

Widow Rockfish Fishery

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ABSTRACT

Widow rockfish (*Sebastes entomelas*) was the most important West Coast groundfish species in 1980. Prior to 1978, fishermen sold only limited amounts never exceeding 1,000 MT. This paper predicts that total landings of widow rockfish will expand to 25,000 MT and account for one-fourth of domestic landings by 1983. The possible reason why widow rockfish were not widely sold prior to 1979, why this fishery has developed and what may occur after 1983 are also discussed.

INTRODUCTION

In 1980 widow rockfish (*Sebastes entomelas*) accounted for 20,000 mt or 45 percent of the estimated 44,000 mt of rockfish landed on the West Coast. Widow rockfish in 1980 was the most important commercial groundfish species, with catches amounting to 22 percent of the 90,000 mt total landings. The current importance of the widow rockfish fishery is surprising since landings had never exceeded 1,000 mt prior to 1978. This paper discusses possible reasons for the lack of earlier development, the current rapid development, and the future of widow rockfish.

ROCKFISH FISHERY

Rockfish, *Sebastes* sp. and *Sebastes* sp., have been part of the domestic groundfish fishery off California, Oregon, and Washington since 1876 (Scofield 1948). Domestic and foreign retained catches of rockfish are given in Table 1. Domestic landings from 1962 to 1975 were fairly constant, averaging 9,800 mt, but the fishery started to expand rapidly in 1976 and landings increased to 44,000 mt in 1980. Estimated foreign catches of rockfish were 44,000 mt in 1967. Following this and other large removals in the late 1960's, an agreement was reached between the United States and the Soviet Union, Japan, and Poland. These international agreements prohibited directed foreign fishing for rockfish, and since the enactment of the Fishery Conservation and Management Act of 1976, both regulation and reduction in foreign fishing have resulted in foreign landings below 1,000 mt.

Increases in domestic landings were caused by changes in the market for fresh rockfish, as well as changes in fishing technology. A major market change was the commencement of sales of rockfish fillets to areas other than the West Coast. Changes in fishing technology have been occurring for years and include high rise nets in 1943 (Scofield 1948), roller gear improvements in 1964 (J. Robinson, Ore. Dep. Fish. Wildl., Newport, OR, pers. commun. 1980) and 1970 (Fisher 1972), single-vessel midwater trawl in 1967

Table 1—U.S. and foreign retained catches of rockfish from California, Oregon, and Washington, 1962-80.

Year	Domestic (1000 mt)	Yearly changes (%)	Foreign (1000 mt)	Total (1000 mt)
1962	12.3	—	—	12.3
1963	12.2	+01	—	12.2
1964	11.2	-08	—	11.2
1965	13.4	+20	—	13.4
1966	10.0	-25	—	10.0
1967	7.0	-30	44.0	51.0
1968	7.5	+07	20.0	27.5
1969	8.2	+09	3.0	11.2
1970	7.5	-09	3.0	10.5
1971	7.5	±00	2.0	9.5
1972	9.2	+23	4.0	13.2
1973	10.5	+14	11.0	21.5
1974	9.5	-10	10.0	19.5
1975	11.3	+19	8.0	19.3
1976	15.6	+38	5.0	20.6
1977	18.2	+17	+	18.3
1978	25.5	+40	+	25.6
1979	27.4	+07	1.0	28.4
1980	44.0	+61	1.0	45.0

Source: Anonymous 1980.

(Pereyra and Richards 1970), and advances in electronics which have greatly enhanced detection of fish and precise determination of vessel position.

The expanding rockfish fillet market from 1976 through 1978 stimulated greater landings of traditional rockfish; however, these landings were not sufficient to supply both the old and new markets. This shortfall in supply was a factor in causing the real (deflated) ex-vessel price of rockfish to increase (Table 2). Between 1972 and 1979 the ex-vessel value of rockfish averaged about 32 percent of the total ex-vessel value of the groundfish fishery. The 1980 estimate of the ex-vessel rockfish value accounted for about half of the ex-vessel groundfish fishery value, even though other groundfish landings have also increased. This large increase in rockfish value was due to increases in both landings and ex-vessel prices. The real ex-vessel price had increased about 2 percent per year from \$0.12/kg in 1962 to \$0.21/kg in 1977. In 1978 the real ex-vessel price reached a maximum of \$0.23/kg.

I believe a number of events contributed to the increase in rockfish landings from 1975 through 1978, including:

1. Increases in real ex-vessel rockfish prices from \$0.16/kg in 1975 to \$0.23/kg in 1978 (Fishermen's Marketing Assn., Eureka, CA 95501).
2. Enactment of the Fishery Conservation and Management Act, which many fishermen believed excluded foreign fishing.
3. Increased investments in midwater trawlers built for use in other fisheries but which entered the rockfish fishery.
4. Increased expenses of larger vessels which necessitated greater fishing effort.
5. Expanded markets for fresh rockfish fillets.

However, since 1978 prices have declined to \$0.13/kg in 1980. This was a 43 percent decline in 2 years.

Table 2—Average real and nominal ex-vessel prices for rockfish, and percentage of total ex-vessel value of groundfish attributed to rockfish.

Year	Nominal (¢/kg)	Real (¢/kg)	CPI ¹ 1967 = 100	Total ex-vessel value rockfish/groundfish Percent
1962	11.2	12.3	91.5	n.a.
1963	11.2	12.1	92.9	n.a.
1964	12.3	13.0	94.7	n.a.
1965	12.3	12.8	95.9	n.a.
1966	12.9	13.2	97.1	n.a.
1967	12.9	12.9	100.0	n.a.
1968	12.3	11.8	104.5	n.a.
1969	13.4	12.1	110.2	n.a.
1970	13.4	12.1	110.2	n.a.
1971	14.6	12.5	115.8	n.a.
1972	16.8	13.4	124.3	32
1973	19.0	14.6	131.5	31
1974	25.8	17.7	144.4	30
1975	25.8	16.1	159.1	29
1976	31.4	18.6	168.0	32
1977	38.7	21.3	180.0	37
1978	41.4	22.6	183.0	33
1979	44.8	22.2	210.7	32
1980	33.6	13.4	251.4	49

Source: Anonymous 1980.

¹Consumer Price Index for San Francisco, Bureau of Labor Statistics, U.S. Dep. Labor.

WIDOW ROCKFISH

Yellowtail and canary rockfish (*Sebastes flavidus* and *S. pinniger*, respectively) accounted for most increases in rockfish landings in 1976 and 1977. By 1978, widow rockfish, also called brownies, brown bombers, and soft browns, began being landed in large amounts. Although canary and yellowtail rockfish increases were expansions of previously utilized species, widow rockfish had generally been underutilized.

Substantial domestic utilization of widow rockfish did not occur until 1978 because many processors believed that widow rockfish had several negative characteristics, including:

1. Short shelf life of both fresh and frozen products.
2. Excessive loss of fluid after packaging.
3. Loss of color or a gray color.
4. Unusual smell.
5. Softer flesh than other rockfish.
6. Poor quality of defrosted product.
7. Low fillet yield.

These presupposed characteristics generally kept domestic processors from buying widow rockfish, and prior to 1975 landings were under 1,000 mt. Occasionally during the 1960's, processors did purchase widow rockfish but only in late winter or early spring when inventories of other rockfish were low and demand for rockfish fillets high.

In 1978 a few West Coast fishermen and processors began to experiment with better fishing methods, at-sea preservation, and onshore rapid processing of Pacific whiting. At the same time, fishermen and processors began to use these newly developed techniques to catch, preserve, and process widow rockfish with the result that the widow rockfish did not have the negative characteristics many processors had attributed to this species. Once processors and wholesalers realized widow rockfish were marketable in the retail rockfish market, widow rockfish fillets began to be sold in volume with few complaints about quality.

The increased utilization of widow rockfish in 1978 was stimulated by the strong market for rockfish. A record amount of rockfish was sold, 25,000 mt, even though fishermen received a record real ex-vessel price, \$0.23/kg. Processors also received record real wholesale prices (Table 3) and fillets accounted for 80 percent of the gross revenue from rockfish (Proctor 1980).

DECLINE IN THE ROCKFISH FISHERY

Landings of most rockfish continued to increase in 1979 and 1980, but prices paid to fishermen and processors declined. I believe the price declined because the supply of rockfish exceeded the demand at the 1978 prices, and lower prices were needed to stimulate the sales of rockfish fillets. Lower prices were first reported for frozen rockfish fillets from October 1978 to March 1979. Processors realized that ex-vessel prices would also have to be lowered to enable them to sell increased supplies. Midwater trawl fishermen believed they could make a profit at a lower ex-vessel price, because they would catch large volumes of widow rockfish and maintain their gross revenues without increasing their costs.

By the winter of 1979-80, the wholesale price for fresh fillets had fallen 50 percent from the summer of 1979, and processors imposed trip limits for rockfish, Dover sole, and other species (Anonymous 1980). By the summer of 1980, the real wholesale price in Los Angeles for rockfish fillets was \$0.54/kg, compared

Table 3—Estimated sales of rockfish and Pacific ocean perch (POP)¹ by West Coast processors in 1978.

Product form	Category	Quantity (kg)	Price (\$/kg)	Real price (1967) (\$/kg)	Round weight (kg)	Conversion ² factors (%)	Processors' 1978 gross revenue (\$)
Fresh whole fish	Rockfish	1,849,633	0.74	0.37	1,849,633	0	1,368,728
	POP	139,835	1.01	0.50	139,835	0	141,233
Fresh fillets	Rockfish	4,835,973	2.62	1.31	17,271,332	28	12,670,249
	POP	1,631,446	2.82	1.41	6,525,784	25	4,600,678
Frozen fillets	Rockfish	224,469	2.82	1.41	801,675	28	502,810
	POP	129,213	2.71	1.36	516,852	25	350,167
Unspecified product	Rockfish	336,044	5.00 ³	2.50	1,680,220	20	1,680,220
	POP	31,768	2.60	1.30	127,072	25	82,596
Total		9,178,381			28,912,403		21,396,681
Actual Commercial Landing					27,557,500 ⁴		

Source: Proctor (1980). West Coast summaries of common product forms for Dungeness crab, pink shrimp and West Coast groundfish. Pacific Fishery Management Council. Portland, OR.

¹POP is separated here because of price difference with other rockfish.

²Estimated by author after discussion with processors.

³Possibly individually-wrapped portions.

⁴Anonymous 1980.

with the 1978 high of \$1.63/kg. In the fall of 1980 the wholesale price for rockfish fillets stabilized at about \$0.77/kg. Processors, however, could not make a profit at this price while paying fishermen at the contracted ex-vessel price of \$0.18/kg. The inability of processors to make a profit is because of the costs associated with factoring fillets. The fillet factoring costs are presented in Table 4 as a general guide to show how ex-vessel prices may affect the processors' selling price.

In 1980 the contracted real ex-vessel price for trawl-caught rockfish was \$0.18/kg. Processors needed either to restrict supply and sell at higher wholesale prices, or lower the ex-vessel price. Although some processors restricted landings of rockfish, most lowered the ex-vessel price and by October 1980 the real ex-vessel price for widow rockfish ranged from \$0.08 to \$0.13/kg. Some Oregon buyers were reported to have paid \$0.06/kg, and rumors were everywhere about still lower ex-vessel prices.

One factor contributing to the decline in ex-vessel price was that processors stopped freezing rockfish. Processors sold most rockfish fresh, because wholesale prices for frozen fillets were close to fresh fillet prices, and freezing and inventory costs added substantially to their total processing costs. Inventory costs were high because the prime interest rate was 20 percent.

Another factor thought to have contributed to the lower rockfish price is the higher risk associated with freezing and defrosting widow rockfish fillets. Whereas retailers can successfully freeze surpluses of other types of rockfish, widow rockfish fillets tend to lose quality when defrosted. Hence, retailers consider surpluses of fresh widow rockfish to be a total loss. The poor quality of defrosted widow rockfish fillets could be detrimental to the entire rockfish market if widow rockfish are not specifically labeled as such.

By December 1980, a market equilibrium appeared to exist for widow rockfish among fishermen, processors, wholesalers, and retailers at the real ex-vessel price of \$0.13/kg. This ex-vessel price is only one factor in the market equilibrium for widow rockfish fillets. Another important factor is the widow rockfish fillet yield, which is reported to be greater than or equal to other rockfish fillet yields. This yield is between 26 and 34 percent. Therefore, the raw material cost of producing widow rockfish fillets is generally less than that for producing an equal weight of other rockfish fillets.

Table 4—Comparisons of the estimated costs of producing one kilogram of rockfish fillets at five ex-vessel prices, two product yields, and a fixed 15 percent cost for profit and overhead.

	Ex-vessel price (¢/kg)									
	6		10		12		15		20	
Product Yield (%)	26	34	26	34	26	34	26	34	26	34
a) Raw material cost (¢/kg)	23	18	38	29	46	35	58	44	77	59
b) Filletting costs (¢/kg)	13	13	13	13	13	13	13	13	13	13
c) Packing costs (¢/kg)	37	37	37	37	37	37	37	37	37	37
d) 15% of a,b,c. for overhead (¢/kg)	11	10	13	12	14	13	16	14	19	16
Total cost/fillet (¢/kg)	84	80	101	93	110	98	124	108	146	125
Profit margin of 15% (¢/kg)	13	12	15	14	17	15	19	16	22	19
Processor selling price (¢/kg)	97	92	116	107	127	113	143	124	168	144

FUTURE OF THE WIDOW ROCKFISH FISHERY

I have presented some data from 1962 to 1980; now I will make some estimates of the widow rockfish fishery in the future. I believe that widow rockfish landings of 25,000 mt are likely by 1983. This estimate is based on the continued growth of the fishery and market, and is contingent on the size of the widow rockfish stocks, fish age-class structure within the stocks, and stock availability which allows fishermen the opportunity to catch them. Also, in the future new freezing techniques may allow widow rockfish fillets to be IQF (individually quick frozen), shatterpacked, or made into blocks. If the ability to freeze large landings of widows can be coupled with machine filleting and packing, widow rockfish could become competitive with similar frozen products. Already, one processor in

California and one in Washington have been selling frozen widow rockfish fillets and report no complaints.

The increases in landings predicted above may not be reached unless industry guards against the marketing of even a limited amount of poor quality widow rockfish fillets. Small amounts of poor quality widow rockfish fillets could affect the entire rockfish market. If industry does not differentiate widow rockfish from other rockfish, jobbers, brokers, and retailers will have no way of knowing the shelf life of the rockfish product they buy, or if the product can be frozen. A retailer buying widow rockfish fillets under the label rockfish, rock cod, red snapper, Pacific red snapper, or Pacific snapper may freeze them unknowingly and end up with an inferior and possibly unsalable product when the fish is defrosted. Many industry persons also feel widow rockfish should be differentiated, and some do sell fillets at prices lower than other rockfish fillets. This price difference will reflect the lower ex-vessel price, higher yield of fillets, and the increased risk the retailer may be taking because of not being able to freeze surplus.

Other conditions which may retard the development of the widow rockfish fishery are:

1. Greater profitability in other fisheries.
2. Government restrictions.
3. Labor resistance to automation.
4. Social pressure within the fishing community which discourages widow rockfish fishing.

Even with all these possible negative factors, widow rockfish is sure to be the major species caught and processed by the West Coast groundfish industry in the near future, and widow rockfish products will be of good quality and relatively inexpensive to the consumer.

CITATIONS

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POSTSCRIPT

Landings of widow rockfish have exceeded my prediction of 25,000 mt per year as early as 1981, when 28,000 mt were landed. In 1982, 26,000 mt is estimated to have been landed. These large catches of widow rockfish exceed the maximum sustainable yield of the widow rockfish stocks (Anonymous 1982). In 1983 a total allowable catch of 10,500 mt and a trip limit have been established. The real ex-vessel price of widow rockfish for 1983 is contracted at \$0.15/kg, which is roughly its mode price over the last 20 years. With these restrictions, many of the fishermen who relied on widow rockfish will have to fish for other groundfish off California, Oregon, Washington, and Alaska.