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1978 OREGON SHRIMP FISHERY

by
Jerry Lukas

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Oregon pink shrimp (*Pandalus jordani*) landings in 1978 were a record 56,997,105 pounds (25,840 mt) over 8 million pounds (17%) more than was landed in 1977, the previous record year (Figure 1, Table 1). Increased effort was probably the main contributing factor to the record landings. A total of 186 vessels landed shrimp in Oregon, up from the 100 that made landings in 1977. Other factors were the continued strong market demand, favorable weather and high abundance and/or availability of shrimp from the Siuslaw River south to Cape Blanco during the first four months of the season and also off Brookings during most of the season (April 1-October 15).

The ex-vessel price for shrimp was 26 cents per pound from April through August. The price was raised to 28 cents at the end of August, following a short four-day tie-up, and held there through the end of the season. Shrimp fishermen were paid 23 cents per pound for the product in 1977.

The increased shrimp production from the south-central and southern Oregon areas resulted in record landings at three Oregon ports (Table 1). The most notable increase was at Brookings where 6.7 million pounds (3,050 mt) were landed, over four times more than the previous high of 1.6 million pounds landed in 1972. All of this shrimp was trucked to other areas for processing as there were no shrimp peeler machines at Brookings.

The number of processors and peeler machines also increased in 1978. There were 26 processors buying shrimp at 38 buying stations and they used 67 shrimp processing machines. Last year there were 50 machines in the state.

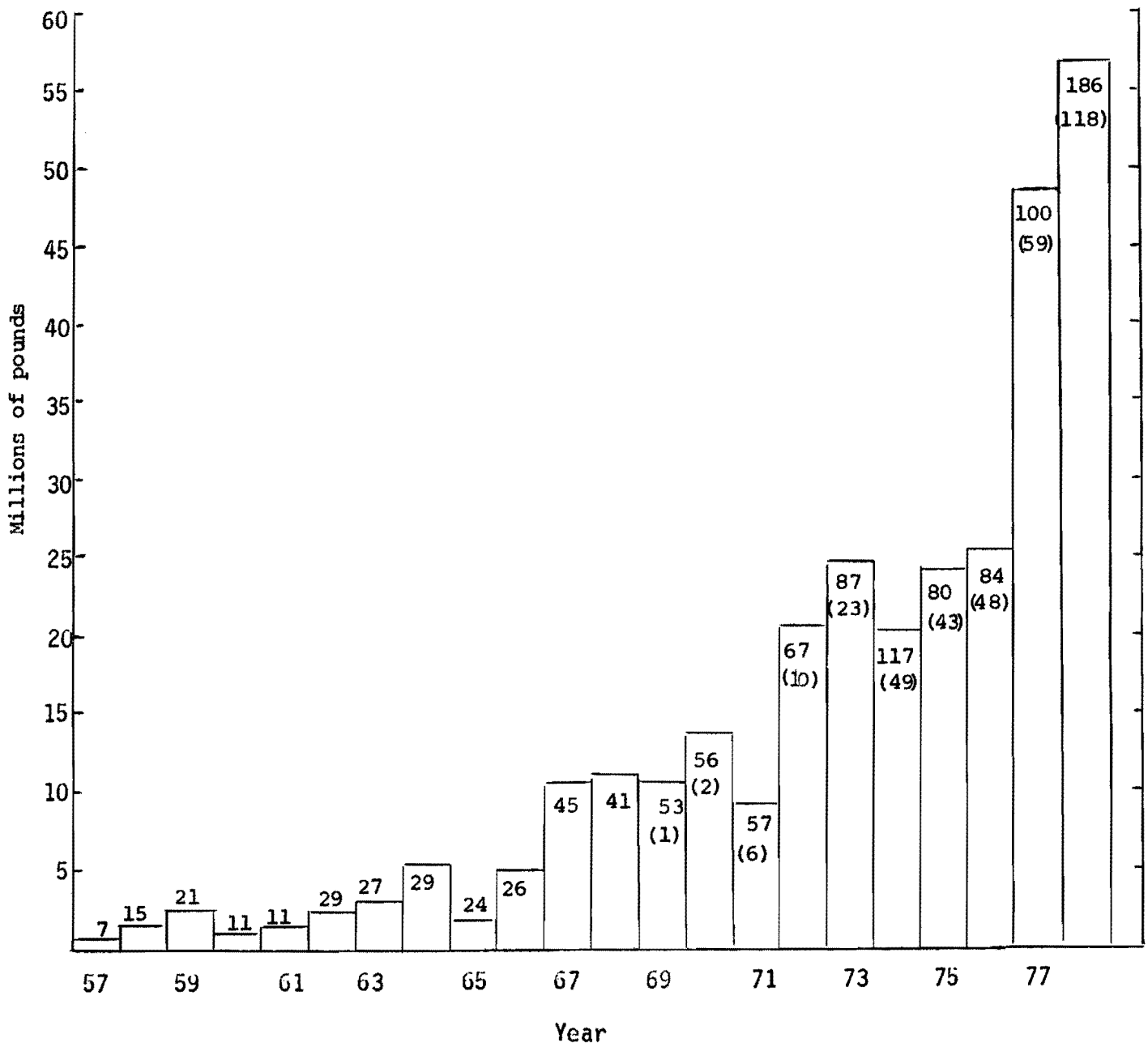


Figure 1. Annual Oregon shrimp landings and number of shrimp boats, number of double-rigged boats in parenthesis and included in total.

The three Oregon ports that had record landings also had the largest increases in their shrimp fleets (Table 2). The small port of Brookings experienced the most startling increase in fishery activity. Not only did the home port fleet increase by 13 vessels, but it also had the largest number of out-of-state vessels (primarily California boats) taking advantage of the excellent shrimp fishing off southern Oregon. Coos Bay was visited by the largest number of shrimp vessels in the state as a result of the intense fishery in the Coos Bay-Bandon grounds.

Table 2. Number of vessels delivering shrimp by port, 1977-78.

Port	1977				1978			
	Home Port	Oregon ^{1/} Transient	Out-of State	Total	Home Port	Oregon Transient	Out-of State	Total
Astoria	20	13	4	37	26	4	9	39
Garibaldi	12	3	-	15	14	2	-	16
Newport	23	15	1	39	39	18	4	61
Winchester Bay	6	1	-	7	6	1	-	7
Coos Bay	27	5	1	33	37	31	24	92
Bandon	-	-	-	-	-	1	-	1
Port Orford	2	-	-	2	1	1	-	2
Brookings	3	-	1	4	16	11	31	58
Total Oregon	93				139			
Out-of-State:								
California	4				30			
Washington	3				17			
Total Vessels Delivering to Oregon ports	100				186			

^{1/} Oregon vessels who delivered to ports other than their home port.

Oregon was the only state that had record landings in 1978 (Table 3). Both Washington and California, while not exceeding their record 1977 landings, ended the year with landings that were the second best on record. Alaska's 1978 landings were down approximately 40% from the previous year and for the first time in twenty years were less than the combined landings of Washington, Oregon and California.

Throughout the shrimp season production was generally poor north of Newport, amounting to only 15 percent of total state landings. The remaining 85 percent came from the southern Oregon shrimp grounds where fishing was very good in nearly all areas. However catch rates progressively declined through the season. In recent years annual landings from areas north and south of Newport have tended to average near a 50:50 ratio plus or minus 10 percent. Total Oregon landings in April, the first month of the season, were a record 10.3 (4,690 mt) million pounds (Table 4). Monthly production increased in May and June peaking at 12.8 million pounds (5,790 mt). After June monthly landings steadily declined as shrimp became less abundant.

Table 3. Annual landings of shrimp by state, province and entire Pacific coast, 1968-1978 (in thousands of pounds; primarily *Pandalus* sp.) Source: PMFC Crab and Shrimp Data Series.

Year	Alaska	Br. Columbia	Washington	Oregon	California	Total
1968	42,023	1,566	1,164	10,976	2,270	57,999
1969	47,851	2,119	1,425	10,505	2,948	64,848
1970	74,256	1,538	926	13,735	4,048	94,503
1971	94,891	735	678	9,291	3,081	108,676
1972	83,830	794	1,582	20,861	2,434	109,501
1973	119,964	1,729	5,271	24,517	1,240	152,720
1974	108,275	2,644	9,325	19,968	2,338	142,550
1975	98,535	1,728	10,167	23,893	4,993	139,316
1976	129,011	7,723	9,261	25,392	3,400	174,787
1977	116,891	6,176	11,803	48,580	15,640	199,090
1978 ^{1/}	73,000	2,500	11,600	56,997	13,167	157,264

^{1/} Preliminary data except for Oregon.

The average catch rate (CPUE) for double rig vessels during April was a record 2,035 pounds per hour. However, CPUE declined steadily the rest of the season and averaged 527 pounds per hour in October (Table 4). The best catch rates were recorded from the southern Oregon shrimp fishery. The season average of 879 pounds per hour for double rig and 621 pounds per hour for single rig vessels was down from the 1977 average of 1,062 and 865 pounds per hour for double and single-rig vessels, respectively.

Figure 2 depicts the borders of the state areas listed in Table 4. It also shows the 1977 and 1978 Oregon landings for comparison.

No effort took place off Vancouver Island in 1978. This area was closed to United States fishermen in 1977 and reopening in 1978 was contingent upon the outcome of the fishery negotiations between the U.S. and Canada; however, no agreement was reached during 1978, and no U.S. fishery was permitted.

Oregon shrimp vessels fishing off Washington landed 4.7 million pounds (2,100 mt) from that area, down 40 percent from the record 8.0 million pounds caught by Oregon boats in 1977 (Figure 2). The catch from the Destruction Island grounds (area 32) was up from 1977 but did not quite approach the record 2.5 million pounds caught in 1974 (Table 5). There was a substantial catch decline in areas 29 and 30. Average seasonal catch per effort by double-rig vessels in area 32 was only 691 pounds per hour and that was the highest average CPUE in three Washington areas for Oregon boats (Table 4). As with most areas along the coast, catch rate was highest during the first two months of the season but declined as the season progressed. Market sample data showed a very good grade during the season (Table 6). The 1975 year class (age III) continued to be a major contributor during the season, as it was (as age II) in 1977. Some four year old shrimp may also have been present but it is difficult to separate, with confidence, age IV+ shrimp from younger ages because length ranges merge too much.

The 1976 year class (age II) showed weakly in 1978. However, the 1977 year

Table 4. Oregon 1978 monthly shrimp catch in thousands of pounds and catch-per-effort by statistical area for single and double-rigged vessels.

State Area		April	May	June	July	Aug.	Sept.	Oct.	Total
32	C	43.4	628.4	782.3	815.3	82.6	-	1.9	2,353.8
	C/E ₁ ^{1/}	467	907	435	483	-	-	-	562
	C/E ₂ ^{2/}	639	1,133	621	643	382	-	138	691
30	C	336.9	516.2	358.5	698.3	281.9	103.1	30.8	2,325.8
	C/E ₁	741	535	602	-	502	336	-	569
	C/E ₂	989	834	506	602	371	404	359	585
29	C	41.9	2.6	-	5.0	-	28.8	-	78.4
	C/E ₁	188	0	-	128	-	-	-	173
	C/E ₂	510	163	-	194	-	170	-	248
28	C	53.9	65.7	411.5	63.1	185.0	2.5	0.8	782.5
	C/E ₁	342	126	536	502	-	-	-	408
	C/E ₂	606	467	570	423	399	146	83	490
26	C	449.8	434.5	597.6	707.6	260.2	25.5	3.2	2,478.4
	C/E ₁	514	344	252	381	262	-	-	360
	C/E ₂	707	563	433	435	344	234	-	461
24	C	26.0	17.1	45.2	13.0	205.6	19.1	24.1	350.2
	C/E ₁	-	610	177	-	-	-	-	256
	C/E ₂	536	134	403	308	473	221	645	420
22	C	6,818.9	4,941.6	1,372.3	2,090.8	2,508.0	3,001.0	294.0	21,026.4
	C/E ₁	865	662	345	499	401	377	248	515
	C/E ₂	2,454	1,104	638	721	630	500	415	927
21	C	1,607.5	3,470.9	7,705.6	5,476.8	1,422.4	513.1	124.7	20,321.0
	C/E ₁	1,510	1,094	702	766	448	317	272	782
	C/E ₂	3,089	1,717	1,122	961	697	514	534	1,085
20	C	-	-	1.4	53.9	285.2	-	12.5	353.0
	C/E ₁	-	-	180	202	626	-	-	507
	C/E ₂	-	-	-	542	845	-	713	769
19	C	969.4	1,061.4	1,423.5	842.8	782.9	689.9	105.2	5,875.0
	C/E ₁	1,001	1,118	582	612	485	396	160	684
	C/E ₂	1,616	1,909	1,131	1,475	888	714	895	1,112
18	C	-	205.7	65.1	67.3	256.2	258.9	199.4	1,052.6
	C/E ₁	-	548	438	855	502	272	116	447
	C/E ₂	-	2,033	694	1,062	824	675	718	855
Total	C	10,347.7	11,344.0	12,763.0	10,833.9	6,270.0	4,642.1	796.5	56,997.1
	C/E ₁	968	819	628	593	438	365	221	621
	C/E ₂	2,035	1,118	860	780	604	511	527	879

^{1/} C/E₁ Average catch in pounds per hour of effort for single-rig vessels.
^{2/} C/E₂ Average catch in pounds per hour of effort for double-rig vessels.

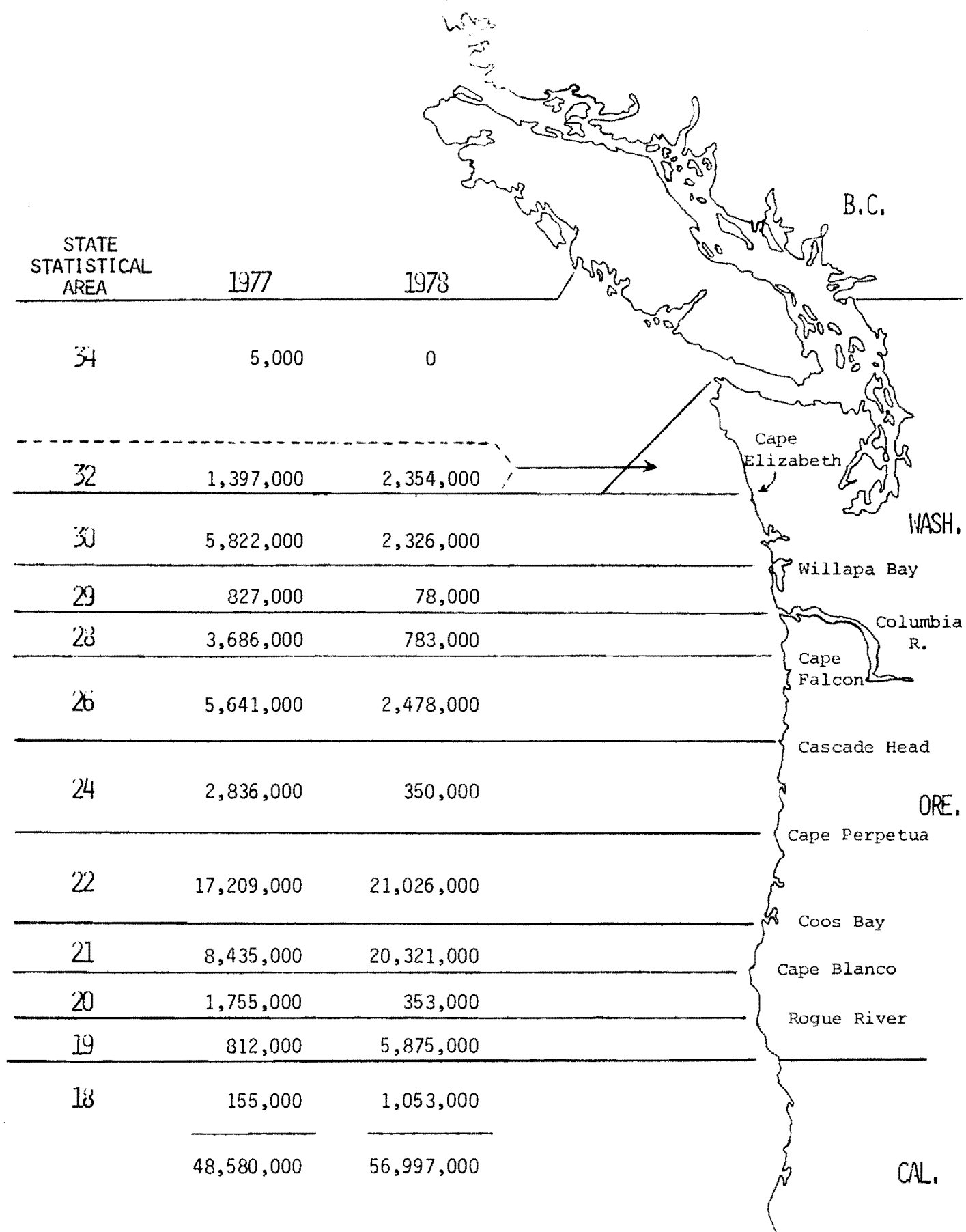


Figure 2. Oregon 1977 and 1978 shrimp landings, in pounds, by state statistical area.

Table 5. Annual Oregon shrimp landings in thousands of pounds and catch-per effort by statistical area for single and double-rigged vessels, 1968-1978.

Year	Area of Catch											
	34	32	30	29	28	26	24	22	21	20	19	18
1968 C		0	25.2	<u>3/</u>	1,771.6	2,660.8	325.9	4,062.8	238.9	1,302.7	307.2	281.2
C/E		-	494		792	635	556	580	636	1,087	554	895
1969 C		166.4	1,067.4	<u>3/</u>	1,220.0	3,852.1	251.1	3,666.9	159.4	2.1	15.0	140.4
C/E		792	690		662	567	430	431	398	58	157	551
1970 C		475.2	787.1	<u>3/</u>	601.3	2,915.8	2,207.6	4,686.9	199.7	1,550.4	141.9	168.0
C/E		775	539		497	560	675	565	494	1,228	443	740
1971 C		9.8	461.5	<u>3/</u>	430.2	5,575.9	<u>4/</u>	1,534.4	<u>5/</u>	656.0	576.0	46.7
C ₂ ^{1/}		1.9	190.2		337.0	1,762.1		0		0	0	0
C/E ₂		416	497		368	465		357		879	472	341
C/E ₂		552	902		926	720		-		-	-	-
1972 C		0	1,553.6	<u>3/</u>	14.0	9,295.8	<u>4/</u>	7,011.3	<u>5/</u>	1,344.9	1,454.6	187.0
C ₂		0	606.7		0	4,381.0		400.4		0	0	0
C/E ₁		-	933		469	671		632		975	677	727
C/E ₂		-	1,253			1,001		1,213		-	-	-
1973 C		1,829.3	113.9	<u>3/</u>	105.9	8,665.9	<u>4/</u>	10,757.4	<u>5/</u>	2,240.7	802.3	0.9
C ₂		84.4	35.8		40.3	5,947.8		3,228.6		38.8	89.1	-
C/E ₁		722	383		489	617		627		1,098	549	132
C/E ₂		356	702		1,061	795		778		2,589	810	0
1974 C	893.2	2,526.3	2,936.0	642.5	626.0	5,366.6	<u>4/</u>	5,661.5	<u>5/</u>	1,038.2	251.8	25.6
C ₂	838.6	1,983.1	2,271.4	359.6	479.4	3,607.4		2,888.2		392.3	41.6	18.8
C/E ₁	872	746	592	624	639	362		355		565	213	171
C/E ₂	1,248	1,182	726	677	846	550		563		1,261	633	692
1975 C	1.9	259.9	2,630.4	1,350.1	734.0	4,936.9	2,780.4	9,502.4	927.0	754.1	14.8	0.6
C ₂	1.9	218.8	2,224.9	142.0	617.3	3,891.7	2,076.6	6,043.1	463.0	246.5	14.8	0
C/E ₁	-	556	827	551	590	608	603	731	903	654	-	158
C/E ₂	97	753	931	717	808	757	813	1,180	1,352	1,500	388	-

Table 5. Continued.

Year	Area of Catch											
	34	32	30	29	28	26	24	22	21	20	19	18
1976 C	1,466.2	108.8	1,728.4	955.1	986.7	7,236.8	3,311.7	6,752.1	1,674.0	704.9	105.5	361.6
C ₂	1,120.3	92.2	1,358.0	665.1	727.3	6,459.1	2,899.1	4,491.3	538.5	254.8	81.7	227.1
C/E ₁	1,462	551	702	544	628	433	374	595	724	690	383	526
C/E ₂	1,394	594	745	542	730	653	582	800	875	963	829	993
1977 C	5.1	1,396.6	5,822.4	827.0	3,686.2	5,641.1	2,836.0	17,208.7	8,435.1	1,755.1	811.9	155.0
C ₂	5.1	1,196.5	5,239.9	587.3	2,870.3	4,649.2	2,639.1	12,601.1	4,844.4	571.0	307.0	126.1
C/E ₁	-	1,045	922	465	695	582	437	786	1,120	1,424	1,585	4,012
C/E ₂	565	1,170	1,052	751	886	751	790	1,232	1,526	1,920	1,424	1,836
1978 C	-	2,353.8	2,325.8	78.4	782.5	2,478.4	350.2	21,026.4	20,321.0	353.0	5,875.0	1,052.6
C ₂	-	2,154.0	2,090.0	70.5	748.2	2,027.8	325.7	18,024.8	16,021.0	306.8	3,213.0	889.4
C/E ₁	-	562	569	173	408	360	256	515	782	507	684	447
C/E ₂	-	691	585	240	490	461	420	927	1,085	769	1,112	855

^{1/} C₂ is landed catch by double-rig vessels; included in C, all columns.

^{2/} C/E₁ = catch per hour by single-rig vessels; C/E₂ = catch per hour by double-rig vessels.

^{3/} Area 29 included with area 30 data.

^{4/} Area 24 included with area 26 data.

^{5/} Area 21 included with area 22 data.

class (age I) appeared to be strong and most likely will be the dominant year class in the 1979 fishery. However, the biomass of this age group is unknown now.

Table 6. Count per pound and age composition (by number of shrimp) in areas 29, 30 and 32 (Washington coast) as summarized from monthly market samples.

Month	Number Sampled	Shrimp per pound	Age composition, in percent, by number		
			I	II	III+
April	942	108	2.3	18.3	79.4
May	1,081	111	20.7	29.0	50.3
June	634	101	21.6	41.3	37.1
July	602	100	31.1	25.2	43.7
August	713	99	35.5	25.2	39.3
September	563	92	41.2	14.4	44.4
October	110	129	66.4	20.0	13.6

Shrimp landings from northern Oregon (state areas 24, 26 and 28) totaled 3.6 million pounds (1,600 mt) down 70 percent from 1977 (Figure 2) and the lowest they have been since 1966. Average CPUE levels were the lowest of any area along the coast with the exception of Area 29, just north of the Columbia River (Table 4).

Market samples indicated the grade was very good during April through June, primarily because over 50 percent were three-year old shrimp (Table 7). July and August samples were too small to evaluate and we were unable to obtain any in September and October. Therefore the status of the 1977 year-class is unknown. The poor catch rates during the last few months of the season are not encouraging and overall biomass in northern Oregon may be down again in 1979.

Table 7. Count per pound and age composition (by number of shrimp) in areas 24, 26 and 28 (northern Oregon) as summarized from monthly market samples.

Month	Number Sampled	Shrimp per pound	Age composition, in percent, by number		
			I	II	III+
April	546	84	29.7	15.9	54.4
May	590	81	23.5	21.0	55.5
June	430	78	17.0	22.1	60.9
July	201	101	52.3	15.4	32.3
August	198	75	18.2	35.4	46.4
September	No samples		-	-	-
October	No samples		-	-	-

By far the greatest shrimp production in Oregon occurred from Cape Perpetua to Cape Blanco (state areas 21 and 22). Over 70 percent of Oregon's total 1978

shrimp landings came from this area. Landings from area 22 were a record 21.0 million pounds (9,500 mt), up 3.8 million pounds from 1977. Area 21 landings were also a record 20.3 million pounds (9,200 mt) more than double the previous record of 8.4 million pounds set in 1977 (Figure 2). This area was heavily fished during 1978 with effort being expended by vessels from as far north as Washington. Over 26 percent of Astoria landings, nearly 23 percent of Garibaldi landings and 98 percent of Newport landings came from areas 21 and 22.

Average CPUE rates for double-rig vessels were very high during April in area 21 and 22. Area 22 catch rates declined rapidly after the first month but the intense pressure of the fishery continued (Table 4). Catch per effort in area 21 also began at a high level but did not decline as rapidly as the season progressed; however, by August, catch rates were below average and in September and October ranged from 514 to 534 pounds per hour.

The 1977 year class (age I) was the main contributor to the fishery in areas 21 and 22 during all months except May (Tables 8 and 9). Two and three year old shrimp were about equal in numbers in both areas. From market sample data, it appears that the 1976 year class (age II) was weak and probably will not be very abundant in 1979. The 1977 year class (age I) will provide the bulk of 1979 landings as two year old shrimp in 1979; however, it is unknown how abundant this year class will be.

Table 8. Count per pound and age composition (by number of shrimp) in area 22 (Cape Perpetua to Coos Bay) as summarized from monthly market samples.

Month	Number Sampled	Shrimp per pound	Age composition, in percent, by number		
			I	II	III+
April	1,437	112	36.0	32.0	32.0
May	719	99	26.1	28.0	45.9
June	304	112	41.1	26.3	32.6
July	200	103	46.0	26.0	28.0
August	817	96	48.5	22.9	28.6
September	748	113	68.9	17.5	13.6
October	1,210	91	56.6	19.0	24.4

Table 9. Count per pound and age composition (by number of shrimp) in area 21 (Coos Bay to Cape Blanco) as summarized from monthly market samples.

Month	Number Sampled	Shrimp per pound	Age composition, in percent, by number		
			I	II	III+
April	723	157	59.6	22.8	17.6
May	423	100	17.2	41.6	41.2
June	616	123	51.2	25.6	23.2
July	419	112	42.2	27.7	30.1
August	203	115	58.1	22.7	19.2
September	459	93	50.3	21.1	28.6
October	694	125	78.7	13.2	8.1

Shrimp landings from the Port Orford grounds (area 20) were down 80 percent from 1977 and were the lowest they have been since 1965 (Figure 2, Table 5). August was the only month when there was a good sign of shrimp.

The most spectacular increase in landings was from area 19 where a record 5.9 million pounds (2,700 mt) were caught, four times the previous record of 1.5 million pounds set in 1972 (Figure 2, Table 5). Oregon boats also caught 1.1 million pounds (480 mt) in area 18 off California. These shrimp (in areas 18 and 19 are considered to be one contiguous group or stock of shrimp that overlap the California-Oregon boundary. The mean 1978 catch rate of 1,112 pounds per hour for double-rig vessels was the highest of any area for Oregon boats along the coast. Some decline was noted during the season but the monthly averages remained high, ranging from 714 to 1,909 lbs per hour (Table 4).

Market sample data showed that during the first three months of the season two and three year old shrimp constituted the largest portion of the catch (Table 10), but by July, as one year old shrimp (1977 year class), became more vulnerable to the fishery they became more dominant in the catch. As with most of the coast it appears that the 1977 year class as age II shrimp in 1979 will probably be a strong year class.

Table 10. Count per pound and age composition (by number of shrimp) in area 19 (Brookings) as summarized from monthly market samples.

Month	Number Sampled	Shrimp per pound	Age composition, in percent, by number		
			I	II	III+
April	200	83	6.0	16.5	77.5
May	464	99	14.2	40.1	45.7
June	402	92	23.1	26.1	50.8
July	404	102	48.0	14.9	37.1
August	405	87	34.1	18.3	47.6
September	400	108	53.0	35.5	11.5
October	200	100	43.0	25.0	32.0