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MANAGEMENT OF COASTAL FISHERY RESOURCES UNDER THE NEW REGIME

by

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UNDER THE NEW REGIME

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INTRODUCTION

The rather sorry history of fishery management around the world can be largely attributed to the fact that agencies with management responsibilities did not have complete, legal jurisdiction over the resources they professed to manage or, conversely, international organizations whose collective jurisdiction was broad enough to cover a particular resource did not have sufficient authority to perform real management. For example, the management program of a coastal country could be applied only within the narrow zone of jurisdiction off its coast or only to its citizens beyond that zone - compliance by other nationals was strictly voluntary. On the other hand, large multi-national compacts were too often composed of parties with diverse interests which precluded the consensus usually required for implementing an effective management scheme.

MANAGEMENT PHILOSOPHY

Under an internationally accepted, extended jurisdiction regime these hinderances to management of coastal-type fishery resources should largely disappear -- most of those resources will be clearly within the jurisdictions of coastal countries. The use of "jurisdiction" in the plural is advised inasmuch as in many, if not most, areas of the world the idiosyncrasies of geography and fish distribution will be such that major coastal fish stocks and the fisheries on them will range across the boundaries of individual national zones of jurisdiction. In those cases effective management will occur only through an appropriate pooling of national jurisdictions, management objectives, and regulatory schemes--in other words, reliance upon regional organizations will be absolutely essential for the implementation of rational fishery management.

The nature of these regional organizations undoubtedly will differ from those of the past in that they will be made up of and most directly controlled by coalitions of coastal countries whose interests are likely to be more alike than was the case with prior international organizations to which both coastal and distant water fishing nations were party and had equal voice. Therefore, control, if not outright "ownership" of coastal resources by the adjacent coastal state or states should bring into line, for the first time in many instances, management authority and resource jurisdiction -- that is, a national or regional management entity will have virtual jurisdiction over the resources it intends to manage.

Accordingly, the opportunity for interplay between biological, economical, and social factors should be enhanced -- from the point of view of the coastal nation(s) -- because they will then be able to decide whether it is in their best parochial interest to produce protein for domestic consumption, maximize financial return by leasing out fishing rights to others or conducting their own fisheries on the basis of maximum economic yield rather than maximum biological yield, or providing such social benefits as employment, preservation of unique cultures, etc.

One, then, could consider "optimum" yield to be a primary management goal, with the definition of "optimum" left to the managing entity in terms of mixing biological, economic, and social factors as best fits the context of national or regional interests and priorities. The optimum mix of these factors, however, will not be easy and will increase in difficulty as one moves up the scale from local to national to regional to international, simply because political and cultural diversity increases on the same scale. What might be a good mix for one small fishing village might not be the best for a whole coastline which, in turn, may not be the best for an entire country or region.

The question of where on this scale to localize the management authority might be answered by keeping in mind two considerations: (1) the optimum mix is easiest to achieve on the most local scale; and (2) for management to work, the management authority must also have jurisdiction over the resources it is to manage. Therefore, a logical principle might be: to vest management authority in the most localized political entity which has jurisdiction over the entirety of the resource to be managed.

A hypothetical example of this principle in action might be drawn from the eastern Bering Sea herring resource (a resource and region that the author is familiar with and which contains a broad spectrum of elements from highly developed distant water fisheries to native subsistance fisheries). At present, the eastern Bering Sea herring stocks are fished primarily by Soviet trawlers and by Japanese trawlers and gillnetters - a very small catch is taken inshore by North American native Eskimos. Because these herring stocks range well offshore beyond the jurisdiction of the State of Alaska, management would be vested in the United States Government (whose jurisdiction would cover most if not all of the eastern Bering Sea herring distribution). Then, the U.S. and the State of Alaska in concert might prioritize their interests in this resource in the following manner: First, protect and enhance the Eskimo culture by providing access to the resource consistent with its artisanal equipment, experience, and need; second, keep open future options for a large-scale U.S. fishery by maintaining the resource at a near-maximum biological level; third, gain whatever economic return possible from the resource consistent with the first two priorities.

The management program then, would proceed along the following lines. Inasmuch as that stock is believed to be in a somewhat depressed state because of recent overexploitation, the total allowable catch would be reduced from the current annual levels of 40,000 - 70,000 mt to, perhaps, 30,000 mt per year; 5,000 tons of mature herring would be reserved for Eskimo fishermen during the spring onshore spawning migration and the remaining portion of the allowable catch (25,000 mt) would be made available to distant-water fishing nations on either a royalty basis, in return for resource concessions beyond U.S. jurisdiction, or for concessions in some other economic arena. If, in the future, a domestic demand grows for this resource, the U.S. would still have the option of maintaining the Eskimo fishery at an optimum level and, further, of assessing the relative values of phasing out the distant-water fisheries with attendant loss of revenue or negotiating advantage, against the social and economic factors involved in a new large-scale domestic fishery. In short, this arrangement would have allowed the resource to be brought under immediate management, the "optimum" mix determined for the present, and options preserved for another mix that might be optimum at some time in the future.

The application of this principle would, of course, be tempered by whatever international standards are contained in the UNLOS Treaty now being negotiated, particularly those provisions dealing with historic fisheries and maximum utilization. In this regard, there is an often expressed reservation about extended jurisdiction that the new regime, especially in its early stages, will cause a greatly reduced yield of marine protein as coastal states exclude foreign fishermen before their own fisheries have the capacity to take the allowable catch, or as the coastal states apply economically or socially related criteria to fisheries management that militates against maximum biological yield.

If the new regime ultimately permits the high degree of coastal state control over fisheries that the current trend in LOS seems to indicate, the chances are that global fish production will decline. Part of that decline could be caused by simple and ill-founded national emotionalism but one would hope for reasonable treaty standards that would prevent a significant portion of the world's fishery potential from being taken out of production. Furthermore, as nation(s) realize that living resources cannot be "banked" for future national development and that financial (or some other) return can be obtained without adversely affecting future national options, there will be a disincentive to letting lay fallow significant portions of the world's fishery resources.

A second cause of production declines will be the actions of coastal nations to rectify past overfishing and allow depleted or partially depleted stocks to recover to levels that will eventually lead to higher sustained production. In this situation the pendulum may well swing to the side where exploitation is dependent upon evidence that such expolitation is sustainable and away from the side of placing no controls on exploitation until overfishing can be documented. In the long term, this atmosphere will be beneficial to the world -- in the short term, it could pose a serious impediment to the highly developed distant-water fisheries and to current world-wide fishery production rates. Again, one would hope that the shift from the exploitation to the conservation mode is tempered with reason, but if one extreme is to prevail for a short time, would it not be best in favor of the latter mode?

In a more philosophical tone, we are considering a shift from "feeding the world from the world ocean to improving the lot of our citizens from our national waters". Once one understands and accepts the concept that coastal fish populations are henceforth national rather than common properties, the question of reduced worldwide fish production becomes similar in character to that of reduced national wheat, timber or oil production -- there are global ramifications but it is national business.

In concluding this rather esoteric section, a third cause of decreased fish production may be expected in the wake of national or regional "optimization". Should countries opt for maximum economic yield, total production may be held below MSY to allow higher catch rates; or, should they seek to preserve some particular culture, they may have to reserve, say 20,000 mt of the allowable catch of some species so that the natives can be assured of taking 2,000 mt by their primitive means.

In each of these cases, there is a substantial potential for reducing yield -- whether or how much remains to be seen. Presumably the laws of supply and demand, both national and international, would quickly produce economic (if not political) pressures to maintain or increase production -- in fact, under extended jurisdiction, these pressures might quickly grow to the point where the pendulum could swing back in favor of exploitation, in this case because of the profit motive to the coastal rather than the distant-water state.

SHORT-TERM REQUIREMENTS

The types of information needed to carry out the management scheme described above are really no different under extended jurisdiction than they were in the past. A difference does lie, however, in the fact that when the coastal state achieves jurisdiction over the coastal fishery resources -- and with it the wherewithall to manage -- the incentive for collecting appropriate fishery and biological data should be much greater. This added incentive would be due to the realization that the data bank so amassed can be put to sound management use without a great deal of international debate and defense, and because as a condition of continued access by distant-water fishermen, the coastal state may require them to pay some share of the management (data collection) costs.

A further incentive for the compilation of a broad fishery information base should come from the states new ability to consider ramifications of the fisheries other than those of purely a biological nature; that is, they would be able to justify the compilation and quantification of economic and social data as well as the basic fishery statistics.

Considering now the more traditional fishery data (i.e. that required for conservation purposes), the management entity should have certain general measures available to implement on "day one" of extended jurisdiction. These need not necessarily be complicated or highly sophisticated management programs but could merely be reasonable estimates of total allowable catch based on the best information currently on hand or the best professional advice available. The initial consideration under extended jurisdiction should be to bring the existing fisheries under some degree of control so that overexploitation or overcapitalization does not become rampant while awaiting "nth degree" precision in population analyses - the management program can be expanded upon and fine-tuned with time.

Therefore, a first step might be to carefully review the recent history of the ongoing fisheries with a view to determining whether trends in catch or catch rates have been increasing, stable, or decreasing. If the catches have been increasing but no signs of biological stress have been noted, one might choose to allow continued (but not unbridled) growth in that fishery by simply fixing such growth at some rather low annual rate with attendant monitoring of catches and catch rates so that as the fishery approaches a rational maximum (i.e. "optimum" yield as defined by the managing entity) that fact can be detected and further growth prohibited. On the other hand, if catches have been falling in the face of increased effort, the manager may choose to enforce a moratorium to allow rapid stock rehabilitation to a level where optimum yield is possible; or, he may accept a somewhat longer rehabilitation period by restricting foreign fishing while allowing smaller-scale domestic fisheries to continue. The important thing is to assess, as best he can, the general condition of the stocks and immediately introduce a reasonable degree of control on the total fishery in order to protect future management options.

Once this initial control is established, the manager can then afford the luxury of developing national (regional) priorities with regard to "optimum yield", and refining the initial fishery controls into a more complete management program consistent with those priorities. It is at

this stage - really not much beyond "day two" of extended jurisdiction - where the apparent trends in catch and catch rates that were used to justify the initial controls can be further analyzed and qualified. For instance, were the stable catch rates that were observed in the near-past merely artifacts of improved fishing efficiency when in fact the resources were declining? Were catches increasing because different segments of the fish population were recently taken under exploitation?

This would also be the time to consider initiation of real-time resource assessment activities that would form a firm base for understanding trends, both past and future, in the fishery. These kinds of activities might well keep a managing agency busy for the first 3 to 5 years of extended jurisdiction, hence they might be considered mid-range objectives.

LONG-TERM REQUIREMENTS

On a somewhat longer time scale, along with a continual restructuring of the "optimum yield mix", the resource manager should be building his data base and technical expertise to the point where multi-species management concepts are being developed and "optimization" can be applied to entire fisheries rather than to individual species. At this stage of management development, one would be considering such issues as the direct effect on incidentally caught species in a fishery targeting on another species, and the indirect effect of the catch of prey species on important predators.

Finally, at the far end of the time-scale, measured perhaps in decades rather than years, the ultimate goal would be ecosystem management. Optimization of a nation's or region's fisheries will only be fully achievable (regardless of how defined) when the management system is capable of making rational decisions on a ecosystem-wide basis with a full understanding of, and the ability to predict naturally induced changes in productivity and fishery induced changes in the interrelationships between the various marine species and between the aggregate marine fauna and the environment. A full realization of ecosystem management is probably not possible under jealously guarded national jurisdiction, particularly in regions where naturally occurring ecosystems span several areas of national jurisdiction. However, by the time this degree of sophistication is available on a global basis, one would hope that enough stability had been obtained in the world's fisheries to permit another try at international institutions developed solely for the purpose of further increasing the biological, economic, and social returns from the fisheries.

IMPLEMENTATION

Once the initial blush of achievement fades, and the enormity of the responsibilites attendant to extended jurisdiction are more fully contemplated, the fishery manager will be immediately confronted with the realities of implementation. Aside from the suggested, and to some extent theoretical outline above, where and how does a manager start? This question is often framed in the context of "how can enforcement of the budding management program be achieved in a suddenly enormous area of fishery jurisdiction?" There are, of course, a number of approaches to fishery enforcement, some dependent on the type of fisheries, some dependent upon monetary and manpower resources of the managing entity, and some dependent upon the type of management measures that are to be implemented. The latter category contains several possibilities for reducing the problem of enforcement to reasonable proportions.

First, the manager might rely heavily on closed area-time strata rather than restrictions on certain types of fishing. If, for example, the manager is concerned with reducing the incidental catch of a particular species in a directed fishery for other species, rather than allowing off-bottom trawling for the target species year-round and then trying to enforce the no-bottom -trawling provision, he might better try to identify specific time-area units in which the incidental species is most available to trawls and prohibit all fishing in that area at that particular time. By doing so, the surveillance arm of the enforcement organization need only check to see whether or not fishing vessels are in an area during a closed period instead of having to monitor exactly what it is they are doing. Another approach would be to require a check-in, check-out procedure in which all vessels that are to participate in a particular fishery would be required to first check in at a predesignated port so that enforcement agents could ascertain that prohibited types of gear were not aboard and determine the amount of and seal prior catches or catch products before the new fishery is pursued. At the conclusion of a vessel's operation in the fishery, it would be required to check out at a predesignated port, at which time its' total catch could be estimated from the volume of fishery products aboard and sampled, if necessary, to determine species composition or the presence of prohibited species.

Perhaps the most straightforward (but costly) method of achieving thorough enforcement would be through the use of observers which would be stationed aboard fishing vessels to monitor directly their activities and catches. Rather than sending observers, at some expense, aboard all fishing vessels the manager may choose to randomly place observers on some small portion of the total fleet, but not so small a proportion so that the fleet could afford to "bend" the operation of a very few vessels to show the observers what they wanted to see while the majority operated without constraint. Of course, all of these measures could be variously combined to fit the practicalities of geography, finance, and fishing practice. The cost of observers, however, might be shared between the enforcement and research arms of the management agency by taking advantage of their presence in the fishing fleet to collect biological data that might otherwise only be available from expensive research vessel operations.

ORDERLY TRANSITION

There is little doubt that the world is about to move -- either by treaty or wide-spread unilateral action -- from a fisheries regime which favored exploitation and intense competition to one in which access to and utilization of living marine resources will be rigorously controlled. In the long run, this might result only in a change in who takes the fish rather than how many are taken. Also, in the long run, a unique opportunity to enhance conservation and apply real fisheries management will be available.

The big question is how can the world, through the collective actions of states, move quickly to grasp this opportunity and how can the potential adverse effects of this change be mitigated?

Preventing a serious decline in global fish production translates, at the outset, into protecting the interests of distant-water fishermen, not necessarily in perpetuity, but at least over the period it will take for coastal fishermen to increase their capacity to that of the distant-

water fleets they will replace. There are a number of avenues for this, aside from treaty provisions which guarantee a long-term and orderly phase-out of foreign fishing from the economic zone: bilateral arrangements between allies or trading partners; government-to-government or industry-to- government joint ventures; paid access, to name only a few.

Perhaps the most important element in any of these is some assurance that fishing arrangements with distant-water fishermen or nations are made in a manner that protects the coastal state's options for future domestic fishery development. A coastal state with little fishery expertise of its own would be at a decided disadvantage in negotiating continued access by distant-water fishermen -- on the one hand it could be misled by overly optimistic forecasts of sustainable yield and, anxious to obtain some income from its new resources, might agree to foreign removals that could sooner or later lead to depletion. In this case, both the profit potential and the opportunity to develop its own fisheries would be lost, at least for some time. On the other hand, a too conservative view would lessen the income that could safely be otained on a sustained basis.

Alleviation of these two potential problems rests to a great extent on the confidence of the coastal state(s) in rightly assessing the allowable catch and optimum methods for taking it. That confidence, in turn, is a function of the amount and quality of fishery and resource information on hand and the ability to interpret it. In other words, the necessary ingredients are data and expertise.

Although there will never be enough of either to satisfy the manager, with sufficient expertise a reasonable amount of fishery management can be performed with something less than a complete data base. Furthermore, fishery data that can be used to modify -- in almost real time -- an initial pre-emptive management program can be generated quite rapidly from an on-going fishery.

Accordingly, and without downplaying the value of good statistical and biological data, the first and most important requirement for coming to grips with "day-one" management is professional expertise. Therefore, in seeing that reasonable management is quickly attained with the least possible disruption of fish production, an initial consideration must be that of having or making available to the managing entity some degree of fisheries expertise.

Presumably, a management entity would want to eventually develop its own permanent cadre of experts and this should be a defined objective of its management program. Income from foreign fishermen, taxes on domestic fishermen, technology exchange provisions in joint ventures all could provide the financial wherewithall to train or hire professional talent.

The immediate problem then is "day-one" expertise and this is really the key to an orderly transition to the new regime.

In some cases, the pooling of national jurisdiction into a regional organization might also allow for a pooling of talent. It is not inconceivable that the merging of limited national talent may create a "critical mass" of expertise sufficient to cope with initial management problems until a more complete professional staff can be trained or hired, at which time the fine-tuning can commence.

In other cases, heavy foreign investment in a joint fishery venture may be a sufficient guarantee to the coastal state that management assistance from that foreign government would be reliable.

Yet another possibility, and one that has been mentioned in LOS, is that of an international register of qualified fishery experts, from developed countries willing to underwrite such assistance, from which developing states (regions) could select consultants until suitable permanent arrangements could be made. The UN (FAO) might also solicit and arrange for cooperation with national Academies of Science or other professional societies in designing initial management programs for developing countries.

Finally, FAO might provide direct management assistance to regional fishery organizations if suitable financial support could be arranged. Perhaps such support could be based on matching funds from FAO and the regional organization, with some or all of the latter's share coming from revenue generated by foreign fishing in the economic zone.

It does not seem unlikely that each of the above possibilities would have a place in one region or another, or that some combination of the above would be apropos to the situation in certain regions. What will be necessary is that the developing coastal states realize the long-term benefits to them of implementing a rational management program and that an investment of some of their first fishery revenues into a management system will guarantee dividends from then on.