

Problems and Prospects for the Convention on the Conservation of Antarctic Marine Living Resources Twenty Years On¹

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Abstract

Twenty years after its adoption, the Convention on the Conservation of Antarctic Marine Living Resources (CCAMLR) remains unique among fisheries agreements in its declared commitment to considering the impact of existing or proposed fisheries on the entire ecosystem, rather than on just the harvested species. However, the recent picture of fisheries activities within the Convention area suggests a substantial – and perhaps widening – gap between theory and practice. The fishery that has most clearly proven beyond CCAMLR's capacity, and which has resulted in the most significant damage to the Antarctic environment in modern times is that for Patagonian Toothfish, *Dissostichus eleginoides*. That fishery is discussed in more detail below. The roots of that problem in conjunction with structural problems that have contributed to CCAMLR's inability to deal with the toothfish challenge threaten to be repeated in the second-generation krill fishery that is rapidly developing in Antarctic waters. The authors provide suggestions for structural and procedural changes within CCAMLR to permit it to effectively manage the marine living resources of the Southern Ocean.

Keywords

The Convention on the Conservation of Antarctic Marine Living Resources; CCAMLR; Patagonian Toothfish; Krill.

1. Introduction

The Convention on the Conservation of Antarctic Marine Living Resources (CCAMLR)³ was adopted in 1980 as the third international Antarctic agreement⁴ under what has been termed the Antarctic Treaty System. Its purpose was to allow fishing activities in the Southern Ocean surrounding Antarctica. For the first time in an international treaty it cast the right to do this in the context of an obligation to conserve

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³ May 20, 1980, 33 U.S.T. 3476, 19 ILM 841 (1980), available at: <http://www.ccamlr.org>.

⁴ Preceded by the 1959 Antarctic Treaty and the 1970 Convention for the Conservation of Antarctic Seals.

marine living resources – both targeted, and dependent and related populations and species⁵ - across the Antarctic marine ecosystem.

CCAMLR was established in response to the evidence of stock collapse for various fish species in unregulated fisheries, and concern that a rapid escalation of fisheries for krill, the one to two-inch long shrimp-like crustacean that forms the base of the Antarctic food chain, could precipitate the demise of the Southern Ocean food chain.

To date, twenty-three⁶ states and the European Union have become Parties to CCAMLR and have agreed to subject their fishing activities in the region to regulation under the Convention. Meetings of CCAMLR's annual Commission employ consensus decision-making.

Twenty years after its adoption, CCAMLR remains unique among fisheries agreements in its declared commitment to considering the impact of existing or proposed fisheries on the entire ecosystem, rather than solely on the harvested species. However, the picture of fisheries activities within the Convention area, particularly over the past seven years, suggests a substantial – and perhaps widening - gap between theory and practice.⁷ The fishery that has most clearly proven beyond CCAMLR's capacity, and which has resulted in the most significant contemporary threat to the Antarctic environment, is that for the Patagonian Toothfish, known by its Latin name, *Dissostichus eleginoides*. The roots of that problem, in conjunction with structural problems within CCAMLR that have contributed to its inability to deal with the toothfish challenge, threaten to be repeated in the second-generation krill fishery currently developing in Antarctic waters.

2. CCAMLR and Development of the Fishing Industry

The core problem is that CCAMLR, created more than twenty years ago primarily to address politically sensitive issues of contested sovereignty in Antarctica, is ill equipped to confront the global transformation in organization and scale of high sea fisheries. Fisheries activities in Antarctic waters in the 1970s and 1980s were more limited in the scale and scope of targeted species, largely employed a single methodology (trawls) and were accordingly restricted by ice conditions. Antarctic fishing also involved fewer states. Perhaps critically, the vessels employed were under effective control by the flag state that was almost without exception itself a Party to CCAMLR.

The negotiation and adoption of CCAMLR provided a means of regulating a new Antarctic fishery that would otherwise have induced political and environmental stresses. It was, nonetheless, a relatively low level and uncomplicated fishery to regulate. CCAMLR was successful essentially because its task was simple.

This has now changed. We now see a massively overcapitalized global fishing industry with ownership and control patterns common to transnational corporations. There is not necessarily a nexus between flag, operations and decision-making, and key modalities can be changed in the course of a voyage. In the case of Antarctic fishing operations, only part of the effective control now resides with

⁵ CCAMLR, *supra* note 3, at art. II.

⁶ Argentina, Australia, Belgium, Brazil, Chile, France, Germany, India, Italy, Japan, Republic of Korea, Namibia, New Zealand, Norway, Poland, Russian Federation, South Africa, Spain, Sweden, United Kingdom, United Kingdom, United States and Uruguay.

⁷ See ASOC Reports on XIII – XIX Meetings of CCAMLR, available from The Antarctica Project, 1630 Connecticut Ave., Washington, DC 20009, USA.

CCAMLR Member states. Increased technical capability has extended the spatial and temporal range of human activities. Higher latitudes and winter operations are increasingly within the range of routine fisheries activities. Technological developments have also provided more powerful fishing methodologies and processing options.

The immediate consequence of this rapid opening up of the Southern Ocean has been a massive assault on the integrity of the Antarctic marine ecosystem. The consequences of current fishing activities on target stocks and seabirds, including a large part of the world's albatross populations, are ominous, and on a par with the earlier impacts of sealing and whaling in the region.

CCAMLR must balance the right to harvest fish against the nominal commitment to ecosystem stability and the environmental ethic underlying this commitment. Pledging to maintain ecosystems is easy when fishing activities are conducted at a low level; however, the conflicts have become far sharper as the scale of Antarctic fisheries has expanded.

3. The Threats to Fish and Ecosystems in the Southern Ocean

3.1 Depletion of fish stocks elsewhere

After an initial peak in the mid-1970s, interest in Southern Ocean pelagic fisheries decreased as fishers concentrated on more accessible waters. This was reinforced by the collapse of one of the primary Southern Ocean fishing states, the Soviet Union, along with other Eastern Bloc interests, and the abandonment of the economic system that had underpinned their capacity in the region. However, with overexploitation leading to collapse in other fisheries, a resurgence of interest in Southern Ocean operations is now underway.

3.2 Effective Control of Fishing

Much of the Antarctic fishing effort is effectively under the control of invisible entities. Possibly the most important example of this involves Spain. Spanish interests own large parts of the operations sailing under Argentine, Chilean and other Latin American states' flags – states which are, like Spain itself, Members of CCAMLR. Spanish interests own or control many of the vessels operating the Illegal, Unregulated and Unreported (IUU) fisheries in Antarctic waters. These vessels fly flags of convenience⁸ and operate out of non-Member ports, historically Walvis Bay, Namibia, and Port Louis, Mauritius, in particular. Spanish fishing interests are the prime determinant of the European Union's (EU) fishing stance in the CCAMLR area. (Through the Common Fisheries Policy the EU has competence over all EU States' operations in the CCAMLR area, apart from those using vessels flagged in the French and British colonial territories.) Spanish fishing interests have also sought investment in, or collaboration with, Australasian Antarctic fisheries operators. While some Spanish vessels operate in Antarctic waters under the Spanish

⁸ A "Flag State" is a State that grants its nationality to a ship and so allows that ship to fly its flag. Certain vessel owners or operators choose "flag of convenience" flag states because it is "convenient," usually financially, for them to do so. This convenience often arises because there is a weak "economic link" between the state and the vessel. However, in the context of fishing, it may be advantageous to the flagged vessel because the flag state consistently fails to ensure that vessels flying its flag comply with applicable fisheries conservation and management measures. In the specific case of CCAMLR, the Flag of Convenience States are not members of CCAMLR and thus vessels flying these flags are not bound by CCAMLR's conservation and management measures.

flag, the larger part of Spanish interest in fishing is hidden by the nature of global corporate arrangements. The system in place to manage Southern Ocean fishing – CCAMLR – is predicated on the assumption that states are the key players, and that an effective relationship exists between flag and control over the operations of vessels flying the flag. This is no longer the case.

As a consequence, the standards of proof for establishing the illegality of fishing operations are twenty years behind the realities of the current industry. The inspection and compliance monitoring arrangements are laughable and pose no impediment to self interest. High seas freedoms, of course, remain virtually sacrosanct.

3.3 New Technologies

Longlining has been widely used in other regions for some time and has emerged as the primary method to harvest a newly targeted stock in Antarctic waters: the deepwater toothfish. It is cost-effective - in the terms understood by the market place - and it is more flexible in ice conditions than the use of nets. But it has a massive ecological downside. Its very efficiency poses a serious risk of overexploitation of targeted species. Moreover, in the absence of implementation of stringent mitigation measures, its bycatch of the region's seabirds and non-target fish species is simply horrendous. In the case of krill, the critical technological factor is not so much the fishing method use, but the developments in processing that make it more palatable for direct human consumption, and facilitate use in more "value-added products.

3.4 A Klondike Species

The Patagonian Toothfish fetches a price at landing of US\$10.00⁹ per kilogram. This high market value has been a prime factor in attracting vessels to Antarctic and in the development of longline fishery. High commercial value has also been reflected in CCAMLR-Member states' attitudes to management. Pecuniary benefit to Member's fishing industries has become the prime consideration. The particular case of the toothfish highlights a transformation of more general significance in governments' priorities in the CCAMLR area. CCAMLR meetings have become little more than an annual allocation of fish catch quotas, and both the level of fishing and the number of species fished are implicitly seen as expanding without end. Added to this are the particular problems of Illegal, Unregulated and Unreported (IUU) vessels fishing under the flags of states that are not Members to CCAMLR – a direct consequence of the high value of the target stocks.

3.5 CCAMLR Decision-Making

Decision-making within CCAMLR is by consensus, which means that a single state can block a conservation initiative.¹⁰ These decisions can include the setting of precautionary catch limits for fisheries, closing fisheries or agreeing to marine protected areas. In a consensus-based system, self-interest often prevails. Even agreement to a decision may be conditional. Conservation measures are treated as recommendations only and do not have binding legal effect on a Member state that files an explicit

⁹This has doubled since 1998, when the price per kilogram was US \$5.00.

¹⁰David Bederman, *CCAMLR in crisis: A case study of marine management in the Southern Ocean*. in *THE LAW OF THE SEA*, 173, 169-196 (H.N. Scheiber, ed. 2000).

objection.¹¹

Without consensus under CCAMLR, a fishery is deemed to be open and not subject to catch limits. The use of consensus decision-making was dictated by the unresolved sovereignty situation in the Antarctic, and is found across the component treaties of the Antarctic Treaty System. For resource management and environmental protection, it is a Faustian bargain.

3.6 Burden of Proof

Fishing activities are usually allowed to proceed until there is adequate proof that the population has collapsed. CCAMLR's Article IX, Paragraph 1 (f), states that conservation measures are to be formulated on the best available scientific evidence. However, the Scientific Committee has been hampered by inadequate and incomplete submission of data by those exploiting the resources. Consequently, the assessments of population sizes and of the impact of the fishery on target stocks have been difficult to perform, and the uncertainties in estimates have increased over time.

The CCAMLR Commission has often ignored the advice of its Scientific Committee. To avoid being marginalized, the Scientific Committee and its Working Groups (which meet between CCAMLR's annual Hobart session and are entirely opaque in their workings) have anticipated the political ramifications of their suggestions prior to providing advice to the Commission, thereby undercutting its legally mandated role and the ultimate value of its advice.

Against this background, we now look at two fisheries posing the greatest challenge for the sustainable management of Southern Ocean resources, those for toothfish and krill.

4. The Case of the Patagonian Toothfish

4.1 The Status of the Toothfish Fishery in Antarctica

Since 1992, there have been limited fisheries in Antarctica for the Patagonian Toothfish. Heightened interest in this fish is a result of the collapse of many fisheries in northern waters and the high price toothfish fetches at landing: US\$10.00 per kilogram. States have been compelled under domestic pressures from fishers to set catch limits above precautionary levels, even though there is limited information on biology and population size. From a single fishery in 1992 around South Georgia (Subarea 48.3), toothfish fishing had spread across the entire Southern Ocean by 1997.

CCAMLR has the mandate to establish regulations for Member states to guard against the expansion of a fishery faster than is warranted by the acquisition of data. In many cases it has adopted strong precautionary conservation measures¹² that limit the size and scope of a fishery.

However, in addition to the increasing number of legal or regulated toothfish fisheries, there has been an escalation in Illegal, Unregulated, and Unreported (IUU) Patagonian Toothfish fisheries. (For convenience, we generically refer to these as 'illegal' or 'pirate' fisheries, although under the Food and

¹¹ *Id.*

¹² See, for example, CCAMLR Conservation Measure 196/XIX (*Limits on the Fishery for Dissostichus eleginoides in Statistical Subarea 48.3*); conservation measures are in effect for all Statistical Subareas and Divisions in the Southern Ocean.) (available at <<http://www.ccamlr.org>>)

Agriculture Organization's (FAO) definition of IUU, each of these terms refers to different activities.¹³) The majority of pirate fishers use boats that are not flagged by a CCAMLR Member state but by a flag of convenience nation. These are states that do not regulate the activities of their fishing vessels in any way. Since its rules apply only to Member states, CCAMLR has been unable to curb the growing pirate fisheries. Although reliable data is notoriously difficult to acquire from the pirate fisheries, for the past five years catches have apparently exceeded the legal catch to a substantial degree. It is estimated that more than eighty percent of the total Patagonian Toothfish catch —with an estimated annual value of US\$500 million —is caught by pirate fishers who do not abide by international catch limits.

Despite CCAMLR's measures to put an end to these fisheries, at its 2000 meeting CCAMLR estimated that pirate fisheries took nearly fifty percent more toothfish than in the previous year. If pirate fishing continues at its current rate, scientists estimate that Patagonian Toothfish populations could be commercially extinct in less than three years. This has already occurred in one area of the Indian Ocean. Toothfish are particularly vulnerable to over-fishing because they are slow growing, late maturing fish. As the number of fisheries has grown, the size of fish caught has decreased.

Pirate fisheries are driving more than just the toothfish populations to extinction. Each year, large numbers of albatrosses and petrels are hooked and drowned in the Southern Ocean as they dive for baits during the setting of longlines.

In October 2000, CCAMLR's own Scientific Committee estimated total seabird bycatch from pirate fishing in the Convention area at between 105,900 and 257,000 birds over the preceding four years.¹⁴ This figure includes some 21,900 – 68,300 albatross, 5,000 – 11,000 giant petrels and 79,000-178,000 white-chinned petrels. These levels of depredation (to which must be added the smaller losses due to the regulated fishery) are completely unsustainable for the species and populations concerned.

CCAMLR has imposed measures to mitigate this incidental mortality for the fisheries it authorizes.¹⁵ Pirate operators, of course, do not comply with these measures. Unfortunately, compliance by

¹³ IUU Fishing (Adapted from the United Nations Food and Agriculture Organization International Plan of Action to Prevent, Deter and Eliminate Illegal, Unreported, and Unregulated Fishing, Adopted by the 24th session of the Committee of Fisheries, Rome, Italy, 26, February - 2 March 2001) Illegal Fishing: Fishing activities conducted by national or foreign vessels in waters under the jurisdiction of a State, without the permission of that State, or in contravention of its laws and regulations; conducted by vessels flying the flag of States that are Parties to a regional fisheries management organization but operate in contravention of the conservation and management measures adopted by that organization, or relevant provisions of the applicable international law; in violation of national laws or international obligations, including those undertaken by cooperating States to a relevant regional fisheries management organization. Unreported Fishing: Fishing Activities which have not been reported, or have been misreported, to the relevant national authority, in contravention of national laws and regulations; fishing activities undertaken in the area of competence of a relevant regional fisheries management organization which have not been reported or have been misreported, in contravention of the reporting procedures of that organization. Unregulated Fishing: Fishing activities conducted in the area of application of a regional fisheries management organization that are conducted by vessels without nationality, or by those flying the flag of a State not party to that organization, or by a fishing entity, in a manner that is not consistent with or contravenes the conservation and management measures of that organization; in areas or for fish stocks in relation to which there are no applicable conservation or management measures and where such fishing activities are conducted in a manner inconsistent with State responsibilities for the conservation of living marine resources under international law.

¹⁴ The lower figure is calculated on the average catch rate for all fishing operations in the regulated fishery; the upper figure on the basis of the highest rate for any cruise in the regulated fishery. Since the calculations are based on what is likely to be better behavior in the legal fishery, the actual IUU figures are probably higher

¹⁵ Conservation Measures for all fisheries specify opening and closing dates. These dates attempt to minimize fishing activity during the breeding seasons of albatrosses and petrels. Conservation Measure 29/XIX prohibits nighttime setting, offal discharge during line setting, and specifies gear modifications to minimize interactions with seabirds. (Conservation Measures available at <<http://www.ccamlr.org>>).

the authorized regulated fishery is also far from perfect – in fact, CCAMLR has started a black list of repeat offenders in the regulated fishery.

In an effort to ensure compliance amongst Members and to combat pirate fishing, CCAMLR has adopted a number of conservation measures, including:

1. Requiring commercial fishing vessels and gear to be marked in accordance with international standards (CM 146/XVII). This would permit identification of retrieved gear from the water;
2. Requiring Port States to inspect Contracting Party vessels that enter their ports prior to the offloading or transshipping of their catch (CM 147/XVII). If there is evidence that fishing in contravention of CCAMLR had occurred, the Flag State must be informed so that it can decide what action is required. The attempt to extend this measure to require inspection of Non-Contracting Party vessels was watered down to a requirement that Members advise the Secretariat of any vessels denied port access or permission to land or transship toothfish;
3. Requiring mandatory placement of vessel monitoring systems (VMS) on board fishing vessels (CM 148/XVII). This measure only entered into force on December 31, 2000. Unfortunately, krill vessels are excluded from the measure (the implications of which are discussed later in this article). VMS are invaluable aids to remotely monitoring the location of vessels;
4. Adoption of a scheme to promote compliance by non-Members (CM 118/XVII). Members are required to inspect a non-Member vessel when it enters its port if the vessel was sighted fishing in the Convention Area. Vessels of non-Members fishing in the CCAMLR area are presumed to be undermining CCAMLR's measures pending an inspection. Inspection includes the right to inspect the VMS records as well as the vessel;
5. Prohibiting fishing in the Convention Area except pursuant to a licence issued by a Contracting Party (CM 119/XVI). This measure specifies the conditions under which such licence could be issued and requires a Member to inspect all its fishing vessels upon departing from and returning to its port. A proposal to prohibit the licencing of vessels that have undermined CCAMLR's measures in the past, thus decreasing the incentive to reflag, was blocked;
6. Prohibiting directed fishing for *Dissostichus* spp. except in accordance with conservation measures (CM 149/XVII).

Adoption of the Catch Document Scheme (CDS) by CCAMLR at its 18th meeting in 1999 appeared to be a useful first step in bringing pirate fishing of toothfish under control. It is intended to allow Members to track the international trade in toothfish and to oblige Members not to import illegally caught fish. However, the CDS will not stop illegal fishing for toothfish. This will only occur if importing states start to reject landings of toothfish of questionable origin, thus taking away the economic incentive to poach.

Under the CDS, Members are required to ensure that:

- (1) *Dissostichus* spp. imported to or exported from its territories was caught in a manner consistent with CCAMLR's Conservation Measures;
- (2) each of its authorized flag vessels engaged in toothfish fishing completes a *Dissostichus* catch document (or DCD) for each landing or transshipment; and
- (3) each landing or transshipment of *Dissostichus* spp. is accompanied by a completed catch document. Further, it is expected that the authorization to fish for toothfish be linked to the demonstrated ability of the vessel to comply with all CCAMLR Conservation Measures, including those to minimize seabird bycatch.

Non-Members may issue catch documents to their flag vessels that intend to harvest *Dissostichus* spp. Since an official of the issuing country must validate the catch document, the expectation is that the information contained in the document will be accurate. It is, however, unrealistic to assume that non-Members will only issue DCDs if a vessel has demonstrated the ability to comply with CCAMLR's measures.

Although participation in the CDS is only compulsory for CCAMLR Members, an Action Plan was adopted to diplomatically persuade non-Member states to participate in the scheme and act in accordance with CCAMLR. In any event, all shipments of toothfish, regardless of location of harvest or flag of harvesting vessel, must be accompanied by a catch document in order to be imported by a CCAMLR Member. However, the effectiveness of the scheme hinges on the veracity of the catch document, which relies on little more than the word of the master of each vessel.

Although the Catch Documentation Scheme is a good first step towards ending the illegal toothfish fisheries, it needs to be strengthened considerably to be fully effective. The following matters need to be addressed:

- There is no requirement for independent verification. Verification mechanisms must, at a minimum, require Vessel Monitoring Systems and independent catch procedure reporting for issuing a catch document.
- Verification procedures should ensure compliance with CCAMLR objectives. In the event of doubt, a catch document should not be issued.
- Toothfish should only be imported if accompanied by a complete, independently verifiable catch document.
- Importing states should require advance notice of an incoming shipment to ensure that there is sufficient time to review the catch document and crosscheck the validity of the information provided with the Flag State. This is a deficiency in the U.S. regulations that implement the CDS.
- A clear, compulsory and enforceable procedure is required for the transfer of information about catch documents between Members, importing states and the Secretariat. This should include the required reporting timeframe and a facility to provide transparency for non-government stakeholders.
- CCAMLR should develop information exchange mechanisms with other trade authorities to identify toothfish consignments/catches that may have eluded monitoring through the established CCAMLR systems.
- All CCAMLR Members should implement the scheme before the next meeting of CCAMLR in October 2001.
- Catch documents should only be issued to vessels that can comply with all CCAMLR Conservation Measures, including seabird bycatch mitigation measures.
- CCAMLR should specify actions to be taken by Members to prevent undocumented toothfish from entering the market elsewhere. Undocumented catch should be confiscated and destroyed. Currently,
 - there is a lack of specificity of what action should be taken against non-compliant vessels and agents;
 - states are not required to confiscate attempted imports of illegal toothfish, and
 - there is no direction on what a state should do with confiscated catches (specifically those not accompanied by a catch document).

- Sanctions should be imposed on importers and flag states that attempt to import pirate toothfish, or toothfish without a catch document.
- Port states that have not implemented the CDS should not be used for the import or export of toothfish.
- Vessels, or beneficial owners of vessels, which have previously been involved in IUU fishing should not receive licenses for toothfish fishing.¹⁶

To date, implementation of the CDS has been uneven. Argentina, Australia, Chile, France (for its dependent territories), Japan, Korea, New Zealand, South Africa, Spain, UNITED KINGDOM (for its dependent territories), Uruguay and the United States have implemented the CDS. The European Union (EU) has not yet implemented the CDS, which means it has not been implemented by its Members that are party to CCAMLR: Belgium, Finland, France, Sweden, and UNITED KINGDOM (although Spain opted to implement it provisionally). Additionally, Brazil, India, Poland, Russia and United Kingdom have not implemented the CDS, although the FAO maintains toothfish catch statistics for India and Brazil. At the 19th CCAMLR meeting in 2000, it was agreed that non-implementation of CDS would no longer be an acceptable reason for not having a DCD, since Members had now had a year to implement the scheme. (Many Members had used the non-implementation of CDS as an excuse for importing non-certified toothfish during its first year of operation.)

The use of consensus decision-making within CCAMLR has made it impossible to establish marine protected areas, despite their value for the conservation of marine life, and in particular, the conservation of Patagonian Toothfish. A recent example comes from the 2000 CCAMLR meeting where fishing states blocked a proposal to establish a marine protected area around the Balleny Islands. The Balleny Islands merit protection since they support the greatest avian and seal species diversity outside the Antarctic Peninsula. CCAMLR was unable to reach consensus on endorsing the proposal, primarily because of concerns over limiting potential fishing areas rather than with the scientific and environmental merits of the proposal.

It is therefore apparent that although CCAMLR has the mandate and ability to manage the Southern Ocean marine ecosystem, the political will is lacking. The following actions need to be taken for CCAMLR to take effective control of Southern Ocean fisheries and return to the conservation convention it was intended to be:

1. The CDS needs to be strengthened;
2. Actions to ensure sound management and enforcement of fisheries should be implemented at the international level, but ultimately the effectiveness of the Members' response is the only true measure of CCAMLR's success. Most of the vessels that are engaged in toothfish fishing are not flying the flag of CCAMLR Members. Given that non-Members are not required to fish in

¹⁶The 2000 meeting of CCAMLR was unable to reach agreement on a Conservation Measure prohibiting the use of ports by states that have not implemented the CDS. Instead, agreement was reached on a Resolution that encourages Members to discourage their flag vessels from using ports of states that have not implemented the CDS. Similarly, the attempt to agree on a Conservation Measure prohibiting the licensing of vessels previously engaged in pirate fishing was watered down to a Resolution, which merely encourages – rather than requires - Members to avoid flagging a non-Member vessel which has engaged in IUU fishing. Two additional Resolutions were agreed calling on Members to ensure that their flag vessels authorized to fish for or transship *Dissostichus* spp. on the high seas maintain an operational VMS; and calling on Acceding States and non-Members to implement the CDS. Unlike Conservation Measures, Resolutions are not binding.

compliance with CCAMLR's measures, all Members need to create and enforce effective disincentives to reflagging, so that this route to evading compliance with conservation measures is closed;

3. Nationals of CCAMLR Members own many of these reflagged vessels. These states need to create disincentives to permit reflagging to flags of convenience. In particular, fishing permits or licenses should be denied to vessels and to the owners of vessels that reflag to flags of convenience. CCAMLR Members should follow Norway's lead and permanently prohibit vessels caught in pirate fishing from being flagged;
4. Fishing permits and licenses should also be denied to all vessels that cannot demonstrate their ability to comply with all CCAMLR Conservation Measures, including those that intend to mitigate incidental seabird mortality;
5. CCAMLR is not able to ensure that its measures are being faithfully implemented. The creation of an enforcement regime with the capacity to curb both illegal activities and the unregulated activities of non-Members is therefore an urgent priority. These measures must include the imposition of sanctions on those states that permit their fishers to contravene CCAMLR's measures. A combination of port, trade, fishery management and vessel monitoring measures are urgently needed. This enforcement regime should include:
 - The adoption of an enforcement protocol. Currently, enforcement is only occurring in those waters within national Exclusive Economic Zones, leaving the rest of the waters in the Convention Area open to illegal fishing. The argument that year-round legal fisheries provide a presence that deters illegal fishing is optimistic at best, and would not be necessary if there was a CCAMLR enforcement regime whose sole purpose was to patrol the waters of the Convention Area. The significant cost of such patrols may be the unavoidable price of ensuring compliance with the Convention.
 - Greatly increasing the use of vessels and aircraft already operating within the Treaty Area to detect, track and report the presence and activities of pirate fishing vessels; and
 - Cooperation in the use of satellites to detect, track and monitor illegal, unreported or unregulated fishing and fishing-support vessels in real time.
6. Populations of toothfish occur within CCAMLR's waters, on the high seas, and within the EEZs of several states. One step toward more effective sustainable management of toothfish would be to harmonize the regulations governing toothfish fisheries throughout the Southern Ocean at the highest level. Thus, states with populations of toothfish within their EEZs should fully harmonize the management of these populations with CCAMLR's measures;
7. Marine Protected Areas should be designated to safeguard large parts of the Antarctic marine environment from the escalating impact of human activity;
8. Fisheries should be opened only if there is sufficient scientific information that a population can sustain either a limited or commercial fishery. While CCAMLR's fishery regulations are supposed to reflect the tenets of the precautionary principle, in most cases, they reflect political compromises that often run counter to the sound management of fisheries;
9. CCAMLR is required to consider the impact of a fishery on the entire ecosystem including seabird mortality. All fishing methods that contribute to seabird mortality must be prohibited;
10. Members whose vessels, nationals, or companies have taken part in illegal or unregulated fishing

must take all necessary steps to enforce the rules against their fishers, regardless of whose flag they fly. Other Members might usefully look to their obligations to identify such breaches of the Convention, and to seek recourse to agreed international means to encourage recalcitrant Members to comply;

11. Non-Member states with Southern Ocean fisheries should join CCAMLR. By allowing states that are not Members of CCAMLR to participate in the Catch Documentation Scheme, CCAMLR is tacitly approving fishing by non-Members in CCAMLR waters by creating a *de facto* category of membership. This, in effect, legitimizes pirate fishing while creating a category of membership with weaker environmental obligations. It leaves CCAMLR and Member States with no substantive way to determine or enforce compliance with the full range of CCAMLR's Conservation Measures.

4.2 The Case for a Moratorium on Toothfish Harvesting

It is insupportable to continue the present 'legal' CCAMLR-mandated fisheries of toothfish in the face of a real catch so far above what CCAMLR estimates as a precautionary level, and which provides a ready cover for 'laundering' illegally caught fish in the marketplace. Furthermore, the large pirate fishery substantially undermines the capacity for scientific and environmental management of the impacts of overall fisheries activities on target species, on highly endangered bycatch species, and on other aspects of the Antarctic marine environment. In this context, a proposed moratorium on all toothfish fishing is necessary to give force to the 'ecosystem as a whole' principle that lies at the heart of CCAMLR.

The Antarctic and Southern Ocean Coalition and the environmental community that it represents believes that a critical short-term measure toward ending IUU or pirate fishing and its devastating by-catch of albatrosses and petrels is for CCAMLR to agree a moratorium on the legal fisheries for Antarctic and Patagonian toothfish.¹⁷ The moratorium should be established in the CCAMLR area, and in the EEZs of Member states, and maintained until:

- Pirate toothfish fishing has been brought under control;
- Necessary biological and demographic information on the population or populations is available (including information on population structure, spawning grounds, and recruitment) from dedicated scientific research programmes conducted by national agencies or under their direct control;
- A trade system is in place that provides independent verification of the source of the catch. This should include developing the Catch Documentation Scheme into a verifiable catch certification scheme under CCAMLR; and
- Incidental catches of albatross and petrels are essentially eliminated.

It is also imperative that Members and the international community adopt and support other tools to complement the CDS, such as a listing under CITES Appendix II for species such as Patagonian Toothfish. CCAMLR's Conservation Measures only apply to 23 Member states and the European Union. A CITES listing for toothfish will expand binding trade regulations to the more than two hundred Member states of CITES. These tools will add significantly to the ability of CCAMLR to rid the waters under its jurisdiction of illegal activity. The adoption earlier this month of the FAO's International Plan of Action (IPOA) on Illegal,

¹⁷ ASOC, *Report of the Antarctic and Southern Ocean Coalition (ASOC) to the XIX Meeting of the Convention on the Conservation of Antarctic Marine Living Resources*, 4, 1-9, CCAMLR-XIX/BG/26 (2000).

Unregulated and Unreported fishing is a good step in this direction.¹⁸

5. The Resumption of Interest in Krill

It was in many respects the planned harvesting of krill, rather than whitefish, which triggered the negotiation and adoption of CCAMLR in the first place. Krill are a key component of the Antarctic marine ecosystem.¹⁹

Krill catches in the CCAMLR area peaked at 528,201 tonnes in 1981/82, then declined to 357,538 tonnes in 1990/91 due to marketing and processing problems. The collapse of the Soviet Union and removal of subsidies for its fisheries, along with convulsions affecting the fishing states of Eastern Europe in the early 1990s, reduced the annual catch further. For the past decade the annual catch has been under a third of the 1990/91 figure – somewhere between 80 and 101 thousand tonnes, apart from a spike in 1994/95.

However, we are about to see a renewed and substantially increased interest in krill harvesting in the CCAMLR area. In 1999/2000 the reported catch by the states fishing for krill was 101,286 tonnes (Japan - 67,188; Poland - 20,721; Uruguay - 6,948; Korea - 5,444 and Ukraine - 955 tonnes). For the 2000/01 season, Russia, South Africa, the United Kingdom and the United States have indicated their intentions to fish for krill in addition to these five states,.

Even at the present level of the fishery, data reporting requirements are not being met. This is in breach of Conservation Measures 32/X and 40/X, and comes despite the Scientific Committee's call for data on krill economics and conversion factors which are essential in order to calculate catch trends and actual catch respectively. Japan in particular has continued to argue that this is commercially confidential information. This sort of thinking – and the related resistance to placing international observers on krill vessels – is a direct challenge to the scientifically-based management regime that is supposed to underpin CCAMLR. It does not augur well for our ability to manage a greatly expanded krill fishery in an ecologically sustainable manner. As with toothfish, the reality is that if industry and its sponsoring states do not think they will like the answer, they prevent the question being asked.

As a preparatory step for this expanded interest in harvesting, a synoptic krill survey was conducted using Japanese, Russian, United Kingdom and US vessels in CCAMLR Statistical Subareas 48.1, 48.2, 48.3 and 48.4 (Antarctic Peninsula and Scotia Sea) in the austral summer 1999/2000. The krill biomass for this area was calculated at 44.29 million tonnes.

On this basis, at the 19th Meeting of CCAMLR in 2000, the Scientific Committee recommended (and the Commission confirmed) raising the potential yield for krill in Area 48 as a whole to four million tonnes annually.

¹⁸ In March 2001, the Food and Agriculture Organization of the United Nations completed negotiations on an International Plan of Action to Prevent, Deter, and Eliminate Illegal, Unreported, and Unregulated Fishing. Member nations approached the negotiations by thinking of the IPOA as a toolbox to assist them in developing National Plans of Action. The tools included measures to be taken by port states, flag states, and coastal states, as well as market related measures to restrict the trade in IUU fish products. The final document, which is voluntary, is riddled with loopholes and weak language and reflects a lack of political will on the part of some fishing states to attack the growing problem of IUU fishing. However, it does offer some useful basic guidelines: Port states should not import IUU fish products, flag states should ensure that their vessels and nationals do not engage in IUU fishing activities, and market related measures can be a useful tool in tracking the trade in fish products and to restrict the trade in IUU fish products.

¹⁹ INIGO EVERSON. KRILL: BIOLOGY, ECOLOGY AND FISHERIES (2000).

Using the proportion of survey transects conducted in each of the Subareas in Area 48, the Scientific Committee estimated potential yields in these subareas as²⁰:

- 1.008 million tonnes in 48.1
- 1.104 million tonnes in 48.2
- 1.056 million tonnes in 48.3
- 0.832 million tonnes in 48.4

A measure of the uncertainties in these sorts of calculations is that at the same meeting, the Scientific Committee found it necessary to revise its biomass calculation downward for another Subarea - 58.4.1 - from 6.67 million tonnes to 4.83 million tonnes (with a potential yield of 0.44 million tonnes).

Various claims for the significance of the krill synoptic survey were made by its proponents in Hobart, not the least being that it was the largest operation ever mounted in support of CCAMLR activities. This may be the case, but if so, that is hardly comforting. The survey was a single season survey in one part of the CCAMLR area, and one largely driven by commercial harvesting interests. Its key scientific participants were essentially confined to krill biologists. The consequences of large-scale krill harvesting on other components of the Antarctic marine ecosystem were not seriously examined – a remarkable situation given CCAMLR’s declared purpose.

The outcomes of this single and partial survey may have far reaching implications across the entire marine ecosystem and beyond Area 48. Whatever its scientific merits, this survey created a new political departure point for krill harvesting in Antarctic waters. The Scientific Committee recommended krill biomass surveys proceed in other areas as soon as possible, and proposed Subareas 88.1/88.2 in the Ross Sea and the area around Bouvet (Subarea 48.6 – high South Atlantic), the latter specifically because no fishing had as yet occurred there.

Whilst the estimated potential yields for Area 48 are not immediately likely to translate into actual catches, the increase in the estimated harvest is dramatic. Once one even starts to consider yields around four million tonnes, one is talking about a major global fishery, and probably one in the top ten globally. To place this in context, the global marine fish catch was around 95 million tonnes in 1995 according to FAO statistics. One would expect an extremely careful and precautionary approach to a new large-scale fishery, particularly one affecting a keystone species of the Antarctic marine ecosystem.

At the 19th Meeting of CCAMLR, parties conducting fishing operations in the region advocated raising the so-called ‘trigger level,’ the catch level which requires management on the basis of smaller areas, from the present 620,000 tonnes to 1,000,000 tonnes. Fortunately, the Commission was persuaded that the existing level should remain, although it seems likely that this issue will be revisited at future CCAMLR meetings.

Almost unnoticed amidst the excitement over the new krill bonanza, the Scientific Committee advised that it would take another five to ten years before the krill needs of land-based predators (seabirds and seals) would be well enough understood to enable management of the krill fishery consistent with the Convention’s Article II. Indeed, opinion amongst seabird biologists seems to be that this will require ten rather than five years. There is already some evidence of krill-predator demand exceeding supply in the 1990s and of likely significant impacts on Antarctic krill stocks of climate change.^{21,22} Understanding of the

²⁰ Anon. Report of the Nineteenth Meeting of the Scientific Committee, 26, 1-79 (CCAMLR, 2000).

²¹ British Antarctic Survey, Food availability changes for natural predators in the Southern Ocean,

krill demand of marine predators (such as cetaceans, fin-fish, and squid) seems to be further away.

It is surely not an encouraging prospect when CCAMLR Members appear unwilling to show forbearance and restraint in relation to fishing for krill – the very fishery for which they negotiated CCAMLR 20 years ago.

6. Conclusion

What is at stake here? Plainly, the sustainability of the present fisheries, some taxa that are caught as bycatch or otherwise adversely affected by fisheries activities, and the integrity of the wider Antarctic marine ecosystem are all at stake. Absent fundamental changes in the regime's fisheries management policies, we can expect unsustainable harvesting of species that may be targeted in the future and additional damage to the ecosystem. That this should be happening at the opening of the 21st Century in the most remote part of our planet should be cause enough for concern. Where is the evidence that we have learned from the sorry history of boom and bust fisheries around the globe? Why is the precautionary principle flouted by the parties to CCAMLR, despite the fact that it was deemed a critical principle of sustainable development at the United Nations Conference on Environment and Development? Are we really still prepared to gamble extinction of charismatic creatures such as albatrosses, penguins and seals – and what does this say about our level of environmental commitment to Antarctica, or globally?

However, the risks are even broader than ecological considerations. Our failure to prevent these assaults on the Antarctic environment constitutes a failure of the political and legal process. To the degree that CCAMLR fails, it weakens the wider Antarctic Treaty System of which it is a part. It ultimately undermines the claims of ATS parties, before the United Nations and in other international forums, that Antarctica is safe under their stewardship.

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<http://www.antarctica.ac.uk/United_Kingdom/News/Press_Releases/2001/20010201.html>, 1 February 2001.

²² Keith Reid & John P. Croxall, *Environmental response of upper trophic-level predators reveals a system change in an Antarctic marine ecosystem*, 268 PROC. R. SOC. LOND. B 377 (2001).