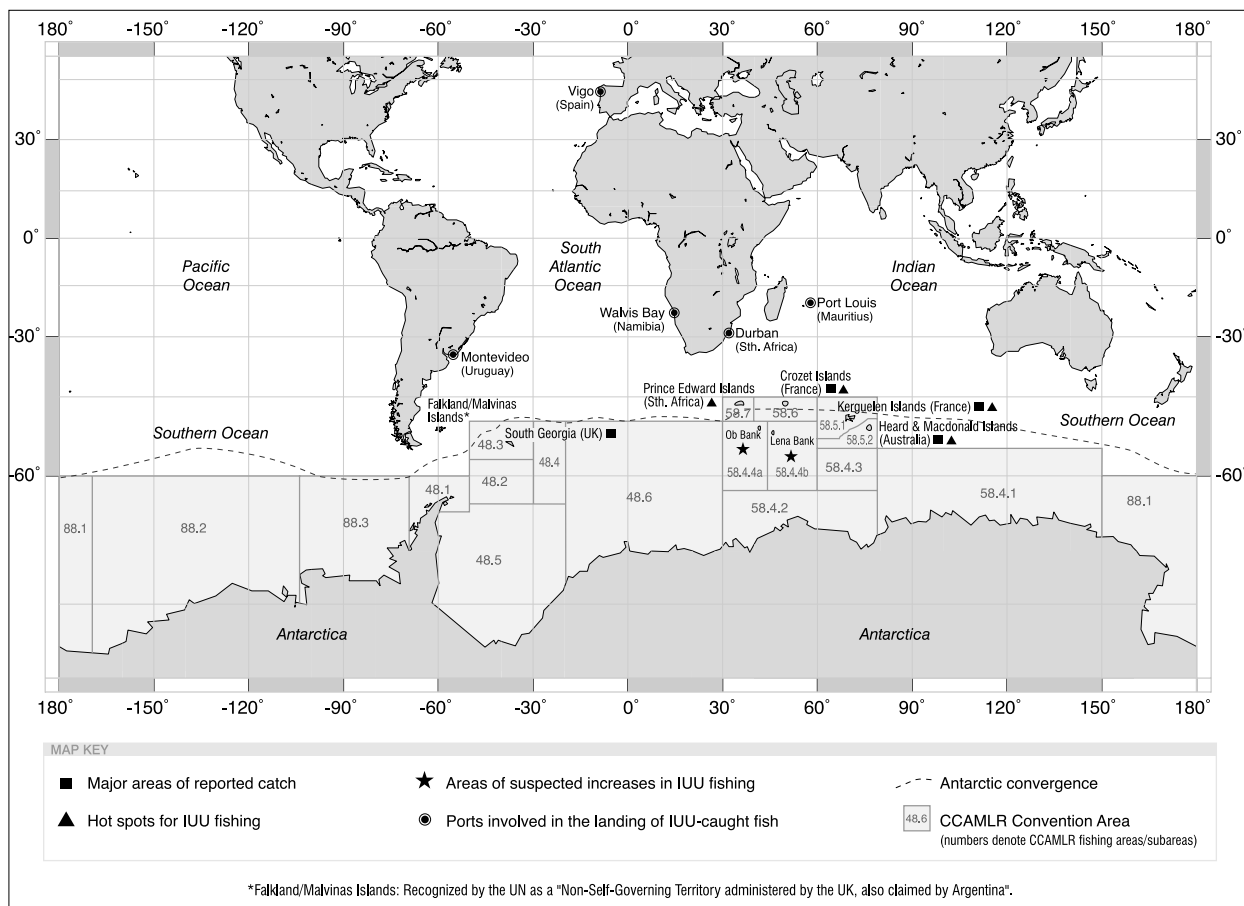
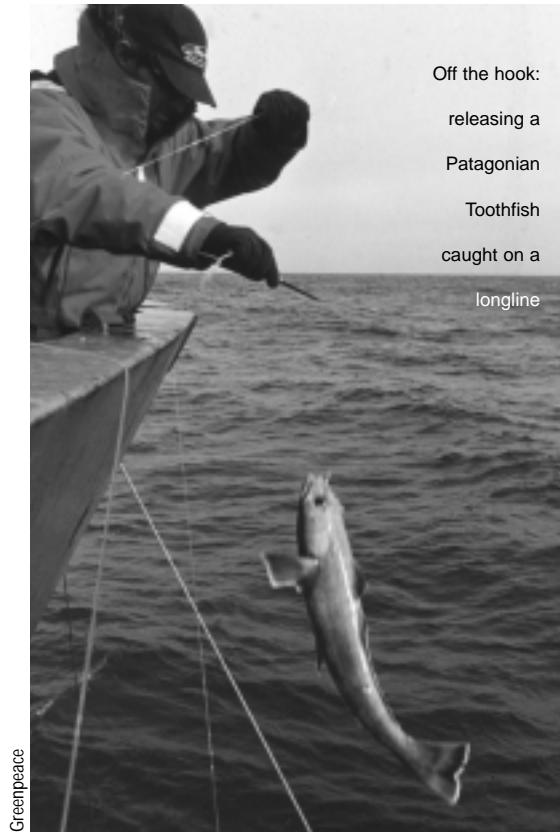


Figure 1. Map of the Southern Ocean showing principal Patagonian Toothfish fishing grounds.

Map created by: hiwire.com.au



The major participants in the catch and export of Patagonian Toothfish are Argentina, Australia, Chile, France, South Africa and the UK. The major importers are Japan and the USA. Canada and the EU also import significant quantities. Other participants include processing and re-exporting nations such as China and the landing/transshipment States of Mauritius and Namibia. Other States, such as Belize and Panama have acted as Flag of Convenience (FOC) States for IUU fishing vessels. Such States accept a fee to register fishing vessels of other nations to operate under their flag, while disregarding international law, which requires the flag State to take responsibility for ensuring that the vessel abides by international rules and regulations.

STOCK STATUS

Scientists have serious concerns for the future of Patagonian Toothfish. CCAMLR's Scientific Committee (CCAMLR, 1999b) reported that: '...continued illegal fishing holds serious implications for the long-term yield and...total catches, in some areas at least, may seriously compromise the status of the spawning stock in the shorter term. For example, there are indications that catches of *D. eleginoides* in the South African EEZ around the Prince Edward Islands (Subareas 58.6 and 58.7) have fallen to about 10% of their initial levels and biomass estimates around the Crozet Islands have declined to between 25 and 30% of their original levels.'

Assessments of stock status and future projections of Patagonian Toothfish stocks do not currently include a stock-recruitment relationship. Stock assessments do not, therefore, take into account the possible direct effects of large reductions in spawning biomass on future recruitment (CCAMLR, 1999b). Significant uncertainties also remain in relation to key assessment parameters, such as growth and natural mortality (CCAMLR, 2000b).

Data availability for stock assessment is dependent largely on the level of reported fishing in each area. Little legal commercial fishing has occurred in some areas and CCAMLR's knowledge of stocks in these areas remains limited.

MANAGEMENT

Regulated Fishing

The 24 Members of CCAMLR are listed in Table 1 along with the six States that have acceded to the Commission and the nine other countries that are invited to attend its meetings as observers. Each of these has an interest in the catch or trade of Patagonian Toothfish. The nature of that interest, together with each country's support for international fisheries conservation and management instruments is indicated in Table 2.

CCAMLR describes its approach to management of the Antarctic marine ecosystem as precautionary (FAO, 1999). In general, CCAMLR's approach encompasses:

- managing fisheries;
- monitoring the ecosystem;
- monitoring marine debris and its impact on marine animals; and,
- reducing seabird by-catch in fisheries.

A system of Conservation Measures, binding on Members, is used to manage these four elements. Total annual catch limits regulate all established, exploratory and new Patagonian Toothfish fisheries. Fishing effort in exploratory fisheries is further controlled by limiting the number of participating vessels. Coastal States (those with toothfish populations within their EEZs) also impose management measures for Patagonian Toothfish. These have tended to be more stringent than those approved by CCAMLR (Rayfuse, 1998).

Since CCAMLR does not have a mechanism to make national catch allocations to Members, catch limits are managed as olympic fisheries, ie. the fishery is closed when reported catch reaches the total annual limit. This can result in catch limits being exceeded. For example, the 1999/00 catch limit of 4036 t in Subarea 48.3 was exceeded by 74 t as a result of late reporting of catch data by Chile and the consequent late closure of the season (CCAMLR, 2000a).

Members	
Argentina	Namibia
Australia	New Zealand
Belgium	Norway
Brazil	Poland
Chile	Russian Federation
European Community (EC)	South Africa
France	Spain
Germany	Sweden
India	UK
Italy	Ukraine
Japan	USA
Korea, Rep. of	Uruguay
Acceding States	
Bulgaria	Greece
Canada	Netherlands
Finland	Peru
Invited non-Contracting Parties ¹	
Belize	Portugal
China	Sao Tome & Principe
Denmark	Seychelles
Mauritius	Vanuatu
Panama	

Table 1. Status of CCAMLR participants.

¹Invited to attend CCAMLR meetings in 1998, 1999 and 2000 as observers or to be invited in 2001.

Catch

The total catch of Patagonian Toothfish has, to date, been estimated by CCAMLR using reports by Members of their catches inside and outside the CCAMLR Area, and by Acceding States of their catches outside the Area, together with estimates made by the Scientific Committee of catch taken by IUU fishing. The data collected under the CDS will provide information to be used, among other things, to determine catches outside the CCAMLR Area in the future.

CCAMLR makes estimates of IUU catches in the CCAMLR Area as well as estimates of landings of IUU-caught Patagonian Toothfish. The latter include IUU catch from both inside and outside the CCAMLR Area. Estimates of IUU catch in the CCAMLR Area are derived from reported sightings by licensed commercial vessels, of unlicensed vessels fishing in the CCAMLR Area together with information on probable 'days at sea' and likely catch rates. Landings are estimated on the basis of reports from port authorities and commercial sources.

Catches reported and estimated by CCAMLR over the four years to 1999/00 are summarized in Table 3. IUU landings are estimated to have represented 49% of the total estimated catch over the period and 25% in 1999/00. Argentina, Australia, Chile, France, South Africa and the UK account for 90% of the reported (ie. legal) catches over the period (Figure 2).

Total annual estimated catch of Patagonian Toothfish has fallen by 67% over the four years. This decline is attributed to a sharp reduction in estimated IUU catches. There has also been a significant decline in reported catches outside the CCAMLR Area primarily in the EEZs of Chile and Argentina. Conversely, reported catches in the CCAMLR Area increased up to 1998/99 but declined by 21% in 1999/00. Reported targeted effort (longline hooks set and hours fished) on Patagonian Toothfish increased in the three years to 1998/99, the last year for which published data are available. Hooks set increased fourfold and hours fished increased by over 40% in that period (CCAMLR, 2000e).

IUU FISHING

There has been a concerted effort by Members, particularly Chile and Argentina, to eliminate the IUU operations of their flag vessels. There is little doubt that this

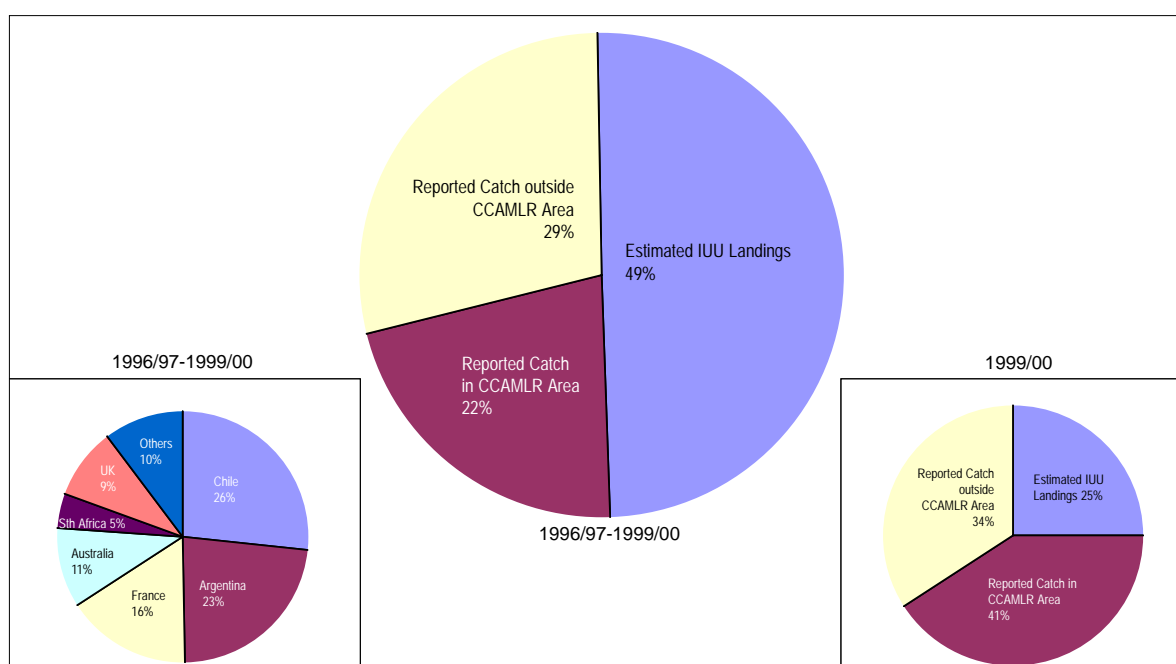


Figure 2. CCAMLR-reported and -estimated catch of Patagonian Toothfish, 1996/97 to 1999/00.

Sources: CCAMLR, 1998b, 1999d, 2000d and 2000e

Participant	CCAMLR Status	Report catch ¹	Coastal State	Importer ²	Exporter ³	Identified involvement in IUU fishing ⁴	Identified IUU landings ⁵	Fish Stocks Agreement	Compliance Agreement
Argentina	Member	✓	✓	✓	✓	✓		Signed	Accepted
Australia	Member	✓	✓		✓			Ratified	
Belgium	Member			✓	✓			Signed	
Brazil	Member	✓		✓	✓			Ratified	
Chile	Member	✓	✓		✓	✓			
EC	Member							Signed	Accepted
France	Member	✓	✓	✓	✓			Signed	
Germany	Member			✓	✓			Signed	
India	Member				✓				
Italy	Member			✓	✓			Signed	
Japan	Member	✓		✓	✓			Signed	Accepted
Korea, Rep. of	Member	✓		✓	✓			Signed	
Namibia	Member			✓	✓		✓	Ratified	Accepted
New Zealand	Member	✓	✓	✓	✓			Ratified	
Norway	Member				✓			Ratified	Accepted
Poland	Member			✓					
Russian Federation	Member				✓			Ratified	
South Africa	Member	✓	✓		✓		✓		
Spain	Member	✓		✓	✓	✓	✓	Signed	
Sweden	Member				✓			Signed	Accepted
UK	Member	✓	✓	✓	✓	✓		Signed	
Ukraine	Member	✓		✓	✓			Signed	
Uruguay	Member	✓		✓	✓	✓	✓	Ratified	Accepted
USA	Member			✓	✓			Ratified	Accepted
Bulgaria	Acceded				✓				
Canada	Acceded			✓	✓			Ratified	Accepted
Finland	Acceded			✓				Signed	
Greece	Acceded			✓	✓			Signed	
Netherlands	Acceded			✓	✓			Signed	
Peru	Acceded	✓			✓				
Belize	Invited				✓	✓		Signed	
China	Invited			✓	✓			Signed	
Denmark	Invited			✓	✓	✓		Signed	
Mauritius	Invited				✓		✓	Acceded	
Panama	Invited				✓	✓			
Portugal	Invited			✓	✓			Signed	
Sao Tome & Principe	Invited					✓			
Seychelles	Invited				✓	✓		Ratified	Accepted
Vanuatu	Invited				✓	✓		Signed	

Table 2. Involvement of CCAMLR participants in the catch and trade of Patagonian Toothfish. Sources: CCAMLR, 1998a, 1998b, 1999a, 1999d, 2000a, 2000d and 2000e; United Nations, 2001; FAO, 2001a

¹Defined as having reported catch to CCAMLR in one or more years in the period 1996/97 to 1999/00. Brazil has indicated its intention to fish for Patagonian Toothfish in the CCAMLR Area in 2000/01. ²Those listed in trade statistics for 1999 (Chile) and 2000 (Australia and the EU) as a destination of exports from Australia, Chile and the EU. ³Those listed as a source of imports in the trade statistics (1998-2000) of Canada, the EU, Japan and the USA. Countries identified in this column as exporters, but not elsewhere in the table as reporting catch or as importers are assumed to have imported product for re-export from countries other than Chile, Australia and the EU. ⁴States identified in CCAMLR, 1998a, 1999a, 2000a as Flag States (Argentina, Belize, Chile, Denmark for Faroe Islands, Panama, Sao Tome & Principe, Seychelles and the UK); port of registration (Vanuatu); country of ownership (Uruguay); or nationality of master (Spain) of IUU vessels.

⁵Ports identified in CCAMLR 1998b; 1999d and 2000d.

has contributed to a decline in IUU fishing. It is less clear whether the decline in IUU fishing by non-Contracting Parties depicted by CCAMLR has actually occurred. It is possible that IUU fishing by non-Contracting Parties has declined as a result of increased surveillance by coastal States of their EEZs. However, increased surveillance may have relocated rather than eliminated the IUU effort.

A more likely explanation for the decline in the CCAMLR estimates of IUU fishing lies in the shortcomings of the estimates themselves. CCAMLR's Standing Committee on Observation and Inspection acknowledges that it is becoming more difficult to estimate IUU catch because of the increase in transshipment at sea together with landings under different species names (CCAMLR, 2000c). As a result CCAMLR's estimates of IUU catch are regarded as minimum estimates that are likely to be underestimates of the true catches to an unknown extent, and which should be compared with previous years' estimates only with caution (CCAMLR, 2000d).

In 1999/00 CCAMLR estimated landings of IUU catch of *Dissostichus* spp. at 8418 t green weight of which an estimated 3526 t were landed in Port Louis, Mauritius. Subsequent information provided by Mauritius indicated that 9109 t of *Dissostichus* spp. was transhipped at Port Louis from January to October 2000 and that much of this was likely to be IUU catch from the CCAMLR Area (CCAMLR, 2000c). The extent to which this comprised IUU catch is not clear. Nor can it be confirmed whether the 9109 t relates to product weight or green weight. It is known that most product transhipped through Port Louis is headed and gutted (ISOFISH, 1998) and it is likely that this figure refers to product weight. If so, this could equate to around 15 000 t green weight. In any case the information from Mauritius suggests that the CCAMLR estimate of total landings of IUU catch is likely to be a considerable underestimate.

The gravity with which CCAMLR regards the potential impact of IUU fishing on Patagonian Toothfish stocks and Antarctic seabirds in the Southern Ocean is reflected in the following CCAMLR (1998a) statement:

'(i) there is a distinct possibility that stocks of *D. eleginoides* will continue to be depleted to extremely low levels;

(ii) the long-term yield of the targeted stocks of *D. eleginoides* is likely to be compromised in the future by ineffective control of illegal, unregulated and unreported fishing; and

(iii) the potential levels of incidental mortality of several species of seabirds in longline fisheries were found to be unsustainable for the populations of these species.'

IUU fishing has consisted largely of illegal fishing within the EEZs of sub-Antarctic island territories within the CCAMLR Area and unregulated and unreported fishing both within and outside the CCAMLR Area. Most is thought to have occurred in the Indian Ocean sector around Crozet, Heard, Kerguelen and Prince Edward Islands. Increased surveillance activity in these areas may be forcing illegal operators to more remote areas such as the waters around Ob and Lena Banks. Illegal fishing also continues in the waters around South Georgia (CCAMLR, 1999d and 2000d).

PARTICIPANTS IN IUU FISHING

IUU fishing is facilitated by: FOC States; countries which allow vessels to land or transship product without confirming that it has not been taken by IUU fishing; and countries that refuse to take action against their nationals involved in IUU fishing.

Of the countries identified in Table 2 as involved in IUU fishing, Belize and Panama are known to be FOC countries. There is some evidence that Panama is seeking to redress its involvement. It has ceased issuing licences for the harvesting of Patagonian Toothfish and will provide CCAMLR with a list of its vessels licensed to fish in international waters. The International Marine Registry of Belize is also co-operating with CCAMLR (CCAMLR, 2000c).

Reported and estimated catch	1996/97	1997/98	1998/99	1999/00
(a) Reported legal catch in EEZs, outside the CCAMLR Area	22 365	16 698	20 041	11 553
(b) Reported legal catch, CCAMLR Area	10 371	11 170	17 278	13 689
(c) Total reported legal catch (a+b)	32 736	27 868	37 319	25 242
(d) Estimated IUU catches of Patagonian Toothfish, CCAMLR Area:				
- by members	37 270	13 400	4 080	0
- by non-Contracting Parties	14 730	9 015	2 333	6 546
Total	52 000	22 415	6 413	6 546
(e) Total estimated catch, CCAMLR Area (b+d)	62 371	33 585	23 691	20 235
(f) Estimated landings of IUU-caught Patagonian Toothfish, all areas	68 234	26 829	16 636	8 418
Total estimated catch, all areas (c+f)	100 970	54 697	53 955	33 660

Table 3. Total CCAMLR-estimated catches (t) of Patagonian Toothfish by regulated and IUU operations, 1996/97-1999/00. 0 = zero, or 0.5 tonnes or less
Sources: CCAMLR, 1998b, 1999d, 2000d and 2000e

BOX 2 IUU FISHING FOR PATAGONIAN TOOTHFISH IN THE CCAMLR AREA



Development of IUU fishing

Early 1990s

- Management measures displaced excess fishing capacity into unregulated fishing grounds.
- Demand and prices for toothfish on Japanese and US markets increased.
- Weak coastal State control in remote waters facilitated IUU fishing in waters such as the UK EEZ around South Georgia (in CCAMLR Area 48.3).
- UK declaration and enforcement in 1994 of 200 nautical mile EEZ around South Georgia and South Sandwich Islands and a decline in the Patagonian Toothfish fishery in Argentina's waters forced IUU vessels to seek alternative grounds.

Mid-90s

- IUU fishing extended into the Indian Ocean sector of the Southern Ocean threatening stocks in the poorly enforced EEZs of sub-Antarctic islands under the jurisdiction of South Africa, France and Australia.
- Countries such as Chile and Argentina imposed new measures to prevent the landing of IUU catch of Patagonian Toothfish in their ports. Chile, for example, requires vessels to use vessel monitoring systems (VMS) before being allowed into its ports and has increased the maximum fines and penalties for those convicted of IUU fishing.
- New landing and transshipment ports emerged including Montevideo (Uruguay), Port Louis (Mauritius) and Walvis Bay (Namibia).

Response to IUU Fishing

1997

- IUU landings estimated by CCAMLR at 68 234 t out of a total estimated catch of 100 970 t.
- CCAMLR acknowledged the threat posed to the sustainable management of Patagonian Toothfish by IUU fishing and began development of an integrated set of Conservation Measures to combat it.

1998

- IUU landings estimated by CCAMLR at 26 829 t out of a total estimated catch of 54 967 t.
- CCAMLR adopted Conservation Measures to require:
 - inspection by Contracting Parties on all their vessels licensed to fish in the CCAMLR Area;
 - compulsory identification markings on vessels and fishing gear;
 - promotion of compliance by non-Contracting Parties; and,
 - the mandated use of VMS in toothfish fisheries.

1999

- IUU landings estimated by CCAMLR at 16 636 t out of a total estimated catch of 53 955 t.
- CCAMLR adopted Conservation Measures to require:
 - co-operative mechanisms between Parties to improve compliance; and
 - the introduction of a Catch Documentation Scheme (CDS) for *Dissostichus* spp.

2000

- IUU landings estimated by CCAMLR at 8418 t out of a total estimated catch of 33 660 t.
- CCAMLR implemented the CDS.
- CCAMLR passed resolutions urging:
 - those Acceding States and non-Contracting Parties not participating in the CDS to implement the scheme as soon as possible;
 - Contracting Parties to discourage their flag vessels from using ports of those Acceding States and non-Contracting Parties that have not implemented the CDS;
 - Contracting Parties to avoid flagging or licensing a non-Contracting Party vessel known to have a history of involvement in IUU fishing in the CCAMLR Area;
 - flag States participating in the CDS to require their flag vessels authorized to fish for or transship *Dissostichus* spp. on the high seas to maintain an operational VMS.

Sources: CCAMLR, 1998b, 1999d, 2000a and 2000d; ISOFISH, 1999

The ports of Durban (South Africa), Montevideo (Uruguay), Port Louis (Mauritius), Vigo (Spain) and Walvis Bay (Namibia) have been identified as receivers of IUU catch of Patagonian Toothfish in recent years (CCAMLR, 1999d and 2000d). All, with the exception of Mauritius, are either Members of, or Acceding States to, CCAMLR. Following the introduction of the CDS Mauritius remained the primary site for landings of IUU-caught Patagonian Toothfish (CCAMLR, 2000d). Mauritius announced on 14 November 2000 that it will implement the CDS (Anon., 2000).

Spanish nationals have been identified as directors of companies and skippers of vessels involved in IUU fishing for Patagonian Toothfish (ISOFISH, 2001). In April 2001 the South Tomi, a trawler registered in Togo, was apprehended after being sighted in the Australian EEZ around Heard and McDonald Islands. The master of the South Tomi was a Spanish national (J. Davis, Australian Fisheries Management Authority (AFMA), pers. comm., 1 May 2001). The apprehension of this vessel was possible only because of the co-operation of Australia, South Africa and France and their determination to eliminate IUU fishing. Unfortunately, the impact of this type of co-operation and commitment will be diminished unless fellow CCAMLR Members also co-operate by taking action against any of their nationals found to be involved in IUU fishing.

CCAMLR INITIATIVES TO ELIMINATE IUU FISHING

Of the actions taken by CCAMLR in response to IUU fishing for Patagonian Toothfish (Box 2), the most significant have been the mandatory use of an automated satellite-linked vessel monitoring system (VMS) on Patagonian Toothfish vessels, the introduction of the CDS and the resolution urging Members to blacklist known IUU vessels.

Vessel Monitoring Systems (VMS)

All vessels licensed to fish for Patagonian Toothfish in the CCAMLR Area are required to carry a VMS. This Conservation Measure, adopted by CCAMLR in 1998, requires each Contracting Party to install satellite-tracking devices on board its fishing vessels to allow them to monitor the activities of their vessels effectively. VMS allows the flag State to receive automatic transmission of information including fishing vessel identification, location, date and time. CCAMLR Members involved in the Patagonian Toothfish fishery should have complied with this Conservation Measure by 31 December 2000. At the insistence of Japan, Poland, Republic of Korea and Ukraine the CCAMLR krill fishing fleet is exempt from this Measure. This potentially compromises CCAMLR's efforts to control IUU fishing since krill vessels have the opportunity to switch gear to fish for, or to transship, species such as Patagonian Toothfish (CCAMLR, 1999c).

Catch Documentation Scheme (CDS)

The CDS became binding on all CCAMLR Members on 7 May 2000. The Scheme is designed to track the landings and trade flows of toothfish caught in the CCAMLR Area by requiring landings of toothfish at participants' ports, or transshipments to participants' vessels, to be accompanied by a valid CCAMLR Catch Document. This will enable the Commission to identify the origin of toothfish entering the markets of all participants in the Scheme, help to determine whether toothfish taken in the CCAMLR Area were caught in a manner consistent with CCAMLR's Conservation Measures and provide additional data for stock assessment purposes.

The catch document collects information including:

- the name, home port, national registry, call sign (a vessel-specific telecommunications identifier) of the vessel, and if issued, its International Maritime Organisation/Lloyd's registration number;
- the reference number of the licence or permit, issued to the vessel;
- the weight of *Dissostichus* spp. landed or transshipped by product type, by CCAMLR statistical subarea or division (if caught in the CCAMLR Area) or by FAO statistical area, subarea or division caught outside the CCAMLR Area.
- the date the catch was taken; and
- the date and port at which the catch was landed, or the date and the vessel, its flag and national registry number, to which the catch was transshipped.

The CDS provides for any non-Contracting Party to participate in the Scheme, avoiding discrimination between product on the basis of CCAMLR membership and thus avoiding conflict with World Trade Organization (WTO) requirements. CCAMLR has invited Belize, Bolivia, Canada, China, Guinea Bissau, Guyana, Honduras, Indonesia, Malaysia, Maldives, Mauritania, Mauritius, Panama, Portugal, Singapore, Taiwan, Thailand and Vanuatu to co-operate in the implementation of the Scheme. These States have been identified as:

- importing toothfish caught in the CCAMLR Area;
- inadvertently or intentionally facilitating IUU fishing by providing ports and landing facilities to vessels which may have been operating in IUU fisheries for toothfish; or
- flag States of vessels fishing in the CCAMLR Area (WTO, 2000).

A number of useful amendments were made to the CDS at the November 2000 CCAMLR meeting. The inclusion of the Lloyd's registration number of the catching vessel on the documentation will facilitate identification of the vessel where name changes have occurred. The frequency of reporting has been increased and the CDS forms standardized. Changes to the explanatory memorandum also made more explicit the requirement for CDS re-export documentation. The meeting also agreed a number of resolutions to

strengthen the CDS (Box 2). It has not been possible to obtain a definitive listing of those countries that have implemented, or are co-operating with, the CDS. The EC¹, a significant importer and exporter of Patagonian Toothfish (Tables 6 and 7) did not, however, adopt regulations to establish the CDS until 22 May 2001 (EC, 2001). The EC was in contravention of a binding CCAMLR Conservation Measure for over 12 months. The Council Regulation (No. 1035/2001) became binding on EU Member States on 20 June 2001. Each EU Member State will now be required to implement domestic legislation that defines the sanctions to be imposed for the various type of violations to the Council Regulation (C. Raymakers *in litt.* to M. Lack, 29 June 2001). Canada, an Acceding State to CCAMLR, and an increasingly significant importer of Patagonian Toothfish, has yet to demonstrate any commitment to implementing the CDS. The EC's tardiness in implementing the Scheme and Canada's reluctance to do so indicate a lack of commitment to the elimination of IUU fishing for Patagonian Toothfish. By contrast, a positive development has been the recent confirmation that China is actively participating in the Scheme (I. Hay, Australian Antarctic Division, *in litt.* to G. Sant, 10 July 2001). CCAMLR agreed in 1998 that an important prerequisite for the effective implementation of the CDS was the introduction of classification codes for toothfish in trade statistics of each participating country. While it is apparent that many Members have complied it has not been possible to confirm whether all Members have done so.

Impact of the CDS

The catch and trade data publicly available do not yet provide a sufficiently strong basis on which to assess the impact of the CDS. There have been anecdotal reports that toothfish product not accompanied by CDS documentation is being traded at discounted prices (CCAMLR, 2000d), however the nature of the market in IUU-caught Patagonian Toothfish does not allow for ready confirmation of this.

A recent report (Falch and Chiba, 2001) on the Japanese market for toothfish indicated that in 2000 "there was no noticeable impact" on that market from the introduction of the CDS. However, the same report suggests that imports into Japan might halve in 2001 due to catch restrictions and the CDS. The decision by Mauritius to implement the CDS may well have a significant impact on the availability and price of Patagonian Toothfish in 2001. This will depend on at least two factors: how rigorously Mauritius applies the CDS; and, to what extent IUU operators are successful in identifying alternative transshipment sites or increasing transshipment at sea.

The sources of Patagonian Toothfish imports into Japan and the USA for the period July to December 2000 - that is after the CDS was introduced - are out-

lined in Table 4. In addition to importing from the CCAMLR Member countries listed, all of which CCAMLR considers to have introduced the CDS (E. Sabourenkov, CCAMLR Secretariat, *in litt.* to M. Lack, 30 April 2001), the USA and Japan imported from 10 other countries. If the implementation of the CDS in the USA and Japan is assumed to be working effectively this implies that imports from each of these countries was accompanied by CDS documentation.

Deficiencies in the CDS

Implementation of the CDS does not in itself preclude the possibility of IUU catch being landed. A serious deficiency in the CDS remains the discretion afforded implementing States to test whether the catch was taken in accordance with CCAMLR's measures. At present the Scheme does not prescribe how catch documents should be verified. States participating in the CDS need to insist, for example, on VMS evidence to verify where a vessel has been fishing or transshipping before coming into port if the CDS is to preclude the trade of IUU catch of Patagonian Toothfish. There is no indication of how many countries will adopt this responsible approach to verification of CDS documents.

The timing of verification of CDS documentation also remains an issue. It is not sufficient that product is cleared for transshipment or for entry into a market simply because it is accompanied by CDS documentation. The information on that documentation must be verified prior to clearance. There remains doubt as to whether all clearance authorities have access to sufficient information at the time of clearance to do so.

Comprehensive coverage of trade by the CDS is critical to its success. Import and export statistics available for this study revealed that some 56 countries were involved in the trade of Patagonian Toothfish in 2000. Of those, 23 are either CCAMLR Members or overseas territories of a CCAMLR Member. A further four have acceded to CCAMLR and another eight have been approached by CCAMLR regarding co-operation with the CDS. The remaining 19 countries involved in the trade of Patagonian Toothfish, albeit many of them in a very minor way, may not even be aware of the provisions of the CDS.

The capacity of participating States for effective implementation is likely to have an impact on the success of the CDS. Fisheries inspectors in South Africa, for instance, have a limited capacity with regard to species identification and a demonstrated lack of consistency and vigilance in the monitoring of toothfish landings in Cape Town prior to the introduction of the CDS. A failure to address this problem will result not only in IUU landings going undetected, but may also inhibit the administrative efficiency of the system, thereby frustrating legitimate traders whose support is critical to the system's success (M. Burgener, TRAFFIC East/Southern Africa, *in litt.* to G. Sant, 4 June 2001).

¹ Fisheries issues for European Union Member States remain under the authority of the European Community (EC) which was ratified under the Treaty of Rome.

Sources	USA			JAPAN	
	Fillets	Other	Fresh	Fillets	Other
CCAMLR Members					
Argentina	0	943	24	609	527
Australia	0	9	0	2	657
Brazil	0	17	0	0	0
Chile	331	338	415	1058	197
France	50	138		184	991
Korea, Rep. of	115	116	0	0	476
Namibia	30	0	0	0	0
New Zealand	0	0	0	0	11
South Africa	30	283	0	0	172
Spain	0	0	0	0	74
Ukraine	0	0	0	0	112
UK ¹	167	18	0	0	48
Uruguay	219	427	0	0	322
USA	0	0	0	0	3
Others					
Belize	0	0	0	0	71
China	512	0	0	1072	270
Costa Rica	16	0	2	0	0
Greece	0	1	0	0	0
Honduras	0	0	4	0	0
Laos	0	0	1	0	0
Mauritius	102	0	0	0	572
Peru	0	0	11	0	0
Seychelles	0	122	0	0	0
Venezuela	0	5	0	0	0

Table 4. Patagonian Toothfish imports (t) by the USA and Japan, July-December 2000. 0 = zero, or 0.5 tonnes or less
Sources: Anon., 2001; USNMFS, 2001. ¹Includes Falkland/Malvinas Islands

Blacklisting IUU vessels

CCAMLR (2000a) passed a resolution, proposed by Norway, urging Contracting Parties to avoid flagging non-Contracting Party vessels or licensing such vessels to fish in waters under their fisheries jurisdiction if the vessels have a history of engagement in IUU fishing in the CCAMLR Area. CCAMLR will maintain and make available to Contracting Parties a list of vessels with a history of IUU fishing. This resolution is seen as a breakthrough in efforts to eliminate IUU fishing and will test the commitment of the Parties to this cause. It is, however, only a resolution, and not, as originally proposed by Norway, part of a binding Conservation Measure.

TRADE IN PATAGONIAN TOOTHFISH

Since IUU fishing is only worthwhile if a market exists for the product, the quantity of product traded should provide an indication of the catch. However, the analysis of trade in Patagonian Toothfish is complicated by a variety of factors.

Patagonian Toothfish is traded under a variety of other names including Bacalao de profundidad (Chile), Butterfish (Mauritius), Chilean Sea Bass (the USA and Canada), Merluza negra (Argentina), Mero (Japan) and Róbalo (Spain). Moreover, some of these generic names are used to describe other fish species. The variety of

names can, deliberately or unintentionally, allow Patagonian Toothfish to bypass regulatory measures and compromise the accuracy of trade statistics. Even in those countries that have specific trade codes for Patagonian Toothfish, the variety of trade names leaves the way open for misclassification.

Other factors include the lack of specific market codes in a number of significant trading countries, the extent of re-exporting and the application of conversion factors for various product forms.

Trade data are presented for the period 1998-2000. Data prior to 1998 are considered too inaccurate to allow meaningful analysis. The completeness of the data, while improving with the introduction of the CDS and HCDCS codes, remains an impediment to comprehensive trade analysis. It is expected that data provided by the CDS will have a major impact on the availability of meaningful trade data for Patagonian Toothfish in the future.

Imports

Japan and the USA are recognized as the largest consumer markets for Patagonian Toothfish with Canada and the EU also significant. Patagonian Toothfish is a highly valued restaurant-quality food fish that competes with Black Cod *Anoplopoma fimbria* (also known as Sablefish) on the North American and Japanese markets. The price of Patagonian Toothfish is sensitive to landings and changes in the price of Black Cod as well as overall economic conditions in importing countries and relative changes in Yen and USD exchange rates (ISOFISH, 1999).

The average value (USD/kg) of imports of Patagonian Toothfish into the major markets of Japan and the USA varies considerably between the markets and inter-annually (Table 5). However prices on both the Japanese and US markets have increased in recent years. The recent increase in price is likely to reflect, at least in part, the decline in supply of Patagonian Toothfish as IUU fishing fell from the peak of the mid-90s. The average value of frozen fillets into the USA increased by 85% between 1998 and 2000 and other frozen product by 66% over the same period. The average value of Japanese imports of both fillets and other frozen product peaked in 1999, but fell by around 13% in 2000.

The Canadian, EU, Japanese and US markets imported a total of nearly 30 000 t of Patagonian Toothfish products in 2000 (Table 6). Japanese imports comprised over 55% of the total. Frozen product, reflecting the deep-sea nature of the fishing fleets involved in catching Patagonian Toothfish, accounted for 97% of imports. Imports of fresh Patagonian Toothfish into Canada and the USA consist largely of headed and gutted product (Anon., 1999; Contreras, 2000).

CCAMLR Members provided 73% of the imports of Patagonian Toothfish products into these markets in 2000. Other significant suppliers included Belize, China, Mauritius, Namibia, Portugal and the Seychelles.

China has emerged as a significant supplier of Patagonian Toothfish products to the Japanese and US

	Quantity (t)	JAPAN Value (USD 000)	USD/kg	Quantity (t)	USA Value (USD'000)	USD/kg	Quantity (t)	CANADA Value (USD'000)	USD/kg
1998									
Frozen fillets	9 644	69 835	7.24	448	2 706	6.05	-	-	-
Frozen other	12 713	62 200	4.89	5 104	26 850	5.26	-	-	-
1999									
Frozen fillets	8 784	99 596	11.34	1 511	13 763	9.11	238	1 174	4.93
Frozen other	8 201	60 848	7.42	4 891	42 989	8.79	471	1 282	2.72
2000									
Frozen fillets	6 451	63 668	9.87	3 208	35 907	11.19	149	594	3.98
Frozen other	10 207	65 005	6.37	4 136	36 059	8.72	952	3 253	3.42
Fresh	-	-	-	692	7 056	10.20	42	192	4.57

Table 5. Average value of Patagonian Toothfish imports into the USA, Japan and Canada, 1998-2000.

- = data not available

¹Japanese Yen and Canadian Dollars converted to US Dollars using exchange rates as at end December of each year.

Sources: Anon., 1996-1999 and 2001; Statistics Canada, 2001; USNMFS, 2001

	JAPAN		USA			CANADA			EU		TOTAL	Green weight equivalent
	Frozen fillets	Frozen other	Frozen fillets	Frozen other	Fresh	Frozen fillets	Frozen other	Fresh	Frozen fillets	Frozen other		
CCAMLR Members												
Argentina	704	1217	462	1247	24	0	187	0	4	222	4067	7499
Australia	4	1570	0	8	0	0	0	0	0	0	1582	2691
Belgium	0	0	0	0	0	1	0	0	11	12	24	47
Brazil	0	0	36	36	0	0	0	0	0	28	100	189
Chile	3303	592	530	719	644	0	237	33	34	149	6241	12544
France	301	1467	49	183	0	0	139	0	0	44	2183	3887
Germany	0	0	0	0	0	0	0	0	2	66	68	117
India	0	0	0	5	0	0	0	0	0	0	5	9
Italy	0	0	0	0	0	0	0	0	0	658	658	1119
Korea, Rep. of	0	865	115	215	0	0	0	0	0	0	1194	2088
New Zealand	0	25	14	61	0	0	41	0	0	43	184	321
Norway	0	91	0	0	0	0	0	0	0	0	91	155
South Africa	0	353	84	456	0	0	0	0	23	0	916	1610
Spain	0	423	0	0	0	0	0	0	12	1122	1557	2654
Ukraine	0	112	0	0	0	0	0	0	0	0	112	190
UK ¹	0	165	187	54	0	0	0	0	122	304	832	1569
Uruguay	0	474	292	859	0	69	246	0	0	0	1939	3478
USA	0	3	0	0	0	4	62	1	0	0	71	122
Total	4312	7357	1769	3842	668	74	913	35	208	2648	21824	40287
Other sources												
Belize	0	349	48	0	0	0	0	0	0	6	403	709
China	2134	419	1061	0	0	0	0	0	20	0	3634	7786
Denmark	0	0	0	0	0	0	0	0	39	84	123	229
Mauritius	0	1723	270	70	0	0	39	0	0	0	2102	3709
Namibia	0	240	44	0	0	0	0	0	0	54	338	597
Netherlands	0	0	0	0	0	0	0	0	49	97	146	273
Peru	0	0	0	0	17	0	0	0	0	30	47	80
Portugal	0	0	0	25	0	0	0	0	97	532	654	1160
Seychelles	0	41	0	122	0	0	0	0	0	0	163	278
Turkey	0	0	0	0	0	75	0	0	0	0	75	165
Others	4	78	16	76	6	0	0	7	24	8	219	395
Total	2138	2850	1439	294	23	75	39	7	229	811	7904	15378
TOTAL	6451	10207	3207	4136	692	149	952	42	437	3459	29731	55665

Table 6. Imports (t) of Patagonian Toothfish into the USA, Japan and Canada in 2000.

0 = zero, or 0.5 tonnes or less

Sources: EUROSTAT, 2001; Anon., 2001; Statistics Canada, 2001; USNMFS, 2001. ¹Includes Falkland/Malvinas Islands and British Virgin Islands.

All figures have been rounded up or down to the nearest unit.

markets. These two markets imported over 3600 t of Patagonian Toothfish from China in 2000, predominantly in the form of fillets (Table 6). Japan imported two-thirds of the fillets, reflecting the presence of a number of Japanese-owned processing plants in China. Since China is not a known catching country, it is believed that its involvement is by way of importing, processing and re-exporting Patagonian Toothfish. Available trade data (Table 7) demonstrate that China imported product from Chile, Australia and France in 1999 and 2000. It is also understood that China imports Patagonian Toothfish from Japan for processing and that this processed product is subsequently re-exported back to Japan. It has not been possible to quantify the extent of this re-export trade between Japan and China. As a result the trade analysis may include some double counting of Patagonian Toothfish product between these two countries. China's participation in the CDS should help to clarify the extent and nature of this trade.

Exports

The latest export data available for this analysis are provided in Table 7. Of the main catching countries identified in Figure 2, export data for toothfish products were available to TRAFFIC for Chile (at various levels of aggregation for 1998-1999), for EU Member States (2000) and for Australia (1999 and 2000).

Lack of resources precluded investigation of the availability of toothfish export data from Argentina, China, South Africa and Uruguay, and the acquisition of the most recent trade data from Chile. However, a proportion of the trade by these countries is, nevertheless, included in the analysis through the import statistics of Canada, the EU, Japan and the USA. The data omitted relate only to exports to markets other than these.

Estimating World Trade

Estimated world trade in Patagonian Toothfish for the period 1998 to 2000 is presented in Table 8. It is not possible to quantify the overall impact of the anomalies in the trade analysis to determine whether the estimates are more likely to under- or over-state world trade. On the one hand, re-exports and possible over-estimation of green weight equivalents, particularly of "other" Patagonian Toothfish products, are likely to bias the estimates upwards. Conversely, estimates of world trade in this article are likely to understate actual trade, to the extent that the available data used (Canadian/EU/Japanese/US imports plus Australian/Chile/EU exports to other markets) exclude the exports of countries such as Argentina and Uruguay to other markets.

Trade data for Patagonian Toothfish continue to exhibit anomalies that impede the analysis and interpretation of trade statistics. As an example Japanese import statistics for Patagonian Toothfish indicate that 4 t of fillets were imported from Australia in 2000. Australian export statistics indicate that 223 t of fillets were exported to Japan in February to December 2000, a discrepancy of 219 t of fillets or nearly 500 t green weight.

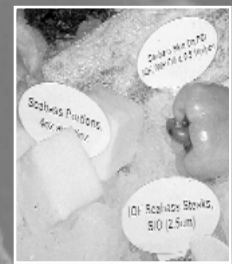
Notwithstanding these anomalies the green weight estimates of world trade in Table 8 show a decline in world trade in Patagonian Toothfish between 1998 and 1999 but an increase in 2000. The greater comprehensiveness of the trade data in 2000 is at least partially responsible for this and makes any trend difficult to identify. The Japanese and US import data are the most consistent over the three-year period. Using the total imports of these two markets the data suggest a significant drop between 1998 and 1999 but a levelling off at around 47 000-48 000 t in 1999 and 2000. Despite a 12 000 t reduction in reported catch over those two years these markets were able to maintain their imports at around the same total level.

Boat fishing illegally for Patagonian Toothfish.
Greenpeace

The use of satellite monitoring systems and the introduction of the Catch Documentation Scheme may be reducing IUU fishing for Patagonian Toothfish. Nevertheless, around one-third of catch in the CCAMLR Area is IUU catch.



Fillets of Patagonian Toothfish on display at the Seafood Expo 2001, Brussels, Belgium.
Caroline Raymakers, TRAFFIC Europe



Black Cod (or Sablefish), another high-value food fish, and Patagonian Toothfish on sale in Japan. Prices on the Japanese market have increased in recent years, a reflection, at least in part, of the decline in supply.
Fumihito Muto, TRAFFIC East Asia



On the menu in Canada, where Patagonian Toothfish is commonly referred to as Chilean Sea Bass
E. Beasley



Backdrop of Patagonian Toothfish
Greenpeace/Grace

EXPORTING COUNTRIES

IMPORTING COUNTRIES	CHILE ¹ (Jan-Sept 99)		AUSTRALIA (Feb 00-Jan 01)		FRANCE (00)	SPAIN (00)		OTHER EU (00)	
	Frozen	Fresh	Frozen Fillets	Frozen Other ²	Frozen Other	Frozen Fillets	Frozen Other	Frozen Other	Frozen Fillets
Argentina	9	1	0	0	0	0	0	0	0
Austria	0	0	0	0	0	0	0	1	12
Belgium	0	0	0	0	0	0	0	1	3
Bosnia-Herzegovina	0	0	0	0	0	0	0	77	0
Brazil	45	0	0	0	0	0	0	0	0
Canada	26	15	0	0	0	0	0	0	0
China	477	0	55	1949	634	0	0	0	0
Colombia	3	0	0	0	0	0	0	0	0
Denmark	0	0	0	0	0	0	0	1	0
Egypt	0	0	0	30	0	0	0	0	0
Finland	0	0	0	0	0	0	0	3	0
France	0	0	0	0	0	45	403	47	2
Germany	0	0	0	0	0	0	0	218	0
Greece	0	0	0	0	0	30	87	11	1
Hong Kong	7	0	0	0	37	0	0	0	0
Israel	14	0	0	0	0	0	0	0	0
Italy	0	0	0	0	0	406	254	8	0
Japan	4793	0	270	406	2173	0	0	0	0
Korea, Rep. of	0	0	30	0	17	0	0	0	0
Luxembourg	0	0	0	0	0	0	0	0	1
Mexico	1	1	0	0	0	0	0	0	0
Namibia	0	0	0	0	0	13	0	0	0
Netherlands	0	0	0	0	40	0	0	7	0
New Zealand	0	0	56	0	0	0	0	0	0
Paraguay	0	2	0	0	0	0	0	0	0
Philippines	0	0	0	9	0	0	0	0	0
Poland	0	0	0	0	0	0	23	0	0
Portugal	8	0	0	0	27	51	36	0	0
Saudi Arabia	0	0	0	60	0	0	0	0	0
Serbia-Montenegro	0	0	0	0	0	0	0	271	0
Singapore	24	0	0	0	0	0	0	0	0
Spain	7	0	0	0	0	0	0	29	0
Taiwan	7	0	0	0	0	0	0	0	0
Thailand	0	0	0	0	23	0	0	0	0
UK	0	0	0	0	59	0	0	20	2
USA	743	1846	6	3	422	0	5	0	0
Total	6163	1865	417	2457	3432	545	808	694	21

Table 7. Trade in Patagonian Toothfish, reported by exporting countries (product weight, t).

0 = zero, or 0.5 tonnes or less

Sources: Contreras, 2000; ABS, 2001; EUROSTAT, 2001

¹Chile exports include 633 t of other meat which consist largely of offcuts, heads, etc. ²Exports of "Frozen other" product include around 33% heads to Japan, 67% heads to China and 100% heads to the Philippines (Martin Exel, Austral Fisheries Pty Ltd, pers. comm., April 2001). All figures have been rounded up or down to the nearest unit.

	1998					1999					2000				
	Frozen Fillets	Other	Fresh Fillets	Other	TOTAL	Frozen Fillets	Other	Fresh Fillets	Other	TOTAL	Frozen Fillets	Other	Fresh Fillets	Other	TOTAL
Imports															
Japan	21 217	21612	-	-	42 829	19 324	13 942	-	-	33 266	14 192	17 351	-	-	31 543
USA ¹	986	8 677	55	4 366	14 084	3 324	8 315	16	3 130	14 785	7 056	7 032	0	1 176	15 264
Canada	-	-	-	-	-	524	801	-	-	1 325	328	1 618	0	71	2 017
EU	-	-	-	-	-	-	-	-	-	-	961	5 880	-	-	6 841
Exports (other than to Japan/US/Canada/EU)²															
Chile ³	874	3 137	12	19	4 042	163	782	2	4	951	-	-	-	-	-
Australia ⁴	-	-	-	-	-	134	831	-	-	965	310	1 255	0	0	1 565
Spain	-	-	-	-	-	-	-	-	-	-	51	24	-	-	75
France	-	-	-	-	-	-	-	-	-	-	-	1 207	-	-	1 207
Other EU	-	-	-	-	-	-	-	-	-	-	-	595	-	-	595
Total	23 077	33 426	67	4 385	60 955	23 469	24 671	18	3 134	51 292	22 898	34 962	0	1 247	59 107

Table 8. Estimated world trade (green weight, t).

- no data available; 0 = zero, or 0.5 tonnes or less

Sources: ABS, 2001; Contreras, 2000; CCAMLR, 1999d; EUROSTAT, 2001; Anon., 1996-1999 and 2001; Statistics Canada, 2000; USNMFS, 2001.

¹Fresh import figures in 1998 and 1999 derived from Chile export data. ²Excludes Canada only in 1999 and 2000; excludes the EU only in 2000. ³Chile data for 1999 only up to September 1999. ⁴Australian data for 2000 relates to February 2000 to January 2001.

Estimating IUU catch

The difference between recorded catch and recorded trade should give an indication of the extent of IUU catch of Patagonian Toothfish. The total and conservative trade estimates of IUU catch for 1998-2000 along with CCAMLR estimates of IUU landings are presented in Table 9.

The trade estimates of IUU catch of Patagonian Toothfish indicate a significant drop in the estimated IUU catch between 1998 and 1999 but an increase back to 1998 levels in 2000. The trade analysis suggests that IUU catch comprised around 57% of the total trade in that year and is four times greater than the CCAMLR estimate of IUU landings of Patagonian Toothfish.

Even a conservative estimate of world trade, provided by imports to only the Japanese and US markets, indicates that total quantities traded have approximated 47 000-48 000 t (green weight) in each of the last two years. This is far in excess of reported catch levels and of particular concern given that reported catch declined by 12 000 t between 1999 and 2000. This resultant shortfall in supply would appear to have been compensated for by IUU catch. The conservative estimate of IUU catch in 2000 is 21 500 t, adding more than 80% to reported catch levels.

INTERNATIONAL INITIATIVES TO COMBAT IUU FISHING

The principal international legal instrument governing exploitation of fisheries is the 1982 United Nations Convention on the Law of the Sea (UNCLOS). A number of agreements and plans have been developed since UNCLOS was adopted in an attempt to clarify and expand on some of the provisions in the Convention. The issues faced by CCAMLR and coastal States in dealing with IUU fishing were central to many of these, including:

- the 1993 Code of Conduct for Responsible Fisheries together with the 1993 Agreement to Promote Compliance with International Conservation and Management Measures by Fishing Vessels on the High Seas (the Compliance Agreement);
- the 1995 Agreement for the Implementation of the Provisions of UNCLOS relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks (the Fish Stocks Agreement); and,
- the 2001 International Plan of Action on IUU Fishing.

The Compliance and Fish Stocks Agreements

The Compliance Agreement, an integral part of the FAO Code of Conduct for Responsible Fisheries, is particularly concerned to address monitoring, control and surveillance (MCS) problems associated with fishing vessels operating under flags of convenience in order to avoid compliance with applicable conservation and management rules. A further five countries are required to accept before the agreement comes into effect.

The Fish Stocks Agreement emphasizes the importance of regional fisheries management organizations (RFMOs) in the sustainable management of fisheries resources, and strengthens their jurisdictional scope, particularly with respect to RFMO non-Parties, provided those non-Parties are Parties to the Fish Stocks Agreement itself. A further two States are required to ratify or accede to the agreement for it to come into effect.

When in force these agreements will, in theory, allow organizations such as CCAMLR the opportunity to impose MCS schemes on Parties to those agreements that are not Parties to CCAMLR. In practice, however, the relevant States may not be party to either agreement (Table 2). However, the accession to and ratification of the Fish Stocks Agreement by Mauritius and Namibia, respectively, is a positive sign. The entry into force of the agreement would place them under an obligation to take measures as port States "to promote the effectiveness" of CCAMLR's Conservation Measures and gradually will help to close the avenues for the landing of toothfish taken in violation of CCAMLR's conservation strategies.

Only eight CCAMLR Members have ratified the Fish Stocks Agreement and eight Members have accepted the Compliance Agreement. Only four Members have done both (Table 2).

International Plan of Action (IPOA)

The threat posed by IUU fishing has been recognized internationally with the adoption in March 2001 of an IPOA on IUU Fishing by the United Nations FAO's Committee on Fisheries (FAO, 2001b). The IPOA outlines measures for exercising flag State responsibility, the use of port and market measures and sanctions to control the actions of those involved in IUU fishing. Adoption of the IPOA, which will be used as the blueprint for action against IUU fishing, is a positive move. It is disappointing, however, that the plan falls well short of expectations in relation to port State measures and market-related measures.

Year	Reported catch	Estimated trade	Trade estimate of IUU catch	Conservative estimate of trade	Conservative trade estimate of IUU catch	CCAMLR estimate of IUU landings
1997/98	27 868	60 955	33 087	56 913	29 045	26 829
1998/99	37 319	51 292	13 973	48 051	10 732	16 636
1999/00	25 242	59 107	33 865	46 807	21 565	8 418

Table 9. Estimated IUU Catch (green weight, t).

The IPOA places the onus on port States to “have clear evidence” that a vessel has been engaged in IUU fishing activity. This outcome reverses the burden of proof that was initially envisaged during the plan’s drafting. For countries that benefit from the Patagonian Toothfish fishery only through the commerce that arises from being a port State, the IPOA provides little incentive to insist on vessels providing, for example, satellite positioning evidence of where the fish was taken. For those port States, particularly those with limited surveillance and enforcement resources, that do wish to refuse access to IUU vessels the burden of proof is very high.

The agreed text on market-related measures effectively relegates them to measures of last resort and denies their legitimate role in fisheries management and conservation. The need for consistency with WTO rules is acknowledged and, as has been demonstrated by the CDS, is achievable. However, the IPOA introduced criteria, over and above those established by the WTO, requiring that market measures be implemented only in “exceptional circumstances” and only where “other measures have proven unsuccessful”. The plan caters for those who wish to defer the introduction of such measures.

Furthermore the IPOA has missed the opportunity to take a strong stance against the apparent trend towards the use of charter vessels in IUU fishing. This practice involves a country allowing its nationals to charter foreign flagged vessels. The country benefits financially through increased catch while incurring no responsibility for, or control over, the activities of these vessels.

DISCUSSION AND CONCLUSION

The fishery for the Patagonian Toothfish is characterized by uncertainty. The true levels of catch of this species cannot be precisely determined: neither the CCAMLR estimates of total catch nor those arising from the trade analysis presented here are conclusive. Furthermore, the status of Patagonian Toothfish stocks in many areas is difficult to establish. There is insufficient information to undertake stock assessments in many areas and uncertainty remains in relation to key stock assessment parameters.

While the trade analysis presented here may not be definitive about the absolute level of total catch it nonetheless provides a sufficiently sound basis for a number of conclusions about the Patagonian Toothfish fishery. First, while IUU catch appears to have been reduced from the peak of the mid-1990s, CCAMLR’s management measures have not prevented an increase in IUU catch in 2000. The USA and Japan were able to maintain their total imports over the two years 1999 and 2000, despite a 12 000 t reduction in reported catch in 2000. This can suggest only an increase in IUU fishing in that year. Second, conservative trade estimates put IUU catch at 21 500 t in 2000. Third, the current management arrangements have not proven effective in ensuring a sustained decline in IUU catch of Patagonian Toothfish.

The environment of uncertainty surrounding the Patagonian Toothfish fishery together with the findings of this study dictate a need for caution. There is no room for

complacency in management of this species. Recent initiatives by CCAMLR, particularly the introduction of the CDS, have the potential to play a major role in eliminating IUU fishing for Patagonian Toothfish and it is acknowledged that the full impact of the CDS is yet to be seen. In light of the outcomes of the recent IPOA negotiations CCAMLR must be congratulated on achieving the consensus necessary to introduce the scheme.

However, no single measure will be successful in addressing IUU fishing. All possible avenues must be explored in order to address the impact of IUU fishing of Patagonian Toothfish stocks. The market, surveillance and political environments provide little comfort for those involved in the task. The economic incentives provided by strong demand, high prices and declining fish stocks worldwide remain. The risk of being detected and successfully prosecuted are relatively low in many of the known fishing grounds. The economic incentive for ports to remain open to landings/transshipment of IUU-caught Patagonian Toothfish may well see the use of new ports, as the traditional landing sites become more restricted. Despite much rhetoric, the political will to accept flag and port State responsibility is low in some countries, as evidenced by their stance on key provisions of the recently negotiated IPOA on IUU fishing. Likewise, within CCAMLR there remains doubt as to the commitment of some Members to eliminate IUU fishing. Few Members have ratified the Fish Stocks Agreement and/or accepted the Compliance Agreement. At least one CCAMLR Member, the EC, failed to comply with the Conservation Measure establishing the CDS within the required timeframe. It remains unclear how many CCAMLR Members require VMS on their vessels and have introduced HCDCS trade codes. Some Members supported the ultimately successful moves to weaken the provisions of the IPOA on IUU fishing.

Under these circumstances CCAMLR Members and others interested in the sustainability of the Patagonian Toothfish fishery must assess all options for improving the effectiveness of management of the species. Within CCAMLR this must include reassessment of existing Conservation Measures. Improvements to Conservation Measures related to the CDS and VMS are essential. CCAMLR must also look to utilize other international instruments to support its measures. The merits of complementary management measures implemented under the auspices of other Conventions, for example trade controls under the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), must now be reviewed. CCAMLR Members must support international Conventions, Codes and Plans in order to ensure that these come into force and that their potential to address IUU fishing is realized.

Ultimately the success of any other management or trade measures rely on the level of commitment to ensuring that catch does not exceed levels consistent with the long-term sustainability of the stocks of Patagonian Toothfish. The following recommendations are relevant to all organizations, States and agencies with an interest in the conservation of this species.

RECOMMENDATIONS

1. Patagonian Toothfish fishing nations, collectively and individually, must assess whether current catch levels are consistent with the precautionary approach in light of the uncertainty that surrounds catch and stock status.
2. The role of complementary mechanisms implemented under the auspices of other Conventions, such as CITES, must be considered.
3. CCAMLR Members must ensure that their domestic legislation and administrative arrangements support the Conservation Measures introduced by CCAMLR. Members must, for example, be able to take appropriate action against their nationals found to be involved in IUU fishing, such as the denial of access to vessels known to be involved in IUU fishing and to adopt a responsible approach to verification of CDS documentation.
4. The CDS should be altered to prescribe how documentation should be verified. In particular, vessel monitoring systems data should be required as proof that the catch was not taken by IUU fishing and documentation should be verified prior to product being cleared for transshipment or released by Customs.
5. Further efforts must be made to involve all trading nations in the CDS.
6. CCAMLR must prioritize the collection of high quality trade data and market intelligence as a complementary exercise to monitoring trade through the CDS. Particular emphasis should be placed on gaining a better understanding of the role of key countries including Argentina, China and Uruguay in the international toothfish trade.
7. The Conservation Measure requiring CCAMLR's Patagonian Toothfish fleet to carry VMS should be extended to all CCAMLR vessels.
8. In the interests of transparency CCAMLR should make information concerning the compliance of Members with Conservation Measures and other agreed CCAMLR actions publicly available. Responsible States must demonstrate their individual commitment to eliminating IUU fishing by ratifying the Fish Stocks Agreement and accepting the Compliance Agreement.
9. Responsible States should relay to the FAO their disappointment with the outcomes of the negotiations of the IPOA on IUU fishing and seek opportunities to strengthen the provisions relating to port State controls, controls over charter boats and trade-related measures.
10. Despite the limitations of the IPOA on IUU Fishing, CCAMLR must exploit the momentum generated by its recent adoption to persuade non-Contracting Parties with a significant role as port, flag or market States for Patagonian Toothfish to accede to CCAMLR or to introduce complementary measures.

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...continued illegal fishing [of Patagonian Toothfish] holds serious implications for the long-term yield and ... total catches, in some areas at least, may seriously compromise the status of the spawning stock in the shorter term



Greenpeace/Grace

from Dr Denzil Miller, Barry Watkins and Simon Purves of the South African Directorate of Marine and Coastal Management; Santiago Contreras (ECOCEANOS), consultant to TRAFFIC South America (translated by Lea Lewin); Hisako Kiyono, TRAFFIC East Asia; Nina Marshall (formerly of TRAFFIC Europe), Caroline Raymakers and other TRAFFIC Europe staff; Julie Thomson (formerly of TRAFFIC North America) and Nathalie Chalifour, TRAFFIC North America, with assistance from WWF Canada; and, Dean Bialek, temporary employee of TRAFFIC Oceania. Dean Bialek was also responsible for compiling and analysing the research input from the various offices. This article updates that research with more recently available catch and trade data and developments within CCAMLR and internationally. Mary Lack, Shellack Pty Ltd, consultant to TRAFFIC Oceania, prepared the article with further assistance and comments from TRAFFIC staff. The underlying research and preparation of this article were made possible by funding from the Marine Species Protection Program of Environment Australia (a programme of the Natural Heritage Trust), WWF US and the David and Lucile Packard Foundation.

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The TRAFFIC Network is the world's largest wildlife trade monitoring programme with offices covering most parts of the world. TRAFFIC is a programme of the conservation organization WWF and IUCN-The World Conservation Union, established to monitor trade in wild plants and animals. It works in close co-operation with the Secretariat of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES).

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