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OVERFISHING

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A GLOBAL CHALLENGE

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ECONOMIC PERSPECTIVES

OVERFISHING: A GLOBAL CHALLENGE

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From the editor:

As representatives from more than 100 U.N. Food and Agriculture Organization (FAO) member countries meet in Rome February 24-28, 2003, they face a crisis in the ocean's fisheries that gets surprisingly little attention from the world's press. By FAO estimates, more than 70 percent of those fisheries are depleted or nearly depleted even as more and more of the world's people depend on those fish stocks for food and livelihoods. Competition between countries over access to fishing grounds has already spawned confrontation, even violence. This issue of Economic Perspectives presents 10 articles from governments, industry and the environmental community providing background information about this problem and possible solutions.

The FAO's Committee on Fisheries (COFI) has an opportunity at its February meeting to bring overfishing under control if its members can agree on ways to implement existing agreements, Assistant Secretary of State John Turner says in the lead article. Alice Mattice of the Office of the U.S. Trade Representative (USTR) says that World Trade Organization (WTO) negotiators can effect part of that implementation if they can agree on eliminating subsidies that encourage overfishing. Commander John Davis of the U.S. Coast Guard describes how U.S. and Russian patrol boats cooperate with each other to enforce the global moratorium on driftnet fishing. Angela Somma of the National Marine Fisheries Service (NMFS) describes the economic and environmental costs of overfishing; David Balton of the State Department outlines the complex web of multinational agreements and regional organizations aimed at managing and conserving fisheries, and NMFS' Dean Swanson tells how the U.S. government implements its international obligations on marine conservation. Four articles on overfishing are from non-U.S. government experts. The FAO's David Doullman says countries need to demonstrate political will to halt overfishing. Scott Burns of the World Wildlife Fund suggests three discrete sets of actions to make marine conservation work. Justin LeBlanc of the National Fisheries Institute warns that marine conservation cannot work without participation by all the relevant markets. And Paul Nichols, an adviser to the Namibian government, tells how one developing country has stopped illegal overfishing in its 200-mile coastal zone.

Other sections provide background information, links to relevant Internet sites, and selected readings about overfishing. We hope that this journal will contribute to the international discussion of this important issue.

ECONOMIC PERSPECTIVES

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Governments of fishing countries need to demonstrate the political will to halt overfishing, says David Doulman of the U.N. Food and Agriculture Organization (FAO). Developing countries could well fall further behind developed countries as management of fisheries becomes ever more complicated, he says.

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Managing the world's fisheries in a sustainable way would assure their productive capacity for the millions who work in them and the many more who depend on them for food, says Scott Burns of the World Wildlife Fund. What the oceans need now, he says, are stronger management of migratory fish stocks, reduction of fishing fleet overcapacity by eliminating subsidies, and strict protection for the most biologically important marine regions.

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Without participation by all relevant markets, fisheries conservation schemes have no chance to succeed, says Justin LeBlanc of the National Fisheries Institute. A powerful existing international convention for protecting endangered species might help enforce conservation measures some day, but for now it lacks expertise, he says.

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Foreign fishing fleets drastically overfished the waters off Namibia before that country gained independence in 1990, according to Paul Nichols, special adviser to the Namibian fisheries ministry. Since then, he said, the government has taken strong regulatory actions that have brought overfishing under control and allowed depleted fish stocks to rebuild.

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□ CURRENT CHALLENGES IN INTERNATIONAL FISHERIES

*By John Turner, Assistant Secretary, Bureau of Oceans and International Environmental and Scientific Affairs,
U.S. Department of State*

When the U.N. Food and Agriculture Organization's (FAO) Committee on Fisheries meets in February, it has an important opportunity to improve conservation in the world's battered fisheries, says John Turner, assistant secretary of state. FAO already has an impressive array of agreements with which to work — the time has come to implement them, with special attention to halting illegal, unregulated and unreported fishing, he says. Turner describes new approaches FAO could try, including cooperation with multilateral trade and conservation organizations. FAO members and other donors should donate the money developing countries need to build the capacity for enforcing marine conservation, he adds.

A CHALLENGE FROM OUR LEADERSHIP

The 25th meeting of the FAO Committee on Fisheries (COFI) that will take place in February 2003 comes at a critical time in the quest for sustainable fisheries. Meeting in Johannesburg at the World Summit on Sustainable Development in 2002, world leaders acknowledged the vital role of marine fisheries to economic and food security and to biodiversity in general. Leaders established a number of fisheries commitments for the world community, including a call "to maintain or restore stocks to levels that can produce maximum sustainable yield with the aim of achieving these goals for depleted stocks on an urgent basis and where possible not later than 2015."

The mission of FAO in the field of fisheries is to facilitate and secure the long-term sustainable development and utilization of the world's fisheries and aquaculture. Many of the issues on the agenda for the 2003 COFI meeting will contribute directly to the goal of restoring depleted fish stocks and to advancing other commitments.

If we are to fulfill these commitments, we must take concerted actions and set clear priorities. The most recent FAO statistics indicate that over 70 percent of fisheries are either overfished or are fished at their maximum capacity. In coming years, production from

many key fisheries will likely decline. Demand for fisheries products, however, will continue to increase. The prospect of this growing shortfall poses our greatest fisheries challenge today.

IMPLEMENTATION OF EXISTING AGREEMENTS

The past decade saw the development of new agreed standards to guide us on the path toward sustainable fisheries. Top among these initiatives are two global fisheries treaties, the 1995 UN Fish Stocks Agreement and the 1993 FAO Compliance Agreement. Further progress depends on all states ratifying or acceding to these agreements and implementing them fully. COFI will have an opportunity to address issues relating to these treaties, particularly the capacity building provisions of the Fish Stocks Agreement.

FAO has also made great contributions through its adoption of the 1995 Code of Conduct for Responsible Fisheries and its four associated International Plans of Action (IPOAs). The upcoming COFI meeting will give all FAO members an opportunity to demonstrate the progress they have made, individually and collectively, in implementing these agreements.

The two treaties, the Code of Conduct and the four IPOAs provide a comprehensive and compelling blueprint for action. Our chief focus today must be to hold governments accountable for their efforts to implement these agreements. We must find ways to ensure that the provisions that we have worked so hard to negotiate and adopt do not remain mere words on paper.

A FOCUS ON IUU FISHING

To this end, we must ensure that all players abide by the same rules. Fundamental fairness demands further measures to eliminate "illegal, unreported and unregulated" (IUU) fishing. The 2001 FAO International Plan of Action on IUU Fishing, adopted at the previous meeting of COFI, offers a toolkit for use by

all FAO members, both in their general capacities as states as well as in their more particular capacities as flag states, port states, coastal states, and market states and as members of regional fishery management organizations.

Many of these tools are readily available and cost effective. For example, the International Monitoring, Control, and Surveillance Network for Fisheries Related Activities (MCS Network) is a worldwide association of MCS professionals who assist each other in handling both general matters and particular cases. COFI should consider ways to promote further advances in MCS, including through a conference or technical consultation that would provide training opportunities for developing countries, increase dialogue at the regional level, and promote membership in the voluntary MCS Network.

The recent FAO expert meeting on port state controls has produced valuable recommendations for COFI as well. By inspecting vessels and withholding port privileges, port states can help greatly in the fight against IUU fishing. It is time to make port state regimes in fisheries more stringent, perhaps through the development of binding agreements at the regional or global level.

FAO also has the capacity to work with states that continue to offer flags of convenience (and which serve as ports of convenience) to make them more aware of their responsibilities under the IPOAs and to assist them in carrying out those responsibilities. Typically, such states fail to exercise their responsibilities for the control of the vessels that fly their flags, or fail to exercise controls over fish and fish products landed in their ports. These practices encourage unscrupulous fishers to continue IUU fishing.

As the international community uses the toolkit to solve IUU problems, the most useful tool may be a mirror, however. In this mirror, each of us can see that nationals and vessels from all states engage in IUU fishing and that all FAO members can do more to eliminate it. We can also see, conversely, that each of us is a victim of IUU fishing. In short, all FAO members must recognize that the successful control of IUU fishing will require cooperative and coordinated action, rather than rhetoric that blames others for the problems that result from IUU fishing.

SOME NEW ISSUES AND APPROACHES

CITES-FAO. For nearly three years, FAO has been working with the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) to

help develop appropriate listing criteria for commercially traded fish species. FAO and CITES must enhance this cooperation further on issues of mutual concern. COFI will have the opportunity to give initial approval to a draft memorandum of understanding for CITES-FAO cooperation as well as approve a draft work plan for FAO developed at the last meeting of the COFI Subcommittee on Fish Trade.

Enhanced cooperation with FAO will make CITES a more effective regime for stopping illegal trade in certain fisheries products, particularly from fisheries not currently under the purview of a regional fishery management organization. Cooperation with FAO will also allow better scientific analysis to inform CITES decisions on the listing of fish species and provide additional capacity building opportunities for developing countries on science and law-enforcement issues. The recent listing of two sharks species and all seahorses on Appendix II of CITES underscores the importance of FAO involvement in CITES activities to ensure that sustainable fisheries principles are incorporated into the work of CITES. COFI should therefore approve the MOU and work plan and direct FAO to undertake inter-session work with CITES.

Status and Trends Reporting. COFI should also move forward on the FAO Draft Strategy for improving information on the status and trends of capture fisheries, which will better guide the conservation and management of fisheries within ecosystems. The Draft Strategy combines a number of initiatives, including increased capacity building for developing countries in science and data collection, broadening and deepening the scope of FAO fisheries statistics to include fish stocks and ecosystems not currently covered, and a push for a global inventory of fish stocks. Effective implementation of the strategy will require substantial coordination within the FAO Fisheries Department, among donor states, and with interested donor organizations.

Ecosystem Approach. In the same vein, COFI should maintain the momentum created by the 2001 Reykjavik Conference on Responsible Fisheries in the Marine Ecosystem. The World Summit on Sustainable Development called for application of the "ecosystem approach" to fisheries management by 2010, drawing on the guidance for applying the ecosystem approach contained in the Reykjavik Declaration and decision V/6 taken by the Conference of Parties to the Convention on Biological Diversity. As recognized in the Reykjavik Declaration, the ability of management regimes to

achieve this goal will depend first and foremost on advancing scientific knowledge about marine ecosystems in general and about the interaction of fish stocks with other components of those ecosystems in particular. FAO is developing guidelines to assist in this undertaking.

One aspect of the "ecosystem approach" that demands urgent attention is the problem of "by-catch" in fisheries. Too often, fishers unintentionally catch fish and other marine animals that are not their real targets. We must work with the fishers to make their gear and fishing techniques more selective, particularly to avoid catching species that are endangered or threatened, such as sea turtles and seabirds.

Responsible Aquaculture. COFI also has the opportunity to promote the development of responsible aquaculture, building on the ambitious agenda of the first meeting of the FAO COFI Subcommittee on Aquaculture, held in Beijing in April 2002. Through COFI, FAO can make progress in dealing with issues of human and animal health associated with aquaculture and in maximizing the contribution of aquaculture to rural development. To make such progress, there must be improved data collection and reporting on aquaculture products.

In this regard, states in the Inter-American region are developing a formal cooperative mechanism on aquaculture issues, with assistance from both FAO and the Asia Pacific Economic Cooperation forum. This cooperative mechanism could follow the model provided by the Network of Aquaculture Centers in Asia, a treaty-based technical cooperation network in Southeast Asia that has contributed greatly to the sustainable expansion of aquaculture in that region. To further this effort, FAO member states from the Americas could meet on the margins of COFI at the political level.

IMPROVING THE TRADING SYSTEM

Subsidies that contribute to overcapacity and overfishing must end. In the 2001 World Trade Organization (WTO) ministerial meeting in Doha, Qatar, and in other fora, the international community has made the commitment to reduce these harmful subsidies. Most recently, at the World Summit on Sustainable

Development, leaders committed "to eliminate subsidies that contribute to illegal, unreported and unregulated fishing and to over-capacity while completing the efforts undertaken at WTO to clarify and improve its disciplines on fisheries subsidies, taking into account the importance of this sector to developing countries." FAO held an expert consultation on government financial transfers in December.

The time may also be ripe for FAO to consider once again the difficult issue of "ecolabeling" of fisheries products, building on groundwork laid by the FAO Subcommittee on Fish Trade. Ecolabeling schemes have been proliferating, without particular guidance from FAO. Now, however, both importing and exporting states support renewed FAO attention to this matter.

CAPACITY BUILDING FOR DEVELOPING COUNTRIES

FAO members must do more to help developing countries fulfill their commitments. FAO has recently sought to organize the extra-budgetary contributions it receives on implementation of the Code of Conduct for Responsible Fisheries into a comprehensive program known as FishCODE. Several donor countries have now made specific contributions to the FishCODE program, which offers a way to rationalize donor activities in FAO and reduce overlap and gaps in work. Through COFI, FAO should also extend its outreach to donor institutions, in particular the World Bank and Global Environment Facility.

The recent entry into force of the 1995 UN Fish Stocks Agreement has provided a new opportunity to channel assistance to developing countries that are parties to that treaty. The 2002 UNGA Fisheries resolution on the Fish Stocks Agreement calls upon FAO to take an active role in the development of a voluntary trust fund to promote implementation of the agreement by developing states parties. COFI should support this activity and encourage the Secretariat to continue sending a representative to informal meetings of parties where this trust fund is to be discussed. Work in this area will encourage more developing states to ratify the Fish Stocks Agreement and to do their part in the achievement of sustainable fisheries worldwide. □

□ ELIMINATING FISHING SUBSIDIES TO PROMOTE CONSERVATION

By Alice Mattice, Director for Trade and Environmental Policy Planning, Office of the U.S. Trade Representative

A number of practices are responsible for overfishing, and payment of government subsidies to the fisheries sector is clearly one of them, according to Alice Mattice of the Office of the U.S. Trade Representative. Mattice argues in this article that World Trade Organization negotiations offer the best opportunity for imposing discipline on fishing subsidies.

In November 2001, trade ministers from more than 140 countries met at the Fifth Ministerial meeting of the World Trade Organization (WTO) in Doha, Qatar, to establish an ambitious agenda for new global trade talks. Among the decisions made in Doha was to begin negotiations that "aim to clarify and improve WTO disciplines on fisheries subsidies, taking into account the importance of this sector to developing countries." The negotiations mark a considerable milestone for the WTO. For the first time, not only traditional trade concerns but also concerns for environmental conservation and sustainable development have played a major role in the launch of a trade negotiation.

The fisheries subsidy negotiations have broad support, not only from the United States and other developed countries such as New Zealand, Australia and Iceland, but also from a large number of developing countries — a reflection of the critical role the fisheries sector plays in supplying food and a source of livelihood for their people. The importance of the negotiations was recently underscored at the World Summit on Sustainable Development in Johannesburg, South Africa, where world leaders called for action on a number of fronts to maintain or restore world fish stocks to sustainable levels, including the elimination of harmful subsidies. It should be noted, however, that a limited number of key WTO members (notably Japan, Korea and, to a lesser degree, the European Union) continue to question the link between subsidies and harm to the environment and sustainable development.

THE SUBSIDIES PROBLEM AND WHY THE WTO IS ADDRESSING IT

There can be little doubt that overcapacity in the world fishing fleet is a major cause of the depletion of the world's fish stocks. Simply put, there are "too many boats chasing too few fish."

There has been some debate, however, concerning the contribution subsidies make to the problem. Overcapacity and overfishing have many causes, prominently including ineffective fisheries management regimes in many cases. Beginning in the mid-1990s, however, fisheries experts and intergovernmental organizations began increasingly to recognize the role of subsidies.

Shortly after the founding of the WTO, its Committee on Trade and Environment (CTE) — a non-negotiating body created to explore the environmental implications of trade — began discussions on the role government subsidies play in the fisheries sector. During the same period, the U.N. Food and Agriculture Organization (FAO) began to give considerable attention to the role of subsidies. The FAO in 1999 adopted a voluntary International Plan of Action on the Management of Fishing Capacity, which called upon FAO members to reduce and progressively eliminate subsidies contributing to overcapacity. Meanwhile, studies by other intergovernmental organizations, including the World Bank, the Organization for Economic Cooperation and Development (OECD) and the Asia Pacific Economic Cooperation (APEC) forum, attempted to estimate the levels of subsidies worldwide. Environmental non-governmental organizations such as the World Wildlife Fund also identified work on subsidies as a high priority and pressed for the WTO to address the issue.

While there are many gaps in the data and difficulties in interpreting them, widely accepted (and conservative) estimates place global fishing subsidies in the range of \$10 billion to \$15 billion annually — possibly more than 25 percent of the annual \$56 billion trade in fish. Subsidies at these high levels certainly exacerbate

management failures. Such subsidies operate to reduce fixed and variable costs, enhance revenues, and mitigate risks. They therefore encourage even more added effort and investments in overfished and depleted fisheries, which tend to predominate in the developed world.

Moreover, once a fishery is overfished, subsidized vessels turn to previously unexploited or uneconomic fisheries or go further offshore, often to the fishing grounds of developing countries. While these countries may wish to develop their own fisheries, they are hindered from doing so by overfishing on the part of subsidized distant-water fleets and by a lack of law-enforcement resources to effectively monitor fishing in their waters.

While the problem of overfishing and overcapacity is obviously a multifaceted one, the WTO is the body with the expertise on subsidies and the ability to impose binding disciplines on them. The WTO therefore has an important role to play in helping to address one part of the puzzle. At the same time, the WTO must remain within its core competency, and its efforts should be carefully coordinated with other fisheries work in the FAO, regional fisheries management organizations and other fora with appropriate expertise.

CURRENT ISSUES AND STATUS

The WTO Agreement on Subsidies and Countervailing Measures already prohibits certain subsidies (particularly those directly designed to promote exports) and establishes some controls over most others. However, the existing rules have not limited trade-distorting fishery

subsidies and clearly do not adequately address subsidies that can contribute to the actual depletion of the resource and consequent denial of access to producers from other countries. Nor are they well equipped to address problems with an exhaustible natural resource that migrates across jurisdictional boundaries. The negotiations now under way will seek to identify the gaps in WTO rules and suggest possible solutions.

One important issue in the negotiations will be to find ways to distinguish between harmful subsidies that contribute to overcapacity and subsidies that do not. Many government programs — such as those that support sound environmental conservation and well-designed "buy-backs" aimed at decommissioning fishing vessels — may help to eliminate overcapacity or overfishing.

Negotiations now under way in the WTO Negotiating Group on Rules are at a preliminary stage. The objective of proponents of improved rules is to suggest concrete ways to move forward by the time of the WTO ministerial meeting in Cancun, Mexico, in September 2003. The negotiations are scheduled to conclude in 2005. The United States continues its efforts to address overfishing concurrently on other fronts in the FAO, regional fisheries management organizations, and other appropriate fora. □

□ HOW INTERNATIONAL ENFORCEMENT COOPERATION DETERS ILLEGAL FISHING IN THE NORTH PACIFIC

By Commander John Davis, Chief, Fisheries Enforcement Division, U.S. Coast Guard

Multinational cooperation is essential in enforcing conservation of fisheries over the vast distances of the ocean, says Commander John Davis, chief of fisheries enforcement for the U.S. Coast Guard. Davis describes how U.S. cooperation with Russian and Chinese authorities has achieved a steep drop in illegal driftnet fishing in the North Pacific.

Preventing illegal, unreported and unregulated (IUU) fishing on the high seas is a daunting task. Vast areas of ocean to monitor, enforcement resource limitations, and the sheer number of fishing vessels plying the seas only make the situation worse. The result of illegal fishing is further depletion of the world's fish stocks, natural resources and food reserves. No single nation can stamp out IUU fishing. If nations work together and unify their enforcement efforts, however, IUU fishing can be deterred in many regions.

A shining example of this sort of international cooperation is the North Pacific Anadromous Fish Commission. The cooperation, planning and commitment of enforcement resources by all member states are a model for all other regional fisheries management organizations to follow.

The Convention for Conservation of Anadromous Stocks in the North Pacific Ocean, signed in February 1992 and entered into force in February 1993, created the North Pacific Anadromous Fish Commission to promote conservation of anadromous stocks — fish that are born in fresh water, migrate to the ocean to grow as adults, and then return to fresh water to spawn — as well as ecologically related species in the North Pacific.

Commission contracting parties are Canada, Japan, Russia, and the United States. In addition to conservation of anadromous fish stocks, commission member states also work closely together to enforce the 1991 United National General Assembly moratorium on large-scale high-seas driftnet fishing, prohibiting the use of nets greater than 2.5 kilometers in length.¹ These “curtains of death” have a devastating impact on marine

life, from whales to sea birds to the anadromous species that the North Pacific Anadromous Fish Commission was chartered to conserve.

The commission is the only regional organization whose charter specifically addresses enforcement agency interoperability. The cooperative enforcement efforts of the parties have been successful in reducing illegal fishing operations within the Convention Area² from the 1998 high of 24 known vessels to virtually no known IUU fishing over the past few years. This type of multinational enforcement cooperation is the key to future protection of the world's natural resources.

PLANNING AND COORDINATION OF ENFORCEMENT ACTIVITIES

Planning and coordination of enforcement activities within the Convention Area is the responsibility of the Committee on Enforcement. This committee holds annual workshops to coordinate patrol activities and to confirm notification procedures in the event illegal fishing activity is discovered. The results of these workshops are evident during the peak fisheries period for high-seas driftnet enforcement operations. Canadian CP-140 and U.S. Coast Guard C-130 aircraft deploy out of Alaska to patrol the Convention Area, frequently with enforcement agents of the U.S. National Marine Fisheries Service on board. Furthermore, during the Canadian CP-140 deployments, a Canadian Department of National Defense officer also works out of the U.S. Coast Guard office in Juneau to coordinate patrols and response to sightings.

Enforcement interoperability of the parties was further enhanced in 2001 when a Joint Operations Information Coordination Group was established to exchange enforcement-related information for protection of salmon resources and prevent high-seas driftnet fishing in the Convention Area. The group comprises designated enforcement officials of each of the North Pacific Anadromous Fish Commission parties. Coordination Group points of contact communicate with each other at least once each month to ensure open lines of

communications and to coordinate dissemination of information with appropriate government agencies or entities.

Continual evaluation and improvement of enforcement activities was further enhanced with the establishment of an Enforcement Procedures Working Group in October 2002. This group has begun work on threat analysis and vessel profiling. The U.S. Coast Guard has been the primary agency providing threat assessment information to the Enforcement Committee, using past fishing activity, market conditions, political factors, and deterrent measures to determine the threat level in the Convention Area for each year. The Coast Guard has also developed a CD-ROM for all parties that contains photographs of research, enforcement, and high-seas driftnet vessels. The group is working towards integrating information from all parties into the threat assessments and vessel profiling data.

China provides ancillary enforcement support within the Convention Area although it is not a signatory to the Convention. The Chinese cooperate with the United States by way of a 1993 Memorandum of Understanding (MOU) that established a boarding/shiprider agreement. This agreement provides non-flag-state enforcement authority and establishes boarding procedures for law-enforcement officials of either country to board U.S.- or China-flagged vessels suspected of illegal driftnet fishing on the high seas. The MOU allows Chinese fisheries enforcement officials to embark on U.S. Coast Guard cutters during each driftnet season.

As a bilateral enforcement agreement, the MOU facilitates and expedites investigations of suspicious vessels when they are encountered on the high seas. Chinese shipriders have been based in Kodiak, Alaska, every year since 1994 and have been instrumental in a number of high-seas driftnet boardings and seizures. These shipriders participate in Coast Guard C-130 high-seas driftnet surveillance flights and deploy on Coast Guard cutters responding to high-seas driftnet vessel sightings.

SUCCESSSES IN ENFORCEMENT

Multinational enforcement cooperation by parties of the North Pacific Anadromous Fish Commission has enabled remarkable success in interdicting and deterring illegal large-scale high-seas driftnet fishing. In 1998, four of 24 vessels suspected of such driftnet fishing sighted in the Convention Area were interdicted and seized by U.S.

Coast Guard and Russian Federal Border Service vessels. In 1999, three of 10 vessels suspected of illegal driftnet fishing sighted within the Convention Area were interdicted and seized through the coordination of Canadian, Russian, American, and Chinese enforcement resources. In 2001 only one vessel was sighted, interdicted, and seized for illegal fishing operations in the Convention Area, and in 2002, none, although one vessel was detected fishing illegally just outside the Convention Area and inside the Russian 200-mile exclusive economic zone (EEZ). The Russian Federal Border Service interdicted that vessel.

The following cases demonstrate the international cooperation necessary to interdict and seize vessels engaging in illegal fishing operations over the past three years:

- On April 18, 1999, a Canadian surveillance aircraft observed a fishing vessel conducting large-scale high-seas driftnet fishing operations approximately 500 nautical miles southwest of Attu, Alaska. The following day, the vessel was sighted with 10 miles of a net in the water. That information was passed to the U.S. Coast Guard and the Russian Federal Border Service. On April 19, the Coast Guard Cutter Rush intercepted the vessel, identified as the Russian-flagged Lobana-1. During the boarding, seven tons of salmon were discovered. On April 21, custody of the Lobana-1 was transferred to the Russian Federal Border Service vessel Brest for enforcement action.
- On April 25, 1999, the Coast Guard Cutter Rush observed the Ying Fa, flying China's flag, conducting driftnet fishing operations approximately 800 nautical miles southwest of Attu. The Ying Fa was boarded under the authority of the U.S.-China boarding/shiprider MOU with the assistance of a Chinese shiprider on the Rush. The boarding revealed 6.2 tons of salmon and a 10-mile driftnet. The master stated he intended to fish until 40-50 tons of salmon were caught. The government of China refuted the registration claim of the Ying Fa, and it was assimilated to a vessel without nationality, seized, and escorted to Adak, Alaska, for enforcement action under U.S. law.
- On May 1, 1999, a U.S. Coast Guard C-130 surveillance flight observed the Tayfun-4 conducting large-scale high-seas driftnet fishing operations 450 nautical miles southwest of Attu, Alaska. The Coast Guard Cutter Rush intercepted and boarded the Russian-

flagged vessel on May 3 and discovered two tons of salmon. On May 6 custody of the Tayfun-4 was transferred to the Russian Federal Border Service vessel Barrs for enforcement action.

- On May 12, 2000, the Coast Guard, with authorization from the government of Honduras, seized the Honduran-flagged fishing vessel Arctic Wind for illegal driftnet fishing within the Convention Area. At least three driftnets totaling 20 miles were left behind by the Arctic Wind, and one whale was entangled in the net. The Arctic Wind was sold at auction for \$226,600. More than half of the vessel's catch proved to be salmon from Alaskan spawning areas as determined by National Marine Fisheries Service genetic testing.

- On May 16, 2001, delegates from all parties attending the annual North Pacific Anadromous Fish Commission enforcement coordination meeting participated in the first high-seas driftnet patrol flight of the Convention Area by a Coast Guard HC-130 aircraft patrol staged out of Petropavlovsk-Kamchatsky, Russia. A trawler converted into a driftnet-fishing vessel — later identified as the Russian-flagged Sakhfrakt-3 — was observed driftnet fishing 15 nautical miles inside the Russian EEZ just outside the Convention Area. The Russian Federal Border Service ship Dzerzhinsky was contacted and immediately diverted to intercept the Sakhfrakt-3. Upon boarding, the Federal Border Service found the vessel was equipped for driftnet fishing, having on board radio buoys, five driftnets with a combined length of 17 nautical miles, processing equipment and shipping boxes. The Dzerzhinsky directed the vessel to recover its driftnets containing 1,460 salmon. The Sakhfrakt-3 was escorted to Petropavlovsk-Kamchatsky and charged with multiple violations of Russian law. The master of the Sakhfrakt-3 had his license to fish suspended for three years and was fined 1.2 million rubles (approximately US\$41,000).

- In 2002, Canadian surveillance flights detected three vessels matching the profile of a driftnet vessel. Investigation revealed that one of the vessels, the MYS Nord, was a large-scale driftnet vessel operating just inside the Russian EEZ. Canada provided copies of the MYS Nord evidence package to the North Pacific Anadromous Fish Commission parties in May 2002. Russia conducted an investigation of the MYS Nord and found no evidence of high-seas driftnet fishing although it proposed to include the vessel in the North Pacific Anadromous Fish Commission database of suspected large-scale high-seas driftnet vessels.

CONCLUSION

Activity in the high-seas driftnet high-threat area has been quiet in 2001 and 2002. Although this may be due in part to deteriorating global salmon market conditions, aggressive enforcement coordination by North Pacific Anadromous Fish Commission parties and well-publicized interdiction successes over the past three years undoubtedly have been significant deterrents to illegal high-seas fishing activity. This multinational enforcement cooperation is necessary to overcome the vast ocean distances and jurisdictional issues associated with illegal fishing on the high seas. The commission continues to improve and refine its enforcement success and is an excellent model for other regional fisheries management organizations aiming to protect the oceans' valuable natural resources. □

1. In support of this resolution, the United States enacted The High Seas Drift Net Enforcement Act.

2. The Convention Area is defined as "the waters of the North Pacific Ocean and its adjacent seas, north of 33 degrees north latitude beyond 200 nautical miles from the baselines from which the breadth of the territorial sea is measured."

□ THE ENVIRONMENTAL CONSEQUENCES AND ECONOMIC COSTS OF DEPLETING THE OCEANS

By Angela Somma, Natural Resource Specialist, Office of Sustainable Fisheries, National Marine Fisheries Service

Overfishing can not only reduce the stocks of targeted and non-targeted species but also wreak havoc with the marine ecosystem, according to Angela Somma of the National Marine Fisheries Service of the U.S. Department of Commerce. Moreover, she says, overfishing and mismanagement of fisheries cost billions of dollars a year in potential revenue to the industry while government subsidies to unsustainably large fishing fleets cost billions more.

Throughout the 1960s and 1970s, world marine and inland capture fisheries production increased steadily, on average by as much as 6 percent per year. In the 1980s, the rate of growth slowed considerably, and in the 1990s harvests leveled off. Around 1990, global fish production plateaued at about 100 million tons annually and hasn't moved much in the succeeding years. While aquaculture output continued to grow, yields from fisheries harvesting wild stocks from the oceans and inland waters were uneven and began to stagnate. A consensus emerged that the stagnation was the result of widespread overfishing. This paper examines the environmental and economic costs of that overfishing.

Over the past decade, it became increasingly clear that fisheries resources that were once thought of as nearly inexhaustible had been severely overfished as one fishery after another experienced serious decline. The once-abundant fisheries of bottom-dwelling fish such as cod in New England and eastern Canada were decimated, giant tuna species in the Atlantic were depressed to levels that jeopardized rebuilding, and several species of Pacific and Atlantic salmon were placed on the U.S. endangered species list. And the problem persists. In October 2002, an international scientific advisory commission recommended that all fisheries targeting cod in the North Sea, Irish Sea and waters west of Scotland be closed. Overfishing has obvious detrimental effects on the stocks being overharvested, but it can also harm the ecosystem in which those stocks live and cause economic hardship to fishermen and their communities.

The problem of overfishing is widespread throughout both the developed and developing worlds. The United Nations Food and Agriculture Organization (FAO) estimates that of the major marine fish stocks or groups of stocks for which information is available, 47-50 percent are fully exploited, 15-18 percent are over-exploited, and 9-10 percent have been depleted or are recovering from depletion. Thus, close to 75 percent of the world's major fisheries are fully exploited, or worse.¹

ENVIRONMENTAL CONSEQUENCES OF OVERFISHING

The environmental consequences of overfishing are many and include reduced harvests of the targeted fish; excessive unintentional harvest of non-targeted, undersized or protected species, and ecosystems changes.

Persistent overfishing can lead to the elimination of the largest and oldest individuals from a population or stock. Overfished populations are characterized by less-productive fish that eventually lead to a decline in stocks. In the United States, recent average yields of all U.S. fisheries resources are roughly 60 percent of the best estimate of long-term potential yield from these resources.²

Alternatively, if overfishing is curtailed and fishery resources sustainably managed, fisheries become more productive, the cost per fish harvested declines, and harvests rise substantially. For example, in 1999 the International Commission for the Conservation of Atlantic Tunas (ICCAT) established a 10-year rebuilding program for overfished North Atlantic swordfish. Catch reductions were integral to stock recovery. Four years into the rebuilding program, the stock size is estimated to be at 94 percent of its healthy level. With the program well on track, ICCAT was able to increase catch levels at its 2002 meeting.

Harvest of non-targeted animals, or bycatch, is estimated to constitute about one-quarter of the global fish catch. Bycatch comprises all of the animals that are caught but not wanted or used, or are required to be discarded by

management regulation. It may include specially protected species such as marine mammals or endangered species, juvenile individuals too small to be marketed, or other species of fish without commercial or recreational value to the fisher. The unwanted species are usually discarded, often dead, either at sea or on shore. Various types of fishing gear are non-selective and can ensnare unwanted catch. Purse seine nets can catch juvenile fish and marine mammals such as dolphins. Longlines catch seabirds, sea turtles, and non-targeted fish along with the targeted catch. Gillnets can also catch seabirds, and lost or discarded gillnets can continue to catch and kill marine animals through what is known as "ghost fishing." Trawls are a particularly non-selective type of gear and can take considerable bycatch of many different species. In addition, concern is also growing about the changes trawls can make to fish habitat. They are often dragged along the bottom of the seabed and may damage habitat.

Overfishing can have broader adverse effects on the ecosystem as well. As noted above, in the 1990s total world catch reached a plateau. In some cases, this plateau in production was maintained by changes in species composition and by "fishing down the food chain." Top predatory species tend to be fished for first. Once depleted, fishing moves down the food chain and can simplify the marine ecosystem. This, along with environmental changes to important habitat areas, can affect future fish production levels.

Overfishing can cause changes in marine food webs, adversely affecting other species. For example, the decline of Steller sea lions in Alaska has been attributed in part to overfishing of the Stellers' main food sources: pollock, cod, and mackerel. Overfishing also has the potential to indirectly change ecosystems such as coral reef ecosystems. When plant-eating fish are removed from coral reef ecosystems, grazing is reduced, allowing the algae that coexist with corals to flourish and potentially take over, especially if the water contains high levels of nitrogen. Because they often reduce light that enters the water, these algae contribute to the loss of corals, which depend upon light.

ECONOMIC COSTS

In addition to the numerous environmental costs, overfishing has significant economic costs as well. If fishery resources were sustainably managed, total harvests could rise an additional 10 million metric tons, adding \$16 billion to worldwide gross revenues annually.³ In the

United States, rebuilding currently overfished stocks and preventing overfishing in other fisheries could generate an additional \$2.9 billion in revenue each year.⁴ Current revenues are \$3.0-3.5 billion. Thus, sustainably managing marine fisheries in the United States' 200-mile exclusive economic zone (the source of most of the U.S. catch) could nearly double revenues in this sector of the economy.

Ineffective management and overfishing have caused the fishing industry to underperform. In 1992, the FAO estimated that worldwide revenue at first-hand sales was approximately \$70 billion while the total operating cost for the world's fishing fleet was \$85 billion. Thus, the fleet was operating at an annual deficit of \$15 billion.⁵

The operating deficit can be traced to marked growth in the world's fleet between 1979 and 1989 — estimated by FAO to have increased by 322 percent without a concomitant increase in the resource.⁶ In fact, during this period world fisheries harvests grew at only about half the rate as the fleets, causing overcapacity in the world's fishing fleet. Overcapacity in fisheries in which anyone can participate often leads to "derby" fishing in which all the fishers attempt to catch as much as they can as quickly as they can before the quota is reached. This often creates a temporary market glut and lowers prices for fishers while creating longer-term supply problems for buyers. It also leads to overcapacity in the processing sector and reduces economic benefits to consumers.

Excessive bycatch, which often accompanies overfishing, imparts economic costs on the sector as well. Those economic costs include reduced food production in fisheries directed at the adult species of juveniles discarded in another fishery, reduced employment in fisheries and processing plants, and corresponding losses to fishery-dependent communities.

The fishing sector is not the only sector to experience economic costs associated with overfishing. There can be significant costs to the public as well. A recent study by the Organization for Economic Cooperation and Development (OECD) found that the cost of fisheries services among the 30 OECD member governments (research, management, and enforcement services) accounts for approximately 36 percent of total government financial transfers to the fisheries sector.⁷ The cost of those services totaled approximately \$2.5 billion in 1999.⁸ It is difficult to know how much of this cost is attributable to overfishing, but as stocks become

overfished, management regulations generally become increasingly complex with greater need for enforcement, thus increasing costs to the public sector to manage these dwindling resources.

The costs to the public of providing subsidies to the fishing sector are receiving ever-greater attention. Worldwide, subsidies to the fishing sector are estimated to cost somewhere between \$14 billion and \$20 billion annually.⁹ Subsidies that reduce fixed and variable costs or increase revenues distort trade and undermine competition in global seafood markets. Because of subsidies, the level of production is higher, resulting in decreases in prices. As a species becomes overfished, reduction in supplies can eventually lead to higher prices.

The costs of reducing overcapacity, if borne by the public through publicly funded vessel buyback programs, can be substantial as well. In the United States, all but one buyback program in 1994-2002 was federally funded, at a total cost of \$65 million.¹⁰ A recent study of the costs of a buyback program to eliminate overcapacity in five federally managed fisheries in the United States (New England and West Coast groundfish, East Coast swordfish, Atlantic longline shark, and Gulf of Mexico shrimp fisheries) estimated those costs to total \$999.6 million.¹¹

Clearly, overfishing has substantial economic as well as environmental costs. Stopping overfishing and allowing the stocks to rebuild would increase the productivity of the stocks and maximize revenues to the industry in the long run. Such action is necessary to stabilize both the resource and the industry. □

1. FAO, *The State of World Fisheries and Agriculture*, 2000.

2. NMFS, *Our Living Oceans: Report on the Status of U.S. Living Marine Resources*, 1999, June 1999, pg. 43.

3. FAO, *Marine Fisheries and the Law of the Sea: A Decade of Change*, in *The State of Food and Agriculture*, 1992, pg. 29-30 (using 1989 global fisheries data).

4. U.S. Department of Commerce, National Oceanic and Atmospheric Administration, *NOAA Strategic Plan: A Vision for 2005*, 1996, pg. 89.

5. FAO, *World Fisheries Situation*, 1992, pg. 7.

6. S.M. Garcia and C. Newton, "Current Situation, Trends and Prospects in World Capture Fisheries," paper presented at the Conference on Fisheries Management, Global Trends, Seattle, 14-16, June 1994, pp. 20-21.

7. OECD, *Fisheries Management Costs Study: Experiences and Insights from OECD Countries*, 2002, pg. 5.

8. *Ibid*, pg. 6.

9. Milazzo, Matteo, *Subsidies in World Fisheries, A Reexamination*, 1998, pg. 73.

10. NMFS, *Draft United States National Plan for the Management of Fishing Capacity*, November 2002, pg. 15.

11. NMFS, *The Estimated Vessel Buyback Program Costs to Eliminate Overcapacity in Five Federally Managed Fisheries*, June 2002.

INTERNATIONAL INSTRUMENTS FOR INTERNATIONAL FISHERIES

By David Balton, Director, Office of Marine Conservation, U.S. Department of State

The past decade has seen a burst of international rules and voluntary guidelines for fishing in coastal waters and on the high seas. In this article David Balton, director of the State Department's Office of Marine Conservation, summarizes developments from the 1992 U.N. Conference on Environment and Development to the 2002 U.N. World Summit for Sustainable Development.

Profound changes have reshaped the world of marine fisheries in the past decade. In the early 1990s, the international community was forced to recognize that the capacity of harvesting operations in many key fisheries had outpaced both the reproductive capacities of those resources as well as the tools being used by governments and international organizations to regulate those fisheries to achieve sustainability. Unresolved jurisdictional disputes between states over certain valuable fish stocks were producing heightened conflict and inhibiting effective conservation.

The 1992 Cancun Conference on Responsible Fishing and the 1992 United Nations Conference on Environment and Development (UNCED) set in motion a series of steps designed to address these problems. At the global level, these included the negotiation of two new treaties to regulate ocean fisheries as well as the adoption of a non-binding "code of conduct." The United Nations established a moratorium on the use of large-scale driftnets (longer than 2.5 kilometers) on the high seas, which became effective in 1993. Several new regimes governing ocean fisheries in specific regions have also arisen.

The international community has developed some additional measures to address more particular concerns, including non-binding instruments aimed at reducing fishing capacity, conserving sharks, minimizing by-catch of seabirds in long-line fisheries, and combating illegal fishing.

A number of regional fisheries management organizations have also taken steps to control fisheries in their respective regions more effectively. Some of these

organizations now require their members to prohibit fish from being landed or transshipped in their ports in situations where the fish may have been harvested illegally. Others require their members to restrict international trade in such circumstances. Other trends include calls for fisheries to be managed as part of ecosystems, reduction and elimination of harmful subsidies to the fisheries sector, and eco-labeling schemes.

A REVIEW OF INTERNATIONAL INSTRUMENTS

Following is a brief summary of the major international instruments, both binding and non-binding, that relate to the management of ocean fisheries today. A number of websites contain significantly more information, including that of the Food and Agriculture Organization of the United Nations (FAO), www.fao.org/fi/default.asp, and the Internet Guide to International Fisheries Law, www.oceanlaw.net/guide.htm.

1982 U.N. Convention on the Law of the Sea. This treaty, which entered into force in 1994, contains general provisions for the governance of ocean fisheries. These provisions have also served as the framework for developing more specific rules in subsequent international instruments.

In the decades leading up to the 1982 Convention, many states had advanced new claims to jurisdiction over significant ocean areas off their coasts. The 1982 Convention recognized this practice and codified the status of the "exclusive economic zone" (EEZ). Under the 1982 Convention, coastal states may claim EEZs extending up to 200 miles (about 322 kilometers) from their shores and may exercise full control over fisheries in their EEZs. Because at least 90 percent of all marine harvests occur within 200 miles of shore, the 1982 Convention effectively placed the vast majority of fishery resources at the disposal of coastal states.

In exchange for this enormous benefit, coastal states have certain responsibilities under the 1982 Convention. Each coastal state must determine the allowable catch of living resources in its EEZ, protect such resources against over-

exploitation, take certain measures to reduce by-catch, promote optimum utilization of such resources, determine its capacity to harvest such resources, and give other states access to any surplus resources in its EEZ.

Beyond the EEZs lie the remaining high seas, which, if all coastal states claimed EEZs out to 200 miles, would still cover more than 21 percent of the earth's surface and approximately 70 percent of all ocean area. The 1982 Convention reaffirms the traditional right of all nations for their nationals and vessels to fish on the high seas but makes this right subject to a number of important, though general, additional conditions.

The 1982 Convention authorizes each coastal state to enforce its fishery laws within its EEZ against any vessels that may be fishing there. Fishing vessels on the high seas, generally speaking, remain under the exclusive jurisdiction of the flag state (that is, the state in which the vessel is registered), although the flag state may consent to have enforcement action taken by another state.

FAO Compliance Agreement. This treaty — known formally as the Agreement to Promote Compliance with International Conservation and Management Measures by Fishing Vessels on the High Seas (the Compliance Agreement) — was adopted by the Food and Agriculture Organization of the United Nations (FAO) in 1993. The agreement has two primary objectives:

- to impose upon all states whose fishing vessels operate on the high seas an array of obligations designed to make the activities of those vessels consistent with conservation and management needs;
- to increase the transparency of all high-seas fishing operations through the collection and dissemination of data about high-seas fishing vessels and their activities.

Perhaps the most groundbreaking aspects of the agreement are three new rules contained in it regarding high-seas fishing operations:

Rule #1: Each flag state must ensure that its vessels do not engage in any activity that undermines the effectiveness of international fishery conservation and management measures, whether or not the flag state is a member of the regional fishery organization that adopted such measures.

Rule #2: No vessel is to be used for fishing on the high seas without specific flag state authorization.

Rule #3: No flag state shall grant such authority to a vessel unless the flag state is able to control the fishing activities of that vessel.

These three rules represent a new vision for high-seas fisheries. To abide by these rules, flag states must actively oversee the high-seas fishing operations of their vessels. They must decide case by case whether to authorize any vessel to fish on the high seas. Most importantly, they may not permit any vessel to fish on the high seas at all unless they are able to prevent the vessel from undermining agreed high-seas conservation rules.

In order for the Compliance Agreement to enter into force, 25 states must deposit instruments of acceptance with FAO. As of this writing, FAO has received only 23 instruments of acceptance.

U.N. Fish Stocks Agreement. This treaty — known formally as the Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 Relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks — also responded to a recommendation arising out of UNCED, which called for specific new measures to deal with problems of “straddling” fish stocks and “highly migratory” fish stocks.

Straddling fish stocks are those that cross between the EEZs of one or more coastal states and into adjacent high-seas areas. Among these are valuable stocks of cod in the Northwest Atlantic Ocean and pollock in the Bering Sea. Highly migratory fish stocks are those that migrate extensively across the high seas and through the EEZs of many coastal states. Examples of this type are tuna and swordfish.

The agreement builds upon certain basic provisions of the 1982 U.N. Convention relating to these two categories of fish stocks with the aim of ensuring that they are conserved and managed on a sustainable basis. Among other notable features, the agreement prescribes a precautionary approach to fishery management. This approach generally calls upon fishery managers to proceed cautiously in regulating fish harvests when information is uncertain, unreliable, or inadequate. The absence of adequate information is no reason to postpone (or to fail

to take) measures to conserve fish stocks. The agreement also reinforces the roles played by regional fisheries organizations in managing these stocks. In order for states to have access to these fisheries, they must either join the organizations or, at a minimum, apply the fishing rules established by these organizations to their own vessels. Disputes arising under the agreement are subject to compulsory and binding dispute settlement.

The United Nations adopted the U.N. Fish Stocks Agreement in 1995 after three years of negotiation. The agreement entered into force in 2001 and, as of this writing, has 32 parties.

FAO Code of Conduct for Responsible Fisheries. The FAO adopted this comprehensive blueprint for the management of fisheries in 1995. Although the code is voluntary, certain parts of it are based on relevant rules of international law, including those reflected in the 1982 U.N. Convention.

The code sets forth principles and standards applicable to the conservation, management and development of all fisheries. It also covers the capture, processing and trade of fish and fishery products, fishing operations, aquaculture, fisheries research and the integration of fisheries into coastal area management.

Among the objectives of the code are:

- to establish principles for responsible fishing and fisheries activities, taking into account all their relevant biological, technological, economic, social, environmental and commercial aspects;
- to establish principles and criteria for the elaboration and implementation of national policies for responsible conservation of fisheries resources and fisheries management and development;
- to serve as an instrument of reference to help states establish or improve the legal and institutional framework required for the exercise of responsible fisheries and to formulate and implement appropriate measures;
- to provide guidance that may be used where appropriate in the formulation and implementation of international agreements and other legal instruments, both binding and voluntary;

- to facilitate and promote technical, financial and other cooperation in conservation of fisheries resources and fisheries management and development;

- to promote the contribution of fisheries to food security and food quality, giving priority to the nutritional needs of local communities;

- to promote protection of living aquatic resources and their environments and coastal areas;

- to promote the trade of fish and fishery products in conformity with relevant international rules and to avoid the use of measures that constitute hidden barriers to such trade;

- to promote research on fisheries as well as on associated ecosystems and relevant environmental factors;

- to provide standards of conduct for all persons involved in the fisheries sector.

FAO International Plans of Action. In 1999, FAO adopted three non-binding instruments, known as International Plans of Action (IPOAs), to address three specific problems in ocean fisheries.

The most complex and far-reaching of these instruments concerns the management of “fishing capacity” — the ability (or capacity) of the world’s fishing fleet to harvest fish in the oceans. Many studies have indicated that, on a worldwide basis, total fishing capacity is too great and must be reduced. There are simply too many vessels chasing too few fish. Although excess capacity does not exist in each individual fishery, the problem of excess capacity is growing. Many key fish stocks cannot sustain any increase in harvesting but face increased capacity from new vessels and improved technology. The IPOA on the Management of Fishing Capacity commits the international community to address this problem and sets standards for bringing fishing capacity in line with sustainable fishing.

Another of these IPOAs concerns the conservation and management of sharks while the other deals with the problem of seabird by-catch in longline fisheries. A final IPOA, adopted by FAO in 2001, concerns the growing incidence of “illegal, unreported and unregulated” fishing.

World Summit for Sustainable Development. Ten years after UNCED, the world's leaders met at the World Summit for Sustainable Development (WSSD) in Johannesburg, South Africa, to review progress achieved in meeting the goals of UNCED. WSSD produced a new Plan of Implementation, which includes several

commitments related to international fisheries. The most significant of these commitments is a call to rebuild depleted fish stocks on an urgent basis and no later than 2015. □

□ CREATING AND IMPLEMENTING INTERNATIONAL FISHERIES CONSERVATION AGREEMENTS

By Dean Swanson, Chief, International Fisheries Division, National Marine Fisheries Service

The way the United States approaches negotiation and implementation of fisheries agreements could serve as a model, says Dean Swanson of the National Marine Fisheries Service of the U.S. Department of Commerce. The inclusive, transparent process means all the difference in achieving results, he says.

A remarkable process has evolved in the United States for negotiating and implementing international agreements for the conservation and management of living marine resources. It is remarkable for the close partnerships that have evolved between federal agencies, Congress, state governments, constituent groups, and the general public. It is remarkable for a process wherein lead responsibility for negotiations and implementation is constantly shifting among key agencies. And it is remarkable for the leadership exercised by the United States in achieving good negotiated agreements over decades.

THE PARTNERSHIPS

A key ingredient to the inspiration, negotiation, and implementation of international agreements is a transparent and inclusive process. The inclusion of constituent representatives at all stages of the negotiation enriches the process itself, particularly in position development, communication, and intelligence gathering. It is not only because most such agreements will be subject to the advice and consent to ratification of the U.S. Senate that it is important to consult with congressional staffs; working with these staffs ensures that legislative programs are well informed and that a broader constituent base is reached.

The partnerships nurtured between the Department of State, the National Marine Fisheries Service of the National Oceanic and Atmospheric Administration (NOAA Fisheries), and the U.S. Coast Guard are central to negotiating these agreements. The State Department provides negotiating authority and expertise; NOAA Fisheries provides information on the state of the living marine resource; and U.S. and foreign fishers provide perspectives on implementation of the prospective

agreement, including aspects of enforcement. The U.S. Coast Guard has primary responsibility for monitoring and enforcing international agreements on living marine resources on the water. In some cases, state governments and U.S. native peoples also participate. Bringing together these complementary responsibilities and sources of expertise is the sine qua non of success in producing these agreements.

SHIFTING RESPONSIBILITIES

Creation of an international agreement is achieved in three phases: pre-negotiation, negotiation, and implementation.

In the pre-negotiation phase, the State Department typically takes the lead, using its foreign policy authority and responsibility for handling communication through diplomatic channels to organize the negotiation activity, collect intelligence, and coordinate the development of U.S. positions. Among the involved federal agencies, NOAA Fisheries provides information and expertise regarding the resource and its users, implementation, and enforcement while the U.S. Coast Guard provides advice and expertise based on its enforcement responsibilities.

Representatives of these three agencies, other agencies, state governments and constituent groups typically become a team that plans for the negotiation and, with congressional input, serves as the U.S. delegation during the negotiation phase. Reaching agreement can take anywhere from a single session to decades.

If such a negotiation concludes successfully, implementing the agreement requires different responsibilities. Legislation from Congress for implementing the agreement usually confers living marine resource conservation and management duties on the secretary of commerce, who oversees NOAA Fisheries. NOAA Fisheries typically drafts this legislation and promulgates the regulations. Senior NOAA Fisheries officials assume decision-making roles on behalf of the U.S. government in any organization or arrangement created by the new agreement, such as serving as a U.S.

commissioner. While leadership shifts during the implementation stage, the agencies and groups participating in the process stay the same.

The monitoring and enforcement part of the implementation process becomes a shared responsibility with the U.S. Coast Guard responsible at sea and NOAA Fisheries onshore. When violations occur, NOAA Fisheries investigates and, in cooperation with the Coast Guard and the Department of Justice, prosecutes the cases. NOAA Fisheries collects data on the resource and its utilization, providing conservation and management activities with the best available scientific advice.

PRODUCTION OF RELEVANT INTERNATIONAL AGREEMENTS

This team approach has produced numerous state-of-the-art living marine resource conservation and management agreements over recent decades. The approach evolved as national jurisdiction over the seas was extended in the 1970s and 1980s. It evolved further in the 1990s as

fisheries management had to start considering sustainability, food security and fair trade. One recent effort to assess progress made over the last decade may be found online at:

www.nmfs.noaa.gov/sfa/international/Reportcard_final.pdf.

By any reckoning, the transparent, inclusive approach to creating and implementing living marine resource conservation and management agreements is a resounding success. Intrinsic to it is recognizing and employing the unique responsibilities and expertise of the involved federal agencies, Congress, and a wide variety of private-sector organizations and individuals. Working together, they will continue to secure the international cooperation necessary to provide for the conservation and management of living marine resources. □

□ SOME OBSERVATIONS ON DEVELOPMENTS IN WORLD FISHERIES

By David J. Doulman, Senior Fishery Liaison Officer, Fisheries Department, U.N. Food and Agriculture Organization

The Food and Agriculture Organization of the United Nations (FAO) has taken a number of steps to tackle the problems of overfishing, says David Doulman of FAO's Fisheries Department. Governments need to demonstrate the political will to halt overfishing, he says. Developing countries could well fall further behind developed countries as management of fisheries becomes ever more complicated, he says.

See FAO data on global fish stocks on page 36.

It is difficult to pinpoint a single overriding reason why many of the world's marine capture fisheries — those harvesting wild fish stocks in the oceans and seas — have become so overfished. Rather, there is a suite of interrelated reasons that have contributed to a greater or lesser extent in different situations. Generally, these reasons include:

- Access to a large share of the world's capture fisheries, and in particular small-scale fisheries, remain open or quasi-open. Even where efforts are made to manage these fisheries, measures are often inadequate to limit or roll back fishing effort. Moreover, management measures are often poorly enforced with sanctions insufficiently severe to discourage irresponsible fishing.
- Political support is lacking for unpopular decisions that underlie fisheries management. Governments tend to take a short-term view and defer difficult management decisions because of their social and economic consequences. Regrettably, such procrastination occurs even in the face of declining catches and declining financial returns.
- Fisheries biology has been the primary focus while management of the fishers has received relatively little attention. This syndrome continues despite widespread recognition that the human dimension of fisheries management and the need to promote behavioral change on the part of fishers is essential.

- Capacity and institutional constraints, especially in developing countries, restrict implementation of effective management arrangements in capture fisheries. However, capacity and institutional strengthening cannot be pursued in isolation: They presuppose the existence of a governance framework that will enable technical and financial assistance efforts to take root and flourish.

- Fisheries management systems become centralized with little stakeholder participation in decision making. It is recognized widely, and certainly within FAO, that small-scale fisheries, especially in developing countries, cannot be managed effectively through a centralized process. In industrial fisheries, the merits of co-management have been demonstrated, with fishers and industry groups seizing the opportunity to participate in assessing and developing management measures and in turn monitoring their implementation. Where industry groups contribute to determining research programs, fishers and their organizations are usually willing to contribute to their cost. However, bureaucrats administering fisheries often find it difficult to work comfortably in an environment where fishers, fishing communities and industry groups share power in making decisions about how fisheries should be managed.

- In fisheries where resources are shared and jointly exploited on a regional basis, major differences among participants in objectives and approach can inhibit effective management. While the 1982 U.N. Convention on the Law of the Sea underscores the duty of states to cooperate in fisheries management, international cooperation often falls short of the level required to achieve rational and sustainable outcomes. Furthermore, perceptions of what constitutes management vary between parties to an arrangement, depending often on their particular interests and pressures from fishers.

- Fisheries monitoring, control and surveillance (MCS) is often inadequate. Only in the past five years has MCS been recognized widely to be an integral part of fisheries management and not a military or police function. Without MCS there can be no certainty that pre-determined management objectives will be realized. MCS systems should be bolstered and enhanced through the exchange of information, regional cooperation and the introduction of cost-effective technologies such as vessel monitoring systems.

Regional fisheries are managed cooperatively through regional fishery management organizations (RFMOs). There is no realistic alternative approach. The 1995 U.N. Fish Stocks Agreement places RFMOs at center stage for management of straddling fish stocks and highly migratory fish stocks. RFMOs have to foster cooperation among their member countries for adopting and implementing management measures. Where necessary, they have to encourage non-members to join or at least refrain from engaging in activities that undermine regional management efforts.

With a strong international focus on dealing effectively with illegal, unreported and unregulated (IUU) fishing, several RFMOs are taking positions against some of their own members as well as non-members that would not have been contemplated five years ago. So called "name and shame" strategies adopted by RFMOs mean that the polite, soft diplomatic measures of the past, where members and other countries were not named, are no longer in vogue. Information made available on the Internet provides lists of vessels that have engaged in IUU fishing, their flags and other related information. There is evidence that making such information available publicly has a positive impact on vessel and fleet behavior and encourages some countries that offer "flags of convenience" to rein in offending vessels that damage the countries' reputation.

FAO'S ROLE IN PROMOTING RESPONSIBLE FISHERIES

FAO has a mandate to monitor and assess developments in fisheries globally and to make this information available to the international community. The Organization must also promote responsible, long-term sustainable outcomes in fisheries. To this end FAO actively encouraged a number of important initiatives, some of which include:

- The 1992 Cancun Conference on Responsible Fisheries, hosted by the government of Mexico, which provided input for the 1992 U.N. Conference on Environment and Development (UNCED), or "Earth Summit."

- Conclusion of the 1993 FAO Compliance Agreement. This seeks to ensure that all vessels operating on the high seas are properly authorized and that national and international records of such vessels are maintained. This Agreement is expected to take effect by mid-2003. It is an integral component of the 1995 FAO Code of Conduct for Responsible Fisheries.

- Elaboration of the Code of Conduct. This voluntary code takes a holistic approach to promoting responsibility in fisheries by urging structural change in the fisheries sector. It provides the umbrella for the FAO fisheries work program and a reference point for the work of national fishery administrations. Indeed, some countries have adopted national codes of practice based on the FAO Code.

- Conclusion of four international plans of action (IPOAs) designed to address specific issues addressed by the Code of Conduct. These IPOAs concern management of fishing capacity, management of sharks, interaction between seabirds and longline fisheries, and IUU fishing. FAO members are encouraged to implement these IPOAs through national plans of action. Progress by countries towards implementation has varied.

- More recently, the 2002 World Summit on Sustainable Development (WSSD) adopted the Johannesburg Plan of Implementation. The plan sets deadlines for completing certain actions, including 2015 for the restoration of depleted stocks. Apart from providing goals for achievement of certain outcomes, the plan presses the international community to move towards greater responsibility and sustainability in fisheries. FAO will play a key role in this process.

POINTS TO PONDER

UNCED's Agenda 21 pointed out that 50 percent of the world's population lived within 60 kilometers of a coast in 1992 and that the proportion would increase to 75 percent by 2020. This population will put all living and non-living resources in coastal zones under increasing pressure. The poverty and job insecurity characteristic of many fishing communities in developing countries will

therefore make implementing responsible practices in fisheries and aquaculture all the more difficult.

About 90 percent of fishing activity takes place in areas under national jurisdiction even though high-seas fisheries remain important for exploiting certain high-value stocks. Nonetheless, the most intense and severe fisheries management problems are to be found in the 200-mile exclusive economic zones (EEZs). This situation will not change in the foreseeable future. A focus on management of these fisheries, which are critical for food security, is necessary.

In developing countries, inshore and inland capture fisheries are the main source of protein for many of the world's poor and socially disadvantaged. Under current scenarios of resource usage, expectations are that, despite the resilience of fish stocks, capture fisheries production will continue to drift downwards. Despite growth in aquaculture production, fish prices for the poor are likely to go up, thereby increasing food security vulnerability for the poor.

Fisheries management is becoming much more complicated. Countries with capacity and institutional constraints are likely to lag ever further behind their more affluent counterparts. Following are some of the concepts now finding general international acceptance:

- ecosystem approach to fisheries management, which involves taking into consideration the impacts of fisheries on the marine ecosystem and the impact of the marine ecosystem on fisheries, should be the baseline for management;
- fisheries should be exploited in a precautionary manner: That is to say that when there is uncertainty about the effects of fishing on stocks and on the marine ecosystem, caution should be exercised until better information becomes available; and

- indicators should be used to measure progress towards achieving responsible and sustainable fisheries.

Although these concepts are relatively unambiguous in theory, they are difficult to put into practice. Moreover, they place a major additional burden on fisheries administrators in collecting and analyzing data and then developing and implementing management plans. Developed countries occasionally point out the implementation burden of the ecosystem approach to management — additional stock assessments require more staff development and training. Where does this leave developing countries? One can reasonably conclude that implementation of sophisticated new approaches to fisheries management will further increase the already-wide gap between developing and developed countries in management performance.

Fisheries administrations are notorious for responding to management problems only after they have become entrenched. There is often a reluctance to take responsible and pre-emptive measures to restrict fishing effort because of the social and economic impact of such action. For example, policy makers in some developed countries are under intense political pressure not to implement fleet reductions even though the science demonstrates that current levels of fishing effort cannot be sustained. To defer introduction of these reductions in fishing capacity, even for five years, would be irresponsible. Policy makers should stand firm and insist on the reductions despite the political ramifications. By taking such a position these policy makers will send a positive signal to the international community that these fisheries are ailing and in need of both preventive and curative care. □

Note: The opinions expressed in this article do not necessarily reflect the views or policies of the U.S. government or of FAO or any of its members.

□ AMERICA'S STAKE IN THE CONSERVATION OF FISHERIES AND THE OCEANS

By Scott Burns, World Wildlife Fund

Managing the world's fisheries in a sustainable way would assure their productive capacity for the millions who work in them and the many more who depend on them for food, says Scott Burns of the World Wildlife Fund. What the oceans need now, he says, are stronger management of migratory fish stocks, reduction of fishing fleet overcapacity by eliminating subsidies, and strict protection for the most biologically important marine regions.

The fate of the earth's oceans is inextricably tied to U.S. economic and national security interests. The oceans provide a source of employment and income for millions worldwide. When sustainable management of marine resources is ignored, the long-term interests of coastal communities suffer and the economic engine upon which so many people depend is undermined. In major fisheries around the world, critically important resources are being depleted, and coastal economies threatened. Managing marine resources sustainably, however, will maximize economic return, strengthening local communities and our national economy.

ASSESSING THE THREATS

As we look abroad, as ocean resources are depleted, we have seen that competition between countries or sectors intensifies and can trigger confrontations, including violent ones. The recent incident at the maritime boundary between North and South Korea — triggered by a disagreement over access to fishing grounds — is a case in point and underlines the strong U.S. interest in peaceful resolution of maritime disputes around the world.

The well being of some of our country's most important allies will be determined in part by how successful they are in conserving ocean wildlife. The Philippines, for example, is located at the heart of the world's most biologically important coral region. Corals and the remarkable diversity of ocean life they support are an essential element in the Philippines economy.

Yet, these critical coral communities are disintegrating, part of a global collapse of coral ecosystems. Human activities threaten nearly 90 percent of Southeast Asia's coral reefs, jeopardizing their biological and economic values to the local people. Left unchecked, this coral crisis can only have a further destabilizing impact on coastal nations in the tropics, nations that are already in some cases politically and economically fragile.

ALARMING TRENDS

The trends in international fisheries are truly alarming. Notable cases include depletion of bluefin tuna populations worldwide, rampant — and often illegal — overfishing of Patagonian toothfish populations, and depletion of coastal fish populations in some of the poorest regions of the world by distant-water vessels from Europe and elsewhere.

In the United States, foreign fishing has a direct impact on some of our most important fish populations. The pollock, salmon, and other species caught in Alaska make up roughly half the U.S. fish catch. Yet many of these important fish populations are shared with Russia, and illegal fishing in the Russian waters of the Bering Sea poses a significant threat to the continued viability of these fisheries.

As consumers, as employers, as citizens, we all depend on oceans and their resources. The sea's bounty ranges from the ubiquitous fish fillet sandwich to limulus amebocyte lysate (LAL), a compound derived from the blood of horseshoe crabs used to test all injectible drug products and medical devices for the presence of endotoxin — a bacterium that can be fatal to humans.

If we use the sea wisely, the benefits it provides can increase over time. Unfortunately, the threats facing ocean wildlife and ecosystems have never been greater. Of the world's major fisheries, more than 70 percent are either overfished or fully exploited.

Addressing the problems of our oceans requires a shift in priorities: a redoubled effort to strengthen the

international management of migratory fish populations, new initiatives to create market signals that are consistent with ocean sustainability, and a global program to protect the most biologically important marine regions for future generations.

IMPROVING INTERNATIONAL FISHERIES MANAGEMENT

For every example of effective fisheries management there are too many cases of mismanagement, overfishing, and depletion. There is no single formula or solution to this problem. Wise fisheries management requires a combination of political will, prudent thinking, adherence to scientific advice, and a focus on what makes sense over the long term rather than what is merely expedient today.

Unfortunately, current international fisheries management regimes fall short of what's needed to address these concerns. Acquiescence to overfishing is the rule rather than the exception. In too many instances fishery managers have chosen to maximize short-term returns and put the long-term potential of the fisheries they manage at risk. Recently, the United States played a leadership role in shaping the new United Nations agreement that governs fishing for highly migratory and straddling fish stocks (the U.N. Fish Stocks Agreement). The agreement embodies important principles meant to assure the sustainability of fish stocks and the protection of marine life and mandates new measures to promote more effective and timely international cooperation and assure transparency in decision-making. But present regional fisheries conventions — and the organizations that implement them — are often directly at odds with the ideals of the U.N. Fish Stocks Agreement.

The International Convention for the Conservation of Atlantic Tunas (ICCAT), for example, has been a vehicle for mismanaging some of the Atlantic Ocean's most valuable fish populations. The North Atlantic Salmon Conservation Organization (NASCO) has regularly ignored scientific advice and presided over the demise of once-important commercial fisheries and the extinction of many historic salmon runs.

The U.N. Fish Stocks Agreement also explicitly calls on regional fisheries management organizations to do business in a transparent fashion. These bodies have done business behind closed doors for too long. A lack of

public scrutiny has encouraged shortsighted decision-making.

Exposing international fisheries governance to the light of day can only help assure accountability and better protect the fisheries resources.

The United States was one of the first major fishing nations to ratify the U.N. Fish Stocks Agreement. Now we have to put our money where our mouth is and take steps to assure that this principle is incorporated — and adhered to — in every international fishing body that we are party to.

What can be gained from more conservative management of fish populations? More jobs, higher catches, healthier oceans. The U.N. Food and Agriculture Organization (FAO) has projected that fish catches could increase significantly in the future if overfishing is reined in now.

ADDRESSING THE IMPACT OF FISHING ON THE ENVIRONMENT

The U.N. Fish Stocks Agreement and other international instruments recognize the importance of reducing fishing's harmful effects on ocean species and ecosystems. Fishing's unintended consequences include an estimated 20 million tons of bycatch a year and in some cases the destruction of habitats that serve as cornerstones of marine productivity and biological diversity. For example, bycatch is by far the most important threat to populations of dolphins and other cetaceans.

Reducing bycatch and mitigating fishing's other impacts on the environment makes business sense as well. In many cases bycatch consists of commercially valuable fish species, caught before they have reached marketable size. In the Gulf of Mexico, for example, bycatch in shrimp fisheries has played a major role in undermining red snapper populations.

Fortunately, there are plenty of good examples of fishermen and managers working together to solve bycatch problems. In the eastern Pacific tuna fishery, the bycatch of dolphins dropped by more than 98 percent through a concerted effort by fishermen and regional governments. If we set priorities for fisheries where bycatch poses a major problem and work aggressively to solve it, we can achieve similar results elsewhere.

This will only happen in international fisheries if relevant conventions are modified to explicitly mandate bycatch reduction and habitat protection — and if there is the political will to assure that these new mandates are actually carried out.

CREATING A HOSPITABLE ECONOMIC ENVIRONMENT FOR OCEAN CONSERVATION

Conservation policies are most likely to be embraced if they are in synch with the economic signals that shape commercial behavior.

Today, though, economic incentives are more often than not inconsistent with the stated objectives of current ocean policy. This lack of harmony is most pronounced in the fisheries sector, where economic incentives encourage the expansion of fishing fleets that are already too large and stimulate a race for fish that is neither biologically sound nor economically prudent.

The United States should play a stronger role in encouraging the development of measures to address the problem of fishing fleet overcapacity. Overcapacity is a root cause of the collapse of New England's cod population and is at the heart of the crises in the Pacific rockfish and Alaska crab fisheries. It also poses a major threat to the health of international fisheries that are of critical importance to U.S. fishermen and markets.

Overcapacity, spurred by massive government supports on the scale of \$15 billion to \$20 billion annually, also is linked to poverty and underdevelopment where subsidized fleets from developed countries compete with fledgling local industries. The subsidies have helped underwrite cycles of mismanagement that have ultimately left thousands of fishermen in developing countries unemployed.

Where overcapacity exists, fishermen must fish harder and spend more to catch fewer fish but earn less. Overcapacity also increases habitat destruction and the bycatch of marine life. While reducing the size of fleets is perhaps the single most important step that can be taken to improve the long-term viability of fisheries and protect biological diversity and the economic interests of fishermen, international efforts to better manage fleet size have made little progress. The FAO Plan of Action for managing fishing capacity is largely a paper exercise. In those few cases where steps are being taken to control fleet growth, they are "too little, too late."

In the Inter-American Tropical Tunas Commission, for example, present capacity-control measures are plainly inadequate despite clear evidence that overcapacity is already threatening tuna populations and eroding economic returns. In other important international fisheries no concrete measures at all have been established to address the problem of burgeoning fleets. The continued failure to address this issue will inevitably result in additional depletions, lower profits and exacerbated tensions between competing fishing groups and countries.

In 1997, WWF began an international campaign to eliminate government subsidies that drive overfishing. A critical goal of that campaign has been to achieve binding and effective new rules under the World Trade Organization (WTO) to discipline fishing subsidies. Last November, in an important step, trade ministers meeting in Doha, Qatar, agreed to include negotiations on fishing subsidies in the new round of WTO negotiations.

CONSERVING THE MOST BIOLOGICALLY IMPORTANT MARINE AREAS

In addressing the threats to the integrity of our oceans, it makes sense to begin with the most pressing problems and focus first on the habitats that are most critical to life in the sea and the marine areas that house the greatest biological wealth. At the global scale, WWF has worked with leading scientists around the world to identify a set of ecosystems that are most important to life on earth. In the marine realm, these biological priorities include the Bering Sea (home to America's richest fisheries); the Sulu-Sulawesi seas at the center of the oceans' most biologically diverse region, and the Galapagos archipelago, a unique and highly productive marine system. Such places of special biological importance should be considered as the United States develops its ocean conservation priorities.

Within these biologically important regions, the United States should play a leadership role in promoting the creation of networks of protected areas to conserve the oceans' web of life. Marine protected areas are well established as the most effective tool for safeguarding marine biological diversity. The problem is that existing protected areas are too few, too dispersed, and, frankly, too small to provide large-scale conservation benefits. At present less than 1 percent of the world's oceans and coasts are under any form of effective management or protection.

Recent scientific studies from Florida and the Caribbean demonstrate that protected areas can play an important role in the rebound of fisheries. Linked together in networks, they can serve as the centerpiece for initiatives to conserve large-scale seascapes — like the one the United States has started in the Florida Keys. In the Dry Tortugas, for example, WWF worked with fishermen and other stakeholders to create the largest fully protected marine reserve in the United States. Our experience there

and our review of the latest science convinces us that well-designed protected areas can help secure the long-term objectives of all parties. □

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□ THE GLOBAL FISH MARKET AND THE NEED FOR MULTILATERAL FISHING DISCIPLINES

By Justin LeBlanc, Vice President for Government Relations, National Fisheries Institute

Without participation by all relevant markets, fisheries conservation schemes have no chance to succeed, says Justin LeBlanc of the National Fisheries Institute. A powerful existing international convention for protecting endangered species might help enforce conservation measures some day, but for now it lacks expertise, he says. The National Fisheries Institute represents fishing vessel owners, aquaculturalists, processors, importers, exporters, distributors, retailers and restaurants.

U.S. commercial fishers are often challenged by the low prices of an increasingly competitive global marketplace while at the same time bearing substantial conservation burdens imposed by strict U.S. laws and regulations. These burdens, whether based on sound science or other policy objectives, may place U.S. fishers at a considerable disadvantage by increasing costs, decreasing yields, or both. Making U.S. fishermen more competitive by relaxing these conservation requirements is unlikely and, in many cases, undesirable.

Increasing the conservation commitment of the world's other commercial fishers to levels approaching that of U.S. fishers is a complicated task involving rigorous conservation and management regimes, education and training, and the participation of major markets for fish and seafood products. In recent years, international fisheries bodies have begun to supplement traditional conservation and management measures with controversial market-based constraints in response to the challenges (financial and logistical) of enforcing conservation and management measures, particularly on the high seas.

In general, market-access restrictions must be consistent with the international trade rules of the World Trade Organization (WTO), should be multilateral, and should be initiated by the relevant fisheries management authority. To be truly effective, market constraints must be adopted by all countries participating in that market—a situation that can be difficult to attain. Existing high-seas fisheries management regimes often fail to secure

such full participation. A new mechanism may be needed.

THE GLOBAL NATURE OF SEAFOOD TRADE AND THE U.S. SEAFOOD MARKET

Thousands of forms of fish and seafood products are traded internationally. The United Nations Food and Agriculture Organization (FAO) reports that international trade in fishery commodities has exceeded \$50 billion a year in recent years and is approaching \$55 billion a year. According to FAO, approximately one-third of all global fish and seafood production enters international trade.

The United States is the fifth-largest fishing nation in the world, with commercial landings of 4.3 billion kilograms valued at \$3.2 billion in 2001, according to the National Marine Fisheries Service (NMFS) in the U.S. Department of Commerce. NMFS also reports that the United States is the third-largest importer, with seafood imports valued at \$9.9 billion in 2001, while U.S. seafood exports of \$3.2 billion for the same year rank the U.S. as the third-largest exporter.

This trade deficit can be even more acute in certain species. For example, U.S. commercial shrimp landings have remained relatively stable over the past 10 years at about 91 million kilograms while shrimp imports have increased from 318 million kilograms to 544 million kilograms in 2001. U.S. swordfish fishers land approximately 7 million kilograms per year while facing imports of 14 million kilograms. Other popular seafood products in the United States, such as Chilean sea bass, are totally import dependent and may compete for the so-called "center of the plate" with domestically produced substitutable products.

U.S. CONSERVATION BURDENS

While confronting a market often dictated by imports, U.S. fishers carry considerable obligations to protect the environment from the potential negative impacts of commercial fishing. These obligations often carry considerable economic consequences by requiring new

fishing gear, closing productive areas or times to fishing, or otherwise changing fishing operations to make them less efficient and, therefore, less profitable.

All federal U.S. fisheries are governed by the Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA), which requires all fishery management plans to prevent overfishing, minimize bycatch, and protect essential fish habitat. In addition, NMFS requires application of the precautionary principle — simply put, the less certain you are the more cautious you should be — to fishery management decisions. All fishery management plans must also have an associated environmental impact statement prepared under the National Environmental Policy Act.

Certain marine species, such as sea turtles, are protected by the Endangered Species Act, which requires incidental takes of these animals by commercial fishing operations to be reduced to levels that do not jeopardize the survival of the species. Hence, U.S. shrimpers must install turtle excluder devices (TEDs) in their fishing nets, losing anywhere from 5 to 20 percent of their shrimp catch through the hole, and U.S. swordfish fishers have had vast tracts of productive ocean denied to them as fishing grounds to reduce sea turtle interactions. Marine mammals are protected by the Marine Mammal Protection Act, which requires commercial fishing takes of marine mammals to be reduced to levels approaching zero, regardless of the status of the marine mammal population.

These obligations are among the strictest sets of environmental standards for commercial fishing in the world and are by and large effectively enforced by NMFS and the U.S. Coast Guard. For example, the Gulf of Mexico shrimp fishery is 99-percent compliant with TEDs requirements. Most U.S. commercial fishers are committed to conservation and generally support the goals of these laws and regulations if not their actual case-by-case application. While some are interested in easing the conservation burdens these laws impose, others are more interested in getting other nations to impose similar burdens on their commercial fishing fleets in order to "level the playing field" in this global marketplace.

UNILATERAL ACTIONS HAVE LIMITATIONS

Recognizing that not all nations have the resources and infrastructure of the United States to enforce conservation and management measures, one approach to level the

playing field supported by some sectors of the U.S. commercial fishing industry is to prescribe conditions for or even proscribe access to the U.S. market for products that are not caught in compliance with conservation and management measures or do not meet the threshold of conservation imposed on U.S. fishers. That is why all shrimp imports into the U.S. must be turtle safe, why the debate continues on market access for tuna not eligible for a dolphin-safe label, and why juvenile Atlantic swordfish imports are prohibited.

Such unilateral actions must be consistent with WTO trade rules, thereby making them more difficult to design and implement. They may prompt retaliatory trade restrictions by major export markets for U.S. seafood products. Most importantly, while such actions may make U.S. consumers feel good about the products on their dinner plates, they do little for true conservation on the water as producers simply shift to less-restrictive markets. Hence, juvenile swordfish go to the European Union instead of the United States, and turtle un-safe shrimp is diverted to markets that do not require turtle protection. In addition, unilateral measures may be implemented not for true conservation reasons but rather to use conservation as a guise for protectionist measures.

MULTILATERAL AGREEMENTS DO MORE

Given these inherent limitations to the utility of unilateral trade actions, a better approach is to seek a multilateral agreement among interested countries to collectively limit access to their markets. For high-seas fisheries, regional fishery management organizations pose the ideal venue for developing and implementing such multilateral arrangements, but other arrangements are possible. The advantages of multilateral agreements are obvious: A greater percentage of the marketplace is placed off limits to non-compliant producers. The opportunity for such producers to shift distribution to avoid market-access restrictions is lessened. And the competitive position of seafood traders relative to other buyers in the global marketplace is maintained.

Multilateral instruments — such as the catch documentation scheme for Chilean sea bass developed by the Commission for the Conservation of Antarctic Marine Living Resources — can be particularly effective at combating illegal, unregulated, and unreported (IUU) fishing as called for by an FAO international plan of action. Making such schemes effective requires standards for implementation to create familiarity with and

confidence in the systems. But such systems can also have limitations, especially where major market countries do not participate in the conservation and management of the resource and therefore have no incentive to comply with the trade restrictions.

MAKING AGREEMENTS MORE MULTILATERAL

Since not all multilateral trade agreements can engage all market countries to the fullest extent possible, some are calling for other mechanisms to be applied to global seafood trade. Recently, there has been considerable interest in submitting seafood to the Convention on International Trade in Endangered Species (CITES). CITES offers promising and potentially powerful mechanisms to engage all market countries in restricting market access for fish and seafood products. CITES members agree to ban all trade in certain species, such as tigers, that are threatened or endangered with extinction.

Unfortunately, CITES is currently ill equipped to contend with the complexities of international trade in what is primarily a food product. Fundamental questions about the applicability of CITES to fish and seafood remain. Overfishing, IUU fishing, and unsustainable fishing practices can certainly threaten the productivity of fishery resources, but they rarely threaten these resources with extinction.

Serious questions remain about how CITES would work with commercial fish and seafood.

For example, CITES says species that "look alike" to species of concern should also be listed and subjected to trade mechanisms. To avoid such listings, a layperson must be able to distinguish between the species. This can be extremely difficult for even trained scientists when it comes to fish species, let alone processed whitefish fillets. The CITES convention cannot deal with so-called "split

listings," that is, the listing of a portion of a species but not the entire species — for example, listing Russian pollock but not U.S. pollock.

CITES also lacks clear mechanisms to de-list a species for which it bans trade. Fisheries are dynamic and can change rapidly and sometimes suddenly. CITES is not equipped to address these rapid changes with de-listing procedures that can respond to stock recovery.

CONCLUSION

Before CITES can become meaningfully involved in regulating trade of commercial fish and seafood products, it must gain access to fish and seafood expertise. At a minimum, such expertise should be sought through a consultative process with the FAO, the only international venue where government fisheries experts regularly convene at a global level. This consultative process should be highly structured as called for by the FAO Subcommittee on Fish Trade. Even better, CITES should be amended to require CITES to defer to the expertise of relevant regional fishery management organizations. Only then will the capacity of CITES to affect market access combine with fisheries conservation and management expertise to become truly effective. □

Note: The opinions expressed in this article do not necessarily reflect the views or policies of the U.S. government.

❑ A DEVELOPING COUNTRY PUTS A HALT TO FOREIGN OVERFISHING

By Paul Nichols, Special Adviser to the Minister for Fisheries and Marine Resources, Namibia

Foreign fishing fleets drastically overfished the waters off Namibia before that country gained independence in 1990, according to Paul Nichols, special adviser to the Namibian Ministry of Fisheries and Marine Resources. Since then, the government has taken strong regulatory actions that have brought overfishing under control and allowed depleted fish stocks to rebuild while gaining strong support for the policy among Namibia's commercial fishers.

The history of Namibia's fisheries is characterized by massive and uncontrolled fishing, primarily by European and Eastern bloc fleets, followed by near collapse of many stocks. This period was followed by a dramatic recovery of the resources following independence in 1990 and the implementation of a resource-management system that incorporates a highly effective, cost-efficient system of monitoring, control and surveillance. Namibia's successful post-independence track record bears testimony to what a young developing nation can achieve if sufficient resources and political will are provided in support of fisheries management.

Largely as a result of up-welling of the nutrient-rich Benguela Current, Namibia's waters are highly productive. Prior to Namibian independence in 1990, uncontrolled fishing on a massive scale — perpetrated mainly by Spanish and Soviet vessels, and to a lesser extent vessels from Portugal, South Africa, Romania, Poland, Bulgaria, and Cuba — greatly reduced the abundance of all the major fish stocks.

During the 1960s South African factory ships undertook fish processing at sea outside the then-22-kilometer jurisdiction of Namibia's fisheries administration. First over-exploitation caused pilchard catches to plummet; when the ships turned to anchovy, that stock also plummeted.

From 1964 foreign interest in Namibia's offshore fishing grounds grew rapidly with the advent of long-distance freezer trawlers. For example, in 1964 a mere 47,600 metric tons of hake were caught, but by 1972 hake catches were reported to be 820,000 metric tons although

the true catch figure was probably much higher.

The International Commission for Southeast Atlantic Fisheries (ICSEAF), established in 1969 with the intent of good management, was in reality used by many of its 17 member states to legitimize plundering of fish stocks in the southeast Atlantic, and particularly in Namibian waters. Namibia declined to become a member of ICSEAF at independence, and the organization is now in the process of being formally disbanded.

BUILDING A MANAGEMENT REGIME

Finding itself at independence with a heritage of systematically depleted fish stocks, the newly elected government moved quickly to establish a fisheries administration — the Ministry of Fisheries and Marine Resources — and to develop policy goals and broad strategies in order to rebuild the fish stocks and build a national fishing and processing industry with real involvement of Namibians.

One of the first acts of Parliament was the Territorial Sea and Exclusive Economic Zone of Namibia Act of 1990, underlining the importance attached to fisheries. In 1992 Parliament passed the Sea Fisheries Act. Namibia subsequently signed a number of international fisheries conventions, agreements and arrangements. These new international obligations prompted a revision of the 1992 Act, which was replaced in 2001 by the Marine Resources Act. Key elements of the management system defined in the Act are outlined below.

MANAGEMENT MEASURES

- Fishing rights, or rights of exploitation, are the central element of the fisheries management regime. Fishing rights limit entry to the fisheries so as to protect the fisheries resources and maintain sustainable operations. Currently there are 152 right holders. Fishing rights are granted for a period of 7, 10, 15 or 20 years depending on various factors, in particular the level of investment and the level of Namibian ownership. Fishing rights are not freely transferable in Namibia in line with the

government's goals of Namibianisation and empowerment within the sector.

- All vessels are required to obtain a license in order to fish commercially within Namibia's 200-mile exclusive economic zone (EEZ). A Namibian flag vessel must also have a specific license to harvest any marine resources in waters outside of the Namibian EEZ.
- To ensure sustainable fishing, a total allowable catch (TAC) is set for each of the major species, based on recommendations made by fisheries scientists employed by the ministry.
- To give companies enough information to plan for the fishing season, a TAC is distributed among the right holders in each fishery in the form of quotas. Quotas are not permanently transferable.
- Fees earn revenue for the government and create incentives for achieving goals of both conservation and Namibianisation. The most important fees are those payable on allocated quota. By-catch fees are used to discourage capture of non-target species but are not set so high as to encourage dumping — a certain percentage of by-catch is not levied because a reasonable amount of by-catch cannot be avoided. A Marine Resources Fund levy is imposed per ton of landed catch to finance fisheries research and training initiatives. Also, owners of fishing vessels pay license fees to fish legally within Namibia's waters; each year between 300 and 350 vessels are licensed.
- The Namibian fishing industry is not subsidized. Namibia strongly opposes the use of subsidies by other countries, which cause overcapitalization, distort trade unfairly, and ultimately lead to overfishing and encourage illegal, unreported and unregulated (IUU) fishing practices. Instead Namibia's rights-based system and associated quota fees have led to healthier stocks, improved compliance and an efficient industry that supports responsible fisheries management and earns healthy profits.
- Namibia implements its obligations to international fisheries organizations, arrangements and conventions by publishing them in the national Gazette.

MONITORING, CONTROL AND SURVEILLANCE

On the day in 1990 that Namibia's 200-mile EEZ was declared, more than 100 foreign vessels were fishing illegally in Namibian waters. When other small coastal states had found it impossible to effectively control such operations in their EEZs, they faced little real alternative than to sanction continuation of the foreign operations through licensing arrangements that did not leave them in real control.

Namibia, however, decided to put in place measures to reap the gains from sustainable utilization of its fisheries. During 1990 and 1991, 11 Spanish trawlers and one Congolese trawler were arrested for illegal fishing and successfully prosecuted; most of them were forfeited to Namibia by the Namibian courts. These actions sent a clear message to the international fishing community that Namibia was serious about establishing sovereignty over its new EEZ. There were a few further incidents of poaching after this, but effective monitoring, control and surveillance (MCS) and enforcement deterred poachers and improved compliance by licensed vessels.

Namibia's MCS system has evolved over the years into what is today widely regarded by the international community as a very effective system. A crucial element has been the financial, human and material support from the Namibian government. The costs to government and industry of MCS and other management activities have been kept commensurate with the value of the sector. From 1994 to 1997, the full cost to the Namibian government of fisheries management, including fisheries research and MCS, was about 6 percent of landed value; that fell to 4.9 percent in 1998 and 3.6 percent in 1999, due to the increasing value of landed catch. This cost is appropriate to the economic value of the fisheries sector and reasonable when compared with the cost of other comprehensive and effective fisheries management systems elsewhere in the world.

An integrated program of inspection and patrols at sea, on land, and in the air ensures continuing compliance with Namibia's fisheries laws. The major features of the program are described below:

- Virtually complete coverage of larger vessels by onboard observers serves both to ensure compliance and collection of scientific data. The establishment of the

new Fisheries Observer Agency under the Marine Resources Act will improve current capacities in this regard.

- Systematic sea patrols aim to ensure compliance with fishing conditions by licensed vessels through regular at-sea inspections. Air patrols detect and deter unlicensed fishing vessels and monitor the movement and operations of the licensed fleet. Shore patrols ensure compliance by both recreational and commercial fishers with conservation measures for inshore resources.
- Complete monitoring of all landings at the two commercial fishing ports, Walvis Bay and Luderitz, by onshore inspectors ensure compliance with quota limits and fee payments.
- All vessels are required to supply EEZ exit and entry reports as well as daily catch and effort reports in the form of vessel log-sheets.
- Namibia is well advanced in implementing a national satellite-based vessel monitoring system (VMS). Once fully operational the system will benefit fisheries management in real-time monitoring of vessel movement and activities. The system that has been chosen is already in use in the United Kingdom, Germany, United States, Morocco, and, closer to home, South Africa and Mozambique. Namibia is fully supportive of collaborating in the development of a cost-effective, regional VMS.

REGIONAL AND INTERNATIONAL COOPERATION

Regional co-operation in fisheries management is enhanced through a number of mechanisms. The Southern African Development Community (SADC) is implementing two regional programs of particular relevance: the Regional Fisheries Information System Program, which aims to capture and disseminate timely, relevant, accessible, useable and cost-effective information to improve the management of marine fisheries resources in the SADC region; and the Regional Fisheries MCS Program, which aims to improve national capacity for efficient, cost-effective and sustainable MCS and to enhance regional co-operation on MCS and fisheries management.

A recent initiative is the SADC Protocol on Fisheries, which aims to promote responsible and sustainable use of

the living aquatic resources and aquatic ecosystems within the SADC region.

A convention to establish the South-East Atlantic Fisheries Organization (SEAFO) was signed by nine states in Namibia on 20 April 2001, the first such convention to be signed following the establishment of the 1995 UN Fish Stocks Agreement. SEAFO establishes a management regime for conservation and sustainable utilization of fish, molluscs, crustaceans and other sedentary species in the high-seas portion of what is essentially FAO Statistical Area 47. It excludes those sedentary species that are subject to the fishery jurisdiction of coastal states and tuna and tuna-like species that fall under the jurisdiction of the International Commission for the Conservation of Atlantic Tunas (ICCAT). Namibia joined ICCAT in 1999 and abides by its comprehensive management tools to curb IUU fishing targeting tunas.

As a member of the Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR), Namibia complies fully with the CCAMLR catch documentation scheme to reduce IUU fishing in Antarctic waters.

CONCLUSION

Since independence, Namibia has successfully put in place a policy, legal and management framework for its marine fisheries that has worked well. The sector contributed US\$221.1 million to gross domestic product in 2000. The value of fish exports was US\$354 million in 2001. The number of whitefish-processing plants has grown from zero in 1991 to more than 20 in 2002, and employment in the sector has grown to about 14,000 people. Total capital investment in vessels and shore infrastructure, including new fish-processing factories, has exceeded US\$200 million since 1990.

Namibia's rights-based fisheries management system incorporates an effective MCS system at a cost that is commensurate with the socio-economic value of the sector. As a result, Namibia enjoys very high levels of compliance by its fishing industry, a situation very different from 1990. □

Note: The opinions expressed in this article do not necessarily reflect the views or policies of the U.S. government or of the government of Namibia.

FACTS AND FIGURES

□ A LOOK AT RECENT GLOBAL DATA ON THE STATE OF FISH STOCKS

In his opening address at the 2001 Reykjavik Conference on Responsible Fisheries in the Marine Ecosystem, Jacques Diouf, Director-General of the U.N. Food and Agriculture Organization of the United Nations (FAO), summarized as follows the state of world fisheries:

"The great oceans are exhaustible. Despite the fact that the majority of all resources are now fully exploited, access to these resources remains open in far too many fisheries around the world. Over-investment in the fishing industry exacerbates the problem Today there are too many vessels chasing too few fish The task at hand is to examine how to manage fisheries with a view to ensuring sustainable utilization of the food available in the oceans for the benefit of present and future generations without harming the ecosystem's capacity to support human life."

For more than three decades the international community has grappled with achieving sustainable fisheries. Indeed, the 1947 London Conference on Overfishing, although not reaching agreement on how to deal with overfishing, aimed to address a problem that had already progressively worsened over years. Had pre-emptive action been taken following the London Conference, the 1990s collapse of

one of the world's oldest and best-known commercial fisheries, the North Atlantic cod fishery, might have been averted. A decade after the collapse, scientific evidence indicates that cod stocks of North Atlantic have still not recovered to a level to permit resumption of even limited commercial fishing.

In 1982, following lengthy and complicated negotiations, the U.N. Convention on the Law of the Sea (1982 Convention) was concluded. It was widely believed that the convention would lead to the rational and optimum use of fish stocks. However, current assessments of the state of world fisheries indicate that the convention has not achieved its intended results in fisheries. This situation can be attributed to several factors, including:

- a lack of national implementation of the 1982 Convention, and
- little or no change in the behavior and attitude of fishers towards achieving responsible and sustainable outcomes in fisheries.

In the late 1980s, concern over environmental degradation led to a number of regional and global initiatives, most importantly the convening of the 1992 United Nations

Table 1: Marine capture fishery production (in millions of metric tons) as a proportion of total world fishery production in 1995, 1999 and 2001

Production category	1995	1999	2000	2001p
Total world fishery production	116.4	126.7	130.4	128.8
Total marine capture fisheries production	84.7	84.7	86.0	82.5
Total marine capture fisheries production as a percentage of total world fishery production	73	67	66	64

Source: FAO. Data for 2001 are provisional.

Table 2: World marine capture fisheries production (in millions of metric tons) by Ocean in 1995, 1999 and 2000

Ocean	1995	1999	2000	
	Tons	Tons	Tons	Percent
Pacific Ocean	53.3	52.9	53.8	63
Atlantic Ocean	23.5	23.2	23.5	27
Indian Ocean	7.8	8.5	8.6	10
Southern Ocean	0.1	0.1	0.1	..
Total marine capture fisheries production	84.7	84.7	86.0	100

Source: FAO.

Conference on Environment and Development (UNCED), or "Earth Summit," and the adoption of the Rio Declaration and Agenda 21. One outcome was agreement that utilization of all natural resources should be based on long-term sustainability.

WHAT DO RECENT FISHERIES DATA SHOW?

Total world fisheries production (which includes both capture fisheries and aquaculture production) has fluctuated upwardly over the 1990s and into the new millennium.

Table 1 reveals that the level of marine capture fisheries as a proportion of total production has declined since 1995. With harvest in the capture fisheries stagnating, more and more total fisheries production increases come from aquaculture. There is little reason for now to anticipate a change in this trend.

Table 2 shows that:

- The Pacific Ocean ranks clearly as the most important area of production, followed by the Atlantic and Indian oceans. The Southern Ocean, in global production terms, is insignificant.
- FAO assessments indicate no likely dramatic change in the ranking of capture fishery production by ocean over the next decade.

The top 10 world marine capture fisheries producers have largely maintained their rankings since 1995.

From table 3, it is clear that:

- China is ranked first, followed by Peru. Peru's catches, much of them Peruvian anchovy, are subject to wide annual fluctuations, however.
- Production by the eight other leading world producers has generally remained static or trended downwards.
- The 10 major producers account for about 65 percent of total marine fisheries production.
- In the foreseeable future radical change in the ranking of the top world capture fisheries producers is unlikely.

Table 4 shows how total world fish production is consumed. In 1995, 72 percent of total production was directed to food consumption. In 1999 and 2000 the proportion directed to food consumption strengthened, but provisional data for 2001 indicate the proportion weakened slightly.

The table indicates that:

- People, on average, are eating more fish. More sophisticated analysis is required to determine who is eating more fish: people with higher disposable incomes or poorer people out of necessity because fish may be the only protein source available to them or within their financial reach.
- Generally, fish consumption in higher-income countries is strengthening, partly for health reasons. There are real fears that, if management of fish stocks overall is not improved, the poorer and economically weaker segments

of the world's population will find themselves facing an ever-decreasing supply of fish and protein.

STATUS OF WORLD FISH STOCKS

FAO evaluates periodically the status of world fish stocks. In its most recent assessment, undertaken in 2000, FAO said that:

- 25 to 27 percent of world marine fish stocks are under-exploited or moderately exploited and thus are the main potential source for expansion of total capture fisheries production.
- 47 to 50 percent of stocks are fully exploited and are therefore producing catches that have either reached, or are very close to, their maximum limits with no room expected for further expansion.
- 15 to 18 percent of stocks are overexploited and have no potential for further increase. Moreover it is likely that catches from these stocks will decrease if remedial action is not taken to reduce or reverse overfishing.
- 9 to 10 percent have been depleted or are recovering from depletion.

With 71 to 78 percent of fish stocks fully exploited, overexploited, depleted or recovering from depletion, responsible management of fish stocks has become ever more urgent.

FAO said in its 2000 global assessment that over the past decade there has been little change in the status of stocks despite strong international efforts after UNCED to promote more responsible behavior in fisheries.

Lack of improvement during the 1990s might be attributed to many factors, including insufficient time to realize substantive improvements. The apparent halt in deterioration suggests, at least, that implementation of conservation measures are not entirely ineffective but require more time than expected to demonstrate measurable progress towards stock recovery. A contrary view is that conservation measures have achieved no effect but that stocks are more resilient to heavy fishing pressure than had been realized.

An estimated 90 percent of the world's capture fisheries fall under national jurisdiction, and a significant proportion of these fisheries are found within 50 kilometers of the coast. Many of these fisheries operate on a small scale. They are responsible for producing

Table 3: World marine capture fisheries production (in millions of metric tons) by major producing country in 1995, 1999 and 2000

Country	1995	1999	2000	
	Tons	Tons	Tons	Ranking
China	11.0	15.0	14.8	1
Peru	8.9	8.4	10.6	2
Japan	5.9	5.1	4.9	3
United States of America	5.2	4.7	4.7	4
Chile	7.4	5.0	4.3	5
Indonesia	2.7	3.7	3.8	6
Russian Federation	4.1	3.8	3.7	7
India	2.7	2.8	2.8	8
Thailand	2.8	2.7	2.7	9
Norway	2.5	2.6	2.7	10
Sub-total	53.2	53.8	55.0	
Other countries	31.5	30.9	31.0	
Total	84.7	84.7	86.0	
Major ten producers as a percentage of total marine capture fisheries production	63	64	64	

Source: FAO.

Table 4: Utilization of total world fishery production (in millions of metric tons) and per capita consumption (in kilograms) in 1995 and from 1999 to 2001

Use/production	1995	1999	2000	2001p
Direct food consumption	84.3	94.4	96.7	99.4
Non-food uses	32.1	32.2	33.7	29.4
Total world fishery production	116.4	126.7	130.4	128.8
Direct food consumption as a proportion of total world fishery production	72	75	74	77
Per capita supply (Kg)	14.9	15.8	16.0	16.2

Source: FAO. Data for 2001 are provisional. Some totals may not add due to rounding.

about 50 percent of global capture production for consumption, supplying nearly all the fish consumed in developing countries. These fisheries are critical in the world food security equation. More than 400 million people in developing countries are employed directly or indirectly in these small-scale fisheries.

As a consequence of the concentration of capture fisheries in 200-mile exclusive economic zones (EEZs), most fisheries management problems are found in areas under national jurisdiction and a large proportion of them in

developing countries. A focus on improving EEZ fisheries management continues to have high priority. □

Source: David J. Doulman, Senior Fishery Liaison Officer, Fisheries Department, U.N. Food and Agriculture Organization. The views expressed by the author do not necessarily represent the views of FAO or any of its members.

INTERNATIONAL AND REGIONAL FISHERIES MANAGEMENT ARRANGEMENTS

ATLANTIC OCEAN

International Convention for the Conservation of Atlantic Tunas

(Basic Instrument for the International Commission for the Conservation of Atlantic Tunas — ICCAT)
<http://www.iccat.es/>

Convention for the Conservation of Salmon in the North Atlantic Ocean

(Basic Instrument for the North Atlantic Salmon Conservation Organization — NASCO)
<http://www.nasco.int/>

Convention on Future Multilateral Cooperation in the Northwest Atlantic Fisheries

(Basic Instrument for the Northwest Atlantic Fisheries Organization — NAFO)
<http://www.nafo.ca/>

PACIFIC OCEAN

Convention for the Establishment of an Inter-American Tropical Tuna Commission (IATTC)

<http://oceanlaw.net/texts/iattc.htm>

Convention for the Preservation of the Halibut Fishery of the Northern Pacific Ocean and Bering Sea

(Basic Instrument for the International Pacific Halibut Commission — IPHC)
<http://www.iphc.washington.edu/halcom/default.htm>

Convention for the Conservation of Anadromous Stocks in the North Pacific Ocean

(Basic Instrument for the North Pacific Anadromous Fish Commission — NPAFC)
<http://www.npafc.org/>

Treaty Between the Government of the United States of America and the Government of Canada Concerning Pacific Salmon

(Basic Instrument for the Pacific Salmon Commission — PSC)
<http://www.psc.org/index.htm>

Convention on the Conservation and Management of Pollock Resources in the Central Bering Sea

<http://www.oceanlaw.net/texts/bering.htm>

Treaty Between the Government of the United States of America and the Government of Canada on Pacific Coast Albacore Tuna Vessels and Port Privileges

Treaty on Fisheries Between the Governments of Certain Pacific Island States and the Government of the United States of America

(South Pacific Tuna Treaty — SPTT)

SOUTHERN OCEAN

Convention for the Conservation of Antarctic Marine Living Resources

(Basic Instrument for the Commission for the Conservation of Antarctic Marine Living Resources — CCAMLR)
<http://www.ccamlr.org/>

Convention for the Conservation of Antarctic Seals (CCAS)

<http://www.oceanlaw.net/texts/seals.htm>

GREAT LAKES

Convention on Great Lakes Fisheries Between the United States and Canada

(Basic Instrument for the Great Lakes Fishery Commission — GLFC)

GLOBAL

Convention on Biological Diversity (CBD)

<http://www.biodiv.org/>

Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)

<http://www.cites.org/>

International Whaling Commission (IWC)

<http://www.iwcoffice.org/>

Source: National Marine Fisheries Service, U.S. Department of Commerce

❑ FISHERIES AND THE WORLD SUMMIT ON SUSTAINABLE DEVELOPMENT

Following is an excerpt from Fisheries and the World Summit on Sustainable Development, prepared by the U.S. Department of Commerce National Marine Fisheries Service for the July-August 2002 summit in Johannesburg. The excerpt describes steps taken by the U.N. Food and Agriculture Organization (FAO) and FAO members to promote fisheries conservation. The entire article can be viewed at http://www.nmfs.noaa.gov/sfa/international/Reportcard_final.pdf.

The FAO Code of Conduct for Responsible Fisheries

The concept for the Code of Conduct was discussed at the Rio Summit in 1992 and subsequently developed as a set of principles and international standards of behavior for responsible fishing practices. It was adopted by the Twenty-eighth Session of the FAO Conference on 31 October 1995. The Code of Conduct recognizes all aspects of fisheries, including economic, social, biological, and environmental and the multitude of interests of users of the resource while providing for the effective conservation, management, and development of living aquatic resources.

International Plans of Action (IPOAs)

Four IPOAs have been developed under the framework of the Code of Conduct. The IPOAs have been developed to address pressing issues facing international fisheries management and include the IPOA for Reducing Incidental Catch of Seabirds in Longline Fisheries (IPOA-Seabirds), the IPOA for the Conservation and Management of Sharks (IPOA-Sharks), the IPOA for the Management of Fishing Capacity (IPOA-Capacity), and the IPOA to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing (IPOA-IUU). IPOAs are voluntary; however, they are useful in providing an international focus on pressing issues within the fisheries community and providing guidance for individual nations, regional fishery management organizations, and other regimes on tackling these issues within their respective frameworks.

The Rome Declaration on the Implementation of the Code of Conduct for Responsible Fisheries

The Rome Declaration was adopted by the FAO Ministerial Meeting on Fisheries in March 1999. In addition to its call to implement the Code of Conduct, the Declaration highlights a number of key issues in fisheries management including the use of the ecosystem approach to achieve sustainable fisheries and aquaculture, reducing waste and destructive fishing practices, addressing trade and environment issues related to fisheries, implementation of the Fish Stocks Agreement [see below], and the implementation of International Plans of Action (IPOAs). The Declaration also called for FAO to develop a global plan of action to deal effectively with all forms of illegal, unregulated, and unreported fishing which ultimately led to the development of the IPOA-IUU.

DEVELOPMENTS UNDER THE AUSPICES OF UNCLOS

Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 Relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks (Fish Stocks Agreement)

As envisioned in Agenda 21, the United Nations convened a 3-year negotiating process that culminated in the adoption of the U.N. Fish Stocks Agreement in 1995. The United States participated actively in those negotiations and became one of the first states to ratify. The Agreement, which entered into force in December 2001, is recognized as an important instrument for achieving sustainable fisheries around the globe. As a management regime, it sets out principles for the conservation of straddling and highly migratory fish stocks. It also introduces new principles and concepts to fisheries management including the precautionary approach, vessel monitoring systems (VMS), compatibility of conservation and management measures, transparency of activities within subregional and regional fishery management organizations, compliance of

nonmember states with fishery management organizations measures, high seas boarding and inspection, port state measures, and data collection and sharing standards.

Agreement to Promote Compliance with International Conservation and Management Measures by Fishing Vessels on the High Seas (Compliance Agreement)

This 1993 Agreement was one of the first responses to Agenda 21. It reaffirms the provisions of the U.N. Convention on the Law of the Sea that flag states must exercise effective control over their vessels fishing on the high seas. It elaborates this obligation by requiring that all such vessels be licensed to conduct such fishing, that the licenses be conditioned on the vessel abiding by internationally agreed conservation and management measures, and sets up the FAO as an archive and clearing house for information on such fishing vessels, particularly those that have broken applicable rules and been punished for it. The United States contributed significantly to the development of this agreement and became one of the first states to deposit an instrument of acceptance for it.

Reykjavik Declaration on Responsible Fisheries in the Marine Ecosystem

The Reykjavik Conference, held in October of 2001 and organized by the FAO, sought to gather and review the best available knowledge on marine ecosystem issues and identify means by which ecosystem considerations can be included in capture fisheries management. The declaration adopted at the conference reflected this imperative and called for the integration of ecosystem considerations in fisheries management, not only from the standpoint of the impact of fisheries on the ecosystem, but the impact of the ecosystem on fisheries. It sought to integrate ecosystem considerations into the workings of regional and international fisheries management organizations, to advance the scientific basis for incorporating ecosystem considerations, to encourage technology transfers that allow for the incorporation of ecosystem considerations, and to develop technical guidelines for introducing ecosystem considerations into fisheries management.

Efforts to Combat and Deter Illegal, Unreported, and Unregulated (IUU) Fishing Activities

It is widely recognized within the international fisheries management arena that IUU fishing can jeopardize and sometimes undermine management and conservation efforts for sustainable fisheries. Raising concerns regarding IUU fishing activities within many regional fishery management organizations (RFMOs) and the recognition of the inability of existing international instruments to effectively address illegal, unreported, and unregulated fishing led to the development of an IPOA to prevent, deter, and eliminate IUU fishing. The IPOA-IUU encourages states and RFMOs to use all available measures in accordance with international law to combat IUU fishing, including port state measures, coastal state measures, market-related measures, national legislation, sanctions, economic incentives, education, monitoring, control, and surveillance (MCS) systems, and internationally agreed market-related measures. In addition, the recently established Monitoring, Control, and Surveillance Network (MCS Network), is a significant contribution to global efforts to combat IUU fishing as nations voluntarily join their resources to increase their effectiveness in enforcing conservation measures designed to protect world fisheries and ecosystems.

Monitoring, Control, and Surveillance (MCS) Network

A network of national organizations and institutions joined together to create the International MCS Network to coordinate efforts to prevent, deter and eliminate IUU fishing. The objectives of the International MCS Network are to improve the efficiency and effectiveness of fisheries-related MCS activities through enhanced cooperation, coordination, information collection and exchange among national organizations/institutions responsible for fisheries-related MCS. It is intended to give agencies support in meeting national fisheries responsibilities as well as international and regional commitments in relation to the U.N. Convention on the Law of the Sea, the Code of Conduct, the Fish Stocks Agreement, and the IPOA to combat IUU fishing.

Following is an excerpt from Key Outcomes of the Summit, prepared by the United Nations following the summit:

OCEANS AND FISHERIES

Encourage the application by 2010 of the ecosystem approach for the sustainable development of the oceans.

On an urgent basis and where possible by 2015, maintain or restore depleted fish stocks to levels that can produce the maximum sustainable yield.

Put into effect the FAO international plans of action by the agreed dates:

- for the management of fishing capacity by 2005; and
- to prevent, deter and eliminate illegal, unreported and unregulated fishing by 2004.

Develop and facilitate the use of diverse approaches and tools, including the ecosystem approach, the elimination of destructive fishing practices, the establishment of marine protected areas consistent with international law and based on scientific information, including representative networks by 2012 .

Establish by 2004 a regular process under the United Nations for global reporting and assessment of the state of the marine environment.

Eliminate subsidies that contribute to illegal, unreported and unregulated fishing and to over-capacity. □

INFORMATION RESOURCES

KEY CONTACTS AND INTERNET SITES

UNITED STATES GOVERNMENT

U.S. Department of Commerce
National Marine Fisheries Service
NOAA Fisheries
1315 East West Highway
SSMC3
Silver Spring, MD 20910
Telephone: (301) 713-2276
<http://www.nmfs.noaa.gov/sfa/international/index.htm>

Office of the U.S. Trade Representative
Trade and Environment
600 17th Street, N.W.
Washington, DC 20508
Telephone: (202) 395-7320
<http://www.ustr.gov/environment/index.shtml>

U.S. Department of State
**Bureau of Oceans and International Environmental
and Scientific Affairs**
2201 C Street NW
Washington, DC 20520
Telephone: (202) 647-2335
<http://www.state.gov/g/oes/ocns/>

NON-U.S. GOVERNMENT

**Food and Agriculture Organization of the
United Nations**
<http://www.fao.org/fi/default.asp>

Greenpeace
<http://www.greenpeaceusa.org/oceans/>

National Fisheries Institute
<http://www.nfi.org/issues/management.php>

**Organization for Economic Cooperation
and Development**
<http://www.oecd.org/EN/home/0,,EN-home-159-nodirectorate-no-no-no-1,00.html>

World Bank Group
<http://lnweb18.worldbank.org/ESSD/essdext.nsf/26ByDocName/FisheriesAquacultureCaptureFisheries>

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OVERFISHING

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A GLOBAL CHALLENGE

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