

on the species being managed and the willingness of industry to work together for positive solutions.

Emerging ideas include effort reduction, incentive programs, and individual transferable quotas that move the responsibility for bycatch reduction to the individual vessel level. The authors feel major gains against the global bycatch problem are likely to occur as such shifts towards individual responsibility take place. Progress may be impeded, however, because observer programs, an uncommon characteristic of today's fisheries, are nec-

essary to audit progress toward bycatch goals adequately. For many fisheries suffering from growth overfishing, a reduction in effort may be the most straightforward means of reducing bycatch and improving fisheries conservation and management. Because the solution to global discard problems will vary between fisheries and regions, a clear understanding of the nature and scope of specific fishery problems should precede the introduction of management and other measures.

Quick solutions to the bycatch problem are unlikely. Instead, a concerted na-

tional and international effort that will take money and time is necessary. A critical component of such action will be the reduction in effort levels from today's excessive amounts to quantities which will avoid conservation and ecological problems and will efficiently harvest the sea's resources.

The full paper *A global assessment of fisheries bycatch and discards* has been published in FAO Technical Paper No. 339 (1994), 233 p. **6**

USA Rethinks Fisheries Management

Fisheries in the USA are managed under the Magnuson Fishery Conservation and Management Act of 1976 (MFCMA).

By 1991, it was reported that fish stocks had declined considerably since the Act came into force. A national Committee in Fisheries was set up in 1992 to investigate ways of improving fisheries management regimes.

The 13-member Committee, led by John

Magnuson, was convened under the auspices of the Ocean Studies Board of the National Research Council. Their task was to make recommendations while the US Congress is considering changes in the MFCMA. The report, entitled *Improving the Management of U.S. Marine Fisheries*, was published this year by the National Academy of Sciences.

The Committee's seven recommendations "are designed to enhance the most

effective aspects of the present MFCMA and to introduce critically needed clarifications and structural improvements."

We reproduce their recommendations here because the recommendations reflect current thinking in the USA on subjects of interest to fishing nations worldwide. The text of the report elaborates on the background to and implication of the recommendations, which were framed in four broad areas:

Prevent Overfishing

Recommendation 1: *Fishery management should promote full realization of optimum yields as originally envisioned in the MFCMA by ensuring that harvest does not reduce stock abundance below levels that can sustain maximum yields over the long term. For currently overfished stocks, harvest levels must allow rebuilding the stock over specified periods of time to a level that can support sustainable maximum yields. Any departure from the above must be supported by persuasive evidence regarding natural variability, ecosystem interdependence, sustainable national income gains, or truly exceptional socio-cultural considerations.*

Recommendation 2: *Fishery management should control entry into and wasteful deployment of capital, labor, and equipment in marine fisheries.*

Improve the Institutional Structure

Recommendation 3: *Congress should clarify the authority and responsibility of the Secretary of Commerce and of regional fishery management councils with respect to allocation and capitalization controls, implementation and enforcement of fisheries management plans, strategic planning, review of management decisions and actions, and conflict resolution.*

Improve the Quality of Fishery Science and Data

Recommendation 4: *The Secretary of Commerce should improve the NOAA/National Marine Fisheries Service's scientific programs by making them responsive to management needs and to possible societal and economic effects. Improved data collection, analysis, and dissemination are needed to make evaluations and policy decisions.*

Move Toward an Ecosystem Approach to Fishery Management

Recommendation 5: *Fishery management should increase the use of the ecosystem approach to management, and include environmental protection goals in the development of fishery management plans.*

Recommendation 6: *The Secretary should provide adequate funding for collection of reliable discard data and for a major new fishery technology program to improve gear and fishing techniques needed to reduce the bycatch/discard problem.*

Recommendation 7: *The Secretary of Commerce, through the NOAA/ National Marine Fisheries Service and under advisement from regional fishery management councils, should be empowered to protect the habitats necessary to sustain fishery resources. A major national program should be developed to determine what habitats are critical for fish reproduction and growth, and how they can be protected.* **6**