

The *TRAFFIC Bulletin* is a publication of TRAFFIC, the wildlife trade monitoring network, which works to ensure that trade in wild plants and animals is not a threat to the conservation of nature. TRAFFIC is a joint programme of



The *TRAFFIC Bulletin* publishes information and original papers on the subject of trade in wild animals and plants, and strives to be a source of accurate and objective information.

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TRAFFIC was established in 1976 with a conviction that viable and successful strategies to address conservation threats caused by commercial wildlife exploitation would have to be based on independent, accurate and credible knowledge of what was being traded and why. Reaching its 25th anniversary this year, TRAFFIC has evolved dramatically from a single London-based office to a global network of around 90 staff based in 25 countries. However, the core values and purpose of TRAFFIC's work remain faithful to this original vision.

TRAFFIC was initially set up as a volunteer group within the IUCN Species Survival Commission as a response to the 1975 entry into force of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). Since then, assisting and encouraging the development of CITES as a focus for international efforts to prevent unsustainable wildlife trade has remained at the core of TRAFFIC's work. However, TRAFFIC has also developed a strong and recognized role in addressing wider wildlife trade issues, including a greater emphasis on the impacts of demand and use at a local scale, on non-regulatory approaches to trade problems and with increased attention to trade from major natural resource sectors such as forestry and fisheries.

The 25th anniversary is an excellent opportunity to look back on our achievements to date and to express sincere thanks to the many collaborators and supporters, including colleagues in WWF, IUCN-The World Conservation Union, the CITES Secretariat, government agencies and a wide range of other organizations and individuals that have made this work possible. It is particularly appropriate to take this opportunity through the pages of the *TRAFFIC Bulletin*, originally published by the Wildlife Trade Monitoring Unit, the temporary home of TRAFFIC International for most of the 1980s. The Bulletin, now in its 22nd year of publication, is a central pillar of our work and still an essential and widely-respected reference for news and learning about wildlife trade issues.

Despite there being a compelling case for organizations to take time to learn from past experiences, there is little doubt that the most exciting and challenging aspect of TRAFFIC's anniversary is looking ahead a similar distance into the future. What will be the status of wildlife resources 20-25 years from now? How will consumer attitudes change? Will market forces play a strong role in preventing over-exploitation of wild animals and plants in trade, or will we still be heavily dependent on regulation and enforcement strategies? Will today's inconsistencies between government approaches to different international institutions be resolved? What role, if any, will non-governmental organizations play in promoting and assisting conservation solutions?

With an eye on some of the possible answers to these and other questions, TRAFFIC has recently adopted an ambitious new programme running to mid-2004. This, in turn, is being underpinned by a significant push for institutional investment to strengthen our capacity to meet current challenges. We plan to improve our attention to economic incentives and consumer motivations, expand our network in key regions, such as South Asia, West/Central Africa and Central America, and concentrate even more on forming strategic partnerships with other organizations to increase the impact of our efforts.

Nevertheless, our core purpose and values remain intact. TRAFFIC's commitment to delivering independent, accurate and credible knowledge about wildlife trade issues and sound advice based on direct experience of developing and assisting practical conservation solutions, remains as strong today as it was when our work began.



STEVEN BROAD
Executive Director
TRAFFIC International



JOHN A. BURTON
Chair, IUCN/SSC
TRAFFIC Group,
1976-1981

S. GOLDFIELD



TIM INSKIP
Director,
TRAFFIC International,
1979-1980

K. LOCHEN



CHRIS HUXLEY
Head, Wildlife Trade
Monitoring Unit
1982-1983

K. LOCHEN



JONATHAN BARZDO
Head, Wildlife Trade
Monitoring Unit/
TRAFFIC International
1983-1990

N.H. COLLINS



JØRGEN THOMSEN
Executive Director
TRAFFIC International
1990-1995

K. LOCHEN

PRIVAN DIJK

Ernie Cooper was appointed National Representative of TRAFFIC North America-Canada in June 2001.

Chen Hin Keong has left his position as Director of TRAFFIC South-east Asia after a period of six years, during which time the programme developed to include the establishment of a national TRAFFIC office in Vietnam, now responsible for work throughout Indochina. As of 1 November 2001, Chen takes up a new role within TRAFFIC of Senior Forest Trade Advisor, the global TRAFFIC focal point for activities related to trade in timber and other wood products. He will remain based in Malaysia.

bulletin board

Craig Hoover has been promoted from Senior Programme Officer to Deputy Director of TRAFFIC North America.

Tom De Meulenaer left TRAFFIC at the end of March 2001 to take up the position of Senior Scientific Officer (Animals) at the CITES Secretariat. Tom first became involved with TRAFFIC in 1986 at the former TRAFFIC Belgium office, of which he was appointed Director in 1989. Tom was instrumental in the development of that office as the regional headquarters of TRAFFIC in Europe. Caroline Raymakers has been appointed Acting Director of TRAFFIC Europe pending recruitment of the new Regional Director.

Nina Marshall has taken up employment with Conservation International as Africa Grants Director for the Critical Ecosystem Partnership Fund. Nina's association with TRAFFIC began in 1989 when she was employed as Research Botanist at TRAFFIC (USA) (now TRAFFIC North America). Nina also worked at the TRAFFIC offices in Kenya and South Africa, before being appointed Assistant Director of TRAFFIC Europe.

Fumihito Muto has been appointed Regional Fisheries Officer at TRAFFIC East Asia-Japan.

Stephen Nash has left TRAFFIC to take up the position of Chief of the Capacity Building Unit at the CITES Secretariat. Steve was first employed by TRAFFIC from late 1991 to 1993 as Director of TRAFFIC Southeast Asia, based in Malaysia, prior to his appointment as Assistant Director of TRAFFIC International in 1994 for one year. After a break of four years, Steve returned in December 1998 to become Programme Director of TRAFFIC International.

traffic websites

<http://www.traffic.org>
<http://www.twics.com/~trafficy>
<http://www.deol.ru/nature/protect>
<http://www.wow.org.tw>

Text of this issue of the *TRAFFIC Bulletin* is available on <http://www.traffic.org>



A collection of specimens of some 100 CITES-listed species can be viewed by the public and traders in Hong Kong following the opening of the Endangered Species Resource Centre. Set up by the Agriculture, Fisheries and Conservation Department (AFCD) to enhance public awareness, the Centre displays some 500 specimens confiscated during the course of AFCD's enforcement work. Items include shahtoosh shawls, a Giant Panda skin, rhino horn, traditional Chinese medicines, as well as live species such as Asiatic Bonytongues, chameleons and juvenile Green Turtles.

Hong Kong has been implementing CITES since 1976. As the CITES Management Authority, the AFCD is responsible for implementing licensing controls: about 15 000 licences and the inspection of about 8000 shops are conducted by the department every year.

Guided visits to the Centre can be arranged for traders, students and the general public.

The department has also produced leaflets on a range of related topics including the trade in pets, plants, and traditional Chinese medicine. These are available free of charge and copies can be obtained from the Endangered Species Protection Division, Agriculture, Fisheries and Conservation Department, 5/F Cheung Sha Wan Government Offices, 303 Cheung Sha Wan Road, Kowloon, Hong Kong, or via e-mail (afcdeng@afcd.gcn.gov.hk) or fax (852) 2376 3749.

Y.K. Chan, Agriculture, Fisheries & Conservation Department, Hong Kong

T H A N K Y O U

We should like to thank all those who completed the TRAFFIC Mailing Database Form that was included with the last issue of the *TRAFFIC Bulletin*. We received a great response but a small number of subscribers have yet to submit the details that we require to maintain our database. Please ensure that the form on the back page of this issue (or the one that appears on our website) is completed and sent without further delay. Thank you.

Thank you very much to those who have made financial contributions to TRAFFIC. This is very much appreciated and will be enormously helpful in funding the bulletin and the growing number of projects that TRAFFIC is working on.

CITES Parties

The Republic of Moldova, Qatar, and Sao Tome and Principe have acceded to CITES and bring to 155 the number of Parties to the Convention. These accessions entered into force on 27 June, 6 August and 7 November 2001, respectively.

CITES Secretariat

BRIEFLY . . .

Brazil Suspends Mahogany Trade

The Government of Brazil has suspended all logging, transport and trade of Bigleaf Mahogany *Swietenia macrophylla* (CITES Appendix III) until an investigation into the industry is completed. The ban follows the release of a report by Greenpeace, undertaken with the help of the Brazilian Government, that reveals a chain of illegality in the industry in that country. Brazil's Government says that Pará is the conduit through which most of the illegal timber flows after being cut on lands reserved for Indian tribes where logging is prohibited. The USA and Japan are the biggest importers of this slow-growing hardwood, which is among the most valuable of the Amazon timber species, followed by the UK, which typically imports 1729 cubic metres of mahogany a year through the port of Pará.

The Guardian (UK), 27 October 2001; <http://www.greenpeace.org/~forests>; TRAFFIC South America

Australia Strengthens Wildlife Protection

A Bill to improve Australia's capacity to enforce wildlife protection laws will come into force in December 2001. The Environment Protection and Biodiversity Conservation Amendment (Wildlife Protection) Bill 2001 integrates the existing *Wildlife Protection (Regulation of Exports and Imports) Act 1982* within the *Environment Protection and Biodiversity Conservation Act 1999*. The new legislation will improve the Australian Government's capacity to prosecute offenders for illegally importing threatened species and it will restrict the commercial use and export of non-threatened Australian plants and animals.

TRAFFIC Oceania

Ecuador Tightens Net on Regulations

Two landmark decisions taken in support of the conservation of the Galapagos Islands demonstrates Ecuador's commitment to preserve its unique biodiversity.

On 24 October 2001, Ecuador's Attorney General ruled that fishing vessel, the *Tintorera*, that has been sitting in port for several years while its owners fought for permission to fish in the Galapagos, must leave the islands permanently. The following day, the Constitutional Court in Quito rejected an appeal lodged by the owner of the longliner *Maria Canela II* which had been forfeited in March 2001 for violating the *Galapagos Special Law* by fishing within 40 miles of the baseline of the archipelago. The appeal sought to invalidate the Galapagos National Park's decision to confiscate the vessel and sell it at auction (see also page 48). Following the Court's decision, the Galapagos National Park announced that the vessel would be sold at auction.

TRAFFIC South America; Press Release of WWF-Galapagos Program and Fundación Natura, 29 October 2001; <http://www.seashepherd.org> 8 November 2001

New Directions for Changing Times

An international seminar on "Regulation, enforcement and the international trade in wildlife: new directions for changing times" was convened by Resource Africa (formerly Africa Resources Trust) and TRAFFIC International on 17-18 September, in Cambridge, UK. The need for the seminar had arisen from the recognition that there had been an evolution in thinking about approaches to the regulation and enforcement of the international trade in wildlife. The seminar was a means to share ideas about new and more effective approaches for the future. The agenda comprised papers by 20 speakers from around the world on topics as diverse as the European Union wildlife regulation, comparisons with the illegal trade in drugs, antiquities, fisheries enforcement and the impact of trade bans in India. Nearly 50 delegates attended, representing a broad range of views and expertise. Four workshops were convened to garner detailed views and raise discussion on elements that the participants thought were most significant, under the headings:

- The dynamics of trade and regulation (e.g. does opening up the legal trade promote illegal trade?).
- The relationship between trade regulation and other conservation initiatives (e.g. can wildlife trade be regulated in isolation from other conservation initiatives?).
- Towards better enforcement (e.g. is more effective enforcement needed or better regulation that dictates enforcement practice?).
- North-South issues in regulation and enforcement (e.g. is trade regulation a Northern solution to a conservation problem in the South?).

Participants were later provided with a CD-ROM of all the materials presented and summaries of the discussions.

It was generally recognized that this meeting had achieved its aims in stimulating and exploring new thinking. Of great value was the opportunity it afforded to compare regulations and enforcement in other countries and to consider and develop alternative ideas. In order to ensure that the findings of the meeting are given wider exposure it has been agreed that a book will be produced to follow up from the Seminar. An editorial review board consisting of the partners involved has been established to implement this. Fundraising is under way to meet the costs of publication and the book is expected to be launched at the 12th meeting of the Conference of the Parties.

The Seminar was developed and supported by Resource Africa and TRAFFIC International and many partners including Flora and Fauna International, Hughes Hall Cambridge University, IUCN-The World Conservation Union and the Royal Institute of International Affairs. Generous funding - provided by the UK Department for Environment, Food and Rural Affairs - DEFRA, the Taiwan Council of Agriculture, the European Commission, and the Packard Foundation - allowed for speakers and participants from developing countries to attend. This support and energetic participation by all involved was very much appreciated by the convenors.

Crawford Allan, Global Enforcement Assistance Co-ordinator, TRAFFIC International

The 17th Meeting of the CITES Animals Committee took place from 30 July to 3 August 2001 in Hanoi, Vietnam. The meeting was attended by 122 people and the agenda included issues relating to trade in hard corals, in species used in traditional medicines, in alien species; the conservation of sea-horses; and the revision of the universal caviar labelling system.

The Committee was informed that work was under way to review the remaining species selected under Phase IV of the significant trade review which TRAFFIC and IUCN had been contracted to undertake. These included four species of sturgeon (*Acipenser persicus*, *A. transmontanus*, *A. oxyrinchus*, *Scaphyrhynchus platyrhynchus*), four species of freshwater turtle (*Cuora amboinensis*, *C. flavomarginata*, *C. galbinifrons*, *Lissemys punctata*) and a land tortoise (*Pyxis planicauda*). The findings will be presented to the next meeting.

A significant outcome of the meeting was the adoption of a proposal to initiate an experimental country-based significant trade review as a more effective approach to improve the implementation of Article IV (regulation of trade in specimens of species included in Appendix II) at the national level. However, there was consensus that country-based reviews should not replace species-based reviews, that additional funds would need to be sought to support this initiative, and that an evaluation of its effectiveness should be conducted. Madagascar has been selected as the pilot country for such a review, for both animal and plant species, and TRAFFIC, IUCN-The World Conservation Union and Royal Botanic Gardens, Kew, will be involved in the procedure.

With the adoption of this proposal and with nine species reviews under way, it was agreed that selection of species for Phase V of the review would for the time being be restricted to Queen Conch *Strombus gigas* and any other species demanding immediate attention.

Four reviews were produced for consideration under the periodic review of animal taxa in the Appendices. The Committee concluded that two of these - Scarlet Macaw *Ara macao* and Mexican Seabass *Totoaba macdonaldi* - should be retained in Appendix I. A decision concerning the Orange-throated Whiptail lizard *Cnemidophorus hyperythrus* (Appendix II) was deferred until the next meeting when a more comprehensive review would be available. The Committee was unable to reach a conclusion as to whether all or some populations of Peregrine Falcon *Falco peregrinus* should be down-listed to Appendix II, since although there was general consensus that the species did not appear to meet the biological criteria for inclusion in Appendix I, there was concern over continuing illegal trade, difficulties in identifying subspecies and lack of DNA paternity analysis mechanisms (particularly in countries with

vulnerable subspecies or populations). Rather than selecting additional species, it was agreed that the priority should be to complete outstanding reviews and to develop a standardized periodic review methodology through an intersessional working group.

The hotly debated issue of registration of captive breeding operations for certain species and monitoring of Appendix I species bred in captivity for commercial purposes has spanned several Animals Committee meetings. There have been difficulties in defining the criteria for producing the list of Appendix I species, the commercial export of which may only be allowed if they originate from registered captive breeding facilities, called for in Resolution Conf. 11.4. Discussion concluded with the adoption of a proposal to undertake a study to resolve the difficulties of defining one of these criteria: "critically endangered in the wild". The pilot project, to be completed by the next meeting, entails compiling three alternative lists of all Appendix I reptile species that are considered "difficult to breed" and/or "difficult to keep" in captivity, and which are categorized under different IUCN threat categories.

There was considerable discussion on the document relating to the control of captive breeding, ranching and wild harvest production systems for Appendix II species. The document proposed to redefine and further differentiate captive breeding production systems and source codes because Parties are incorrectly applying present source codes and, moreover, these codes do not clearly describe actual production/management regimes. There was consensus that it was necessary to document the different management systems employed and that source codes needed to be better defined. However, it is important that the system eventually adopted is practical and easily implemented. In light of its technical complexities and significant consequences, an intersessional working group was created to review the proposal in depth and report back to the next meeting.

Discussion concerning trade in freshwater turtles and tortoises in South-east Asia revolved around preparations for the workshop called for under Decision 11.150. The workshop aims to establish conservation priorities and actions to achieve sustainable trade in freshwater turtles and tortoises, and is expected to take place in January 2002. It was agreed that the workshop should focus on implementation and enforcement and should lead to tangible results, and all significant Asian exporting, importing and transit countries will be invited to attend.

There was also discussion about the possibility and feasibility of 'mega-proposals' for listing freshwater turtles and tortoises such as the family Bataguridae and the subfamily Trionychinae in Appendix II. CITES listing proposals for a number of taxa are expected to be submitted for consideration at the twelfth meeting of the Conference of the Parties.

The meeting was concluded with Costa Rica offering to host the 18th Animals Committee Meeting, from 8 to 12 April 2002.

Angela Barden, Research Officer, TRAFFIC International



Wild Meat *Out of Africa*

In the first conviction in the UK for offences relating to the smuggling of wild meat, on 15 June 2001, Mobolaji Osakuade and Rose Kinnane of Nigeria were each sentenced to four months' imprisonment for illegally importing and selling CITES specimens, some in the form of wild meat.

The pair, proprietors of a shop in London which offered wild meat for sale, were each found guilty on 10 counts relating to the illegal importation and sale of the following species: Tantalus Monkey *Chlorocebus aethiops tantalus*, pangolin *Manis* spp., the skins of African Savanna Monitor *Varanus exanthematicus* and African Python *Python sebae*, and a handbag made from the skin of Nile Monitor *Varanus niloticus*. All these species are listed in CITES Appendix II (EU Annex B) and, as such, their importation into the EU requires an import permit.

Wildlife throughout Africa, South America and Asia is threatened not only by habitat destruction but also by hunting for the live animal trade, for food, skins, medicine and other products. The focus on the trade in wild meat (also referred to as 'bush meat') has been increasing in recent years. In Africa, wild meat is derived from elephants, gorillas, chimpanzees and other primates, forest antelopes (duikers), crocodiles, porcupines, bush pigs, cane rats, pangolins, monitor lizards and guinea fowl. The trade is primarily on a local to national scale, with the majority of meat being consumed within the country of capture, though a small percentage does cross national borders. By comparison, the level of wild meat trade in African species found outside Africa is far less significant. However, as ethnic African populations outside Africa continue to grow, so too does the demand for wild meat and this has resulted in wild meat being imported into European countries. It has been found on sale in outlets in Brussels, Paris and London as well as at points of import in Spain and the UK.

As awareness of the wild meat trade has grown, governments as well as conservation organizations have taken up this issue. Wild meat was on the CITES agenda at the last meeting of the Conference of the Parties in 2000 and this resulted in the formation of a Bushmeat Working Group. This trade is a key focus of TRAFFIC's programme (recent outputs include investigations into wild meat use in Eastern/Southern Africa¹ and of Asia's freshwater turtles² (see also box page 6)). In addition, a number of other non-governmental organizations, chiefly through the Ape Alliance in the UK and the Bushmeat Crisis Task Force in the USA, have also focused attention on this subject. Law enforcement agencies are now more aware of the possibility of wild meat being imported from Africa, and are faced with the challenge of trying to identify species offered for sale from the animal parts or whole animal carcasses.

UK Observations

In the last few years UK enforcement authorities have increasingly been detecting wild meat imports. However, it is hard to know if this is because the trade itself is increasing or whether improved monitoring and detection is simply finding it more often. Wild meat is not commonly found on sale in retail outlets and restaurants in the UK, and tends to be available only in major cities with significant populations of the relevant ethnic groups. Much of the meat being brought into the UK is transported in luggage by individuals for consumption by family, friends and personal contacts. However, some larger-scale commercial shipments do take place as port inspections by Customs have shown.

TRAFFIC International has been working closely with the Customs CITES Team at Heathrow Airport, who have carried out strategic assessments of the volume and composition of species imported for wild meat in commercial freight and personal luggage that had been carried on flights from West Africa. During these assessments, seizures were made in collaboration with agricultural health inspectors. The largest seizure was in September 2000, when almost 1.4 tonnes of illegal meat and fish arriving from Ghana was found in passengers' luggage. The total weight of illegal meat and fish seized from nine Nigerian flights was 2.5 tonnes. The majority of these shipments and the trade in general does not consist of CITES-listed specimens but of fish and seafood (e.g. chicken, pig, cow, cane rat, freshwater fish and shrimps), meat from domestic animals, and wild species not subject to trade controls.

In November 2000, at Heathrow, inspection of a commercial shipment from Cameroon containing foodstuffs uncovered the carcasses of 11 monkeys, two pangolins, two legs, head and lumps of tortoise meat, two whole antelopes and a large quantity of cuts, along with a large quantity of meat of non-CITES-listed species. In connection with this case, on 17 September 2001, Bruno Matudi, of Ilford, Essex, was found not guilty on three charges of importing controlled species without an import permit under CEMA (*Customs & Excise Management Act 1979*), as the goods were imported for someone else. The fourth charge is one of Strict Liability under the *Import of Products of Animal Origin Order 1996*. If meat is imported

¹Food for Thought: The Utilization of Wild Meat in Eastern and Southern Africa, 2000. TRAFFIC East/Southern Africa;

²Tortoise and Freshwater Turtle Trade and Utilisation in Peninsular Malaysia, 1999. TRAFFIC Southeast Asia (addresses back page).

without notification to the Ministry of Agriculture, Fisheries and Food (MAFF) (as in this case), the responsible party is automatically found guilty. All the meat was destroyed.

In a separate case, in June 2001, two Nigerians were sentenced to four months' imprisonment in the UK for illegally importing and selling CITES specimens, some in the form of wild meat. This is the first conviction in the UK for the smuggling of African wild meat. The case was brought to court by HM Customs and Excise National Investigation Service, who followed up on information from a British newspaper relating to the purchase by a journalist of a Tantalus Monkey *Chlorocebus aethiops tantalus* carcass from a shop in Hackney, for GBP350 (USD490). When Customs raided the premises, officials, assisted by representatives of HM Customs CITES Heathrow Team, the International Primate Protection League and TRAFFIC International, found wild meat in the freezer, including antelope, pangolin, porcupine and cane rat, along with the skins of various monitor lizards and pythons.

It is evident from these cases that there is a market for wild meat in the UK and that supplies are being imported in quantity, both in personal luggage on international flights as well as in commercial shipments.

Forensic analysis

One of the major problems that Customs face is identifying the species origin of the meat that is imported. Often only indistinguishable parts of animals are imported and they may have been smoked or processed in ways that make even expert identification very difficult. The DNA and Forensic Analysis Working Group of the UK Partnership for Action against Wildlife Crime was called in to look for appropriate technologies to assist in wild meat identification. Several methods were identified, including simple morphological studies of bones, but for the majority of meat samples only DNA testing was appropriate. The Forensic Science Service carried out DNA testing of 10 representative samples of material collected from luggage carried on West African flights to Heathrow. They found that the samples included domestic species (cow and pig), but also African wild meat species (cane rat, porcupine, guinea fowl and duiker). The duiker sample was particularly interesting as it is thought to derive from a new species previously unknown to science.

Control of a growing demand

As expatriate African populations in Europe expand, so too may the demand for wild meat, and enforcement agencies are likely to see an increase in wild meat imports in the future. The scale of the European market, though small in comparison to that within Africa, will grow, and enforcement agencies will continue to be faced with the task of identifying species from unrecognizable animal parts. Controlling the wild meat trade is not solely an African challenge, but one that can be found wherever there is a demand.

Stephanie Pendry, UK Enforcement Assistance Officer, TRAFFIC International



H.M. CUSTOMS & EXCISE



Wild meat on sale in Hackney, London, included antelope, pangolin, porcupine, cane rat and the carcass of a juvenile, male Tantalus Monkey (right, shows the animal's cleaned skull).



SIMON WILLEDE/TRAFFIC

Bushpig *Potamochoerus larvatus* being taken to a local market, Mombo, Tanzania.

WILD MEAT WORKSHOP

In response to the impact of the unsustainable use of wild species for meat on wildlife populations and on the livelihoods of people in many countries, IUCN-The World Conservation Union, the Food and Agriculture Organisation of the United Nations (FAO), and TRAFFIC recently organized an international workshop in Yaoundé, Cameroon, which aimed to:

- forge functional links among the species conservation, food security/community development and commercial sectors in order to identify means to address conservation and development concerns linked to the unsustainable use of wild fauna for food.
- contribute to the process of identifying, prioritizing and planning practical responses to address priority conservation and development concerns related to the use of wild fauna for food.
- provide input to a Global Environmental Facility (GEF) proposal related to the use of wild fauna to contribute to sustainable livelihoods in Central Africa.

Further information on the issues discussed and the decisions and agreements made at the workshop, as well as specific project development areas for which IUCN, FAO and TRAFFIC will be seeking partners, can be found at:

http://www.iucn.org/info_and_news/press/wild-meat3.html or by writing to mandar.trivedi@ssc-uk.org

Observations on Wildlife Trade at Golden Rock, Myanmar

Few comprehensive wildlife trade surveys have been undertaken in Myanmar, a fact that may largely be attributed to the restrictions placed on foreign visitors to some areas within the country. However, in recent years a thriving domestic trade in wildlife has been observed during surveys carried out in 1995 (Martin, 1997) and during a spot check of wildlife on sale in 1998 (Anon, 1999) in Tachilek, at the border with Thailand. In April 2000, a brief survey of wildlife on sale at Kyaik-tiyo (also known as Golden Rock), a town situated between Thaton and Bago, was undertaken over a period of two days. An inventory was made of the wildlife on sale and dealers were questioned about the animals' provenance, their local status, the method of hunting, and the purposes to which the various animal parts are put. A national of Myanmar acted as translator and those interviewed were friendly and open to questions. It is impossible to measure the actual impact the trade is having, owing to lack of baseline data on the wild populations. This paper records the species found on sale at one market and the variety of ways in which the parts and products are reported to be used.

Wildlife shops

The wildlife market at Golden Rock consists of small, open shops - at the time of the survey 27 specialized in wildlife, including plants. Products were displayed on wooden tables at the front of the shops and almost all had pots rendering animal parts.

Hunters and dealers

The majority of the animals offered for sale had been killed by hunters who live at Golden Rock, many of whom are of the Karen tribe, generally considered by the wildlife dealers in Golden Rock to be among the country's best hunters. While some animals are killed in the locality of Golden Rock, those interviewed stated that many species are becoming rare and, in some cases locally extinct - Tiger and Leopard, for example - and the majority of animals are caught further afield. Hunters usually use homemade crossbows with poison-tipped arrows, but guns and snares are also used. It was not established how many of the villagers hunt to supply this market. Most hunting appears to be opportunistic and when saleable animals are killed, they are brought to the market. Otherwise the specimens are consumed by the hunters' families.

Many of the dealerships in Golden Rock are run by more than one person and many of the dealers are related and local. Some carried out much of the hunting themselves, while others shared the duties of hunting and selling with family members. All the dealers interviewed appeared to have a very good knowledge of the species they hunted and of hunting methods, as well as the medicinal uses of each species.

Species accounts

The majority of species offered for sale at Golden Rock were mammals (23 species), and to a lesser extent reptiles (three species) and birds (one species). Most specimens on sale were for use as traditional medicines, with some by-products offered as trophies. A few species seemed to be sold purely for ornamental purposes or as trophies. Accounts of some of the species observed are recorded below; a full list of the species seen, the number of specimens available and their uses and protection status are listed in Table 1.

Bears: It is likely that the only species of bear observed was the Asiatic Black Bear *Ursus thibetanus*, as all parts that could readily be identified - skins and paws - were of this species. The skins are sold as trophies and other body parts as traditional medicines. Rendered fat claimed to be from bears was said to be used to improve hair condition and to treat white skin patches. Bear skulls are ground and the powder mixed with water to form a paste that is used to treat children's mouth diseases. Fresh skulls are also used with other animal parts for rendering. According to the dealers, the skins are generally purchased by Taiwanese and Chinese tourists and the Taiwanese are also the main buyers of the bear paws. One dealer had the skin, gall bladder and two paws of an Asiatic Black Bear that had been killed six weeks' earlier. He stated that the Chinese and Thais are the main buyers of gall bladders on sale here. Gall bladders do not seem to be purchased by locals, possibly owing to the high price. Dealers in this village claimed that bears no longer inhabit the area.

Elephants *Elephas maximus*: Elephant parts are used as traditional medicine and, to a lesser degree, for ornamental purposes, and include the soles of the elephants' feet, skin, leg bones, teeth, tail and tail hairs. The soles are ground on a round stone plate with a catch around the perimeter while water is added to the powder to form a sticky paste. This is applied to the skin to treat hernias. Pieces of elephant skin, leg bones and molars are processed in the same way and the resulting paste is used, respectively, to treat fungal skin infections, piles and other external ailments, including bruising. Elephant bones are also said to be used for carving ornamental figurines and Buddhist prayer necklaces, and a few bones and carved items were observed. A dealer stated that the carved items had been worked in the town of Bego and that there were no carvers in Golden Rock. Elephant tail hairs are fashioned into rings (a single hair makes one ring) and worn to protect against supernatural attacks; men wear these rings to attract women. According to a dealer, an elephant tail on sale would bring success if hung in the home.



The head and fins of two Dolphins had been removed and the carcasses tied over a fire; oil from the fat was captured in a pot. The specimens had reportedly been captured in the Sitong River, near the river mouth, but, according to the dealers, were not river dolphins. Dolphins are reportedly often captured by fishermen in this region but are usually released as it is believed such an act will bring good luck.

Photographs: C.R. Shepherd



Elephant hide and hair. A single hair is fashioned into a ring and worn by men to attract women.



Animal skins, including that of a Leopard, for sale as trophies.



Serow head being rendered down for its oil.

The dealers stated that the Forestry Department prohibits the sale of ivory at Golden Rock and none was observed, although carved ivory is offered for sale in other locations in Myanmar. The dealers claimed that elephants are not hunted to supply the demand for their parts but that these derivatives come from elephants that have died in Forest Reserves and from Government-owned logging operations and which are then sold to the dealers. This is reported to be legal and is controlled by the Forest Department.

Pythons: Skins of Reticulated Pythons *Python reticulata* and Rock Pythons *Python molurus* are usually sold to leather factories in the larger centres in Myanmar and factory buyers are reported to come to Golden Rock regularly to buy up skin stocks. Python meat is sometimes partially dried and added to rendering pots containing other animal parts and the oil sold to treat a variety of ailments. According to dealers, the Reticulated Python is the more common of the two occurring in the wild in this area and most skins on sale were of this species.

Serows *Capricornis sumatraensis*: Serow parts were among the most frequently seen of all animal parts on sale and, according to dealers, the species most sought after by customers. All parts of the animal, including the dung, are rendered into medicinal ointments. The bones are left rendering until bleached white, a process which, according to one dealer, takes approximately two years, after which time, they are discarded. The most valuable parts are said to be the head, tongue, forelegs (all of which bear oil-secreting glands) and the fat, especially from the abdominal area, which is considered the purest. Although parts of other animals may be included, pure Serow oil is the most valuable and considered to be the most potent. Oil from freshly killed Serows is the most prized. Bottles of pure Serow oil sell for K1500 each; those containing oil from other species sell for K200. Oil from the tongue is used to treat cracked bones, that from the lower legs to treat ailments of the joints, muscles and nerves, and oil from the horns and horn base is made into a paste and rubbed directly onto the eyeball to treat cataracts. Oil from the glands in the head and forelegs makes the most powerful medicine, used to treat serious wounds, and often these are the only parts rendered down.

It is impossible from these observations to determine the amount of oil rendered from a single Serow because the pots are continually being added to as more animals are supplied. An approximate number of Serows killed each year to supply the demand of this particular market can be estimated, however. Forty-four Serow heads in various stages of rendering were observed at this market. If the parts are kept for up to two years, approximately 20 are used each year. This estimate was reinforced by two dealers in the market who said that approximately 20 Serows were used per year by all the medicine dealers in Golden Rock combined. One hunter/trader stated that 15 Serows had been killed for this market in the past year, only a few of which had been killed in the area and another stated that between 20 and 30 are killed each year. A few hunters and dealers said that only two or three of the Serows on sale had been killed in this area and that their numbers in the region are declining, forcing the hunters to go much further afield to find them, with many purchased from hunters in the Chen Hills area.

Occasionally a snared Serow is brought back to the village alive to be slaughtered. The meat is highly prized and usually eaten by the hunter's family, rather than sold. It is said to have a warming effect on the body. According to one hunter, two types of Serow are killed in this area and can be distinguished from one another by the spiral pattern on their horns. All hunters easily distinguished Serow from Goral, which they said they rarely came across in this region (no Goral was observed during the survey). Occasionally dealers accompany hunters on Serow hunts as some hunters have been known to try to pass off domestic goat parts for Serow. Dealers are also not above cheating their customers as one dealer proudly pointed out, showing the surveyors a 'tiger penis' that he had fashioned from the tendon of a Serow's leg.

Wild cats: At least four species of wild cats were observed. Fake wild cat parts and products are widely available (Nowell, 2000) and it was not possible to establish conclusively the authenticity of the cat parts seen on sale. A pair of canine Tiger *Panthera*

SPECIES	PART	QUANTITY	USE	PRICE	NATIONAL LAW	CITES
Asiatic Black Bear	<i>Ursus thibetanus</i>	skins	5			
		paws	29	Oil for treating aching joints	K 2000 each	
		rendered fat	numerous	To improve hair condition and white skin patches	K 600/bottle	
		skulls	8	Drink made from the paste to treat childrens' mouth diseases Oil for treating aching joints		
Cat	<i>Felis sp?</i>	gall bladder	5		K 5000 each	
		small skulls	numerous			I/II
Leopard	<i>Panthera pardus</i>	paws	20			I
		head	2			
		skin	1			
		penis and testes	1	Stimulate sex hormones		
Leopard or Clouded Leopard	<i>Panthera pardus</i>				TP	I
	<i>Neofelis nebulosa</i>	skeleton	5		TP	I
Tiger	<i>Panthera tigris</i>	canines	2	To protect the home	K 2500 each	TP
		bone pieces	4	unknown		I
		horns	2			
		skins	7			
		head	13	Oil for treating aching joints		
		skin	1			
Common Palm Civet	<i>Paradosurus hermaphroditus</i>	stuffed	1	Ornament		P
		skin	4			III
Civet?		skin with fins				
Dolphin	Cetacea	and fat layer	2	Oil for treating aching joints		?
Elephant	<i>Elephas maximus</i>	sole of foot	6	Paste applied to skin to cure hernias		*TP
		skin (pieces)	25	To cure fungal skin infections		I
		tail hair	numerous	Rings worn to protect against supernatural attack/to attract women		
		tail	2	Hung in the home to bring business success		
		leg bones	1.5	Carving material. Paste to cure piles		
		bones	numerous	Carved into beads for Buddhist prayer necklaces	K 100 each	
			5	Carved into figurines		
			22			
Macaque	<i>Macaca sp.</i>	skull	33	Oil/ornamental purposes		II
Otter	<i>Lutra or Aonyx sp.</i>	charred body	1	Oil for treating aching joints		TP
		head	1	Oil for treating aching joints		I/II
Pangolin	<i>Manis sp.</i>	skins	3	Treatment for children's diseases: scales hung on a string around a child's neck		TP
Porcupine	<i>Hystrix sp.</i>	head	1			
		quills	numerous	Quills dipped in lime are used in light acupuncture (without breaking skin) on back of neck to cure headaches Manufacture of traditional buttons		not protected
		heads	34	Oil for treating aching joints		TP
Serow	<i>Capricornis sumatraensis</i>	skulls	10	Oil for treating aching joints		I
		legs	4	Oil for treating aching joints		
Wild Pig	<i>Sus sp.</i>	skull	3	Ornament and possibly medicine		
Squirrel		tails	20	Key-chains		
Squirrel	<i>Callosciurus sp.</i>	stuffed	1	Ornament		not protected
Giant Flying Squirrel	<i>Petaurista sp.</i>	charred body	2	Oil for treating aching joints		not protected
Tree shrew	<i>Tupaia sp.</i>	stuffed	3	Ornament		P
Giant squirrel	<i>Ratufa sp.</i>	stuffed	2	Ornament		not protected
Reticulated Python	<i>Python reticulatus</i>	skins	26	Sold to visiting middlemen for onward sale to leather factories	Approx. K 700/metre	TP
Rock Python	<i>Python molurus</i>	skins	8	As above		P
Python	<i>Python sp.</i>	meat	15	Oil for treating aching joints		II
Elongated Tortoise	<i>Indotestudo elongata</i>	shell	1	Manufacture of combs according to dealer, although this is questionable		P
Great Hornbill	<i>Buceros bicornis</i>	head	4	Ornament		TP
		skin	2	Ornament		I
		shell	1	Oil applied to white skin blotches		

Table 1. Observations during survey of Golden Rock, 16-17 April, 2000.

TP: totally protected; P: protected; SP: seasonally protected; * unless a domesticated elephant

tigris teeth appeared to be very fresh, bearing apparent traces of dried blood. According to the dealer, canine teeth are kept in the home for protection. Four pieces of cut bone said to have come from a Tiger were on sale for (undisclosed) medicinal purposes. According to the dealer, Tigers no longer survive in this area and the few parts observed were from other regions. As this market caters mostly to locals, it seems likely that expensive items, such as a Tiger skin, would be sent to other markets where foreign buyers were more numerous.

Leopard *Panthera pardus* parts were the most numerous of the cat species' parts observed in the market. The entire carcass of an adult male Leopard was being offered by one dealer, although the animal had already been cut up to be sold as individual parts. The penis and testes were to be sold to stimulate the production of sex hormones. The head and other parts were included with derivatives of other species for rendering and the oil used to treat a variety of ailments, including aching joints. The skin was to be sold as a trophy. According to the dealer, the Leopard had been killed near Golden Rock less than a month earlier using a snare. He claimed that Leopards were extremely rare in this region and that this was the first specimen to be killed in the area in approximately five years. Other Leopard parts observed apparently were from animals killed in other areas. Twenty paws and two heads were also on display.

Three skeletons said to be of Clouded Leopards *Neofelis nebulosa* were on sale for medicinal purposes or as trophies. One dealer claimed that he had recently sold a skin for USD40 to a foreign buyer of undisclosed nationality. He claimed that selling the skin for US dollars had been very awkward for him as it was difficult to change the money without raising suspicions. For these reasons, dealers prefer local currency. The head and feet, reportedly of this particular Clouded Leopard, were also seen.

Numerous small cat skulls, most likely from Leopard Cats *Prionailurus bengalensis*, were seen, both in pots being rendered down for oil, and on sale as ornamental objects. No skins or other recognizable parts were seen so positive identification was difficult. Additionally, five skeletons of medium-sized cats, most likely Leopards or Clouded Leopards, were being offered for sale but, again, identification could not be verified.

Legislation: The Forest Department has been responsible for the management and conservation of wildlife in Myanmar since 1856. The *Burma Forest Act* of 1902 and the *Burma Wildlife Protection Act* of 1936 provide for the establishment of sanctuaries and forest reserves within which animals are protected; protection does not cover habitats however (Martin, 1997). On 8 June 1994 the Forest Department established the *Protection of Wildlife and Wild Plants and Conservation of Natural Areas Law*, which set up a committee to protect wildlife, designated the powers of the Minister to "natural areas" and zoological gardens, and enacted specific conditions for hunting (Martin, 1997). A fine of up to 50 000 kyat (approximately USD135 in April 2000) and/or imprisonment for

up to seven years was to be imposed for the illegal possession, sale or export of completely protected species (including any medicines made from these species), or their parts, and up to 30 000 kyat and up to five years imprisonment for the illegal possession, sale or export of normally protected and seasonally protected wildlife. This was followed on 26 October 1994 by the release of Notification No. 583/94, which published a list of species that had been placed in three protection categories:

- a) Totally Protected Species, which lists 40 species of mammals, 50 families and species of birds and nine species of reptiles.
- b) Normally Protected Species, which lists 12 families and species of mammals, 41 families and species of birds and six families and species of reptiles.
- c) Seasonally Protected Species, which lists two species of mammals, ten families of birds and two bird species.

Myanmar has no officially sanctioned trade in wildlife. However, under special circumstances and with the permission of local government, some species may be traded outside protected areas. Furthermore, it is not an offence to possess or trade in any domesticated elephant or part thereof. In fact, the Forestry Department sells the rights to market elephant parts derived from animals coming from forest reserves or government-owned logging operations. This is very difficult to control as there are numerous trans-boundary routes to neighbouring countries (Hla, 1995).

Myanmar acceded to CITES in 1997. The Director General of the Forest Department serves as the Management Authority for CITES and the Director of the Nature and Wildlife Conservation Division as the Scientific Authority. Both departments are from the Ministry of Forestry, based in Yangon.

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THE TRADE IN MEDICINAL PLANTS IN THE EASTERN CAPE PROVINCE, SOUTH AFRICA



Tony Dold and Michelle Cocks

Almost every city and town in South Africa has some form of trade in plants for medicinal or cultural purposes, most often through informal street markets or small shops known as Amayeza stores (*Amayeza* is the Xhosa word for medicine), or as Muthi shops in KwaZulu-Natal. A survey carried out in 2000 of the trade of medicinal plants in the six largest urban centres of the Eastern Cape Province of South Africa (Figure 1) has revealed some startling results (Cocks and Dold, 2000). Based on 282 informants' lists of their 10 most-frequently traded species, no fewer than 166 plant species were recorded as regularly harvested from wild populations and sold for medicinal and cultural purposes. The total number of species traded is very much higher but is almost impossible to estimate as many are only occasionally collected. It is estimated that 435 tonnes of wild-harvested plant material is traded in the six city centres in the Eastern Cape alone every year, generating an income of USD2.43 million per annum. As lucrative as this may sound it is shared amongst so many traders that the average monthly income per capita is between USD19.2 and USD64.1¹.

Scientific name	Xhosa name	Vegetation type	Part used
1 <i>Hypoxis hemerocallidea</i>	Inongwe	Grassland	Bulb
2 <i>Rhoicissus digitata</i>	Uchitibunga	Forest and Valley Thicket	Tuber
3 <i>Curtisia dentata</i>	Umlaheni	Forest	Bark
4 <i>Helichrysum odoratissimum</i>	Imphepho	Grassland	Whole plant
5 <i>Protorhus longifolia</i>	Uzintlwa	Forest	Bark
6 <i>Haworthia attenuata</i>	Intelezi	Valley Thicket	Whole plant
7 <i>Rubia petiolaris</i>	Impendulo	Valley Thicket	Roots
8 <i>Bulbine alooides</i>	Irooiwater	Valley Thicket	Bulb
9 <i>Ilex mitis</i>	Isidumo	Forest	Bark
10 <i>Rapanea melanophloeos</i>	Umaphipha	Forest	Bark

Figure 2. Top 10 medicinal plant species in demand in the Eastern Cape.

< Figure 1. Map of Eastern Cape Province, South Africa, showing principal survey sites.

Legislation

Medicinal plants are harvested regularly with little or no control or management in communal areas and State-owned land in the Eastern Cape. No plants are cultivated and all material is wild harvested. Current legislation (*National Forests Act 1998*) allows for the harvesting of plant material for subsistence use only and this is restricted to what the harvester can carry without containers (Anon., 1997). The Department of Water Affairs and Forestry (DWAF) have adopted a policy of sustainable harvesting by means of community-based management programmes (pers. comm. N. Michele, DWAF, King William's Town). The "new" (post 1994) conservation legislation is excellent and allows for both community access as well as strict law enforcement where necessary. Unfortunately there are as yet no management structures in place and the present harvesting rates are uncontrolled and far from sustainable (Cocks and Dold, 2000). Provincial conservation authorities and DWAF are critically understaffed and lack the capacity to manage previously restricted areas, much less communal land.

King William's Town

One of the largest street markets in the province is in King William's Town, the provincial administrative capital, which serves a rapidly growing population and its surrounding rural communities of the former homeland, Ciskei (Figure 3). The street traders in King William's Town selling medicinal plants are amongst the poorest within the community and rely on plant sales as their only source of income. Of the 14 traders, 11 are middle-aged women with little or no formal education. All the traders live in surrounding rural villages from where they harvest plant material and commute daily to the city. The traders harvest the material themselves and have few overhead costs apart from transport, which amounts to almost half their income. Plant material is displayed openly on the street and there are no formal restrictions or costs such as rates or rental to pay. These markets are most often situated near taxi and bus ranks and serve hundreds of daily commuters. Material is generally sold in affordable units of USD0.25 or USD0.64¹. Customers buy plants that they know and will prepare the medicine and treat themselves or family members without consultation. The traders are not healers and do not offer consultation. The traders also sell regularly to middlemen for resale in city centres throughout the country.

¹Converted at a rate of R7.80 to USD1 as reported on 24 January 2001



TONY DOLD

< **Figure 3. The street traders in King William's Town selling medicinal plants are amongst the poorest within the community and rely on plant sales as their only source of income. All plant material is wild-harvested.**

Species

The majority of the plant material sold at most markets can be broadly grouped into three categories: bark, succulent plants and bulbous plants. This is most likely due to the longer shelf life of these product types but smaller quantities of fresh herbaceous material are also sold. Thirty-four per cent of the total 166 plants were harvested from Grasslands (36 200 kg pa); 23% from Valley Thicket (26 871 kg pa); 18% from Forest (26 972 kg pa) and 13% are located in both Forest and Valley Thicket. Twelve per cent (other) are collected in Wetlands, Disturbed areas and Grassy Fynbos (3114 kg pa) (see box and Low and Rebelo, 1996, for full vegetation descriptions).

Grassland species are harvested from grassveld patches associated with Valley Thicket and from the Moist Upland Grassland along the foothills of the Amatola Mountains. The most frequently sold species are *Hypoxis hemerocallidea* (Hypoxidaceae) and *Helichrysum odoratissimum* (Asteraceae), both sold for USD3.50/kg. *Hypoxis hemerocallidea* (and several other species of the genus not differentiated by users) was reported by 97% of traders as the most frequently sold plant. This plant has received much publicity in both the local and international press during the last five years as the "Miracle cure - African Potato" resulting in increased sales to traditional users and small-scale pharmaceutical companies (including many informal temporary establishments). *Helichrysum odoratissimum* is a much sought-after aromatic herb that is burnt as incense in traditional cultural ceremonies and can be bought at any herbal market throughout the country. Two of the top ten species traded in the study site are collected from Grasslands (Figure 2).

Valley Thicket (Valley Bushveld *sensu* Acocks, 1988) is the most easily accessible vegetation type for harvesters and traders as King William's Town Municipal Commonage is almost entirely thicket and provides many succulent medicinal plant species such as *Gasteria bicolor* (Aloaceae) (USD3.70/kg), *Haworthia attenuata* (Aloaceae) (USD3.70/kg) *Bulbine alooides* (Asphodelaceae) (USD3.90/kg). Whole plants are removed in large quantities severely depleting populations. Four of the top ten species traded in the study site are collected from Valley Thicket (Figure 2).

Bark from trees of certain species is harvested on a massive scale in the nearby Pirie Forest, formerly a State forest reserve, and is supplied to markets as far away as Durban and Johannesburg. During the last five years, competition for forest resources has become intense resulting in violent clashes between user groups and State law-enforcement and has resulted in the total withdrawal of forest guards, who fear for their lives. One of the most important species harvested in Pirie Forest is *Cassipourea flanaganii*, a small tree of the family Rhizophoraceae. The powdered bark is used as a face cream to lighten the complexion and remove blemishes and sold for USD6.30/kg. *C. flanaganii* has an IUCN Red List Category of Rare (Hilton-Taylor, 1996). The three most frequently sold forest species are all trees: *Curtisia dentata* (Cornaceae), *Protorhus longifolia* (Anacardiaceae) and *Ilex mitis* (Aquifoliaceae) which sell for USD7/kg, USD4.30/kg and USD7.20/kg, respectively. Bark is harvested from eight of the top ten forest species which, if over-harvested, may result in the ultimate death of the tree. Of the remaining two species, either the bulb or tuber is removed. This indicates that the type of harvesting in the forest is highly destructive. Five of the top ten species traded in the study site are collected from Forests (Figure 2).

The highest quantity recorded within the same sample set for a single species is 3635 kg per annum for *Ilex mitis* (Aquifoliaceae), a forest tree, the bark of which is removed for medicinal purposes. The highest value recorded was USD8.71¹ per kilogramme for *Behnia reticulata* (Luzuriaceae), a forest climber.

Future trends

The destructive methods used to harvest - usually either removal of bark or of the whole plant - is resulting in a decline in supply to markets. The majority of the informants interviewed readily acknowledged difficulties in obtaining certain species. Furthermore the demand for traditional medicines is increasing as 54% of traditional healers interviewed indicated an increase in the number of patients that they had seen over the last five years. When asked what they predicted for the next

five years in terms of the trade, the majority - 81% - were confident of an increase in business due to increased urbanization and “new” health issues such as HIV and AIDS.

It is clear that both the State and the private sector need to implement appropriate programmes to deal with the trade in medicinal plants. One way to achieve this is to promote and implement community-based cultivation programmes in the province. Interviews with traditional healers revealed that, contrary to popular belief, 82% would readily make use of cultivated plants. Only 7% felt that they could not use cultivated plants and 11% were indecisive. These findings clearly indicate that traditional healers recognize that wild supplies of medicinal plants are declining. It is therefore proposed that cultivation programmes be implemented in rural and peri-urban communities in the Eastern Cape as soon as possible. The species that should be focused on are those that have relatively fast growth-rates including genera such as *Gasteria*, *Haworthia*, *Bulbine* and *Hypoxis* species. The slow-growing woody species such as *Ocotea bullata*, *Rapanea melanophloeos*, *Casipourea flanaganii* and *Curtisia dentata*, could be cultivated by DWAF, local councils, municipalities and privately owned nurseries.

It is the authors' opinion that if certain medicinal plants are not supplemented from alternative sources such as cultivated plants in the near future, it is certain that their survival in the wild will be seriously threatened.

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vegetation descriptions

moist upland grassland

Sourveld occurring at altitudes of 600 to 1400 m above sea level, most commonly in the foothills of the Eastern Cape and KwaZulu-Natal. Comprises dense grass cover often adjacent to Afromontane Forest. Covers 3.48% of southern Africa, of which only 2.52% is conserved.

valley thicket

A very dense thicket of woody shrubs and trees which occurs in the river valleys of the eastern parts of the Western Cape, extending through the Eastern Cape to KwaZulu-Natal at altitudes of 400 to 800 m above sea level. Covers 1.81% of southern Africa and 2.14% is conserved.

afromontane forest

Scattered patches of Afromontane Forest occur on the south facing mountain slopes along the eastern seaboard from sea level to 1500 m above sea level. A continuous canopy cover is evident, reaching 30 to 40 m tall, with multi-layered substrata beneath it. Covers 0.46% of southern Africa of which only 17.64% is conserved.

grassy fynbos

A fynbos type characteristically rich in grass species which tend to replace the restioid element of the better known Mountain Fynbos of the Cape. Succulent species such as *Haworthia* are also characteristic. Grassy Fynbos is restricted to the Eastern Cape and occupies 0.47% of southern Africa, of which 16% is conserved.

Extracted from Low and Rebelo (1996).



Gasteria sp. - known as Intelezi - is a much sought-after succulent plant valued for its medicinal and cultural use.

JAMIE POTE

The Malaysian Government hosted the 11th Meeting of the CITES Plants Committee at Langkawi from 3 to 7 September 2001. The agenda comprised approximately 25 topics including: the trade in Red Stinkwood *Prunus africana*; the status and trade of Holywood Lignum Vitae *Guaiacum sanctum*; the trade in Mexican cacti; harvesting techniques of Snowdrops *Galanthus* species in Georgia; and standard exemptions for Appendix II species.

With insufficient funding hindering efforts to implement Decisions 11.112 and 11.113 concerning Agarwood *Aquilaria* species, a working group was formed at the meeting to help prioritize future activities. Although some Parties and Committee members were in favour of listing the entire genus in Appendix II at the 12th meeting of the Conference of the Parties, owing to the lack of detailed distribution, population and conservation status data it was concluded that consideration of listing more species in the Appendices would extend beyond the 12th meeting. When funding is secured, the highest priorities for action will be to collect these data, and to develop standard methodologies for determining population status to ensure that harvest and export quotas are appropriately based on scientific data.

Despite concerns about cost and practicality, there was continued support for the ongoing development of DNA analysis techniques to establish whether products in trade can be identified to species level, which currently is extremely difficult. Another important decision taken by the Committee was to include additional agarwood-producing genera (*Gyrinops* spp. and *Aetoxylon sympetalum/santalum*) in all future agarwood studies conducted on behalf of the Plants Committee, in part as a result of TRAFFIC Oceania's recent work (see page 49). Once funding becomes available, IUCN intends to re-evaluate all *Aquilaria* species against the 2000 IUCN Red List criteria.

A document regarding the problems and complexities with the trade in Yew *Taxus* species was presented for discussion. The taxonomy of the genus remains confused: the unlisted species *T. yunnanensis* is a possible synonym of the listed Himalayan Yew *T. wallichiana*, but is currently not reported by CITES because it is treated as a distinct species. With the majority of *T. wallichiana* being traded in the form of finished pharmaceutical products, which are exempt from CITES controls, the conservation value of the CITES listing for *T. wallichiana* is weakened by excluding these products from regulation and monitoring. The Committee recognized that this issue is of great concern and therefore needs more attention. It was concluded that a number of Parties, including India who proposed the original listing, should produce a document for the next meeting which should address whether additional *Taxus* species merit listing in the Appendices, either for conservation or look-

alike reasons; it should also examine whether finished products of *Taxus* species are readily recognizable and therefore can and should be regulated by CITES.

Discussion regarding the implementation of Appendix III listings for timber species was prompted by Indonesia's recent decision to list its population of Ramin *Gonystylus* spp. in Appendix III. Malaysia and Singapore, which are also range States of Ramin, indicated that they were notified after the listing went into effect, so were ill-prepared to enforce the listings. Malaysia therefore noted its intention to enter a reservation to this listing. With an increasing number of Parties using Appendix III as a means to regulate their timber trade (Colombia has also recently listed its populations of West Indian Cedar *Cedrela odorata* and Bigleaf Mahogany *Swietenia macrophylla* in Appendix III), the debate concerning how such listings can be implemented, particularly by importing Parties, and the extent of consultation undertaken beforehand, is set to continue.

Related to this issue, an interim review of all tree species included in the Appendices called for under Decision 11.116 was discussed under the periodic review of the Appendices. Tree species are being assessed against the current CITES listing criteria to assess whether they are appropriately listed in the Appendices, and a final report will be presented to the 12th meeting of the Conference of the Parties, potentially resulting in amendment proposals for relevant species being submitted to the 13th meeting of the Conference of the Parties.

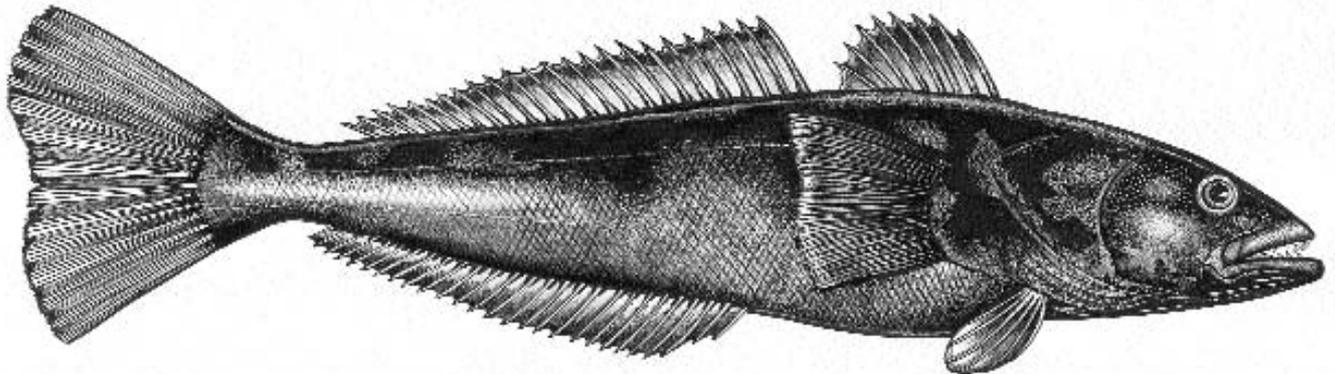
Several other large taxonomic groups were also considered. The Secretariat had initiated a process to simplify CITES listings for Orchidaceae. The Committee agreed with the Secretariat's conclusion that amending the Appendices to remove some orchid taxa while retaining others would prove difficult to enforce owing to the number and similarity of species involved. Therefore, the Committee supported the decision to keep the entire family in the Appendices. An intersessional working group was created to develop a process to exempt "supermarket" orchids from CITES controls.

Earlier concerns regarding illegal trade in the Appendix I-listed orchid genus *Paphiopedilum* resulted in a document being produced summarizing illegal trade in this genus, for example in Europe, Japan, Taiwan and the USA. Mature plants of highly prized newly discovered and rediscovered species found in international trade indicate that specimens originated in the wild and are hence being traded illegally. There is also evidence that the exemption from CITES controls for "flasked seedlings" is being exploited to export wild specimens as artificially propagated specimens. The report's recommendations were adopted by the Committee and a report addressing their implementation will be tabled at the next meeting.

The 12th meeting of the Plants Committee will be held in Leiden, the Netherlands, from 13-17 May 2002.

Angela Barden, Research Officer, TRAFFIC International

P A T A G O N I A N



T O O T H F I S H

ARE CONSERVATION AND TRADE MEASURES WORKING?

M. Lack and G. Sant

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

Illustration of Patagonian Toothfish by Bruce Mahalski

INTRODUCTION

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

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

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

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

'Illegal fishing refers to activities:

conducted by national or foreign vessels in waters under the jurisdiction of a State, without the permission of that State, or in contravention of its laws and regulations;

conducted by vessels flying the flag of States that are parties to a relevant regional fisheries management organization but operate in contravention of the conservation and management measures adopted by that organization and by which the States are bound, or relevant provisions of the applicable international law; or

in violation of national laws or international obligations, including those undertaken by co-operating States to a relevant regional fisheries management organization.

Unreported fishing refers to fishing activities:

which have not been reported, or have been misreported, to the relevant national authority, in contravention of national laws and regulations; or

undertaken in the area of competence of a relevant regional fisheries management organization which have not been reported or have been misreported, in contravention of the reporting procedures of that organization.



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

Photograph: Greenpeace/Grace

Unregulated fishing refers to fishing activities¹:

in the area of application of a relevant regional fisheries management organization that are conducted by vessels without nationality, or by those flying the flag of a State not party to that organization, or by a fishing entity, in a manner that is not consistent with or contravenes the conservation and management measures of that organization; or

in areas or for fish stocks in relation to which there are no applicable conservation or management measures and where such fishing activities are conducted in a manner inconsistent with State responsibilities for the conservation of living marine resources under international law.¹

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

Source: FAO, 2001b

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

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

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

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

METHODS

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

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

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

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

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

THE PATAGONIAN TOOTHFISH FISHERY

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

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

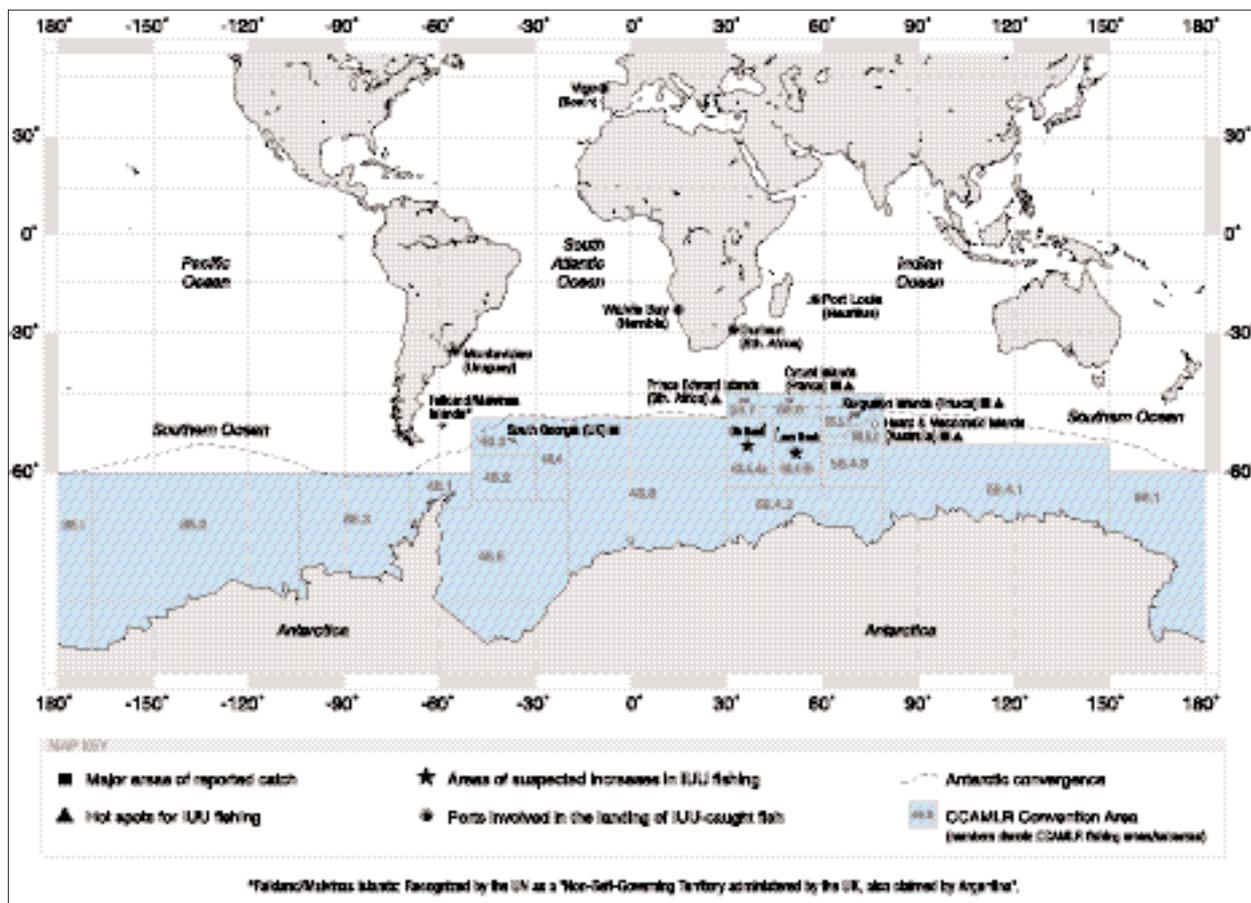
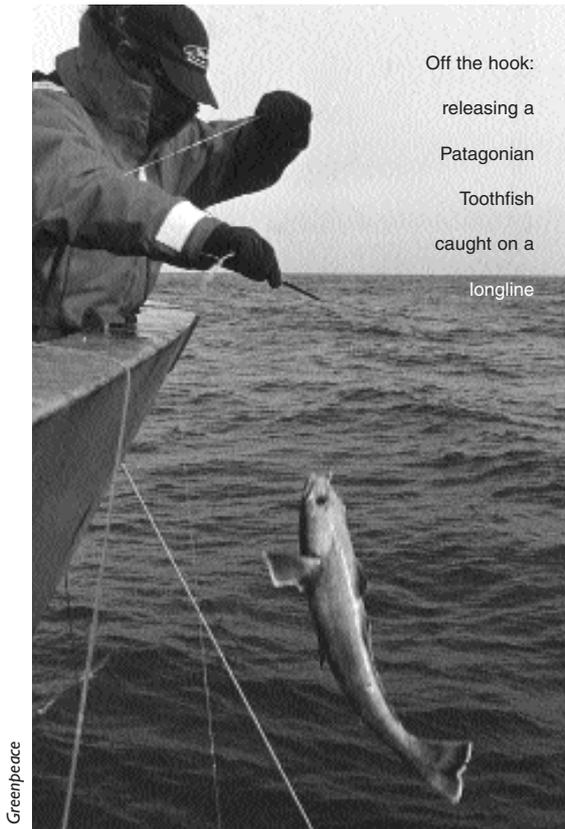


Figure 1. Map of the Southern Ocean showing principal Patagonian Toothfish fishing grounds.

Map created by: hiwire.com.au



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

STOCK STATUS

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

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

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

MANAGEMENT

Regulated Fishing

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

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

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

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

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

Members	
Argentina	Namibia
Australia	New Zealand
Belgium	Norway
Brazil	Poland
Chile	Russian Federation
European Community (EC)	South Africa
France	Spain
Germany	Sweden
India	UK
Italy	Ukraine
Japan	USA
Korea, Rep. of	Uruguay

Acceding States	
Bulgaria	Greece
Canada	Netherlands
Finland	Peru

Invited non-Contracting Parties ¹	
Belize	Portugal
China	Sao Tome & Principe
Denmark	Seychelles
Mauritius	Vanuatu
Panama	

Table 1. Status of CCAMLR participants.

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

Catch

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

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

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

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

IUU Fishing

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

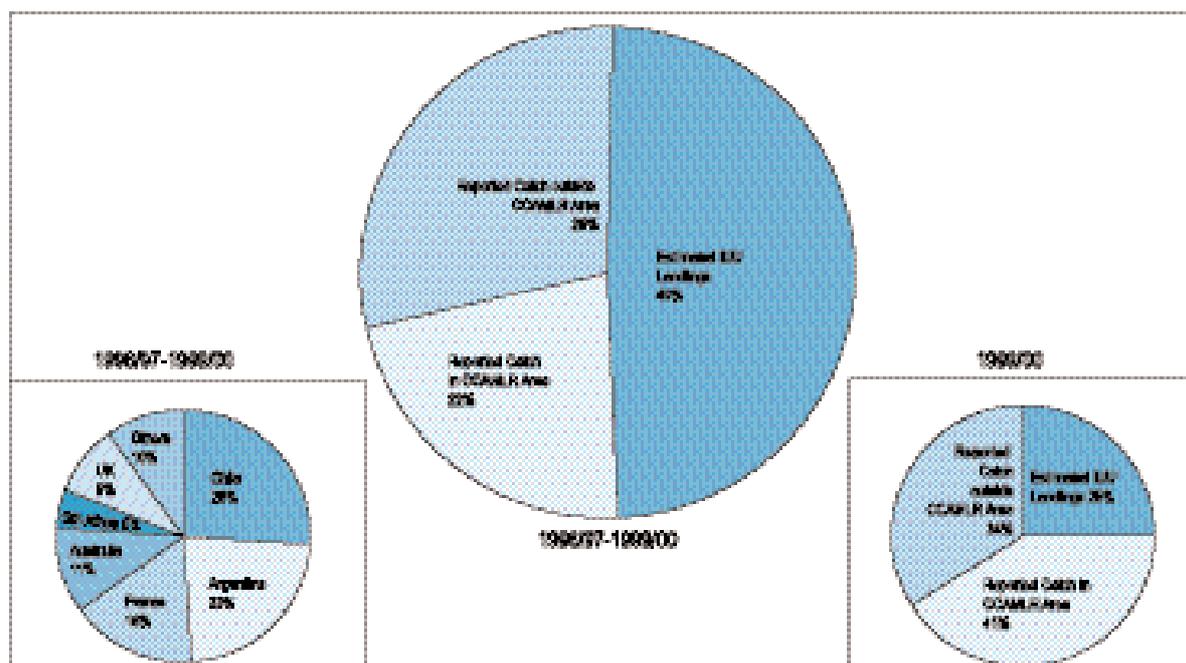


Figure 2. CCAMLR-reported and -estimated catch of Patagonian Toothfish, 1996/97 to 1999/00.

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

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

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

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

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

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

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

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

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

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

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

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

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

PARTICIPANTS IN IUU FISHING

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

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

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

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

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

BOX 2 IUU FISHING FOR PATAGONIAN TOOTHFISH IN THE CCAMLR AREA



Development of IUU fishing

Early 1990s

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

Mid-90s

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

New landing and transshipment ports emerged including Montevideo (Uruguay), Port Louis (Mauritius) and Walvis Bay (Namibia).

Response to IUU Fishing

1997

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

1998

IUU landings estimated by CCAMLR at 26 829 t out of a total estimated catch of 54 967 t. CCAMLR adopted Conservation Measures to require:

- inspection by Contracting Parties on all their vessels licensed to fish in the CCAMLR Area;
- compulsory identification markings on vessels and fishing gear;
- promotion of compliance by non-Contracting Parties; and,
- the mandated use of VMS in toothfish fisheries.

1999

IUU landings estimated by CCAMLR at 16 636 t out of a total estimated catch of 53 955 t. CCAMLR adopted Conservation Measures to require:

- co-operative mechanisms between Parties to improve compliance; and
- the introduction of a Catch Documentation Scheme (CDS) for *Dissostichus* spp.

2000

IUU landings estimated by CCAMLR at 8418 t out of a total estimated catch of 33 660 t. CCAMLR implemented the CDS. CCAMLR passed resolutions urging:

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

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

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

CCAMLR Initiatives to Eliminate IUU Fishing

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

Vessel Monitoring Systems (VMS)

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

CATCH DOCUMENTATION SCHEME (CDS)

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

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

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

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

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

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

Impact of the CDS

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

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

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

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

Deficiencies in the CDS

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

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

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

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

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

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

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

Blacklisting IUU vessels

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

Trade in Patagonian Toothfish

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

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

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

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

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

Imports

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

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

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

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

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

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

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

- = data not available

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

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

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

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

0 = zero, or 0.5 tonnes or less

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

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

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

Exports

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

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

Estimating World Trade

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

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

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

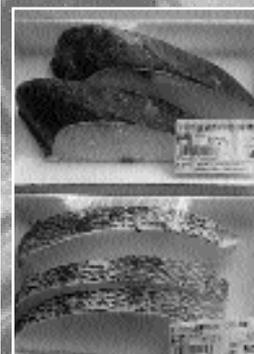
Boat fishing illegally for Patagonian Toothfish.
Greenpeace

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

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

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

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



Backdrop of Patagonian Toothfish
Greenpeace/Grace

EXPORTING COUNTRIES

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

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

0 = zero, or 0.5 tonnes or less

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

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

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

	1998					1999					2000				
	Frozen Fillets	Other	Fresh Fillets	Other	TOTAL	Frozen Fillets	Other	Fresh Fillets	Other	TOTAL	Frozen Fillets	Other	Fresh Fillets	Other	TOTAL
Imports															
Japan	21 217	21 612	-	-	42 829	19 324	13 942	-	-	33 266	14 192	17 351	-	-	31 543
USA ¹	986	8 677	55	4 366	14 084	3 324	8 315	16	3 130	14 785	7 056	7 032	0	1 176	15 264
Canada	-	-	-	-	-	524	801	-	-	1 325	328	1 618	0	71	2 017
EU	-	-	-	-	-	-	-	-	-	-	961	5 880	-	-	6 841
Exports (other than to Japan/US/Canada/EU)²															
Chile ³	874	3 137	12	19	4 042	163	782	2	4	951	-	-	-	-	-
Australia ⁴	-	-	-	-	-	134	831	-	-	965	310	1 255	0	0	1 565
Spain	-	-	-	-	-	-	-	-	-	-	51	24	-	-	75
France	-	-	-	-	-	-	-	-	-	-	-	1 207	-	-	1 207
Other EU	-	-	-	-	-	-	-	-	-	-	-	595	-	-	595
Total	23 077	33 426	67	4 385	60 955	23 469	24 671	18	3 134	51 292	22 898	34 962	0	1 247	59 107

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

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

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

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

Estimating IUU catch

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

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

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

INTERNATIONAL INITIATIVES TO COMBAT IUU FISHING

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

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

The Compliance and Fish Stocks Agreements

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

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

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

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

International Plan of Action (IPOA)

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

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

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

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

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

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

DISCUSSION AND CONCLUSION

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

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

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

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

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

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

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

RECOMMENDATIONS

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

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



Greenpeace/Grace

was undertaken by: Markus Burgener of TRAFFIC East/Southern Africa in 2000, with assistance from Dr Denzil Miller, Barry Watkins and Simon Purves of the South African Directorate of Marine and Coastal Management; Santiago Contreras (ECOCEANOS), consultant to TRAFFIC South America (translated by Lea Lewin); Hisako Kiyono, TRAFFIC East Asia; Nina Marshall (formerly of TRAFFIC Europe), Caroline Raymakers and other TRAFFIC Europe staff; Julie Thomson (formerly of TRAFFIC North America) and Nathalie Chalifour, TRAFFIC North America, with assistance from WWF Canada; and, Dean Bialek, temporary employee of TRAFFIC Oceania. Dean Bialek was also responsible for compiling and analysing the research input from the various offices. This article updates that research with more recently available catch and trade data and developments within CCAMLR and internationally. Mary Lack, Shellack Pty Ltd, consultant to TRAFFIC Oceania, prepared the article with further assistance and comments from TRAFFIC staff. The underlying research and preparation of this article were made possible by funding from the Marine Species Protection Program of Environment Australia (a programme of the Natural Heritage Trust), WWF US and the David and Lucile Packard Foundation.

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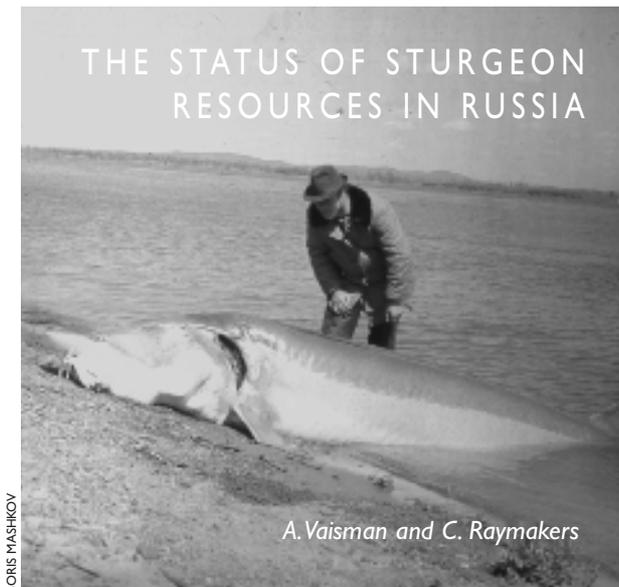
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THE STATUS OF STURGEON RESOURCES IN RUSSIA



BORIS MASHKOV

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In June 1997, 23 species of *Acipenseriformes* (sturgeons and paddlefish) were listed in CITES Appendix II, joining those already covered by the Convention, and thereby including all sturgeon species under CITES. Despite some evidence that such a listing has relieved pressure on stocks, illegal harvesting and trade of sturgeon for caviar continues unabated and populations continue to decline at a precipitous rate. This demand gives serious cause for concern and prompted a recommendation by the CITES Standing Committee in June 2001 for a halt to all sturgeon fishing in the Caspian Sea by Russia, Azerbaijan, Kazakhstan and Turkmenistan for the remainder of 2001 or face the prospect of a full suspension of their caviar trade. The first three of these range States have agreed to such a moratorium and have committed themselves to a package of measures to reduce overfishing of sturgeons. However it is unlikely that a ban on caviar exports would ease the pressure on sturgeon stocks since the majority of the sturgeon catch appears to be destined for domestic markets, and, moreover, these countries have already reduced their combined export quotas by more than 50% since 1998. Turkmenistan, which has not responded to the Standing Committee recommendation, faces a full suspension of its caviar exports unless it complies.

INTRODUCTION

Sturgeons are widespread in Russia, inhabiting the Caspian, Black and Azov Seas, rivers flowing into the Arctic Ocean, the Amur River basin and Lake Baikal. For many years, the sturgeon fishery in the former USSR accounted for approximately 90% of the world catch, with caviar - the unfertilized eggs, or roe, of the female sturgeon - the most valuable product of this fishery. Since the 1950s, however, the destruction of sturgeon migration routes by hydro-engineering construction, damage to spawning habitat from gravel mining, and

^ Kaluga *Huso dauricus*, Amur River.

pollution led to a dramatic decline in sturgeon populations in Eurasia, a situation more recently exacerbated by illegal and over-fishing driven by the demand for caviar. In an effort to update knowledge on the current biological status of sturgeons in Russia and trade trends, the authors conducted a review of the harvest and trade in Russia, outlets in Azerbaijan and Iran, and importing countries. Findings have been put in the context of recent progress made under the CITES Significant Trade Review carried out under the auspices of the CITES Animals Committee.

METHODS

This article is based on the findings of TRAFFIC Europe's work on sturgeons over the period 1997 to 2001, which include several separate studies as well as ongoing investigations carried out during the course of TRAFFIC Europe's efforts to improve implementation and enforcement of CITES-listed species and other species.

Sturgeon catch data were gathered for the Amur River, the Sea of Azov and the Caspian Sea basins, and selected rivers and reservoirs in Russia, particularly in Siberia. Information was obtained on sturgeon hatcheries (artificial breeding centres), including broodstock and the number of fry released.

The trade in caviar and sturgeon meat in markets in Astrakhan (Volga River-north Caspian Sea) and Moscow, and in duty-free shops in Iran and importing countries, was also examined.

LEGAL STATUS OF STURGEON FISHERIES IN THE RUSSIAN FEDERATION

The legislation governing sturgeon fisheries in Russia is unclear. The targeting of sturgeons by commercial fisheries is banned by government decree. By-catch - or accidental catch - of sturgeons by fisheries that target other species is permitted in inland, coastal and offshore waters provided a special permit has been issued; however limits are set on fishing gear, seasons, and grounds, as well as on fish sizes per sturgeon species. Stationary sweep-nets - large, stationary structures made of net fabric with wings and traps - with which the highest by-catch of sturgeons is recorded, are the main fishing gear used in the Lower Volga River and Sea of Azov basins. These nets are designed for open sea fishing but owing to the high by-catch of sturgeons their use has been prohibited in the Caspian Sea. Any sturgeons caught by such devices in the Russian part of the Caspian Sea basin are therefore considered illegal. Rather, very selective gear, such as beach seines, are used to fish here and in the Lower Volga River and the delta.

Part of the by-catch is destined for scientific studies and the remainder can be used for commercial purposes. Scientific and commercial quotas - which make up the Total Allowable Catch (TAC) - are set annually by the federal government to limit the by-catch and define its

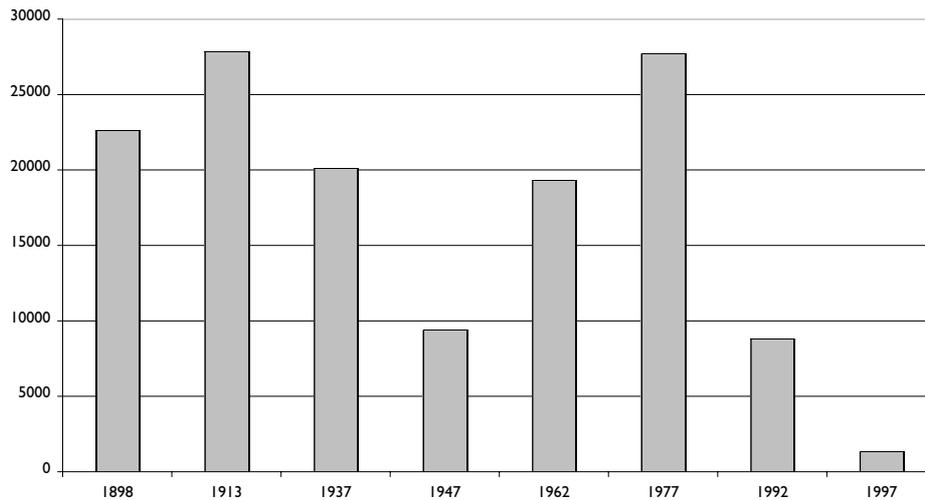


Figure 2. Former Soviet and Russian Caspian sturgeon catches (t) over the past 100 years.
Sources: Khodorevskaya et al., 1992, 1994, 1995, 1997a and b, 1999, 2000a and b; Korobochkina, 1964; Pavlov, 1989; Pirogovsky, 1981; Vlasenko et al., 1998.

use. All available data, including the number of juvenile sturgeons released annually by hatcheries in the Sea of Azov and Caspian Sea basins, are used by those scientific institutes responsible for calculating the TAC which they submit to the State Committee of Fisheries for agreement. These institutes include the Caspian Scientific Research Fisheries Institute (CaspNIRKh) and the Russian Federal Research Fisheries Institute of Fisheries and Oceanography (VNIRO). Once agreement has been reached, the proposed TAC for each sturgeon species is passed to the federal government for adoption.

CONSERVATION STATUS OF STURGEON SPECIES IN RUSSIA

All Acipenseriformes species occurring in Russia are listed in CITES Appendix II. The listing of the Pont subspecies of Ship Sturgeon *Acipenser nudiiventris ponticus* and Beluga *Huso huso* in the Red Data Book of the Russian Federation was a response to the concerns raised by the catch decline and because neither has been recorded in the Sea of Azov since the early 1980s. In 1998, the Ob' population of Siberian Sturgeon *Acipenser baerii* was also listed.

THE STATUS OF STURGEON POPULATIONS IN RUSSIA

In the absence of up-to-date scientific data, the assessment of sturgeon populations in the Russian Federation and neighbouring CIS (Commonwealth of Independent States) since the late 1980s has been based on available data for catch and landings.

CASPIAN SEA BASIN

Historically, the Caspian Sea basin has been and remains the source of the greatest volume of sturgeons in the world. During the first half of the last century, however, the harvest started to decline and the reduction in recorded annual catches has become especially serious during the last decade, with a reported drop from 8500 t in 1992 to about 1200 t in 1997 (see Figures 2 and 3).

Surveys on the number of sexually mature sturgeons migrating annually in the Lower Volga River undertaken in 1978, 1994 (Khodorevskaya et al., 2000b) and 1997 (CaspNIRKh, unpublished report) do not show the same level of decline of mature individuals caught: 30-60% instead of 80-85% according to catch records. The reports also suggest that the population of sexually mature Stellate Sturgeon *Acipenser stellatus* has suffered the sharpest decline (80-90%), followed by Russian Sturgeon *Acipenser gueldenstaedtii* (65-85%) and Beluga *Huso huso* (25-55%).

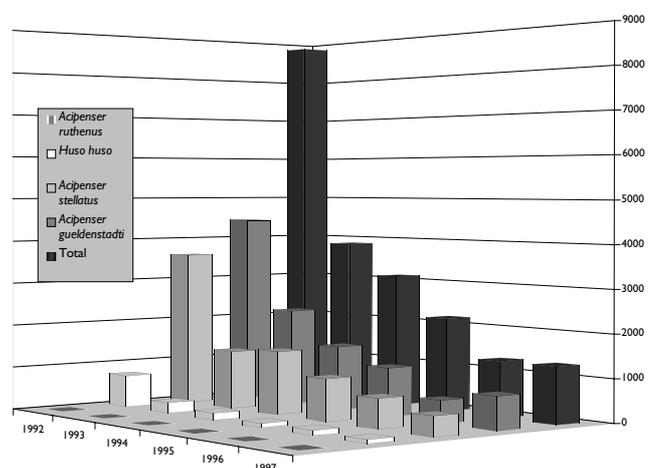


Figure 3. Sturgeon catch (t) in the Caspian Sea basin in the 1990s. Source: Khodorevskaya et al., 2000a and b; Zhuravleva, 2000.

Years	Catch			Number of Stationary Sweep-Nets Allowed			
	Quotas	Russia	Ukraine	Total	Russia	Ukraine	Total
1937	1500	-	-	7270	-	-	-
1947	1500	-	-	1480	-	-	-
1952	1500	-	-	3260	-	-	-
1962	1500	-	-	1080	-	-	-
1985	-	-	-	-	1079	37	1116
1986	-	-	-	-	753	38	791
1987	-	-	-	-	369	32	401
1988	-	-	-	-	48	1	49
1989	1500	448	76	524	36	3	39
1990	1500	915	215	1130	114	12	126
1991	1500	933	137	1070	139	16	155
1992	1500	892	106	998	319	70	389
1993	1500	914	296	1210	370	45	415
1994	1250	1003	233	1236	439	45	484
1995	1250	662	128	790	483	30	513
1996	1250	438	156	594	512	30	542
1997	1250	443	201	644	770	70	840
1998	1000	150	50	200	795	70	865

Table 1. Sturgeon annual catch quotas (t), catch figures and number of stationary sweep-nets in the Sea of Azov.

- = data not recorded Sources: Anon. 1964 and Anon., 1999a.

Discrepancies between scientific and fisheries data recorded in the 1970s and 1990s are probably the result of an underestimation of the commercial catch owing to the high proportion of unreported illegal sturgeon fishing: certain fisheries inspectors and government scientists estimate that sturgeon poaching in the Lower Volga River and the Russian waters of the Caspian Sea exceeds the 'legal' catch by 80-100%, while other reliable officials claim it exceeds the legal catch by as much as 600-1000% (Dr Y.S. Chuikov, State Committee for Nature Preservation of Astrakhan Region, pers. comm. to TRAFFIC Europe, February 1998; Dr V. Ivanov, Director of CaspNIRKh, pers. comm. to the IUCN/SSC Sturgeon Specialist Group, February 2001).



Beach seine fishing gear, Volga River, north of Astrakhan, Caspian Sea.

In addition to the clear population decline and a significantly lower proportion of sexually mature fish, sturgeon stocks in the Caspian Sea face an obvious reduction in the share of female fish. The natural sex-ratio is close to 1:1, but, today, female sturgeons are estimated to make up only 15-17% of the sturgeon populations in Russia (Zhuravleva, 2000).

SEA OF AZOV BASIN

The first major threat to affect sturgeons in the Sea of Azov was the construction of dams on the Don and Kuban rivers in the mid-20th century. Nowadays overexploitation has the most damaging impact. Despite the sharp decline (about 85%) in the reported sturgeon landings in the Sea of Azov from the 1930s to the early 1990s (from 7270 t in 1937 to 1102 t average annual catch in the early 1990s) (Table 1), the annual quotas set for sturgeon caught as by-catch in the Sea of Azov remained unchanged for more than 50 years. Russia and Ukraine permit sturgeon by-catch from a limited number of legal nets set for other fish species (Table 1). Figures clearly indicate that the increasing number of nets used in commercial sturgeon by-catch in the 1990s has not been accompanied by an increase in the catch. On the contrary, it has decreased and, according to data reported by the Azov Scientific Research Fisheries Institute (AzNIRKh), the catch per unit effort (CPUE) dropped by almost ten times - from 2558 kg to 231 kg/net in 1994 and 1998, respectively.

From 1993 to 1998, the commercial sturgeon catch in certain areas of the Sea of Azov has reduced by up to 40%, while in other places, e.g. near Port-Katon, a small Russian fishing harbour, the catch dropped by 98% (Anon., 2000a). This could be attributable to the fact that sturgeon populations do not follow a fixed migration pattern as has been observed in other river basins. For example, an alarmingly low 2000 spring migration was observed in the Lower Volga River while a surprisingly high number of adults of all species was recorded in the Lower Ural River, a few hundred kilometres east of the Volga River delta in the northern Caspian Sea (A. Petrossian, European caviar importer, pers. comm. to TRAFFIC Europe, June 2000).

According to AzNIRKh, the number of poachers' *akhans* (large stationary gillnets) in the Sea of Azov reached 28 000 in 1998. The number of illegal fishing nets observed by helicopter surveys is estimated to be close to 11 times the number of nets set by licensed fishermen (M.S. Chebanov, Deputy Director, Krasnodar Research Institute of Fisheries (Sea of Azov), pers. comm. to TRAFFIC Europe, September 1999). Each net measures 50-75 m long, suggesting a total length of 1400-2100 km of illegal nets. Based on the official CPUE of 240 to 380 kg/net/year in 1998, the total illegal harvest can be calculated at 6700-10 640 t/year. These figures are 18.8-29.4 times higher than the official 1998 catch and were taken into consideration by AzNIRKh to calculate the 1999 TAC. However, they concern only illegal nets and do not take account of other prohibited gear used by poachers, particularly bottom lines with hooks.

Legal fishermen are also involved in illegal activities. For example, State fishing enterprises bring less than 15-16% of their catch to legal landing sites, and reportedly sell the rest to illegal processing and trade channels (A.D. Vlasenko, CaspNIRKh Deputy Director, pers. comm., 1999).

	Siberian Sturgeon <i>Acipenser baerii</i>				Sterlet <i>Acipenser ruthenus</i>			
	Ob' River	Yenisey River	Lena River	Total	Russian water reservoirs	Yenisey	Northern River	Total Dvina River
1985	73.0	23.4	8.8	105.2	-	-	-	-
1986	74.0	28.1	11.2	113.3	-	-	-	-
1987	48.0	30.4	8.7	87.1	-	-	-	-
1988	63.0	20.7	15.2	98.9	40.5	39.2	-	-
1989	48.0	17.0	8.2	73.2	57.8	28.9	-	-
1990	57.0	40.6	9.5	107.1	30.4	63.3	7.7	101.4
1991	26.0	36.9	14.9	77.8	31.4	57.2	8.0	96.6
1992	15.9	31.1	4.9	51.9	29.7	56.0	9.5	95.2
1993	17.0	42.4	5.4	64.8	12.3	64.4	7.0	83.7
1994	11.5	44.1	17.2	72.8	13.1	61.9	5.0	80
1995	n/a	n/a	12.9	-	24.1	58.2	8.0	90.3
1996	6.7	33.6	21.6	61.9	16.8	42.0	4.8	63.6
1997	11.0	-	9.0	-	-	25.9	8.9	-

Table 2. Siberian Sturgeon and Sterlet catch (t) in Siberian rivers and other Russian inland waters, 1985 to 1997. - = data not recorded. Source: Ruban, 1999.

SIBERIA AND OTHER INLAND WATERS

Catch data for sturgeons caught in Siberian rivers are only available for the most biologically important populations, e.g. in the Ob' and Irtysh river basin. No data are recorded for the rivers of Yakutia (Republic of Sakha): the Khatanga, the Anabar, the Olenek, the Lena, the Yana, the Indigirka, and the Kolyma (see Figure 1).

To address the rapid decline of sturgeon populations in the Yenisey River caused mainly by damming and pollution, catches of Siberian Sturgeons *Acipenser baerii* and Sterlets *Acipenser ruthenus* have been banned since 1998. In 2000, a low catch quota was allocated in order to respond to scientific monitoring and local subsistence: 8 t of Siberian Sturgeons and 5 t of Sterlets (based on the TAC proposed by VNIRO to the State Committee of Fisheries for 2000).

Siberian Sturgeon *Acipenser baerii*

The Ob' and Irtysh river basin used to be inhabited by the largest population of Siberian Sturgeons, with an annual catch of as much as 1410 t in the 1930s. In 1997 the official harvest amounted to just 11 t (Table 2). As with other sturgeon fisheries, poaching of Siberian Sturgeons exceeds by far the legal catch: in 1994, the illegal catch in the Ob' River was estimated to be 300 t, but the legal catch was only 11 t (Ruban, 1996).

Sterlet *Acipenser ruthenus*

As the smallest of the sturgeon species, female Sterlets bear relatively small amounts of caviar which has never been as prized as caviar from other species. It is primarily harvested for the domestic consumption of its meat.

Water bodies	Beluga <i>H. huso</i>	Russian Sturgeon <i>A. gueldenstaedtii</i>	Stellate Sturgeon <i>A. stellatus</i>	Sterlet <i>A. ruthenus</i>	Siberian Sturgeon <i>A. baerii</i>	Amur Sturgeon <i>A. schrencki</i>	Kaluga <i>Huso dauricus</i>
SEAS							
Caspian ¹	45 ⁴	259	250	1	-	=	=
Azov ²	-	60 ⁵	55 ⁵	-	-	-	-
Subtotal	45	319	305	1	-	-	-
RIVERS							
Ob'-Irtysh basin	-	-	-	10 ³	-	-	-
Yenisey	-	-	-	5 ^{2; 4}	8 ^{2; 4}	-	-
Amur	-	-	-	-	-	15 ⁶	65 ⁷
Subtotal	-	-	-	15	8	15	65
WATER RESERVOIRS							
Cheboksarkoye	-	-	-	2	-	-	-
Kuybyshev	-	-	-	8	-	-	-
Subtotal	-	-	-	10	-	-	-
TOTAL	45	319	305	26	8	15	65

Table 3. Russia's Total Allowable Catch (TAC) (t) in 2000 of sturgeons for scientific purposes and for broodstock to supply breeders for hatcheries, by species and water bodies.

Source: State Environment Committee, Directorate for State Ecological Expertise Board

- = not applicable

¹ Targeted and supplementary catch of sturgeons are prohibited; ² not allowing catch for commercial purposes; ³ Excluding Tomsk Oblast where sturgeon catch is prohibited; ⁴ Catch restricted to scientific purposes; ⁵ Including 100 t (50 t for each species) destined for hatcheries as well as 10 t and 5 t of Russian and Stellate Sturgeons, respectively, for scientific purposes; ⁶ Excluding catch in the estuary where Amur Sturgeon catch is prohibited; including 15 t of the river population for scientific purposes; ⁷ Controlled catch and scientific purposes; including 50 t from estuary and 15 t from the river population.

Sterlet catch in the main Siberian rivers and other inland waters in the Russian Federation decreased by more than 35% from 1990 (101.4 t) to 1996 (63.6 t), and did not exceed 15 t per year in the Ob' River during the same period. The Sterlet annual catch in the Ob'-Irtysh basin may have to be limited to 10 t (based on reports used to calculate the TAC proposed by VNIRO for 2001).

AMUR RIVER BASIN

Amur Sturgeon *Acipenser schrencki* and Kaluga *Huso dauricus*

The two species of sturgeon that occur in the Amur River - Amur Sturgeon *Acipenser schrencki* and Kaluga *Huso dauricus* - are endemic to the basin. The biologically productive habitat of the river and its large estuary are favourable to the development of large sturgeon populations. This is reflected in the level of annual catch recorded for the Amur River species by the Soviet Union at the end of the 19th century: 1188 t in 1891 (which is higher than the level currently reported from the Caspian Sea basin), compared with 1000 t in the late 1990s (Svirskii, 1971; Krykhtin and Svirskii, 1997).

Separate data on catch volumes of Amur Sturgeon and Kaluga in the 1990s are only available for 1996, when the Amur Sturgeon represented less than 9% of the catch, and Kaluga 91% (Khabarovsk branch of TINRO (Pacific Regional Scientific Institute for Fishery and Oceanography), 1999). The total Amur River catch decreased by 31% in seven years, from 128 t to 89 t in 1991 and 1996, respectively. Scientific and local subsistence catch quotas proposed by the Khabarovsk branch of TINRO for both the Amur Sturgeon and Kaluga in 1999 and 2000 were 15 t and 65 t, respectively.

A targeted sturgeon fishery has been banned on the Russian bank of the Amur River since the 1930s. Under the current regulation, only a "controlled catch", limited to scientific and subsistence purposes, is permitted. Despite this, in 1993 and 1995, Kaluga was found on sale in fish markets and shops in Komsomolsk-on-Amur and Nikolayevsk-on-Amur in Khabarovsk (TRAFFIC Europe field observations, *in litt.* 1993 and 1995).

CATCH QUOTAS

The State Ecological Expertise Board under the Ministry of Natural Resources has analysed the bases for the TAC proposed by scientific institutes for 2000, and approved the quotas (Table 3). A total of 783 t of sturgeons was caught in the wild in the Russian Federation in 2000 (Table 3). Numbers in superscripts in the table refer to experts' annotations that clearly restrict the purpose and location of the catch, mostly excluding commercial use, but the Government of Russia omitted to include these notes in the legal text adopted regarding catch quotas for 2000. Thereby the catch and its use were left unrestricted in that year. Such poor procedure has been observed regularly in the past.



Scientists at work in a sturgeon hatchery, Krisansky, Volga River, south-east of Astrakhan. Inset: six-month old Beluga at the hatchery.

STURGEON RESTOCKING PROGRAMME

Ten sturgeon hatcheries were built in the 1950s and 1960s in the Volga River delta by the authorities of the former Soviet Union to maintain sturgeon populations and restock juveniles in the Caspian Sea basin to compensate for the loss of spawning grounds caused by the construction of the Volgograd dam. A smaller but similar programme was initiated in the Sea of Azov (e.g. Kuban River). Priority was given to the rehabilitation of the three sturgeon species most targeted by commercial fisheries. Of the 56.4 million fry released annually in the Caspian Sea in the late 1970s, 27% consisted of Beluga, 44% Russian Sturgeon and 29% Stellate Sturgeon (Anon., 1999b). In the Sea of Azov during the same period, 39 million juveniles were released, comprising 7%, 43% and 49% of the aforementioned species, respectively.

In 1995, only a few of these hatcheries were still operating (Dr Ivanov, CaspNIRKh, pers. comm. to TRAFFIC Europe, 1995). Besides financial and logistical problems encountered by the hatcheries since the early 1990s, the restocking programme has been affected by the depletion of wild populations for broodstock. However, official annual reports on the Russian restocking programme do not reflect the decreasing productivity of the facilities and still report the release of between 50 and 55 million sturgeon fry by Russian hatcheries located in the Caspian Sea basin (Anon., 2000b) and between 27 and 32 million in the Sea of Azov (Anon., 1999a).



A device to release sturgeons, Krisansky, Volga River, south-east of Astrakhan. The juvenile fish are released from the hatchery into a chute (centre, right) which feeds into the Volga River.

TRADE IN STURGEON CAVIAR AND OTHER STURGEON PRODUCTS

A decree issued by the Mayor of Moscow on 13 June 1993 prohibits the trade in caviar by private citizens, e.g. at open air market stalls in the city. By law, caviar for retail sale throughout the Russian Federation must be accompanied by a certificate of origin and a certificate of quality.

Trade in caviar and sturgeon meat in Moscow

Despite the 1993 prohibition, caviar and sturgeon meat (frozen and smoked) was illegally displayed at numerous food outlets in Moscow in 1996, 1997 and 1999. Local traders estimated that about 10 t of sturgeons from legal and illegal sources were brought to Moscow every day (Anon., 1998). Illegally acquired or illegally processed produce could be recognized from the following:

- 1. Use of forged documents:** At 80% of the sites surveyed the certificates for caviar sold in shops had been obviously forged.
- 2. Suspect packaging:** Lids of illegal caviar tins and jars tended to imitate packaging of products from established producers (such as “*Russkaya Ikra*” (Russian Caviar) company); these were distinguished from the genuine article by the incorrect spelling or poor grammar. Others bore no information on the processing factory, or they mentioned the “*Russian Ministry of Fishing Industry*” a body which does not exist.
- 3. Condition of the product:** Some outlets displayed caviar in bulk, which was sold by weight and in three-litre glass jars commonly used for home-made preserved food. This caviar was frequently sold with the membrane of the ovary, which contravenes current health requirements and reveals that the caviar was not produced under the supervision of authorized caviar processors and was therefore most probably from illegal sources.
- 4. Low prices:** The most obvious distinction between legal and illegal caviar was the price. Prices for illegal caviar were approximately twice as low as those for legal caviar - prices that could not possibly cover the costs of running an official fishery operation (maintenance of the gear, fuel, etc.) and in processing the products in compliance with all the sanitary requirements. In 1999, caviar sold illegally at Moscow markets ranged from between USD33 and 57.5/kg; the highest price seen for caviar sold in legal outlets, such as Moscow supermarkets, was USD177/kg. The same product on sale at Moscow international airport duty-free shops was available for USD858/kg.

Location and Date	Average USD/Kg
<i>Caviar House</i> , Frankfurt Airport (December 2000)	3431
<i>Caviar House</i> , London Heathrow (May 2001)	3132
<i>Harrods</i> , London Heathrow (May 2001)	2540
<i>Caviar House</i> (caviar from Iran)	
Hamburg Airport (July 1999)	2617
Eurostar (train service linking UK and France)	
train station, duty-free shop (November 2000)	1874
Eurostar, train station, duty-free shop (June 2000)	1547
Tehran Airport (May 2001)	1190
<i>Caviar House</i> (caviar from Russia) (Germany)	
Hamburg Airport (July 1999)	1079
Sheremetievo Airport, Moscow (February 2001)	668
Sheremetievo Airport, Moscow (May 2001)	602
Sheremetievo Airport, Moscow (August 1999)	574
Novotel, Sheremetievo Airport, Moscow (October 2000)	449
Moscow fish market (May 1997)	303
Astrakhan fish shop (October 2000)	132
Hotel Lotus shop, Astrakhan (August 1999)	107
Moscow fish market (March 1999)	120
Baku (Azerbaijan) local markets (June 1997)	39
Astrakhan fish market (March-June and August 1999)	24

Table 4. Average retail prices of beluga, ossetra and sevruga caviar. Source: TRAFFIC field surveys, 1997-2001.

Retail prices for caviar and sturgeon meat in range States and importing countries

Responses to a questionnaire and interviews with European, Japanese and US caviar importers indicate that the CITES-listing of all Acipenseriformes (in effect since 1 April 1998) has improved international trade controls (Anon., 2000c) and probably reduced the volume of smuggled caviar. However, it seems that most Caspian range States (as well as the Danube River/Sea of Azov/Black Sea range States) ignore the volume of sturgeon products consumed inside their borders. The Russian Federation, for instance, specifically recognized that: “*The level of domestic consumption of sturgeon products in the Russian Federation is unknown, but is said to be the main outlet of illegal sturgeon fisheries...*” (Anon., 2001a). The knowledge of domestic trade is essential to ensure that the level of export quotas has no detrimental effect on wild sturgeon populations.

Caviar

Average retail prices of different types of caviar, including beluga, ossetra and sevruga, gathered in Azerbaijan (Baku), the Russian Federation (Moscow and Astrakhan) and duty free shops in importing countries, from 1997 to 2001, are summarized in Table 4.

The most valuable caviar is that derived from the Beluga - usually twice the value of ossetra (most commonly from the Russian Sturgeon or Persian



<
Cans of Russian Sturgeon *Acipenser gueldenstaedtii* meat on sale in Astrakhan, September 2001.

Photographs: Caroline Raymakers/ TRAFFIC



<
Smoked sturgeon meat on display at the Seafood Exposition in Brussels, 1998.



Sturgeon *Acipenser persicus*) and three times the value of sevruga (from the Stellate Sturgeon) in importing countries. However, the differences in value observed were not as significant at Moscow airport, where beluga caviar was 28% and 50% more expensive than ossetra and sevruga, respectively. Data collected also indicate that caviar retail prices:

- have decreased by 60% at Russian markets (USD303 to 120/kg in 1997 and 1999, respectively).
- have increased by 14% in duty-free shops at Moscow international airport from 1999 to 2001;
- have increased by 44% in duty-free shops in importing countries (USD1970 to 2235/kg on average in 1999 and 2001, respectively).
- were five times lower at the fish market than in shops in Astrakhan in August 1999.
- were three (USD668/kg) to 60 times (USD39/kg, Baku fish market, June 1997) lower in range States than the average price observed in duty-free shops of importing countries (USD2315/kg).

Meat

The average retail prices for meat in Azerbaijan and in the Russian Federation in 1997, 1999 and 2000 were recorded: the most expensive meat was smoked-dried sturgeon (“balyk”), which sold at USD9.8-11.8/kg. The value of frozen sturgeon meat ranged from between USD4.8-7/kg, while the price of the whole fish (frozen) ranged from between USD2-3.5/kg. The prices compiled suggest that:

- paradoxically, since its caviar is the most prized, Beluga meat was the cheapest (USD7.3/kg), regardless of the location and the time of the sale - about 66% of the average price of Russian Sturgeon meat (USD10.5/kg), which was the most expensive sturgeon meat;
- retail prices for sturgeon meat in Moscow decreased by half between 1999 and 1997 (USD8.37 and 16.75/kg, respectively);
- as with caviar, prices recorded in Moscow were higher (by 34% in 1999) than in Astrakhan (USD5.53/kg);

- sturgeon meat sold on fish markets (USD5.53/kg) was cheaper than in shops (USD9.27/kg) or department stores (USD13.88/kg), e.g. as much as 60% lower in Astrakhan in 1999; and
- as for caviar, the cheapest prices for sturgeon meat were recorded in fish markets in Baku (USD1.83/kg in June 1997).

Legal production and exports of caviar from Russia

From the estimated total volume of sturgeon roe that was extracted from the 1998 sturgeon catch (7.5% in weight of 101 220 kg) (Table 5), 20 to 25% was used for scientific purposes and in sturgeon hatcheries for artificial reproduction and this figure - 78 450 kg - must be deducted to calculate the volume of caviar available for commercial trade. Russian customs data for caviar exports in 1998 account for 78% of the estimated national caviar production. Caviar export quotas set by the Russian Federation for 1998 (83 000 t) (after deducting the estimated share of Azerbaijan and Kazakhstan, 12 and 43% respectively) exceeded by 6% the estimated volume available for commercial trade. Obviously the large quantities of caviar openly, and most often illegally, sold in Moscow and other Russian cities, were not taken into account when the export quotas were calculated.

	1995	1996	1997	1998
Legal caviar production	203 280	127 617	121 786	101 220
Caviar available for trade				
(75% of total legal production)	157 540	98 900	94 385	78 450
Export quota (CITES) ¹	n/a	n/a	n/a	183 300
Exports, CITES annual reports	n/a	n/a	n/a	47 327
Exports, Customs records	106 758	91 346	92 292.9	61 242

Table 5. Legal caviar production and exports (kg) from Russia, 1995 to 1998.

Sources: State Committee for Fisheries, CITES Notification N° 1998/61 and 1998 annual report, and Russian Customs.

¹Including the share of Azerbaijan and Kazakhstan



< and far right
Smoked Stellate Sturgeon *A. stellatus* (left) and Sterlet *A. ruthenus* (photo, far right), Astrakhan, 1999. Sterlet, the smallest of the sturgeon species, bears relatively small amounts of caviar and is mainly harvested for the domestic consumption of its meat.



<<
Sold at duty-free shop, Moscow airport, 1999. Said to contain "oscietra" caviar, but the pale yellow roe was found on examination to be carp roe.
< Traditionally prepared Russian sevruga caviar (from Stellate Sturgeon *Acipenser stellatus*).



The same observation can be made for 2000, when the catch quota was set at 783 t (Table 3), from which an estimated volume of 58 725 kg (7.5%) of caviar can be produced, with 45 500 kg (average 75%) available for commercial trade, while the total caviar export quota submitted by the Russian Federation to the CITES Parties for 2000 was about 85 000 kg - 46% higher than the caviar legally available. However, this can be attributed more to the lack of information on quantities consumed locally and the absence of control of domestic trade than to the level of export quotas per se.

Illegal re-export of caviar from the Russian Federation

The listing of sturgeon species in CITES Appendix II, as well as the wide publicity given to the predicament of sturgeon populations has apparently helped to decrease significantly the illegal trade that flourished during 1989-1997. The most important smuggling routes remaining seem to be supported by well-organized re-exports such as from Kalmykia and Dagestan to Turkey via Azerbaijan, and from Kazakhstan to the United Arab Emirates (UAE). Re-exporting countries have apparently developed operating schemes to legalize imported products of dubious origin. These schemes are based on the fact that imported caviar is cleared as caviar purchased from Russian "shuttle" traders. All necessary documentation required for clearance is organized and the caviar is subsequently packed into Turkish-made cans and exported to EU countries and the USA as "Turkish caviar" (Raymakers, 1999). This practice is still taking place. Other channels set up to launder illegally acquired caviar include the UAE (De Meulenaer and Raymakers, 1996).

CONCLUSIONS

Official catch records of all sturgeon species in Russian waters suggest an alarming depletion of wild populations although those in the Caspian Sea are probably still the most abundant of the world's sturgeon stocks.

a. **Availability of scientific data:** Owing to the lack of available scientific data, this report is based on fisheries records. Representatives of the Russian Federation at the Caspian Bioresources Commission, together with representatives from other nations, claim that scientific surveys have been and continue to be carried out, that technical reports are prepared annually for the establishment of concerted catch and export quotas for sturgeons. However, almost no scientific articles relating to such data are known to have been published internationally during the past decade.

b. **Poaching and total catch:** Russian officials agree that the level of poaching in the Sea of Azov and Caspian Sea is equivalent to 11 and 6-10 times the legal catch, respectively. Taking into account the official estimated volume of poaching and other illegal practices surrounding the Russian sturgeon fishing industry, the total Russian sturgeon catch in the Caspian Sea for the 1970s and 1999 would be 22 000 t and 11 000 t, respectively (FAO, 2000 and 2001), or a reduction of 50% of the catch instead of 1700 to 2000% as inferred by the official reports. Such speculation on the status of sturgeon stocks will continue as long as scientific research does not provide up-to-date and reliable information.

c. **Sturgeon catch quotas:** Since the 1930s, prohibitions of commercial sturgeon catch were successively imposed in Soviet and Russian sea and river basins. However, for all sturgeon species, limited volumes can be landed for non-commercial purposes, including sturgeon by-catch. Also, part of the catch can be traded for commercial purposes. Abusive use of "scientific quotas" is highly suspected and the advice given by scientific institutions is usually not taken into consideration by the Federal authorities when final quotas are adopted, which leads to the overstatement of catch quotas destined for commercial use. The underlying reason is the "free for all" spirit in which neighbouring States are competing for the same resource. This illustrates the limited potential for progress as long as concerted efforts have not been agreed upon by nations that share the same basin.

d. **Sturgeon juvenile release:** Since the early 1990s, information relating to the current capacity of sturgeon hatcheries in Russia and the effectiveness of juvenile release programmes has been contradictory. Officially reported figures have not been substantiated by scientific research, neither has the survival rate and migration pattern of the sturgeon fry released.

e. **Domestic trade:** The average retail price of imported caviar has increased by 44% from 1999 to 2001. This trend could indicate, as confirmed by consultation with caviar importers, that the sharp decrease in the value of caviar observed in the early and mid-1990s caused by the wide availability of illegal caviar has been curbed, possibly through improved international trade controls. On the other hand, the devaluation of sturgeon products available on Russian domestic markets - by 60% for caviar and 50% for meat from 1997 to 1999 - could suggest an increased supply composed of sturgeon products of dubious origin that were formerly destined for the illegal international trade.

f. **Export quotas:** In order to establish export quotas that are at sustainable levels, quotas for domestic consumption must be taken into consideration; comparison of catch data, catch quotas and export quotas shows that domestic consumption is not taken into account when establishing the proportion of caviar that can be exported.

RECOMMENDATIONS

To relieve the pressure of fishing on sturgeon populations in the Sea of Azov, Black and Caspian Seas, as well as the Amur and Danube River basins, where sturgeon populations are facing the same threats, it is imperative that:

I. efficient measures are taken to ensure that domestic trade, exports and re-exports of sturgeon products from wild and captive bred sources are controllable; and,

II. procedures are taken to provide reliable, sound and justifiable bases for the establishment of export quotas for sturgeon products that address, in particular, the status of sturgeon populations throughout their range and the unknown but apparently fast increasing level of domestic demand;

III. the bases upon which calculations to establish export quotas that are at sustainable levels are made are verified and challenged, particularly in relation to the level of domestic trade around the Caspian Sea as well as in the Amur and Danube River.

Range States, and countries and international institutions involved in the trade in sturgeon products should contribute to the following initiatives:

1. Universal labelling system

In support of national legislation that strongly limits domestic trade in sturgeon products, range States should:

a) implement and enforce the universal labelling system for caviar identification (CITES Resolution Conf. 11.13) for all sturgeon products (including meat) destined for domestic consumption;

b) register and allocate a code to all exporters/processors of sturgeon products, a list of which should be provided to all CITES Parties via the CITES Secretariat;

c) compile a list of the above-mentioned codes which should be submitted to the CITES Secretariat and made available to re-exporting countries.



Smoke-dried Russian Sturgeon *Acipenser gueldenstaedtii* (balyk) on sale at Astrakhan fish market, September 2001.

Photographs: Caroline Raymakers/TRAFFIC

Wild sturgeon on display at the Seafood Exposition, Brussels, 1998.



Caviar importing countries should also implement the universal labelling system for repacked caviar and processed meat. By adopting a revised resolution at the 12th meeting of the Conference of the Parties and agreeing to extend labelling to all repacked caviar, including consignments destined for the domestic market, all Parties will show their commitment to improved control.

2. Sturgeon stock assessment

There is an urgent need for range States:

a) to design and implement, in collaboration with international experts, a joint project for research on sturgeon population assessments and monitoring, based on standardized up-to-date methodologies;

b) to link fishing companies and research institutes (e.g. Casparya and CaspNIRKh in Astrakhan) in order:

- to monitor the catch per unit effort (CPUE) (number of “sweep nets” or beach seines, number of fishermen, time of operation per day, number of days operated per month or per season, etc.). Such parameters should be used to estimate the pressure from both legal and illegal fishing as an indicator of the status of the stock; and

- for scientists to be systematically present at a certain number of fishing stations/landing sites to record data on specimens caught (sex, length, body weight, caviar, meat, cartilage, swim bladder and other parts), and to sample the pectoral fin bone to study the age, etc.

3. Forensic support

Methods to enable label and specimens to be matched must be made available, therefore:

a) range States should collaborate in the constitution of a common set of reference samples of sturgeon tissue destined for the identification of sturgeon products, i.e. based on DNA tests. This initiative could benefit from the expertise of the IUCN/SSC Sturgeon Specialist Group;

b) all necessary genetic information on broodstock should be required from commercial sturgeon farms by the national CITES Management Authority for the verification of the parental match and to control products of captive bred source.

4. Curtailing the laundering of sturgeon products of dubious origin by re-exports

Range States should inform the CITES Secretariat of the suspension of exports to countries that are/have been sus-



Returning with the catch: one Stellate Sturgeon *Acipenser stellatus* and three Russian Sturgeons *A. gueldenstaedtii*.

Photograph: Caroline Raymakers/TRAFFIC

dubious origin by re-exports

Range States should inform the CITES Secretariat of the suspension of exports to countries that are/have been suspected of re-exporting significant quantities of sturgeon products of dubious origin, e.g. Dubai (UAE) and Turkey. The Secretariat recommends to all Parties that no imports or specimens of *Acipenser gueldenstaedtii*, *A. nudiiventris*, *A. stellatus* and *Huso huso* be accepted from Turkey until Turkey has made a commitment to prevent illegal harvesting and participates in the development of regional conservation strategies and action plans and in systems to identify stocks and specimens in trade (Anon., 2001b).

5. Sturgeon restocking programmes

An independent and international team of experts should be commissioned to carry out an accurate and up-to-date assessment of the relevant facilities (i.e. hatcheries and related activities) including the monitoring of released fingerlings (migration, survival, growth) of each country

bordering the Caspian Sea. Experts could be selected by the CITES Secretariat in consultation with the IUCN/SSC Sturgeon Specialist Group.

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The sources of information upon which the cases below are based are cited at the end of each country section.

EUROPE

BELGIUM

In October 2000, the Anti-Drug Group (GAD) Inspection Service team raided several antique shops in Brussels following information obtained by TRAFFIC Europe. Skins of two Tigers *Panthera tigris* and three Leopards *Panthera pardus* (both CITES I), 15 primate skulls (CITES I/II), one large python skin (CITES II), one stuffed Gaviel *Gavialis gangeticus* (CITES I) and some 230 carved items made of elephant and hippo ivory were seized. The shop owners claimed the goods were 'antiques' which did not require documentation; experts consulted by Customs, however, concluded that most items had been acquired recently.

The GAD Inspection Service team at Zaventem Airport, Brussels, have informed TRAFFIC Europe that shipments of caviar have been sent illegally from Azerbaijan about once a month by courier to a private address in Brussels. The packets usually contain 0.5 kg of caviar. Up to 250 g of caviar per person may be carried as personal effects but applies only to passengers accompanying their cargo. Five shipments have been seized during 2001.

Further seizures by the GAD team at Zaventem Airport include:

26 May 2001: nine live Bell's Dabb Lizards *Uromastyx acanthinurus*, one Spur-thighed Tortoise *Testudo graeca* (both CITES II), two live scorpions and a number of cacti were confiscated from the hand luggage of three Belgian nationals returning from Tunisia. The men are accused of violating national law which is linked to Council Regulation 338/97 that implements CITES in the EU. The seizure took place following information obtained from TRAFFIC. The animals are being cared for by the Sabena rescue centre.

27 May 2001: 310 CITES Appendix II-listed wild orchids, arriving by post from Costa Rica, including two *Dichaea* specimens, five *Epidendrum*, 12 *Lepototes*, three *Lycaste*, nine *Masdevallia*, 31 *Maxillaria*, eight *Oncidium*, 11 *Pleurothallis*, 57 *Psychomorphis*, 52 *Stelis*, five *Telipogon*.

30 June 2001: a shipment of ivory from Mali, bound for China, consisting of 45 unworked and 29 worked tusks and 405 ivory items (total 150 kg). Most of the tusks were less than 70 cm. On 5 August, 15 doctors returning to China after a two-year period working in Mali, were charged with smuggling the ivory and other goods after being detained by police as they passed through Zaventem Airport in transit. Personal effects found among the ivory linked the men to the consignment. However, because the maximum penalty for smuggling wildlife listed under EU Regulations 338/97 in Belgium is only three months' imprisonment, the suspects could not be held in custody and left the country some days later. The date for a court hearing has not yet been set.

GAD, Brussels; TRAFFIC Europe; <http://news.bbc.co.uk/1/hi/english>; New Straits Times (Malaysia), 6 August 2001

A large > number of tins containing 0.5 kg of caviar have been arriving in Belgium by courier post from Azerbaijan.

Photographs: Pol Meuleneire, GAD, Brussels

v Samples of wild orchids which arrived by post from Costa Rica and were seized by authorities in Brussels.



GERMANY

In January 2001, Victor Franck of Germany was found guilty and sentenced to three years' imprisonment on charges relating to 15 cases of smuggling or attempting to smuggle protected live animals for zoos and wildlife parks. Joint investigations by Customs officials and police began when a mis-addressed fax reached TRAFFIC which included offers of CITES-listed animals. Four Germans and one Russian were initially charged with comprising a criminal organization under Paragraph 129 under the Criminal Code of German law and accused of 41 cases of smuggling or attempting to smuggle the following CITES I-listed species: Orang-utans *Pongo pygmaeus*, Javan Gibbons *Hylobates moloch*, Komodo Monitor lizards *Varanus komodoensis*, Red-crowned Cranes *Grus japonensis*, Arabian Oryx *Oryx leucoryx*, Asian Elephants *Elephas maximus* and CITES II-listed Ural Owls *Strix uralensis*, overall involving more than 25 countries. However, the Higher Regional Court in Frankfurt did not pursue charges relating to the formation of a criminal organization and, for simplicity, narrowed the court procedure to the respective 15 cases. The other defendants were released after being held in custody for between a few days to up to eight months. Two were fined. In Germany, the smuggling of wildlife can lead to a prison term of up to five years and a fine of DM 100 000 (USD46 000) and this is one of the most severe sentences to be imposed in Germany for a wildlife trade offence in more than ten years.

TRAFFIC Europe



ITALY

In March 2001, some 8000 stuffed and live birds were seized during raids on the houses of breeders and national animal traders. Species included Peregrine Falcon *Falco peregrinus* (CITES I/Annex A), Golden Eagle *Aquila chrysaetos*, Eurasian Eagle-Owl *Bubo bubo*, Eurasian Griffon *Gyps fulvus*, Red Kite *Milvus milvus*, Common Buzzard *Buteo buteo* (all CITES II/EU Annex A), as well as parrots (CITES I/II EU Annex A/B), ciconiiformes, herons and thousands of passeriformes. The seizures followed a year-long investigation involving the cooperation of the Italian Forestry Corps, the Regional Corp of Regione Veneto (North Italy) and the Guardia di Finanza. Some 20 people have been questioned by the police and the investigation continues.

TRAFFIC Europe

POLAND

On 4 June 2001, at Warsaw National Airport, Customs officials seized 649 live Spur-thighed Tortoises *Testudo graeca* (CITES II) and Egyptian Tortoises *Testudo kleinmanni* (CITES I), and eight Grey Parrots *Psittacus erithacus* (CITES II) from two Lithuanians who had travelled from Syria. The animals had been transported in small cages that were wrapped with plastic bags and hidden in hand luggage. No CITES permits could be presented. The pair have been banned from entering Poland for two years. The reptiles have been placed with Warsaw Zoo.

Frankfurter Rundschau (Germany), 8 June 2001

RUSSIA

On 11 August 2001, Russian guards arrested two Dagestan residents attempting to smuggle 54 caviar-bearing sturgeon out of the vicinity of the Caspian Sea. Nine of the fish were Beluga *Huso huso*.

In July, Russia halted commercial fishing of sturgeon in the Caspian Sea for the rest of the year owing to depletion of stocks (see page 33).

Associated Press; TRAFFIC International

UK

In January and March 2001, the Customs CITES team at Heathrow seized 18 kg and 120 kg of caviar, respectively, imported by post from Dubai, destined for the UK. Enquiries are continuing.

In March 2001, the Customs CITES team at Heathrow seized 710 Horsfield's Tortoises *Testudo horsfieldii* (CITES II) from three suitcases of a passenger arriving from Russia, in transit to Tunisia. The suspect was arrested owing to lack of CITES permits and for infringing IATA regulations. The case is continuing.

In April 2001, the Customs CITES team at Gatwick Airport seized 445 kg of raw ivory from a consignment of stone carvings from Kenya, in transit to China. The Chinese authorities took on the case after being informed and arrested one individual.

On 11 July 2001, at North Sefton Magistrates' Court, Douglas Petrie, owner of Southport Zoo, was charged with the illegal display of CITES Appendix I-listed (Annex A) specimens for commercial purposes, in contravention of EU regulations. The case arose following a search of Petrie's premises by Merseyside Police, accompanied by staff of TRAFFIC International and the RSPCA, on 20 November 2000. The following specimens were on commercial display: one Radiated Tortoise *Geochelone radiata*, one Scarlet Macaw *Ara macao*, three Ocelots *Leopardus pardalis* and three Cotton-headed Tamarins *Saguinus oedipus* (all CITES I), and nine Hermann's Tortoises *Testudo hermanni*, 10 Spur-thighed Tortoises *Testudo graeca*, three Barn

Owls *Tyto alba* and four Tawny Owls *Strix aluco* (all CITES II). Petrie was unable to provide the necessary paperwork. During his trial, Petrie changed his plea from not guilty to guilty. He was fined GBP5000 (USD7116) and GBP350 costs and was ordered to forfeit all the animals mentioned in the charges.

HM Customs & Excise CITES Team, Heathrow Airport; Merseyside Police; TRAFFIC International

AFRICA

DJIBOUTI

On 8 June 2001, officials of the Ministère de l'Habitat, de l'Urbanisme, de l'Environnement et de l'Aménagement du Territoire, assisted by 25 police officers, inspected over 40 stalls selling wildlife in Djibouti-ville's central market and seized a number of items including 16 elephant ivory pieces, shells of three Hawksbill Turtles *Eretmochelys imbricata*, skins of nine Leopards *Panthera pardus* and two Cheetahs *Acinonyx jubatus* (all CITES I), and the hide of a Spotted Hyaena *Crocuta crocuta*. The raid followed a meeting with representatives from TRAFFIC who were in Djibouti to encourage awareness of CITES-related issues and to foster support and co-operation among the various government agencies involved in CITES implementation. Most of these wildlife products are imported from neighbouring countries and the majority are sold to non-Djiboutians who export them (see also *TRAFFIC Bulletin* 18(2):58).

www.traffic.org

< Cheetah *Acinonyx jubatus*

Cheetah skins were among animal products seized from Djibouti-ville's central market during a raid by wildlife officials. Ongoing TRAFFIC activities in Djibouti hope to follow up on the raid by producing posters and leaflets, and providing implementation and enforcement assistance.



The world trade in cat skins has shown a steadily declining trend and since 1980 the number of species in trade has declined by more than half



< Lions *Panthera leo*

The stuffed head of a lion, with skin and limbs attached, was seized from a businessman travelling to Hong Kong from South Africa.

East and Southern Africa are home to the majority of the continent's Lions. Throughout most of Africa, the species is becoming increasingly rare outside protected areas.

Photographs: S. Millidge/TRAFFIC

ASIA

EAST ASIA CHINA

On 12 March 2001, at the Zhefang toll station, along the Yunnan and Myanmar border, at Luxi City, Dehong Prefecture, Yunnan Province, border police conducting a routine check on a lorry coming from Myanmar found 1178 snakes in 88 crates concealed under 20 bags of rice husk. Specimens included 42 Asian Cobras *Naja naja* (CITES II) (weighing a total of 42 kg, contained in 3 crates), 650 Rat Snakes *Ptyas* spp. (654 kg in 54 crates), and 486 vipers (380 kg in 31 crates). All the snakes are listed as protected species in the province. The driver of the lorry and one passenger were detained while another passenger escaped.

Yunnan Daily (China), 14 March, 2001

HONG KONG

On 29 January 2001, at Chek Lap Kok Airport, Customs officers examining a box being carried by a businessman arriving from Johannesburg discovered the stuffed head of a male adult Lion *Panthera leo* (CITES II) with its skin, four limbs and tail still attached. The man claimed the specimen, which weighed 11.9 kg and measured 3.32 m from head to tail, was for decoration in his home. An export permit had been issued by South Africa but the traveller was unable to produce an import permit. He was handed over to the Agriculture, Fisheries and Conservation Department but later released with the specimen.

TRAFFIC East Asia

JAPAN

On 30 July 2001, at Tokyo District Court, Hiroataka Sakai, president of a clothing retailer, his manager Yuji Katsumata, and the company, were each fined 500 000 yen (USD4260) for illegally importing and attempting to sell shawls from Nepal made from the wool of Tibetan Antelopes *Pantholops hodgsonii* (CITES I), in April 2001. Five shawls were seized.

Police began investigating the company following information received from TRAFFIC East Asia-Japan.

TRAFFIC East Asia

NEPAL

On 6 August 2001, Kathmandu District Office officials arrested three Nepalis for questioning in relation to an attempt to smuggle beetles to Japan. Their identities were revealed by two Japanese men who were arrested on 29 July as they attempted to smuggle 271 beetles on a flight to Osaka. The insects are kept as pets and are in high demand in Japan.

<http://www.nepalnews.com/> 1/7 August 2001

SOUTH ASIA INDIA

On 27/28 April 2001, during two raids, police in Uttar Pradesh, India, arrested five members of a gang involved in the international trade in animal skins and seized skins of 25 Tigers *Panthera tigris* and Leop-

ards *P. pardus* (both CITES I). The suspects were reportedly sending the skins to international markets via Nepal after acquiring them from poachers in Madhya Pradesh, Uttar Pradesh, Chhattisgarh and Rajasthan. In the first incident, a Special Task Force (STF) team of the police arrested four persons including two Nepali citizens from Kooli Bazar area of Kanpur and seized skins of 19 Leopards and one Tiger. In the second case, another STF team seized five Leopard skins and 10 Leopard nails from a person in Lucknow. Two of the skins had been packed in stamped parcels, which were allegedly sent by courier from Bilaspur.

Enforcement agencies reveal that those arrested in the first incident have been involved in the international smuggling of cat skins, bones and other parts from various places in north and Central India. One is the son of a person arrested in Khaga in January 2000 (*TRAFFIC Bulletin* 18(2):74), pointing to clear links between these seizures.

On 30 July 2001, two Russian insect collectors were arrested in remote forest in the Kanchenjunga National Park in the Indian State of Sikkim, with some 2000 butterflies and 15 kg of insects in their possession. Four porters, two of whom are Nepali nationals, were also arrested. The Russian pair are reported to have been involved in organizing large-scale expeditions to Russia, China and Tajikistan for decades, and have sold specimens to collectors in Germany and Japan. The Russians have been detained under the *Wildlife Protection Act*. The collectors were believed to be hunting rare specimens, including the Bhutan Glory *Bhutanitis lidderdalii* and Kaiserhind *Teinopalpus imperialis* butterflies (both CITES II), as well as moths and stag beetles.

www.indya.com, 28 April 2001; *TRAFFIC India*; *Wildlife Protection Society of India*, 9 August 2001; *The Independent (UK)*, 9 August 2001

SOUTHEAST ASIA

MALAYSIA

On 19 February 2001, at Sultan Abdul Aziz Shah Airport, Customs officials and staff of Selangor Wildlife and National Parks Department impounded 1176 Oriental Rat Snakes *Ptyas mucosus* and 516 Asian Cobras *Naja naja* (both CITES II) awaiting transportation overseas (destination unreported). Both species, which are non-venomous, had been smuggled in from a neighbouring country in transparent sacks inside 141 boxes. Rat snakes are reportedly caught for their meat whereas Asian Cobras serve medicinal purposes. Two men were detained when they failed to produce valid documents for their cargo, but were later released; further action may be taken against them, however.

On 13 March and 2 April 2001, acting on information supplied by TRAFFIC, the Department of Wildlife and National Parks (PERHILITAN) raided three locations in Kuala Lumpur selling pieces of carved elephant ivory (CITES I). In the first, a shop in the Equatorial Hotel, 14 ivory items were seized including carved boxes, fans and bowls. A few pieces of carved Hawksbill Turtle *Eretmochelys imbricata* (CITES I) shell were also seized. The owner of the shop, Mr Sunny Ng, was fined 1500 Ringgit (USD392). A further two shops, known as King Art, situated in the Park Royal Hotel and the Shangri-La Hotel, both owned by Mr Tee Siyo Koog,

were found to have a total of 13 ivory items, including one chess set and earrings. Mr Tee was fined 2500 Ringgit (USD653), which was reduced to 2000R (USD522) after an appeal. Both dealers appealed to have their ivory returned to them, claiming it was antique and therefore owned by them before the elephant ivory trade ban came into effect. However, as they did not have any documentation or proof of origin, the ivory was confiscated.

A large number of Malayan Pangolins *Manis javanica* (CITES II and fully protected under Malaysia's *Wildlife Protection Act 1972*) have been seized in separate incidents in Malaysia in recent months. On 26 April 2001, staff of the General Operations Force seized more than 2000 kg of Malayan Pangolins. Some weeks earlier, on 18 March, more than 100 pangolins contained in 60 plastic baskets were seized from a jetty on the Kelantan side of Golok River; two men from Terengganu were detained. The specimens were believed to have been brought from Johor and were bound for Thailand. By law, anyone who possesses, kills and hunts this species faces a maximum fine of RM5000 (USD1317) or five years' gaol or both. The pangolins were to be sent to a zoo or released in the wild.

On 9 May, 202 pangolins were seized by the Wildlife and National Parks Department (PERHILITAN) from a house in Yong Peng that they had been monitoring for two days. The pangolins were found in plastic cages normally used for transporting chickens; some were already dead. One man was detained and subsequently released on bail. It is believed the animals were due to be smuggled into Thailand. The Magistrates' Court issued an order to have the pangolins released into a forest reserve.

On 20 May 2001, police officials arrested four Thai nationals in possession of a consignment of agarwood *Aquilaria* at a road block in Selama. The wood is believed to have been extracted illegally from a forest reserve in Kedah. The suspects, in a taxi bound for the Thai border town of Betong, had no identification papers. They were remanded in custody and were to be handed over to immigration and forestry authorities for illegal entry and possession of agarwood without a permit.

On 25 May 2001, in a joint operation of the police, Perak Forestry Department and Rela (civil defence volunteers), five Thais were arrested on suspicion of stealing sandalwood *Santalum* from jungle on the Malaysian-Thai border near Batu, Jalan Kinjang, Sahom, Chenderiang in Kampar. A further two people are being sought. The men are reported to be part of a syndicate stealing sandalwood in an area that extends from Hulu Perak district to the forest reserve in Batang Padang-Kampar.

New Straits Times (Malaysia), 19 February; 21 April; 10/28 May 2001; *TRAFFIC Southeast Asia*; *BERNAMA*, 23 May 2001

SINGAPORE

On 2 November 2000, Lawrence Kuah Kok Choon of Singapore was sentenced to one year in prison and fined SGD10 000 (USD5630) for the possession of two Lear's Macaws *Anodorhynchus leari* (CITES I) that he had smuggled from Brazil in 1996. The birds were found in Kuah's flat after he had been caught at a Paris airport on his way from Brazil to Singapore with a different pair of macaws.

In collaboration with the Management Authority of Brazil, Singapore arranged for the birds to be repatriated on 21 March 2001. They have been placed at Sao Paulo Zoo.

Agri-food & Veterinary Authority of Singapore; *Streets (Singapore)*, 21 March 2001

OCEANIA

AUSTRALIA

On 11 April 2001, at Adelaide Magistrates' Court, Kimihito Takahashi, charged with the illegal possession and attempted export of five Shingleback Lizards *Trachydosaurus rugosus*, was sentenced to three months' imprisonment (suspended) and was fined a total of AUD1000 (USD494). The reptiles had been wrapped individually in fabric pouches and were found in a room at the Murray Bridge backpacker hostel following a tip-off to Customs. A box with a Tokyo address was found in the room. The lizards have been released in the wild.

On 16 April 2001, with the co-operation of their South African counterparts, troops of Australia's Defence Force (ADF) apprehended a Togo-flagged ship off the coast of South Africa. The vessel had first been sighted on 29 March reportedly poaching Patagonian Toothfish *Dissostichus eleginoides* in Australian waters off the McDonald and Heard Islands in the Indian Ocean near Antarctica. It was apprehended about 540 km south of Cape Town after being chased for two weeks over a distance of 3200 km as it headed across the Indian Ocean towards South Africa. Some 100 t of Patagonian Toothfish was estimated to be on board. The operation to board the vessel involved co-operation between the Australian Fisheries Management Agency, the ADF and the South African National Defence Force. This operation marks the first time the ADF has worked in conjunction with the SANDF to capture an illegal fishing vessel.

The vessel was towed from South African waters to Fremantle, Western Australia. On 21 September 2001, at Perth District Court, the captain, Leonardo Aviles pleaded guilty to charges of illegal fishing inside Australia's EEZ. On 11 October he was fined a total of AUD136 000 (USD69 000). Forfeiture of the vessel, gear and catch is still subject to litigation. See also page 23.

The Advertiser (Adelaide), 11 April 2001; *Reuters News Service*, 17 April 2001; *Sydney Morning Herald*, 13 April 2001; *TRAFFIC Oceania*

NEW ZEALAND

In January 2001, the activities of a German couple visiting Stewart Island (south of South Island) attracted the attention of the Department of Conservation who in turn contacted the Wildlife Enforcement Group. Enquiries culminated in the couple's apprehension at Auckland Airport on 28 January when the male was found to be carrying one pair of Gray's Tree Geckos *Naultinus grayii* in his underwear. As a result, Jorg Kreutz from Frankfurt, Germany, was convicted in Manukau District Court and fined NZD10 000 (USD4117) plus NZD1000 per head of animal, resulting in a total fine of NZD12 000.

TRAFFIC Oceania

AMERICAS

BRAZIL

On 12 February 2001, police in Rio de Janeiro arrested Austrian botanist Johann Zillinger following the discovery of 25 birds and two snakes in his luggage; eggs of five Orange-winged Amazons *Amazona amazonica* (CITES II) had been placed in a sock and tucked into his underwear so they would be at nest temperature. Zillinger reportedly bought the animals in the port of Belém and planned to take them to Austria for sale in Europe. Police also arrested a worker at the airport who they believe was set to help Zillinger move his baggage through Customs. The birds included 10 Red-capped Parrots *Pionopsitta pileata* (CITES I), seven Yellow-fronted Amazons *Amazona ochrocephala*, one Festive Parrot *A. festiva*, five Orange-winged Amazons and four Canary-winged Parakeets *Brotogeris versicolurus* (all CITES II). Zillinger has been released on bail but faces charges of smuggling.

Reuters, 14 February 2001; *Cage & Aviary Birds*, 17 March 2001

ECUADOR

On 12 June 2001, a court in Guayaquil ruled as unacceptable a claim by the owners of an illegal shark-finning vessel that their constitutional rights had been violated by the seizure of their vessel and destruction of their catch. The industrial longliner María Canela II was apprehended by Galapagos Park rangers on 22 March inside the Galapagos Marine Reserve. The vessel had 40 sharks on 15 km of long-line and 78 sharks and 1044 shark fins in her hold.

The owners of the vessel appealed the court ruling. The appeal was heard by the Constitutional Court in Quito on 25 October but was rejected and endorsement given to the Galapagos National Park for whatever action the Park considered it would be pertinent to take (see page 3).

TRAFFIC South America; Press Release of WWF-Galapagos Program and Fundacion Natura, 29 October 2001; <http://www.seashepherd.org>, 8 November 2001

USA

On 9 and 11 April 2001, Customs officials at Los Angeles International Airport discovered 99 kg of African Elephant *Loxodonta africana* (CITES I) ivory concealed inside a shipment of furniture that had originated in Nigeria. A further 18 kg of ivory was subsequently confiscated from a Hollywood, California, residence. The total haul was made up of more than 480 pieces of ivory, both carved and raw, including 38 tusks, some no longer than 15 cm-20 cm. Two men have been charged.

On 29 May 2001, Maxfield Enterprises, Inc., which operates a retail shop in Beverly Hills, and its principal owner, Thomas Perse of Los Angeles, California, entered into a civil settlement with the US attorney's office in Newark, New Jersey, following Maxfield's conviction of being involved in the purchase, sale and import of shahtoosh shawls from 1994 to 1996. As a result, Perse agreed to pay a fine of USD175 000. This is the largest fine a business has paid in the USA for dealing in shahtoosh shawls.

As part of the settlement, Maxfield Enterprises will run a black and white public service advertisement in a fashion magazine expressing contrition and describing the threats to the Tibetan Antelope *Pantholops hodgsonii* (CITES I).

The USFWS has been able to recover some of the shawls from Maxfield which will be shared with other Customs officers for identification purposes. Some shawls will be cut into pieces and placed in identification kits, which will assist officers in distinguishing between pashmina and shahtoosh.

By contrast, on 20 February 2001, at the federal District Court in Newark, New Jersey, Navrang Exports based in Mumbai, India, was fined USD5000 and the company sentenced to five years' probation for smuggling 308 shahtoosh shawls into the country six years earlier. This is the first US felony case involving illegal trade in shahtoosh to be prosecuted, but the penalty was criticised by conservationists for its leniency.

One of the longest jail sentences for the illegal trade in live animals was imposed on 7 June 2001, at San Francisco federal court. Keng Liang "Anson" Wong of Malaysia was sentenced to almost six years' imprisonment and fined USD60 000. He had faced 40 federal felony charges relating to illegal wildlife trade activities from 1996 to 1998 that infringed domestic, national and international laws and involved some 300 protected reptiles. Amongst these were two particularly rare reptiles from island nations: the Komodo Dragon *Varanus komodoensis* (CITES I), the world's largest lizard, native to a small area of Indonesia, and the Ploughshare Tortoise *Geochelone yniophora* (CITES I), which occurs only on the island of Madagascar.

Wong pleaded guilty in December 2000 after being lured to Mexico by undercover investigators in 1998 where he was arrested and, ultimately, extradited to the USA.

In 1991, Wong was indicted in Florida on charges of conspiring to smuggle Fiji Banded Iguanas *Brachylophus fasciatus* (CITES I) (TRAFFIC Bulletin 13(1):37).

On 6 July 2001, at US District Court, Eastern District of New York, Grigori Oudovenko was sentenced to 27 months' imprisonment for attempting to smuggle 765 kg of caviar into the country - the largest single seizure of caviar since trade controls went into effect three years ago. A Russian citizen, Oudovenko is president of MNA Atlantic, a caviar-exporting firm with offices in St Petersburg, Moscow and New York. Ossetra caviar (derived from Russian Sturgeons *Acipenser gueldenstaedtii*) and sevruga caviar (of the Stellate Sturgeon *A. stellatus*) was found in a container with dried fish and labelled to match the rest of the shipment. The illegal shipment was discovered in July 2000 at the Port of Newark, New Jersey.

In a related investigation, a shipment of 171 kg of caviar was intercepted at John F. Kennedy Airport, New York, in January. The caviar had been sent from MNA Atlantic to a US company and labelled as ossetra and sevruga caviar. However, DNA testing revealed that most of the shipment consisted of Beluga *Huso huso* caviar - the most expensive caviar available.

On 20 July 2001, at San Francisco District Court, Peter H. Heibloom of Queensland, Australia, and Ernest J. Bouwer, of Sandton, South Africa, were

charged with illegally sending protected cycads to the USA from South Africa, Australia and Zimbabwe. The pair were arrested by USFWS officials that day. Donald Joseph Wiener of Mexico, alleged to have knowingly purchased some of these plants from Heibloom, was also charged and arrested in Mexico. On the same day, Jose "Pepe" Portilla, of Ecuador was charged in Los Angeles District Court with sending 10 protected cycads to the USA. Three other individuals - John Baker of Gauteng, South Africa, Ian Turner of Harare, Zimbabwe, and Rolf Kyburz, of Queensland, Australia - were charged but remain at large.

In separate indictments, Rolf Bauer and Jan Van Vuuren, of South Africa, were arrested on 20 July and charged with conspiracy, smuggling and making false statements in relation to the illegal import of cycads from South Africa to the USA.

All the accused are charged with using invalid CITES permits for the shipments and falsely labelling many of the plants shipped to cover up the lack of a valid permit.

The USFWS investigation also resulted in charges against three individuals accused of trafficking in protected orchids. Antonius Junioarto of Surabaya, Indonesia, and Iwan Kolopaking of Jakarta, Indonesia, have been indicted in the Northern District of California on 21 counts of conspiracy, smuggling, and false statements related to the shipment of CITES Appendix I-listed orchids from Hong Kong to the USA. Both remain at large. They are accused of sending multiple packages of orchids through the mail with Customs declarations falsely identifying the contents as toys. A separate indictment in the Northern District of California charges Terence Leung of Hong Kong with smuggling related shipments of CITES Appendix II orchids from Hong Kong into the USA. Leung also remains at liberty.

TRAFFIC provided information to the investigation which was assisted by the Department of Agriculture's Animal and Plant Health Inspection Service and Office of Inspector General, as well as the Endangered Species Protection Unit of the South African Police, Australian Customs and Environment Australia.

On 1 August 2001, at the Federal Court for the Eastern District of New York, Oumar Keita, of Abidjan, Ivory Coast, was convicted of attempting to smuggle 57 African Elephant *Loxodonta africana* (CITES I) ivory carvings into the country. He was sentenced to serve 11 months and 10 days in gaol.

The offence took place on 17 September 2000 when Keita arrived at John F. Kennedy Airport, New York, from Abidjan, with the ivory concealed inside a sand and paper substance designed to resemble carved stone. Agents recognized the concealment technique which was identical to that used in a smuggling attempt in January 2000 by another Ivory Coast citizen - Bayo Namory - who is serving a year in prison for the offence. Letters to Keita from Namory were found in Keita's luggage, along with business cards listing African art dealers in New York.

WWF News Release, 11 June; 24 July 2001; Environmental News Service, <http://ens-news.com/ens/jul2001/2001L-07-24-01.html>; <http://library.northernlight.com/FD20010706070000047.html?cb=0&dx=1006&sc=0#doc>; USFWS, 6 July; 1 August; USFWS 26 June 2001, cited in Tibetan Plateau Alert, Tibetan Antelope Project, 28 June 2001; Los Angeles Times (USA), 2 March 2001, cited in Tibetan Plateau Alert, Tibetan Antelope Project; IFAW Press release, 5 May 2001; <http://www.ifaw.com/press/pr10505.html>

The Final Frontier: Towards Sustainable Management of Papua New Guinea's Agarwood Resource

Frank Zich and James Compton

TRAFFIC Oceania/WWF South Pacific Programme

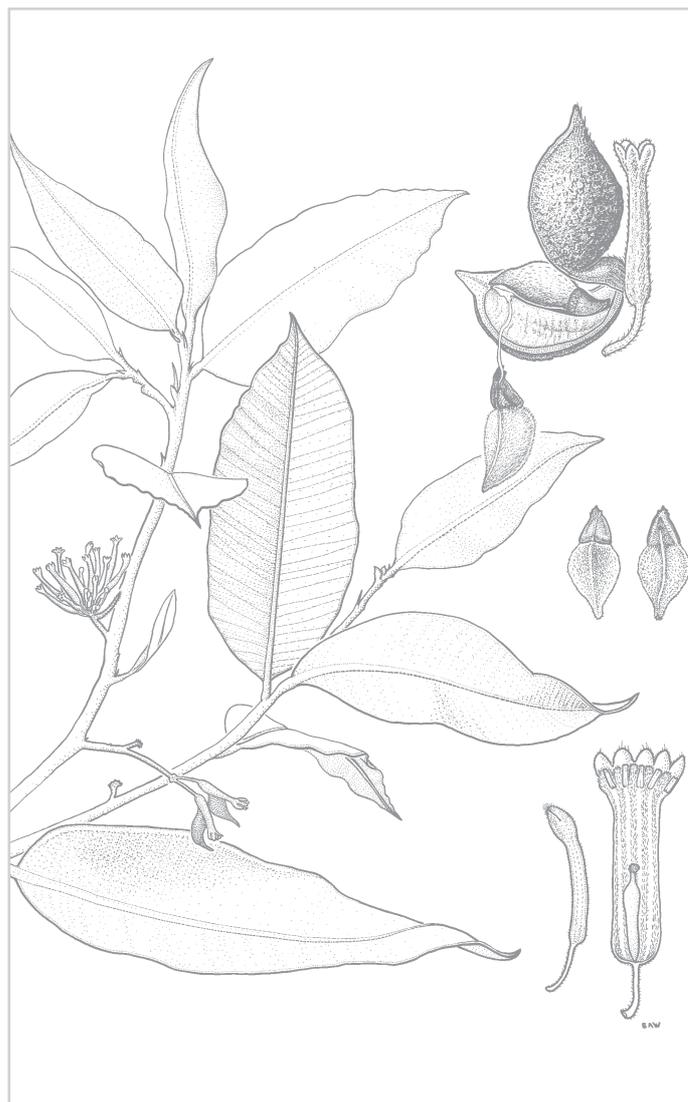
October 2001. 12 pp.

Also available at www.traffic.org/news/agar2.pdf

Agarwood, also known as aloeswood, eaglewood and gaharu among many common names, is found naturally in only a small percentage of trees in the Thymeleaceae family. Heavily exploited for its use in religious, medicinal and aromatic preparations, and with eight species already considered threatened, agarwood-yielding trees in Papua New Guinea constitute possibly the last stronghold of wild stocks of this fragrant wood.

Since harvesting began in the lowland forests of PNG only five years' ago, these stands of agarwood have become subject to increasing pressure to supply global demand, prompting TRAFFIC and WWF to initiate research to identify the species being harvested for agarwood, to clarify the existing national regulatory framework and to map the current harvest and trade dynamics.

Unexploited stands of agarwood-producing trees still exist in PNG. In areas where harvesting has begun, villagers are still learning how to extract agarwood and to manage the trees. PNG therefore provides a unique opportunity to promote the establishment of a sustainable agarwood industry. This report outlines the initial findings of the project, describes the harvesting techniques and *modus operandi* of the traders, as well as providing information on the grading of agarwood, prices and official export figures. The report recommends that further understanding of the trade and the development of an appropriate regulatory framework at local community and national levels would enhance steps towards sustainable management and conservation of viable *in situ* populations. A long-term goal of this project is to enable rural communities to harness the commercial potential of this much sought-after commodity.



There are three agarwood-producing species known from New Guinea: *Aquilaria filaria*, *Gyrinops versteegii* and *G. ledermannii* (above).

SHARYN WRAGG

Antarctic Toothfish: An Analysis of Management, Catch and Trade

Mary Lack, Shellack Pty Ltd

Published by TRAFFIC Oceania, October 2001. 29 pp.

On-line only: www.traffic.org/antooth.pdf

An overview of the management, catch and trade of Antarctic Toothfish *Dissostichus mawsoni* has been undertaken as an adjunct to a larger study by TRAFFIC of the management and trade in Patagonian Toothfish *Dissostichus eleginoides* (see pages 15-32). Although the known catch of Antarctic Toothfish is very low in comparison, these two species are similar in appearance and serve many of the same markets and it is possible that increased fishing effort may be affecting Antarctic Toothfish populations. The analysis of the trade is severely compromised by the availability of reliable trade data specific to this species and anomalies in the data that are available. However, despite these limitations, the analysis suggests strongly that catch data underestimate by between 70% to 147% the total removals of Antarctic Toothfish.

Practical Manual on Wildlife Import and Export Management in China

Wan Ziming. May 2001. 348 pp [in Chinese]. USD3.00 (excl. p&p.)

Available from China Forestry Publishing House, 7 Liuhaihutong, Xicheng, Beijing 100009, PR China, or Wan Ziming, Head, Division of Law Enforcement and Capacity Building, CITES Management Authority of China, State Forestry Administration, 18 Hepinglidongjie, Beijing 100714, People's Republic of China. E-mail: citeswan@21cn.com

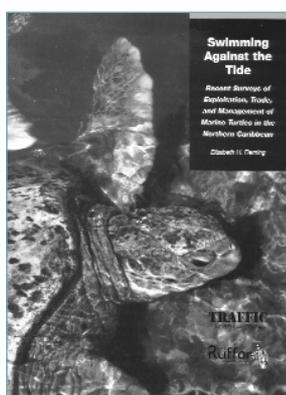
This Chinese-language publication publicizes the provisions of China's wildlife import and export management. It aims to raise public awareness of wildlife conservation and management issues, help strengthen the capacity of enforcement agencies and facilitate the implementation of national wildlife import and export procedures. It includes basic concepts of wildlife conservation and management, the provisions of CITES and China's related wildlife laws and regulations, as well as information on the management of wildlife imports and exports in the USA and the EU.



Musk Deer Farming as a Conservation Tool in China

Rob Parry-Jones and Joyce Y. Wu. *TRAFFIC East Asia*. July 2001. i-vii + 36pp.

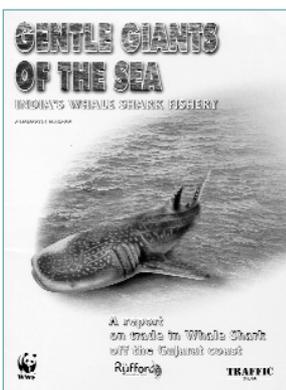
Despite China's evident commitment to the conservation of musk deer resources, collection and use of musk appears to be ongoing, predominantly for traditional medicines in East Asia (but also for the perfume industry abroad). This study documents the trends in China's musk consumption, the sources of its supplies and its long-standing efforts to farm musk deer, and aims to ascertain the long-term sustainability of China's use of natural musk as medicine. Captive-breeding of musk deer is plagued with difficulties including disease and high mortality, and the amount of musk produced from such operations is far from meeting even domestic demand. Captive breeding, however, could serve as a genetic 'safety' net for wild populations, and research of properly managed, self-sustaining captive populations may provide valuable information to benefit species in the wild, providing that illegal hunting of wild populations of musk deer is brought under control.



Swimming Against the Tide: Recent Surveys of Exploitation, Trade, and Management of Marine Turtles in the Northern Caribbean

Elizabeth H. Fleming. *TRAFFIC North America*
April 2001. vii + 161 pp.

Caribbean peoples are thought to have used turtles - for their eggs, meat, shell, skin and other body parts - for basic sustenance and luxury items for thousands of years without overexploiting what is recorded to have been a very abundant resource prior to European colonization of the area. Subsequent overharvesting, however, reduced some populations to the point where their exploitation became no longer profitable, a factor that contributed to a decline in exploitation and trade of marine turtles in the Northern Caribbean. Nevertheless, many populations continue to be affected by current levels of exploitation although this study of the situation in 11 countries reveals a picture of extremes and contrasts.



Gentle Giants of the Sea: India's Whale Shark Fishery

Fahmeeda Hanfee
TRAFFIC India/WWF India. January 2001. 38 pp.

The Whale Shark *Rhincodon typus* is the world's largest fish, reaching lengths of up to 18 m or more. Until the mid-1990s, this species was not considered to be commercially important. Recent surveys in India, however, have found that fishing for Whale Sharks is increasing and is largely unregulated, particularly along the coast of Gujarat. The fish is targeted for its meat, fins, liver, skin and cartilage. This report highlights the results of a year-long field survey (1999 to 2000) to document the extent and composition of the trade in this area: in general, these fish grow slowly, mature late, have small numbers of young and live for many years. These factors contribute to the vulnerability of stocks to over-fishing from which populations may take years, even decades, to recover.

Coming soon

- Trawling in the mist: industrial fisheries in the Russian part of the Bering Sea (TRAFFIC International)
- Far From a Cure [Korean and Japanese translations of TRAFFIC 2000 report] (TRAFFIC East Asia)
- Chinese-language identification guide to medicinal plants in trade (TRAFFIC East Asia)
- Trophy-hunting in Europe (TRAFFIC Europe)
- The role of the EU in the live reptile trade (TRAFFIC Europe)
- An assessment of the illegal trade in elephants and elephant products in Vietnam (TRAFFIC Southeast Asia)
- The harvest and trade in North American paddlefish and sturgeon (TRAFFIC North America)
- The status, management and trade in the Black Bear in North America (TRAFFIC North America)
- Queen Conch fisheries and their management in the Caribbean (TRAFFIC Europe)
- Traditional Asian Medicine Identification Manual for law enforcers (TRAFFIC International)
- Proceedings of the International Expert Workshop on Wildlife Trade Controls in the EU (TRAFFIC Europe)
- Assessment of wildlife trade and implementation of CITES in the EU's candidate countries (TRAFFIC Europe)

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