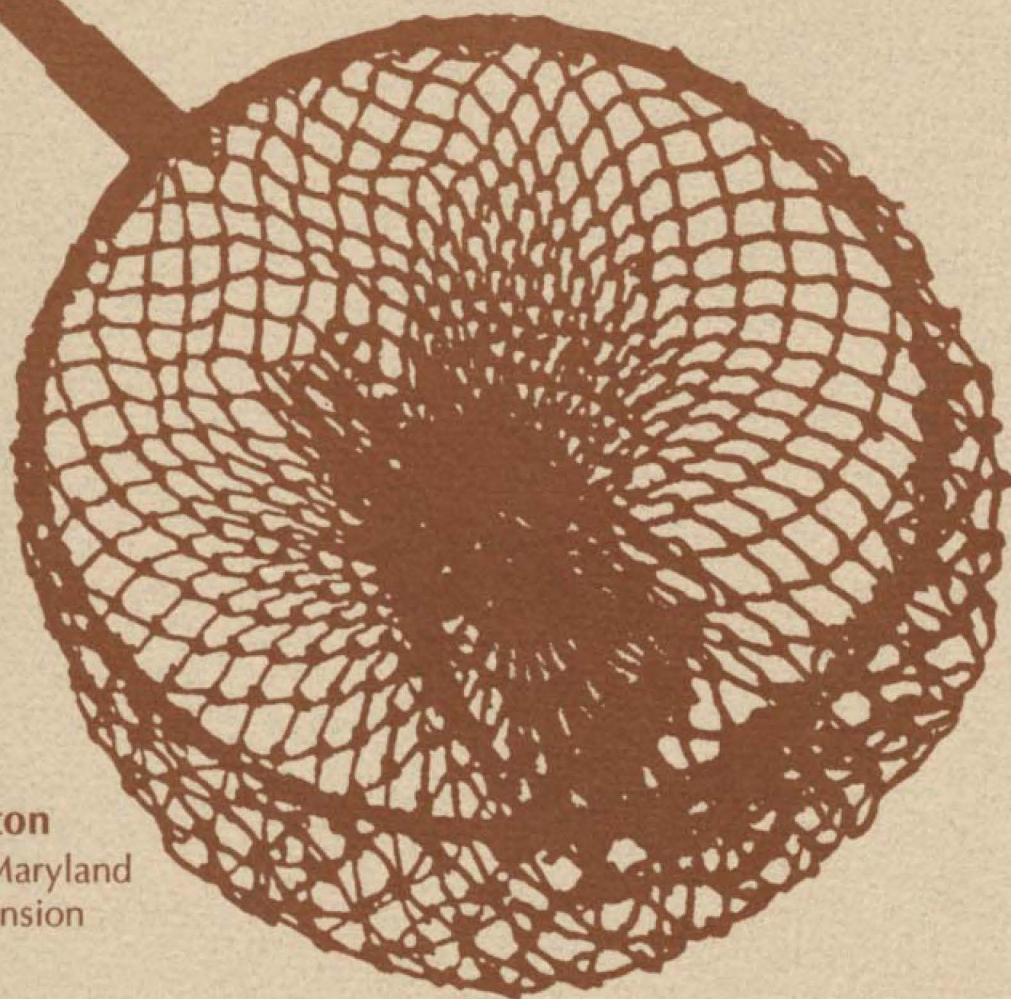


THE STATUS OF
Maryland's
Fishing Industry
1 • 9 • 8 • 7

Douglas Lipton
University of Maryland
Sea Grant Extension



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INTRODUCTION

In 1987, approximately 82 million pounds of fish and shellfish were landed on Maryland shores. The value of this catch to Maryland watermen (ex-vessel) was over \$53 million. Despite a decline of 9% in landings from the 1986 catch, price increases resulted in a 6% increase in total value. Compared to other states' fish and shellfish landings, Maryland ranked 15th in quantity and 14th in value.

Table 1 categorizes Maryland's catch by species and distance from shore. The inshore catch, mostly from Chesapeake Bay, was almost 60 million pounds, worth over \$43 million. The most important species in both weight and value was the blue crab, whose landings exceeded 43 million pounds and was worth over \$25 million. Despite huge declines in abundance, the oyster fishery contributed over 3 million pounds of meats, worth almost \$12 million. The offshore catch which is principally landed in Ocean City was approximately 22 million pounds worth over \$10 million. Of the offshore catch, 20 million pounds was contributed by the surf clam and ocean quahog fishery, worth over \$7 million.

TRENDS IN THE U.S. FISHING INDUSTRY

The information presented in Table 1 provides a snapshot of the state of the Maryland fishing industry; however, it gives no information on economic trends within the industry, nor does it give insight into how changes in the U.S. fishing industry as a whole are affecting Maryland. To accomplish this we examine some recent trends in U.S. and Maryland fisheries, and develop some indexes which provide a relative picture of the health of Maryland's fishing industry.

The most important trend in the U.S. fishing industry has been the sharp rise in demand for seafood products since 1985. The increase in demand is evidenced by the concurrent rise in per capita seafood consumption and seafood prices. Per capita consumption has risen 20% since 1980, and is now at a record 15.4 pounds per person (Figure 1). Seafood prices, as represented by the consumer price index for fish and shellfish have risen 45% over the same period. However, when adjusted for inflation, seafood prices have only risen 6% since 1980. From 1980 to 1984, seafood prices rose less than the overall rate of inflation. Since 1985, the period of increased seafood demand, seafood prices have risen faster than inflation.

The increased demand for seafood has increased the pressure on supplies from domestic fish stocks. Although 1987 was a record year for domestic commercial landings of edible fish, the catch was only 8% greater than in 1980 (Figure 2). Most of the increase was accounted for by larger landings of a single species, Alaskan pollock. Most traditionally important domestic species are fished at or beyond their biological limits, and cannot support increased domestic supplies. To supplement the domestic supply, the U.S. imported a record 6.6 billion pounds of edible seafood in 1987, worth over \$5.7 billion. Imports have increased fairly steadily since 1980, despite fluctuations in the dollar exchange rate which makes imports more expensive, the lower the value of the dollar (Figure 3).

TRENDS IN MARYLAND FISHERIES

Given the status of the domestic fishing industry, any state fortunate enough to have an abundance of fishery resources within its borders will find a strong market for their products. In Maryland, however, as the demand for fishery products has grown, the quantity of reported landings has fallen (Figure 4). As will be discussed below, a large portion of this decline can be attributed to the collapse of the oyster fishery due to the oyster diseases MSX and Dermo. The strong demand for seafood, however, has led to increased prices. As a result, the value of Maryland landings has remained steady in nominal terms, and declined only slightly in real dollars (Figure 5).

Total landings and value are not the best indicators of the health of Maryland's fishing industry. A better measure would be the profits that this industry generates for its participants; however, profit information is not readily available. In the next section, we develop several indexes which are related to profits for watermen participating in the fishery. The indexes are an output price index (OP), an input cost index (IC) and a productivity index (P). The index is constructed by choosing a base year, in this case 1981, and dividing the observed price or quantity in all years by its value in the base year, and then multiplying by 100. For example, if the output price in the base year is \$2.00, then the price index in the base year equals 100. If the price rises to \$2.50, then the index rises to 125, a 25% increase over the base year:

$$OP = \frac{2.50}{2.00} \times 100 = 125$$

Two other indexes are calculated from the three mentioned: a unit output cost index (UOC) equal to IC/P; and a watermen's health index (WH), equal to OP/UOC. The WH index is related to profits. If WH is greater than 100, then profits in that year were greater than in the base year; if WH is less than 100, profits were less.

Finally, an index of full-time equivalents (FTE) that participate in the fishery are calculated by dividing the number of man-days expended in a year by the number of days it is assumed a full-time waterman would participate in the fishery. For example, it is assumed that 125 man-days is what a full-time commercial crabber will spend crabbing. Since the Maryland Department of Natural Resources collects data on man-days, the number of full time equivalents is calculated by dividing total man-days by 125. These indexes were calculated for Maryland's blue crab and oyster watermen and are presented below.

HEALTH OF MARYLAND'S BLUE CRAB FISHERY

Figure 6 shows an index of the nominal and real value of Maryland's blue crab landings relative to the base year of 1981. Maryland changed its method of blue crab data collection in 1981, and data prior to that period are not comparable to data after 1981. Although every year of rising value in blue crab landings since 1981 has been followed by a year of lower value, the basic trend has been upward. Only in 1982 did the value fall below the base year.

Figure 7 presents the indexes of Maryland blue crab landings and productivity, measured as catch per man-days of fishing effort. While the landings index, like the value index (Figure 6), rises and falls from one year to the next, there are two major differences: (1) 1986 and 1987 show a

decline in landings, and (2) there is a downward trend in landings between 1981 and 1987. Productivity on the other hand, except for a dip in 1986, has been rising sharply since 1982.

The output price index (OP) for hard blue crabs has risen 69% since 1981, with the greatest increases occurring in the last two years (Figure 8). Input costs (IC) have declined slightly over the study period due to a lowering of interest costs and fuel prices. The result of increasing productivity and decreasing input costs in the crab fishery is a sharply falling unit cost for producing blue crab (UOC). Low unit costs of production coupled with much higher output prices for blue crabs has resulted in high profitability in this fishery. It is estimated that watermen operating in 1987 earned 250% greater profits than blue crab watermen in 1981 (Figure 9). It should be pointed out, however, that this increase in profits would not have been possible if blue crab fishing effort had increased more than it did over the period. A substantial increase in effort would have lessened the increase in productivity and lowered profits.

To illustrate how the crab fishing industry as a whole has fared over this period, an index of full-time equivalent (FTE) fishing effort was developed from the number of man-days fished (Figure 10). The index of FTE supported by the crab fishery has fallen 65% since 1981. Since watermen's profitability has increased a greater percentage than the decline in FTE, it is estimated that total fishery profits have increased 63% since 1981.

HEALTH OF MARYLAND'S OYSTER FISHERY

Figures 11-15 summarize data for the oyster fishery on landings, productivity, the watermen's health index and fishing effort. Differences between the health of the oyster and crab fisheries (Figures 6-10) are striking. The real value of Maryland oyster landings, for example, has declined 51% from the base year, 1981 (Figure 11). The decline in oyster landings has been more dramatic, equaling only 24% of the 1981 landings (Figure 12). The loss in productivity due to the fall in landings has been tempered somewhat by a decline in effort in the fishery. Productivity in 1987 was about 40% of the 1981 value.

The decline in input costs (IC) along with a decrease in fishing effort has not been enough to keep the unit cost of oyster production (UOC) at earlier levels (Figure 13). As a result, in 1987 unit costs of oyster production were over 200% greater than in 1981. The health of the industry has also been bolstered by a 212% increase in oyster prices (OP) since 1981. The result is that those watermen who continued to oyster earned, on average, about the same profits in 1987 as they earned in 1981 (Figure 14). This would not have been possible had there not been a substantial reduction in fishing effort and increase in oyster prices. If oyster prices in 1987 had remained at the 1986 level, industry health and watermen profits would have fallen to their lowest value in the decade.

Despite the fact that the watermen's health index (WH) has remained at the 1981 level, the 57% decline in FTE oystering coupled with constant profits per watermen, means that profitability has fallen approximately 57% over the period (Figure 15).

SUMMARY

The Maryland fishing industry has adjusted to changing economic conditions in the U.S. seafood industry and to local economic and fish stock conditions. Due to the reduction in effort in the oyster fishery, the remaining watermen have been able to maintain their profits. However, if oyster prices do not remain high, more watermen will have to leave that fishery. Alternatively, a recovery of oyster stocks from their decimation due to MSX and Dermo, could increase industry productivity and profitability if the amount of effort does not increase too greatly.

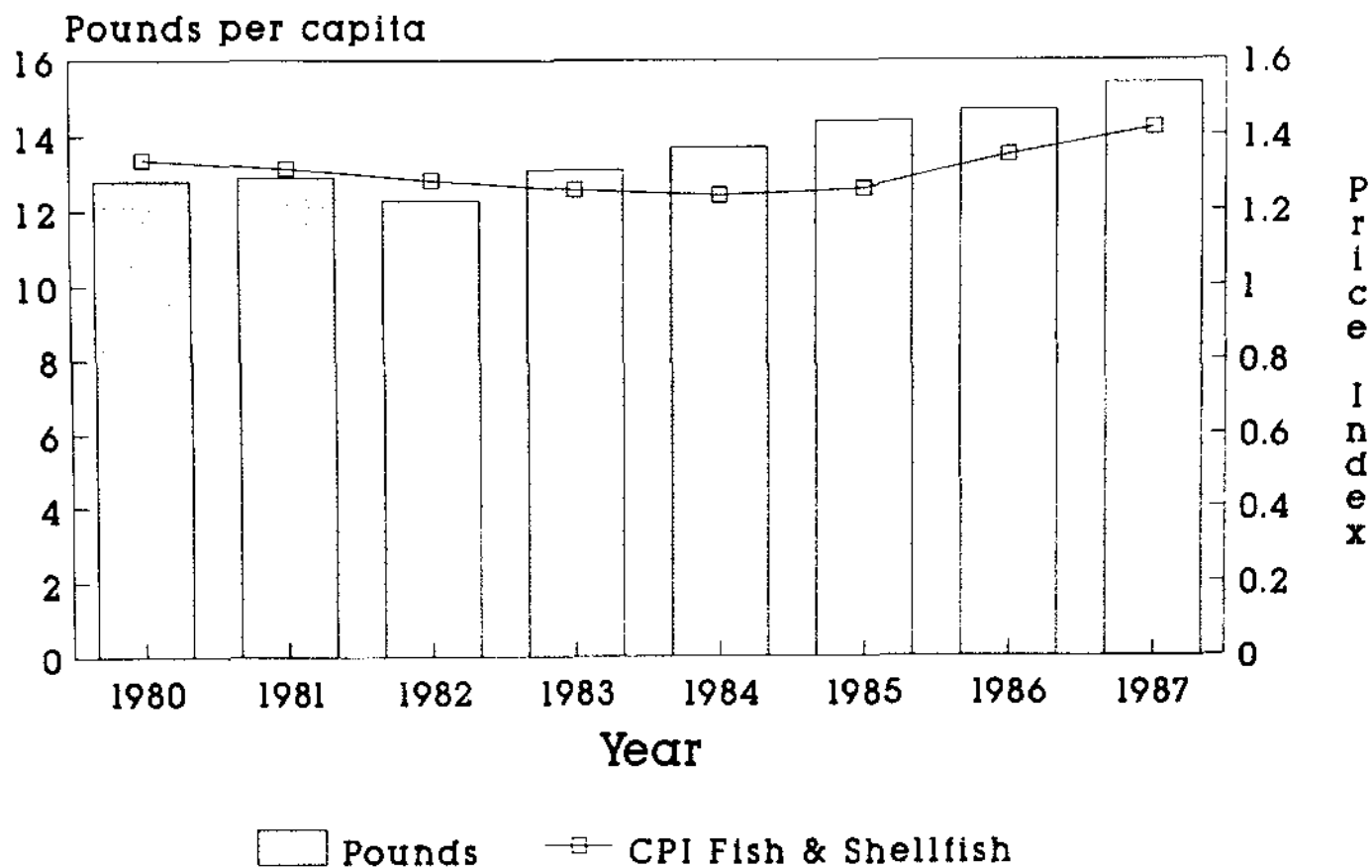
The blue crab fishing industry is at its most profitable level of the decade. Because we only have a relative measure of profitability, it is not known whether these are abnormally high profits that would attract additional effort into the fishery and lower future productivity and profitability. There does not appear to be a large increase in commercial fishing effort occurring in the blue crab fishery. Thus, the current level of profits may be such that there is little incentive to enter this fishery. One explanation may be that as fewer watermen oyster, they are relying more on crabbing to earn a living. In the past, most watermen relied on both species. The current higher profit levels in the crab fishery may be just enough to offset their loss of profits due to not oystering.

Table 1. Maryland fish and shellfish landings and value, inshore and offshore (< 3 miles from coast), 1987.

Species	Inshore		Offshore		Total	
	Pounds (000)	Dollars (000)	Pounds (000)	Dollars (000)	Pounds (000)	Dollars (000)
Alewives	755	76			755	76
Bluefish	356	57	7	1	363	58
Butterfish	14	7	3	1	17	8
Croaker	75	24	45	17	120	41
Fl-Blackback	17	12			17	12
Fl-Fluke	122	143	199	202	321	345
Hake-Red			17	2	17	2
Mackerel-Atl.	1	.			1	.
Menhaden	5753	357			5753	357
Mullet	1	.			1	.
Sea Bass-Bk.	1	1	492	344	493	345
Sea Trout-Gray	346	208	17	3	363	211
Shark-Dogfish	14	5	61	8	75	13
Sharks-Unc.			20	24	20	24
Mackerel-Span.	3			1	3	1
Swordfish			322	1108	322	1108
Tilefish			1	2	1	2
Tuna-Albacore			1	1	1	1
Tuna-Bluefin			5	11	5	11
Tuna-Yellowfin			150	205	150	205
Tuna-Unc.	3	5	9	22	12	27
Tuna-Bigeye			118	466	118	466
Whiting	1	.			1	1
Fish-Other	2202	792	39	35	2241	827
TOTAL FISH	9673	1699	1530	2486	11203	4185
Crab-Blue-Hd	41988	20482			41988	20482
Crab-Soft-Pl	1880	4760			1880	4760
Crab-Other	23	37	51	75	74	112
Lobster-Amer.			50	192	50	192
Clam (meat) O.Q.			12368	3656	12368	3656
Clam (meat) Soft	3155	5645			3155	5645
Clam (meat) Surf			7669	3659	7669	3659
Oyster (meats)	3649	11794			3649	11794
Scallop (meats)	-	1	62	246	62	247
Squid	1	-	1	-	2	-
Shellfish-Other	1817	4369	48	8	1865	4377
TOTAL SHELLFISH	50206	41437	20249	7836	70455	49273
GRAND TOTAL	59879	43136	21779	10322	81658	53458

Source: National Marine Fisheries Service

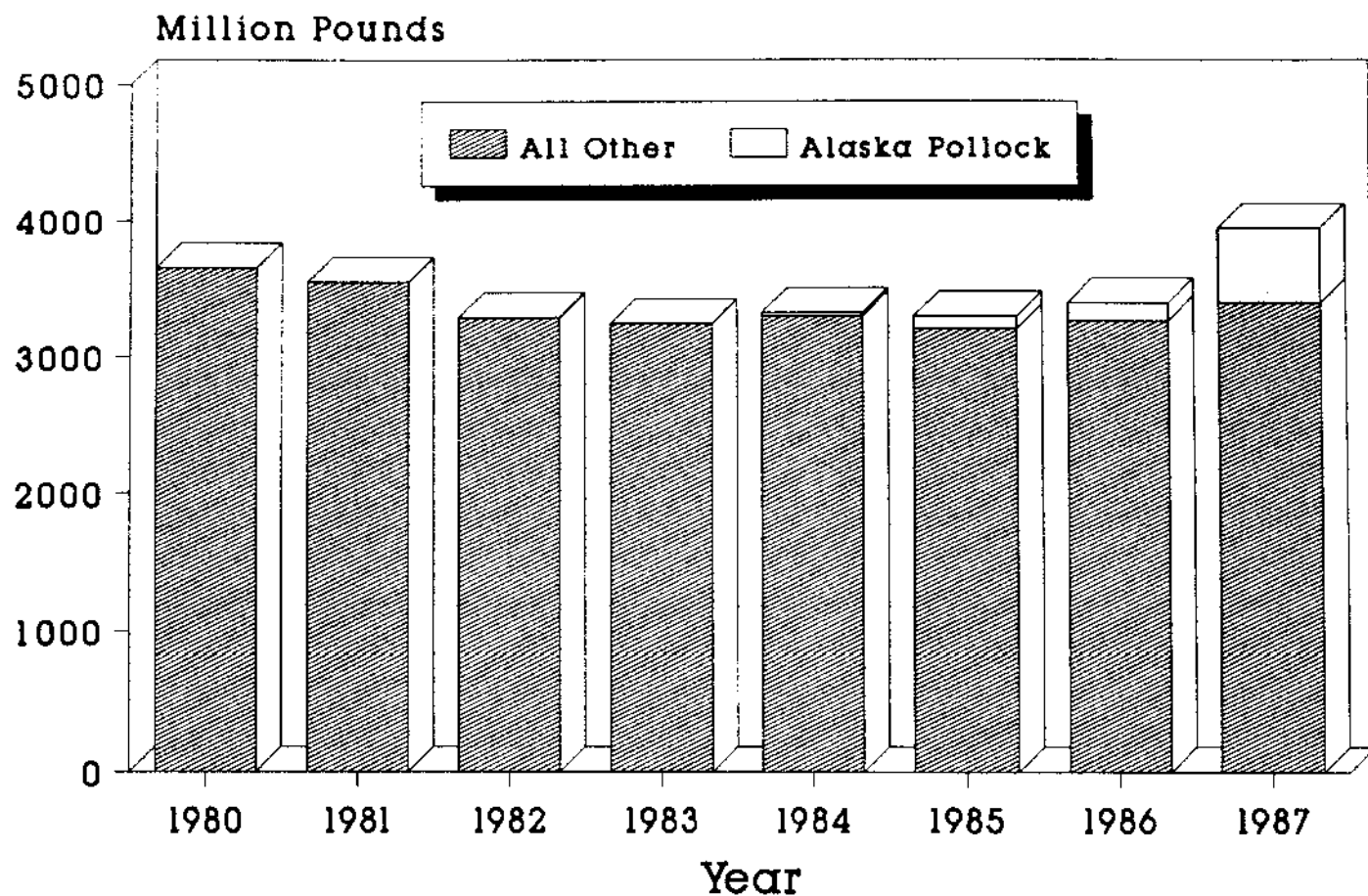
U.S. Seafood Consumption and Prices, 1980-1987



Source: National Marine Fisheries Service

Figure 1.

Edible U.S. Fishery Landings 1980-1987



Source: National Marine Fisheries Service

Figure 2.

U.S. Imports of Edible Fish and Dollar Exchange Rate, 1980-1987

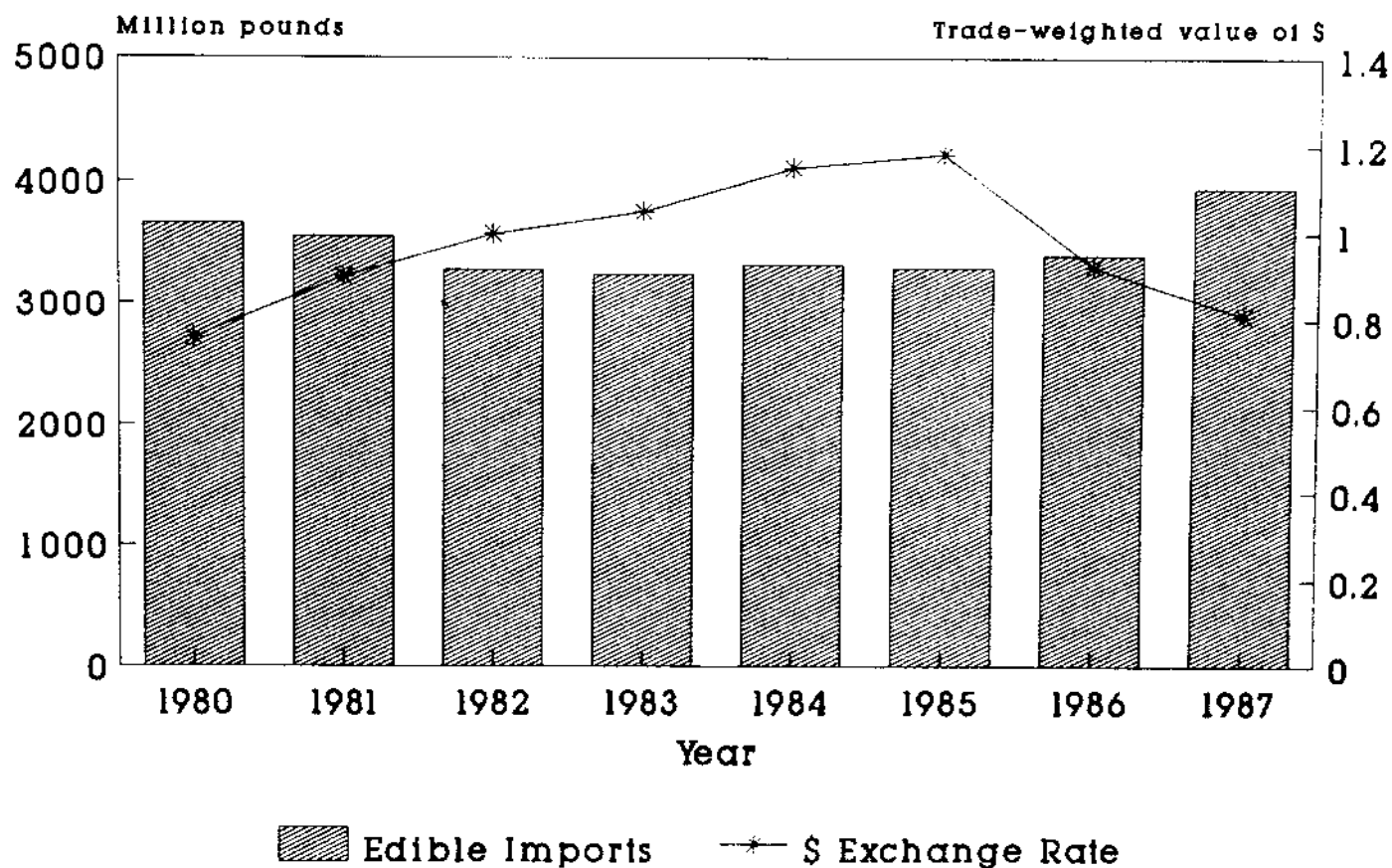


Figure 3.

Source: NMFS, DRI

Maryland Commercial Fishery Landings, 1981-1987

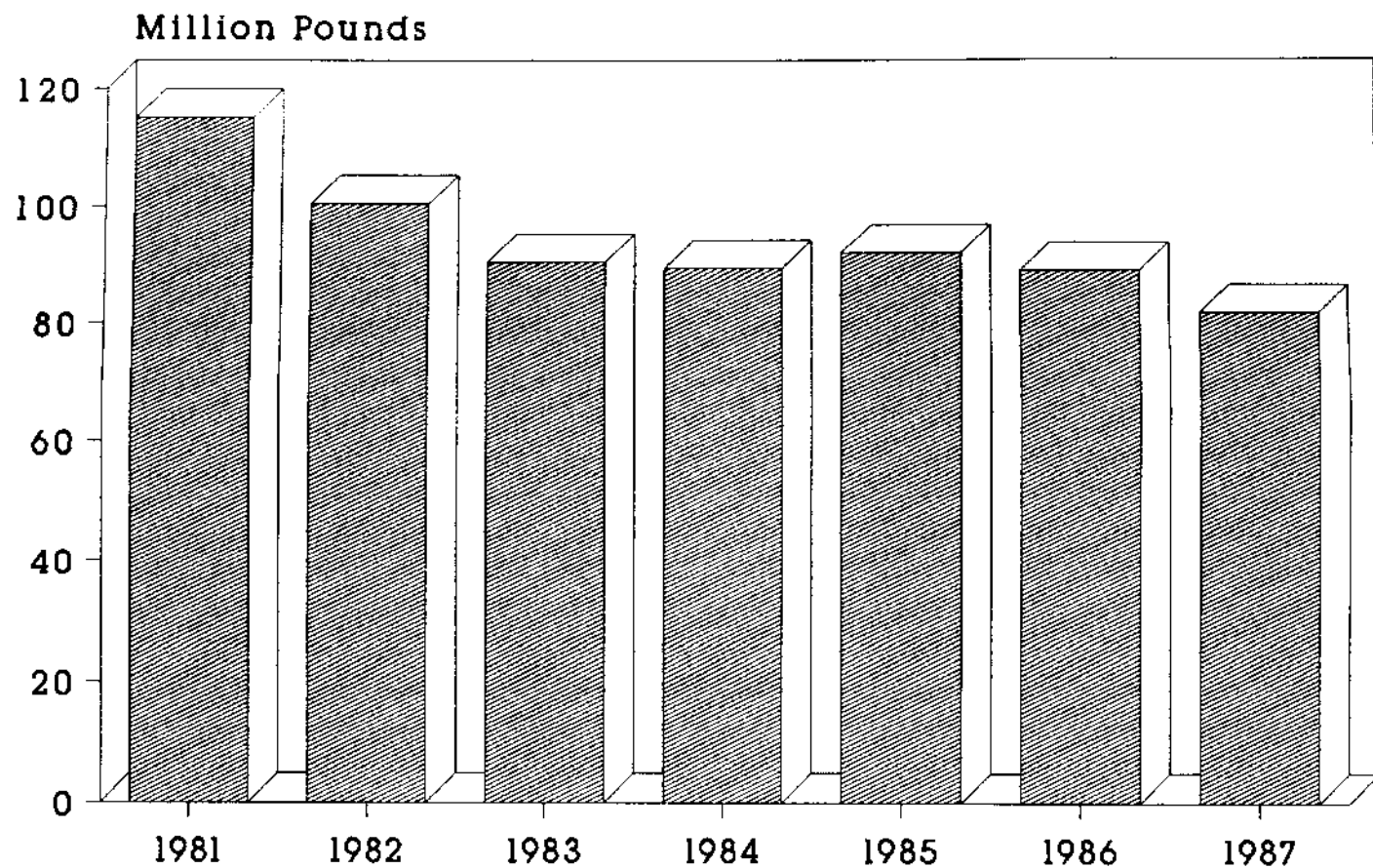


Figure 4.

Source: NMFS

Value of Maryland Landings 1981-1987

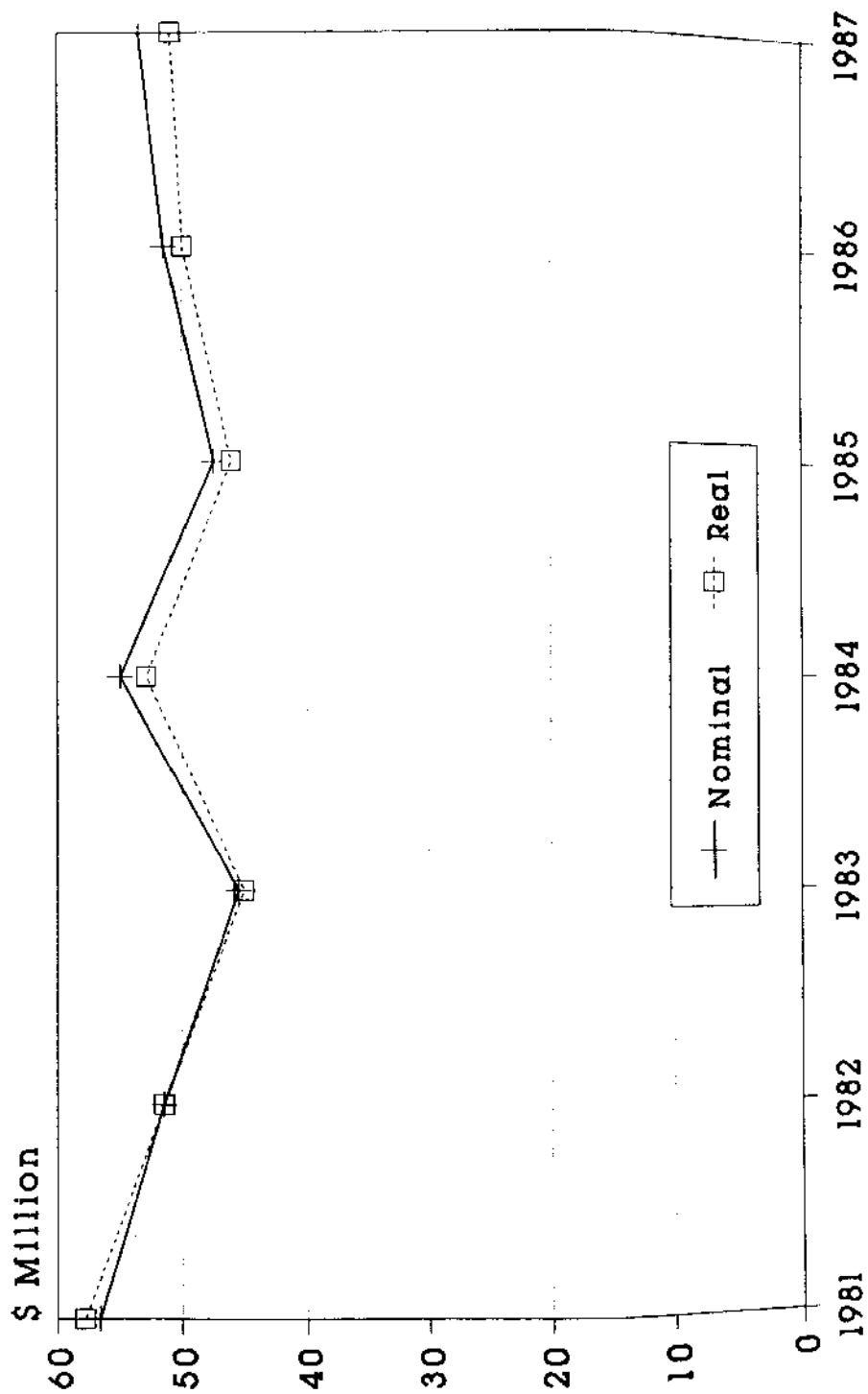
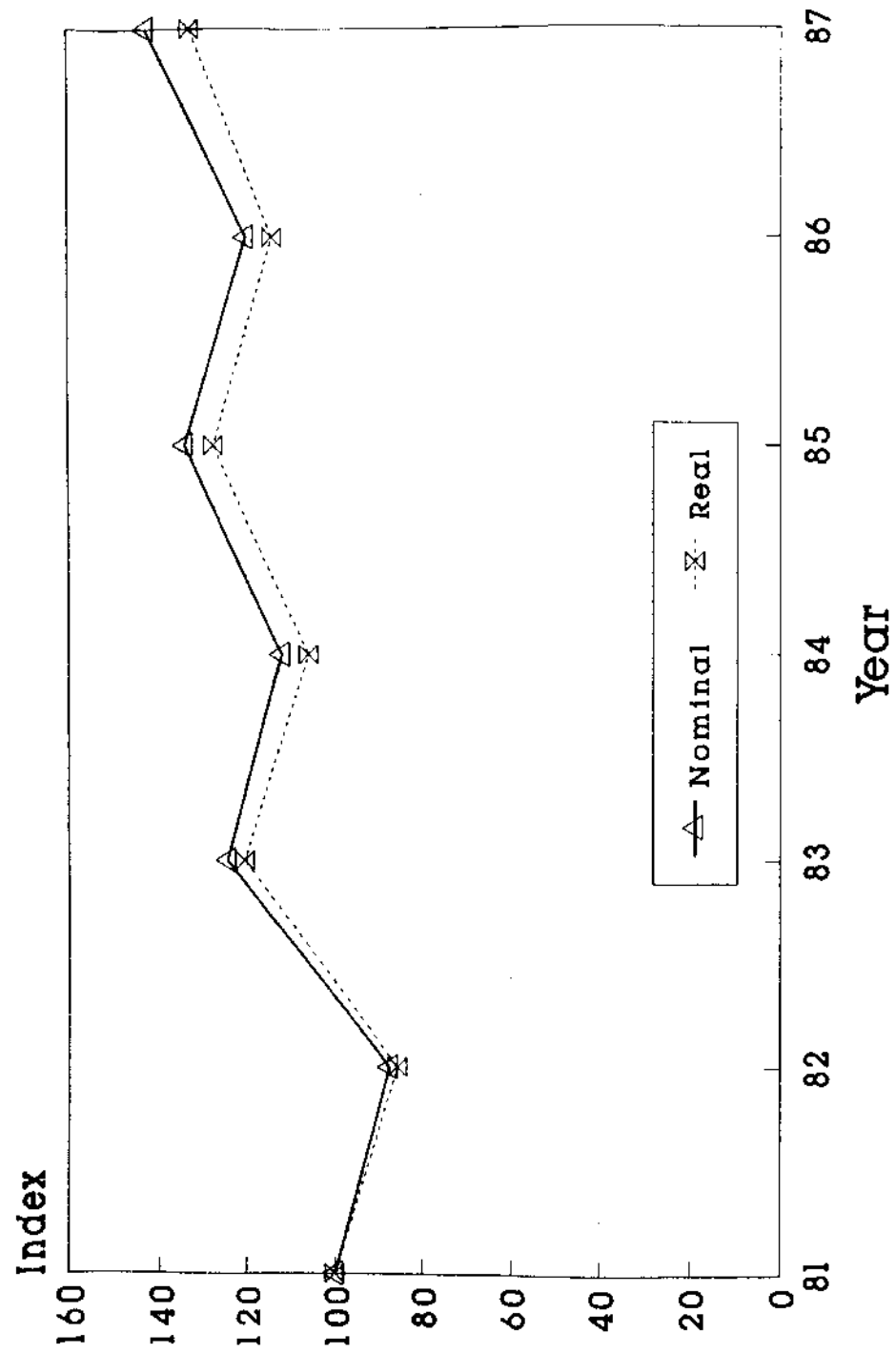


Figure 5.

Source: NMFS

Landings Index, 1981-1987



1981=100

Figure 6.

Maryland Blue Crab Landings and Productivity Indexes, 1981-1987

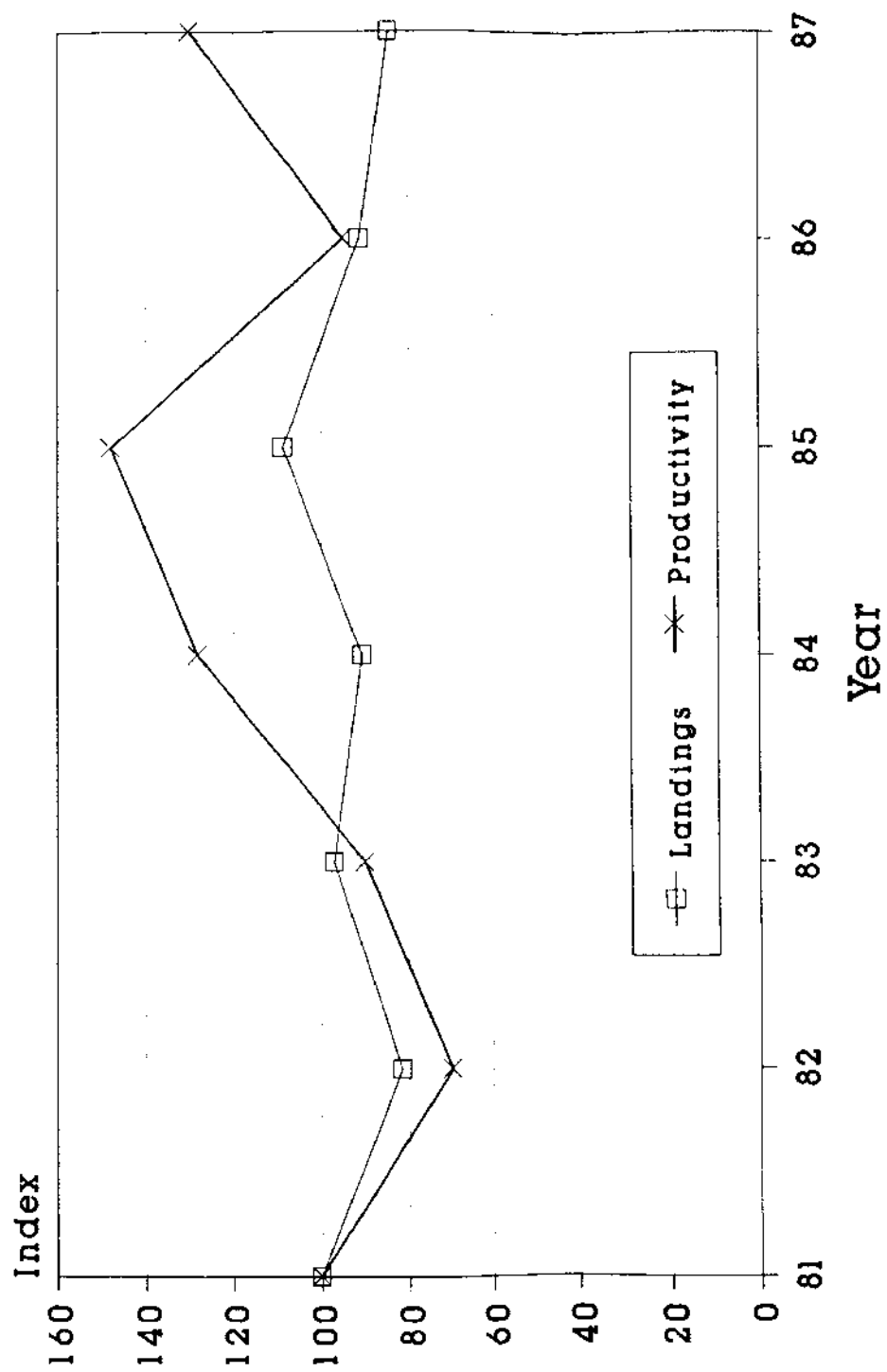


Figure 7.

Maryland Hard Blue Crab Price and Cost Indexes, 1981-1987

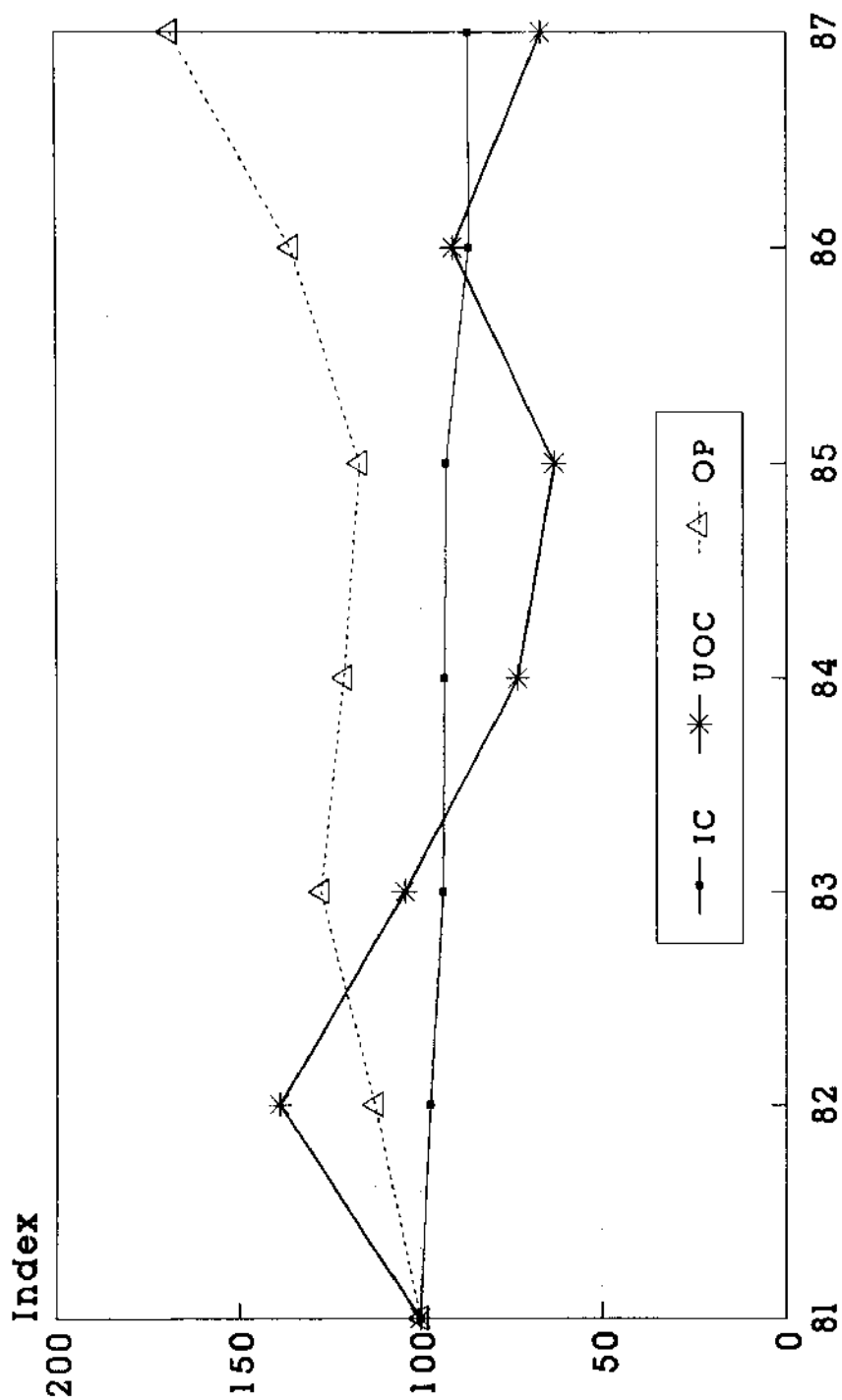


Figure 8.

Watermen's Health Index for Maryland's Blue Crab Fishery, 1981-1987

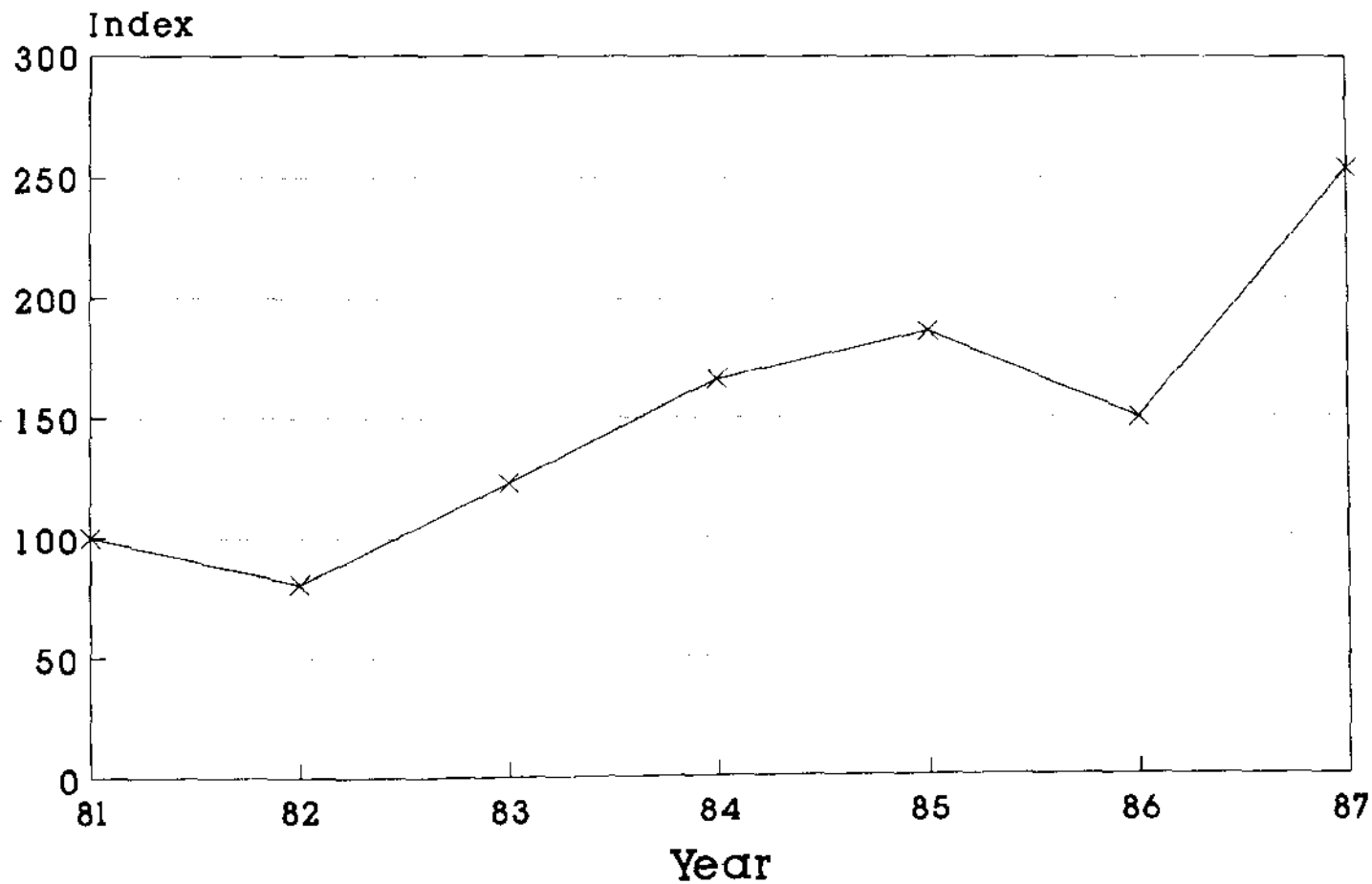
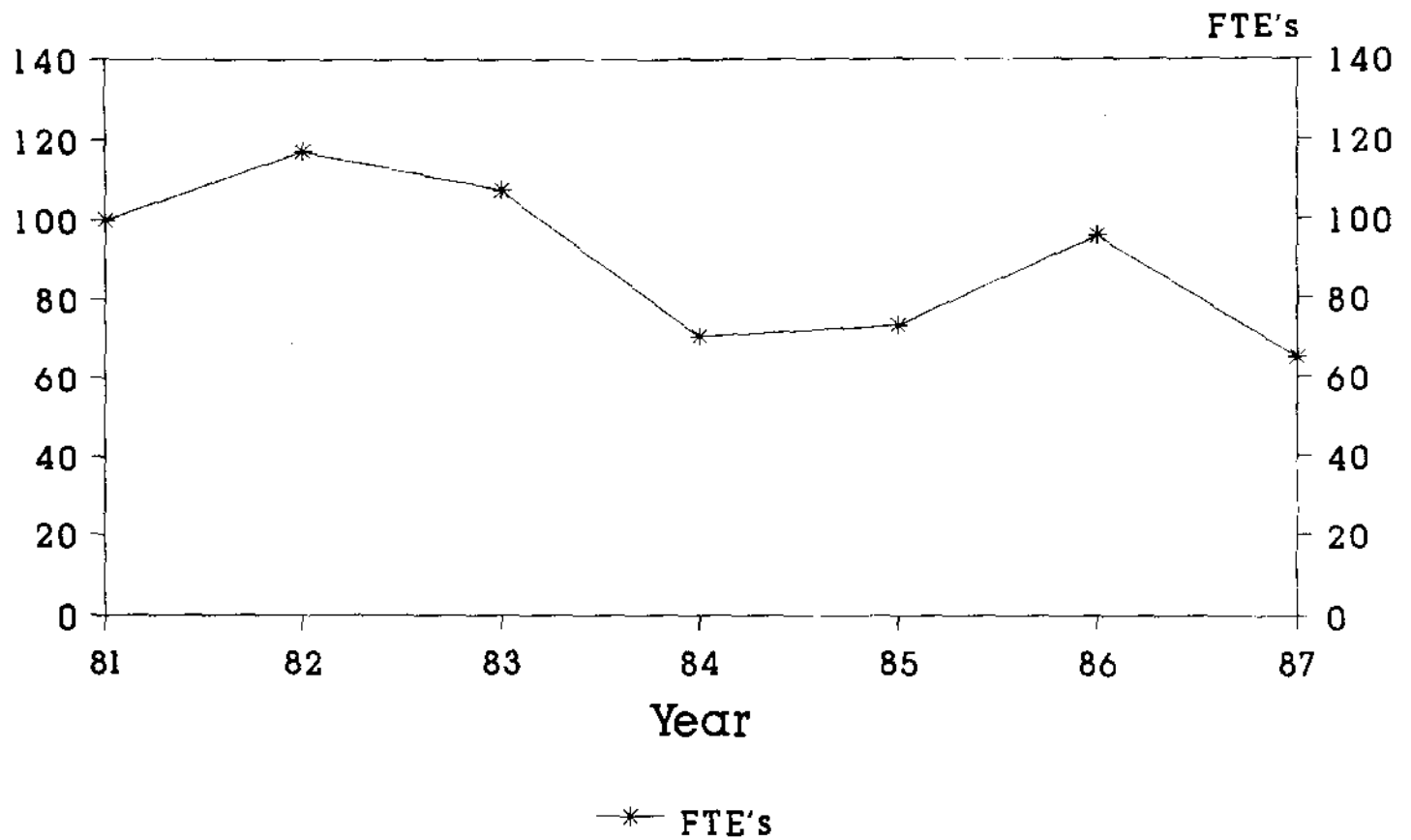


Figure 9.

Maryland Crab Fishing Effort 1981-1987



Assume 125 man-days = 1 FTE

Figure 10.

Maryland Oyster Nominal & Real Value of Landings Index, 1981-1987

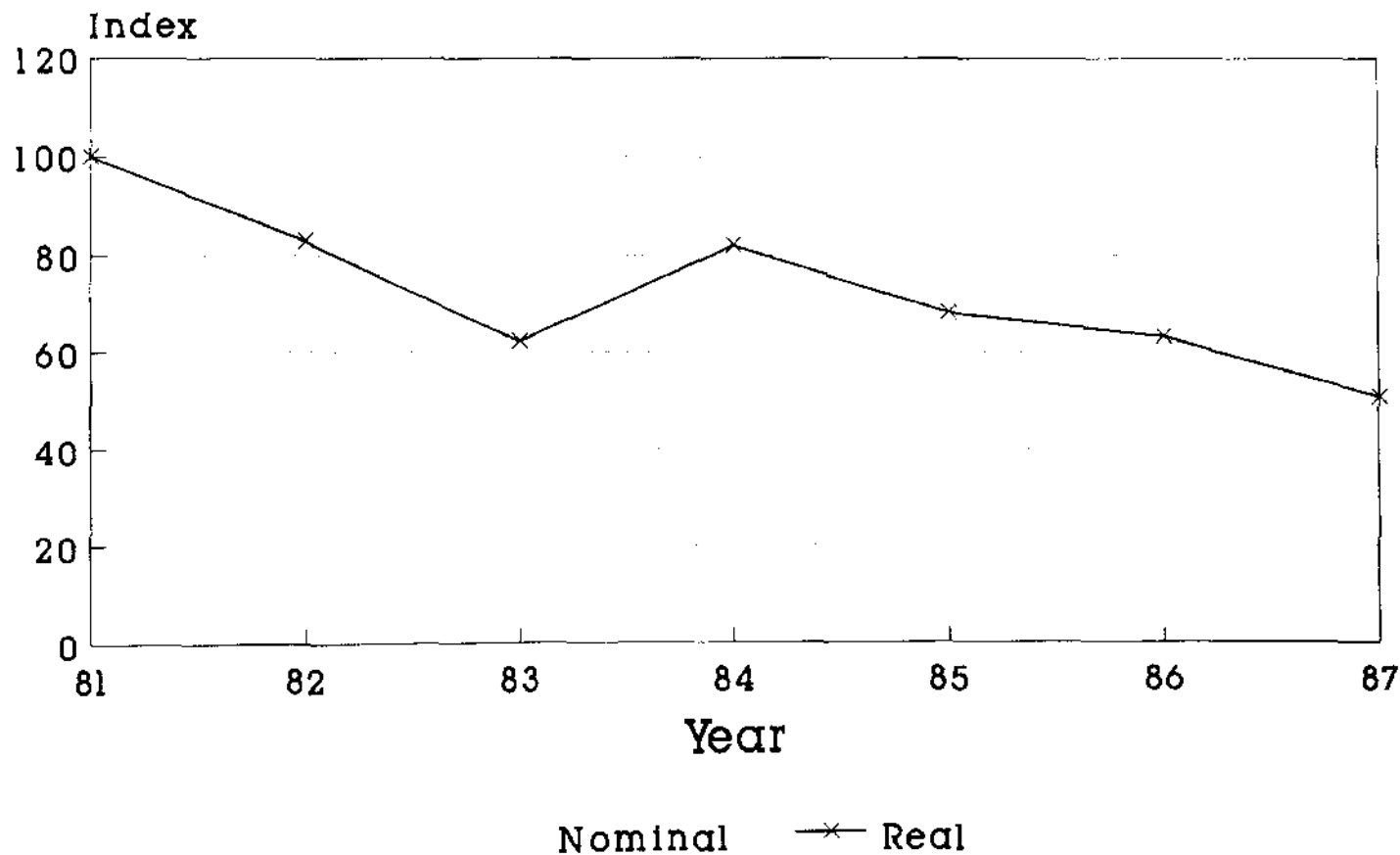


Figure 11.

Maryland Oyster Landings and Productivity Indexes, 1981-1987

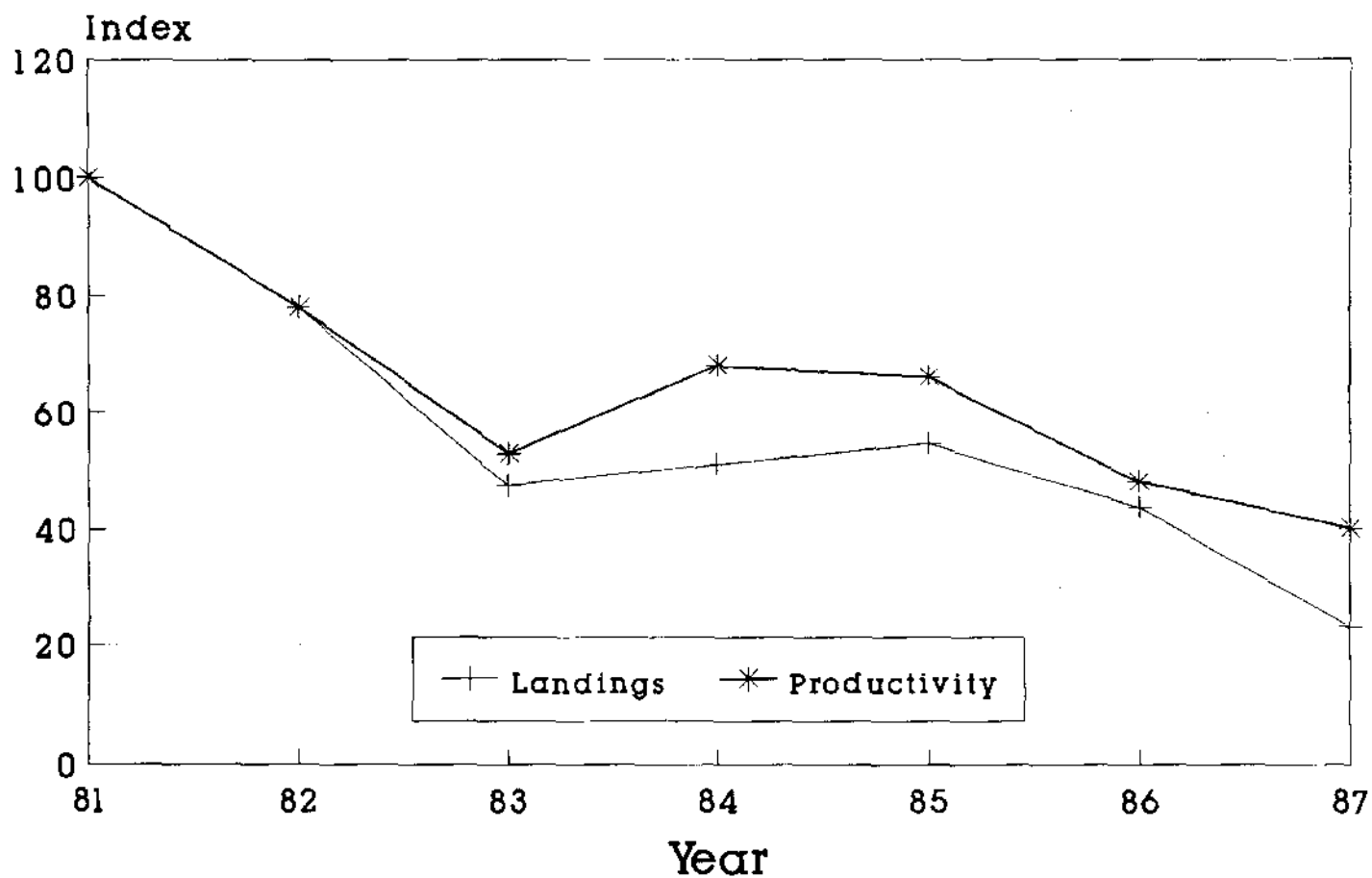


Figure 12.

Maryland Oyster Price/Cost Indexes, 1981-1987

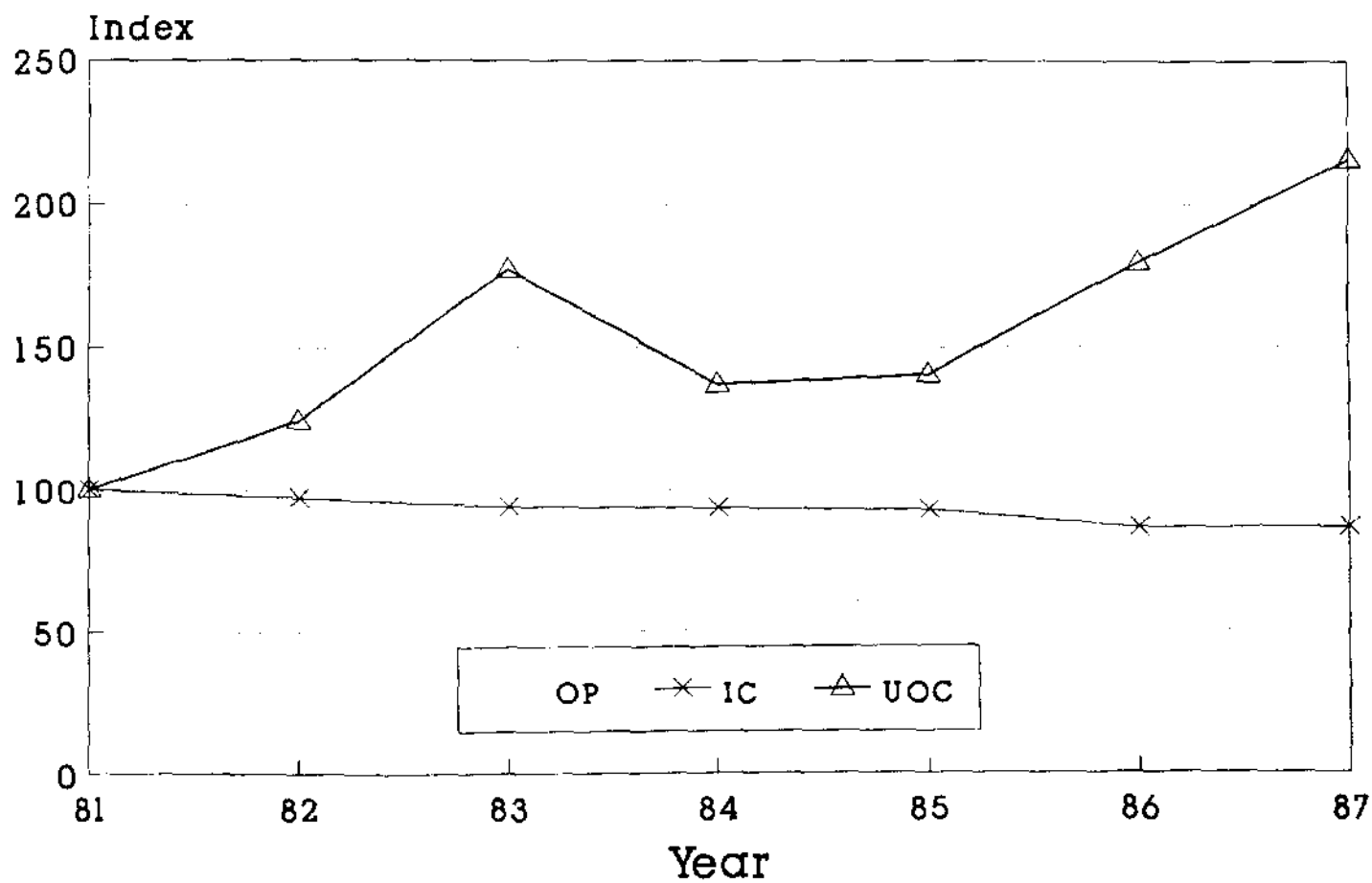


Figure 13.

Watermen's Health Index Maryland Oyster Fishery, 1981-1987

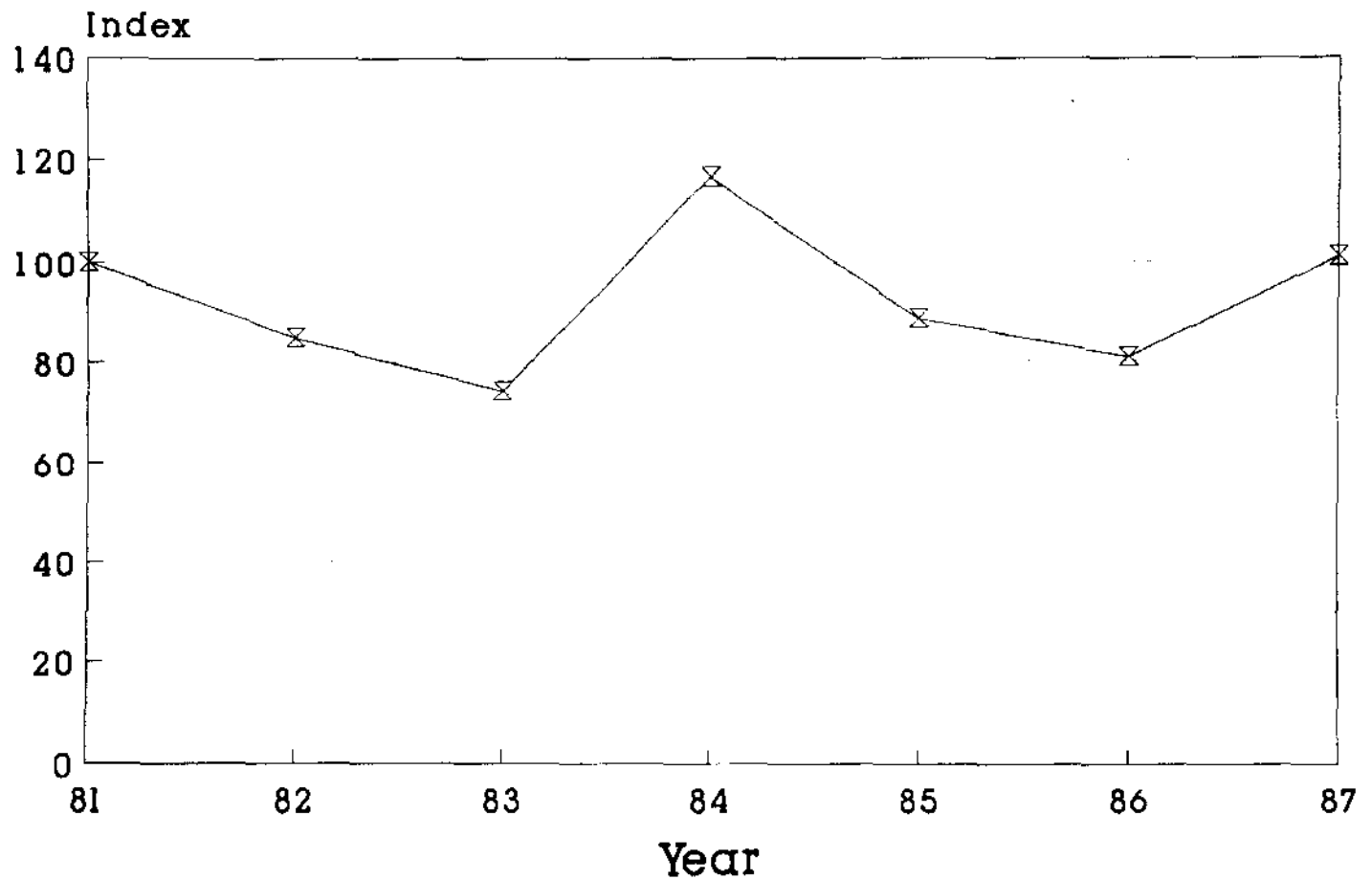
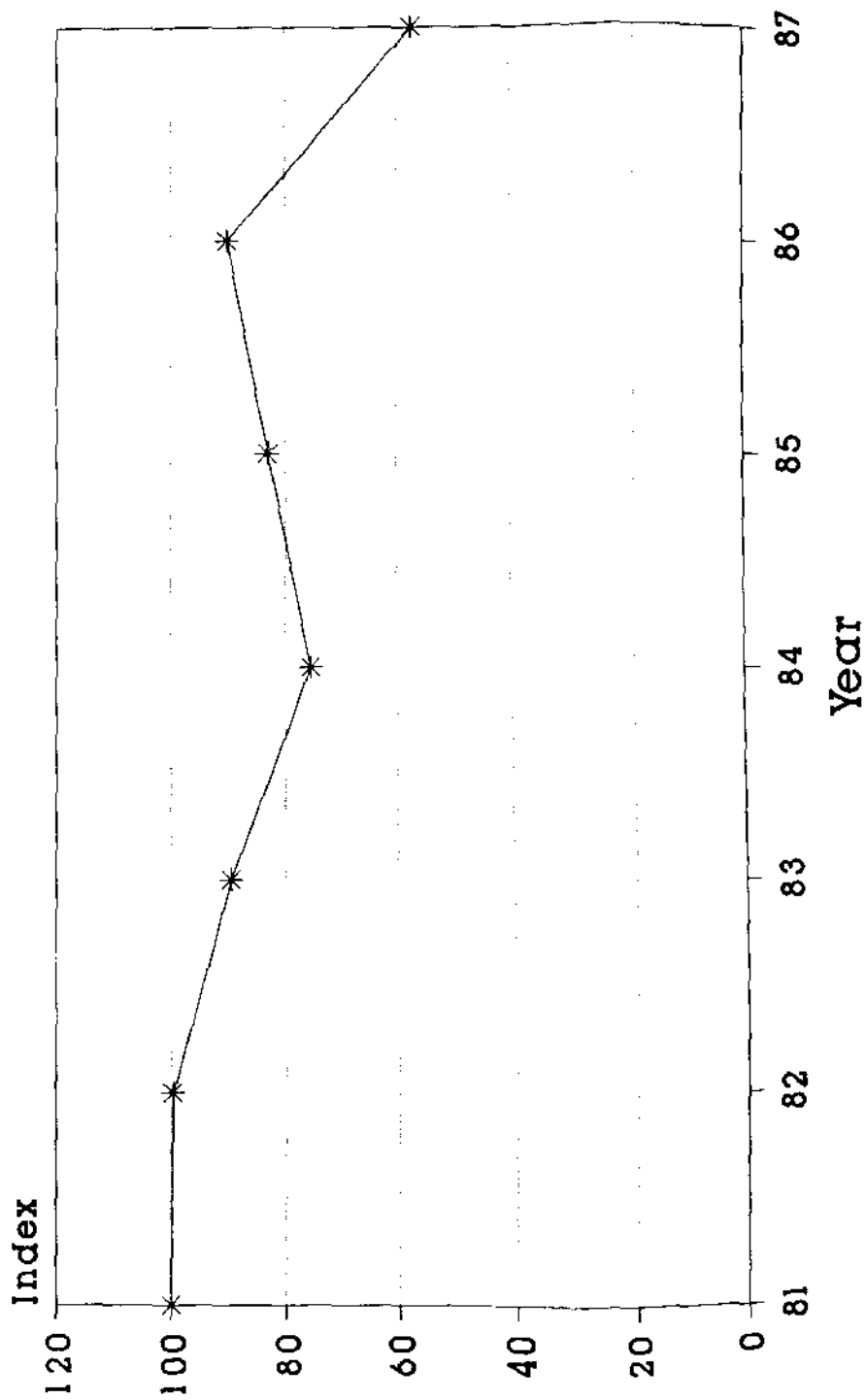


Figure 14.

Maryland Oyster Fishing Effort, 1981-1987



Assume 150 man-days = 1 FTE

Figure 15.

GLOSSARY

Consumer Price Index for Fish and Shellfish. The Bureau of Labor Statistics collects price data on a fixed market basket of fish and shellfish products. The consumer price index is the cost of that market basket in a given year divided by the cost in the base year.

Full-time Equivalent. The number of man-days it is expected that a full-time crabber or oystermen fish in a year. If the full-time equivalent is 120 days, then two watermen each fishing 60 days equal one full-time equivalent.

Input Cost Index. The weighted sum of the cost of inputs used to produce the output, divided by the cost of inputs in the base year, and then multiplied by 100. The weights are determined by the percentage each input contributes to costs in the base year.

Nominal Value. The actual price paid, rather than the real price which is adjusted for inflation. If the price of all goods double, then their nominal value doubles, but the real price remains unchanged.

Output Price Index. The price of the product produced divided by the price in the base year, and then multiplied by 100.

Productivity Index. The total industry harvest is divided by the number of man-days to achieve that harvest. Commonly called catch per unit of effort. It is indexed on the productivity in the base year.

Unit Output Cost Index. The relative cost of producing a unit of output such as a bushel of oysters or crabs. It is calculated by dividing the input cost index by the productivity index.

Watermen's Health Index. This index was developed because actual profit data is not available for oyster and crab watermen. It is calculated by dividing the output price index by the unit output cost index. A value greater than 100 means that profits were greater than in the base year. A value less than 100 means profits have fallen from the base year, but are not necessarily negative.