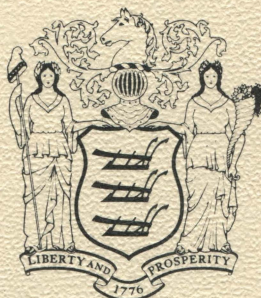


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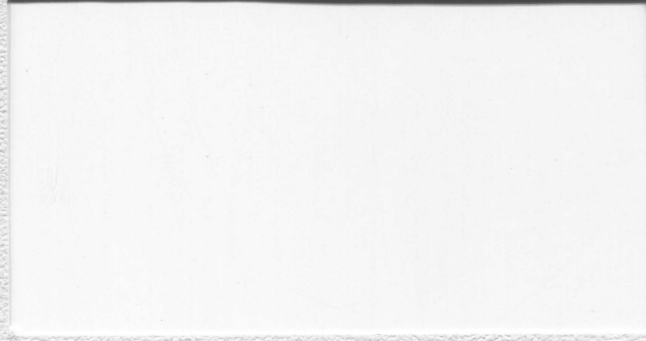
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A PROPOSAL TO CREATE A
NEW JERSEY
FISHERIES AUTHORITY
A WORKING PAPER

Office of State Economic Planning
142 West State Street
Trenton, New Jersey
(609) 292-9200
September 1977

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**A. HISTORICAL BACKGROUND AND STATISTICAL
INFORMATION**

1. Historical Background

The fishing industry in New Jersey has a distinguished past. A 1907 report to the Governor by the Commission for the Investigation of Salt Water Fishing described the New Jersey fishing industry as "practically the largest on the Atlantic Coast." Even the more exotic aspects of the fisheries industry have had an important role in New Jersey's past, probably the best example of which is whaling, an enterprise that existed in New Jersey in the 1600's and lasted until the mid-1800's.

The history of the fishing industry in the United States has been characterized by extremely slow growth from the 1880's, the earliest year for which the Historical Statistics of the United States reported fisheries data, to the mid-1950's. The total yield in 1956, the peak year for domestic fisheries, was only three times the catch in 1880. However, from 1956, when the United States was second only to Japan as the world's largest fishing nation, to 1974, annual yield has fallen from 5,268 million pounds to 4,940 million pounds and the United States is now number five among the fishing nations of the world. The passage of the Fishery Conservation and Management Act of 1976 which effectively limits the fishing activity of foreign nations within 200 miles of American shores, presents an opportunity for major expansion of United States, and therefore New Jersey, fishing activity.

The catch along the North Atlantic coast, which includes New England, Mid-Atlantic (New York, New Jersey, and Delaware), and the Chesapeake Bay states, had actually declined from 1880 to the beginning of World War II. Fishing became a neglected industry during the post-Civil War period of industrialization. The high profits

and wages and the lure of a more regular pattern of life drew fishermen and farmers alike away from the sea and farmlands and to the factories of the expanding urban centers. During this period, it was only the growth in Pacific coast fish landings that enabled the total U.S. yield to show an increase.

The end of World War II saw a rapid expansion of fishing activity that reached its peak for the North Atlantic fishing grounds, as it did for the total U.S., in the mid-1950's. This gain can be attributed to the industry's sharing of the general economic expansion that followed the war. But the lack of technological advance of the U.S. fishing fleet began to show its effect at this point in an inability to compete with the large scale, highly mechanized, and government subsidized operation of foreign vessels resulting in a dramatic decline in the North Atlantic domestic catch. It was only an increase in landings in Gulf coast ports that caused the total U.S. yield to decline only slightly since 1956.

The New Jersey fishing industry has mirrored the United States performance in that its peak year was also 1956, but with the exception that its decline since that date has been precipitous - in this instance paralleling the North Atlantic fisheries experience. The New Jersey catch in 1956 was 540 million pounds. The figure for 1974 was 167 million pounds, a decline of over 69%. Furthermore, the New Jersey catch is subject to extremely wide fluctuations. Available State figures indicate a 1975 catch of only 81 million pounds, 15% of the 1956 high and a rebound to 127 million pounds during 1976.

The decline in the U.S. catch, coupled with an increasing population and constant per capita American consumption of fish (approximately 12 pounds per year), has resulted in a dramatic increase in our dependence on imports. In 1956, imports

were 700 million pounds, but by 1973, 17 years later, this figure had more than tripled to 2,177 million pounds.

An interesting feature of the American fishing industry is the gradual displacement of fish caught for human consumption by fish destined for industrial use, the latter including fish used for animal food. In 1945, when the catch for human consumption was at its peak, fish caught for industrial use was less than one-third of total yield. By 1956, it approached the size of the for-human consumption yield, and currently fish for industrial use is the major yield, by weight, of U.S. fisheries. Industrial fish are of even greater importance to New Jersey fisheries. In 1973, an industrial fish, menhaden, accounted for almost three-quarters of the landings by weight in New Jersey ports.

Fisheries employment in New Jersey mirrored the decline in the catch. In the peak year of 1956, there were 5,298 full and part-time fishermen employed in New Jersey. With the decline in volume of landing the number of fishermen also declined so that by 1973, only 2,978 persons were employed as fishermen. However, onshore employment in processing and wholesaling plants remained relatively constant, 2,293 in 1956 and 2,141 in 1973. For the total U.S., total fisheries employment showed a slight increase, rising from 202,000 in 1956 to 221,000 in 1973.

To sum up: the fishing industry in the United States, and in particular the North Atlantic component of the industry, did not fully participate in the technological development of American industry of the post-Civil War era. The result is that when the domestic fishing fleet was challenged in the past two decades by the high technology vessels of foreign nations, it found it could not successfully compete in its own fishing grounds. However, the gargantuan catches of the foreign fleets indicate the potential in North Atlantic

waters, a potential that was never realized by American fishermen because of the under-developed state of the American fishing fleet. With the passage of the Fishery Conservation and Management Act, the U.S. fishing industry has, in effect, been given a new lease on life. To take advantage of this second chance requires large scale capital investment in new plant and equipment, onshore facilities, including processing plants, as well as vessels, plus the development of trained personnel and managerial skills necessary for this new environment. It is the duty of the U.S. government to ensure that fishing grounds within the 200-mile limit are harvested by American fishermen and that we do not revert to a situation in which the bulk of fish in American waters is landed in foreign ports. The role of the State is likewise clear cut - to see that New Jersey fishermen have the financial ability and facilities complement to effectively compete in these fishing grounds against fishermen from other Atlantic coast states who will likewise be the beneficiaries of assistance from their respective states.

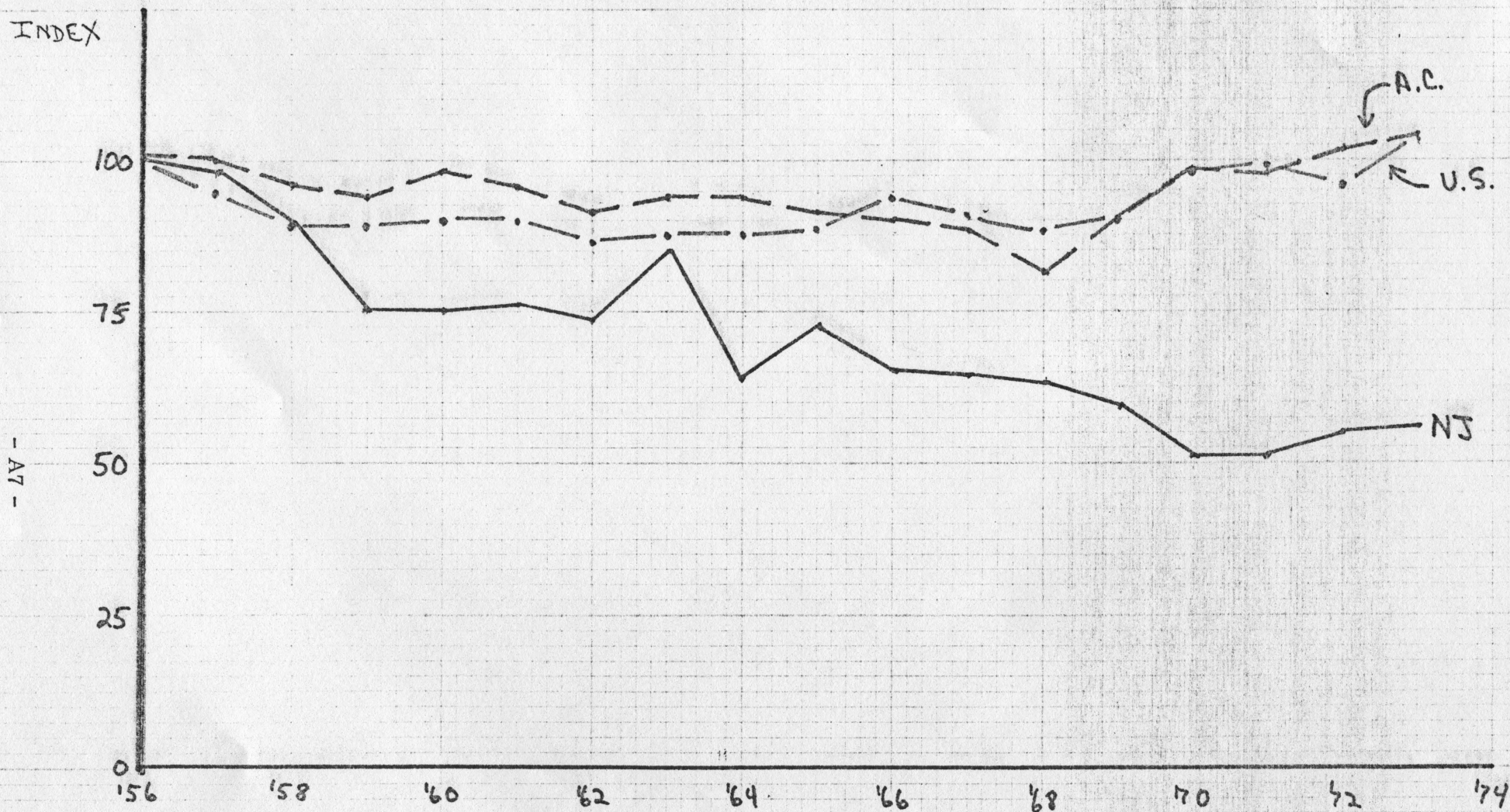
2. Data

EMPLOYMENT (000)

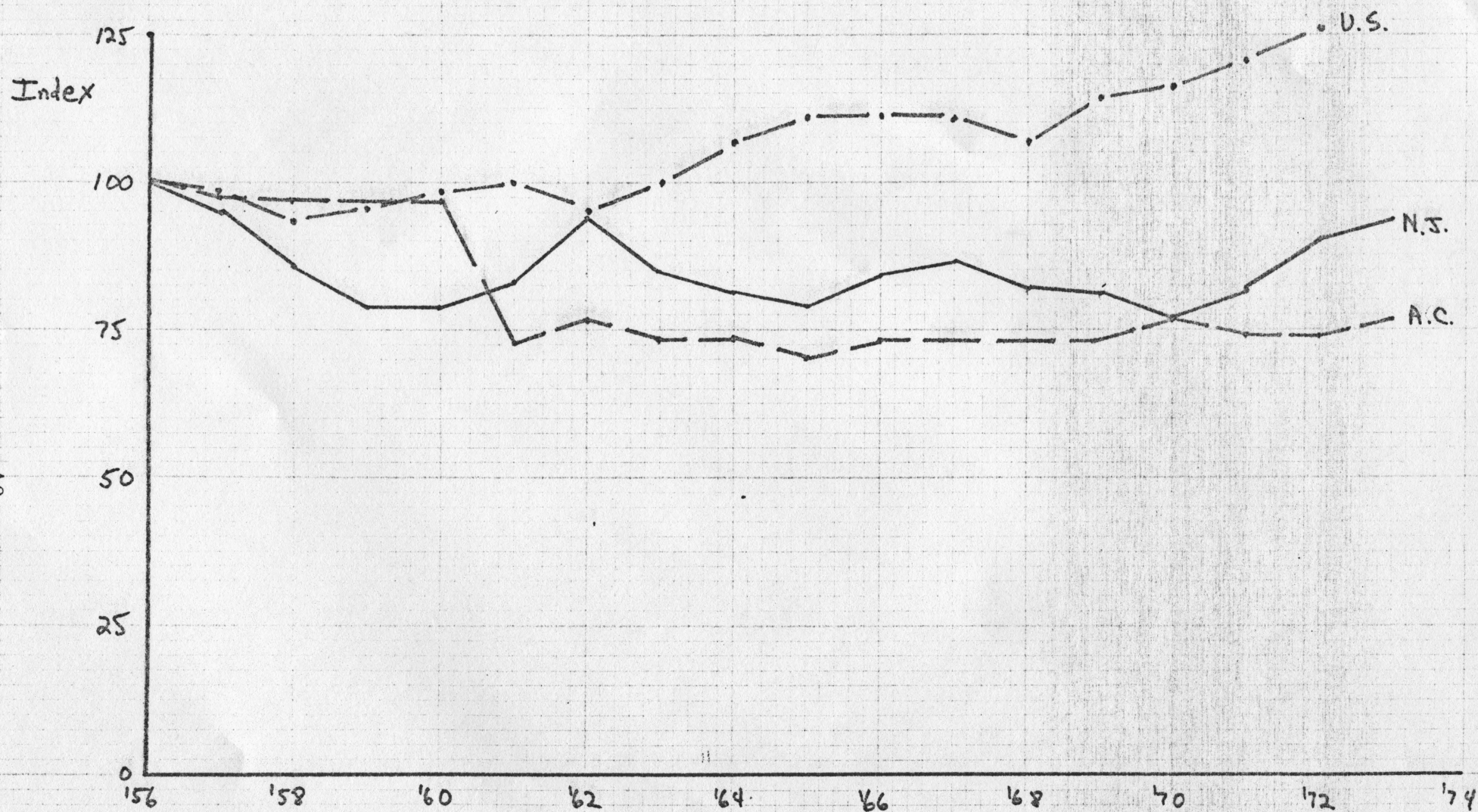
<u>Year</u>	<u>New Jersey</u>		<u>Atlantic Coast*</u>		<u>United States</u>	
	<u>Fishermen</u>	<u>Process/ Wholesale</u>	<u>Fishermen</u>	<u>Process/ Wholesale</u>	<u>Fishermen</u>	<u>Process/ Wholesale</u>
1956	5.3	2.3	51	30	145	57
1957	5.2	2.2	51	29	138	56
1958	4.7	2.0	49	29	129	53
1959	4.0	1.8	48	29	129	55
1960	4.0	1.8	50	29	130	56
1961	4.0	1.9	49	22	130	55
1962	3.9	2.0	47	23	126	57
1963	4.5	2.0	48	22	128	54
1964	3.4	1.9	48	22	128	57
1965	3.8	1.8	47	21	129	61
1966	3.4	1.9	46	22	136	63
1967	3.4	2.0	45	22	132	63
1968	3.3	1.9	42	22	128	63
1969	3.1	1.9	46	22	130	61
1970	2.7	1.8	50	23	141	65
1971	2.7	1.9	50	22	140	66
1972	2.9	2.1	52	22	139	69
1973	3.0	2.1	53	23	149	72

* New England, Mid-Atlantic, Atlantic Coast.

Source: Fishery Statistics of the United States.



Index of Fishermen Employment (1956=100)



Index of Fish Processing/Wholesaling Employment (1956=100)

TOTAL CATCH (LANDINGS) (MILLIONS OF POUNDS)

<u>Year</u>	<u>New Jersey</u>	<u>Atlantic Coast*</u>	<u>United States</u>	<u>World</u>
1956	540	2445	5268	65000
1957	473	2405	4789	66000
1958	251	2126	4747	74000
1959	360	2282	5122	78000
1960	374	2072	4942	83000
1961	397	2063	5187	91000
1962	447	2338	5354	99000
1963	255	1809	4847	102000
1964	139	1589	4541	114000
1965	160	1650	4777	116000
1966	98	1354	4366	125000
1967	124	1209	4055	133000
1968	126	1260	4160	141000
1969	93	1060	4337	139000
1970	98	1301	4917	153000
1971	116	1243	5018	154000
1972	191	1465	4806	145000
1973	210	1476	4858	146000
1974	167	1302	4940	154000

* New England, Mid-Atlantic, Chesapeake Bay.

Source: Fishery Statistics of the United States.

INDEX

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Index of Fish Landings (1956=100)

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EXHIBIT 5

B. ECONOMIC POTENTIAL

1. Impact of the Fishery Conservation and Management Act of 1976

The Fishery Conservation and Management Act of 1976 (FCMA) is the latest of three pieces of federal legislation providing the basis for effective management of marine resources in the coastal waters of the United States. The FCMA complements the Marine Mammal Protection Act of 1972 and the Endangered Species Act of 1973.

On the Atlantic coast, FCMA supercedes the International Convention for Northwest Atlantic Fisheries treaty as well as bilateral executive agreements with Canada, Poland, and the USSR. While these international agreements are credited with preventing the wholesale depletion of fishery stocks off the Atlantic coast, they have been criticized within the United States. This criticism arises from the apparent inability of these agreements to prevent overfishing of more abundant species and serious depletion of some of the smaller stocks of fish. In the coastal waters north of Cape Hatteras, the Atlantic-North, the total volume of fish has declined about 33% in the past decade.

The FCMA, of course, establishes preferential American access to the fisheries of the coastal waters out to 200 miles. Perhaps the most innovative aspect of the legislation, however, is the related establishment of regional fishery management councils. These councils, such as the Mid-Atlantic Fishery Management Council, covering New York, New Jersey, Delaware, Pennsylvania, Maryland, and Virginia, are required to prepare and implement fishery management plans with respect to each fishery within its geographic area of authority. The intent of these management plans is to deal directly with the excessive harvesting of certain species of finfish and shellfish by both domestic and foreign fishermen through the determination and enforcement of limits on the catches of stocks of fish.

The FCMA comes into being at a time when, as noted above, the United States finds itself fifth in rank among the leading fishing nations of the world. Little more than two decades ago, in 1956, the United States ranked second (behind Japan). Symptomatic of this decline is the fact that in 1974, in the U.S. Atlantic coastal waters north of Cape Hatteras, the Atlantic-North, foreign fishermen accounted for 44% of the catch by volume. (See Table I.)

In order to best assess the probable impact of the FCMA on New Jersey's commercial fishing industry, it should be noted that the industry is composed of two broad subcategories; one concerned with finfish and the other with shellfish. This distinction is meaningful in New Jersey where in 1976 the value of shellfish (e.g., crabs, clams, and scallops) landed was \$22 million, and that of finfish, \$12 million.

Shellfishing in New Jersey can usefully be classified as to distance from shore. Within the territorial sea, which extends three miles off the coastline, shellfishing is subject to the regulation of the New Jersey Division of Fish, Game, and Shellfisheries. This control will be unaltered by the FCMA. New Jersey shellfishermen are, however, also active beyond three miles, where clams, scallops, and quahogs (a type of clam) are harvested in the newly-extended U.S. contiguous zone, 3 to 200 miles offshore. The surf clam has been harvested at greater-than-sustainable levels. Regrettably, this condition is the result of overfishing by the domestic industry; foreign harvesting has been insignificant. With the implementation of fishery management plans, New Jersey shellfishermen may well have to reduce their catches in this fishery. The quahog, in contrast, is currently underutilized and may offset, to some uncertain degree, the reduced harvest of the surf clam. In summary, while the conservation programs of the Mid-Atlantic Fishery Management Council may ultimately increase allowable yields, the shellfishing industry in New Jersey will not experience an immediate expansion as a result of the FCMA.

Finfishing in the State can benefit significantly in both the short- and long-term from the implementation of the FCMA. In order to identify these benefits, it is necessary to discuss separately the two components of the finfishing industry in the State.

"Industrial" finfishing, specifically, the harvesting of the menhaden, will realize no near-term benefits from the FCMA. The menhaden, used for fishmeal, oil, and solubles, is caught within 12 miles of the coast, almost exclusively by domestic fishermen. This fishery is considered to be fully exploited, perhaps overexploited, in the Atlantic, and the restrictions on foreign fishermen embodied in the FCMA will have no impact on the menhaden. In the longer-term, stock management controls could result in a greater abundance and improved yield for this fish. Effective stock management could entail, however, a period of substantially reduced harvesting.

The "edible" finfishing segment of the State's industry, in contrast, is presented by the FCMA with the prospect of meaningful expansion. While foreign and domestic fishermen have, in general, not competed directly for the same fish stocks, the foreign fishing effort in U.S. coastal waters north of Cape Hatteras has resulted in substantial incidental foreign harvests of American "target" fish. In assigning quotas to foreign fishermen, the Mid-Atlantic Fishery Management Council has taken steps to reduce these incidental catches of fish sought by American fishermen. Quotas are defined not only in terms of species and quantity, but also in terms of the time period during which the harvesting may take place, and the area, or "window," in which it is permissible. These windows are selected so as to minimize the size of the incidental catches of American target fish. This reduction in incidental harvests should increase somewhat the domestic catches of the affected fish.

More important to New Jersey edible finfishermen than the reduction in foreign incidental catches is the FCMA provision for preferential access to the target fish of the foreign harvesters. These fish, primarily squid (technically a shellfish), mackerel, hake, and herring are currently largely ignored by domestic fishermen. While herring is currently an overfished species in the Atlantic-North region, the reduction in foreign effort in this fishery that would follow American entrance into the fishing of this stock would still permit a substantial expansion for the domestic harvesters. These fish, with the possible exception of hake, as discussed below, are thought, by the National Marine Fisheries Service, to represent strong export potential. In 1974, the foreign harvest of squid, mackerel and herring approximately equalled the U.S. edible finfish catch in the same Atlantic North region waters.

In review, FCMA presents the greatest potential for growth and revitalization to the edible finfishing sub-industry in New Jersey. Neither the industrial finfish or the shellfish component of the commercial fishing industry will realize significant benefits for many years to come.

2. The Potential Supply of Edible Finfish in the U.S. Atlantic-North Contiguous Zone

In extending its contiguous zone from 3 to 200 miles offshore, the United States has presented domestic fishermen both with preferential access to certain fish stocks and with the prospect that fishery management will result in enlarged stocks and higher feasible harvests. The maximum sustainable yield (MSY) is scientific terminology for the balance between harvesting a certain number of a particular species and leaving the necessary number to permit propagation. It is appropriate in assessing the longer-term, three years and beyond, prospects for edible finfishing to consider the estimated MSY's for the fish likely to be harvested in the Atlantic-North coastal waters.

Table II presents recent authoritative estimates of the MSY's for herring, mackerel and squid (now largely harvested by foreign fishermen) and a broad class of finfish, groundfish (flounder, haddock, hake, et al.). The herring fishery within the Atlantic-North coastal waters is seriously depleted. While the fishery is large enough to permit increased use by domestic fishermen, it will require careful management control, largely at the expense of foreign harvesters, in order to increase the stocks to the point where the MSY given in Table II will be feasible.

Table II makes clear the fact that if the edible finfishing industry in New Jersey, or along the Atlantic-North, is to expand, it must turn its efforts toward the mackerel, squid, and, ultimately, the herring currently harvested by foreign fishermen.

TABLE I

TOTAL FISH CATCH IN THE U.S. ATLANTIC-NORTH COASTAL WATERS*

BY SPECIES, 1974, (METRIC TONS)

	<u>Total Catch</u>	<u>U.S. Catch</u>	<u>U.S. / U.S. + Foreign</u>	<u>Foreign/ U.S. + Foreign</u>
(E) Tuna	1,178	1,030	87.4%	12.6%
(E) Smelts	19,726	31	.2	99.8
(E) Herring	204,424	45,174	22.1	87.9
(I) Menhaden	257,378	257,288	99.9	0.1
(E) Halibut	76	46	60.5	39.5
(E) Sole/Flounder	41,867	40,924	97.7	2.3
(E) Cod	36,826	27,232	73.9	26.1
(E) Hake	167,425	20,514	12.2	87.8
(E) Haddock	5,121	3,289	64.2	35.8
(E) Pollack	12,393	5,731	46.2	53.8
(E) Groupers	4,772	4,772	100.0	0.0
(E) Croakers	7,198	7,198	100.0	0.0
(E) Atlantic Redfish	10,611	8,677	81.7	18.3
(E) Mackerel	294,962	1,079	0.3	99.7
(E) Mullet	279	279	100.0	0.0
(S) Crabs	37,362	37,362	100.0	0.0
(S) Lobster	11,330	11,152	98.4	1.6
(S) Shrimp	8,615	8,615	100.0	0.0
(S) Oyster	199,808	119,808	100.0	0.0
(S) Scallops	76,197	25,263	33.1	66.9
(S) Clams	289,719	289,719	100.0	0.0
(S) Squid	55,878	2,422	4.3	95.7
Other	60,954	17,068	-	-
	1,804,099	1,016,698	56.3%	43.7%

Notes:

- * Atlantic-North coastal waters extend northward from Cape Hatteras, North Carolina, to the U.S.-Canada border.
- (E) Indicates an edible finfish.
- (I) Indicates an industrial finfish.
- (S) Indicates a shellfish.

Source: The U.S. Commercial Fishing Industry - Present Condition and Future of Marine Fisheries, Controller General of the United States, 1976, (CED-76-130).

TABLE II

ESTIMATED POTENTIAL LONG-TERM^(a) SUPPLY OF EDIBLE FINFISH,
IN THE U.S. ATLANTIC-NORTH COASTAL WATERS

(METRIC TONS)

	<u>Thousands</u>
Ground Fish ^(b)	351
Mackerel	313
Herring	227
Squid	<u>91</u>
	982

Notes:

- (a) This is the estimated maximum sustainable yield, with proper interim stock management controls, as necessary.
- (b) Ground fish include cod, flounder, haddock, hakes, pollack, ocean perch, butterfish, croaker, scup.

Source: The U.S. Commercial Fishing Industry - Present Condition and Future of Marine Fisheries, Controller General of the United States, 1976, (CED-76-130).

3. Market Development

In 1960, domestic landings of edible fin- and shellfish accounted for 59% of domestic consumption. By 1975, however, that percentage had declined to 38% as domestic landings stagnated while the domestic market expanded. While reversal of this market share is one means by which the domestic edible finfish industry can expand, there are other feasible directions open as well.

The growth in fish consumption between 1960 and 1975 was primarily the result of population increase. During that time period, as well as from the first decade of this century, per capita consumption of food fish has averaged around 12 pounds. In the case of finfish, per capita consumption rose from 8.4 pounds in 1960 to 9.6 in 1975. While it is not clear that this constitutes an upward trend, it can, perhaps, be argued that market development activities could increase per capita consumption in this country. With the exception of canned tuna and fish cakes, the fragmented nature of fish processing industry has stood in the way of the broad scale and prolonged marketing activities (e.g., advertising) that are necessary for market development.

Abstracting from possible increases in per capita consumption, the existence of a substantial foreign presence in the American fish marketplace indicates that there exists considerable potential for displacement of foreign suppliers. Market development activities could be directed at shifting domestic tastes from imported fish to domestically caught species.

Of the herring, mackerel, hake, and squid harvested by foreign fishermen in Atlantic-North coastal waters, the overwhelming portion is sold to foreign consumers. Demand for herring is strong in Northern Europe while squid is widely consumed in

Southern Europe. The National Marine Fisheries Service reports that major alternative sources of these two fish outside of the U.S. coastal waters do not exist. In the case of mackerel, alternative sources are not readily available and a strong market for export purposes is seen in Africa and Europe. Hake, the other major catch by foreign fishermen, is consumed largely by the Communist nations. The National Marine Fisheries Service has expressed the opinion that while marketing to the Communist nations presents great challenges, it is not beyond the realm of feasibility.

In summary, there is good reason to believe that an enlarged domestic catch of edible finfish could be marketed in the United States as well as in foreign countries. Marketing will be further discussed following.

4. The Structure of the Fishing and Related Industries

In evaluating the impact of government policies on an industry, the existing structure of that industry is an important consideration. The factors commonly used to describe the structure of an industry include the number and size of firms, current employment status, the linkages that exist between related industries, and concentration ratios.

There are many small operating units in the fishing and related industries, especially in fishing per se and in distribution. In New Jersey in 1973, over one-hundred plants involved in processing and wholesaling were in business and almost two-thousand boats and vessels operated from New Jersey ports. In New Jersey in 1973, there were, on the average, about five employees in each fish wholesaling plant, four fishermen on each vessel, and about one fisherman on each boat. In the case of fish processing, the average number of employees per plant in 1973 was 45. While this figure is higher than its national counterpart, it is considerably below the average number of employees per plant for the total manufacturing sector. Other industries which have many small operating units as in fishing, for example trucking, have historically done well when regulated and aided by a government agency.

In 1973, the most recent year for which data are available, there were 2,978 fishermen in New Jersey, representing 2% of the nation's total and 2,341 employees in the fish processing/distributing industry, 3% of the nation's total. In ship and boat building and repair, in 1972, 6,300 individuals were employed, representing 3.4% of the nation's total.

New Jersey's share of total national fishing employment is significant, particularly when compared with neighboring coastal states, for example, Delaware and Connecticut. The geographic dispersion, as well as the large number of establishments in all of these industries signify that they could respond more positively to market and policy changes than more concentrated or closed industries.

The link between fishermen and processing and distributing is fairly direct, since fish that is landed here will tend to be processed and distributed here in order to preserve the fish. Using simplistic linkages, five fishermen in New Jersey "create" employment for about four employees in processing/distributing. At the national level, five fishermen are linked to 2.5 processing/distributing employees. This difference could be explained by the nature of the catch off New Jersey's shore (the extremely large landings of industrial fish), by landings in New Jersey by out-of-state fishermen or the relatively high productivity of New Jersey fishermen. In any event, given an increase in the number of fishermen from the extension of the fishing limit, it would be reasonable to expect a gain of 2.5 to 4 employees for every five fishermen. Another method for predicting the size of the increase in employment in processing/distributing is to link these employees directly to landings. One employee in processing/distributing can handle 78,000 pounds of landings, on the average.

The link between commercial fishing and ship/boat building is less direct than for processing, particularly at the State level, because a ship or a boat will be manufactured where it is the most profitable, and therefore the direct linkage stemming from the need for geographic proximity is not present as it was in processing. There is, however, reason to believe that a linkage exists. Again using simplistic links at the national level,

one fisherman "creates" employment for 1.2 ship/boat builders. This crude estimate is too large, however, as the ship building figures include an undisclosed amount of employment in the manufacture of military ships which should not increase with an increase in the number of fishermen. One other measure of the linkage is from the Input-Output tables of the U.S. Economy (1967) which show that \$1 in output of commercially caught fish has a total requirement of almost \$.01 in ship/boat building, making ships/boats a significant input to fishing.

The last frequently used measure to describe the structure of an industry is called the concentration ratio, which delineates industries according to the number of very large establishments present. Presumably, if an industry had many small firms (and accordingly a "low" concentration ratio), growth opportunities for geographic regions without currently existing large sectors would be greater. That is, in concentrated industries, employment growth would most likely occur in the large firms. The four largest firms in the fish processing industry have approximately 30% of the total market, indicating some opportunity for growth in New Jersey, especially since this industry is currently present in the State. While the processing industry has more employees per operating unit than fishing or distributing, the low concentration ratio indicates an opportunity for employment growth and successful government intervention.

The concentration ratio of the four largest firms in ship/boat building nationally is approximately 50%, also indicating some opportunity for employment growth, especially given the current existence of the industry in New Jersey.

In summary, the critical examination of the fishing industry in New Jersey reveals the following conditions:

1. All aspects of the national industry exist in New Jersey.
2. A large number of relatively small firms exist in New Jersey fishing industries.
3. Direct employment linkages exist among these industries at the national and State level.
4. Low concentration ratios are present in all industries studied.

All of these traits suggest that government policy and infusion of capital could have dramatic positive impact given the change in the fishing limits.

5. Employment Potential

The potential for expansion of the New Jersey fishing industry lies, as previously noted, in the growth of the domestic catch of edible finfish and squid.

Drawing upon the total maximum sustainable yield of 980,000 metric tons reported in Table II, Table III has been constructed embodying assumptions regarding the foreign harvest and New Jersey's share of the domestic catch.

It is useful to recall, in considering Table III, that total landings consist of the catch of shellfish, industrial finfish, and edible finfish. Table III assumes that the available supply of shellfish and industrial finfish will remain at approximately 450,000 metric tons. That of the edible finfish and squid is assumed to be 900,000 metric tons. New Jersey's share of the domestic catch of edible finfish and squid in the Atlantic-North coastal waters was 5% in the recent past. The five scenarios portrayed in Table III are based on a continued New Jersey share of 5% of the maximum sustainable edible-finish-and-squid yield of 900,000 metric tons (Scenario A), and increased shares for the State.

For example, Scenario C of Table III should be given the following interpretation: Through investment in new equipment and the development of new markets, the domestic fishing industry may be able to totally displace the foreign fishermen from the Atlantic-North coastal waters. At that time, the domestic catch (shell- and finfish) will be 1,350,000 metric tons. If New Jersey is able to increase its share of the edible finfish and squid harvest in these same waters to 10%, its landings will be 174,000 metric tons of shell- and finfish. This level of New Jersey landings implies, based on historical relationships, a fishing industry of 6,707 employed persons. Drawing also on historical relationships, this should lead to a fish processing and distribution industry of 3,650.

Expansion of the New Jersey fishing industry implies a demand for more boats, repair services, and related gear. If the entire demand for boats is captured by New Jersey boatyards (an admittedly optimistic assumption), the boat building and repair industry would expand to 5,004 persons.

TABLE III
FIVE SCENARIOS IN A SETTING OF ZERO FOREIGN CATCH
IN THE ATLANTIC-NORTH COASTAL WATERS

<u>Scenario⁽¹⁾</u>	<u>Potential⁽²⁾ Supply Metric Tons</u>	<u>N. J. Landings Metric Tons</u>	<u>N. J. Fishermen</u>	<u>N. J. Processing/ Distributing Employment</u>	<u>N. J. Boat Building/ Repair Employment</u>
(Actual 1973)	(670,000)	(95,000)	(2,978)	(1,850)	(900)
A: 5%	1,350,000	129,000	4,574	2,584	2,871
B: 10%	1,350,000	174,000	6,707	3,650	5,004
C: 15%	1,350,000	219,000	8,840	4,637	7,137
D: 20%	1,350,000	264,000	10,973	5,783	9,270
E: 25%	1,350,000	309,000	13,106	6,850	11,403

Notes:

- (1) Scenarios are based on different N. J. shares of a total Atlantic-North domestic edible finfish and squid catch of 900,000 metric tons.
- (2) The potential supply of 1,350,000 metric tons consists of 450,000 metric tons of shellfish and industrial finfish and 900,000 metric tons of edible finfish and squid.

C. SUMMARY AND CONCLUSIONS

The commercial fishing industry in New Jersey is honored both by time and by its imprint on the history of the State. The growth, however, that has been realized and, perhaps, taken for granted in most sectors of the State and national economies has, in recent decades, eluded this industry.

Lack of expansion has fed upon itself as new techniques and equipment appeared yet went unadopted. Large and efficient foreign fishing fleets took an ever-increasing harvest from the abundant marine resources of our coastal waters until the FCMA became a necessity if those resources were not to suffer serious depletion.

With the coming of the FCMA, the commercial fishing industry in New Jersey and the United States is provided the opportunity to grow and flourish once again. Realization of the opportunity requires that some relatively new species (to U.S. fishermen) be harvested, export and domestic markets be developed, modern equipment be bought and skills be upgraded. If New Jersey commercial fishermen and processors respond quickly, substantial employment growth can take place in the State.

It is appropriate, here, to consider some numbers. Analysis of available information suggests that if New Jersey commercial fishermen can increase their share of the regional harvest of edible finfish and squid from the current 5% to 15% almost six thousand fishing jobs alone will be added. This cannot and will not be done immediately. Three to five years appears to be both the time it would take and all the time that others would allow. If our commercial fishing industry does not delay, 1982 could see 8,800 commercial fishermen (a growth of nearly 6,000) and 4,600 processing and distributing workers (an expansion of 2,800) in New Jersey.

D. NEED FOR STATE INVOLVEMENT

The justification for government involvement in the private economy typically arises from a disparity between societal benefits or costs and private benefits or costs. Such is the case with the commercial fishing industry in New Jersey.

It is not uncommon in an atomistic industry, such as commercial fishing, for conditions to exist which may prevent society from receiving the full economic benefits that could be realized from an industry. Short entrepreneurial time horizons, inability to accumulate or borrow sufficient capital to invest in new technologies, and even lack of correct information may cause an industry to perform in a socially suboptimal manner. The significance of these conditions is underscored when the industry is called upon to adapt to new circumstances.

All sectors of the economy experience changes in the conditions under which they operate. The tempo of these changes ranges from the evolutionary to the abrupt, and their significance can be minimal to profound. Society is best served if an industry adjusts in a timely and orderly manner to new economic realities.

There is reason to believe that the commercial fishing industry in New Jersey, as well as the processing and support sectors that are linked to it, may respond only in an uncertain and limited manner to the new opportunities available to them and to the people of the State. Public involvement in the form of a New Jersey Fishing Authority seems warranted and appropriate if our State is to share in meaningful measure in the emerging commercial fishing and related opportunities.

E. ROLES FOR AN AUTHORITY

1. Financial Aid for Entrepreneurs

Enactment of the FCMA has given Atlantic coast fishermen preferential access to the fish-laden waters of the Atlantic Ocean. If the New Jersey fishing industry is going to capitalize on this opportunity, new technology as utilized by the foreign fleets will have to be acquired. The Fishing Authority can play a key role in assisting the fishing industry to obtain the necessary financing for these purchases.

The Authority would grant loans directly to commercial fishing, fish processing, boat building, and fish distributing (wholesale and retail) businesses. These loans would be used to cover operating expenses (primarily start-up costs), as well as for capital equipment. In addition, these loans could be utilized in both the formation of new businesses and the retrofitting of existing processing plants and to cover such expenses as wages, fuel, raw materials, boats, food processing equipment, delivery trucks, ice machines, and loading equipment.

Capital necessary to permit granting of this type of loan would be made available by the sale of bonds in the tax-exempt market. Interest paid on these bonds would be free from federal income taxes, making possible sale at a lower interest rate. Interest charged to the borrower would therefore be lower than that required in connection with conventional loans. Loan repayments would be utilized to reduce the bonded indebtedness of the Authority. Some percentage increment would be built into the rate charged the borrower to cover administrative charges.

2. Marketing and Publicity

In order to realize the full benefit of the FCMA and to achieve maximum employment and personal income gains in fishing and related industries, a comprehensive marketing effort directed at both domestic and foreign markets must be developed.

In the case of domestic markets, the program should include efforts to change the mix of fresh fish species presently consumed by the American public. It is not unreasonable to believe that through well-designed advertising programs the advantages of eating particular species of fresh fish caught off the New Jersey coast can be made well known.

Another main thrust of the marketing program should be directed at increasing the total amount of fish consumed in the domestic market.

In both of these areas consideration can be given to promoting the benefits of eating New Jersey fish, i. e., health, price, variety, et cetera.

The marketing effort should also give close attention to means of improving the delivery of fresh fish to the metropolitan consumer, whether it be through food chains, fresh fish stores, or restaurants. The Fulton Fish Market in New York City plays an important role currently in the distribution of fresh fish in New Jersey as does a similar facility in Philadelphia. However, there is question as to whether these markets operate in the most efficient manner in providing New Jersey fishermen with the best outlet and buyers with the freshest fish possible at the most reasonable prices. The Authority should determine the feasibility of establishing a fish market in New Jersey. Site selection should consider both accessibility by buyers and local economic conditions.

In the case of foreign markets, it is clear that a ready market exists overseas for the catches of U.S. fishermen off the New Jersey shore. Of major concern, however, is whether we can make the fish available at a price foreign consumers will be willing to pay. The Authority should study this question carefully to determine the demand characteristics of these markets and industry techniques which can be utilized to achieve satisfactory performance. Through the U.S. Department of Commerce, marketing assistance can be made available to work with the Authority to insure adequate representation for the New Jersey industry.

The New Jersey Fishing Authority's marketing programs should consider inclusion of the following specific activities:

Unified Advertising Campaign - develop a single theme to improve the fishing industry's image in New Jersey.

Coordinate Advertising - augment the impact of advertising programs by relating it to other public and private groups.

Local Promotional Campaign - highlight local activities that relate to the New Jersey fishing industry, i. e. , construction of new dock facilities, acquisition of new fishing boats and equipment, opening of processing plants, et cetera.

Monitoring Publicity Campaigns - determine the effectiveness of promotional efforts.

Assistance to U.S. Exporters - work with the U.S. Department of Commerce to insure adequate representation for New Jersey fish products.

The revenues necessary to finance a comprehensive marketing program can be made available from two sources:

- 1.) Fishing boat owners would pay a fee based upon a measure, such as tonnage, representing benefits received. The proceeds of these fees would be earmarked for the marketing program.
- 2.) Federal grants are available for marketing studies through the Public Works and Development Act.

Furthermore, the possibility of supplementing or sharing the expenses of a State program through coordination with trade associations would be an additional source of funds for a comprehensive New Jersey marketing effort.

3. Training

The FCMA poses to the New Jersey commercial fishing and related industries both an opportunity and a challenge. If the potential benefits of the preferential access embodied in the Act are to be realized, fishermen, many of whom have operated only on a small scale, will have to adopt new and more efficient technologies. Processors as well will have to acquire new equipment the equal of that which is common in highly efficient foreign processing facilities. This conversion process will be accelerated and its benefits more quickly realized if the private "costs" of acquiring the necessary related knowledge and skills are reduced. An important role for the public sector in providing training emerges in this context.

Rhode Island, through its state university, provides a noteworthy example of public sector involvement in the acquisition of knowledge and skills applicable to commercial fishing. At the University of Rhode Island, the Department of Fisheries and Marine Technology offers 21 undergraduate courses leading to a Bachelor of Science Degree. The courses range from seamanship to marine electronics and industrial fishery technology. Because of far-sighted policies adopted in earlier decades, New Jersey has in place strong university, state college, and community college systems where programs supportive of commercial fishing and related industries could be developed. In secondary vocational education as well, relevant technical programs might be established.

For those members of the New Jersey work force who require skill upgrading in order to enhance their productivity in commercial fish processing, boat building, or other support industries, the New Jersey Customized Manpower Training program and the federal Comprehensive Employment and Training Act program are available.

A New Jersey Fisheries Authority could play a meaningful role in the training areas working with the Departments of Education and Higher Education as well as the State Manpower Services Council of the Department of Labor and Industry. Industry training needs would be assessed on a regular basis and transmitted by the Authority to the appropriate agencies for program design purposes. Follow-up evaluation of training conducted will be an ongoing responsibility of the Authority. This is foreseen as entailing no significant outlays on the part of the Authority.

4. Management Consultation

The opportunities made available by FCMA may not be fully realized if the private sector in New Jersey responds in a questioning and halting manner. The industry is faced with new arrays of costs and benefits, all clouded by uncertainty. New technologies will need to be adopted to improve efficiency in both harvesting and processing. New business techniques will be necessary in order to implement these new technologies and to effectively respond to the inevitable changes in the size and mode of operation in the fisheries industry.

Frequently, small and medium size employers, such as are prevalent in the fishing industry, have neither the expertise nor the ability to utilize consultant services to improve their management operations. A New Jersey Fisheries Authority could provide technical support as well as assist the industry in obtaining consulting services available from a variety of government and nonprofit organizations. Both the U.S. Small Business Administration and the Office of Small Business Assistance of the New Jersey Department of Labor and Industry provide managerial and financial planning assistance to small business. State colleges, including the Rutgers Graduate School of Business, offer management development and extension programs staffed by their faculty and students. In addition, SCORE, the Service Corps of Retired Executives, is available to give the benefit of their experience to businessmen in this developing industry.

Governmental agency services are free, and the nominal charges of nonprofit organizations would be met by the individual firm or group activities could be sponsored cooperatively. Any costs incurred by the Authority would be considered operating costs and financed from general revenues. Assistance to harvesters and processors in this formative

period could lead to a stream of benefits stretching long after Authority assistance and guidance has ceased.

5. Public Infrastructure

A. Docking facilities would be developed by the Authority at various locations along the shore. The Authority would build new facilities or retrofit existing piers, as appropriate. This project would provide landing facilities for fishermen and would serve as convenient locations for fish processors. To implement this project the Authority would become involved in such activities as land acquisition, bulkheading, pier building, sewerage, water supply and development of freezing facilities. Revenues would be provided to the Authority through payments from fishermen, processors and wholesalers who would lease space at the facility. Actual operation of the docks would be contracted to a private entrepreneur or could be performed by the Authority, directly.

Funding for this project would be generated partly by the floating of bonds by the Authority. Supplementary funding would be sought through an application for a Title IX grant from the Economic Development Administration, U.S. Department of Commerce. That agency has, in the past, funded a dock rehabilitation facility project in Gloucester, Massachusetts utilizing \$6 million in federal funds plus more than \$2 million in matching funds from a combination of the State, the municipal government, regional agencies and other sources. The planning phase for that project has been substantially completed and the construction component is about to begin. The project involves pier construction, road improvements, water supply, sewerage, the building of a marina, the rebuilding of a freezer plant and the provision of loans to fishermen of up to \$25,000. The pier is State-owned and is operated by a nonprofit association created by the State, which continues to report to the State. Revenue is generated by rental payments from fishermen, boat owners and fish processors.

Section G of this report describes federal grant opportunities for the planning and implementation of a dock development project in New Jersey.

B. The Authority would establish a wholesale fresh fish market primarily to serve as an outlet for fish landed in New Jersey. The market could be expected to attract buyers from the State's restaurants and food retailers who currently purchase most of their supplies from markets in New York or Philadelphia. Funding would be provided from the floating of bonds by the Authority. The Authority would administer and operate the market, and revenues would be generated from the leasing of market space to fish wholesalers. Section G of this report describes federal funding opportunities for a feasibility study for this project.

C. The Authority would establish several fish processing plants in several communities along the shore either by building new plants or retrofitting existing facilities. The plants would be operated either by the Authority itself, or by a cooperative association of fishermen, on a nonprofit basis. The processing plant would serve as a reliable purchaser of fish for the fishermen and would stimulate commercial fishing off New Jersey's shore. Of interest, fishermen in the Point Pleasant area have expressed the need for additional processing facilities to handle their catch.

Funding for this project would be provided by the floating of bonds by the Authority. Substantial supplementary funds would be sought through an application for a Title IX grant from the Economic Development Administration, U.S. Department of Commerce. The processing plant would generate revenues through the sales of its products to the foreign and/or domestic markets.

If the Authority became the operator of the processing plant, the revenues from the sale of products would be applied to service the capital as well as operating costs

of the project. If a cooperative association operated the facility, rental payments to the Authority would be applied to those capital and operating costs. (See Section G of this report for a description of federal planning and implementation grants available for this project.)

6. Other Roles

Permit Expediting

Costs incurred by fishermen, processors and others include the less obvious costs of compliance with governmental regulations as well as the familiar outlays for materials and labor. An authority could play a meaningful role in expediting the necessary approvals required in connection with variances, permits and licensing regulations. These actions will have the effect of lowering compliance costs associated with environmental regulations.

Through its Division of Fish, Game, and Shellfish, the Department of Environmental Protection is deeply involved in the shellfishing industry. CAFRA and related legislation have important implications for the processing phase of the fishing and related industries complex. By working closely with DEP a fishing authority could contribute to the achievement of improved environmental quality and economic growth.

Liaison Activities

Many of the roles delineated for Authority involvement relate closely to responsibilities and expertise which reside in other existing agencies at the local, State or federal level. It is important that close coordination be developed with these organizations to insure that not only are specific activities not being duplicated, but that they are handled in the most efficient manner possible. For example, in the area of financial assistance, the resources of the New Jersey Economic Development Authority should be considered when direct loans are not mandatory and capital can be raised through more conventional sources. In a similar fashion, marketing and publicity programs devised for the fishing industry should take into consideration other promotional efforts of State, county or local organizations, i.e., Division of Economic Development in the Department of Labor and Industry.

Listed below are those agencies and organizations with which the Authority will have close working relationships. It should not be considered a final list for undoubtedly other organizations will be added from time to time.

National Marine Fisheries Services

Economic Development Administration

National Fisheries Institute

Shellfish Institute of North America

New Jersey Department of Environmental Protection

New Jersey Office of Coastal Zone Management

Division of Economic Development, New Jersey Department of Labor and Industry

Rutgers University

New Jersey Department of Health

New Jersey Department of Education

New Jersey Department of Higher Education

New Jersey Economic Development Authority

Local Economic Development Committees

Aquaculture

Aquaculture or "fish farming" is, at present, a significant source of edible finfish and shellfish. In recent years aquaculture has supplied an amount equal to about 10% of the world commercial catch. Japan, for example, relies heavily on its finfish and shellfish aquaculture programs. In the United States, salmon, oysters, catfish and trout are raised in noteworthy amounts.

The future of aquaculture is potentially enormous. Experts are not unanimous on this point, but those who are optimistic note that the potential protein production per unit area of water is estimated to be 5,000 times that of a similar area of pasture used for beef production. Technological and economic problems currently confront aquaculture, however, research efforts continue in this area.

A New Jersey Fisheries Authority working with the New Jersey Department of Agriculture, could provide impetus for further exploration of aquaculture in the State.

F. LEGAL JUSTIFICATION

THE PUBLIC PURPOSE QUESTION

It has long been established that the State's authorization to issue bonds is limited by the public purpose doctrine Const. 1947 Art VIII and III par 3. This rule has been substantially modified, however, by the tendency of the courts and legislature to expand upon those projects which are seen as serving the public good. The awareness of the advantages of the authority concept as a means of addressing social problems has been a prime reason for this change.

The expansive nature of the public purpose concept was recently seen in New Jersey in New Jersey Sports and Exposition Authority V McCrane 119 N.J. Super 457 (Law Div 1971) wherein the court citing Roe V Kervick 42 N.J. 191, 229 (1964) said as to case law:

The modern tendency of legislatures is to meet challenges presented by pressing social economic needs of our times. They re-emphasize the long established principles of judicial deference to the will of the lawmakers, whenever reasonable men might differ as to whether the means devised to meet the public need conform to the constitution.

The court noted the legislative finding that the creation of the New Jersey Sports and Exposition Authority would "promote the public health, welfare and prosperity of the people of the State by providing needed facilities for recreational purposes, by accommodating trade shows and other expositions designed to promote industry and development within the State." The need to provide a climate wherein employment and job training can flourish as a means of retaining an otherwise terminal industry is equally serving the public need.

The passage of the Fishery Conservation and Management Act of 1976,

Pub L 94-265, has created the potential for the creation of a revived industry and substantial increase in employment for State residents. The ability to realize this potential lies beyond the means of the private sector. The magnitude of the undertaking as well as the need to cut across jurisdictional boundaries calls for the assistance of the public sector. The quasi-public Fisheries Authority would allow access to needed sources of capital for development, while avoiding the need for State expenditures.

The ability of New Jersey to assist in the creation of new opportunities for employment for residents is clearly within the sphere of the public purpose doctrine as seen in New Jersey Sport and Exposition Authority V McCrane 119 N.J. Super 457 (Law Div 1971).

G. RECOMMENDATIONS FOR ACTION

1. Legislation

(Not available at this time.)

2. Federal Grants

Opportunities exist to obtain federal grants to support selected activities that would be performed by the Authority. Project proposals and federal applications are being developed for those projects described on the pages following.

OPPORTUNITIES FOR FUNDING OF COMMERCIAL FISHING INDUSTRY ACTIVITIES
BY THE ECONOMIC DEVELOPMENT ADMINISTRATION,
U.S. DEPARTMENT OF COMMERCE

I. Title IX Program (Public Works and Economic Development Act of 1965)

Title IX provides both planning and implementation grants. The State first would apply for a planning grant which would fund a study to assess the feasibility of a proposed project. The study would also lead to the specification of a detailed program for implementation of that project. The report prepared under the Title IX planning grant would then serve as the basis for an application for a Title IX implementation grant. The State matching share for this program is negotiable. It is recommended that New Jersey apply for the following planning grants:

A. Feasibility study for the establishment of a fish processing plant which would be operated, on a non-profit basis, by a cooperative association of fishermen. The study would:

1. Assess the feasibility of establishing a processing plant on a cooperative basis.
2. Outline the procedures involved in creating a co-op.
3. Estimate the tonnage of fish that would be sold to such a facility.
4. Indicate appropriate markets for the output of the processing plant.
5. Make a recommendation as to the most feasible size and scale of operations of a fish processing plant.
6. Recommend feasible geographic locations along the shore for the development of processing facilities.
7. Estimate the cost of building and equipping a processing plant.

Upon completion of this study, if feasibility were indicated, the next step would be to apply for a Title IX implementation grant to carry out the project. That application would include such details as the operational structure of the co-op, location of the proposed facility, cost breakdowns for land acquisition, land preparation, plant construction, securing of permits and purchase of needed capital equipment.

- B. Feasibility study for the development by the State of dock facilities, which would be leased to fishermen and other elements of the commercial fishing industry. The study would assess the need for additional dock facilities in the various port areas. Consideration would be given to the cost factors involved in dock development, including land purchase, bulkheading, pier building, sewerage, water supply and freezing facilities. Appropriate sites for development would be identified and described with regard to cost factors, projected levels of use and impact upon surrounding area.

If feasibility were shown, the planning study would serve as a basis for a subsequent application for a Title IX implementation grant to fund the actual development by the State of dockage facilities. That application would include the specification of a proposed site, an estimate of the development costs and a description of the arrangements for leasing dock space to fishermen and pier or shore space to processors and wholesalers.

II. Technical Assistance Grant Program (Public Works and Economic Development Act)

This program provides up to 75% funding for technical studies for economic development. Most of the grants have ranged from \$2,000 to as high as \$100,000, but the

majority have been from \$10,000-\$25,000. New Jersey could apply for funds to do the following:

A. Marketing study - the State would investigate the potentials for marketing various species of fish which are caught off the shores of New Jersey. Analyses of both the domestic and export markets would be formulated. Alternative methods of processing and preparation would also be examined. For example, high protein products composed of fish meal and other foods could be prepared and packaged for the export market. Results of this study would facilitate the development of the onshore fish processing industry.

B. Feasibility study for the establishment of a wholesale fish market in New Jersey. Such a facility would serve numerous New Jersey restaurants and fish stores which now do their purchasing in either New York or Philadelphia. Fish landed in New Jersey would be delivered to the market for sale; however, the market would also trade in fish brought in from out of state in order to provide a steady and varied supply of product.

This study would assess the opportunity for the successful operation of a wholesale fish market in New Jersey and would also recommend alternative locations for its development.

3. Advisory Committee

In order to provide continuity during the time period between Executive acceptance of the Fisheries Authority proposal and legislative acceptance of required legislation, it is recommended that a permanent New Jersey Fisheries Advisory Committee be established.

The purpose of such an Advisory Committee would be to:

- 1) develop additional factual information regarding the existing and potential fisheries industry in New Jersey,
- 2) be available to provide information and expert testimony to the Legislature, as required,
- 3) prepare recommendations concerning the operating responsibilities of the Authority so as to enhance the effectiveness and efficiency of that agency during its formative stage, and,
- 4) direct and supervise the preparation of the various applications for federal funding assistance.

It is further recommended that this Committee be composed of between 12 and 15 members, large enough to represent the variety of interests that will be affected by the Authority but not so large as to mitigate against effective action. Members would include fishermen and processors, representatives of economic development committees and public officials from the major fishing counties, Monmouth, Ocean, Atlantic, Cape May, and Cumberland. Furthermore, representatives of the New Jersey Fisheries Council and academic or other experts on marine biology and economics should be included to facilitate the work of the committee.

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