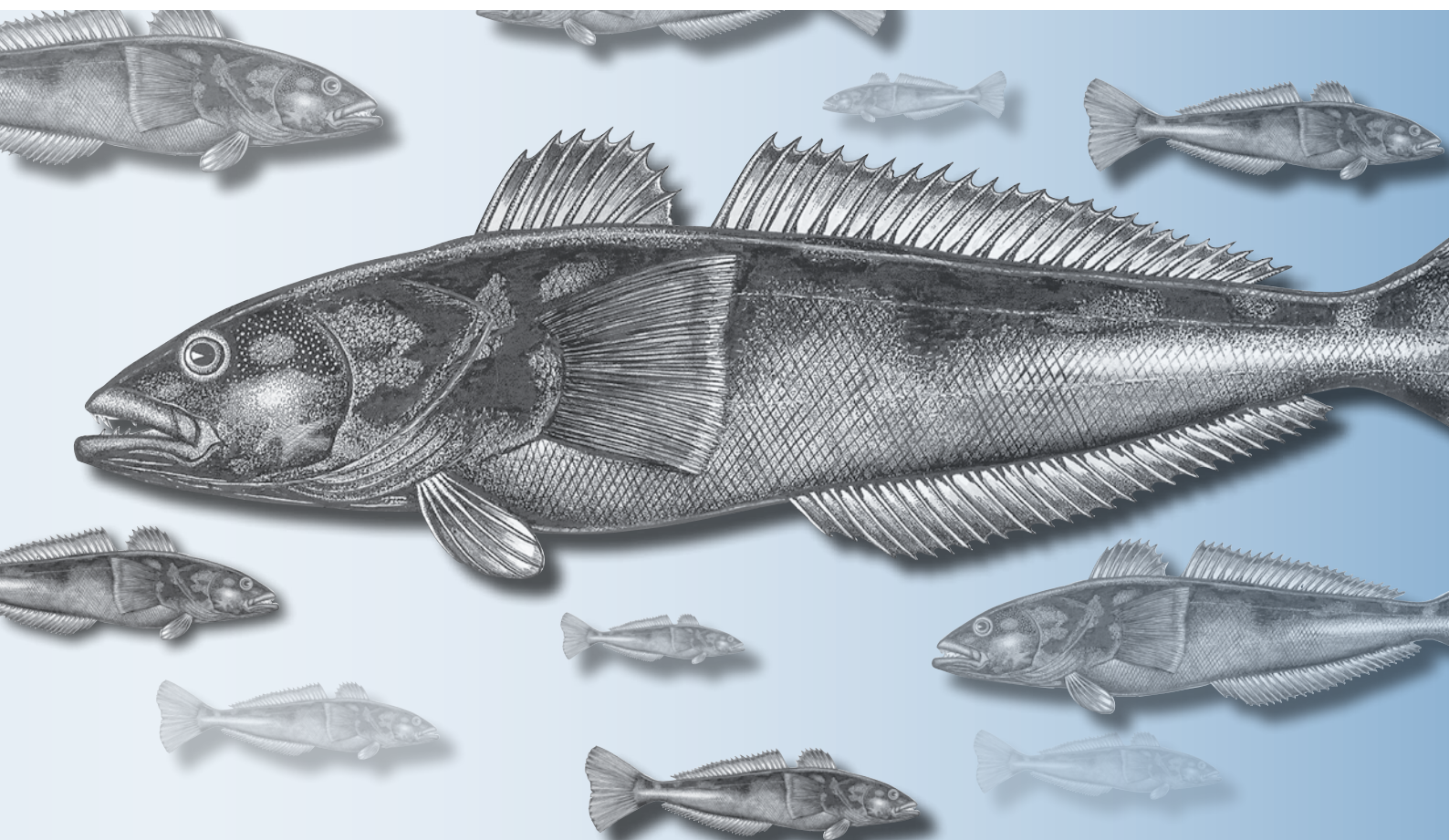


CONTINUING CCAMLR'S FIGHT AGAINST IUU FISHING FOR TOOTHFISH



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Mary Lack is a consultant from Shellack Pty Ltd.

Front cover illustration: Patagonian
Toothfish *Dissostichus eleginoides*

Credit: Bruce Mahalski

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Toothfish *Dissostichus eleginoides*

Credit: Bruce Mahalski

CONTINUING CCAMLR'S FIGHT AGAINST IUU FISHING FOR TOOTHFISH

by Mary Lack



Credit: Stuart Hanchet, NIWA

Antarctic Toothfish *Dissostichus mawsoni*

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EXECUTIVE SUMMARY

Members of the Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR) and relevant coastal States have struggled to control the illegal, unreported and unregulated (IUU) catch of Patagonian Toothfish *Dissostichus eleginoides* and Antarctic Toothfish *Dissostichus mawsoni* for more than a decade. In 2001, TRAFFIC estimated, through analysis of trade data, that the IUU catch of Patagonian Toothfish was between 21 500 t and 33 800 t, or around half the world trade of the species in 1999/00 (Lack and Sant, 2001), compared with CCAMLR's estimate at that time of 8500 t.

Despite the introduction of a range of monitoring, control and surveillance (MCS) measures, most notably the introduction of a Catch Documentation Scheme (CDS) for *Dissostichus* spp., IUU catch remains a concern. In 2006/07, CCAMLR estimated that 3615 t of toothfish (Patagonian and Antarctic Toothfish), representing 11% of CCAMLR's estimated total landings, was taken by IUU fishing. This situation prompted WWF and TRAFFIC to conduct another trade-based assessment of toothfish catch. This trade-based assessment compares reported landings with total estimated trade, the difference between these two giving an indication of the extent of the IUU catch. The results of the assessment, 2003–2007, are presented in the following table.

Estimated IUU catch (t, liveweight)

	Reported landings	CCAMLR estimate of IUU catch	CCAMLR estimated landings	Total estimated trade	Trade estimate of IUU catch	IUU catch % of total trade
2003	44 731	7422	52 153	46 111	1380	3%
2004	31 575	2178	33 753	37 834	6259	17%
2005	29 308	2578	31 886	37 990	8682	23%
2006	27 779	3420	31 199	32 252	4473	14%
2007	28 861	3615	32 476	34 532	5671	16%

In all but one year (2003) of the analysis period, the trade-based estimate of IUU catch is significantly higher than CCAMLR's estimate. In the period 2004–2007, the percentage of trade represented by IUU catch is estimated to average 17%, compared to CCAMLR's average estimate of 10% of total landings. This suggests that CCAMLR may be underestimating IUU catch by more than 50% annually.

CCAMLR takes into account its estimates of IUU fishing in setting total allowable catches (TACs) for toothfish stocks. If those estimates understate the level of IUU fishing, these TACs may be less precautionary and over time this could prove detrimental to the stocks. In addition, continuation of significant levels of IUU fishing imposes greater constraints on legitimate fishers as their access to the stocks is reduced to account for the impact of IUU catch. Further, by-catch species of seabirds and sharks are subjected to IUU fishing pressure that fails to apply even the most basic by-catch mitigation measures.

No estimate of IUU fishing can be precise. Both CCAMLR's estimates and trade-based estimates are subject to issues associated with the level of comprehensiveness of the data and a range of other assumptions. Neither method is perfect, but taken together they add to our understanding of the extent and patterns of catch and trade in toothfish taken by IUU fishers.

IUU fishing persists because those involved can continue to access markets for their product. CCAMLR's implementation of the CDS acknowledged the key roles that trade and markets play in controlling IUU fishing; however this analysis suggests that there remains scope for tightening the CDS arrangements and for increasing the comprehensiveness of its application. In addition, the adoption of measures to provide a swift and effective response mechanism against those States believed to be engaged in or supporting IUU fishing must be a priority. The analysis has reinforced the need for ongoing vigilance by CCAMLR to address IUU fishing, to use all available sources of information to maximize the accuracy of estimates of IUU catch and to continue to improve the current MCS measures in order to minimize opportunities for IUU toothfish to find a market.

It is recommended that:

- 1) Conservation Measure (CM) 10/05, Catch Documentation Scheme for *Dissostichus* spp., be revised:
 - a) to include a clear definition of where, when and under what arrangements transshipment can take place; and
 - b) to provide for formal, transparent, reconciliation of individual flag State catch records with landings data from their *Dissostichus* Catch Documents by the Secretariat.
- 2) To bring the centralized vessel monitoring system (VMS) into line with best practice, the current CM be amended to mandate real-time reporting to the flag State and in parallel to the CCAMLR Secretariat (that is, no longer provide the option of reporting via the flag State).
- 3) To maximize the value of real-time VMS data, the data be made available in confidence to the MCS agencies of CCAMLR members for both planning and operational surveillance purposes.
- 4) CCAMLR members should consider adopting a transparent, non-discriminatory measure to provide for the implementation of trade sanctions against States/entities which fail to control the operations of their vessels or nationals that are considered to be involved in activities that diminish the effectiveness of CCAMLR's conservation measures.
 - Consideration should be given on how to avoid such decisions being blocked by a member against whom action was directed.

- 5) Public access to CDS data be improved with a view to facilitating external and internal review of the data and, in particular, that the current publicly available data be enhanced by publication of:
- exports of toothfish by product form, by Patagonian Toothfish and by Antarctic Toothfish;
 - landings/transshipment by port of landing or receiving vessel of transshipment, and by product form; and
 - trade data by month.
- 6) All CCAMLR Contracting Parties and co-operating Non-contracting Parties, be required to implement, at a minimum, the current Harmonized Commodity Description and Coding System codes for toothfish.
- 7) The CCAMLR Secretariat be charged with, and provided with the resources to undertake, regular analyses of trade and CDS data in order to develop a better understanding of the landings and trade flows and to identify changes in the pattern of trade and fishing practices.
- 8) In order to provide the best possible estimate of IUU fishing, the Standing Committee on Inspection and Compliance explore the opportunities to access information from all available sources, including from non-government organizations, trade data and the fishing industry, and facilitate the participation of those with relevant information.

Credit: CAPEFISH



Antarctic Toothfish *Dissostichus mawsoni*



Credit: Image courtesy of the Australian Fisheries Management Authority, 2008

Frozen toothfish in the hold of a vessel operating in the Southern Ocean, 2006.

INTRODUCTION

Patagonian Toothfish *Dissostichus eleginoides* and Antarctic Toothfish *Dissostichus mawsoni*¹ are found in sub-Antarctic and cool temperate waters of southern South America and the islands and submarine plateaus of the southern Atlantic and Indian Oceans. The Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR) has responsibility for the conservation and rational use of fisheries resources in the Southern Ocean and, together with coastal States in whose waters these species occur, manages the catch of these species.

For more than a decade, members of CCAMLR and the relevant coastal States have struggled to control the illegal, unreported and unregulated (IUU) catch of toothfish taken outside the agreed management arrangements. In 2001, TRAFFIC conducted an analysis of trade in Patagonian Toothfish to determine the extent of the IUU catch. That analysis (Lack and Sant, 2001) estimated that between 21 500 t and 33 800 t, or around half the world trade, of Patagonian Toothfish was taken by IUU fishing in 1999/00. This was considerably higher than CCAMLR's estimate at the time of 8500 t. In response to the impact of IUU fishing on toothfish stocks, CCAMLR introduced a catch documentation scheme (CDS) in May 2000.

CCAMLR acknowledges the ongoing issues associated with IUU fishing for toothfish. In its 2007 report the Commission noted the following:

- IUU catches in the Convention Area (CA) in 2006/07 were 3615 t.
- the expansion of gillnet fishing by IUU vessels, noting that gillnets were a more flexible and more effective gear than longlines, that the level and nature of the incidental impact of gillnets on marine life in the CA, including on seabirds and mammals, was unknown, and that lost gillnets had the potential to continue to incur mortality on marine life through ghost fishing;
- the shift of IUU fishing from “traditional” grounds such as in CCAMLR Division 58.5.1, to high-seas areas and oceanic banks, in particular, in the Indian Ocean sector of the CA, such as Banzare Bank (Divisions 58.4.3b);
- IUU catch was higher than legitimate catch in some areas, e.g. the catch limit in Division 58.4.3b for the 2006/07 season was 300 t and the estimated IUU catch of 2293 t was almost 10 times higher than the legal catch of 253 t;
- the potential for IUU fishing to cause substantial damage to stocks, such as those on Banzare Bank, which may take decades to reverse; and
- IUU fishing remained a priority for the Commission and, if not addressed effectively, it would continue to undermine CCAMLR's conservation efforts (CCAMLR, 2007).

In addition, CCAMLR acknowledged gaps in the implementation of the CDS including the failure of some toothfish trading entities to implement the CDS (e.g. Hong Kong and Indonesia) or to implement it only partially (e.g. Singapore) and that some States (e.g. Malaysia, Singapore and Indonesia) were known to receive in their ports vessels that had been identified by RFMOs (regional fisheries management organizations) as engaged in IUU fishing (CCAMLR, 2007).

¹ References to toothfish in this paper are references to both Patagonian and Antarctic Toothfish.

Under these circumstances, a re-examination of the extent of IUU catch and the effectiveness of CCAMLR's conservation and management measures is warranted. While CCAMLR continues to estimate IUU catch, there has been no further trade analysis to compare those estimates with trade-based estimates of catch. This paper uses available trade data and CDS data to:

- estimate the total annual trade in toothfish over the period 2003–2007;
- calculate the total liveweight equivalent of that trade as a basis for estimating global catch;
- compare the estimated global catch with CCAMLR's CDS records of landings; and
- estimate the level of IUU catch.

The analysis is then used to assess the effectiveness of CCAMLR's monitoring, control and surveillance (MCS) regime for toothfish, including the CDS, in addressing IUU fishing and as a basis for recommendations to improve the effectiveness of that regime.

METHODOLOGY

Period of the analysis

The analysis of catch and trade covers the period 2003–2007. This period was chosen because the CDS is not considered to have become fully operational until May 2002 (CITES, 2007), so 2003 represents the first complete year of operation of a fully functional CDS, and 2007 is the latest full year for which data are available.

It should be noted that the CCAMLR fishing year covers the period 1 December to 30 November. There is not, therefore, a complete alignment between catch data and calendar year trade and CDS data. While Patagonian Toothfish is caught year-round, the highest catches are taken from May to October each year. In contrast, catches of Antarctic Toothfish are taken nearly exclusively from December to March. This study has used the calendar year CDS landing data rather than the fishing season year catch data, to maximize the comparability of trade and catch statistics.

Credit: Image courtesy of the Australian Fisheries Management Authority, 2008



Patagonian Toothfish *Dissostichus eleginoides*

Species coverage

Both Patagonian Toothfish and Antarctic Toothfish are covered by the analysis. This reflects the fact that the CDS applies to both species and that publicly available CDS data do not discriminate between the two species. In addition, CCAMLR's estimates of global catch and IUU catch are made for *Dissostichus* spp. and most trade data do not discriminate between the two species. Only the USA and New

Zealand are known to collect and report trade data for Patagonian and Antarctic Toothfish separately.

Patagonian Toothfish comprises the bulk of the catch of *Dissostichus* spp.; accounting for around 84% of the catch reported to the Food and Agriculture Organization of the United Nations (FAO) in 2005 and 2006 (FAO, 2008). However the catch of Antarctic Toothfish, and its contribution to total catch, is increasing. In both 2005 and 2006, the catch of Antarctic Toothfish was around 4500 t, up from around 2000 t in 2003. Over the same period the share of Antarctic Toothfish in total catch of *Dissostichus* spp. increased from 5% to 16%.



Credit: CAPFISH

Antarctic Toothfish: its contribution to total toothfish catch is rising

Trade data

Trade data are derived from the official trade records of importers and exporters of toothfish. Issues with analysis of trade data for toothfish have been discussed elsewhere (see, for example, Lack and Sant, 2001 and Lack, 2001). However, in summary, factors that affect the accuracy of trade analyses include:

- the range of names under which toothfish is traded and the resultant potential for deliberate or accidental misclassification of toothfish products in trade;
- the proportion of product caught by a fishing State that is consumed domestically rather than entering international trade;
- the lack of species-specific trade codes in place in significant trading countries and the resultant recording of toothfish products under generic fish codes;
- the ambiguity of various trade codes in relation to specific product form and the resultant difficulties in accurately converting product weight trade data to liveweight equivalent for the purposes of estimating catch;
- access to trade data;
- the potential for double counting of product; and
- the complexity of the trade chain and idiosyncrasies in the official recording of trade data.

It is not possible to estimate or account for the impact of the potential misclassification as a result of naming issues in trade analysis. An analysis by the National Environment Trust (2004) found that mislabelling of toothfish product under names such as Sea Bass (rather than as Chilean Sea Bass, the common marketing name in the USA), which did not attract the same level of scrutiny by Customs

agents, was common. Overall, it is considered that the impact of this factor is likely to result in an underestimation of toothfish trade, however the extent of this problem, and hence its impact on trade-based estimates of catch, remains unknown.

On the other hand, failure to account for consumption of toothfish in the flag State of vessels catching the fish, will necessarily inflate the difference between catch and trade estimates, potentially leading to an over-estimate of the level of IUU catch. As with misclassification, it has not been possible to account for the impact of flag State consumption in the analysis. However, both factors should be taken into account in interpreting the implications of the estimates of trade and IUU fishing arising from the analysis.

The way in which the other five factors identified above have been dealt with in this analysis is discussed below.

Species-specific trade codes

A range of trade codes is in use for toothfish with considerable variation across trading entities in the extent to which species and product forms are disaggregated. As of 1 January 2007, the nomenclature for toothfish products in the International Convention on the Harmonized Commodity Description and Coding System includes the following classifications:

- 0302.68** Toothfish (*Dissostichus* spp.) (Fresh or chilled, excluding fish fillets and other fish meat of Heading 0304)
- 0303.62** Toothfish (*Dissostichus* spp.) (Frozen, excluding fish fillets and other fish meat of Heading 0304)
- 0304.12** Toothfish (*Dissostichus* spp.) (Fresh or chilled fillets)
- 0304.22** Toothfish (*Dissostichus* spp.) (Frozen fillets)
- 0304.92** Toothfish (*Dissostichus* spp.) (Other fish meat (whether or not minced), fresh, chilled or frozen)

A summary of the trade codes for toothfish in place in the major trading nations is provided in **Appendix 2**. The adoption of new nomenclature in 2007 has resulted in larger amounts of toothfish trade being identifiable in trade data. For example, in New Zealand, Canada and the EU, toothfish previously included in generic trade codes such as “fish, not elsewhere specified” is now recorded separately in species-specific codes. In this analysis only trade codes exclusive to toothfish have been used. Therefore the data for the years 2003 to 2006 necessarily understate toothfish trade to the unknown extent to which toothfish product was included in generic categories. This underestimation persists in the 2007 data but to a significantly lower level.

Product form and conversion factors

Toothfish trade is generally reported as “fillets, fresh, chilled”, “fillets, frozen”, “fish excluding fillets, fresh, chilled” and “fish excluding fillets, frozen”. CCAMLR applies the factors contained in **Table 1** to convert trade data in its CDS to liveweight equivalents. However, because of the lack of detail surrounding the form of product included in the “fish excluding fillets” category in most official trade statistics it is not possible to apply CCAMLR’s conversion factors applicable to the product types of “headed and gutted”, “headed and tailed”, “headed, gutted and tailed” or with and without viscera.

However, the main toothfish product forms are known to be fillets and headed and gutted (Lack and Sant, 2001). Therefore, unless the data permit a more accurate application of conversion factors, the headed and gutted factor of 1.7 has been applied to the “fish excluding fillets” category. Where specific “byproduct” forms, such as collars, cheeks or heads, are identified in the trade data or where the trade codes suggest that the product included is likely to include such products, these categories have not been converted to liveweight. The rationale for this is that conversion of headed and gutted or filleted product to liveweight would have already accounted for the whole weight of the fish including such by-products.

Access to trade data

Access to trade data varies across trading entities. In some countries, for example Australia and New Zealand, data must be purchased from the relevant statistical agency. In contrast, access to data is freely available through web-based databases in the EU, the USA, Japan and a number of other countries/entities. In some cases, access to data was constrained by lack of access to web-based databases or language. In such cases, officers from TRAFFIC in a number of global locations sought to access the data locally. The availability of time and financial resources together with inefficient data extraction processes in some countries did, however, constrain the extraction of data from these sources.

Table 1
Conversion factors

Product type	Conversion factor
Filleted	2.3
Whole fish with viscera removed	1.1
Headed and gutted	1.6
Headed and tailed with viscera intact	1.7
Headed, gutted and tailed	1.7
Whole fish	1
Other	0

Source: CCAMLR (2008).



Credit: (C) Greenpeace/Roger Grace

Patagonian Toothfish

Double counting

The main potential source of double counting in the trade data for toothfish relates to the extent to which product is imported and then either re-exported (in its imported form without any value adding) or exported (in another form, e.g. fillets).

This becomes a problem for the analysis where both the imports to and exports from a country are included in the analysis. In the current analysis this is potentially an issue for countries in the EU, in particular.

In order to avoid double counting of intra-EU trade of toothfish the EU import data used in this analysis include all imports by EU members from non-EU members, together with any imports by EU members from those EU members that catch toothfish (Spain, France and the UK). The EU export data used in the analysis include only exports by Spain, France and the UK to non-EU members.

China is a key importer, processor, exporter, and is also presumably a consumer, of toothfish products and, as such, represents a potential source of double counting. China is not recorded as catching toothfish (FAO, 2008) and the CDS data show that China imported between 2000 and 3500 t (product weight) of toothfish annually over the 2003–2007 period (see **Table 3**). Import statistics from other countries identify China as a significant source of toothfish products. It has been assumed, therefore, that China's exports of toothfish comprise imported, reprocessed product. Research by TRAFFIC officers failed to identify specific trade codes for toothfish in China's trade classification system. Therefore the trade analysis presented in this report does not include import or export data for China specifically. Instead, it relies on import statistics from other countries to identify this trade and, as a result, the possibility of double counting toothfish product imported into and exported from China is considered to be minimized.

Complexities and characteristics



Credit: Alan Blacklock, NIWA

Antarctic Toothfish caught in the Ross Sea, Antarctica

There is considerable scope for misinterpretation of trade data in the absence of a complete understanding of the different landing, transshipping and trading practices of vessels from particular flag States or of particular fishing companies. The example in **Box 1** highlights the complexity associated with compiling and interpreting trade data. There are undoubtedly similar or more complex arrangements, which affect the interpretation of trade data elsewhere. It is likely that public access to more detailed CDS data would facilitate a better understanding of trade flows of toothfish products and more accurate trade analyses. As discussed later in this paper, there are considerable restrictions on access to CDS data.

Box 1: The complex nature of trade data

The available export data for Australia indicate that there were no toothfish exports recorded in 2004, 2005 or 2006 (see **Appendix 4**). Australian catch of toothfish in each of these years was around 2500 t and little toothfish is consumed on the Australian market. The available data from importing countries and the CDS data show that Australia exported considerable quantities of toothfish during this period. The explanation is believed to lie in the practice of Australian vessels unloading toothfish in other countries, in particular Mauritius. It is known, for example, that unloadings from three Australian vessels occurred in Mauritius in 2003 (Anon., 2003) and that six unloadings occurred in 2004 (Anon., 2004). These unloadings, observed by Australian fisheries officers, either enter Mauritius for processing and are subsequently exported as product of Mauritius or are landed in bond in Mauritius for containerization and export, as product of Australia, primarily to China for processing. In neither case is the product recorded in Australia's export statistics. However, ultimately this product finds its way into the market of the USA, the EU or Japan and is consequently included in this analysis through the import data from those markets. While these operations are perfectly legitimate they serve to highlight the complexities and potential uncertainties involved in interpreting official trade data. Further, this confirms the need for publicly available data from comprehensive catch documentation schemes in order to avoid the misinterpretation that can occur by reliance on official trade statistics.

Estimating global trade

Global trade was estimated by:

- 1) summing the imports of countries/entities for which official import data for toothfish could be identified—the USA; Japan; the EU; Taiwan; Republic of Korea (South Korea), for 2007 only; Hong Kong; and the Russian Federation

and

- 2) using export data as a surrogate for imports to other countries/entities for which official import data for toothfish could not be identified (i.e. importers other than those included in step 1). This involved the extraction of “residual exports” based on:

- official trade statistics for Australia, New Zealand, South Korea (2007 only), France, Spain and the UK; and
- CDS export data for Argentina, Chile, Norway, the Russian Federation, South Africa, South Korea (2003–2006) and Uruguay.

Catch data

All catch data are derived from data published in CCAMLR's annual *Statistical Bulletin* and in the reports of CCAMLR's Working Group on Fish Stock Assessment (WGFSAs).

The first analysis of toothfish catch and trade was conducted shortly after the introduction of the CDS. It was expected at that time that the data provided by the CDS would "have a major impact on the availability of meaningful trade data for Patagonian Toothfish in the future" (Lack and Sant, 2001). CCAMLR publishes some data extracted from the CDS in its annual *Statistical Bulletin* and an approach to CCAMLR confirmed that those data represented the full extent of the publicly available CDS information. However, those data are highly aggregated and fail to provide any information on the form in which product is traded or to provide an estimate of liveweight equivalent of landings by country. Such information would greatly assist analysis of trade patterns and the "ground truthing" of official trade statistics. The constraints on the availability of CDS data, imposed under CCAMLR's *Rules for Access to Catch Documentation Scheme Data* have significantly reduced the contribution of the CDS to meaningful analysis of trade in toothfish. These constraints were clearly identified by TRAFFIC in a paper presented to CCAMLR (CCAMLR-XXII/BG/126) in 2003. That paper contained a number of recommendations concerning the publication of CDS data and CCAMLR requested that the Secretariat consider those recommendations with a view to reviewing the categories and details of data for publication and their utility for comparative analysis of CDS data and trade statistics. However, the data currently available fail to reflect the recommendations made.

PARTICIPATION IN TOOTHFISH CATCH AND TRADE

Analysis of catch and trade data for 2003 to 2007 provides a profile of the participants in the fishery for, the management of, and the trade and consumption of toothfish. The participants and the nature of their involvement are summarized in **Appendix 1**.

Over 100 countries/entities are involved in the catch and/or trade of toothfish. The high number of countries involved in the trade of toothfish was an important factor behind the 2002 proposal to list toothfish in Appendix II of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). The nomination was subsequently withdrawn. CITES Parties recognized CCAMLR's competency for assessing sustainable harvest levels and managing toothfish, and acknowledged the CDS as the appropriate trade documentation scheme for toothfish. However, the Parties also agreed that "Parties should, by the end of 2003, report to the Secretariat their use of the *Dissostichus* Catch Document used by CCAMLR, and their verification requirements for such Catch Documents" and that the Secretariat would compile this information and circulate it to Parties and CCAMLR yearly. Despite this, CCAMLR's report to the 14th meeting of the Conference of the Parties to CITES identified Equatorial Guinea, Indonesia, Singapore and Togo, all CITES Parties, together with Hong Kong, as failing to implement the CDS and/or being involved in IUU fishing (CITES, 2007).

Tables 2–4 report on the nature and extent of participation of those identified by the CDS as being involved in the catch and trade of toothfish. The major catching countries identified are Chile, France, Australia, the UK, South Korea, Argentina, Uruguay and New Zealand (see **Table 2**). From 2003 to 2007, the CDS data identify 19 exporters and an additional re-exporter (Canada) of toothfish. Of those, France, Uruguay, Chile, Norway, Namibia, Argentina, the UK and South Africa are the major exporters (see **Table 3**). The most significant importers of toothfish are the USA, Japan, South Korea and Singapore (see **Table 4**). Of those importers, the USA and Japan are recognized as major final markets for toothfish products while China is recognized as a major processor and re-exporter of toothfish. For example, in addition to the 256 t of export recorded by China in 2007 (see **Table 3**), China re-exported nearly 700 t in the same year (CCAMLR, 2008). EU Member States are also known as major markets for toothfish and EU trade data identify significant quantities of trade between them.

The pictures of the extent of trade painted by CDS data and the official trade statistics of trading countries vary considerably. For example, according to CCAMLR data, in 2007 South Korea caught 2200 t of toothfish (liveweight) and imported a further 1000 t (product weight). In the same year, CDS data identify 385 t of toothfish as being exported from South Korea with no records of re-exports. South Korea’s own trade statistics, however, record product weight imports of toothfish of 337 t and exports of 647 t.



Credit: Patricio Arana

Processing toothfish in South America



Credit: Image courtesy of the Australian Fisheries Management Authority, 2008

An officer of the Australian Fisheries Management Authority with toothfish

Table 2

Landings of toothfish recorded by the CDS (t, product weight)

Catchers	2003			2004			2005			2006			2007		
	Inside	Outside	Total	Inside	Outside	Total	Inside	Outside	Total	Inside	Outside	Total	Inside	Outside	Total
	CA	CA		CA	CA		CA	CA		CA	CA		CA	CA	
Argentina		3903	3903	106	1446	1552	160	667	827	138	766	904	141	1531	1672
Australia	2976	38	3014	2996	362	3358	2520	52	2572	2163	402	2565	2173	282	2455
Chile	1857	5392	7249	1108	4498	5606	671	5340	6011	372	3880	4252	239	3894	4133
France	4244		4244	4051	21	4072	4043	5	4048	4162	1	4163	3914		3914
Japan	179	38	217	5	106	111	38	208	246	128	123	251	156	132	288
Korea, South	266	2479	2745	356	1589	1945	277	1283	1560	449	1574	2023	737	1491	2228
Namibia													83		83
Norway				69		69	154		154	223		223	194		194
Neth. Antilles		399	399												
New Zealand	1037	32	1069	835	1	836	1508		1508	1156		1156	1064		1064
Peru		311	311		313	313		160	160		192	192		128	128
Russian Federation	821	1452	2273	190	109	299		444	444	514		514	338	6	344
Seychelles		317	317			0						0			0
South Africa	646		646	428		428	420	1	421	341		341	440	20	460
Spain	615	502	1117	531	451	982	606	100	706	787	10	797	488	28	516
UK	976	1213	2189	1069	1297	2366	1298	1047	2345	1196	950	2146	1461	873	2334
Ukraine				113	265	378		362	362		285	285		268	268
Uruguay	267	3649	3916	410	1410	1820	254	571	825	464	325	789	502	722	1224
USA				135		135			0			0			0
Total			33 609			24 270			22 189			20 601			21 305

Note: CA = Convention Area. *Source:* CCAMLR (2008).

Table 3

Exporters of toothfish reported by CDS, 2003–2007 (t, product weight)

Catchers	2003		2004		2005		2006		2007	
	t	%	t	%	t	%	t	%	t	%
Argentina	3104	10.73	1327	5.34	672	2.95	1024	4.93	983	5.75
Australia	1534	5.30	3371	13.58	2037	8.93	1965	9.46	535	3.13
Chile	5928	20.50	5036	20.28	4248	18.63	2932	14.12	2455	14.37
China	1224	4.23	490	1.97	1291	5.66	224	1.08	256	1.50
France	5438	18.81	7043	28.37	7274	31.90	7118	34.28	4418	25.86
Japan					36	0.17			71	0.42
Korea, South	1478	5.11	194	0.78	214	0.94	279	1.34	385	2.25
Mauritius	1663	5.75	249	1.00	983	4.31	225	1.08	1293	7.57
Namibia	1359	4.70		3.25	155	0.68				
New Zealand	245	0.85	806	0.01	2	0.01	1092	5.26	1403	8.21
Norway	1168	4.04	2	1.01	1431	6.28				
Peru	370	1.28	250	2.88	116	0.51	142	0.68	72	0.42
Russian Federation							207	1.00		
Singapore					12	0.05	40	0.19	84	0.49
South Africa	638	2.21	716		1025	4.49	1307	6.29	1112	6.51
Spain	348	1.20	744	3.00	3	0.01	155	0.75	24	0.14
UK	13	0.04	51	0.21	117	0.51	711	3.42	1129	6.61
Uruguay	4407	15.24	4548	100.00	3218	14.11	3305	15.92	2836	16.60
USA					6	0.03	1	0.00	29	0.17
Total	28 917		24 827		22 804		20 763		17 085	

Source: CCAMLR (2008).

Table 4

Importers of toothfish reported by CDS, 2003–2007 (t, product weight)

Catchers	2003		2004		2005		2006		2007	
	t	%	t	%	t	%	t	%	t	%
Australia					15	0.07			30	0.18
Brazil	4	0.01								
Canada	167	0.58	41	0.17	142	0.62	62	0.30	43	0.25
Chile	57	0.20	337	1.36	190	0.83	731	3.52	495	2.90
China	3343	11.56	3778	15.22	3465	15.19	2726	13.13	2062	12.07
Colombia	4	0.01	1	0.00					1	0.01
Czech Republic					1	0.00				
Denmark							9	0.02		
France	5	0.02	45	0.18	7	0.00	5	0.02	13	0.08
Germany			23	0.09	37	0.00	46	0.02	44	0.26
Hong Kong			1305	5.26	704	0.16	1067	5.14	1060	6.20
Japan	9167	31.70	5518	22.22	5304	3.09	3353	16.15	2508	14.68
Korea, South	435	1.50	536	2.16	655	23.26	1145	5.51	1079	6.32
Malaysia	199	0.69	328	1.32	193	0.85	209	1.01	229	1.34
Mauritius	92	0.32	26	0.10		2.87				
Mexico	11	0.04	10	0.04	11	0.00	8	0.04	15	0.09
Morocco									48	0.28
Namibia			1	0.00						
Norway	2	0.01							30	0.18
Philippines	21	0.07					47	0.23	81	0.47
Poland					1	0.00	2	0.01		
Russian Federation	2	0.01	10	0.04					27	0.16
Singapore	1173	4.06	1111	4.47	1175	5.15	1496	7.21	762	4.46
Spain	889	3.07	158	0.64	8	5.15	13	0.06	7	0.04
Taiwan	215	0.74	125	0.50	41	0.18	56	0.27	35	0.20
Thailand	222	0.77	97	0.39	145	0.64	293	1.41	263	1.54
Ukraine	29	0.10							28	0.16
UK	125	0.43	177	0.71	9	0.00	79	0.38	33	0.19
Uruguay	37	0.13	2	0.01	7	0.03			271	1.59
USA	11 141	38.53	11 113	44.76	10 279	45.08	9205	44.33	7841	45.89
Viet Nam			86	0.35	415	1.82	211	1.02	81	0.47
Total	28 917		24 828		22 804		20 763		17 086	

Source: CCAMLR (2008).

ESTIMATES OF GLOBAL CATCH

CCAMLR estimates global catch of toothfish taking into account:

- reports from licensed fishing;
- estimated IUU fishing in the CA based on the number of vessels sighted/apprehended and reports of port inspections, together with information on fishing trips and catch rates derived from CCAMLR data on licensed vessels; and
- CDS data on catch outside the CA, both within exclusive economic zones (EEZs) and on the high seas.

Estimates of global toothfish catch, based on CCAMLR CDS landing data for the period 2003–2007 are provided in **Table 5** along with the FAO’s reported catch of toothfish for 2003–2006.

Table 5

Global catch of toothfish, 2003–2007 (t, liveweight)*

	2003	2004	2005	2006	2007
CCAMLR estimates					
Landings of product taken in Convention Area—CDS estimated liveweight ¹	19 772	16 923	17 336	17 180	16 737
Landings of product taken outside Convention Area—CDS estimated liveweight ¹	24 959	14 562	11 972	10 599	12 124
<i>Total estimated landings</i>	<i>44 731</i>	<i>31 575</i>	<i>29 308</i>	<i>27 779</i>	<i>28 861</i>
CCAMLR estimate of IUU catch ²	7422	2178	2578	3420	3615 ³
Estimate of global catch	52 153	33 753	31 886	31 199	32 476
IUU as % of global catch	14%	6%	8%	11%	11%
FAO reported catch ⁴	37 686	27 915	27 312	27 921	n.a

Notes: * The figures used to compile CCAMLR’s total estimated catch are based on the figures published in CCAMLR’s Statistical Bulletin (CCAMLR, 2008) for landings of *Dissostichus* spp. (liveweight, t) for the calendar years 2003 to 2007 in the CA and outside the CA (in EEZs and on the high seas). CCAMLR’s estimate of IUU catch for each year was taken from the annual reports of CCAMLR’s WGFSAs. This approach ensures that the latest available and most comprehensive CCAMLR data are used.

Sources: ¹ CCAMLR (2008); ² CCAMLR WGFSAs (2007); ³ To 1 September 2007 only; ⁴ FAO (2008).

CCAMLR makes available CDS data on processed weight landings by country by area of catch (within and outside the CA) and data on liveweight equivalents of total catch by area based on conversion of the CDS processed weight data. However, as noted above, CCAMLR does not make available the liveweight equivalent of landings by country, in and outside the CA. CCAMLR's CDS does not in fact record catch. Rather, it records the processed weight of landed and transshipped catch. This is potentially inconsistent with CCAMLR's stated objectives of the CDS which are to:

- to monitor the international trade in toothfish;
- to identify the origins of toothfish imported into or exported from the territories of CCAMLR Contracting Parties (CPs);
- to determine whether toothfish catches in the CCAMLR Area are conducted in a manner consistent with CCAMLR Conservation Measures (CMs); and
- to gather catch data for the scientific evaluation of the stocks (CCAMLR, 2006).

ESTIMATES OF GLOBAL TRADE

Imports

Imports of toothfish by product form for each importer for which official import data could be compiled are summarized in **Table 6** in liveweight equivalent and a breakdown of the data by product and by country is provided in **Appendix 3**. In total, the data in **Table 6** suggest that the equivalent of 28 600 t of toothfish were imported into these markets in 2007. Imports into the USA represented 65% of that trade, Japan 17% and the EU 13%.

The data in **Table 6** highlight some notable trends over the period.

- There are two significant annual reductions in imports. The first, of around 7000 t from 2003 to 2004, is accounted for predominantly by a reduction of more than 5000 t in Japan's imports of headed and gutted product over the period. This lower level of imports reflects significant reductions in imports from Argentina, France and Uruguay (see **Table Appendix 3.3**). The second event, a fall of nearly 4500 t from 2005 to 2006, was accounted for predominantly by a further reduction in Japan's imports of both headed and gutted and filleted product, together with a reduction in the EU's imports of headed and gutted product. The reductions in trade from 2003 to 2004 and from 2005 to 2006 are also reflected in the CDS import data.
- The continued decline in Japan's imports over the period, from around 18 500 t to around 5000 t. This trend is also supported by CDS data on the destination of toothfish exports.
- A reversal of the downward trend in trade in 2007, with a 6.5% increase in that year over 2006. The increase was accounted for largely by the identification of around 1000 t of fresh, chilled fillet imports by EU members in 2007 which had not previously been detectable from the trade data and

Table 6**Imports of toothfish, 2003–2007, by importer and product form, (t, liveweight)**

Importer	2003	2004	2005	2006	2007
USA					
Fillets, frozen	5354	4412	4734	5145	4560
Other than fillets, frozen	11 419	10 933	13 498	13 906	12 999
Other than fillets, fresh	2560	2091	1612	1708	908
Total USA	19 333	17 436	19 843	20 760	18 466
Japan					
Fillets, frozen	5947	4158	1872	697	400
Other than fillets, frozen	12 544	7305	7538	4369	4457
Total Japan	18 491	11 463	9411	5065	4857
EU					
Fillets, frozen	37	168	158	134	2250
Fillets, fresh/chilled	0	0	0	0	977
Other than fillets, frozen	567	2326	1878	716	315
Other than fillets, fresh/chilled	390	415	195	141	124
Total EU	995	2909	2231	991	3666
Hong Kong					
Fillets, frozen	2	0	0	0	0
Other than fillets, frozen	163	358	35	36	868
Total Hong Kong	166	358	35	36	868
South Korea					
Fillets, frozen	0	0	0	0	1
Other than fillets, frozen	0	0	0	0	336
Total South Korea	0	0	0	0	336
Taiwan					
Fillets, frozen	9	0	0	0	4
Other than fillets, frozen	255	61	69	60	452
Fillets, fresh, chilled	0	0	0	0	5
Total Taiwan	263	61	69	60	461
Russian Federation					
Fillets, frozen	1		0	0	0
Other than fillets, frozen	3	0	4	11	0
Other than fillets, fresh, chilled	0	8	0	0	0
Total Russian Federation	3	10	4	11	0
All above importers					
Fillets, frozen	11 350	8738	6764	5976	7215
Fillets, fresh	0	0	0	0	982
Other than fillets, frozen	24 951	20 983	23 022	19 098	19 427
Other than fillets, fresh	2950	2514	1807	1849	1032
Total	39 251	32 235	31 593	26 923	28 656

Sources: European Commission (2008); Timothy Lam and Joyce Wu, TRAFFIC East Asia, and Natalia Dronova, TRAFFIC Europe, *in litt.*; Korean Customs Service (2008); Ministry of Finance, Japan (2008); Personal communication from the National Marine Fisheries Service, Fisheries Statistics Division, Silver Spring, MD, USA, July 2008.

a significant rise in the EU's imports of frozen fillets. The EU import data for 2007 indicate that this was due to a ten-fold increase in imports from China and Spain in addition to imports, for the first time during the period, from sources including Uganda, Tanzania, Brazil, Namibia and Morocco (see **Table Appendix 3.4**). The increase in trade from 2006 to 2007 is, however, not reflected by the CDS data, which show a 15% decline in exports over the same period.

Exports

Export data provide additional insights into the markets for toothfish products and identify a range of importers for which import data was not included in the above analysis.

The CDS data indicate that, while up to 17 countries reported exports of toothfish in any one year in the 2003–2007 period, around nine countries account for the bulk of these exports. For example, in 2006 and 2007, France, UK, Uruguay, Chile, Mauritius, New Zealand, South Africa, Argentina and Australia accounted for around 95% of the recorded CDS exports (see **Table 3**). Of those key countries, France, UK, New Zealand and Australia were able to supply official export data. In addition, data were readily available for Spain and South Korea (for 2007 only).

Research by TRAFFIC officers on the availability of export data for other countries revealed the following:

- export data were readily accessible in value terms only for Chile, Uruguay and Argentina and could not be incorporated into the analysis, although they did provide useful information on trade codes available, the form in which toothfish products were traded and trading partners;
- export data specific to toothfish were available for Mauritius only from 2008; and
- it was not possible to confirm whether South Africa had introduced specific trade codes for toothfish.

It was outside the capacity of this project to conduct further investigation of trade data for Singapore and Indonesia.

A breakdown of the available official export data by country and product form is provided in **Appendix 4**. Exports of toothfish to the seven importers identified above (**Table 6**) were then excluded² to identify the residual exports. This residual trade is summarized in **Table 7**.

The data in **Table 7** indicate a significant increase in exports in 2007. This was largely accounted for by a rise in the exports of frozen fillets from Spain, the identification of significant quantities of fresh fillets from Spain and the inclusion of export data for South Korea in 2007.

² Data for South Korea were excluded only for 2007 and data for the Russian Federation were excluded for 2003–2006 since import data were available for those countries only for those periods.

Table 7**Residual exports of toothfish 2003–2007, by exporter and product form, from trade statistics (t, liveweight)**

Exporter	2003	2004	2005	2006	2007
Australia					
Fillets, frozen	212				
Other than fillets, frozen	192				
Other than fillets, fresh					4
Total Australia	404				4
New Zealand					
Fillets, frozen					
Other than fillets, frozen					
Whole, frozen	12				81
Total New Zealand	12				81
South Korea					
Other than fillets, frozen					647
Total South Korea					647
France					
Fillets, frozen		50	55	92	111
Fillets, fresh					
Other than fillets, frozen	669	1123	1138	1418	1827
Total France	669	1174	1193	1510	1938
Spain					
Fillets, frozen	9	15			756
Fillets, fresh					164
Other than fillets, frozen	582	287	4	74	1
Total Spain	591	311	4	74	920
UK					
Fillets, frozen					6
Other than fillets, frozen					1
Total UK					7
Total residual exports	1675	1484	1197	1584	3597

Source: Australian Bureau of Statistics (2008); European Commission (2008); Korean Customs Service (2008); Statistics, New Zealand (2008).

As noted above, official trade export data for a number of key countries that are known to catch and export toothfish were not available for inclusion in this analysis. In lieu of those data, the CDS records have been used to estimate the residual exports. The exporters identified by the CDS have been listed in **Table 3**. Of those exporters for which official export data have not been compiled for this analysis, China, Mauritius and Singapore are not recognized (see **Appendix 1**) as catching toothfish. Namibia and the USA are recorded in CCAMLR data as having taken toothfish in only one year of the analysis period and Japan took a maximum of 200 t of toothfish in any year of the analysis period. Therefore the omission from the analysis of export data from these countries is considered unlikely to have any significant impact on the results.

However, the omission of export data for Argentina, Chile, Peru, Uruguay, the Russian Federation, South Korea (2003–2006), Norway and South Africa potentially represents a considerable leakage in the estimation of total world trade. The significance of this leakage will depend on the extent to which exports from these countries have not been identified by the import data used in the analysis. Therefore the residual exports from these countries have been estimated based on CDS product weight export data. Unfortunately, the publicly available CDS data do not include the product form of these exports and therefore this trade could not be converted directly into liveweight equivalent. The approach and data used to estimate the liveweight equivalent of residual exports from these eight countries are presented in **Appendix 5** and the results are presented in **Table 8**. The total residual exports, derived by summing the totals of **Tables 7** and **8**, are presented in **Table 9**.

The export data identify a significant reduction in exports between 2006 and 2007. This is accounted for largely by the difference in exports figures used for South Korea. CDS data for South Korea have not been used for 2007, since official export figures were available for that year (see **Table 7**).

Table 8

Residual exports of toothfish, by exporter, from CDS data (t, liveweight)

Exporter	2003	2004	2005	2006	2007
Argentina	344	212	14	243	231
Chile	1632	944	2785	610	461
South Korea	609		63	122	
Norway		5	4		
Peru	9				
South Africa	161	221	462	457	384
Uruguay	2430	2733	1873	2313	1202
Total	5185	4115	5201	3745	2278

Table 9

Estimated total residual exports (t, liveweight)

	2003	2004	2005	2006	2007
Residual exports from official export data	1675	1484	1196	1584	3597
Residual exports from CDS data	5185	4115	5201	3745	2279
Total residual exports	6860	5599	6397	5329	5875

Total world trade

Based on the available import and export data, the total estimated liveweight equivalent of trade ranged between 32 000 t and 46 000 t annually in the 2003–2007 period (see **Table 10**). The trade data for 2007 are considered to provide a more comprehensive account of total trade in toothfish since they apply to more highly specified trade codes for toothfish and also include a wider range of trading entities than data for earlier years. However, as discussed earlier in this document, there is a range of factors that could cause the data for any year to overstate or understate world trade.



Credit: CAPFISH

Toothfish headed and gutted

Table 10

Estimate of world trade in toothfish (t, liveweight)

	2003	2004	2005	2006	2007
Imports	39 251	32 235	31 593	26 923	28 656
Total residual exports	6860	5599	6397	5329	5876
Total trade	46 111	37 834	37 990	32 252	34 532

ESTIMATES OF IUU CATCH

While CCAMLR's estimates of reported landings have declined by 35% over the 2003–2007 period, estimated world trade has declined by only 25% (see **Table 11**). The explanation for this could lie in:

- less reported catch entering international trade and a greater proportion being consumed in the markets of catching States; and/or
- a greater detection of toothfish products in international trade statistics over time as greater specificity is introduced and as more countries introduce toothfish trade codes; and/or
- more toothfish being caught than is reflected in CCAMLR's reported catch figure, i.e. that IUU fishing is occurring.

There is no evidence on which to gauge the extent to which consumption of domestically caught toothfish products has increased in the flag State of the catching vessel, but equally there is no information to suggest that any significant change of this nature has occurred. It is clear, however, that

Table 11**Estimated IUU catch (t, liveweight)**

	Reported landings	CCAMLR estimate of IUU catch	CCAMLR estimated landings	Total estimated trade	Trade estimate of IUU catch	IUU catch % of total trade
2003	44 731	7422	52 153	46 111	1380	3%
2004	31 575	2178	33 753	37 834	6259	17%
2005	29 308	2578	31 886	37 990	8682	23%
2006	27 779	3420	31 199	32 252	4473	14%
2007	28 861	3615	32 476	34 532	5671	16%

increasing amounts of toothfish are being identified in trade. In the period to which this analysis relates, the impact of this is thought to be greatest in 2007. However, even excluding 2007 from the analysis, the difference between the rates of decline of reported landings and trade remains at around eight percentage points rather than the 10 percentage points over the entire period. This suggests that this factor is not the major explanation for the difference in trends. The most likely explanation lies, therefore, in IUU catch.

The trade estimate of IUU catch is defined as the difference between the total liveweight estimate of trade and the reported catch identified by CCAMLR (see **Table 11**). In all but one year of the analysis period the trade estimate of IUU catch is significantly higher than CCAMLR's estimate. More importantly, over the period 2004–2007 the percentage of trade represented by IUU catch averaged 17%. This compares to CCAMLR's estimate that IUU catch averaged 10% of estimated total landings over the same period.

There is no doubt that IUU fishing for toothfish has declined since TRAFFIC's 2001 trade analysis. While the possibility that stock declines have provided a disincentive to IUU fishers cannot be entirely discounted, CCAMLR's MCS measures including the CDS, together with the substantial investment in enforcement by relevant coastal States such as Australia, South Africa and France, have reduced significantly the level of IUU fishing for toothfish. In 1997/98 CCAMLR's estimates of IUU catch and trade-based estimates of IUU catch were around 27 000–29 000 t per annum. In 1999/2000 trade-based estimates put this figure at 21 500 t (Lack and Sant, 2001) while CCAMLR estimated 8500 t. The estimates of IUU fishing produced in the current study show both a significantly lower level of IUU catch and less disparity between CCAMLR's estimates and trade-based estimates of IUU catch.

It is equally clear, however, that IUU fishing remains a significant problem for toothfish. In 2007, for example, the estimates of IUU fishing as a percentage of total trade range from 10% (using CCAMLR's estimate of IUU catch) to 16% using the trade based estimate. Given that CCAMLR's estimate of IUU catch is based on sightings of IUU vessels, it is inevitable that it underestimates IUU catch, since it is unlikely that all IUU vessels are sighted. In any case, either of these two estimates is cause for concern, but of particular concern is that the trade analysis suggests that CCAMLR may be underestimating IUU catch by more than 50% annually. This could have significant consequences for the longer-term sustainability of toothfish stocks.

CCAMLR has actively been reducing TACs (total allowable catches) for toothfish within the CA in line with its precautionary approach to management and taking into account its estimates of IUU fishing. However, if CCAMLR's estimates of IUU catch continue to understate the level of IUU fishing, the TACs may be less precautionary and the cumulative effect over time could prove detrimental to toothfish stocks. Further, the continuation of IUU fishing imposes greater constraints on legitimate fishers as their access to the stocks is reduced to account for the impact of IUU catch. In addition, the continuation of significant levels of IUU fishing poses threats to non-target species such as seabirds and sharks. CCAMLR's measures to mitigate the impact of fishing on these species are undermined by the operations of IUU fishers who flout these regulatory measures.

ADDRESSING IUU FISHING

Current measures

CCAMLR has an extensive suite of MCS measures which have been introduced progressively over the last 20 years. While these measures have gradually tightened arrangements in support of management and conservation measures they have not been able to reduce the IUU catch of toothfish much below 10% of the CCAMLR's reported landings.

CCAMLR's focus on IUU activities has seen the introduction of a number of additional MCS measures including:

1. Vessel and gear marking CM 10-01 (1998)

This covers fishing vessel and gear marking and requires that this be in accordance with internationally recognized standards.

2. Flag State licensing and inspection CM 10-02 (2007)

This requires that a CP prohibit fishing in the CA except pursuant to a licence which specifies the area, species and time periods for which fishing is authorized as well as any other specific conditions set out in CMs. It also sets out a range of obligations which CPs must meet with respect to the Convention and CMs. Each CP must also provide specific information on the fishing vessel (including photos), the fishing method and the operator and master of the vessel. This information is made publicly available via the CCAMLR website—essentially a “white list” of vessels. The CM also outlines a series of inspection requirements.



Credit: Image courtesy of the Australian Fisheries Management Authority, 2008

Fishing vessel in CCAMLR waters

3. Port inspections for vessels carrying toothfish CM 10-03 (2005)

This CM outlines the requirements for CPs to undertake inspections of all fishing vessels carrying *Dissostichus* spp. which enter their ports. It sets out the procedures to be followed in allowing the vessels port access, including a requirement that vessels which have fished in contravention of CMs not be allowed to land or transship their catch. CPs are required to provide the Secretariat with a report on the outcome of each inspection promptly.

4. Centralized Vessel Monitoring Scheme (VMS) CM 10-04 (2007)

The CM covers the installation and use of a satellite linked vessel monitoring device. It sets out the requirements for CPs and vessel operators (masters and owners). The CM provides for reporting via the flag State to the Secretariat or parallel reporting to the flag State and the Secretariat. The CM does not mandate real-time reporting and depending on the fishery in question there can be a lag of anywhere between four hours after receipt of the information by the flag State or up to 10 working days following departure of the fishing vessel from the CA. Despite these significant deficiencies it is understood that nearly all reporting is currently available in real time. The CM provides for the use of this information (subject to strict provisions) for surveillance and enforcement operations. In addition it provides for the secure and confidential treatment of the reports and messages received via VMS.

5. Catch Documentation Scheme (CDS) for toothfish CM 10-05 (2006)

This CM sets up a document tracking system and a document—a *Dissostichus* catch document (DCD)—which accompanies landed or transshipped toothfish on each occasion that it is landed or transshipped. Landings or transshipments without a DCD are prohibited. The scheme is open to CPs and co-operating Non-contracting Parties (NCPs). The DCD includes a range of information: the issuing authority; details of the catching vessel; the weight and product type of *Dissostichus* species landed or transshipped, by CCAMLR statistical subarea and/or FAO statistical area; the dates the catch was taken; and the date and port where the catch was landed, or the date and vessel (including flag and national registry number) to which the catch was transshipped and details of the recipient of the catch.

6. Scheme to promote compliance by CPs' vessels (blacklisting of CPs' vessels) CM 10-06 (2006)

Using a range of information from other CMs and relevant information and statistics from other sources, this CM establishes a list of vessels from CPs whose vessels have engaged in fishing activities in a manner which diminishes the effectiveness of CMs—a blacklist of CPs' vessels. The CM provides details of what constitutes non-compliance and a comprehensive process which must be followed to register or deregister a vessel and what actions the CP should take in respect of that vessel.

7. Scheme to promote compliance by NCPs' vessels (blacklisting of NCP vessels) CM 10-07 (2006)

This provides similar provisions, processes and outcomes to CM 10-06. It establishes a list of vessels from NCPs whose vessels have engaged in fishing activities in a manner which diminishes the effectiveness of CMs—a blacklist of NCPs' vessels. The CM provides details of what constitutes non-compliance and what information should be used to assess this, including the use of port inspections, trade and CDS information, sightings and transshipments. It also provides a comprehensive process which must be followed to register or deregister a vessel and what actions the NCPs should take in respect of that vessel.

8. Scheme to promote compliance by CP nationals CM 10-08 (2006)

This CM requires that CPs develop and implement arrangements within their jurisdiction to verify that their nationals are not engaged in any activity which would undermine CMs and if such activity is detected to take appropriate action to correct this. CPs are urged to co-operate in implementing these measures and actions.

By the standards of other regional fisheries bodies standards this is a comprehensive suite of measures. However, not all the measures are being implemented effectively. In addition, despite some of them, in particular the CDS (Lodge *et. al.*, 2007), identified as “best practice approaches” there are some inherent weaknesses which need to be addressed.

The following analysis focuses on potential improvements to the centralized VMS (cVMS) and the CDS.

Centralized VMS

The cVMS is working effectively, with most vessels reporting their positions in real time. This is despite the fact that CM 10-04 does not mandate this. Paragraph 10 of CM 10-04 states:

“10. Each Contracting Party shall forward VMS reports and messages received, pursuant to paragraph 1, to the CCAMLR Secretariat as soon as possible:

(i) but not later than four hours after receipt for those exploratory longline fisheries subject to conservation measures adopted at CCAMLR-XXIII; or

(ii) but not later than 10 working days following departure from the Convention Area for all other fisheries.”³

In effect, as a result of (ii) above for vessels in most fisheries, if they were providing information via their flag State and not in parallel to the CCAMLR Secretariat, they would not have to do so until well after they had left the CA.

³ There are a series of footnotes to this paragraph which specify that it does not apply to certain French and South African licensed vessels fishing in the EEZs surrounding Kerguelen and Crozet Islands and Prince Edward Islands, nor does it apply to krill fisheries.

Paragraph 14 states:

“Without prejudice to its responsibilities as a flag State, if the Contracting Party so desires, it shall ensure that each of its vessels communicates the reports referred to in paragraphs 10 and 13 in parallel to the CCAMLR Secretariat.”

This provision enables flag States to opt for dual reporting, that is to the flag State and the CCAMLR Secretariat at the same time. While this remains optional, it is understood that the majority of vessels authorized to fish in the CCAMLR CA are reporting directly to the CCAMLR Secretariat in real time in this manner and the remainder are reporting via their flag State in real time. Recognized best practice suggests that all vessels report in parallel to their flag State and the regional fisheries body in real time.

It is understood that the reason that most States are reporting directly to the Secretariat in real time has nothing to do with the CM. Rather, it is as a result of requirements introduced by the USA in 2007 which require “the mandatory use of electronic catch documents and centralized vessel monitoring as conditions for the import of Patagonian and Antarctic Toothfish into US markets (Commission Circular 07/103).” In effect this requires all vessels (other than the artisanal fleets of Peru and Chile) to provide proof of the use of cVMS when harvesting toothfish for the US market. Likewise the use of Electronic Catch Documents is required on all import shipments of toothfish into the USA, including shipments of toothfish harvested by artisanal fishers.

The measures introduced by the USA have had the beneficial effect of tightening what are relatively loose arrangements within this CM when it comes to real-time reporting to the CCAMLR Secretariat. As it stands, should market arrangements change and the USA no longer be the predominant or preferred market for toothfish, CPs could choose to revert to the mandated reporting requirements in this CM. This would reduce the effectiveness of this measure and create a potential loophole which might be used to undertake IUU fishing.

A further issue with this CM relates to the availability and use of VMS data in planning and undertaking surveillance and enforcement operations pursuant to paragraphs 20 and 21. While data may be made available during active surveillance operations subject to the conditions set out in paragraph 20 there is scope in paragraph 21 for a flag State to refuse permission for such data to be made available for the planning of active surveillance.

In effect, the lack of real-time data will be a significant disincentive for CPs to undertake what are expensive surveillance operations. The substantial distances from ports or airfields that such operations involve and the cost of maintaining a vessel or aircraft on station will potentially mean such operations are only carried out when information suggests there is a strong likelihood that IUU fishing is occurring and enforcement action will be successful. The absence of real-time VMS data will reduce such operations and potentially encourage IUU fishing.

CDS for toothfish

The CDS is frequently cited as a significant tool in the fight against IUU fishing and an example of a best practice approach in relation to market and trade-related tools. There can be no doubt that it has had a major positive impact on the trade of legal toothfish and helped reduce the scope for the trade in illegally caught product. However, there appear to be a number of aspects of the relevant CM which create ambiguity and provide potential loopholes in the system. The CM does not contain a definition of “catch” and in fact it does not appear to monitor catch. Catches are reported to the flag State while the DCD follows the product to the market and the information is provided to the Secretariat. Catches and DCDs are not reconciled. It is understood that there is nothing to prevent this occurring, but that there is no formal requirement for it to occur. The system requires the vessel master or authorized representative to complete a DCD for each “shipment” of catch landed or transshipped and for this to be done each time this occurs. Landings or transshipment without a DCD are prohibited.

There appears to be a significant problem with the CM when it comes to transshipment. The role of transshipment in the scheme is unclear due to ambiguity in both the definition in paragraph 1 (vi) of the CM and in Sections 8 and 9 of the DCD (Annex 10-05/A of the CM). Paragraph 1 (vi) does not appear explicitly to rule out at-sea transshipment, instead referring to it taking place within the territory under the control of a port State for the purpose of effecting its removal from that State. Likewise Section 8 of the DCD seeks information on the “Landing/Transshipment Port and Country/Area” but does not make provision for transshipment outside a port. Again Section 9 of the DCD is unclear as to whether transshipment refers to both at-sea and in-port transshipment.

The combined effect of these ambiguities means that there is scope for catch to be landed in non-co-operating Parties or transshipped at sea with the resulting effect that additional catches are taken and enter trade outside the CDS and agreed catch limits set by CCAMLR. If this is in fact occurring, this could account for some of the difference between the CCAMLR estimate of IUU catch and the trade estimate of IUU catch in **Table 11** above.

Additional measures

The suite of MCS measures outlined above has proven inadequate to control IUU catch of toothfish. The discussion of this issue at the 2007 CCAMLR meeting confirms that all CCAMLR members agree that the current level of IUU fishing is unacceptable and that additional measures are required to address it.

The implementation of measures to provide for the imposition of trade sanctions is an additional step that CCAMLR should take to minimize the opportunities for marketing of IUU-caught toothfish. Such a measure would require members of CCAMLR to impose trade sanctions on flag States that have not taken action to control the operations of their vessels that are considered to be undermining CCAMLR’s conservation and management measures.

Such measures have been agreed by the International Commission for the Conservation of Atlantic Tunas (ICCAT) and the Commission for the Conservation of Southern Bluefin Tuna and ICCAT has taken action against a range of countries involved in the catch of Swordfish *Xiphias gladius* and Bigeye Tuna *Thunnus obesus*.

In order to ensure that such schemes are non-discriminatory, it is essential that the processes in place for determining when sanctions will be applied are specified formally and are transparent. In this respect it is also essential that the measures apply to both members and non-members of the implementing body.

At the Commission's 2007 meeting, CCAMLR members discussed, at length, a proposal for the introduction of a trade-based measure. The proposal, which would apply only as a last resort when other measures had proven unsuccessful, would require CCAMLR members to take non-discriminatory trade-restrictive measures against flag States undermining CMs for toothfish. All but one of the 25 members of CCAMLR, Argentina, agreed to the proposal. As a result of the consensus decision-making framework in which CCAMLR operates, adoption of the measure was therefore blocked. Should such a measure be agreed within CCAMLR, the potential for consensus decision-making to stymie its application, when the measure was directed at a member of the Commission, would definitely need to be addressed.

RECOMMENDATIONS

IUU fishing persists because those involved can continue to access markets for their product. Measures related to trade and markets therefore provide key areas for CCAMLR's attention. CCAMLR's implementation of the CDS acknowledged this; however the persistence of IUU fishing suggests that CCAMLR's measures have not been entirely successful in closing off the market for IUU-caught toothfish. There remains scope for tightening the CDS arrangements and for increasing the comprehensiveness of its application. In addition, the adoption of measures to provide a swift and effective response mechanism against those States believed to be engaged in or supporting IUU fishing must be a priority.

It is recommended that:

- 1) Conservation Measure (CM) 10/05, Catch Documentation Scheme for *Dissostichus* spp., be revised:
 - a) to include a clear definition of where, when and under what arrangements transshipment can take place; and
 - b) to provide for formal, transparent, reconciliation of individual flag State catch records with landings data from their *Dissostichus* Catch Documents by the Secretariat.

- 2) To bring the centralized vessel monitoring system (VMS) into line with best practice, the current CM be amended to mandate real-time reporting to the flag State and in parallel to the CCAMLR Secretariat (that is, no longer provide the option of reporting via the flag State).
- 3) To maximize the value of real-time VMS data, the data be made available in confidence to the MCS agencies of CCAMLR members for both planning and operational surveillance purposes.
- 4) CCAMLR members should consider adopting a transparent, non-discriminatory measure to provide for the implementation of trade sanctions against States/entities which fail to control the operations of their vessels or nationals that are considered to be involved in activities that diminish the effectiveness of CCAMLR's conservation measures.
 - Consideration should be given on how to avoid such decisions being blocked by a member against whom action was directed.
- 5) Public access to CDS data be improved with a view to facilitating external and internal review of the data and, in particular, that the current publicly available data be enhanced by publication of:
 - exports of toothfish by product form, by Patagonian Toothfish and by Antarctic Toothfish;
 - landings/transshipment by port of landing or receiving vessel of transshipment, and by product form; and
 - trade data by month.
- 6) All CCAMLR Contracting Parties and co-operating Non-contracting Parties, be required to implement, at a minimum, the current Harmonized Commodity Description and Coding System codes for toothfish.
- 7) The CCAMLR Secretariat be charged with, and provided with the resources to undertake, regular analyses of trade and CDS data in order to develop a better understanding of the landings and trade flows and to identify changes in the pattern of trade and fishing practices.
- 8) In order to provide the best possible estimate of IUU fishing, the Standing Committee on Inspection and Compliance explore the opportunities to access information from all available sources, including from non-government organizations, trade data and the fishing industry, and facilitate the participation of those with relevant information.

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ACRONYMS

CA	Convention Area
CCAMLR	Commission for the Conservation of Antarctic Marine Living Resources
CDS	Catch documentation scheme
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CM	Conservation Measure
CP	Contracting Party
cVMS	Centralized vessel monitoring system
DCD	Dissostichus Catch Document
EEZ	Exclusive economic zone
FAO	Food and Agriculture Organization of the United Nations
ICCAT	International Commission for the Conservation of Atlantic Tunas.
IUU	Illegal, unreported and unregulated (fishing)
MCS	Monitoring, control and surveillance
NCP	Non-contracting Party
TAC	Total allowable catch
VMS	Vessel monitoring system
WGFA	Working Group on Fish Stock Assessment

APPENDIX I: PARTICIPANTS IN THE CATCH AND TRADE OF TOOTHFISH, 2003–2007

Participant	CCAMLR status	Catch ¹	Exporter ²	Exporter (e) or re-exporter (r) CDS ³	Importer CDS ⁴	Importer ⁵
Afghanistan						✓
Albania						✓
American Samoa	Invited (2008) ⁶					
Algeria						✓
Andorra						✓
Angola						✓
Argentina	Member	✓	✓	✓ (e)		
Australia	Member	✓	✓	✓(e, r)	✓	✓ ⁷
Austria			✓			✓
Barbados						✓
Belarus						✓
Belgium	Member		✓			✓
Belize	Invited (2008)					
Bermuda						✓
Bolivia	Invited (2008)					
Brazil	Member		✓		✓	
Bulgaria	Acceded					✓
Cambodia	Invited (2008)					
Canada	Acceded ⁸		✓	✓ (r)	✓	✓
Cape Verde						✓
Cayman Isl.			✓			
Chile	Member	✓	✓	✓ (e, r)	✓	✓
China	Member		✓	✓ (e, r)	✓	✓
Colombia	Invited (2008)		✓		✓	
Congo						✓
Cook Islands	Acceded					
Costa Rica			✓			
Croatia						✓
Cyprus			✓			✓
Czech Republic			✓		✓	✓
Denmark			✓		✓	✓
Djibouti			✓			
Ecuador			✓			
Equatorial Guinea	Invited (2008)					
Estonia			✓			✓
European Union	Member					
Faroe Islands			✓			
Finland	Acceded		✓			✓
France	Member	✓	✓	✓ (e)	✓	✓
French Polynesia						✓
Gabon			✓			
Georgia			✓			
Germany	Member		✓		✓	✓

Participant	CCAMLR status	Catch ¹	Exporter ²	Exporter (e) or re-exporter (r) CDS ³	Importer CDS ⁴	Importer ⁵
Gibraltar						✓
Greece	Acceded		✓			✓
Greenland						✓
Guvana			✓			
Hong Kong			✓		✓	✓
Hungary			✓			✓
Iceland						✓
India	Member		✓			
Indonesia	Invited (2008)		✓			
Ireland			✓			✓
Israel			✓			✓
Italy	Member		✓			✓
Japan	Member	✓	✓	✓ (e, r)	✓	✓
Kazakhstan						✓
Kenya	Invited (2008)					
Korea, North	Invited (2008)					
Korea, South	Member	✓	✓	✓ (e)	✓	✓
Latvia						✓
Luxembourg						✓
Lithuania			✓			✓
Macedonia						✓
Madagascar			✓			
Malaysia	Invited (2008)		✓		✓	✓
Maldives			✓			
Mauritania			✓			
Mauritius	Acceded ⁸		✓	✓ (e)	✓	
Mexico	Invited (2008)		✓		✓	
Morocco			✓		✓	✓
Mozambique	Invited (2008)					
Namibia	Member	✓	✓	✓ (e, r)	✓	
Netherlands	Acceded		✓			✓
Netherlands Antilles			✓			
New Caledonia						✓
New Zealand	Member	✓	✓	✓ (e)		✓
Nicaragua			✓			
Nigeria						✓
Norway	Member	✓	✓	✓ (e, r)	✓	✓
Oman			✓			✓
Panama	Invited (2008)		✓			
Peru	Acceded ⁸	✓	✓	✓ (e)		
Philippines			✓		✓	
Poland	Member		✓		✓	✓
Portugal			✓			✓
Reunion			✓			
Russian Federation	Member	✓	✓	✓ (e)	✓	✓
Senegal			✓			

Participant	CCAMLR status	Catch ¹	Exporter ²	Exporter (e) or re-exporter (r) CDS ³	Importer CDS ⁴	Importer ⁵
Seychelles	Non-					
Sierra Leone	Invited (2008)					
Singapore	Non-		✓	✓ (e, r)	✓	✓
Slovakia						✓
South Africa	Member	✓	✓	✓ (e)		✓
Spain	Member	✓	✓	✓ (e, r)	✓	✓
Sri Lanka			✓			
St. Helena			✓			
Surinam			✓			
Sweden	Member		✓			✓
Switzerland						✓
Taiwan			✓		✓	✓
Tanzania			✓			
Thailand	Invited (2008)				✓	✓
Togo	Invited (2008)					
Tunisia						✓
UK	Member	✓	✓	✓ (e)	✓	✓
Ukraine	Member	✓	✓		✓	✓
United Arab Emirates						✓
Uruguay	Member	✓	✓	✓ (e, r)	✓	✓
USA	Member	✓	✓	✓ (e, r)	✓	✓
Vanuatu	Acceded					
Viet Nam	Invited (2008)		✓		✓	✓

Notes:

1. Have reported catch to CCAMLR in any of the 2002/03–2006/07 fishing seasons or are otherwise known to fish for toothfish within their own EEZ or on the high seas.
2. Identified as a source of imports in the available import data of the USA, Japan, the EU, Hong Kong, Taiwan, South Korea, the Russian Federation or Canada (noting that only data on the value of toothfish imports into Canada were available for this study).
3. Identified as an exporter or re-exporter by the CDS.
4. Identified as an importer by the CDS.
5. Identified as a destination of exports from Australia, South Korea, New Zealand, Argentina and the EU.
6. Invited (2008) implies that CCAMLR will invite these countries to attend the 2008 CCAMLR Commission meeting on the grounds that they are possibly involved in harvesting or landing and/or trade of toothfish.
7. Under Australian law, toothfish is a prohibited import unless approval is granted by the Commonwealth Minister for Fisheries and Forestry. Such approval is contingent upon the relevant CCAMLR catch documents accompanying the product.
8. Participates in the CDS.

APPENDIX 2: TOOTHFISH TRADE CODES

Table A1.1 Toothfish codes in place in major importing countries

Importer	2003–2006	2007 Onwards
USA	<p>0302.69.40.97 Patagonian Toothfish (<i>Dissostichus eleginoides</i>) (fresh/chilled excl. fish fillets and other fish meat of Heading 0304)</p> <p>0303.79.40.93 Patagonian Toothfish (<i>Dissostichus eleginoides</i>) (frozen, excluding fish fillets and other fish meat of Heading 0304)</p> <p>0303.79.40.94 Antarctic Toothfish (<i>Dissostichus mawsoni</i>) (frozen, excluding fish fillets and other fish meat of Heading 0304)</p> <p>0304.20.60.93 Patagonian Toothfish (<i>Dissostichus eleginoides</i>) Frozen fillets</p> <p>0304.20.60.94 Antarctic Toothfish (<i>Dissostichus mawsoni</i>) Frozen fillets</p>	<p>0302.68.00.10 Patagonian Toothfish (<i>Dissostichus eleginoides</i>) (fresh/chilled excl. fish fillets and other fish meat of Heading 0304)</p> <p>0302.68.00.90 Other Toothfish (<i>Dissostichus</i> spp.) (fresh/chilled excl. fish fillets and other fish meat of Heading 0304)</p> <p>0303.62.00.06 Patagonian Toothfish (<i>Dissostichus eleginoides</i>) (frozen, excluding fish fillets and other fish meat of Heading 0304)</p> <p>0303.62.00.10 Antarctic Toothfish (<i>Dissostichus mawsoni</i>) (frozen, excluding fish fillets and other fish meat of Heading 0304)</p> <p>0303.62.00.90 Other Toothfish (<i>Dissostichus</i> spp.) (frozen, excluding fish fillets and other fish meat of Heading 0304)</p> <p>0304.12.00.00 Toothfish (Fresh or chilled fillets and other fish meat (whether or not minced))</p> <p>0304.22.00.03 Patagonian Toothfish (<i>Dissostichus eleginoides</i>) Frozen fillets</p> <p>0304.22.00.06 Antarctic Toothfish (<i>Dissostichus mawsoni</i>) Frozen fillets</p> <p>0304.92.10.00 Toothfish (<i>Dissostichus</i> spp.) in bulk or in immediate containers weighing with their contents over 6.8 kg each)</p> <p>0304.92.90.00 Toothfish (<i>Dissostichus</i> spp., other</p>
Japan	<p>0303.79.101 (to end March 2003) Mero (Merluza negra), (excluding fish fillet, other fish meat, livers and roes), frozen</p> <p>0303.79.102 (from 1 April 2003) Mero (<i>Dissostichus</i> spp.) (excluding fish fillet, other fish meat, livers and roes), frozen</p> <p>0304.20.095 (to end march 2003) Fillets of Mero (Merluza negra), frozen</p> <p>0304.20.100 (From 1 April 2003) Fillets of Mero (<i>Dissostichus</i> spp.), frozen</p>	<p>0302.68.000 Toothfish (<i>Dissostichus</i> spp.) (excluding fish fillet, other fish meat, livers and roes), fresh or chilled</p> <p>0303.62.000 Toothfish (<i>Dissostichus</i> spp.) (excluding fish fillet, other fish meat, livers and roes), frozen</p> <p>0304.12.000 Fillets of toothfish (<i>Dissostichus</i> spp.), fresh or chilled</p> <p>0304.22.000 Fillets of toothfish (<i>Dissostichus</i> spp.), frozen</p> <p>0304.92.000 Fish meat of toothfish (<i>Dissostichus</i> spp.), excluding fillets, frozen</p>

Importer	2003–2006	2007 Onwards
EU	<p>0302.69.88 Toothfish (<i>Dissostichus</i> spp.), fresh chilled excluding fish fillets and other fish meat of Heading 0304</p> <p>0303.79.88 Toothfish (<i>Dissostichus</i> spp.) Fish, frozen, excluding fish fillets and other fish meat of Heading 0304</p> <p>0304.20.88 Toothfish (<i>Dissostichus</i> spp.), fillets frozen</p>	<p>0302.68.00 Toothfish (<i>Dissostichus</i> spp.) Fish, fresh or chilled, excluding fish fillets and other fish meat of Heading 0304</p> <p>0303.62.00 Toothfish (<i>Dissostichus</i> spp.) Fish, frozen, excluding fish fillets and other fish meat of Heading 0304</p> <p>0304 12 10 Toothfish (<i>Dissostichus</i> spp.), fillets fresh, chilled</p> <p>0304 12 90 Toothfish (<i>Dissostichus</i> spp.) Other fish meat (whether or not minced) fresh, chilled</p> <p>0304.22.00 Toothfish (<i>Dissostichus</i> spp.), fillets frozen</p> <p>03049200 Toothfish (<i>Dissostichus</i> spp.) other fish meat (whether or not minced), fresh, chilled or frozen</p>
Canada	<p>0302690050 Patagonian Toothfish (Chilean Sea Bass) , fresh or chilled, excluding fillets and other fish meat of Heading 03.04</p> <p>0303790040 Patagonian Toothfish (Chilean sea bass), frozen, excluding fillets and other fish meat of Heading 03.04</p> <p>0304200070 Patagonian Toothfish (Chilean Sea Bass), frozen fillets</p>	<p>030268 Toothfish, fresh or chilled, excluding Heading 0304, livers and roes</p> <p>030362 Toothfish (<i>Dissostichus</i> spp.), frozen, excluding Heading 0304, livers and roes</p> <p>03041210 Toothfish fillets, fresh or chilled</p> <p>03041290 Toothfish meat, nes, excluding fillets, W/N minced, fresh or chilled</p> <p>03042210 Toothfish, fillets, frozen, in blocks over 4.5kg</p> <p>03049290 Toothfish, fillets, frozen, wt <=4.5kg</p> <p>03049210 Toothfish, excl. fillets, blocks and slabs, w/n minced, frozen</p> <p>03049290 Toothfish, minced or not, frozen</p>
Russian Fed.	<p>0302.69.88.00 Toothfish, fresh, chilled</p> <p>0303.79.88.00 Toothfish frozen</p> <p>0304.20.99.00 Toothfish fillets, frozen</p>	<p>0302.69.88.00 Toothfish, fresh, chilled</p> <p>0303.79.88.00 Toothfish frozen</p> <p>0304.20.99.00 Toothfish fillets, frozen</p>
Hong Kong	<p>03026921 Toothfish, excluding fillets, livers and roes, fresh or chilled</p> <p>03037921 Toothfish, excluding fillets, livers and roes, frozen</p> <p>03041011 Fillets of toothfish, fresh or chilled</p> <p>03041091 Meat of toothfish (Other than fillets), fresh or chilled</p>	<p>03026800 Toothfish, excluding fillets, livers and roes, fresh or chilled</p> <p>03036200 Toothfish, excluding fillets, livers and roes, frozen</p> <p>03041210 Fillets of toothfish, fresh or chilled</p> <p>03041290 Meat of toothfish (Other than fillets), fresh or chilled</p>

Importer	2003–2006	2007 Onwards
	03042010 Fillets of toothfish, frozen 03049010 Meat of toothfish (Other than fillets), frozen	03042200 Fillets of toothfish, frozen 03049200 Meat of toothfish (Other than fillets), frozen
South Korea		030268000 Toothfish (<i>Dissostichus</i> spp.) fresh, chilled, excluding fish fillets and other fish meat of Heading 0304 030362000 Toothfish (<i>Dissostichus</i> spp.), frozen, excluding fish fillets and other fish meat of Heading 0304 0304121000 Toothfish (<i>Dissostichus</i> spp.), fresh chilled fillets 0304122000 Toothfish (<i>Dissostichus</i> spp.), surimi, fresh, chilled 0304129000 Toothfish (<i>Dissostichus</i> spp.), other, fresh, chilled 030422000 Toothfish (<i>Dissostichus</i> spp.), fillets, frozen 0304921000 Toothfish (<i>Dissostichus</i> spp.), frozen surimi 0304929000 Toothfish (<i>Dissostichus</i> spp.), frozen, other
Taiwan	03026999602 Toothfish (<i>Dissostichus</i> spp.), fresh or chilled 03037999565 Toothfish (<i>Dissostichus</i> spp.), frozen 03041090707 Toothfish (<i>Dissostichus</i> spp.) fillets and its meat (whether or not minced), fresh or chilled 03042090509 Toothfish (<i>Dissostichus</i> spp.), fillets or steaks, frozen 03055990502 Toothfish (<i>Dissostichus</i> spp.), dried 03056990500 Toothfish (<i>Dissostichus</i> spp.), salted or in brine 16041990614 Toothfish (<i>Dissostichus</i> spp.), whole or in pieces, but not minced, prepared or preserved, frozen 16041990623 Toothfish (<i>Dissostichus</i> spp.), whole or in pieces, but not minced, prepared or preserved, canned 16041990696 other toothfish (<i>Dissostichus</i> spp.), whole or in pieces, but not minced, prepared or preserved	03026999602 Toothfish (<i>Dissostichus</i> spp.), fresh or chilled 03037999565 Toothfish (<i>Dissostichus</i> spp.), frozen 03041090707 Toothfish (<i>Dissostichus</i> spp.) fillets and its meat (whether or not minced), fresh or chilled 03042090509 Toothfish (<i>Dissostichus</i> spp.), fillets or steaks, frozen 03055990502 Toothfish (<i>Dissostichus</i> spp.), dried 03056990500 Toothfish (<i>Dissostichus</i> spp.), salted or in brine 16041990614 Toothfish (<i>Dissostichus</i> spp.), whole or in pieces, but not minced, prepared or preserved, frozen 16041990623 Toothfish (<i>Dissostichus</i> spp.), whole or in pieces, but not minced, prepared or preserved, canned 16041990696 other toothfish (<i>Dissostichus</i> spp.), whole or in pieces, but not minced, prepared or preserved

Table A1.2: Toothfish codes in exporting countries

Exporter	2003–2006	2007 Onwards
Australia	<p>03026900 Toothfish (<i>Dissostichus</i> spp.), (excl. fish fillets, other fish meat of HS 0304, livers & roes) fresh or chilled</p> <p>03037911 Toothfish (<i>Dissostichus</i> spp.), frozen (excl. fish fillets, other fish meat, livers and roes)</p> <p>03041000 Toothfish (<i>Dissostichus</i> spp.) fillets & other meat, whether or not minced, fresh or chilled</p> <p>03042001 Toothfish (<i>Dissostichus</i> spp.), frozen fillets</p> <p>03049091 Toothfish (<i>Dissostichus</i> spp.), frozen, fish meat (excl. fillets)</p>	<p>03026807 Toothfish (<i>Dissostichus</i> spp.) (excl. fish fillets, other fish meat of HS 0304, livers & roes) fresh or chilled</p> <p>03036206 Toothfish (<i>Dissostichus</i> spp.), frozen (excl. fish fillets, other fish meat of HS 0304, livers & roes)</p> <p>03041202 Toothfish (<i>Dissostichus</i> spp.) fillets & other meat, whether or not minced, fresh or chilled</p> <p>03042204 Toothfish (<i>Dissostichus</i> spp.), frozen fillets</p> <p>03049206 Toothfish (<i>Dissostichus</i> spp.), frozen, fish meat (excl. fillets)</p>
New Zealand	<p>0304.20.00.92 Fish; Patagonian Toothfish (<i>Dissostichus mawsoni</i>), fillets, frozen</p> <p>0304.20.00.93 Fish; Patagonian Toothfish (<i>Dissostichus eleginoides</i>), fillets, frozen</p> <p>0303.79.01.91 Fish; Patagonian Toothfish (<i>Dissostichus mawsoni</i>), frozen (excluding fillets, livers, roes and other fish meat of Heading no 0304), whole</p> <p>0303.79.01.93 Fish; Patagonian Toothfish (<i>Dissostichus eleginoides</i>), frozen (excluding fillets, livers, roes and other fish meat of Heading no 0304), whole</p>	<p>0303.62.00.22 Fish; Patagonian Toothfish (<i>Dissostichus mawsoni</i>), frozen (excluding fillets, livers, roes and other fish meat of Heading no 0304), headed and gutted</p> <p>0303.62.00.25 Fish; Patagonian Toothfish (<i>Dissostichus eleginoides</i>), frozen (excluding fillets, livers, roes and other fish meat of Heading no 0304), headed and gutted</p> <p>0303.62.00.28 Fish; toothfish (<i>Dissostichus</i> spp.), n.e.c. in item no. 0303.62, frozen (excluding fillets, livers, roes and other fish meat of Heading no. 0304), headed and gutted</p> <p>0303.62.00.33 Fish; Patagonian Toothfish (<i>Dissostichus mawsoni</i>), frozen (excluding fillets, livers, roes and other fish meat of Heading no 0304), other than whole or headed and gutted</p> <p>0303.62.00.36 Fish; Patagonian Toothfish (<i>Dissostichus eleginoides</i>), frozen (excluding fillets, livers, roes and other fish meat of Heading no 0304), other than whole or headed and gutted</p> <p>0304.22.00.10 Fish; Patagonian Toothfish (<i>Dissostichus mawsoni</i>), fillets, frozen</p>
South Korea		<p>030268000 Toothfish (<i>Dissostichus</i> spp.), fresh, excluding fillets and other meat of Heading 0304</p>

Exporter	2003–2006	2007 Onwards
		<p>030362000, Toothfish (<i>Dissostichus</i> spp.), frozen, excluding fillets and other meat of Heading 0304</p> <p>0304121000 Toothfish (<i>Dissostichus</i> spp.), fillets, fresh</p> <p>0304122000 Toothfish (<i>Dissostichus</i> spp.), fish surimi, fresh</p> <p>030412900 Toothfish (<i>Dissostichus</i> spp.), fresh, other</p> <p>0304220000, Toothfish (<i>Dissostichus</i> spp.), fillets, frozen</p> <p>0304921000 Toothfish (<i>Dissostichus</i> spp.), fish surimi, frozen</p> <p>0304929000 Toothfish (<i>Dissostichus</i> spp.), other, frozen</p>
Argentina	<p>03037949 Merluza negra (<i>Dissostichus eleginoides</i>), frozen, excluding fillets and other fish meat of Heading 0304</p> <p>03042070 De merluza negra (<i>Dissostichus eleginoides</i>), fillets, fresh, chilled or frozen</p>	<p>03026800, <i>Dissostichus</i> spp. Fresh, chilled excluding fillets and meat of Heading 0304.</p> <p>03036210 Merluza negra (<i>Dissostichus</i> spp.) frozen, except fillets and meat of Heading 0304</p> <p>03036290 <i>Dissostichus</i> spp., other frozen, except fillets and meat of Heading 0304</p> <p>03041200 <i>Dissostichus</i> spp. Fresh or chilled</p> <p>03042210 Merluza negra (<i>Dissostichus eleginoides</i>), frozen fillets</p> <p>03042290 Merluza negra (<i>Dissostichus eleginoides</i>), frozen, other</p> <p>03049200 <i>Dissostichus</i> spp., other</p>
Chile	<p>03026911 Mero (<i>Dissostichus eleginoides</i>), fresh, chilled, whole</p> <p>03026912 Mero (<i>Dissostichus eleginoides</i>), fresh, chilled, headed and gutted</p> <p>03026919 Mero (<i>Dissostichus eleginoides</i>), fresh, chilled, other</p> <p>03037911 Mero (<i>Dissostichus eleginoides</i>), frozen, whole</p> <p>03037912 Mero (<i>Dissostichus eleginoides</i>), frozen, headed and gutted</p> <p>03037919 Mero (<i>Dissostichus eleginoides</i>), frozen, other</p>	<p>03026811 Bacalao de profundidad (<i>Dissostichus eleginoides</i>), fresh, chilled, whole</p> <p>03026812 Bacalao de profundidad (<i>Dissostichus eleginoides</i>), fresh, chilled, headed and gutted</p> <p>03026819 Bacalao de profundidad (<i>Dissostichus eleginoides</i>), fresh, chilled, other</p> <p>03036212 Bacalao de profundidad (<i>Dissostichus eleginoides</i>), frozen, headed and gutted</p> <p>03036190 Bacalao de profundidad (<i>Dissostichus eleginoides</i>), frozen, other</p> <p>03036290 Bacalao de profundidad (<i>Dissostichus eleginoides</i>), frozen, other</p>

Exporter	2003–2006	2007 Onwards
	<p>03041031 Mero (<i>Dissostichus eleginoides</i>), fresh, chilled fillets</p> <p>03042031 Mero (<i>Dissostichus eleginoides</i>), frozen, fillets</p> <p>03049033 Mero (<i>Dissostichus eleginoides</i>), other</p>	<p>03041211 Bacalao de profundidad (<i>Dissostichus eleginoides</i>), fresh, chilled fillets</p> <p>03041219 Bacalao de profundidad (<i>Dissostichus eleginoides</i>), other fresh, chilled</p> <p>03041290 Bacalao de profundidad (<i>Dissostichus eleginoides</i>), other</p> <p>03042210 Bacalao de profundidad (<i>Dissostichus eleginoides</i>), frozen fillets</p> <p>03042290 Bacalao de profundidad (<i>Dissostichus eleginoides</i>), frozen, other</p> <p>03049211 Bacalao de profundidad (<i>Dissostichus eleginoides</i>), trozos</p> <p>03049212 Bacalao de profundidad (<i>Dissostichus eleginoides</i>), cocochas</p> <p>03049219 Bacalao de profundidad (<i>Dissostichus eleginoides</i>), other</p> <p>03049290 Bacalao de profundidad (<i>Dissostichus eleginoides</i>), other</p>
Uruguay	<p>0303794900 Merluza negra (<i>Dissostichus eleginoides</i>), frozen, excluding fillets and other fish meat of Heading 0304</p> <p>03042070 De merluza negra (<i>Dissostichus eleginoides</i>), fillets, fresh, chilled or frozen</p> <p>0304207030 De merluza negra (<i>Dissostichus eleginoides</i>), without skin, with bone, fresh, chilled or frozen</p> <p>0304207040 De merluza negra (<i>Dissostichus eleginoides</i>), without skin, without bone, fresh, chilled or frozen</p>	<p>0303621000 Merluza negra (<i>Dissostichus</i> spp.) frozen, excluding fillets and other meat of Heading 0304</p> <p>0304120000 Merluza negra (<i>Dissostichus eleginoides</i>) fillets, frozen, with skin, with bone</p> <p>0304221020 Merluza negra (<i>Dissostichus eleginoides</i>) fillets, frozen, with skin, without bone</p> <p>0304221030 Merluza negra (<i>Dissostichus eleginoides</i>) fillets, frozen, without skin, with bone</p> <p>0304221040 Merluza negra (<i>Dissostichus eleginoides</i>) fillets, frozen, without skin without bone</p> <p>0304229000 Merluza negra (<i>Dissostichus eleginoides</i>) fillets, frozen, other</p> <p>0304920000 <i>Dissostichus</i> spp. Other</p>

APPENDIX 3: TOOTHFISH IMPORTS

The data in this do not include data relating to product forms considered to represent by-products. Import quantities of less than 100 kgs have been omitted.

Table A3.1: US Patagonian Toothfish imports, by source and product form (t, product weight)

Source	Fillet frozen					Other than fillet, fresh					Other than fillet, frozen				
	2003	2004	2005	2006	2007	2003	2004	2005	2006	2007	2003	2004	2005	2006	2007
Argentina	26	21			3				83	21	1202	1247	364	390	825
Australia			19								85	46	159	157	43
Canada	1041				17										
Cayman Is.									62			34		22	
Chile		1097	1039	1535	1143	1079	701	462	598	377	1223	1228	1139	1825	1326
China	629	76	193	152	99						10		11		590
Taiwan												4	36		
Cyprus												18			
Colombia														18	
Ecuador			24			1	1		1						
Falkland Is.	79	25									374	533	1589	1084	309
France		16	20		13					38	870	781	794	377	645
India					0		1								
Indonesia			28		0										
Japan					23	19	11	22	72		23	34	22	59	195
Korea, South		37	72	146	47	103	110	48	52		151	107	182	301	306
Mauritius											198	57			32
Namibia											8				68
New Zealand	52	3	73	48	22					1	171	373	143	256	234
Mexico								1							
Nicaragua	1														
Norway		58													19
Panama						1					29				
Peru		17				250	229	127	137	97					
Philippines				24											
Reunion											144	134	299	425	202
Russian Fed.	243	78	162								19	0	263	259	76
Singapore	0	18	4												
South Africa	32	23							36		325	149	445	184	245
Spain			71	255	175	23	78	191			420	577	344	424	192
St. Helena					149								25		22
Suriname													5	16	0
Ukraine		40	53										95	279	135
UK	139	187	34		6	1						26	298	153	179
Uruguay	18	151	136	12	18	26	62	97			983	544	669	868	654
Total	2259	1849	1925	2172	1714	1506	1230	948	1005	534	6299	5891	6881	7100	6295

Table A3.2: US Antarctic Toothfish imports by source and product form (t, product weight)

	Fillet frozen					Other than fillet, frozen				
	2003	2004	2005	2006	2007	2003	2004	2005	2006	2007
Argentina	0	0	0	0	0	0		217	43	
Chile	15	31	73	26	43	0	39			
China	50	7	40	18	20	35		6	13	
Taiwan					16	31		11	15	
France							22			
Guyana							18			
Indonesia		8			16				12	
Japan	3	2					462	666		12
Korea, South					39					182
Namibia										3
New Zealand		16	17		55	352		150	613	636
Norway			3	21	36			9	172	55
Singapore					1					
South Africa										37
Spain					41				187	334
UK										18
Uruguay									25	75
Total	69	64	134	65	268	418	541	1059	1080	1351

Table A3.3: Japanese toothfish imports, by source and product form (t, product weight)

	Other than fillets, frozen					Fillets, frozen				
	2003	2004	2005	2006	2007	2003	2004	2005	2006	2007
Argentina	953	264	86	48	123	246	164	24		
Australia	1494	1410	1742	838	1242	50	46	6		
Chile	431	329	272	158	213	1021	473	430	271	145
China	306	124	80			1203	1116	346		
Falkland Islands	56	61	111	43	52	2			10	
France	2062	1197	1759	992	533	15	9	1	20	10
Korea, South	136	93	5	2	15					
Netherlands	28					1				
Netherlands Antilles	95									
New Zealand	111	39	38	15	47					
Norway				4					3	
Reunion	58			146	36					5
Russian Fed.					33	23				9
Singapore		3								
South Africa	167	95	130	62	44					
Spain	206	224	33	31		24		5		
St Helena	26	120	77	176	193					
Ukraine				10	22					
UK		18	45							4
Uruguay	1245	319	56	45	69					
USA	3		1					1		
Total	7379	4297	4434	2570	2622	2586	1808	814	303	174

Table A3.4: EU toothfish imports, by source and product form (t, product weight)

	Fillets frozen					Other than fillets, frozen					Other than fillets, fresh					Fillets
	2003	2004	2005	2006	2007	2003	2004	2005	2006	2007	2003	2004	2005	2006	2007	2007
Argentina	1	1			28	38	28	11	25	12						
Australia							11	22	12							26
Brazil					27											
Chile	5	10	16	3	1		4	3	1							
China	0	0	0	30	344				20							
Falkland Isl.						46	58	28	26	9						65
France	0	16	12	8	11	39	102	18	0	1	72	66	56	41	61	
French S.	8	43	31	17	32	34	1031	977	90	91						11
St. Helena					4	123	70									
Iceland																
India					3	15		2	1	10						33
Indonesia					8											
Korea, South					2											
Madagascar																
Morocco					15											
Mauritania										1						
New Zealand										1						
Norway										1						
Oman																70
South Africa																
Spain		3	10	2	206	29	10	16	46	30	123	172	58	42	11	2
Tunisia								1	5							106
Turkey						2										
Namibia					18											89
Senegal					4											
Singapore									11	21						
Sri Lanka	1				7											
Tanzania,	0				53											
Uganda					205											
UK					10	8	43	27	185	10	36	7	1			
USA															1	
Uruguay							5									22
Viet Nam							6									
Total	16	73	69	58	978	334	1368	1105	421	185	230	244	115	83	73	425

Table A3.5: Hong Kong toothfish imports, by source and product form (t, product weight)

	Other than fillets, frozen					Fillets, frozen				
	2003	2004	2005	2006	2007	2003	2004	2005	2006	2007
Australia	30	48								
Central and South American countries					24					
Chile					20					
France				12	160					
Japan	14									
Korea, South	41				32					
Mauritius		88	17	9	247					
New Zealand		9	4		11					
Norway	10									
South Africa		22								
Spain		45								
Uruguay					17					
Viet Nam					0	1				
Total	96	211	20	21	511	1	0	0	0	0

Table A3.6: South Korean toothfish imports, by source and product form (t, product weight)

	Other than fillets, frozen	Fillets, frozen
	2007	2007
Chile	8.6	0.0
France	85.6	0.0
Singapore	12.5	0.0
Ukraine	3.1	0.0
UK	62.3	0.0
Uruguay	25.5	0.2
Total	197.5	0.2

Table A3.7: Taiwanese toothfish imports, by source and product form (t, product weight)

	Other than fillets, frozen					Fillets or steaks, frozen					Fillets, fresh				
	2003	2004	2005	2006	2007	2003	2004	2005	2006	2007	2003	2004	2005	2006	2007
Argentina					27.3										
Australia	5.0														
Chile				0.5											
China					44.6										
France					0.0					1.6					
Indonesia					24.1										
Japan															
Malaysia					105.1										5.1
New Zealand	144.7	35.6	40.5	4.5		3.7									
Netherlands															
Portugal					30.3										
Spain				2.7											
Uruguay				27.6	34.5										
Total	149.7	35.6	40.5	35.4	265.9	3.7	0.0	0.0	0.0	1.6	0	0	0	0	5.1

Table A3.8: Russian toothfish imports, by source and product form (t, product weight)

	Other than fillets, frozen				Fillets, frozen
	2003	2004	2005	2006 (11 months)	2003
Argentina					0.6
Chile		2.4			
Germany			2.6		
Lithuania				6.4	
Spain	1.2				
Uruguay	0.7	2.6			
USA					
Total	1.9	5.0	2.6	6.4	0.6

APPENDIX 4: TOOTHFISH EXPORTS

The data in this appendix include exports to all destinations, i.e. they include exports regardless of whether they were to countries for which import data were obtained. Residual exports were extracted from these data. Data relating to product forms considered to represent by-products have been omitted.

Table A4.1: Australian exports of toothfish, by destination and product form (t, product weight)

	Other than fillets, frozen					Fillets, fresh	Fillets, frozen
	2003	2004	2005	2006	2007	2003	2007
China	90.0					92.2	
Hong Kong	61.3						
Japan	122.3						15.5
Malaysia	11.4						
Singapore	11.3						
Taiwan	5.0						
Total	301.4	0.0	0.0	0.0	0.0	92.2	15.5

Table A4.2: New Zealand exports of Patagonian Toothfish, by destination and product form (t, product weight)

	Whole, frozen					Fillets, frozen					Other than fillets, frozen				
	2003	2004	2005	2006	2007	2003	2004	2005	2006	2007	2003	2004	2005	2006	2007
Australia								0.2							
China ¹															33.5
Japan ¹															19.3
South Africa	11.6														
USA		0.1					0.5								45.9
Total	11.6	0.1					0.5	0.2							98.7

¹ Refers to headed and gutted *Dissostichus* spp.

Table A4.3: New Zealand exports of Antarctic Toothfish, by destination and product form (t, product weight)

	Whole frozen					Fillets frozen					Headed/gutted				
	2003	2004	2005	2006	2007	2003	2004	2005	2006	2007	2003	2004	2005	2006	2007
USA		28.5	18.8				0.4								342.9
Japan					2.1										0.0
Australia															13.8
French Polynesia															0.3
Japan															0.3
South Korea															119.0
Total	0.0	28.5	18.8	0.0	2.1	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	476.2

Table A4.4: South Korean exports of toothfish, by destination and product form (t, product weight) 2007 only

	Other	fillets
	2007	2007
Chile	76.0	
China	64.2	
Hong Kong	118.1	
Japan		2.2
Malaysia	45.1	
Singapore	9.9	
Thailand	67.3	
USA	566.7	
Total	947.4	2.2

Table A4.5: Spanish, French and UK toothfish exports, other than fillets, by destination (t, product weight)

	Other, than fillets frozen															Other, than fillets, fresh/ chilled	
	2003			2004			2005			2006			2007			2007	
	Spain	France	UK	Spain	France	UK	Spain	France	UK	Spain	France	UK	Spain	France	UK	Spain	
Andorra							2			11							
Canada	12			14							40						
Chile											157						17
China	251	85		73	240			386		30	421			590			
Algeria	3																
Gibraltar													1			1	
Guyana																	
Hong Kong	64	138			243		2	79			167			527			
Japan	481	1458		26	993		23	929		28	867		22	308			
Korea, South		47			45			13		3	9						
Malaysia	13			27	108			6						46			
New Zealand								24									
Singapore	61	209		54	224			196			129			242			
Switzerland																	0.5
Thailand		30			44			44			36			153			
Taiwan		23									43						
Ukraine	2																
Uganda																	
USA	287	623		314	753		13	785		118	375			483			
Viet Nam														24			
Total	1175	2612	0	509	2649	0	40	2463	0	190	2242	0	23	2372	1		17.5

Table A4.6: Spanish, French and UK toothfish fillet exports, by destination (t, product weight)

	Fillets, frozen															Fillets, fresh/chilled		
	2003			2004			2005			2006			2007			2007		
	Spain	France	UK	Spain	France	UK	Spain	France	UK	Spain	France	UK	Spain	France	UK	Spain	France	UK
Andorra													4.4			0.6		
United Arab Emirates																	2.1	
Bermuda																0.6		
Algeria													309.3			31.4		
Gibraltar													2.5			11		
Japan	43.3	24.2			63.4			12.2										
Korea, South					21.9			23.8			27.5			48.2				
Melilla													4.4					
Morocco													7.9					
Oman																	1	
Singapore	4			6.6														
Thailand											12.5							
Tunisia																28.2		
USA				2.9						0.4								
Total	47.3	24.2	0	9.5	85.3	0	0	36	0	0.4	40	0	328.5	48.2	2.7	71.2	1	0

APPENDIX 5: CALCULATION OF RESIDUAL EXPORTS FROM CDS DATA

In the absence of official trade data for a number of key exporters, the CDS export data have been used to identify the residual exports (i.e. trade that has not been identified by the analysis of import data) of these exporters. Since publicly available CDS data do not breakdown exports by product form it is not possible to convert the data directly to liveweight for incorporation in the analysis. The following approach was therefore adopted in the calculation of the liveweight equivalent of residual exports.

1. The countries of interest were identified as Argentina, Chile, Norway, Peru, Russian Federation, South Africa, South Korea and Uruguay.
2. CDS records of exports by these countries to countries included in the import analysis were excluded to derive residual exports in product weight (See **Table A5.1**).

Table A5.1: Residual exports by country, from CDS data (t, product weight)

	2003	2004	2005	2006	2007
Argentina	201	123	8	143	136
Chile	958	492	1431	315	237
Korea, South	358		34	65	
Norway		2	2		
Peru	5				
Russian Fed.	0	0	0	0	0
South Africa	92	125	272	269	226
Uruguay	1421	1502	1046	1354	701
Total	3035	2244	2793	2146	1300

3. The US import data relating to the countries of interest was analysed and the proportional contribution of exports from these countries by fillets and headed and gutted product was derived for each year of than analysis period (see **Table A5.2**).

Table A5.2: Composition of US toothfish imports, by product form (%)

	2003		2004		2005		2006		2007	
	fillet	h/g	fillet	h/g	fillet	h/g	fillet	h/g	fillet	h/g
Argentina	2.1	97.9	1.7	98.3	0.0	100.0	0.0	100.0	0.3	99.7
Chile	0.7	99.3	36.4	63.6	41.0	59.0	39.2	60.8	41.1	58.9
Korea, South	0.0	100.0	14.7	85.3	23.8	76.2	29.2	70.8	15.0	85.0
Norway	0.0	0.0	100.0	0.0	25.2	74.8	11.0	89.0	32.7	67.3
Peru	0.0	100	6.8	93.2	0.0	100	0.0	100	0.0	100
Russian Fed.	92.6	7.4	100.0	0.0	38.1	61.9	0.0	100.0	0.0	100.0
South Africa	9.0	91.0	11.2	88.8	0.0	100.0	0.0	100.0	0.0	100.0
Uruguay	1.7	98.3	19.9	80.1	15.1	84.9	1.3	98.7	2.4	97.6

4. These factors were then applied to the total CDS exports recorded for each country in each year and converted to liveweight using the standard conversion factors of 2.3 for fillets and 1.7 for headed and gutted (see **Table A5.3**).

Table A5.3: CDS residual exports (t, liveweight)

	2003			2004			2005			2006			2007		
	fillet	h/g	total	fillet	h/g	total	fillet	h/g	total	fillet	h/g	total	fillet	h/g	total
Argentina	10	335	344	5	207	212	0	14	14	0	243	243	1	231	231
Chile	15	1618	1632	412	532	944	1349	1436	2785	284	326	610	224	237	461
Korea, South	0	609	609	0	0	0	19	44	63	44	78	122	0	0	0
Norway	0	0	0	5	0	5	1	3	4	0	0	0	0	0	0
Peru	0	9	0	0	0	0	0	0	0	0	0	0	0	0	0
Russian Fed.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
South Africa	19	142	161	32	189	221	0	462	462	0	457	457	0	384	384
Uruguay	56	2374	2430	689	2044	2733	363	1510	1873	41	2271	2313	39	1163	1202
Total	99	5086	5185	1143	2972	4115	1732	3468	5200	369	3376	3745	263	2015	2279

5. The residual exports from CDS data were then added to the residual exports from official export data to estimate total residual exports (see **Table A5.4**)

Table A5.4: Estimated total residual exports (t, liveweight)

	2003	2004	2005	2006	2007
Residual exports from official export data	1675	1484	1197	1584	3597
Residual exports from CDS data	5185	4115	5200	3745	2279
Total residual exports	6860	5596	6396	5329	5876



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