

**Seafood Supply Chain Management:
Methods to Prevent Illegally-Caught Product Entry into the
Marketplace**

By

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January 7, 2008

Paper prepared for IUCN World Conservation Union-US for the project PROFISH Law Enforcement, Corruption and Fisheries Work. The author wishes to thank several people for information used in the preparation of this paper, including Ms. Harriet Hall, Government of South Georgia and the Sandwich Islands, UK; Chris Grieve, Marine Stewardship Council, UK; Todd Clark, Endeavor Seafoods, US; Mike Della Grotta, Kendall Seafoods, US; Greg Johansson, Sanford Limited, NZ.

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I. Introduction

It has been broadly recognized that illegal, unreported and unregulated (IUU) fishing is a significant problem globally, with the estimated value of IUU catches between US\$ 4-9 billion per year (HSTF, 2006).¹ IUU fishing is prevalent on the high seas, but the bulk of the value of IUU catch is from within Exclusive Economic Zones (EEZs) of coastal states. Developing countries are particularly impacted, such as sub-Saharan Africa which loses about US\$ 1 billion in catches yearly to illegal fishing, or 19% of current landed value (HSTF, 2006).

There are many factors which facilitate the pervasive nature of IUU fishing. There are often inadequate national laws, or insufficient funds for implementation. Regional governance is only as effective as the collective will of individual governments. Surveillance and enforcement in fisheries is costly. There may be a need to rely on technology, which may be inadequate, tampered with, or costly. In many cases, there are weak port state controls and weak trade measures.

Bribery and corruption is also found within some IUU fisheries or in the supply chain for IUU fish. Corruption, as defined by Campos and Bhargava (2007) is ‘the use of public office for private gain’ (p.9). Inspectors have been known to endorse catch documentation data that is clearly false (HSTF, 2006). Paper copies of customs-related forms can also be obtained from government officials to be forged or altered in order to allow entry of illegally-caught product as legally-caught product at ports of entry. Illegally-caught seafood products without proper documents may be smuggled into countries by bribing government officials to look the other way.

There are concerted efforts being put forth by many organizations to curb IUU fishing activities directly, with several recommendations for further improvements in those efforts put forward recently by the High Seas Task Force (HSTF) of the OECD (HSTF, 2006). The goal is to eradicate IUU fishing activities, as these activities cause not only damage to the fish stocks via over-fishing, but also cause significant losses to society through economic and other losses to communities. Focusing on greater and more effective enforcement is one approach, which continues to be explored.

Another avenue to pursue is supply chain management – in other words, preventing IUU fish from reaching the marketplace, thus effectively removing the economic incentive to

¹ The acronym “IUU” refers to illegal, unreported and unregulated, where ‘illegal fishing’ takes place when vessels operate in violation of the laws of the fishery; unreported fishing is fishing that has been unreported or misreported to the relevant national authority or regional organization in contravention of application laws and regulations; and unregulated fishing generally refers to fishing that is conducted by vessels without nationality, or vessels flying the flag of a country that is not party to the regional organization governing the particular fishing area or species (HSTF, 2006).

pursue IUU activities. A traditional approach to such management has been under the management of the regional fisheries management organizations (RFMOs) through catch and trade documentation schemes and trade-related measures. This approach has well-documented weaknesses inherent in its structure and implementation, in many cases springing from inadequate laws or weak enforcement due to high costs of surveillance as well as corruption.

More recently, privately initiated approaches are being utilized by the seafood industry via management of the chain-of-custody of seafood products, which requires full traceability of the product back to the vessel at capture, such as that of the Marine Stewardship Council (MSC) program for sustainably-managed capture fisheries, and that of the European Fish Processors Association (AIPCE). While the MSC was not created to deal specifically with IUU fishing, the chain of custody certification program contained within the overall program holds promise for managing a supply chain free of illegally-caught seafood products.

The economic incentives created by these initiatives might be framed under the rubric of corporate social responsibility – in other words, the corporate buyers at the top of the supply chain such as retailers and processors have a reputation at stake; i.e. their brand has value. As such, being associated with the purchase of illegally-caught product reduces the value of their brand and reputation, and thus is something several corporations are beginning to invest in avoiding. As a result, several firms in Europe, the U.S. and elsewhere are requiring that seafood they purchase either meet traceability requirements to prevent IUU fish from entering the supply chain, or come from MSC-certified fisheries, in which case they must meet certain criteria, or both. These systems are relatively new and somewhat untested, thus somewhat hard to evaluate at this juncture. They are being instituted on a fishery by fishery basis, and cannot at this date be viewed as a generic solution for all fisheries. However, they may hold promise for preventing IUU fish from entering the marketplace, and thus deserve review of their capabilities.

The purpose of this paper is to analyze approaches to supply chain management in the global seafood market, then to use this analysis to make recommendations for better management of fisheries resources in such a way that IUU fishing is diminished. In particular, this paper will look at: a) catch and trade documentation schemes (CDS) in use by several of the regional fisheries management organizations (RFMOs); and b) traceability systems put into place in the seafood industry, such as the chain-of-custody certification system of the MSC, and the protocol for IUU cod from the Barents Sea recently created by the AIPCE.

The paper will begin by providing an overview of a simplified supply chain for fish in the global market, followed by a brief explanation of traceability systems in seafood. The next sections will describe and analyze CDS as implemented by current RFMOs, followed by the MSC chain-of-custody certification standard and process looking specifically at its use in the South Georgia toothfish fishery, concluding with the AIPCE protocol for Barents Sea cod. The paper will conclude with recommendations.

II. Background

A. *The Global Seafood Supply Chain*

The supply chain for seafood can involve a large number of intermediaries between the fisherman and the consumer, as depicted in the stylized example in Figure 1, loosely based on Knapp, Roheim and Anderson (2007). Most seafood is traded internationally, particularly the high-valued species most commonly associated with IUU fishing (e.g. tuna, toothfish, cod, abalone).

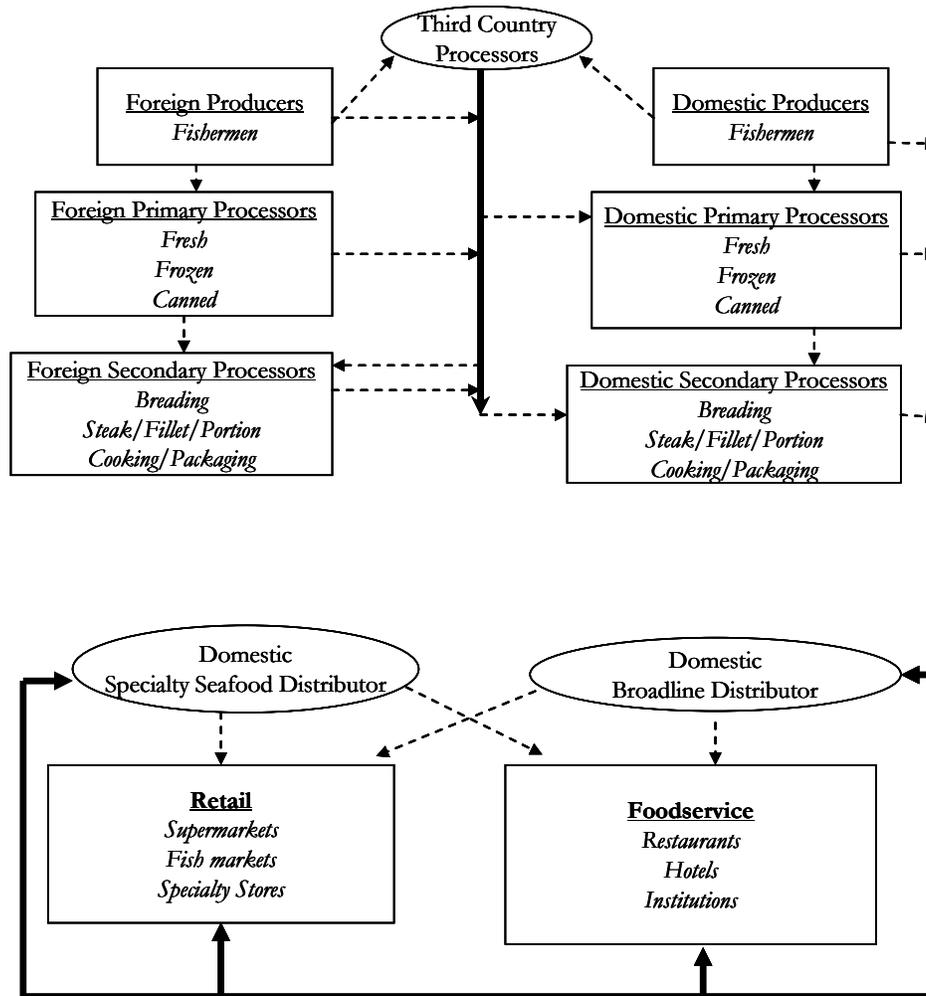
In the simplified supply chain presented in Figure 1, there are four possible routes fish caught by a foreign fleet may make its way to the consuming nation: 1) it may be exported directly after harvest; 2) it may be exported after only primary processing occurs within the foreign harvesting nation; 3) it may be exported after both primary and secondary processing occur within the foreign harvesting nation; or, 4) it may be exported after harvest to a third country processor which will then re-export the product to the consuming nation.

A relatively new feature of the global supply chain is the emergence of a third country processor – a country to which nations export unprocessed products simply to become processed, only to have those products re-exported. The primary nation serving this role is China. A growing and significant amount of fish is exported to China post-harvest, processed, then re-exported around the globe. This has significant implications for IUU fish, in particular, as if one is successful in getting illegal fish into China, the product is essentially laundered, as it re-emerges as legal ‘product of China,’ if it does not remain in the domestic market for consumption there.

The supply chain presented in Figure 1 masks the presence of middlemen (brokers, traders and others) which may be found within virtually every link in the chain. Direct sales without middlemen are certainly prevalent, however, one should not think that because middlemen are not depicted in the simplified flowchart that they are not present.

Even a simplified supply chain makes it clear that following seafood as it moves from harvest to the consumer is difficult. It is in the early stages of the supply chain, as the vessel brings product to port and processor, that IUU fish finds its entry into the supply chain. Thus, as chain of custody programs rely on *traceability* systems, a brief discussion of traceability systems is warranted. This discussion will not do justice to the full complexity of traceability systems, as the length of this paper is limited. For that, the reader is encouraged to go to the sources cited for more detailed discussions.

Figure 1. A Simplified Global Finfish Supply Chain



B. Traceability in Seafood

There are several definitions of traceability internationally. The European Union defines traceability as ‘the ability to trace and follow a food, feed, or food-producing animal or substance intended to be, or expected to be incorporated into a food or feed, through all stages of production, processing and distribution’ (EU 2004). Codex Alimentarius defines traceability as the ‘ability to follow the movement of a food through specified stages of production, processing and distribution (FAO 2004). Finally, the International Organization for Standardization (ISO) broadly defines traceability as ‘the ability to

trace the history, applications, or location of that which is under consideration. When considering a product, traceability can relate to the: origin of material and parts; processing history, and distribution and location of the product after delivery.' ISO recently re-defined traceability specifically having to do with feed and the food chain (ISO 22005:2007) as the same as the Codex definition.²

Traceability in limited form has been in place in the seafood industry largely as a means to reduce the impacts of food-borne illnesses by fast and precise product recalls (Petersen and Green, 2006). Legislation such as that in the U.S., EU and other nations requiring country-of-origin labeling, which generally also requires information on production method -- caught at sea or farmed -- requires traceability. The increasing use of voluntary labels, including geographic designation, organic certification, or environmental attributes such as ecolabeling, also require traceability.

Traceability is broadly a record-keeping system that identifies and tracks products, transportation of products, and ingredients into products from origin to consumption, while providing the ability to quickly trace back products at any point in along the supply chain (Thompson, Sylvia and Morrissey, 2005). Internal traceability refers to tracking the movement and changes made to a product within a company, while external traceability refers to tracking a product as it moves through the supply chain (Petersen and Green, 2006). Traceability systems used may be either paper-based, electronically-based (bar-codes and/or radio frequency identification systems) or a combination of both (Petersen and Green, 2006). A traceability system must cover the entire supply chain, such as that depicted in Figure 1, including the transportation and middlemen involved.

There are 3 issues that are critical to the success of any traceability system: 1) compatibility; 2) data standardization; and 3) the definition of a traceable resource unit (Kim, Fox and Gruninger, 1995). The first requires that all entities within the chain are able to communicate and transmit data efficiently. Standardization requires identifying the aspects of handling, processing and storage that are important to preserve the identity of the product and its attributes. A traceable resource unit is defined as a whole fish or a batch of fish at the initial stage, however, this will change during processing. Thus, new traceable resource units are assigned at each step along the chain, although the initial unit must follow each fish or lot through all steps of processing and distribution (Thompson, Sylvia and Morrissey, 2005).

Database systems must be developed to handle all the collected data (Derrick and Dillon, 2004). Computer software providers have developed software packages capable of tracking seafood (Thompson, Sylvia and Morrissey, 2005; Petersen and Green, 2006).

III. Catch and Trade Documentation Schemes

The FAO lists 17 regional fisheries management bodies, in other words, bodies with a management mandate. Among those, only a few have in place schemes to document

² <http://www.iso.org/iso/pressrelease.htm?refid=Ref1063> (last accessed November 27, 2007).

catch and trade, or subsequent movements of fish through the supply chain. A catch documentation scheme is one which uses certifications at the point of harvesting and applies to all fish which are caught, landed and/or trans-shipped (FAO, 2002). A trade documentation scheme requires documentation to accompany particular fish and fish products when traded (Upton and Vitalis, 2003).

The Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR) has the most comprehensive program, which seeks to provide independent verification of retained catches of members, to estimate legal catch and to deter the entry of IUU-caught product into ports and onto the market, as well as cover transshipments, exports and imports (Lack, 2007). The first to adopt a trade documentation scheme was the International Commission for the Conservation of Atlantic Tunas (ICCAT) to address IUU fishing for bluefin tuna; a certified document must accompany the fish when it is traded on the international market (Upton and Vitalis, 2003). The Commission for the Conservation of Southern Bluefin Tuna (CCSBT) and the Indian Ocean Tuna Commission (IOTC) have adopted similar measures (Upton and Vitalis, 2003).

In general, consensus appears to be that the documentation schemes have failed to prevent IUU fishing. NET (2004) and others provide additional reasons, a rather lengthy list, of why catch and trade documentation schemes tend to fail. A subset of those, related specifically to supply chain management, is compiled here.

Documentation schemes monitor only subsets of the catch and of the supply chain (NET, 2004; Lack, 2007). For example, some schemes apply only to a subset of products that enter the supply chain (Lack, 2007). For example, depending upon RFMO, perhaps only a) frozen but not fresh products, b) catch taken by a particular method, or c) product that enters into trade but not product remaining in domestic markets, are documented. Under scenario (a) or (b), if products that are close substitutes, this increases the possibility of laundering, or mislabeling, when one product requires documentation and another does not. In scenario (c), if a large enough share remains in the domestic market – or makes its way circuitously to the international market, it undermines the effectiveness of documentation schemes as fisheries management tools.

Specific to the case of Patagonian toothfish, there are a number of well-documented means by which the CCAMLR catch documentation scheme can be circumvented, leading to a total catch which is often 100% greater than the set quota. For example, NET (2004) describes how IUU fish importers can evade restrictions by falsifying the name and shipping codes to incorrectly describe the product being imported on the shipping manifests for imported fish (e.g., species, form, weight). The mislabeling can be quite simple. For example, the manifests for shipments of Patagonian toothfish frequently use only the term ‘seabass,’ which also can include common seabass (*Dicentrarchus labrax* and *Dicentrarchus punctatus*). The shipping codes are not very dissimilar, and are not carefully scrutinized by customs agents. In addition, importers can more easily evade restrictions by importing frozen fillets instead of whole fish. It is easier to disguise Patagonian toothfish (and most IUU species) as another species in the fillet form. More specific labeling of species would limit this mislabeling.

Documentation schemes generally do not apply to legitimately trans-shipped product which is often a point of laundering of IUU fish (Upton and Vitalis, 2003). Then there are the cases of non-legitimate trans-shipments. For example, in the case of toothfish, a tactic used involves mixing legal and illegal catches of IUU species. For example, mixing of legal and IUU fish can be done at sea, when IUU fish are transferred to a vessel that carries legal documentation (COLTO, undated). Prohibiting transfers at sea would reduce that ability for laundering IUU fish.

One of the root problems leading to several of the above problems is the use of paper documentation, which is easily manipulated and forged. HSTF (2006) noted that documentation schemes need a significant amount of work to be a) harmonized and b) made resistant to fraud. It is generally recognized that electronic documentation, such as that described in the traceability section of this paper, would be far more difficult to manipulate and is preferable to the current system (Lack, 2007; NET, 2004). This would make it more difficult for public officials to ‘mistakenly’ verify false data as well. Electronic documentation would also make it simpler to reduce the ability to engage in mislabeling, and weight manipulation, among other concerns.

The above indicates catch and trade documentation schemes have weaknesses, but also points to recommendations made by several studies as to how they could be strengthened. Efforts by RFMOs may be greatly enhanced by the private initiatives of chain of custody management, discussed further below, by the MSC and AIPCE.

IV. Marine Stewardship Council Chain of Custody Certification

Ecolabeling relies on third-party independent certifiers verifying that the products meet certain environmental criteria or standards. If the product is certified to meet those standards, then an ecolabel may be affixed to the product as it moves through the marketing chain. Ecolabeling can serve three functions in the marketplace: 1) it can provide independent evaluation and endorsement of a product; 2) it can act as a consumer protection tool; and 3) it can be a means of achieving specific environmental policy goals. An ecolabeling organization owns its environmental endorsement symbol or trademark. It licenses the use of its mark for a specified period of time and a specific fee.

The MSC was created in 1997 to provide a standardized mechanism for certifying and labeling sustainable seafood products from capture fisheries worldwide, thereby providing a market-based incentive to maintain sustainable fish stocks. The MSC ecolabel is awarded to a sustainable fishery by a third-party independent certifier. The principles of the MSC have strong roots in the FAO Code of Conduct for Responsible Fisheries and are, in the simplest terms, based on the health and productivity of the stock, ecosystem function, and effective management.

Having set the standard, the MSC has hired an accreditation firm to accredit a number of certification bodies (the third-party independent entities) who then judge fisheries against

the standard. The certification bodies in turn hire a team of scientific experts to assist in the assessment process. Certification is voluntary and accessible to all wild capture fisheries.

Certification lasts five years and is subject to annual audits to confirm improved required improvements are being made. No product from the fishery can bear the MSC eco-label identifying it as being from a well-managed source until chain-of-custody/traceability requirements have been met.

Within the MSC program, the Chain of Custody certification program verifies that fish and fish products originating from fisheries certified to the MSC Principles and Criteria are kept separate from product from uncertified fisheries. For example, it is intended for the processor who takes custody of fish landed from the certified fishery which must be able keep the processing line segregated if the firm is processing fish from both a certified and a non-certified fishery. MSC Chain of Custody standards were established in 1999, and have been in place since the first fisheries were certified.

Once the fishery is certified, and chain-of-custody/traceability requirements are met throughout the supply chain, the MSC's trading company, MSCI, licenses the use of the MSC logo on packaging or point-of-purchase materials.

MSC and Patagonian Toothfish

In 2004 the South Georgia longline fishery for Patagonian toothfish (*Dissostichus eleginoides*) was certified by the MSC. When the South Georgia Patagonian toothfish fishery requested assessment for certification, many environmental groups and probably others were quite certain that this was a fishery unlikely to pass the criteria for certification under the MSC Principles and Criteria, because of the IUU problems associated with toothfish fisheries globally.

The assessment process began in May 2001. The client, or body requesting the assessment, was the Government of South Georgia and the South Sandwich Islands.³

With the MSC certification of the fishery, the fishery was determined to be well managed. However, that by itself does nothing to prevent IUU fish from reaching the marketplace. The certification of South Georgia toothfish fishery additionally required that a certified chain of custody be established from the vessel to the port to prevent IUU fish from entrance. Thus, the fishery was certified, but fish and fish products from the fishery would not even be considered for labeling as an MSC product until a joint fishery/chain of custody certificate was issued.

³ The MSC website (www.msc.org) contains several documents which fully report on the assessment process, information that is not totally relevant to our report. Suffice it to say that the GSGSSI showed that the toothfish fishery in that CCAMLR area is sufficiently separate and distinct from the other toothfish stocks that was managed separately, and well managed – necessary for certification.

The issuing, initially, of a fishery only certificate, rather than a joint certificate was a first for any fishery certified by the MSC since its inception, and directly a result of the significant problems with IUU fish. A joint fishery/chain of custody certificate was to be issued when the certification body responsible for issuing the associated fishery management certificate was satisfied that the system of tracking and tracing implemented by the fishery was sufficient to provide a guarantee that all fish and fish products invoiced by the fishery originate from the evaluated fishery. Until this joint fishery/chain of custody certificate was issued, fish and fish products from the fishery were not allowed to enter into further chains of custody, and be eligible to carry the MSC Logo. The joint fishery/chain of custody certificate was issued in May 2005.

Chain of Custody Certification for MSC-certified South Georgia Toothfish⁴

What we discuss next is the chain of custody certification that has taken place from vessel to landing, and the elaborate program undertaken by the GSGSSI to ensure no IUU fish enters into that chain that allowed them to obtain that certification. Equally important, a detailed discussion of chain of custody and its certification stands in contrast to catch documentation schemes. This highlights why chain of custody is a more rigorous and effective method of prevention of IUU fish entering the marketplace than catch documentation scheme, at least as the catch documentation scheme currently operates.

What limits chain of custody versus catch documentation scheme in the toothfish instance is that the South Georgia toothfish fishery is only 3,500 metric tons. According to CCAMLR figures for 06/07 season (up to 5 October) the South Georgia fishery (subareas 48.3 and 48.4) amounted to 13% of legally caught toothfish globally, and 20% of fish legally caught in CCAMLR waters (Harriet Hall, personal communication).

The chain of custody is operated by the Government of South Georgia and the South Sandwich Islands and contracted organizations. Membership of the scheme is open to Group Members. These Group Members are companies/vessels with licenses to fish in the South Georgia Maritime Zone in the season for which group membership is sought. In addition, among other requirements, applicants for group membership must have demonstrated that it has no links to any companies or entities, either through direct or beneficial ownership, that have or are engaged in IUU fishing for toothfish; demonstrated that it has committed no serious infractions of CCAMLR or GSGSSI conservation measures or laws in the last season on which it fished; and have the necessary additional equipment to participate in the group scheme, and demonstrate through sea trials that the equipment is capable of operation under standard fishing conditions.

In addition to standard CCAMLR and GSGSSI requirements to carry vessel monitoring system (VMS) equipment, to have on-board observers and to be subject to inspection at sea by patrol vessels, group members must comply with other requirements of the group scheme. These include:

⁴ Taken from Roheim and Sutinen (2006) but updated after personal communication with Harriet Hall, Government of South Georgia.

- Inspection of vessels, at designated ports, prior to commencing fishing operations
- Automated labeling of all boxes of toothfish product to a pre-set specification, detailing all relevant aspects of capture and box contents
- Daily uploading of product data onto a central database
- Inspection on cessation of fishing operations, including weighing of total catch and sampling of box labels and contents

This scheme meets the requirements of the MSC chain of custody standard, i.e.

- These is a clearly documented control system specifying procedures and responsibilities
- Inspections, VMS and recording of catches prevents any mixing of certified and non-certified product
- Catches are clearly and securely labeled
- Appropriate records are maintained

The group scheme is responsible for the accurate labeling and tracing of toothfish product to the point at which the product has been inspected on cessation of fishing activities, at either KEP, South Georgia or Port Stanley, Falkland Islands. After inspection, chain of custody will be the responsibility of the individual Group Members and will be subject to a further chain of custody. This will be subject to future separate certification assessments along the chain of custody.

The central database of product label information provides the bases for further verification of chain of custody integrity at later points in the chain of custody. This will be subject to future separate certification assessments along the chain of custody.

In a personal conversation with Harriet Hall, Director of Fisheries for GSGSSI, several more specifics of the program were laid out. Any vessel operator who expresses interest in joining the SG Group Entity receives a letter. Once the vessel has joined the SG Group Entity, beginning in 2004, it is required to undergo a beginning of the season and end of season inspection, which was extended beyond the previous inspection to include verification that the vessel has no toothfish stored.

At the end of the season, or if the vessel has left SG waters mid-season, a declaration of the amount of toothfish on board must be made to the Government Officer and checked against the daily catch reports to ensure accuracy. Immediately upon exiting SG waters the vessels must proceed to Stanley, Falkland Islands for catch weighing. Once in Stanley the trunks of toothfish are taken off the vessels and weighed. The trunks are then stored in cold storage/reefer containers until the holds are empty of all product (Headed and gutted trunks). Sub-products, i.e. collars and cheeks are not weighed as they are not used in calculating the amount of quota taken by a vessel.

Once all the products have been offloaded and weighed, the vessels are searched, random checks being carried out on bait and sub-products stored on board to ensure that all products have been offloaded.

The total amount weighed is compared with the total amount declared. In the 2004 season a discrepancy of +/- 5 % was allowed for. One vessel in 2004 was found to be over the 5% leeway allowed and was subsequently prosecuted and convicted. If the amount of product weighed corresponds with the amount declared, the ship is allowed to reload the product and leave the Islands.

The above procedure is a requirement on all license holders. GSG appoints Agents to carry out the weighing. Stevedoring and cold storage arrangements are the responsibility of the operators.

MRAG is contracted to GSGSSI to provide advice on fisheries management. In 2005, following discussion with Moody Marine, MRAG and the operators, GSGSSI introduced a scheme by which companies could join the SG Group Entity, which applied for and was awarded Chain of Custody Certification. A company has to fulfill a number of criteria to join the scheme - the majority of which are standard licensing conditions. In addition they have to demonstrate that they have on board the ability to weigh, report and label accurately their catch and product. In essence this means they have to have accurate scales on board which are linked to the vessel's VMS system and are able to transmit data on a daily basis to a Government database (operated by MRAG). Each day the vessel transmits to MRAG's database the weight, number and size of fish caught in each haul. This is linked to VMS data so that GSGSSI can tell the exact location of the vessel and can also cross-reference with the daily reports which the Captain makes to the Government Officer at South Georgia. On the vessel the information is stored in a unique barcode which is affixed to each box of toothfish. Hence any one box has a unique barcode detailing the net and gross weight of the box, the number and size of fish in it, the vessel identifier (callsign and campaign season) and the haul number.

At the end of the season the vessel notifies it is leaving the SG Zone and makes its exit report to the Government Officer declaring the quantity of fish on board. MRAG then emails the database to Stanley where it is transferred to a laptop computer. During the weighing process a random sample of boxes are selected for individual checks. This includes individual box weighing, hand-scanning of the barcode, confirmation of the number of pieces of fish in the box. Boxes which have lost their label are excluded from the chain of custody. Again, the Government provides Agents to weigh and scan the catch. Stevedoring and other services are the responsibility of the company.

The Government then retains the database to be able to provide confirmation if asked by a retailer or other person further down the chain that the fish was caught in South Georgia under a valid license by a vessel which fished legally and responsibly.

MSC and Chain of Custody Certification

Chain of custody does not cease at the port, simply because chain of custody must continue up the supply chain to the consumer before one can apply for the MSC logo

license.⁵ This is equally true with South Georgia toothfish certification. Subsequent handlers of MSC toothfish must undergo MSC chain of custody certification. Before any MSC toothfish will be seen by a consumer, chain of custody will not just have to be established from the vessel to the ports, but from the ports further along the supply chain through the wholesale and up to the retail sector. IUU fish must not be able to make its way into the supply chain at any point. This makes the computerized documentation and database maintained by the GSGSSI extraordinarily important. Firms further up the supply chain and their ability to access the central database to verify product label information to provide the basis for further verification of chain of custody integrity at later points in the chain of custody is critical.

The MSC chain of custody standard follows a traceability scheme as outlined earlier in the paper. Each business in the chain of custody is certified to have a system and set of procedures in place to ensure that MSC fish are kept separate from other non-MSC certified fish in their business, and able to trace a product back to its original source. The key is record keeping; for goods in, processing and packaging, and goods out. Once certification is awarded, annual audits are required, and re-certification is required every 3 years.

The full Standard is available on the MSC website.⁶

Applicability of MSC Certification in Removing IUU Fish from the Supply Chain

To date, the South Georgia toothfish fishery is the only fishery certified by the MSC which significantly tests the ability of this approach to preventing the most egregious cases of IUU fish from reaching the supply chain, although the Ross Sea Antarctic toothfish fishery announced November 20, 2007 it is entering the assessment process. However, all certified fisheries have shown that even the least egregious cases of IUU fishing can be prevented for those fisheries; thus the traceability created in the entire supply chain from MSC-certified fishery to consumer by the MSC chain of custody certification ensures such product does not enter the marketplace. For the purposes of this paper, the focus will be on the egregious cases.

While the system has been in place for toothfish for 3 years, there are no documented cases of IUU fish reaching the marketplace. In other words, there are no documented cases of anyone being able to circumvent the various control measures, such as the electronic bar coding or computerized systems, put in place and inter-mingle IUU fish with the MSC-certified fish from South Georgia. Surveillance reports by Moody Marine, available on the MSC website, give no indications of any breakdown in the chain of custody system.

Interviews with industry members along the supply chain who have chain of custody similarly indicate a positive view of MSC certification. Greg Johnsson of Sanford

⁵http://www.msc.org/assets/docs/The_MSC's_Logo_Licensing_System_categories_and_charges.doc.

⁶ http://www.msc.org/assets/docs/Chain_of_custody/CoC_Standard_03_August_05_Version_2_Final.pdf

Company Limited in New Zealand states “the MSC certification certainly complements the catch documentation scheme of CCAMLR, VMS requirements and port access controls, have all made the life of the IUU operator more difficult and less profitable.” Mike Della Grotta, President of Kendall Seafoods, the largest importer of toothfish in the U.S., paid a premium last season for MSC-certified toothfish imported from South Georgia, although continued to import toothfish from non-certified fisheries as well. He indicates, however, in his view the U.S. market generally does not appear ready to pay more for MSC-certified versus non-certified toothfish. However, Whole Foods Markets and Wal-Mart source only toothfish from the MSC-certified fishery (*Seafood Business*, 2007). To do so, these retail chains must purchase from suppliers who are certified under the MSC chain of custody to ensure MSC and non-MSC toothfish are not intermingled or mislabeled.⁷

The primary issues related to applicability of this approach to removing IUU fish from the market relates to costs of certification of the fishery. Costs are a private matter between the client fishery and the certification body, and are often not known by the public. However, it is known that the more complex the fishery and the more protracted the process (in particular if objections are lodged), the larger the cost of certification. In some cases, the costs are borne by industry, in some cases by governments, or a combination. This becomes a far more serious issue in cases of fishing industries with small margins, or in developing countries. In addition, certification of a fishery governed by multiple governments, such as an RFMO, adds an additional layer of complexity which may make certification more difficult and costly, assuming it is well-managed enough to meet the MSC Principles and Criteria.

V. AIPCE Fish Purchase Control Measures for Barents Sea Cod

The European seafood processors have faced significant scrutiny from a variety of fronts regarding the purchase of IUU fish. An example was the allegation in 2006 that Unilever (at that time the owner of the Bird’s Eye brand) may have sourced illegal cod from a Hong-Kong based firm of Russian fishing vessels (Ocean Trawlers) allegedly engaged in illegal fishing in the Barents Sea (Leigh and Evans, 2006). Concern by the German processor Frosta and the Swedish processor Findus regarding similar issues led them to make changes to their supply chain management (Cherry 2006a; 2006b).

According to a recent AIPCE study of the European whitefish market, 90% of all whitefish in the EU market is imported (AIPCE, 2006). Among the various species, 88% of cod is imported, 73% of haddock, 71% of saithe and 100% of Alaska pollock. Russia is a very important supplier of fish to the EU, particularly of Barents Sea cod.⁸ The Norwegian Ministry of Fisheries estimates that Russian illegal fishing of cod from the

⁷ Distributors with MSC chain of custody certification, by species and country, are listed on the MSC website, www.msc.org.

⁸ As well as Alaska pollock which is largely processed and re-exported through China.

Barents Sea was approximately 101,000 tons of cod in 2005, or approximately 20% of the total allowable catch (TAC).⁹

Recently, the European Seafood Processors Association, or AIPCE, has created measures to safeguard against the entrance of IUU cod from the Barents Sea into the European supply chain, and is working on similar measures for Baltic Sea cod (Morrison 2007a; 2007b). It is envisaged that similar measures could be created for tuna, other whitefish and salmon (Morrison, 2007b). Interestingly, even though the same species is coming from both the Barents Sea and the Baltic Sea (cod), Morrison points out that different document control procedures must be developed since different product forms come from each – frozen cod from the Barents Sea and fresh cod from the Baltic. This is another example of why the supply chain is complex (see Figure 1).

The measures include working closely with the Northeast Atlantic Fisheries Commission (NEAFC), the RFMO in charge of cod from the Barents Sea. To that end, all fish destined from third countries must first be landed at a NEAFC designated port (of which there are only 100 as of September 17, 2007- www.neafc.org). No transshipment at sea to flags of convenience vessels is allowed. A strengthened system of black-listing IUU vessels and port control took effect as of May 1, 2007 (NEAFC 2007).

The control procedures are new as of only months ago, thus difficult to assess as to their effectiveness. What is unique about them is that the approach is common to the purchase of fish *by all European processors*, including 13 member states and Norway as an associate member. Thus, all seafood processors in these 14 countries will be demanding common control procedures with respect to the vessels from whom they purchase fish. Ocean Trawlers, the firm whose vessels came under scrutiny for selling IUU fish to several European processors as mentioned above, has posted these procedures on their website, and a copy of which may be found in Appendix A.

VI. Summary and Recommendations

The above discussion has provided a brief discussion and analysis of catch and trade documentation schemes, the application of the MSC chain of custody certification to the South Georgia toothfish fishery, and the newly created AIPCE Barents Sea cod control document procedures. All these approaches prevent IUU fish from reaching the marketplace.

The interesting difference is that the private initiatives – MSC and AIPCE - may be characterized as stemming from corporate social responsibility. Increasingly, retailers and processors globally are demanding seafood with attributes that require traceability, including sustainability and verifiable sources of origin. Reasons for this may or may not be linked directly to consumers' demand for those attributes as much as reasons such as

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http://www.fisheries.no/management_control/recourse_management_control/Extent+and+consequences+of+IUU+fish+ing+in+the+Barents+sea.htm (last accessed November 27, 2007).

risk reduction and public relations, among others. No matter what the reasons, the economic incentives created by the demand for such seafood by the retailers and processors at the top of the supply chain is transmitted down the chain to all those who supply to them, forcing changes in business practices with respect to IUU fish. To the extent that the traceability system remains verifiable, and it is in the interest of the AIPCE and MSC, as well as the retailers and processors, that it does so, this creates a more effective system than the current systems in place by RFMOs.

The problem, of course, is that these systems are currently only in place for very limited number of fisheries, and may not be easily expandable to all the fisheries in which significant IUU issues exist. Given that a prerequisite for MSC chain of custody certification is certification of the fishery, if a fishery is poorly managed it is not likely to be MSC certified until significant changes occur within the fishery. It must reform its management system to become a well-managed fishery before it may become certified. This is of course the point of market-based incentives for better environmental stewardship, but the likelihood that the occurrence of this in some fisheries with significant IUU fishing may not be large. However, those fisheries might take on board some aspects of chain of custody programs onto their catch documentation schemes.

The MSC is actively engaged in increasing the number of developing country fisheries within its program. The European processors appear to similarly be planning to expand the traceability schemes to Africa, at least under the UK Department for International Development program “Grand Theft Oceans” program (DEFRA, 2007). Progress will be on a fishery by fishery basis, similar to that in the developed fisheries.

To conclude, this paper has raised several points which lead naturally to the several recommendations. Some of recommendations are not new, although the arguments of this paper may strengthen the case for those recommendations. All are directly related to supply-chain management. In the cases where others have also made the recommendations, they will be attributed.

Recommendations

- **Fisheries should**, to the extent feasible, be certified to the MSC Standard which brings with it not only the confidence of sustainability but also independent verification of the supply chain through chain of custody certification (also recommended by Roheim and Sutinen, 2006; Morrison, 2007a).¹⁰
- **Processors associations worldwide should** follow the lead of AIPCE to develop similar document control procedures for other IUU species, and product forms. It may take groups such as WWF to take the lead in initiating meetings with these associations to begin the development of such procedures, similar to the meetings

¹⁰ This recommendation is also made by Jacquet and Pauly (2007). However, their paper incorrectly states that the MSC has only recently instituted chain of custody certification. As discussed earlier in this paper, the MSC has had chain of custody certification in place since 1999 and products from the first certified fisheries in 2000 underwent chain of custody certification as have all subsequent certified products.

WWF and others have had at Disney World, bringing industry together to point out the merits of sourcing sustainable seafood.

- It is clear from this discussion that traceability is strengthened with electronic documentation and would help stymie the ability of forgery and manipulation; thus, **RFMOs should** institute mandatory electronic catch documentation (also recommended by NET, 2004; Lack, 2007).
- Traceability systems are not mandatory in most nations, but become necessary when legislation such as country-of-origin labeling (COOL), geographic designation labeling or other voluntary labels are used. The U.S., EU, Japan, and a few other nations have COOL legislation for seafood. To the extent that COOL legislation would provide the impetus to implement mandatory traceability systems, more **governments should** institute and fully enforce COOL legislation. In addition to providing consumers with additional information for informed decision making, having traceability systems in place is the first step in assisting the tracking of IUU fish in entering the market; having the need for traceability is the first step in creating traceability. There should be 100% compliance with all national labeling and traceability requirements on the part of the seafood supply chain when in place (also recommended by Clarke, 2007).¹¹
- Given the increasing amount of seafood passing through China as a processing and re-export country, co-operating with Chinese authorities to combat laundering of IUU fish is increasingly important. Thus, **the global seafood industry should** be vigilant in chain-of-custody certification of Chinese processing facilities, and of audits of those certifications including withdrawal of certification in instances where documented cases of fraud occur.
- **RFMOs and national authorities should** prohibit trans-shipment at sea (also recommended by Clarke, 2007; EJF, 2005; instituted by NEAFC, 2007). A break in the supply chain occurs at sea when product is moved from one ship (perhaps a ship with a flag of convenience or one which is black listed) to another and is undocumented. Even when two acceptable ships meet and exchange products, given that it is difficult to monitor the exchange, prohibition strengthens trade documentation.

¹¹ A slight variant of this recommendation is that made by EJF (2005) which recommended full traceability of all fish and fish products entering the market.

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Appendix A

Ocean Trawlers :: Article :: AIPCE - CEP adopts Common Control Procedures to counteract illegal fishing (IUU).



Ocean Trawlers 

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Articles

21 November 2006.

PRESS INFORMATION FOR IMMEDIATE PUBLISHING.

AIPCE - CEP adopts Common Control Procedures to counteract illegal fishing (IUU).

At its General Assembly on 29 September 2006, AIPCE - CEP unanimously approved a set of Common Control Procedures based on protocols already used by many companies.

The Procedures are listed below. Ocean Trawlers comply with all relevant items.

Common Control Procedures

1.0 Goods

Every delivery of cod and haddock, h & g, interleaved, blocks and IQF products coming from Russian vessels.

2.0 Demands - Fishing and Transport Vessels

2.1 All fish must, to the suppliers' best knowledge, be caught legally and under legally-given quotas.

2.2 Documentation of each catch must be fully recorded and reported to the Russian authorities.

2.3 Trans-shipment on the high seas is only accepted when both fishing and transport vessels are sailing under their national flags. Flags of convenience are not acceptable.

2.4 Vessels must not be black-listed by either NEAFC, NAFO or the Norwegian Directory of Fisheries.

3.0 EU / EFTA Port Registration and / or Russian Ports

3.1 All fish must pass through an EU / EFTA port that is approved for import and fisheries control or a Russian port. In either case, the fish must be accompanied by officially approved and stamped documentation. With EU ports, the supplier must provide documentation that shows that the ports where they plan to discharge have been subject to a Border Inspection Report carried out by the European Commission, confirming that the inspection has been carried out without any major remarks.

http://www.oceantrawlers.co.uk/news/item_cc_procedure.html (1 of 3) [11/27/2007 1:01:59 PM]

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3.2 Point 3.1 above is considered to be a minimum requirement as it is preferred that all landings take place in ports that exchange data with the Norwegian authorities. These ports are Bremerhaven, Cuxhaven, Emshaven and Velsen.

3.3 More ports will be added to the above list once as it is verified that the port is cooperating with the Norwegian authorities.

4.0 Control Documentation

The supplier must, on demand, be able to present a third-party audited report from either the supplier's public accountant or attorney-at-law stating that the buyer, according to the supplier's files, books of account, business routines and circumstances in general, has not received fish exceeding the quota.

With regard to spot checks, the supplier must also be able to confirm that according to the supplier's best knowledge, the fishing vessel owners have not exceeded their quota.

In addition, the origin and legality of the fish provided by the supplier to the buyer must be proved in the following manner: -

4.1 The information on the invoice, packing list and health certificate must state the name and registration number of the fishing vessel, transport vessel and port of discharge, date of catch, total transshipment quantity, catching area and date of discharge at port.

4.2 A declaration from the supplier that the catch is legally caught within the given quota for the specified vessel documented by a Letter of Warranty given to the importer relating to the specified catch. The Letter of Warranty must be signed by the vessel owner and addressed to the first buyer / importer. In addition, a copy of the Bill of Lading, Health Certificate and Cargo Manifest must be included.

4.3 In accordance with EU regulations, the arrival of the vessel must be reported to the authorities 72 hours prior to arrival. For Russian and / or Norwegian ports (but not EU ports) the legislation of these countries applies.

5.0 Importer Control Procedures

It is the duty of the importer to:

5.1 Check that trawlers and transport vessels are not black-listed.

5.2 Ensure that the supplier checks the report to the Norwegian Directory of Fisheries.

5.3 Randomly check any given information with the Norwegian Directory of Fisheries.

6.0 Purchase of Finished Products

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6.1 With semi-prepared products for further processing in China, Norway, Iceland, The Faroe Islands and the EU, the processor is responsible for presenting all applicable information shown above in relation to raw materials.

To maximize results, industry measures must be backed by effective controls from authorities. AIPCE - CEP is committed to giving its full support to any actions aimed at reinforcing these Common Control Procedures.

For more information, contact Corporate Communications of Ocean Trawlers Group at corp_comm@oceantrawlers.com.hk, or +852 2446 8200.

The Ocean Trawlers Group is a market leader in the supply and processing of cod and haddock from the North Atlantic, and a significant player in the global seafood industry.

The Hong Kong based Group handles about 120,000 mts (metric tonnes) of fish and seafood yearly, mainly cod and haddock.

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