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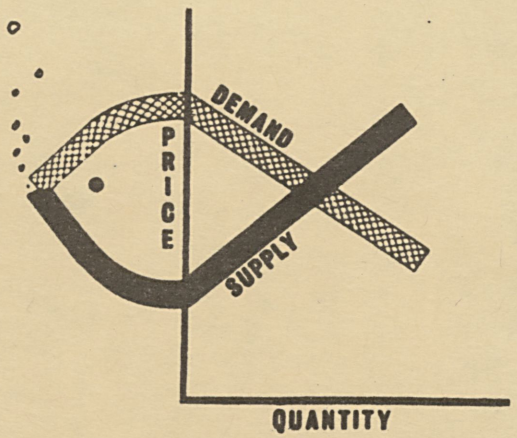

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THE CURRENT STATUS OF THE UNITED STATES FISHERIES

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The Current Status of the United States Fisheries *

Today, the fishery resources traditionally fished by both U.S. and foreign fishing fleets are at the crossroads between overexploitation and rational fisheries management. To gain some appreciation for the developments leading up to this crisis, it is necessary to briefly describe some of the critical developments over the last decade.

The Domestic Harvesting Sector: A Mixed Picture: The last ten years have witnessed a rate of increase in world fish production (based upon aggregate pounds landed) of approximately 7.0 percent per year. The consumption of no other basic food commodity increased at anything approaching this rate. In contrast to the other nations, the U.S. domestic harvesting sector has decreased its catch from 4.94 to 4.88 billion pounds over the 1960-70 period. However, the only meaningful figure, harvested value, has increased from $354 million to $602 million over the same period, an annual increase of seven percent reflecting in part a tendency toward the harvesting of higher valued species.[1]

Of special significance, inter-country comparisons reveal through the latest available FAO statistics (1967) that the U.S. still possesses the third largest fishing industry in the world based upon total value of all harvested fishery products (see table 1). A direct quantity comparison on a species by species basis among world fishing nations reveals the U.S. was first in the harvesting of such major species as shrimp, crabs, clams, scallops and oysters and among the top three nations in tuna, salmon, halibut and menhaden (see table 2). These rankings dramatically indicate that on a world scale the U.S. is still a major fishing power. In addition, over the 1960-70 period, the domestic harvest of shrimp, tuna, salmon, clams, crabs and Pacific groundfish have shown respectable rates of expansion, both in quantity and value (see table 3). In contrast, many other species have shown declines in production due mainly to resource problems.

U.S. Fishery Consumption: A Dynamic Picture: Although per capita consumption of food fish has remained relatively static over the 1960-68 period, per capita utilization of fishery products (including fish meal used for poultry, etc.) has increased dramatically from 46.1 to 87.7 pounds, an average annual increase of over five percent.[2] Aggregate consumption of both food and industrial fish has increased from 8.2 billion to 17.3 billion pounds, an annual increase of 14 percent (see table 4). Per capita consumption of crabs, tuna, fish meal, shrimp, clams, lobster, and groundfish has increased at a rate well over two percent per year

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* Prepared by Frederick W. Bell, Donald Cleary, Darrel Nash and Richard Kinoshita of the Economic Research Division, Office of Resource Utilization, National Marine Fisheries Service

1. Over this period, inflation (CPI) has increased by approximately three percent per year. No attempt has been made to adjust fishery value for inflation.

2. The years 1969 and 70 were eliminated because of short run fluctuations which were in our opinion not typical of the long run trend.

which, when coupled with U.S. population growth, has placed serious pressure on resources fished by U.S. fishermen and foreign fleets. Presently, the U.S. consumes 11 percent of all fishery resources harvested on a world basis, with less than one percent of the world's population. These dramatic increases in demand in United States and also throughout the world have placed increasing pressure on the world's fixed supply of traditional fishery resources.

Imports the Answer: To supply the rapidly growing market for various fishery products in the U.S., it became necessary to import substantial quantities of fish. As trade barriers were relaxed on fishery products via the Kennedy rounds and demand for the product expanded, many foreign nations began to supply fish for the following variety of reasons: (1) limitation on resources available to U.S. fishermen; (2) comparative advantage of labor and material costs and (3) access to untapped resources of their own. Based on value, imports (both industrial and food) of fishery products expanded at an annual rate of 18.6 percent per year over the 1960-70 period and increased its share from 40 to 57 percent (see table 4).

U.S. Fishery Resources: Their Potential: Except for certain elements of the U.S. tuna and shrimp fleets, most U.S. fishing vessels fish either on or just off the continental shelf. The fishery resources in the latter area can be divided into underutilized (i.e., not commercially marketed to any extent) and utilized (i.e., commercially marketable such as shrimp, crabs, and haddock). For the utilized species, the rate of expansion in fishing effort (i.e., amount of capital, labor and technology applied in harvesting the resource) in response to demand increases discussed above has been astounding. For selected major species, fishing effort has increased by the following percentages over approximately the last decade:

Species	Percent Increase in Fishing Effort over Decade	Percent Decline in Catch Per Unit of Effort over Decade
1. Northern Lobsters(inshore)	+16.7	-20.6
2. Gulf Blue Crab	+160.0	-60.0
3. Gulf Menhaden	+94.1	-29.4
4. Atlantic Menhaden	+114.8	-76.1
5. Gulf Shrimp	+12.0	-22.3
6. Northwest Atlantic Haddock	+ 7.3	-61.1
7. Northwest Atlantic Silver Hake	+629.1	-72.0
8. Skipjack Tuna	+63.4	-37.6
9. Atlantic Blue Crab	+ 9.2	- 9.5
10. Northern Lobsters(offshore)	+112.2	- 8.5

Because we are dealing with a living renewable resource, but with a fixed maximum sustainable yield on an annual basis, these rates of expansion in fishing effort cannot be maintained with proportional increases in output. As indicated above, catch per unit of effort (i.e., an indicator of resource productivity) has dropped secularly over the 1960-70 period.

The capitalization index for a fishery defined as the amount of fishing effort presently in a fishery divided by the necessary fishing effort to harvest the maximum sustainable annual yield is approaching or has already surpassed unity (i.e., is overfished) for many species. For example, such species fished by U.S. fishermenas Atlantic menhaden; king crab; haddock; yellowtail flouder; Northern lobster, and sardines are significantly overfished. We have reached the crossroads with respect to many utilized species. However, NMFS scientists have estimated that there are on annual sustainable basis from 36-38 billion pounds of underutilized species on the U.S. continental shelf. These resources offer hope for the future

Labor Productivity: On the Rise: Despite declines in catch per unit of effort, the American fisherman has been able to increase his annual landings per worker. A recent NMFS study indicates that the productivity index (output per fisherman) has increased at an annual rate of three percent which is approximately the rate of growth in GNP per worker for the rest of the U.S. economy.[3] Apparently, U.S. fishermen have expended more units of fishing effort per fisherman each year to offset the dwindling productivity of the resource. This has materially helped U.S. fishermen compete with foreign imports and helped maintain their earnings which are at relatively low level (see below). However, open access to the fishery resources combined with increasing demand may ultimately cut into this amazing performance of labor productivity in this resource based industry unless rational management steps are taken. Increases in labor productivity (i.e., displacing labor) resource limitations and low earnings have resulted in a decline from approximately 130,000 fisheries in 1960 to 128,000 in 1968.

Earnings to Vessels and Fishermen: Tables 6 and 7 show limited survey data on annual earnings for fishing firms and labor in various fisheries. The data do indicate that for many fisheries both the rate of return and annual wages are substantially lower than return in many sectors of the U.S. economy. In addition, it must be remembered that the risk factor in fishing is great and the earnings reported are actually relatively low, given the hazards of the sea and variability in resource abundance. It should always be remembered that fishing is a profit sharing enterprise where risks fall upon labor as well as capital.

Future Prospects: For traditional species, the NMFS projects that demand in the U.S. will increase by over 33 percent by the year 2000,[4] (see table 8). The pressure on regional as well as world resources will result in rapidly rising prices that will act to slow the rate of consumption from its previous level discussed above. It is expected that within the next five to ten years the pressures of U.S. and rest of the world demand on traditional species will result in overfishing for crabs, lobsters, shrimp, menhaden, herring, and sea scallops on a world basis under conditions of open access to the resource

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3. Frederick W. Bell and Richard K. Kinoshita, The Measurement of Labor Productivity Changes in U.S. Fisheries (draft manuscript, NMFS).

4. F.W. Bell, et. al., "The Future of the World's Fishery Resources to the Year 2000," Marine Technology Society Preprints 1971.

Capsule Summary: Many U.S. fisheries are presently suffering from archaic laws and regulations, overcapacity and relatively low returns to labor and capital. Because of the common property nature of the resource, open access and rising demand, the problems are likely to continue unless rational management schemes are instituted. It is to this latter objective that the NMFS is dedicated.

Table 1.--Value and volume of catch by countries landing over $100,000,000, 1967

Country	Thousand U.S. dollars	Thousand metric tons
Japan	1,952,851	7,850.4
U.S.S.R.	1,037,046 1/	5,777.1
United States	439,144	2,430.5
Spain	325,524	1,435.7
Philippines	271,426	769.2
France	265,358	820.0
Italy	186,890	373.1
United Kingdom	174,659	1,026.1
Norway	166,227	3,268.7
Pakistan	153,473	417.0
Canada	149,460	1,302.6
Thailand	146,421	847.1
Peru	124,046	10,133.7
South Korea	112,454	749.2
Taiwan	103,390	458.2
Viet Nam (South)	2/	410.7

1/ Figure is a weighted average price of all other countries in the table multiplied by U.S.S.R. landings. This is done for each species in the U.S.S.R. catch and summed to obtain the total.

2/ Value figure cannot be derived.

Source: FAO Yearbook of Fishery Statistics

Derived by: Division of Current Economic Analysis, National Marine Fisheries Service, U.S. Department of Commerce

Table 2. --Rank of three leading countries, by catch of specified species, 1955 and 1967

(Round weight)

Species	1955 Country	1955 Mil. lbs.	1967 Country	1967 Mil. lbs.
Groundfish	U.S.S.R.	1,884	U.S.S.R.	5,284
	United Kingdom	1,304	Japan	3,621
	Japan	871	United Kingdom	1,419
	Total world	10,560	Total world	21,426
Tuna	Japan	786[1/]	Japan	1,278
	United States	355[1/]	United States	426
	Peru	214[1/]	Peru	109
	Total world	1,659[1/]	Total world	2,932
Salmon	Japan	395	Japan	357
	U.S.S.R.	393	United States	217
	United States	282	U.S.S.R.	194
	Total world	1,270	Total world	1,032
Halibut	United States	49	Canada	42
	Canada	34	United States	39
	Norway	11	U.S.S.R.	20
	Total world	112	Total world	128
Sardines (canned herring)	United States	147	Portugal	187
	Portugal	109	Spain	96
	Norway	103	Norway	95[2/]
	Total world	1,254	Total world	1,920
Shrimp	United States	244	United States	308
	India	235	India	202
	Japan	107	Mexico	154
	Total world	1,024	Total world	1,521
Lobsters	Canada	48	Chile	44
	South & Southwest Africa	47	Canada	35
	United States	32	Australia	32
	Total world	227	Total world	309
Crabs	Japan	152	United States	326
	United States	137	Japan	190
	U.S.S.R.	83	U.S.S.R.	93
	Total world	425	Total world	739

Table 2. --Rank of three leading countries, by catch of specified species, 1955 and 1967 (continued)

(Round weight)

Species	1955 Country	1955 Mil. lbs.	1967 Country	1967 Mil. lbs.
Clams	Japan	232	United States	390
	United States	207	Japan	384
	United Kingdom	17	Spain	91
	Total world	500	Total world	1,065
Scallops	United States	194	United States	111
	Japan	36	Canada	107
	Canada	14	Australia	30
	Total world	247	Total world	289
Oysters	United States	1,061	United States	903
	Japan	216	Japan	512
	Mexico	23	France	153
	Total world	1,376	Total world	1,828
Fish Meal 3/	United States	750	Peru	4,004
	Norway	438	Norway	1,084
	United Kingdom	199	United States	539
	Total world	2,276	Total world	10,132

1/ 1956
2/ 1966
3/ Product weight

Source: FAO Yearbook of Fishery Statistics (annual editions)

Table 3.--United States Total Catch and Catch of Selected Species

Year	Total		Shrimp		Salmon		Tuna		Crabs		Atlantic Groundfish	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
	million pounds	million dollars	million pounds	million dollars	million pounds	million dollars	million pounds	million dollars	million pounds	million dollars	million pounds	million dollars
1960	4,942	354	249	67	235	45	319	40	219	17	529	31
1961	5,187	362	175	52	311	52	357	46	229	17	533	31
1962	5,354	396	191	73	315	56	341	49	231	18	542	33
1963	4,847	377	240	70	294	49	359	44	249	21	518	34
1964	4,541	389	212	70	352	56	354	44	269	23	508	32
1965	4,777	446	244	82	327	65	373	47	332	30	487	37
1966	4,366	472	239	96	388	73	334	58	369	32	481	41
1967	4,055	440	308	103	217	49	426	55	315	30	404	32
1968	4,116	472	292	113	301	55	402	63	238	44	383	32
1969	4,292	518	317	123	246	55	419	67	246	40	337	34
1970 1/	4,884	602	368	130	397	90	478	77	268	39	316	38

Source: Fishery Statistics of the United States and Fisheries of the United States, annual editions, U.S. Department of the Interior; 1/ 1970 U.S. Department of Commerce.

Table 4.--Value of United States imports and consumption, and utilization of total and selected fishery products. 1960-70.

Year	Imports					Consumption					Utilization	
	Total	Shrimp	Atlantic Groundfish	Tuna	Lobster	All food fish	Shrimp	Tuna	Atlantic Groundfish	Lobster	Total U.S. Supply	Per capit consumpti
	Million dollars					Million pounds					Million pounds	Pound
1960	363	56	39	51	45	2,181	269	283	151	137	8,223	46.1
1961	401	68	48	52	49	2,293	266	294	164	153	9,570	52.8
1962	490	92	53	69	57	2,398	302	335	179	163	10,408	56.6
1963	501	103	56	59	54	2,398	330	318	186	159	11,434	61.2
1964	564	107	65	74	60	2,428	313	318	192	177	12,031	63.5
1965	601	114	82	69	79	2,579	369	322	228	224	10,535	54.9
1966	720	143	94	109	77	2,798	401	397	259	214	12,469	64.3
1967	708	151	81	97	72	2,900	466	390	211	206	13,991	71.5
1968	823	162	106	104	99	3,030	487	394	247	268	17,337	87.7
1969	844	173	129	97	121	3,162	554	412		305	11,802	59.1
1970	1,040	200	157	126	102	3,292	674	500		307	11,460	56.7

Table 5

Categories of Fisheries According to Current Exploitation Level in Relation to Maximum Sustainable Yield*

1. Exploitation in Excess of Maximum Sustainable Yield	2. Exploitation at Maximum Sustainable Yield	3. Exploitation at Less than Maximum Sustainable Yield	4. Minimum Degree of Exploitati
Cod, North Atlantic	Blue Crab, Gulf of Mexico	Blue Crab, Atlantic	Anchovy, Pacific
Haddock	Clams	Finfish, Gulf of Mexico	Calico Sca
Herring, Atlantic	Shrimp, Gulf of Mexico	Groundfish, Pacific	Herring, Pacific
King Crab	Spiny Lobster	Redfish	Mackerel, North Atlantic
Menhaden, Atlantic	Summer Flounder, North Atlantic	Red Hake	Pollock, North Atlantic
Menhaden, Gulf of Mexico	Winter Flounder, North Atlantic	Shrimp, Alaskan	Tanner Cra
Northern Lobster	Yellowfin, East Tropical Pacific	Shrimp, North Atlantic	
Oysters	Pacific Halibut	Silver Hake	
Salmon	Albacore	Skipjack, East Tropical Pacific	
Scallops, North Atlantic		Tuna, Tropical	
Yellowtail Flounder, North Atlantic			

* This is a very tentative table based upon the research of the Task Force on Capitalization in the U.S. Fisheries.

Table 6

Recent Profitability in Selected U.S. Fisheries
and in Selected Manufacturing Corporations

	ROI rate*
A. Highly profitable fisheries	
Shrimp - Gulf of Mexico	13.4
Yellowfin and skipjack tuna	9.8
King crab and tanner crab	9.1
Scallops	8.2
Salmon	7.4
Albacore	7.4
Anchovy and jack mackerel	7.1
B. Low profitable fisheries	
Groundfish - North Atlantic	3.2 - 6.1
Herring - Atlantic and Pacific	6.0
Menhaden - Atlantic and Gulf	6.6
Northern lobster	6.1
Oyster	5.8
Blue crab - Gulf and Atlantic	5.0
Clams	5.1
Spring lobster	5.5
Groundfish - Pacific	6.0
Shrimp - Alaska	5.5
Shrimp - North Atlantic	4.7
Mackerel - North Atlantic	6.1
Pollock	5.4
Halibut	4.4
C. ROI in selected manufacturing corporations (1968):	
Food and kindred products	14.0
Motor vehicles and equipment	25.1
Electrical machinery and equipment	15.9
Dairy products	12.8
All manufacturing corporations	15.3

*ROI = Estimated rate of return on investment.

Source: Economic Research Division

Table 7.-- Return to Labor in Selected U.S. Fisheries and in Selected Manufacturing Industries

Fishery	Average wages per fisherman*: per month	per annum (or season)
	dollars	
1. Groundfish - Pacific	1,007	12,068
2. Tuna - purse seiners	953	11,434
3. Northern lobster - offshore	773	9,273
4. Sea scallops	742	8,908
5. Groundfish - New Bedford draggers	724	8,695
6. King crab	694	8,328
7. Shrimp - Gulf of Mexico	687	8,240
8. Groundfish - Boston large trawlers	650	7,806
9. Groundfish - Rhode Island	634	7,606
10. Halibut	536	6,438
11. Mackerel and anchovy	440	5,275
12. Salmon - trollers & gillnetters (HS)	615	3,688
13. Shrimp - South Atlantic (S)	364	2,912
14. Salmon - purse seiners (HS)	585	2,342
15. Menhaden (HS)	383	1,915
Selected Manufacturing Industries		
Food and kindred products	-	6,410
Motor vehicles and equipment	-	9,301
Electrical machinery and equipment	-	7,254
All manufacturing corporations	-	7,430

*Wages per job site

Table -- U.S. Aggregate Consumption of Fis' y Products, Projected to year 2000 1/

	1965-67 Average	1970	1975	1980	1985	1990	2000	Changes 2000 from 1965-67
	Million Pounds, edible weight							Percent
Groundfish	497.8	412.0	375.2	333.9	298.4	265.4	249.3	-49.9
Tuna	449.1	552.0	607.7	642.1	660.1	685.1	695.6	54.9
Salmon	195.0	203.8	208.9	212.1	215.3	217.3	222.4	14.0
Halibut	33.5	36.6	37.0	37.0	37.0	37.0	37.4	11.6
Sardines	84.7	86.5	92.2	101.1	108.8	116.4	132.4	56.3
Shrimp	254.1	337.8	412.5	484.5	531.1	593.1	646.4	154.4
Lobsters	35.5	47.4	57.0	63.5	68.3	65.0	55.4	56.0
Crabs 2/	67.0	90.6	116.3	138.8	126.5	108.3	95.4	42.4
Clams 3/	72.9	80.3	85.6	91.7	98.6	100.2	104.8	43.8
Scallops 4/	31.5	35.1	39.5	42.3	48.1	51.5	58.5	85.7
Oysters	67.0	70.1	74.6	80.0	86.0	92.1	104.7	56.3
Miscellaneous	380.2	396.3	414.0	423.6	443.1	462.0	486.9	28.1
Total	2,169.3	2,348.5	2,520.5	2,650.6	2,721.3	2,793.4	2,889.2	33.2

1. Under LDR-DIE assumptions

2. Estimated for 1985, 1990 and 2000 based upon a more gradual decline in the resource base than shown in chapter 6.

3. Projections made without additional aquaculture of clams.

4. Includes calico scallops