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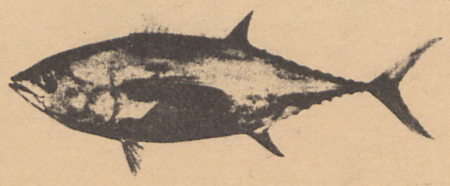
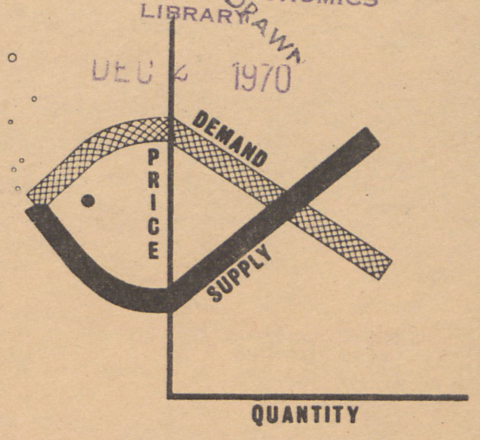




BASIC ECONOMIC INDICATORS

TUNA

Master Plan Fishery 50 10 45

Working Paper No. 61

May 1970

US BUREAU OF COMMERCIAL FISHERIES
DIVISION OF ECONOMIC RESEARCH

Foreward

The purpose of "Basic Economic Indicators" is to bring together pertinent economic, technological and biological data for each Master Plan fishery. The Division of Economic Research of the Bureau of Commercial Fisheries has consolidated the basic variables which reflect the economic behavior of a fishery. Having this basic data set under one cover will materially aid research and development currently being conducted on each fishery and will serve as a helpful guide to policy decisions. In addition, Basic Economic Indicators reflect a major shift in thinking away from the separate discipline approach and to an interdisciplinary approach to solving many of the problems faced by the U.S. fishing industry. Hopefully, these data will be of great value in furthering quantitative analyses of the nation's fisheries.

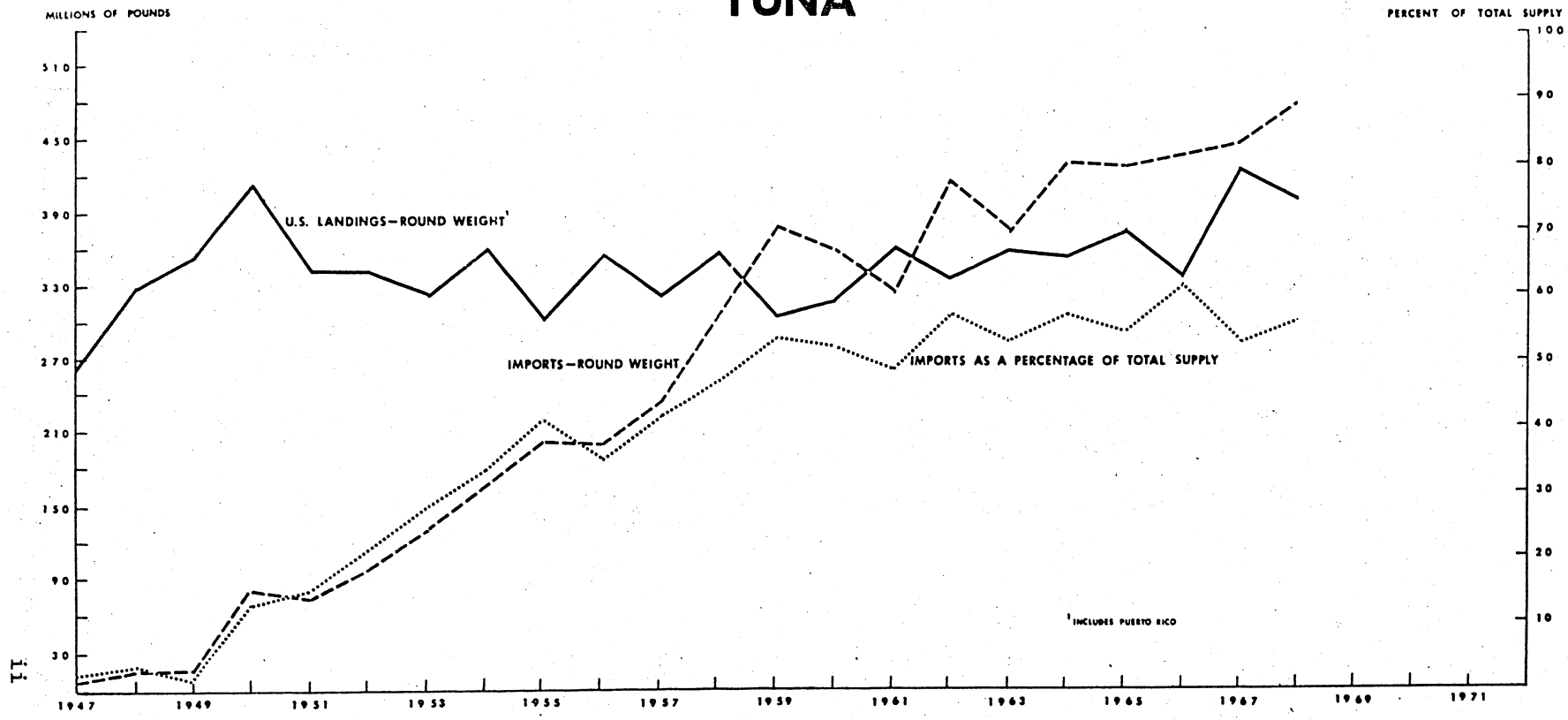
It should be noted that data for 1967 and 1968 are preliminary. Some figures are approximations and are subject to revision. Comments and suggestions may be directed to the Division of Economic Research, 7338 Baltimore Avenue, College Park, Maryland 20740.

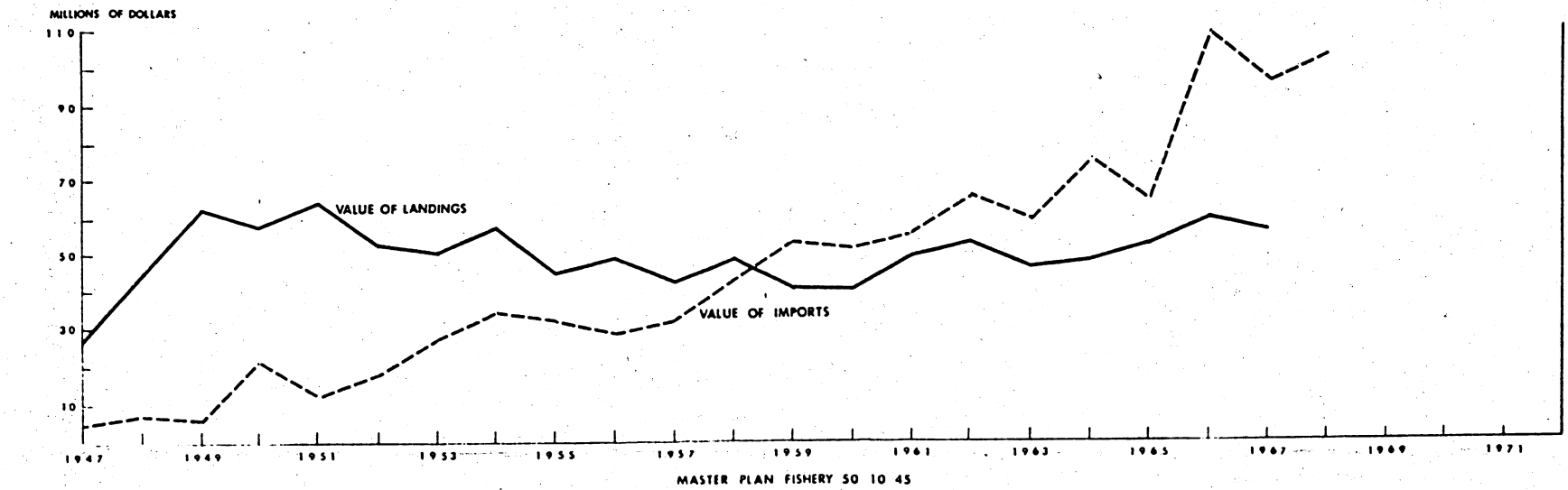
The "Basic Economic Indicators" were compiled and reviewed by the staff of the Division of Economic Research under the supervision of Richard K. Kinoshita with major contributions from Bruno G. Noetzel and Kenneth E. Koller.

Frederick W. Bell

Frederick W. Bell, Chief
Division of Economic Research

TUNA





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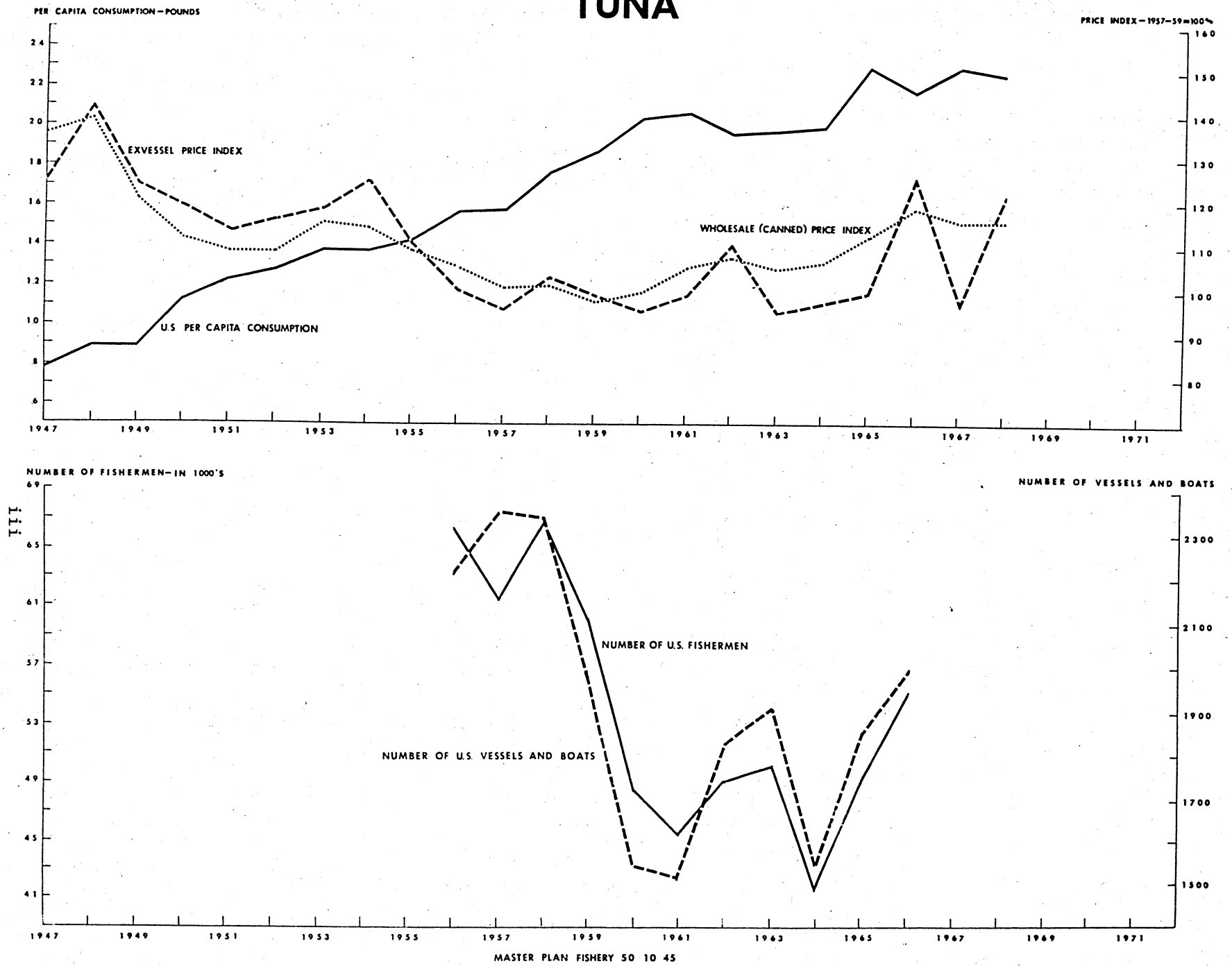

MASTER PLAN FISHERY 50 10 45

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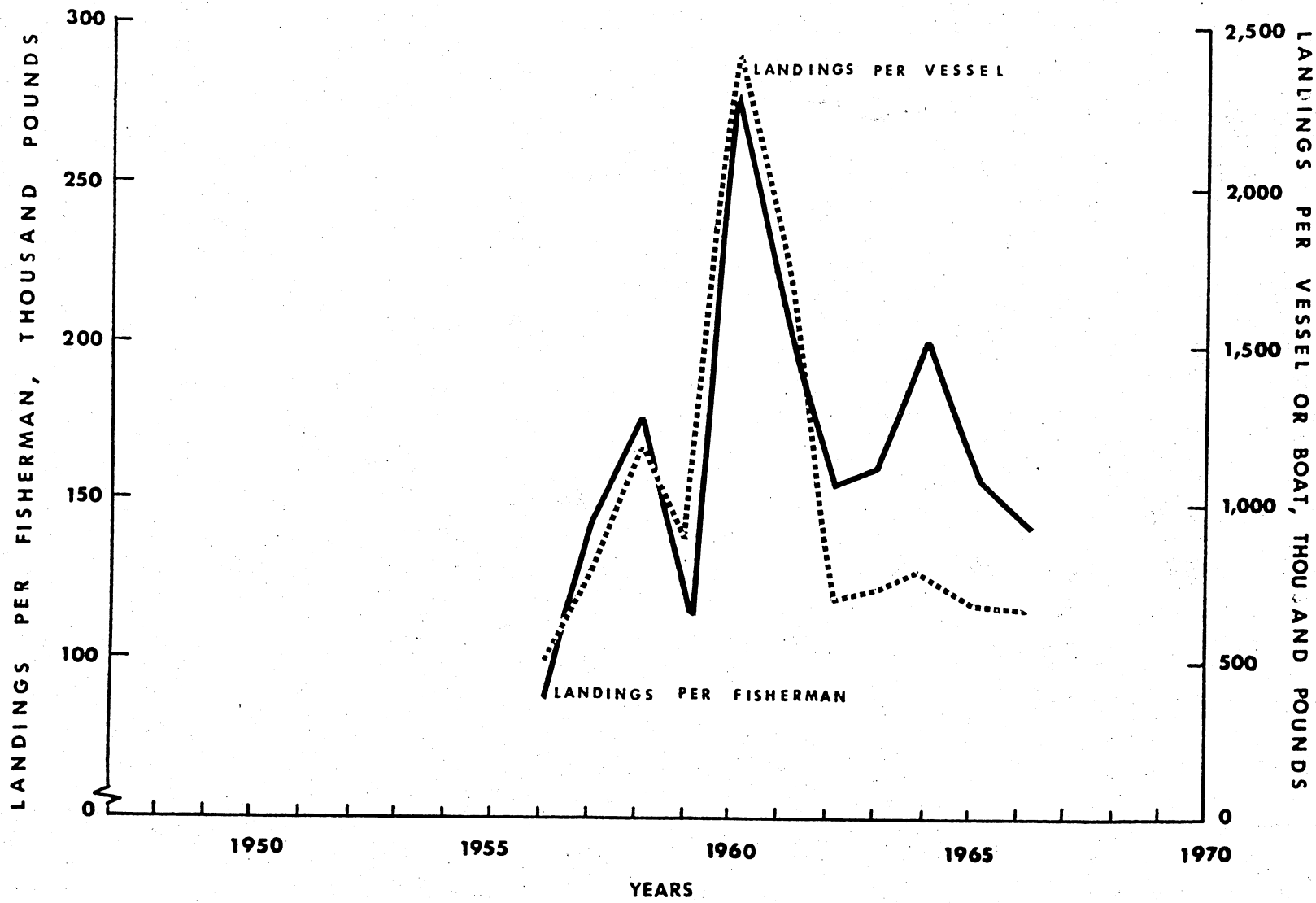
PRODUCTIVITY OF TUNA FISHERMEN AND VESSELS AND BOATS (Excluding Albacore)



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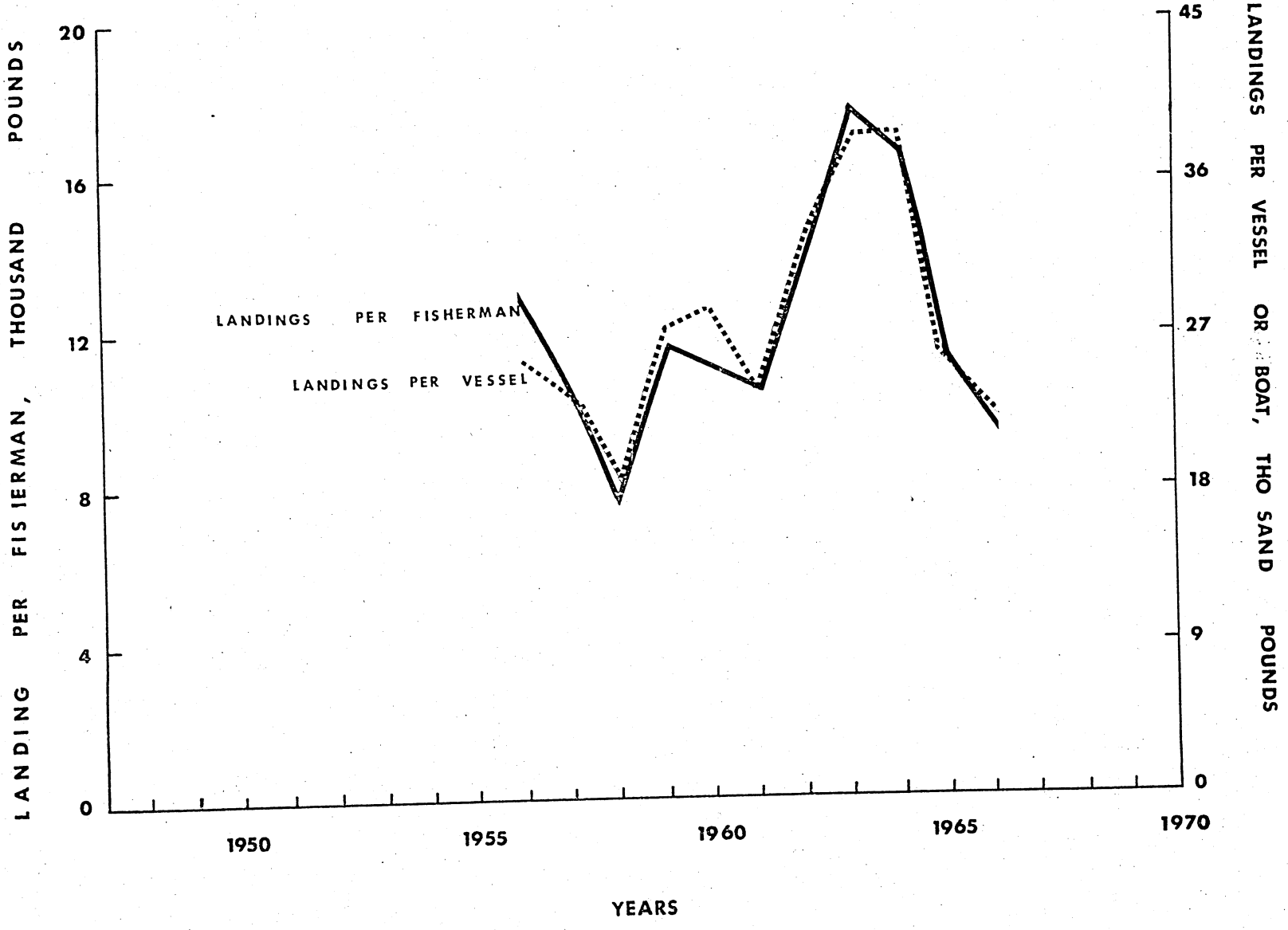
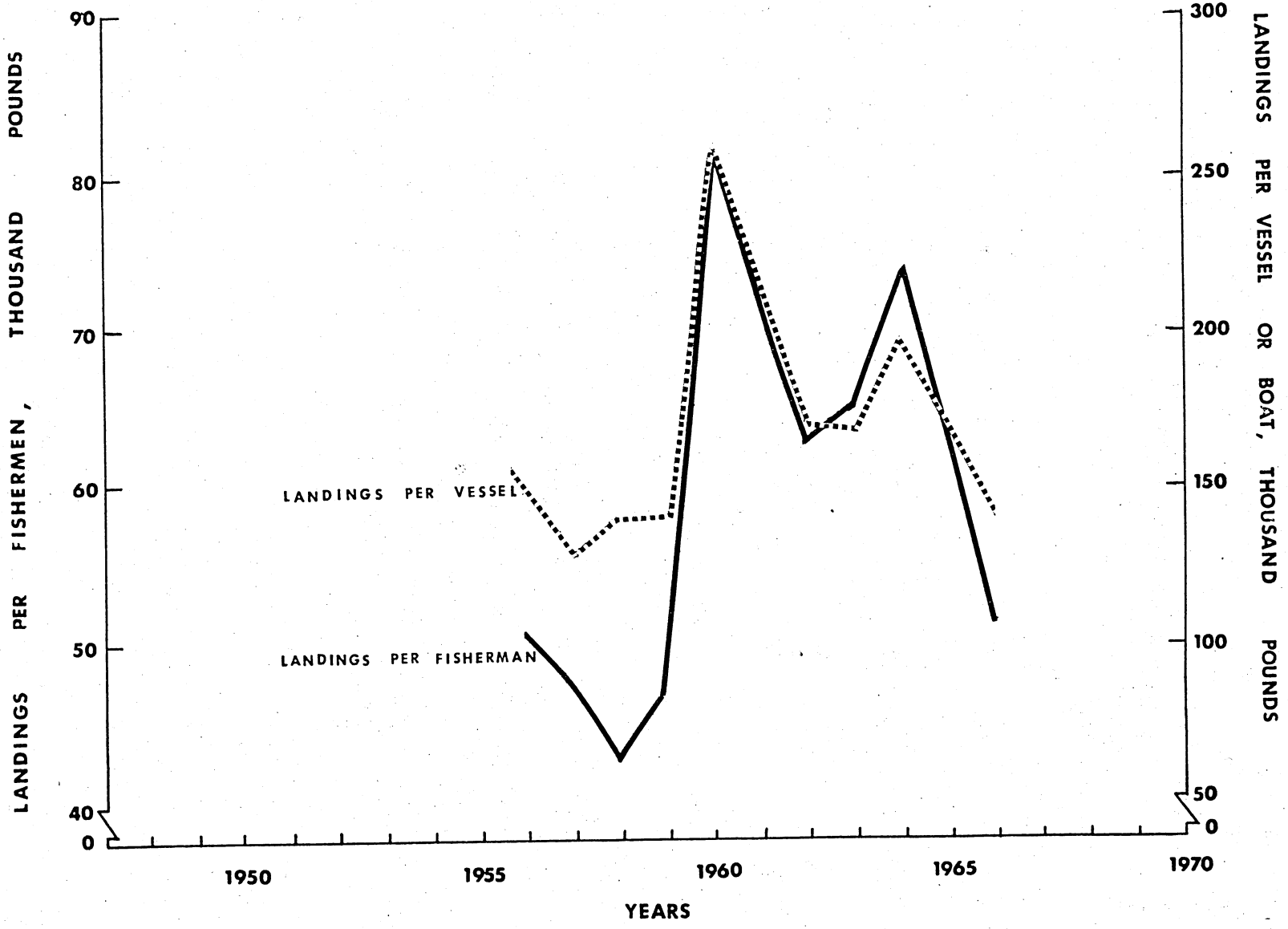


PRODUCTIVITY OF TUNA (TOTAL) FISHERMEN AND VESSELS



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- Productivity
  - Vessels
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- Historical growth rates
  - landings
  - fishermen
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Table I-1(a).--Average cost and earnings of tuna seiners, 1962-67[1/]

Item	1962	1963	1964
No. of vessels	5	11	13
Av. length of vessels (feet)	114.0	120.7	124.2
No. of trips	62	5.5	5.5
Av. length of trip(days)	42	45	46
Crew size	13	13	13
Days at sea	258	246	254
Landings (pounds)	2,638,800	2,652,000	3,037,200
Av. price[1/] (cents per pound)	14.0	12.0	12.0
Gross receipts (dollars)	369,439	318,245	364,461
	-----Dollars per vessel, per year-------		
Trip expenditures			
Food	11,414	11,317	11,989
Fuel	27,415	27,182	28,795
Ice & icing	n.a.	n.a.	n.a.
Other	12,128	12,025	12,739
Subtotal	50,957	50,524	53,523
Repair & maintenance			
Gear	11,289	10,938	11,381
Hull & engine	34,400	35,862	46,799
Subtotal	45,689	46,800	58,180
Fixed charges			
Interest	3,114	3,156	7,895
Insurance	18,901	26,855	29,449
Taxes (employee)	n.a.	n.a.	n.a.
Administrative	17,396	16,915	19,599
Subtotal	39,411	46,926	56,943
TOTAL CASH EXPENDITURES	136,057	144,250	168,646
TOTAL SHARE EXPENDITURES	233,382	173,995	195,815
Including:			
Wages	142,532	117,913	138,306
Captain's commission	15,990	9,899	9,819
Owner's share	74,860	46,183	47,690
Depreciation	45,141	36,125	33,314
Net return before taxes	29,719	10,058	14,376

Table I-1(a).--Average cost and earnings of tuna seiners, 1962-67 1/ (Continued)

Item	1965	1966	1967
No. of vessels	13	5	2
Av. length of vessels (feet)	124.8	122.2	112.8
No. of trips	5.3	5.0	5.0
Av. length of trip(days)	41	48	43
Crew size	13	13	13
Days at sea	217	241	217
Landings (pounds)	2,867,100	2,271,800	3,324,000
Av. price 2/(cents per pound)	13.0	15.8	12.6
Gross receipts (dollars)	372,720	359,973	419,958
	----------Dollars per vessel, per year---------		
Trip expenditures			
Food	10,882	11,653	11,596
Fuel	26,137	27,988	27,852
Ice & icing	N.A.	N.A.	N.A.
Other	11,563	12,381	12,322
Subtotal	48,582	52,022	51,770
Repair & maintenance			
Gear	8,926	5,714	21,856
Hull & engine	53,569	66,745	34,535
Subtotal	62,495	72,459	56,391
Fixed charges			
Interest	7,978	2,034	12,797
Insurance	26,349	22,147	28,729
Taxes (employee)	N.A.	N.A.	N.A.
Administrative	21,572	25,399	27,129
Subtotal	55,899	49,580	68,655
TOTAL CASH EXPENDITURES	166,976	174,061	176,816
TOTAL SHARE EXPENDITURES	205,744	185,912	243,142
Including:			
Wages	143,198	138,385	153,999
Captain's commission	9,884	12,028	20,315
Owner's share	52,662	35,499	68,828
Depreciation	26,727	14,256	34,782
Net return before taxes	25,935	21,243	34,046

Source: Revenue and cost data from BCF, Division of Financial Assistance. Landings for 1962-65 are estimations, based on average prices in those years for 3 species: yellowfin, skipjack, and bluefin. Landings for 1966 and 1967 are based on data from Inter-American Tropical Tuna Commission, La Jolla, California

1/ Data not representative of newer vessels.

2/ The average prices are affected by changes in catch composition by species (yellowfin, skipjack, and bluefin tuna).

Table I-1(b).--Average cost and earnings of tuna bait boats, 1962-65

Item	1962	1963	1964	1965
No. of vessels[1/]	2	3	4	2
Av. length of vessels (feet)	84	87.6	79	74
No. of trips	5	5	4.5	4.8
Av. length of trip(days)	48	46	55	43
Crew size	10	10	9	8
Days at sea	240	230	247	206
Landings (pounds)	1,564,900	1,564,300	1,067,400	650,200
Av. price (cents per pound)	13.8	11.8	11.5	11.9
Gross receipts((dollars)	215,952	184,585	122,747	77,371
	----------Dollars per vessel, per year----------			
Trip expenditure				
Food	11,525	11,845	8,503	5,600
Fuel & icing	17,150	17,625	12,653	8,332
Salt & other	10,931	11,234	8,065	5,311
Subtotal	39,606	40,704	29,221	19,243
Repair & maintenance				
Gear	5,114	4,472	4,114	2,052
Hull & engine	18,219	21,889	23,585	10,829
Subtotal	23,333	26,361	27,699	12,881
Fixed charges				
Interest	-	-	-	-
Insurance	10,290	10,734	8,012	4,326
Taxes (employee)	3,696	3,341	2,892	2,020
Administrative	2,621	2,415	2,233	2,407
Subtotal	16,607	16,490	13,137	8,753
TOTAL CASH EXPENDITURES	79,546	83,555	70,057	40,877
TOTAL SHARE EXPENDITURES	136,406	101,030	52,690	36,494
Including:				
Wages	84,555	65,721	42,796	26,954
Captain's commission	14,406	12,286	6,582	2,550
Owner's share	37,445	23,023	3,312	6,990
Depreciation	1,673	3,613	3,057	4,114
Net return before taxes	35,772	19,410	255	2,876

Source: Revenue and cost data from BCF, Division of Financial Assistance. Landings are estimations based on average prices for yellowfin and skipjack tunas, and average catch composition.

1/ Vessels of about 150 short tons capacity.

Table I-2(a).--Earnings of tuna (purse seine) fishermen, 1962-67

Item	1962	1963	1964	1965	1966	1967
No. of vessels	5	11	13	13	5	2
Av. crew size	13	13	13	13	13	13
Gross receipts (dollars)	369,439	318,245	364,461	372,720	359,973	419,958
Share to labor	158,522	127,812	148,125	153,082	150,413	174,314
Av. share per man[1/]	12,194	9,832	11,394	11,775	11,570	13,409
Food expenditures per man	878	871	922	837	896	892
Av. share per man including food[1/]	13,072	10,703	12,316	12,612	12,466	14,301
Real share[2/]	12,402	10,031	11,393	11,476	11,022	12,297
Wage in U.S. manufacturing	5,021	5,181	5,354	5,592	5,842	5,975
Real wage in U.S. manufacturing[2/]	4,764	4,856	4,953	5,088	5,165	5,137

Source: Based on data from Table I-1(a).

1/ Share per fulltime fishermen, or share per job site.

2/ Deflated by CPI.

Table I-2(b).--Earnings of tuna bait boat fishermen, 1962-65

Item	1962	1963	1964	1965
No. of vessels	2	3	4	2
Av. crew size	10	10	9	8
Gross receipts $	215,952	184,585	122,747	77,371
Share to labor	98,961	78,007	49,378	29,504
Av. share per man[1/]	9,896	7,800	5,486	3,688
Food expenditures per man	1,153	1,185	945	700
Av. share per man including food[1/]	11,049	8,985	6,431	4,388
Real share[2/]	10,483	8,421	5,949	3,993
Wage in U.S. manufacturing	5,021	5,181	5,354	5,592
Real wage in U.S. manufacturing[2/]	4,764	4,856	4,953	5,088

Source: Based on data from Table I-1(b).

1/ Share per fulltime fishermen, or share per job site.

2/ Deflated by CPI,1957-59 = 100.

Table I-3.--Productivity of U.S. tuna fisherman, vessels: Landings per fisherman, vessel and fishing effort

	Landings per fisherman 1/	Landings per vessel and boat 1/	Catch per boat day 1/
	Pounds		
1947	n.a.	n.a.	7,857
1948	n.a.	n.a.	8,353
1949	n.a.	n.a.	8,363
1950	n.a.	n.a.	7,057
1951	n.a.	n.a.	10,108
1952	n.a.	n.a.	5,606
1953	n.a.	n.a.	3,852
1954	n.a.	n.a.	5,339
1955	n.a.	n.a.	8,191
1956	50,277	149,093	6,507
1957	48,716	129,116	6,090
1958	42,209	142,008	4,768
1959	46,718	142,217	4,982
1960	80,748	255,554	6,817
1961	71,335	212,832	5,544
1962	62,762	196,611	4,120
1963	64,996	167,455	4,368
1964	74,044	195,279	4,844
1965	64,053	167,032	4,166
1966	51,140	141,036	4,513
1967			5,292
1968			
1969			
1970			
1971			
1972			

1/ Landings per fisherman and vessel for all tuna, but does not include Puerto Rico.

2/ For yellowfin tuna from the eastern tropical Pacific Ocean. Data available from 1934. Inter-American Tropical Tuna Commission.

Table I-4(a).--Costs per pound of tuna landed (purse seines), 1962-67

Item	1962	1963	1964	1965	1966	1967
Landings (pounds)	2,638,800	2,652,000	3,037,200	2,867,100	2,271,800	3,324,000
Gross receipts (dollars)	369,439	318,245	364,461	372,720	359,973	419,958
Av. price (cents per pound)	14.0	12.0	12.0	13.0	15.8	12.6
	----------Cents per pound----------					
Trip expenditures	1.9	1.9	1.8	1.7	2.3	1.6
Repair & maintenance	1.7	1.8	1.9	2.2	3.2	1.7
Fixed charges	1.5	1.8	1.9	1.9	2.2	2.1
Share to labor	6.0	4.8	4.9	5.3	6.6	5.2
Depreciation	1.7	1.4	1.1	0.9	0.6	1.0
Cost per unit of output	12.86	11.59	11.50	12.06	14.91	11.61

Source: Based on data from Table I-1(a).

Table I-4(b).--Costs per pound of tuna landed (bait boats), 1962-65

Item	1962	1963	1964	1965
Landings (pounds)	1,564,900	1,564,300	1,067,400	650,200
Gross receipts (dollars)	215,952	184,585	122,747	77,371
Av. price (cents per pound)	13.8	11.8	11.8	11.9
	----------Cents per pound----------			
Trip expenditures	2.53	2.60	2.74	2.96
Repair & maintenance	1.49	1.68	2.59	1.98
Fixed charges	1.06	1.05	1.23	1.35
Share to labor	6.32	4.99	4.63	4.54
Depreciation	0.10	0.23	0.28	0.63
Cost per unit of output	11.50	10.55	11.48	11.46

Source: Based on data from Table I-1.(b).

Table I-5.--Financial structure of fishing firms: tuna vessels [1/]

Item	All assets sizes		Under $100,000		$100,000 to $500,000		Over $500,000	
	Thou. dollars	Pct. of total	Thou. dollars	Pct.	Thou. dollars	Pct.	Thou. dollars	Pct.
Assets								
Current assets	40.7	13.4	19.6	25.4	28.1	12.3	126.8	12.4
Net value of vessel	250.8	82.5	57.6	74.6	178.1	77.8	891.8	87.4
Other non-current assets	12.5	4.1	-	-	22.7	9.9	1.8	.2
Total assets	304.0	100	77.2	100	228.9	100	1,020.4	100
Liabilities								
Total current liabilities	43.7	14.4	5.1	6.6	31.0	13.5	165.3	16.2
Total long term liabilities	105.5	34.7	41.4	53.6	13.0	5.7	557.6	54.6
Capital stock and earned surplus	154.8	50.9	30.7	39.8	184.9	80.8	297.5	29.2
Total liabilities and capital	304.0	100	77.2	100	228.9	100	1,020.4	100

Source: Data Bank, Division of Economic Research, BCF

[1/] A sample of 13 firms, for which data for 1966-68 was available (does not include newer vessels)

Table I-6(a)--Estimated market value of tuna seiners, based on present value of future returns

Mean returns to vessel[1/]: $59,579

Discount rate [2/]	Expected useful life - Years: 5	10	15	20
Percent:	Market value in dollars:			
12	214,800	336,600	405,800	445,000
18	186,300	267,700	303,400	318,900
24	163,500	219,400	238,400	244,900

1/ Based on data from Table I-1: Net return before taxes, plus depreciation, plus interest paid; average value for 1966-67.

2/ Arbitrarily chosen.

Table I-6(b)--Estimated market value of a Tuna bait boat, based on present value of future returns

Mean returns to vessel[1/]: $5,151

Discount rate 2/	Expected useful life - Years			
	5	10	15	20
Percent:	Market value in dollars:			
12	18,600	29,100	35,100	38,500
18	16,100	23,100	26,200	27,600
24	14,100	19,000	20,600	21,200

1/ Based on data from Table I-1: Net return before taxes, plus depreciation, plus interest paid; average value for 1964-65.

2/ Arbitrarily chosen.

Table I-7.--Historical growth rate of tuna; landings, fishermen, and vessels, 1956-66

Landings 1/	- .09 percent per year
Fishermen 2/	- 3.50 percent per year
Vessels 3/	- 2.31 percent per year

1/ Log of landings = 5.5198 - .0041 time (1.04)

2/ Log of number of fishermen = 3.8131 - .0152 time (3.01)

3/ Log of number of vessels = 3.3373 - .0106 time (1.77)

II DEMAND INDICATORS

- Consumption
  - Aggregate
  - Per capita
  - Socio-economic characteristics
- Prices
  - Exvessel
  - Wholesale
  - Retail
- Value
  - Landings
  - Wholesale
  - Retail
- Relative prices
- Seasonal demand
- Price and income elasticities

Table II-1.--U.S. consumption of canned tuna

(Edible weight)

	Aggregate[1/]	Per capita
	Thousand Pounds	Pounds
1947	114,654	.796
1948	140,459	.957
1949	143,229	.959
1950	210,253	1.384
1951	168,336	1.093
1952	198,472	1.269
1953	220,070	1.384
1954	244,597	1.511
1955	231,975	1.405
1956	267,660	1.592
1957	276,842	1.617
1958	323,335	1.857
1959	338,326	1.910
1960	353,143	1.962
1961	369,275	2.017
1962	392,225	2.110
1963	384,206	2.037
1964	404,481	2.114
1965	409,366	2.112
1966	455,828	2.327
1967	454,166	2.295
1968	464,237	2.323
1969		
1970		
1971		
1972		

Source: Fisheries of the United States

1/ Apparent consumption, does not reflect any changes in holdings of canned tuna.

Table II 2(a).--U.S. consumption of tuna (light, canned) by socio-economic characteristics, 1969 1/

(Retail Weight)

Socio-Economic Characteristics	1969				
	1st Qtr.	2nd Qtr.	3rd Qtr.	4th Qtr.	Total
	Pounds, per capita				
RACE					
Negro	.687	.483	.557	.500	2.227
White	.481	.442	.419	.390	1.732
Other	.392	.773	.000	.233	1.398
Not specified	.346	.000	.222	.343	.911
RELIGION					
Catholic	.528	.433	.423	.399	1.783
Jewish	.514	.473	.419	.515	1.921
Protestant	.478	.448	.422	.389	1.737
Other	.477	.368	.695	.514	2.054
Not specified	.236	.000	.050	.040	.326
INCOME PER CAPITA					
Under 1,000	.522	.406	.371	.304	1.603
1,000-1,999	.480	.447	.459	.426	1.812
2,000-2,499	.366	.436	.350	.335	1.487
2,500-2,999	.443	.440	.450	.451	1.784
3,000-3,499	.540	.414	.341	.380	1.675
3,400 & over	.716	.473	.454	.410	2.053
OCCUPATION					
Prof. & semiprofessional	.408	.413	.388	.314	1.523
Proprietors, managerial	.465	.400	.382	.335	1.582
Clerical & sales	.500	.461	.465	.482	1.908
Craftsmen, foremen	.546	.459	.481	.451	1.937
Head operative	.280	.358	.286	.321	1.245
Service, workers, & laborers	.692	.543	.494	.453	2.182
EDUCATION					
Less than 4 yr. high school	.486	.452	.431	.387	1.756
Less than 4 yr. college	.532	.455	.439	.429	1.855
College grad.	.378	.406	.381	.332	1.497
Head, not spec.	.602	.245	.154	.198	1.199
REGION					
New England	.386	.360	.254	.070	1.070
Middle Atlantic	.450	.381	.334	.339	1.504
E. North Cent.	.452	.390	.356	.347	1.545
W. North Cent.	.572	.428	.432	.321	1.753
South Atlantic	.434	.442	.414	.420	1.710
E. South Cent.	.358	.437	.344	.322	1.461
W. South Cent.	.534	.428	.594	.514	2.070
Mountain	.983	.518	.533	.589	2.623
Pacific	.681	.681	.636	.583	2.581

Source: Division of Economic Research, BCF

1/ Purchases by households for home use.

Table II-2(b).--U.S. consumption of tuna (white, canned) by socio-economic characteristics, 1969 1/

(Retail weight)

Socio-Economic Characteristics	1969 1st Qtr.	2nd Qtr.	3rd Qtr.	4th Qtr.	Total
	Pounds, per capita				
RACE					
Negro	.260	.296	.192	.209	.957
White	.224	.220	.244	.219	.907
Other	.392	.818	.833	.189	2.232
Not specified	.620	.080	.317	.000	1.017
RELIGION					
Catholic	.330	.274	.304	.327	1.235
Jewish	.956	1.082	1.055	.787	3.880
Protestant	.170	.179	.199	.167	.715
Other	.177	.163	.098	.202	.640
Not specified	.447	.047	.183	.020	.697
INCOME PER CAPITA					
Under 1,000	.151	.155	.147	.127	.580
1,000-1,999	.178	.194	.228	.190	.790
2,000-2,499	.206	.201	.201	.194	.802
2,500-2,999	.262	.214	.211	.190	.877
3,000-3,499	.214	.192	.204	.194	.804
3,500 & over	.427	.322	.350	.323	1.422
OCCUPATION					
Prof. & semiprofessional	.168	.162	.179	.135	.644
Proprietors, managerial	.204	.221	.255	.243	.923
Clerical & sales	.308	.281	.300	.250	1.139
Craftsmen, foremen	.194	.201	.234	.193	.822
Head operative	.123	.169	.217	.192	.701
Service workers, & laborers	.371	.297	.267	.279	1.214
EDUCATION					
Less than 4 yr. high school	.226	.204	.221	.222	.873
Less than 4 yr. college	.226	.227	.258	.216	.927
College grad.	.219	.239	.239	.198	.895
Head, not spec.	.466	.523	.416	.498	1.903
REGION					
New England	.662	.563	.630	.362	2.217
Middle Atlantic	.391	.390	.436	.368	1.585
E. North Cent.	.122	.140	.127	.139	.528
W. North Cent.	.044	.057	.092	.061	.254
South Atlantic	.196	.160	.186	.182	.724
E. South Cent.	.172	.111	.145	.138	.566
W. South Cent.	.080	.150	.122	.135	.487
Mountain	.286	.226	.224	.120	.856
Pacific	.242	.255	.290	.274	1.061

Source: Division of Economic Research, BCF

1/ Purchases by households for home use.

Table II-2(c).--U.S. Consumption of tuna (other, canned) by socio-economic characteristics, 1969 1/

(Retail weight)

Socio-Economic Characteristics	1969				
	1st Qtr.	2nd Qtr.	3rd Qtr.	4th Qtr.	Total
	Pounds, per capita				
RACE					
Negro	.118	.093	.075	.068	.354
White	.060	.063	.051	.046	.220
Other	.033	.000	.000	.000	.033
Not specified	.000	.000	.000	.000	.000
RELIGION					
Catholic	.064	.039	.041	.038	.182
Jewish	.066	.099	.013	.025	.203
Protestant	.062	.070	.057	.050	.239
Other	.016	.087	.040	.019	.162
Not specified	.000	.200	.000	.000	.200
INCOME PER CAPITA					
Under 1,000	.067	.080	.044	.062	.253
1,000-1,999	.064	.080	.074	.062	.280
2,000-2,499	.063	.032	.038	.025	.153
2,500-2,999	.068	.032	.067	.049	.216
3,000-3,499	.070	.077	.011	.046	.204
3,500 & over	.063	.060	.045	.033	.201
OCCUPATION					
Prof. & semiprofessional	.056	.040	.030	.032	.158
Proprietors, managerial	.036	.068	.058	.048	.210
Clerical & sales	.034	.067	.040	.027	.168
Craftsmen, foremen	.053	.055	.063	.048	.219
Head operative	.035	.058	.029	.047	.169
Service workers, & laborers	.158	.095	.080	.073	.406
EDUCATION					
Less than 4 yr. high school	.082	.082	.058	.062	.284
Less than 4 yr. college	.052	.056	.050	.041	.199
College grad.	.052	.057	.050	.034	.193
Head, not spec.	.122	.000	.000	.027	.149
REGION					
New England	.080	.091	.043	.061	.275
Middle Atlantic	.062	.060	.059	.033	.214
E. North Cent.	.040	.038	.025	.035	.138
W. North Cent.	.035	.061	.042	.038	.176
South Atlantic	.035	.039	.026	.029	.129
E. South Cent.	.142	.125	.160	.093	.520
W. South Cent.	.130	.140	.089	.072	.431
Mountain	.140	.095	.075	.113	.423
Pacific	.037	.034	.039	.039	.149

Source: Division of Economic Research, BCF

1/ Purchases by households for home use.

Table II-2(d).--U.S. consumption of all tuna (canned) by socio-economic characteristics, 1969 1/

(Retail weight)

Socio-Economic Characteristics	1969				
	1st Qtr.	2nd Qtr.	3rd Qtr.	4th Qtr.	Total
	Pounds, per capita				
RACE					
Negro	1.056	.872	.824	.777	3.529
White	.765	.725	.714	.655	2.859
Other	.817	1.591	.833	.422	3.663
Not specified	.966	.080	.539	.343	1.928
RELIGION					
Catholic	.922	.746	.768	.764	3.200
Jewish	1.536	1.654	1.487	1.327	6.004
Protestant	.710	.697	.678	.606	2.691
Other	.670	.618	.833	.735	2.856
Not specified	.713	.247	.233	.060	1.253
INCOME PER CAPITA					
Under 1,000	.740	.641	.562	.493	2.436
1,000-1,999	.722	.721	.761	.678	2.882
2,000-2,499	.635	.669	.589	.554	2.447
2,500-2,999	.773	.686	.728	.690	2.877
3,000-3,499	.824	.683	.556	.620	2.683
3,500 & over	1.206	.855	.849	.806	3.716
OCCUPATION					
Prof. & semiprofessional	.632	.615	.597	.481	2.325
Proprietors, managerial	.705	.689	.695	.626	2.715
Clerical & sales	.842	.809	.805	.759	3.215
Craftsmen, foremen	.793	.715	.778	.692	2.978
Head operative	.438	.585	.532	.560	2.115
Service workers, & laborers	1.221	.935	.841	.759	3.756
EDUCATION					
Less than 4 yr. high school	.794	.738	.710	.671	2.913
Less than 4 yr. college	.810	.738	.747	.686	2.981
College grad.	.649	.702	.670	.564	2.585
Head, not specified	1.190	.768	.570	.723	3.251
REGION					
New England	1.128	1.014	.927	.493	3.562
Middle Atlantic	.903	.831	.829	.740	3.303
E. North Cent.	.614	.568	.508	.521	2.211
W. North Cent.	.651	.690	.566	.411	2.318
South Atlantic	.665	.641	.626	.695	2.627
E. South Atlantic	.672	.673	.649	.532	2.526
W. South Cent.	.744	.718	.805	.721	2.988
Mountain	1.409	.839	.832	.822	3.902
Pacific	.960	.970	.965	.896	3.691

Source: Division of Economic Research, BCF

1/ Purchases by households for home use.

Table II-3.--Prices of tuna: Exvessel, wholesale and retail

	Exvessel[1/]	Wholesale[2/] canned tuna	Retail[3/] canned tuna
	Cents per pound		
1947	16.4	77.1	n.a.
1948	18.6	80.6	n.a.
1949	16.3	69.3	n.a.
1950	15.7	64.6	n.a.
1951	15.0	63.1	n.a.
1952	15.3	63.4	n.a.
1953	15.5	67.2	94.0
1954	16.5	66.4	96.2
1955	14.6	63.7	90.3
1956	13.2	61.2	80.4
1957	12.6	58.4	79.0
1958	13.6	58.4	81.4
1959	13.0	56.4	81.4
1960	12.4	57.3	80.0
1961	12.9	60.9	79.7
1962	14.5	62.5	85.4
1963	12.6	61.7	82.7
1964	12.8	62.2	78.7
1965	13.0	65.0	78.7
1966	16.6	68.5	87.1
1967	12.8	67.3	85.9
1968	16.1	67.3	84.9
1969			
1970			
1971			
1972			

1/ Weighted average price of all tuna species.
2/ Value of canned tuna pack. Canned Fishery Products
3/ Chunk type tuna, 6-6½ ounce can in leading cities of the U.S. Bureau of Labor Statistics.

Table II-4.--Value of tuna landings, wholesale and retail

	Exvessel	Wholesale[1/]	Retail[2/]
	Thousand dollars		
1947	43,570	88,398	n.a.
1948	61,060	113,210	n.a.
1949	55,903	99,258	n.a.
1950	63,418	135,823	n.a.
1951	50,376	106,220	n.a.
1952	51,270	125,831	n.a.
1953	49,792	147,887	206,866
1954	56,642	162,412	235,302
1955	42,784	147,768	209,473
1956	47,171	163,808	215,199
1957	41,368	161,676	218,705
1958	47,091	188,828	263,195
1959	40,301	190,816	275,397
1960	40,164	202,351	282,514
1961	46,143	224,888	294,312
1962	48,890	245,141	334,960
1963	43,890	237,055	317,738
1964	44,359	251,587	318,327
1965	47,834	266,088	322,171
1966	57,600	312,242	397,026
1967	55,000	305,654	390,129
1968		312,432	394,137
1969			
1970			
1971			
1972			

1/ Value of total supply of canned tuna.
2/ Value of total supply of canned tuna, based on price of chunk-style tuna, 6-6½ ounce can in leading U.S. cities. Bureau of Labor Statistics.

Table II-5.--Retail price of tuna relative to the consumer price index and the consumer price index for meat, poultry and fish, 1947-68

	Retail[1/]	Retail/CPI[2/]	Retail/CPImfp[3/]
	Cents per pound		
1947	n.a.	n.a.	n.a.
1948	n.a.	n.a.	n.a.
1949	n.a.	n.a.	n.a.
1950	n.a.	n.a.	n.a.
1951	n.a.	n.a.	n.a.
1952	n.a.	n.a.	n.a.
1953	94.0	100.8	94.3
1954	96.2	102.7	98.3
1955	90.3	96.8	98.0
1956	80.4	84.9	91.3
1957	79.0	80.6	83.7
1958	81.4	80.8	77.7
1959	81.4	80.2	81.1
1960	80.0	77.6	80.7
1961	79.7	76.5	80.2
1962	85.4	81.0	83.8
1963	82.7	77.5	83.3
1964	78.7	72.8	79.8
1965	78.7	71.6	74.9
1966	87.1	77.0	76.3
1967	85.9	73.9	77.2
1968	84.9	70.0	74.7
1969			
1970			
1971			
1972			

1/ Chunk type tuna, 6-6½ ounce can in leading cities of the U.S. Bureau of Labor Statistics
2/ Consumer Price Index, 1957-59 = 100
3/ Consumer Price Index for meat, fish, and poultry. 1957-59 = 100

Table II-6.--Index of seasonal demand for tuna by market area

SEASONAL DEMAND INFORMATION FOR TUNA IS
NOT AVAILABLE AT THIS TIME

Table II-7.--Price and income elasticities for tuna

Price elasticity = -0.86316

Income elasticity = +1.16747

Demand Equation for United States

$$C/N = -2.60986 - 0.86316 \text{ Log} \left[\frac{P}{CPI}\right] + 1.16747 \text{ Log} \left[\frac{Y/CPI}{N}\right]$$

C/N = Tuna consumption per capita

P/CPI = Exvessel price of tuna divided by Consumer Price Index (CPI)

$\frac{Y/CPI}{N}$ = Per capita income deflated by CPI

Source: Division of Economic Research, Bureau of Commercial Fisheries

III DEMAND PROJECTIONS

- U.S. Consumption
  - Aggregate
  - Per capita

Table III-1.--Demand projections for tuna, U.S. and world, to the year 2000[1/]

Year	U.S. per cap. consumption	U.S. population	U.S. aggregate consumption	World aggregate consumption
	Pounds[2/]	Millions	Million pounds[2/]	
1966 (actual)	4.64	195.9	899	2,623
1970	5.34	206.0	1,100	3,200
1975	5.46	219.4	1,200	3,300
1980	5.53	235.2	1,300	3,600
1985	5.54	252.9	1,400	3,700
1990	5.54	270.8	1,500	3,903*
2000	4.71	307.8	1,450	3,903

Assumptions:

(1) Declining income elasticity over time;

(2) A Schaefer biological yield curve;

(3) Fishery management instituted when world fishery reaches maximum sustainable yield;

(4) Relative prices of fishery product variable over time (i.e., cost of production derived from (2) allowed to interact with demand);

(5) Projected per capita income and population given by U.S. Department of Agriculture by country;

(6) Constant technology; and

(7) Input prices to fisheries rise at approximately same rate as all consumer prices.

Source: For a fuller description of above assumptions and alternative projections see Working Paper No. 71, "Economic Projections of U.S. and World Demand for Major Fishery Projects," by F. Bell, D. Nash, F. Waugh, and E. Carlson.

1/ For annual projection between five year intervals the reader may interpolate.

2/ Round weight

* Reaches MSY

IV DOMESTIC PRODUCTION

—Landings

—Value

Table IV-1.--Landings and value of tuna

	Landings	Value[2/]
	Thousand pounds	Thousand dollars
1947	263,170	43,570
1948	329,470	61,060
1949	344,786	55,903
1950	403,372	63,418
1951	334,637	50,376
1952	333,153	51,270
1953	321,064	49,792
1954	346,419	56,642
1955	291,873	42,784
1956	355,202	47,171
1957	323,284	41,368
1958	344,884	47,091
1959	307,999	40,301
1960	319,113	40,164
1961	356,854	46,143
1962	340,947	48,890
1963	358,645	43,890
1964	354,222	44,359
1965	373,471	47,834
1966	333,870	57,600
1967	426,250	55,000
1968	401,500	
1969		
1970		
1971		
1972		

Source: Fishery Statistics of the United States

1/ Includes Hawaii and Puerto Rico starting in 1953.
2/ Value of landings in Puerto Rico are estimated for 1953-62 and 1966-67.

Table IV-2.--U.S. tuna landings by selected States.

	California	Puerto Rico	Other	Total
		Thousand Pounds		
1947	250,811	n.a.	12,359	263,170
1948	302,640	n.a.	26,830	329,470
1949	313,795	n.a.	30,991	344,786
1950	371,070	n.a.	32,302	403,372
1951	311,695	n.a.	22,942	334,637
1952	319,688	n.a.	13,465	333,153
1953	301,107	2,704	17,253	321,064
1954	322,609	6,388	17,422	346,419
1955	266,877	9,549	15,447	291,873
1956	319,243	12,000	23,959	355,202
1957	291,293	18,393	13,598	323,284
1958	304,094	16,652	24,138	344,884
1959	254,786	22,090	31,123	307,999
1960	282,676	20,910	15,527	319,113
1961	307,263	31,050	18,541	356,854
1962	284,565	28,790	27,592	340,947
1963	285,416	37,026	36,203	358,645
1964	280,801	48,393	25,028	354,222
1965	279,941	54,576	38,954	373,471
1966	236,710	64,698	32,462	333,870
1967	284,037	97,882	44,331	426,250
1968	240,353	107,660	53,487	401,500
1969				
1970				
1971				
1972				

Source: Fishery Statistics of the United States.

Table IV-3--Landings of tuna, by species [1/]

	Albacore		Bluefin	
	Quantity	Value	Quantity	Value
	Thou. pounds	Thou. dollars	Thou. pounds	Thou. dollars
1947	26,844	6,780	21,925	3,435
1948	49,493	14,659	9,526	1,310
1949	54,794	10,039	7,128	920
1950	72,453	13,839	4,029	538
1951	34,491	5,403	5,622	735
1952	52,558	9,147	5,142	792
1953	34,700	6,920	11,718	1,673
1954	26,998	5,426	22,453	3,662
1955	29,738	4,826	14,506	1,996
1956	41,338	7,082	13,084	1,734
1957	46,659	6,732	21,316	2,524
1958	38,445	7,897	33,195	4,243
1959	46,295	8,633	19,336	2,609
1960	40,211	5,942	14,651	2,118
1961	32,844	5,867	24,288	3,346
1962	45,955	7,606	41,172	5,736
1963	60,802	9,164	43,807	4,733
1964	48,070	7,469	34,774	4,279
1965	37,220	5,854	23,814	6,141
1966	36,991	6,836	39,709	6,089
1967				
1968				
1969				
1970				
1971				
1972				

Table IV-3--Landings of tuna, by species (continued) 1/

	Skipjack		Yellowfin	
	Quantity	Value	Quantity	Value
	Thou. pounds	Thou. dollars	Thou. pounds	Thou. dollars
1947	52,749	7,628	153,510	23,920
1948	60,554	9,534	199,427	33,406
1949	80,512	11,923	190,543	30,999
1950	126,786	18,131	187,890	28,823
1951	116,599	16,655	161,829	25,006
1952	85,016	10,929	179,231	28,338
1953	123,978	17,081	135,040	21,585
1954	157,756	23,952	121,717	20,973
1955	107,107	14,376	128,408	19,665
1956	128,717	14,762	158,755	21,422
1957	99,121	10,104	148,906	19,731
1958	130,972	15,009	133,352	18,020
1959	120,895	12,971	121,185	15,846
1960	59,352	6,406	204,880	25,620
1961	86,746	9,686	212,971	27,249
1962	122,307	15,675	131,483	19,966
1963	139,571	14,744	114,502	15,239
1964	107,827	10,857	163,419	21,739
1965	142,986	15,326	169,143	23,432
1966	98,523	13,055	158,564	28,244
1967				
1968				
1969				
1970				
1971				
1972				

Source: Fishery Statistics of the U.S., 1947-66.

1/ Includes Puerto Rico.

Table IV-4.--Supply of U.S. canned tuna, 1947-68

	U.S. pack from domestic catch	U.S. pack from imported fish	Total	Imported canned	Total supply
	Thousand pounds				
1947	107,446	1,060	108,506	6,148	114,654
1948	129,554	2,603	132,157	8,302	140,459
1949	134,032	4,613	138,645	4,584	143,229
1950	152,693	20,769	173,462	36,791	210,253
1951	125,816	29,549	155,365	12,971	168,336
1952	140,200	34,951	175,151	23,321	198,472
1953	135,908	49,570	185,478	34,592	220,070
1954	148,861	64,147	213,008	31,589	244,597
1955	113,647	82,765	196,412	35,563	231,975
1956	152,701	76,744	229,445	38,215	267,660
1957	140,196	92,260	232,456	44,386	276,842
1958	149,810	127,321	277,131	46,204	323,335
1959	132,159	150,033	282,192	56,134	338,326
1960	142,638	158,750	301,388	51,755	353,143
1961	163,853	146,759	310,612	58,663	369,275
1962	147,586	187,920	335,506	56,719	392,225
1963	160,822	165,890	326,712	57,494	384,206
1964	154,208	195,626	349,834	54,647	404,481
1965	161,515	196,890	358,405	50,961	409,366
1966	153,231	241,037	394,268	61,560	455,828
1967	183,236	205,609	388,845	65,321	454,166
1968	165,009	232,054	397,063	67,174	464,237
1969					
1970					
1971					
1972					

Source: Fisheries of the United States.

Table IV-5.--U.S. canned tuna production: Quantity and value, 1947-68

	Cases	Quantity	Value
	Thousands	Thou. pounds	Thou. dollars
1947	5,895	117,469	90,609
1948	7,038	139,682	112,612
1949	7,131	138,645	96,040
1950	8,945	173,463	112,136
1951	8,131	155,366	98,102
1952	8,894	175,151	111,076
1953	9,407	185,478	124,744
1954	10,811	213,008	141,504
1955	9,934	196,412	125,223
1956	11,827	229,445	140,287
1957	11,891	232,456	135,813
1958	14,094	277,131	161,793
1959	14,332	282,191	159,143
1960	15,305	301,388	172,679
1961	15,768	310,612	189,173
1962	17,018	335,506	209,821
1963	16,556	326,712	201,588
1964	17,689	349,834	217,585
1965	18,099	358,405	232,976
1966	19,954	394,268	270,239
1967	19,682	388,845	261,527
1968	20,069	397,063	267,167
1969			
1970			
1971			
1972			

Source: Canned Fishery Products
Fishery Statistics of the U.S.

V DOMESTIC EMPLOYMENT, VESSELS AND EFFORT

- Fishermen
- Vessels
- Trips
- Days at sea
- Days fishing

Table V-1.--Number of tuna fishermen and vessels[1/]

	Fishermen	Vessels and boats
	Number	Number
1947	n.a.	n.a.
1948	n.a.	n.a.
1949	n.a.	n.a.
1950	n.a.	n.a.
1951	n.a.	n.a.
1952	n.a.	n.a.
1953	n.a.	n.a.
1954	n.a.	n.a.
1955	n.a.	n.a.
1956	6,610	2,229
1957	6,141	2,317
1958	6,646	2,303
1959	5,924	1,946
1960	4,858	1,535
1961	4,535	1,520
1962	4,859	1,798
1963	4,823	1,872
1964	4,014	1,522
1965	4,817	1,847
1966	5,455	1,978
1967		
1968		
1969		
1970		
1971		
1972		

Source: Fishery Statistics of the United States

1/ Excludes Puerto Rico.

Table V-2.--Catch and fishing effort for yellowfin and skipjack tuna from the eastern tropical Pacific Ocean

Year	U.S. catch of yellowfin	Effort	Catch per effort
	Thousand pounds	Boat days	Pounds
1935	72,294	6,287	11,498
1936	78,353	6,766	11,580
1937	91,522	8,231	11,119
1938	78,288	6,831	11,461
1939	110,418	10,486	10,530
1940	114,590	10,802	10,608
1941	76,841	9,578	8,023
1942	41,965	5,965	7,035
1943	50,058	5,935	8,434
1944	64,869	6,352	10,212
1945	89,194	9,378	9,511
1946	129,701	13,958	9,292
1947	160,151	20,376	7,860
1948	206,993	23,979	8,632
1949	200,070	23,019	8,692
1950	224,810	31,854	7,058
1951	186,015	18,727	9,933
1952	195,277	31,523	6,195
1953	140,042	36,418	3,845
1954	140,033	24,991	5,603
1955	140,865	17,846	7,893
1956	177,026	26,903	6,580
1957	163,020	26,100	6,246
1958	148,450	32,672	4,544
1959	140,484	27,854	5,044
1960	244,331	34,355	7,112
1961	230,886	43,253	5,338
1962	174,063	42,000	4,144
1963	145,469	33,000	4,408
1964	203,882	42,000	4,854
1965	180,086	43,000	4,188
1966	182,294	40,500	4,501
1967	178,944	34,000	5,263

Source: Inter-American Tropical Tuna Commission

Table V-2.--Catch and fishing effort for yellowfin and skipjack tuna from the eastern tropical Pacific Ocean (Continued)

Year	U.S. catch of skipjack	Effort	Catch per effort
	Thousand pounds	Boat days	Pounds
1935	17,200	6,287	2,756
1936	27,000	6,766	3,991
1937	47,100	8,231	5,722
1938	22,700	6,831	3,323
1939	30,100	10,486	2,871
1940	56,600	10,802	5,240
1941	25,600	9,578	2,673
1942	38,700	5,965	6,488
1943	28,900	5,935	4,869
1944	30,000	6,352	4,723
1945	33,300	9,378	3,551
1946	41,100	13,958	2,944
1947	52,700	20,376	2,586
1948	60,600	23,979	2,527
1949	80,500	23,019	3,497
1950	126,800	31,854	3,980
1951	116,600	18,727	6,226
1952	84,800	31,523	2,690
1953	124,000	36,418	3,404
1954	157,800	24,991	6,314
1955	107,100	17,846	6,001
1956	128,700	26,903	4,783
1957	99,100	26,100	3,797
1958	131,000	32,672	4,009
1959	108,500	27,854	3,895
1960	52,000	34,355	1,514
1961	75,800	43,253	1,752
1962	111,900	42,000	2,664
1963	124,700	33,000	5,778
1964	90,000	42,000	2,143
1965	126,700	43,000	2,946
1966	98,400	40,500	2,430
1967	196,400	34,000	5,776

Source: Inter-American Tropical Tuna Commission

Table V-2.--Catch and fishing effort for yellowfin and skipjack tuna from the eastern tropical Pacific Ocean (Continued)

Year	Total U.S.Catch	Effort	Total Catch per effort
	Thousand pounds	Boat days	Pounds
1935	89,494	6,287	14,235
1936	105,353	6,766	15,571
1937	138,622	8,231	16,841
1938	100,988	6,831	14,784
1939	140,518	10,486	13,401
1940	171,190	10,802	15,848
1941	102,441	9,578	10,695
1942	80,665	5,965	13,523
1943	78,958	5,935	13,304
1944	94,869	6,352	14,935
1945	122,494	9,378	13,062
1946	170,801	13,958	12,237
1947	212,851	20,376	10,446
1948	267,593	23,979	11,160
1949	280,570	23,019	12,189
1950	351,610	31,854	11,038
1951	302,615	18,727	16,159
1952	280,077	31,523	8,885
1953	264,042	36,418	7,250
1954	297,833	24,991	11,918
1955	247,965	17,846	13,895
1956	305,726	26,903	11,364
1957	262,120	26,100	10,043
1958	279,450	32,672	8,553
1959	248,984	27,854	8,939
1960	296,331	34,355	8,626
1961	306,686	43,253	7,091
1962	285,963	42,000	6,809
1963	270,169	33,000	8,187
1964	293,882	42,000	6,997
1965	306,786	43,000	7,135
1966	280,694	40,500	6,931
1967	375,344	34,000	11,040

Source: Inter-American Tropical Tuna Commission.

Table V-3.--Number of tuna vessels by region and gear

	Pacific					Atlantic	Gulf	
	Purse seines	Albacore trawl	Yellowfin trawl	Albacore troll	Total	Purse seines	Purse seines	Grand Total
	Number							
1950	110	n.a.	223	1,527	n.a.	n.a.	-	n.a.
1951	101	n.a.	239	1,018	n.a.	n.a.	-	n.a.
1952	97	n.a.	220	n.a.	n.a.	n.a.	-	n.a.
1953	109	n.a.	188	n.a.	n.a.	n.a.	-	n.a.
1954	86	n.a.	197	n.a.	n.a.	n.a.	-	n.a.
1955	92	n.a.	193	1,300	n.a.	n.a.	-	n.a.
1956	126	89	191	990	1,396	n.a.	-	n.a.
1957	58	69	206	1,111	1,444	n.a.	-	n.a.
1958	99	235	186	1,234	1,754	1	-	1,755
1959	97	161	139	1,220	1,617	1	-	1,618
1960	117	228	89	892	1,326	1	-	1,327
1961	126	239	44	835	1,244	2	-	1,246
1962	136	261	44	861	1,302	7	-	1,309
1963	134	192	77	1,014	1,417	16	-	1,433
1964	105	195	38	801	1,139	11	-	1,150
1965	132	106	81	1,074	1,393	9	-	1,402
1966	137	135	63	1,238	1,573	6	2	1,581
1967								
1968								
1969								
1970								
1971								
1972								

Source: Fishery Statistics of the U.S.

Table V-4.--Number of tuna fishermen on vessels by region and gear

	Pacific					Atlantic	Gulf	
	Purse seines	Albacore trawl	Yellowfin trawl	Albacore troll lines	Total	Purse seines	Purse seines	Grand Total
	Number							
1950	1,285	n.a.	2,815	4,571	n.a.	n.a.	-	n.a.
1951	1,192	n.a.	3,039	2,986	n.a.	n.a.	-	n.a.
1952	n.a.	n.a.	2,845	n.a.	n.a.	n.a.	-	n.a.
1953	n.a.	n.a.	2,430	n.a.	n.a.	n.a.	-	n.a.
1954	n.a.	n.a.	2,548	n.a.	n.a.	n.a.	-	n.a.
1955	1,050	n.a.	2,590	2,687	n.a.	n.a.	-	n.a.
1956	1,362	531	2,236	2,207	6,336	n.a.	-	n.a.
1957	698	720	1,198	2,635	6,251	n.a.	-	n.a.
1958	779	1,043	2,246	3,315	7,383	9	-	7,392
1959	760	640	1,582	2,856	5,838	9	-	5,847
1960	1,382	884	1,017	2,264	5,547	9	-	5,556
1961	1,513	651	511	2,034	4,709	18	-	4,727
1962	1,595	813	356	1,961	4,725	80	-	4,805
1963	1,547	627	425	2,289	4,888	213	-	5,101
1964	1,256	713	285	1,884	4,138	122	-	4,260
1965	1,591	487	410	2,343	4,831	101	-	4,932
1966	1,562	680	444	2,753	5,439	62	11	5,512
1967								
1968								
1969								
1970								
1971								
1972								

Source: Fishery Statistics of the U.S.

VI BIOLOGICAL STOCK ASSESSMENT

Table VI-1.--Estimates of maximum sustainable yield from world stock for tuna[1/]

Region		MSY
		Thousand metric tons
I. Atlantic		
A. Albacore		40.0
B. Yellowfin		44.4
C. Bluefin		18.8
D. Bonitos		110.4
E. Skipjack		101.1
	Total	314.7
II. Pacific		
A. Albacore		133.2
B. Yellowfin		205.4
C. Bluefin		72.7
D. Bigeye		109.6
E. Skipjack		1,080.0
F. Bonitos		91.2
	Total	1,692.1
III. Indian Ocean		
A. Bonitos		38.4
B. Skipjack		258.9
C. All Others		265.9
	Total	563.2
	World Total	2,570.0

1/ The estimates for MSY were derived as follows. Potential increases over present landings are available from the BCF Tuna Study Group (Summarized in Economic Projections of the World Demand and Supply of Tuna, 1970-90, p. 32). There are also total world potential estimates subdivided into three parts: (1) Skipjack, (2) Bonito, and (3) All others. For the Atlantic Pacific Ocean, landings for all species were taken from FAO data, and the potential increases for those two areas were added to derive a total potential. The Indian Ocean estimate was derived as a residual.

Table VI-2.--Estimate of maximum sustainable yield for tuna in waters fished by U.S. fishermen

Region		MSY Thous. metric tons
I.	Atlantic	314.7
II.	Pacific	1,692.1
III.	Pacific (adjusted) 1/	931.1

Source: Bureau of Commercial Fisheries, Division of Economic Research. Bell, Frederick W., Economic Projections of the World Demand and Supply of Tuna, Working Paper No. 18, U. S. Department of the Interior, Bureau of Commercial Fisheries, June 1969.

1/ Excludes potential increase of skipjack (800,000 metric tons).

VII INTERNATIONAL TRADE

- Imports
  - Quantity
  - Value
  - Price

Table VII-1.--U.S. imports of fresh and frozen and canned tuna.

	Fresh and Frozen[1]		Canned[2]	
	Quantity	Value	Quantity	Value
	Thousand[3] pounds	Thousand dollars	Thousand pounds	Thousand dollars
1947	9,204	1,237	6,148	3,241
1948	9,143	1,616	8,302	4,776
1949	20,606	2,922	4,584	2,226
1950	56,712	7,693	36,791	14,460
1951	62,085	7,86	12,971	4,508
1952	69,511	9,275	23,321	8,594
1953	96,120	14,502	34,592	14,017
1954	127,830	21,059	31,589	13,881
1955	164,022	19,047	35,563	14,201
1956	152,941	15,337	38,215	14,998
1957	189,153	16,765	44,386	17,002
1958	263,171	25,377	46,204	16,882
1959	312,154	29,728	56,134	21,688
1960	304,927	31,713	51,755	19,142
1961	269,165	30,228	58,663	22,175
1962	364,528	45,715	56,719	22,884
1963	320,910	34,962	57,494	23,864
1964	379,242	50,859	54,647	23,273
1965	378,637	48,501	50,961	20,428
1966	449,840	81,838	61,560	27,598
1967	387,142	66,479	65,321	30,198
1968	420,943	72,892	67,174	31,681
1969				
1970				
1971				
1972				

Source: Imports and Exports of Fishery Products and Fisheries of the United States, Bureau of Commercial Fisheries.

1/ Including loins and discs. Does not include foreign caught fish in American Samoa before 1953.
2/ Canned tuna in oil and in brine.
3/ Round weight equivalent.

Table VII-2.--Extent of U.S. involvement in imports of tuna to the United States, 1968.

U.S. investment abroad by country	Amount of investment	Quantity of total U.S. imports	Quantity of imports based on U.S. involvement	Percentage of quantity
	Mil. Dol.	Million pounds		Percent
Fresh and frozen				
Peru	9.0 2/	392.2 1/	28.6	7
Equador				
Canned				
Peru		67.2	3.4	5
Equador				

U.S. investment abroad by country	Value of total U.S. imports	Value of imports based on U.S. involvement	Percentage of value
	Million dollars		Percent
Fresh and frozen			
Peru	72.9 1/	3.2	3
Equador			
Canned			
Peru	31.7	1.1	3
Equador			

Source: Division of Current Economic Analysis, BCF

1/ Includes landings and value of foreign caught tuna in American Samoa.

2/ Includes investments in tuna canneries.

VIII FOREIGN PRODUCTION

—Landings

Table VIII-1.--World tuna landings by country

	U.S.A.	Japan	E.E.C.	Spain	Peru	China (Taiwan)	Turkey	Canada	U.K.	Other	Total
	Million pounds, round weight										
1956	355.2	786.3	53.6	88.6	213.9	36.8	122.4	.4	-	116.7	1,774.4
1957	323.3	876.7	77.6	93.1	157.0	38.4	89.7	.2	-	133.4	1,790.2
1958	344.9	1,003.3	78.7	123.9	187.6	43.9	60.9	--	-	338.8	2,194.0
1959	308.0	1,142.8	70.8	96.8	256.2	47.0	24.5	.4	-	398.4	2,351.6
1960	319.1	1,067.0	90.0	102.8	273.6	37.9	71.7	.4	-	365.4	2,330.9
1961	356.9	1,309.1	86.0	77.8	295.9	51.6	92.8	.2	-	432.9	2,721.0
1962	340.9	1,413.8	100.1	118.6	251.2	71.0	8.8	.7	-	418.1	2,741.0
1963	358.6	1,354.5	113.8	113.3	262.0	62.2	42.3	1.1	-	456.5	2,773.0
1964	354.2	1,338.4	110.7	114.4	214.3	71.0	24.7	2.4	-	433.7	2,672.5
1965	373.5	1,305.4	185.1	126.1	163.2	59.1	45.4	1.5	-	431.5	2,624.0
1966	333.9	1,449.6	119.3	155.2	183.7	98.8	35.7	1.1	-	624.3	2,910.6
1967	426.2	1,278.5	127.9	150.4	180.8	136.9	n.a.	2.0	-	631.9	2,934.4
1968											
1969											
1970											
1971											
1972											

Source: FAO Yearbook of Fishery Statistics (Excludes Mainland China) and Bureau of Commercial Fisheries.

Table VIII-2.--World tuna landings, international trade and consumption, 1967

Country	Landings	Exports[1/]	Imports[1/]	Consumption
		Million pounds, round weight		
Japan	1,275.4	476.9	n.a.	798.5
U.S.A.	426.2	--	517.8	944.0
Peru	178.1	52.2	--	125.9
Spain	150.4	12.8	1.1	138.7
E.E.C.	127.9	7.5	138.7	259.1
China (Taiwan)	136.9	5.0	--	131.9
Chile	20.0	n.a.	--	20.0
Ecuador	44.3	21.5	--	22.8
Portugal	24.5	10.1	n.a.	14.4
Canada	2.0	--	7.6	9.6
United Kingdom	--	--	3.2	3.2
Other	612.6	82.4	n.a.	530.2
Total	2,998.3	668.4	668.4	2,998.3

Source: Bureau of Commercial Fisheries and FAO Yearbook of Fishery Statistics.

1/ Complete export and import data not available.

IX FOREIGN CONSUMPTION

—Consumption
  Aggregate
  Per capita

—Prices

Table IX-1.--World tuna consumption, by major consuming countries

	U.S.A.	Japan			E.E.C.	Spain			Peru
	Canned	Raw	Canned	Total	Canned	Raw	Canned	Total	Raw
	Million pounds, round weight								
1956	584.6	348.2	106.7	454.9	156.6	11.0	64.0	75.0	72.8
1957	601.2	379.9	97.9	477.8	192.7	18.1	60.0	78.1	19.8
1958	700.5	479.2	103.2	582.4	187.9	30.9	81.6	112.5	72.8
1959	732.4	485.3	142.9	628.2	220.5	26.2	52.9	79.1	182.6
1960	727.6	420.3	101.4	521.7	286.6	26.9	55.6	82.5	130.1
1961	743.3	599.5	128.8	728.3	289.7	16.5	45.9	62.4	239.5
1962	818.9	668.8	86.0	754.8	314.9	39.2	62.6	101.9	129.2
1963	794.5	638.4	88.2	726.6	336.9	29.6	52.5	82.1	196.9
1964	842.8	537.6	70.1	607.7	339.1	47.4	56.9	104.3	176.4
1965	854.0	568.0	40.6	608.6	348.8	33.1	82.9	116.0	77.2
1966	906.8	778.4	56.9	835.3	350.6	70.1	83.4	153.5	110.7
1967	944.0	729.6	70.1	799.7	367.4	51.4	87.3	138.7	112.7
1968									
1969									
1970									
1971									
1972									

Table IX-1.--World tuna consumption, by major consuming countries (Continued)

	China (Taiwan)			Turkey	Canada	U.K.		Grand
	Raw	Canned	Total	Raw	Canned	Canned	Other	Total
	Million pounds, round weight							
1956	35.5	1.3	36.8	118.4	11.7	26.5	245.3	1,774.4
1957	34.4	4.0	38.4	86.2	11.2	17.6	382.0	1,790.2
1958	40.8	3.1	43.9	55.8	10.1	12.4	487.4	2,105.8
1959	45.2	1.8	47.0	23.4	13.9	10.6	540.6	2,351.6
1960	34.8	3.1	37.9	69.9	15.2	9.3	422.6	2,330.9
1961	46.3	5.3	51.6	92.4	16.8	15.0	438.4	2,721.0
1962	64.4	6.6	71.0	8.4	18.1	11.9	677.8	2,741.0
1963	49.8	12.4	62.2	42.4	15.0	15.0	589.5	2,728.9
1964	55.1	15.9	71.0	24.7	18.7	17.2	610.8	2,672.5
1965	49.8	9.3	59.1	45.4	17.9	13.7	418.5	2,657.0
1966	83.8	15.0	98.8	35.3	22.5	16.8	506.0	2,910.6
1967	104.3	32.6	136.9	n.a.	21.6	13.2	400.2	2,934.4
1968								
1969								
1970								
1971								
1972								

Source: FAO Yearbook of Fishery Statistics.

Table IX-2.--World tuna per capita consumption, by major consuming countries

	Peru	Japan			China (Taiwan)			Spain			U.S.A.	E.E.C.	Turkey	Canada	U.K.
	Raw	Raw	Canned	Total	Raw	Canned	Total	Raw	Canned	Total	Canned	Canned	Raw	Canned	Canned
	Pounds, round weight														
1956	8.08	3.87	1.19	5.06	3.62	.13	3.75	.38	2.18	2.56	3.48	.95	4.83	.79	.51
1957	2.15	4.19	1.08	5.27	3.41	.39	3.80	.61	2.03	2.64	3.51	1.15	3.41	.67	.34
1958	7.86	5.23	1.13	6.36	3.92	.30	4.22	1.04	2.73	3.77	4.02	1.11	2.20	.59	.24
1959	18.81	5.25	1.55	6.80	4.19	.16	4.35	.87	1.76	2.63	4.14	1.29	.88	.79	.20
1960	13.00	4.51	1.09	5.60	3.14	.28	3.42	.89	1.83	2.72	4.04	1.67	2.53	.85	.17
1961	23.24	6.37	1.37	7.74	4.06	.46	4.52	.54	1.50	2.04	4.06	1.67	3.27	.92	.28
1962	12.19	7.04	.91	7.95	5.46	.56	6.02	1.27	2.03	3.30	4.40	1.79	.29	.97	.22
1963	17.89	6.65	.92	7.57	4.12	1.02	5.14	.95	1.69	2.64	4.21	1.90	1.42	.79	.28
1964	15.60	5.54	.72	6.26	4.44	1.28	5.72	1.51	1.82	3.33	4.40	1.89	.81	.97	.31
1965	6.65	5.80	.41	6.21	3.82	.71	4.53	1.05	2.62	3.67	4.41	1.92	1.46	.91	.25
1966	9.22	7.87	.58	8.45	6.30	1.12	7.42	2.20	2.61	4.81	4.63	1.91	1.11	1.07	.30
1967	9.10	7.30	.70	8.00	7.59	2.37	9.96	1.60	2.72	4.32	4.77	2.02		1.06	.24
1968											4.79				
1969															
1970															
1971															
1972															

Source: Original data from FAO Yearbook of Fishery Statistics and Bureau of Commercial Fisheries.

Table IX-3.--World tuna prices, by country

	U.S.A.	Japan	Peru	Ecuador	Spain	China (Taiwan)
			Cents per pound			
1956	13.2	11.2	n.a.	n.a.	11.8	6.7
1957	12.6	10.1	n.a.	1.7	12.3	10.1
1958	13.6	10.9	n.a.	1.7	14.7	5.6
1959	13.0	12.4	n.a.	2.8	10.5	8.0
1960	12.4	15.2	n.a.	2.2	10.2	9.7
1961	12.9	15.9	1.7	2.5	13.7	7.5
1962	14.5	14.0	3.2	2.7	17.1	6.2
1963	12.6	15.5	4.1	3.0	11.6	9.2
1964	12.8	15.1	4.1	3.2	14.5	7.3
1965	13.0	16.2	n.a.	3.1	18.3	8.9
1966	16.6	17.9	3.0	3.6	18.3	12.6
1967	12.8	20.6	2.3		18.6	12.3
1968	16.1					
1969						
1970						
1971						
1972						

Source: Bureau of Commercial Fisheries and FAO Yearbook of Fishery Statistics.

X U.S. TRADE BARRIERS

Table X-1.--Present U.S. tariff structure on tuna

Item	Stat. Suffix	Product Description	Rates of Duty: June 30, 1967	Rates of Duty: Jan. 1, 1969	Rates of Duty: K-R Concession (Jan. 1, 1972)	U.S. Imports 1968: Quantity (Thousand pounds)	U.S. Imports 1968: Value (Thousand dollars)
		Fish, fresh, chilled, or frozen, whether or not whole, but not otherwise prepared or preserved:					
110.10		Sea herring, smelts, and tuna....	Free	Free	Free		
		Tuna:					
		Albacore:					
	10	Whole Fish				124,224	26,551
	15	Other				8,408	1,714
		Yellowfin:					
	20	Whole Fish				26,712	4,071
		Eviscerated Fish:					
	25	Head-on....				98,884	18,950
	30	Head-off....				4,262	820
	37	Other....				2,803	437
	45	Skipjack				46,617	4,982
	50	Other				2,008	321
		Fish, prepared or preserved in any manner, not in oil, in airtight containers:					
112.05	00	Bonito and Yellowfin	12.5% ad. val.	10 % ad. val.	6 % ad. val.	346	103
		Tuna:					
112.30		In containers weighing with their contents not over 15 lbs. each, for an aggregate quantity entered in any calendar year not to exceed 20% of the U.S. pack of canned tuna during the immediately preceding calendar year, as reported by the U.S. Fish and Wildlife Service....	12.5% ad. val.	10 % ad. val.	6 % ad. val.		

Table X-1.--Present U.S. tariff structure on tuna (Continued)

Item	Stat. Suffix	Product Description	Rates of Duty: June 30, 1967	Rates of Duty: Jan. 1, 1969	Rates of Duty: K-R Concession (Jan. 1, 1972)	U.S. Imports 1968: Quantity (Thousand pounds)	U.S. Imports 1968: Value (Thousand dollars)
		Fish, Prepared or preserved, etc.(con.):					
		Tuna (con.):					
	20	Albacore....				41,861	21,561
	40	Other....				25,162	10,016
112.34	00	Other....	25 % ad. val.	20 % ad. val.	12 % ad. val.		
		Fish, prepared or preserved in any manner, in oil, in airtight containers:					
112.42	00	Bonito and Yellowtail	15 % ad. val.	12 % ad. val.	7.5 % ad. val.	547	218
112.90	00	Tuna	35 % ad. val.	35 % ad. val.	35 % ad. val.	150	104
		Fish, prepared or preserved, not specially provided for:					
		Not in oil:					
		In bulk or in immediate containers weighing with their contents over 15 lbs. each:					
113.56		Tuna	1 ¢ per lb.	.8 ¢ per lb.	0.5 ¢ per lb.		
	20	Albacore....				3,386	1,660
	40	Yellowfin (Neothunnus)....				3,803	1,584
	60	Other				167	56

Table X-2.--Historical synopsis of trade investigations for tuna

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1. Section 9(b) of the Fish and Wildlife Act of 1956

   Requested by: American Tunaboat Association, San Diego, California, and Fishermen's Cooperative Association, San Pedro, California

   Report: "Report of the Secretary of the Interior to the President and the Congress on Fresh or Frozen Yellowfin, Skipjack, and Bigeye Tuna." May 1958

2. Escape Clause under Executive Orders and the T.E.A. of 1951, as amended (T.C.)

Bonito, canned in oil; and tuna and bonito, canned, not in oil. (Investigation No.9 sec. 7)	Origin of investigation: Application by California Fish Canners Association, Inc., Terminal Island, California, and others. Application received: Nov. 28,, 1951. Investigation instituted: Dec. 28, 1951. Hearing Held: Jan. 29 - Feb. 4, 1952. Investigation completed: Nov. 26, 1952. Recommendation of the Commission: No modification of concession. Vote of the Commission: 3-2 Reference: U.S. Tariff Commission, Bonito Canned in Oil, and Tuna and Bonito, Canned Not in Oil: Report on the Escape-Clause Investigation, Rept. No. 187, 2d ser., 1953.

3. Section 301 of the T.E.A. of 1962 (T.C.)

   None

4. Section 332 of the T.E.A. of 1930 (Invesitgations by the Tariff Commission)

   Requested by: Resolution of Committee of Finance (Senate) on August 20, 1957.

   Report: May 1958.

Table X-2.--Historical synopsis of trade investigations for tuna (Continued)

5. Antidumping under Antidumping Act of 1921 (Customs Bureau)

None

6. Countervailing (Section 303 of T.E.A. of 1930 Customs Bureau)

None

1/ Also available "Survey of the Domestic Tuna Special Scientific Report" #104.

XI GOVERNMENT PROGRAMS

—Subsidies

—Mortgage insurance

—Loans

—EDA projects

—BCF expenditures

—Federal aid to states

Table XI-1.--Bureau of Commercial Fisheries programs and expenditures on tuna, fiscal years 1960-69

Bureau of Commercial Fisheries Programs	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969
1960 and 1964 Fishing Fleet Improvement Act										
(a) Number of Vessels Constructed	-	-	-	-	-	-	-	2	6	3
(b) Total Government Subsidies to Vessels Constructed (dollars)	-	-	-	-	-	-	-	1,806,875	5,356,614	2,450,159
Mortgage Insurance Program										
(a) Number of Vessels	-	-	2	-	1	1	1	8	1	2
(b) Value of Mortgages (dollars)	-	-	939,500	-	18,750	705,000	33,000	6,333,425	1,091,000	2,107,000
Fisheries Loan Fund										
(a) Number of Vessels Receiving Loans	13	14	11	3	5	4	10	13	11	4
(b) Total Value of Loans (dollars)	988,088	1,335,672	814,494	60,907	865,229	116,619	328,118	484,446	447,997	119,562
Other BCF Programs 1/	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	3,000,000	7,700,000	7,300,000

Source: Division of Financial Assistance, Bureau of Commercial Fisheries.
1/ 1971 Program Memorandum, U.S. Dept. of the Interior, Living Aquatic Resources.

Table XI-2.--Estimated Economic Development Administration expenditures on tuna by program, May 1961 - May 1969[1/]

Program/Project	Amount
Public Facilities Grants and Loans:	
Astoria, Oregon - Marine Food Science Lab	$ 15,000
Cambridge, Maryland - Construction of Public Facilities for Cannery	500,000
Ft. Bragg, California - Mooring basin	117,000
Newport, Oregon - Fish. expansion	53,000
Willapa Bay, Washington - Floating docks	1,000
Total Public Works	$ 686,000
Business Loans:	
Peter Pan Caribe, Inc.	$ 283,000
Peter Pan Caribe, Inc.	655,000
Farwest Fisheries, Inc. (Wash.)	355,000
Total Business Loans	$1,293,000
Technical Assistance Grants:	
San Diego, California - Ocean Industries Study	$ 75,000
Florida Finest Seafood Co.	75,000
American Samoa - Study of assets, etc.	12,000
Total Technical Assistance	$ 162,000
Grand Total	$2,141,000

1/ Includes available information on expenditures under the predecessor agency, the Area Redevelopment Administration. Estimates represent an attempt to prorate the total amount of EDA funding applicable to the fishing industry in multi-industry projects and to a particular fishery in multi-fishery projects.

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Division of Economic Research
Bureau of Commercial Fisheries

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51. Basic Economic Indicators-Atlantic Groundfish.

52. Basic Economic Indicators-Halibut.

53. Basic Economic Indicators-Northern Lobsters.

54. Basic Economic Indicators-Sea Scallops.

55. Basic Economic Indicators-Clams.

56. Basic Economic Indicators-Oysters.

57. Basic Economic Indicators-Shrimp.

58. Basic Economic Indicators-Blue Crabs.

59. Basic Economic Indicators-King and Dungeness Crabs.

60. Basic Economic Indicators-Menhaden.

61. Basic Economic Indicators-Tuna.

62. Basic Economic Indicators-Salmon.

The goal of the Division of Economic Research is to engage in economic studies which will provide industry and government with costs, production and earnings analyses; furnish projections and forecasts of food fish and industrial fish needs for the U.S.; develop an overall plan to develop each U.S. fishery to its maximum economic potential and serve as an advisory service in evaluating alternative programs within the Bureau of Commercial Fisheries.

In the process of working towards these goals an array of written materials has been generated representing items ranging from interim discussion papers to contract reports. These items are available to interested professionals in limited quantities of offset reproduction. These "Working Papers" are not to be construed as official BCF publications and the analytical techniques used and conclusions reached in no way represent a final policy determination endorsed by the U.S. Bureau of Commercial Fisheries.