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**management policy**

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**thomas a. cllingan, jr., chairman**

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**NATIONAL AND INTERNATIONAL FISHERIES  
MANAGEMENT POLICY**

**A Report of the University of Miami Sea Grant  
Decision Seminar, November, 1971**

**Sea Grant Special Bulletin No. 5**

**Thomas A. Clingan, Jr.**  
**Chairman**

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UNIVERSITY OF MIAMI SEA GRANT DECISION SEMINAR ON NATIONAL  
AND INTERNATIONAL FISHERIES MANAGEMENT POLICY

Preface

Under the auspices of the Sea Grant Program of the National Oceanic and Atmospheric Administration, the University of Miami convened a decision seminar for the purpose of considering problems concerning national and international fisheries management. The seminar met monthly at the University of Miami, and was participated in by a group of invited authorities from industry, government, and academia. The meetings extended from December, 1970, to June, 1971. In October, 1971, the group re-assembled to examine, amend, and approve the draft report that had been assembled over the summer. The final version of that report, as approved by the group, appears in these pages.

Several days prior to each meeting, selected readings on one of the seven topics listed in the table of contents was distributed. The ensuing meeting was opened by the presentation of a brief paper by one of the participants for the purpose of providing focus for discussion. During the discussion portion of the meeting, notes were taken by the rapporteur and chairman to assist in the preparation of this report.

At the first meeting, the seminar was instructed that there were five intellectual tasks to be performed: the establishment of goals; the identification of trends in decisions; the analysis of problems; the prediction of the results of trends; and the illumination of the various alternatives for decision makers. From that point on, group dynamics were allowed to dictate the course of events leading to the final conclusions.

  
Thomas A. Clingan, Jr.  
Chairman

## Policy Statement

At the conclusion of a series of meetings at which problems of U. S. Fisheries were discussed, the participants in the University of Miami Sea Grant Fisheries Decision Seminar, conducted with the support of the National Sea Grant Program, reviewed the following statement of conclusions. Although the final report represents general agreement, participants were not asked to affix their signatures. It should not be assumed that each participant agrees with every recommendation in the statement.

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A REPORT OF THE UNIVERSITY OF MIAMI SEA GRANT DECISION SEMINAR  
ON NATIONAL AND INTERNATIONAL FISHERIES MANAGEMENT POLICY

1. Fishery Resources and their Exploitation: History, Present Trends and Projections.

Much of the problem involved in projecting fisheries trends stems from the complexity and variety of the living resources of the oceans. This problem is exacerbated by an insufficiency in present levels of research. While it is not, therefore, possible to be precise about fishing levels, certain facts and trends can be identified which may lend credence to management choices.

To begin with, there are more than 20,000 species of marine fish, yet only about a dozen of these make up three-fourths of the commercially desirable stocks. The more popular fishes (about 40% by weight) are the herrings, anchovies and sardines. These are followed in order by cod, haddock, hake, and (in lesser proportions) horse mackerel, tuna, flatfish, salmon and shark. World production of fish climbed from about 20 million metric tons (44.1 billion pounds) in 1950 to 57 million metric tons (125.7 billion pounds) in 1968, but decreased approximately 1 million metric tons (2.2 billion pounds) between 1968 and 1969. During the same two decades, the total U. S. annual catch varied relatively little, fluctuating between 4 and 5 billion pounds (1.8 and 2.3 million metric tons). In

1970, the U. S. catch was 4.884 billion pounds (2.2 million metric tons), up 591 million pounds or .3 million metric tons over 1969, for a dockside value of \$602 million.

Of all commercially valuable fish, the demersal stocks (such as the flounders, soles, cods and Atlantic redfish) are probably exploited close to their potential. This is especially true in the northern hemisphere. At the same time, pelagic fishes (such as some stocks of tuna, sardines, jacks, anchovies, and hakes) seem to have considerable potential for increased production. Preliminary 1970 figures show that the shrimp catch alone may be valued at as much as \$129.7 million.

While the production potential of oceanic living resources is not accurately known, current estimates range from a low of about 80 million metric tons (176.4 billion pounds) to a high of 2,000 million metric tons (4.4 trillion pounds). The figures obtained from extrapolation of the trends of present catches fall on the lower end of that scale, while those on the high end are computed on the theoretical flow of energy through the trophic layers of the marine food chain. Thus, the lower estimate generally represents potential production, while the high end suggests potential yield. Considering present and expected states of technology, the range of 55 to 200 million metric tons (121.3 to 440.9 billion pounds) annually

is considered a reasonable estimate by most, with many experts recognizing less than 100 million tons (220.5 billion pounds).

Fisheries are concentrated in areas of high nutrients. About 90% of the commercial fish come from waters about the continental shelves in depths less than 200 meters. Areas of high nutrients may be enriched as the result of: (1) natural convection, bringing nutrients to the surface (such as on the Grand Banks or the North Sea); (2) wind, driving the water away from the coasts so that it is replaced by the richer waters from the deeps (such as on the West coast of Africa and South America); or, (3) mixing produced by the meeting of ocean currents (such as where the Gulf Stream meets the Labrador Current). This localization of rich feeding grounds creates a potential for fishing stress and competition.

Table 1

World Catch of Marine Fish and Other Marine Products  
(Source: FAO Yearbooks of Fishery Statistics)

<u>Year</u>	<u>Catch*</u>	<u>Year</u>	<u>Catch*</u>
1850	1.50-2.25	1959	30.56
1900	4.00	1960	33.39
1930	10.00	1961	36.44
1938	17.50	1962	40.22
1948	17.02	1963	41.26
1955	21.21	1964	45.46
1956	22.61	1965	45.75
1957	26.44	1966	49.17
1958	27.64	1967	52.58
		1968	57.40

\*in millions of metric tons.



The world trend in fishing has been upward over the past two decades, as can be seen from table 1, above. This adds to the stress. At the present, worldwide fish landings are increasing at a rate two to three times the rate of population growth. While the U. S. catch has remained essentially level, it should be noted, that there have been significant changes within U. S. catches. For example, while the per capita consumption of fish in the United States shows no indication of appreciable change, the demands for particular kinds of fish seem to be shifting. Demand for products having good flavor or texture (such as the salmon, shellfish, lake trout, and red snapper) is strong and increasing. This further accounts for the fact that shrimp, salmon and tuna constitute more than 50% of the total landed value of U. S. fisheries. It also accounts for the popularity of ground fish and shellfish for the fresh and frozen trades in New England, the salmon, tuna, crab and oyster trades in the Pacific, and the shrimp, oyster and crab trades in the mid and South Atlantic and the Gulf of Mexico. It should also be understood that there has been a marked increase in the volume of industrial fish taken for fish oil and meal, particularly in the Gulf. But as the lower income seg-

ments of our society improve their financial posture, purchasing trends may be expected to turn from cheaper grades of fish to other sources of animal protein, such as meat and poultry. These trends seem to vary in the U. S. according to: (1) the level of per capita personal income; (2) the aggregate size and rate of growth of population; (3) tastes and preferences; and, (4) the price and availability of substitutable products (such as meat and poultry).

It can be concluded that while the U. S. fisheries may not increase their total catch in the near future, the demand will remain for high quality, high priced stocks, stocks conveniently stored (such as canned tuna and frozen sticks), and industrial fish (such as menhaden, to supply the protein feed for the meat and poultry for which Americans have shown a particular affinity).

Of the nearly 150 nations of the world, six have in recent years dominated world fisheries. They are: Peru, Japan, the USSR, Mainland China, Norway, and the United States. In 1968, these six produced 57% of the total world catch. It cannot be concluded, on the basis of available facts, that the U. S. is likely to increase its stature within that elite group. However, the facts do support the conclusion that with proper support the U. S. fishing industry will continue to play a

major role.

## 2. Goals of Fishery Management and Regulation.

At the present time, the nation's fisheries account for but one-half of one percent of the national economy. In addition, the living resources extracted from the oceans provide the lesser portion of the nation's animal protein, and there are alternative sources for this portion, if need be. For these reasons, the term "maximum sustainable yield" (MSY) should not be the primary objective of U. S. fisheries management. Furthermore, considering the temper of the times, "maximum economic yield" (MEY) cannot any longer be, if it ever was, the primary objective.

Neither maximization of sustainable biological or economic yields alone constitute a sufficient goal for the United States. To these must be added a new ingredient, which, when combined with the others creates a goal that could be called "Maximum Social Yield." This goal contains the elements of the first two, but, in addition, brings certain intangible social factors into the consideration. Without attempting to exhaust the possibilities, some of the factors that may be important in individual cases are:

1. the trauma resulting from the relocation and retraining of labor forces caused by fisheries management decisions,
2. the need to control pollution,
3. the demand for consumer protection,
4. conflicts with the recreation and recreational fishing industries,
5. conservation decisions,
6. local political factors, and
7. the competition with other industries.

The correct blend of biological, economic, and social factors that is adequate for fisheries management must of necessity vary with locality and conditions and must be a matter of value judgment. The formula must be flexible enough to tailor solutions to specific facts. This is another way of saying that once sustained biological yields are assured for a stock, social contributions and social costs must be evaluated before deciding upon the net benefit to be sought through the regulation of fishery operations. Subsumed in this statement is the conclusion that regulation is, in fact, essential, and that regulation will necessarily involve a degree of government. In the absence of government, economic considerations alone would likely dominate to the possible detriment of long and short range social yields.

If one concludes that government has a proper role in

resource management, he must then inquire as to how much management is required, and on what level? Passing over the first question for the moment, it appears that governmental activity is needed on two levels: regulation and assistance (either in the form of research of services, or both).

Regulation will be required to check the uncontrolled exploitation of stocks resulting in resource depletion, economic waste, and, in certain situations, unwanted social consequences such as widespread unemployment, loss of skills, or unnecessary interference with traditional ways of life (particularly in isolated areas). Regulation is also necessary to provide services for the control of pollution and the preservation of endangered species, neither of which would ordinarily be undertaken by the private sector alone.

Assistance programs can be perceived most readily in terms of the needs of the industry than in terms of social benefit. In assigning priorities to assistance programs, the general benefit of the industry, in relation to other land-based industry, should be the primary concern. But within this general rule, there should be the flexibility necessary to allow for benefits to specific fisheries which from time to time require specialized or emergency aid. This is not found at the present time. Further, assistance should be

tailored to the improvement of fishing effort by helping to:

1. reduce production costs,
2. increase fishing opportunities, and
3. improve catch size and quality.

Further, it is conceived that the best assistance is that which, in time, renders itself unnecessary. In other words, assistance should be provided along with training directed at removing the cause that stimulated the need for assistance in the first instance. In practical terms, of course, this ideal goal will probably never be fully realized.

With reference to specific assistance programs, recognition should be given to the need for direct subsidies for research, and for the rehabilitation of ailing fleets. Allocation of financial assistance should be planned on the basis of regions, or even individual industries, as needed. Many priorities must reflect other valid national needs, but research priorities should be ordered to place emphasis on the need for information adequate to enable educated choices concerning the appropriate direction of national fishing effort. The time to undertake comprehensive scientific investigations toward this goal may simply not be available, but sufficient data to undertake decisions respecting immediate problems should be obtainable, and research to obtain that data should

be given high priority.

3. Methods of Regulation.

Among the questions relevant to the problem of regulation are the questions of access (that is, who shall have access to desired stocks, and to what extent) and the relevance of national decisions to international regulatory schemes. The first leads to consideration of the subtopics of gear and season limitation, catch quotas, limitation of entry, and the like, all designed to control excessive fishing capacity. Such steps can be taken on the high seas only through bilateral, regional, or world-wide agreements, except as they may be achieved by unilateral extension of coastal State jurisdiction, or through the use of coastal State preferences.

The first step in regulation is to determine the 'correct' level of fishing effort. As previously discussed, this can be done by adopting MSY, MEY, or the combination of factors referred to as Maximum Social Yield. The use of MSY alone is insufficient, although social considerations may lead to that choice in a specific case. The objective should be to maximize the social yield, and, hopefully, this will fall as close to MEY as possible within the biological limits of the stock.

Regulation, once the goal has been established, will be required to bring fishing effort to the desired point. "Fishing

effort" depends upon the size, type and efficiency of the boat, the type of gear used, the number of trips, and the skill of the fishing crew. Unless all of these factors are taken into account, the profit maximizing fisherman can adjust the remaining factors so that his actual fishing effort is not substantially affected.

There are several common ways to regulate a fishery:

A. Regulations affecting mortality through fishing effort.

1. number of operating units
2. sweep efficiency of units
  - a. areas fished
  - b. time fished
  - c. catching power of gear

B. Regulations affecting the age and size at which fish are taken.

1. nursery areas
2. seasonal closure
3. required selectivity of gear

Each method has advantages and drawbacks.

Closing of nursery areas, for example, is designed to protect the young of a species for exploitation at a later stage of the life cycle. It has been determined, however, that before this method is to be successful the stock must exhibit



two essential characteristics. The animals developing in the nursery must grow and migrate to the area where exploitation is later to occur, and the species must grow faster than they disappear. In other words, the growth rate must exceed the mortality rate so that the harvest realized by waiting will exceed the harvest that would have been attained by exploiting the juveniles. Obviously, this method is not universally applicable.

Closing of fishing seasons, or establishment of fishing periods, is another regulatory device of limited feasibility. This method is often adopted when a stock is characteristically vulnerable during certain periods. While closed seasons provide a period for repair and maintenance of gear, rehabilitation of vessels, and rest for crews, the net effect is to create highly intensified effort during the open season. The total level of fishing may not be reduced proportionately, while higher costs for more efficient gear and larger vessels are incurred and passed on to the consumer. In addition, shorter seasons mean that there must be high capacity processing plants which then remain idle for long periods of time, and the consumer loses the enjoyment of longer periods of fresh fish availability and pays the cost of increased amounts of processing and storage.

Regulations restricting vessels to the use of ineffec-

tive gear to reduce catch levels are common, but such regulations in most cases are ill-advised. Fishery regulation based upon a deliberate choice for inefficiency seems to be irrational. Regulation by gear selectivity is utilized in a number of fisheries, but enforcement of such rules is difficult, and if the primary aim of management is to increase efficiency by reducing cost per ton of fish, then perpetuation of inefficient practice or equipment is not defensible. It is recognized, however, that perpetuation of inefficiency may, nonetheless, be the preferred choice in order to address certain social problems. Regulations establishing a minimum mesh size do not come under this classification since usually they are intended to allow the escape of small, rapidly growing fish, which may later be caught at a larger, more valuable size, or to eliminate small 'trash' fish and thus reduce the task of sorting out the marketable catch.

The case for gear efficiency, used alone, can be carried to extremes. Where maximum sustainable yield is maintained, an increase in gear efficiency may mean only an increased cost to the individual whose increase in efficiency will be matched by others, until the advantage gained by the first to act will be negated by uniform adoption of the improvement. Thus, improved efficiency works well only in a limited-capital market where marginal operators will be forced out, lowering the level

of effort, or where the total sustainable yield can be increased, enabling the lowering of costs and expansion of markets, or where other unutilized and marketable stocks of fish may be exploited to absorb surplus fishing capacity.

Quotas are a more precise way of controlling catches, but they can have the same overall effect as limiting the fishing season. Each fishing unit will try to expand its effort to increase its own share of the catch.

The conclusion may logically be reached that not one, but a combination of methods of regulation may be required to satisfy selected biological, economic and social goals for a particular fishery. Each system must be hand-tailored.

All things considered, it seems clear that the most generally effective method of control would include some form of limited entry, although this method taken by itself emphasizes efficiency at the expense of some social considerations. Reduction of the number of fishing units allows the remaining units to operate over a longer period, increasing efficiency of production. Restricting the number of units does, however, raise two significant problems. First, what is to be done with the individuals that are forced from (or unable to enter) the industry? And, second, what should be done with the economic rent derived from more efficient fishing?

The first problem is significant because the limited entry concept is a contradiction of the traditional common property/open entry philosophy that American fishermen assumed to be basic when they entered the fisheries and selected their gear. Because we would be changing the rules in the middle of the game, those who would lose because of the change must be compensated in some form by the economic rent derived.

One method of restricting entry is through the auction mechanism. Should this be adopted, the most efficient units would be in the best position to bid the highest amount for the right to fish, and the money received from the auction could be utilized to assist in the economic and social adjustments stemming from reduced employment in the restricted fishery. A second method would gradually reduce the number of fishing units through retirement or voluntary sales. Under this program, the government might buy out fishermen prepared to leave the fishery for a reasonable consideration, and retire the purchased license. This would provide for a reasonable phase-out period. It might also be possible to combine the two methods by decreasing the number of licenses auctioned each year until the desired level is achieved.

It might be mentioned that a license control program (that is, a limited entry program) is making progress in the

British Columbia salmon fishery. This program was initiated by freezing the number of licenses as of a given point in time (the 'grandfather' principle), and then proceeding step-by-step with further moves involving the development of property values in licenses, and buying up licenses on a voluntary sale basis. The successful implementation of a similar system in the United States would depend, to a large extent, upon the manner in which it was conducted and the degree to which individual fishermen could be persuaded that benefits would be derived from its adoption. This persuasion effort would be substantial, but it is necessary and should be pursued vigorously.

4. Widths of the Territorial Sea, Fisheries Contiguous Zones and the Proposed Areas of Limited Preferential Fishing Rights Assigned to Coastal States.

The problem to be faced in this section is the identification, with precision, of the various U. S. fishing interests, and the construction of a regime or regimes which could best further these interests without prejudicing U. S. security and navigation interests. The history of U. S. efforts at establishing the limits of national jurisdiction over the seas emphasizes the strong political relationship between the width of fishery zones, and the breadth of the territorial sea. Some coastal States have utilized claims to broader territorial seas in an attempt to protect their near-shore fisheries from severe

over-fishing by massive foreign fishing fleets.

The protection of coastal fleets calls for a zone of at least limited coastal State jurisdiction that would enable that State to implement effective and timely fishery management regulations, and afford adequate economic protection to its fisheries. It must be apparent that in most instances such regulations would pertain principally to stocks which do not conform to strict boundaries drawn at fixed distances from the coastline. Boundaries are arbitrary and do not solve fisheries problems. Line-drawing, however, is helpful for enforcement purposes, and for the delimitation of economically significant zones. But, if lines are to be drawn for these purposes, they should be based upon biological rather than geographical criteria. Thus, each zone would be drawn on its own merits, rather than under any universal rule of construction (e.g., 12 miles from the baseline, etc.).

A U. S. market exists for increased production from our coastal fisheries, as is demonstrated by the increases in annual fish imports. Thus any proposal for fisheries limits should permit the coastal State to develop its full management potential to maximize the sustainable returns from coastal fisheries. Distant water fisheries of the United States would suffer to some extent under this proposal, but increased overall yield and em-

ployment opportunities in coastal fisheries should offset the loss.

The biggest remaining question is whether such a proposal would gain international accord. The Soviet bloc, Japan, and certain European nations are likely to oppose a move in this direction and might be able to develop the necessary blocking third (assuming normal convention rules to apply). But any proposal that does not provide some such management authority to the coastal State is even more likely to encounter the blocking third. Another concern often voiced is that the adoption of wide zones of competence might adversely affect the freedom of scientific research. The implications of restriction of this freedom are serious for the fisheries, and an effort should be made to work out special provisions to afford the necessary protections.

There may be some justification for delineating separate zones for management and for resource allocation, although it would appear that the two are so related that separation would serve no particularly useful purpose.

How should the fishery zones, whatever their width, be established? Resolution of conservation and allocation problems through the machinery of large-membership international conventions has not been significantly productive in the past and

appears even less promising for the future. The conventions usually create large, slow-moving regulatory agencies, subject to delays and vetoes. What is required is a vital and responsive agency. The massive mobile fishing fleets straining coastal waters leave little time for the deliberations and delays characteristic of large, multilateral commissions. Since line-drawing is to be avoided where possible, the more effective approach to solving problems of conservation and allocation would be through small groups of nations having realistic interests in the stock. The salmon and fur seal treaties reflect this approach. In order for this method to be successful, it is apparent that the choice of participating nations should be on the basis of substantial participation in the fishery. Further, the choosing of a 'manageable' stock is important, and accurate recruitment figures will be required if realistic limits are to be set. Finally, if the fur seal and salmon arrangements are to be used as examples, the success of future such arrangements will depend upon the degree to which management and harvesting can be confined to one or a few countries.

In sum, then, line-drawing should as far as possible be related to specific stocks, management, and enforcement requirements. Zones of coastal State preference should include all stocks that range primarily in the coastal zone. The coastal



State should have the primary responsibility for management of the stock, and a preferential right to the sustainable yield, or some agreed upon proportion of that yield. Allocation of catch within zones is a matter of negotiation among the principally affected nations with weight given to coastal State preference and historical rights.

5. Assistance and Technical Aid in Support of Fisheries Management.

The present attitude of the legislative branch of the government regarding the support of fisheries is reflected in the various statutes. Under some circumstances, these programs operate in contradiction to programs regulating fishing effort. Under 16 U.S.C. §724(c), the federal government may make loans to finance or refinance operations, maintenance, replacement and repair of equipment, and for research. The administrator may set reasonable rates of interest on these loans which may extend for periods up to ten years. The U. S. Fishing Fleet Improvement Act, 46 U.S.C. §1401, provides for subsidies for fishing vessel construction.\* In order to qualify for a subsidy, the applicant must show that he is qualified to operate the vessel requested, and that the vessel will aid in the development

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\*This program has not been funded for a period of at least two years.

of U. S. fisheries. He must promise that he will deliver his catch only to U. S. ports and that he will employ only U. S. citizens or U. S. domiciled aliens. If he meets the requirements, the applicant will be eligible for a construction subsidy on the lowest responsible U. S. bid. This subsidy system interrelates with the Jones Act requirements rendering foreign built hulls ineligible for registration. Other laws seek to protect the fisherman from foreign competition.

16 U.S.C. §1081, for example, makes it unlawful for any but a U. S. vessel (except as provided in that section) to engage in fishing in the territorial waters and contiguous zone of the U. S. In addition, 46 U.S.C. §251 provides that (except as provided for by treaty or convention to which the U. S. is a party) only U. S. vessels may land fish caught anywhere on the high seas in U. S. ports. Certain exceptions are made for landing fresh fish in the Virgin Islands for immediate consumption.

Finally, the government provides aid in certain kinds of risk protection. The Fishermen's Protective Act of 1967, 22 U.S.C. §1971, provides that in any case where a United States vessel is seized by a foreign country on the basis of rights or claims not recognized by the United States, the Secretary of State will attempt to secure the release of

that vessel and see that the owners are reimbursed for any fines that he or they may be forced to pay on account of such claim. Further, under Section 1977, any fisherman may, at his option, enter into an agreement with the Secretary whereby he can be reimbursed for certain other losses incident to such confiscation.

In addition, federal money is channeled into special programs of research. The National Marine Fisheries Service funds programs for research, exploration and gear development. The Commercial Fisheries Research and Development Act directs funds to individual states for research and restoration. The Anadromous and Great Lakes Fisheries Act of 1965 provides funds for cooperative projects aimed at the development of anadromous fisheries.

Thus, federal programs emphasize financial support, protection, risk allocation, and research. These programs have not been uniformly successful. The shipbuilding subsidy program, for example, can best be viewed as a subsidy for shipyards than for fishermen. This deficiency is aggravated by the high bidding practices of yards who increase their bids to compensate for the cost of government-related delays and red tape. Rather than subsidies for construction, more money should be spent to improve markets or provide incentives

for improved procedures. Some assistance should be directed at increasing the quality of fish products while at the same time educating the consumer to accept a wider range of food from the sea.

Incentives designed to increase income through better market response might be supplemented by incentives to increase safety aboard ship. This, in turn, would result in lower insurance rates. It could be done in a number of ways. For example, the government could provide a subsidy of so much per pound to owners who agreed to incur the additional cost of instigating on-board safety precautions. A similar incentive program can be seen in the government's mortgage loan program which calls for certain construction specifications. Vessels built under this program with steel hulls have survived Gulf hurricanes with minimal structural damage, demonstrating that the incentive was sufficient to increase reliability with consequent reduction in risk. Such experience encourages lower insurance rates. Another method would be for the government itself to provide insurance for fishing boat owners who cannot meet the rates demanded by the commercial insurance sources, but since this is not an incentive system encouraging better standards it should not be the preferred solution.

Support to the industry in the form of training programs

is needed. The fisheries are in need of new blood as the labor market is decreasing as a consequence of high work loads and long periods at sea. The expenditure of money for the training of fishermen, however, should be viewed critically since programs of this kind often prove unproductive and expensive.

Support for research should be critically re-evaluated. While pure research on fisheries is sorely needed, the more immediate demand is for applied research directed at providing information for effective fisheries management and regulation. Furthermore, federal money being filtered through individual state political structures should be expended directly for management programs only.

6. National Organization and the Management and Regulation of Fisheries.

To be effective, fisheries management should serve the natural system being regulated. Artificial divisions such as those existant between sport and commercial fishing segments create conflict and diseconomies and should be avoided. Management frameworks should be of sufficient breadth to deal with a wide range of fisheries problems providing research facilities and management functions essential for conservation and fishing efficiency. The management program should promote a unified set of goals and regulations to supplant the con-

flicting sets of laws and restrictive regulations which now cause confusion and inequity.

There is a lack of unifying authority for fisheries both within and without the limits of the territorial sea. Congress has elected not to exercise its commerce clause powers to regulate stocks within the three mile limit which nonetheless are solely in interstate commerce and which migrate across state lines. Nor has there been federal regulation over fisheries outside the territorial seas and contiguous zones except in response to specific international treaty obligations. This absence of federal presence is complicated by the lack of uniform agreement among state and county laws reflecting the large degree of political influences protective of local industry. Even in those instances where state and county regulation is effectively structured, the goals are often frustrated by uneven enforcement practices or policies. In addition, individual states and counties often do not have the resources to support effective interstate management. In this area, the conclusion seems clear that more federal authority is needed. States are, however, reluctant to support such authority because of local pressures.

Several mechanisms have been suggested to accommodate federal and State interests in coastal waters. The National

Fisheries Policy Conference held in Washington on June 8-10, 1970,  
made the following recommendation:

"The National Fisheries Policy Conference urges that a high priority be placed upon developing a clear delineation between the Federal Government, the States, the domestic commissions and the international commissions on management of all fisheries and shell fisheries of present and potential interest to the United States."

To implement this suggestion, the Conference called for consideration of the following alternatives:

- "(a) Where a Fishery is located wholly within a state or where a fishery is harvested by citizens of a single state, jurisdiction should reside with that state.
- (b) Where a fishery is located wholly within two or more states or where a fishery is harvested by citizens of two or more states, jurisdiction should rest with a commission composed of members from the state whose citizens are engaged in utilizing the fishery.
- (c) Where a fishery is harvested by both domestic and foreign fishermen, jurisdiction should rest with an international commission composed of members from all countries engaged in the fishery.
- (d) Where a fishery is now under the jurisdiction of two or more states or countries, the existing arrangements should not be disturbed."

The Stratton Commission recommended:

- "That the National Oceanographic and Atmospheric Agency be given statutory authority to assume regulatory jurisdiction of endangered fisheries when it can be demonstrated that;
- "A particular stock of marine and anadromous fish migrates between the waters of one state and those of another or between the territorial waters and the contiguous zone of high seas and
- "The catch enters into interstate or international commerce, and
- "Sound biological evidence demonstrates that the stock has been significantly reduced or endangered by acts of man, and

"The state or states within whose waters these conditions exist have not taken effective remedial action."

Finally, the following was discussed by the New England Fisheries Conference:

"In view of the increasing jurisdiction over stocks of fish in the U. S. coastal waters as a result of current national and international developments (1973 Law of the Sea Conference) and the responsibility that this places on the U. S. to assume the conservation and wise utilization of these stocks, it is imperative that the U. S. Government have adequate legislative authority to properly discharge this responsibility. Such legislation should direct the appropriate agency of the U. S. Government to study and regulate the stocks of fish in our coastal waters to achieve optimum returns from these resources; and provide the authority necessary for such management.

"This should be given top priority by the concerned public and Congress and not wait the action of the 1973 Law of the Sea Conference."

Thus it can be seen that the presently factored regulatory system is ineffective, uneconomic and inequitable. A strong federal role is required for management of stocks in areas outside state jurisdiction, and where present management of interstate stocks has proved ineffective, or where stocks have become endangered. While the federal role is clear under the commerce clause, the Congress has not provided the legislation by which this responsibility could be exercised. More study should be devoted to strengthening the federal role and specifying responsibilities and jurisdiction.

In some fisheries, there has been a gap in communication



between the federal fisheries authorities and the industry resulting in a certain amount of distrust of federal authority and opposition to legislation designed to increase the federal role. However, with the decimation of coastal stocks by increased fishing pressure, there appears to be an increase of support for federal participation in the management of coastal stocks provided that the participants in the fishery have a substantive role in the management program.

Legislation to implement federal participation should be enacted containing full authority for the appropriate federal agency to formulate and implement management measures including limitation on entry ("grandfathering" as required), but it should concurrently provide for a substantive role in the decision-making process for participants in affected fisheries. This can be done by the establishment of a fisheries advisory group, with membership from the industry, to assist the agency in setting policy. Such a mechanism should provide for consultation with representatives of other segments of the commercial and recreational fisheries on any measure substantially affecting them, and for the establishment of federal guidelines where the management of fishery resources impinges upon a broad interest of the public sector. Finally, the legislation should provide for an equitable method for determining the makeup of the partici-

patory management group.

The goal of such a proposed system is to guarantee that those most affected would be actively involved in the decision and management process. This would make a broader delegation of authority to the federal government more acceptable to those who would thus be regulated. The mechanism must assure full examination and approval by both government and industry of such controversial issues as limited entry, with full and open consideration of all benefits and drawbacks. It must also assure agreement on the specific steps for implementing agreed upon programs before they are implemented. Through such a group, a higher degree of trust, cooperation, and progress can be fostered.

7. International Organization and the Management and Regulation of Fisheries.

As the United States approaches the proposed 1973 Law of the Sea Conference, it becomes increasingly obvious that defense and fisheries interests will play an exceedingly large role in the outcome. The success or failure of the conference to achieve maximum benefits for all of the participants may turn on the degree to which such interests can be satisfied without one becoming the handmaiden of the other. Whether U. S. interests of this nature are compatible with other participants remains to be seen.

At this early stage, certain blocs are beginning to emerge. There are five basic groups: (1) Western Europe (including the U. S.), (2) Africa, (3) Asia, (4) Eastern Europe (including the Soviet bloc), and (5) the Latin Americas. To these may be added such other ad hoc groups that might form, including a coalition of land-locked and shelf-locked nations. During recent meetings of the 86-nation working group, the so-called "extremists" (that is, those nations claiming greatly expanded fisheries competence) were successful in obtaining appointments to influential committee positions. The Western European group was able to obtain the chair of but one committee: scientific research and pollution. Not an auspicious beginning.

Also emerging from the preparatory meetings is a growing sense of the national interests of developing countries. There is also the continuing insistence by the Latin group upon the legitimacy of the concept of regional customary international law as a satisfaction of coastal State preferences and needs. Of particular note is the fact that Malta, previously considered a conservative force in the negotiations, aligned itself with those nations calling for a 200 mile jurisdiction for all purposes. This announcement appeared to be based upon the belief of Ambassador Pardo that this figure would lead more readily to agreement than others being proposed. What appears to be emerging

is an indication that the concept of freedom of the seas, as traditionally understood, may become subordinated to a concept of National use of the oceans regardless of zones or uses. This development is not compatible with the present U. S. position calling for a maximum of twelve miles for the territorial sea with freedom of transit through straits and preferential fishing rights for coastal States.

The U. S. fisheries objective has several dimensions. These are desires to protect the coastal fisheries, create effective management schemes, and enhance to the degree possible the position of high-valued U. S. distant water fisheries. Obviously the first and third of these goals are not consistent, and a choice will have to be considered. The final U. S. position in 1973 must, however, be worked out in the light of the strong pressures for greater coastal State jurisdiction.

Our security interests probably are best served by avoiding the establishment of fishery jurisdictional zones of uniform width throughout the world, arbitrarily drawn without regard to the biological and management requirements of the stocks of coastal fish. Furthermore, from the standpoint of conservation and management, designation of management zones based on stocks is preferable to line-drawing. Some line-drawing of course, will be necessary to simplify enforcement and delineate

jurisdictional responsibility but the breadth of the management zones should be stock-related. These zones, therefore, would vary in width according to the biological requirements of the stocks and the geography of the region. This variation will undoubtedly create problems, but so long as the management basis is clear, it should be possible to negotiate acceptable compromises if arrangements for arbitration of disputes and appeals can be worked out.

As a realistic matter, the problem of management of high seas fisheries must be approached on more than one plane. Agreement will probably be reached on a line within which resource management, and perhaps allocation, will be the concern of the coastal State. Certain stocks, not solely within those limits, will then be left to be managed under rules established by international negotiation among the participants. These agreements will have to deal with the pressures for new entries, and some proportion of catches allocated to original participants may subsequently have to be surrendered in favor of legitimate new entries. The key to the effectiveness of such arrangements is found in the degree of flexibility they contain for the settlement of disputes concerning new entries.

In sum, it appears that future organization for high seas fisheries regulation should be constructed on the basis of

expanded coastal State jurisdiction, with international, regional, or stock-oriented commissions to handle those stocks not covered by coastal competence. Such arrangements would prove more satisfactory than the present system to coastal fisheries interests but less satisfactory to distant water. They would be responsive to the solution of national allocation problems, but since stock utilization would be to a greater degree in the hands of the coastal State, conservation measures may not be uniform. Some areas may become over-exploited while some non-fishing States may cause waste by closing their waters to distant-water fleets.

The current U. S. approach to the forthcoming conference, with respect to fisheries, appears to incorporate the 12 mile zone advocated by the defense department with certain preferential rights for coastal States outside the 12 mile zone.\* In the face of the developing pattern of negotiation, it would be in the best interest of the U. S. fisheries if their problems could be considered on their own merits and not as an appendage to other interests. However, complete separation is unlikely since approval of fishery jurisdiction zones of uniform width throughout the world would be likely to encourage some states to seek to expand such jurisdiction to territorial sea coverage. This stimulation

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\* The preferential rights should consist of the historical share of the sustainable yield from such stocks, and authority to establish and enforce management measures in the management zones.

would be minimized if the fishery zones were delineated on the basis of the biology of the coastal stocks and thus had a breadth which differed substantially in different regions in accordance with the characteristics of the fish stocks and geography of the region.

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\*Not all participants were present for each phase of the seminar. In addition, guests such as Dr. Philip Roedel, Director, National Marine Fisheries Service, were present from time to time, and substitutes were occasionally present for regular participants.



