

BH# 345



1980 OREGON SHRIMP FISHERY

Corrected Table 9

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INFORMATIONAL REPORT 81-1

Oregon Department of Fish & Wildlife

APRIL 1981

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OREGON

Oregon pink shrimp (*Pandalus jordani*) landings in 1980 totalled 30.2 million pounds (13,677 mt), only 2% more than the 29.6 million pounds (13,420 mt) landed in 1979 (Bruneau, 1979), but enough to place the 1980 total as third highest on record (Figure 1). Astoria and Coos Bay had an increase in production over 1979 with landings of 9.2 and 10.5 million pounds respectively (Table 1). Included in Oregon's landings were 208 thousand pounds (94 mt) of shrimp caught off Alaska (primarily *Pandalus borealis*), 8.3 million pounds (3,751 mt) caught off Washington and 849 thousand pounds (385 mt) taken from California waters.

Table 1. Annual shrimp landings at Oregon ports 1977-80 in thousands of pounds^{1/}.

Port	1977	1978	1979	1980
Astoria	11,697 ^{2/}	7,414	7,647	9,225 ^{3/}
Garibaldi	5,739 ^{2/}	3,166	1,473	1,116
Newport	15,361	20,595 ^{2/}	7,124	6,311
Winchester Bay	1,921 ^{2/}	1,084	821	690
Coos Bay	12,056	17,476 ^{2/}	9,131	10,466
Port Orford	1,011	529	22	64
Gold Beach	-	-	42	-
Brookings	795	6,724 ^{2/}	3,327	2,280 ^{4/}
Total	48,580	56,997 ^{2/}	29,587	30,152

^{1/} Figures represent only the shrimp poundage landed at each port, not the poundage that was processed. (Some was transshipped to other ports).

^{2/} Record annual landing

^{3/} Includes 207.9 thousand pounds caught off south-east Alaska

^{4/} Includes 67.6 thousand pounds caught south of State Area 18

A total of 284 vessels landed shrimp in Oregon in 1979, an increase of 82 vessels over the 1979 total. This increase was comprised of 57 additional Oregon vessels, 12 Washington vessels, and 12 California vessels (Figure 2, Table 2).

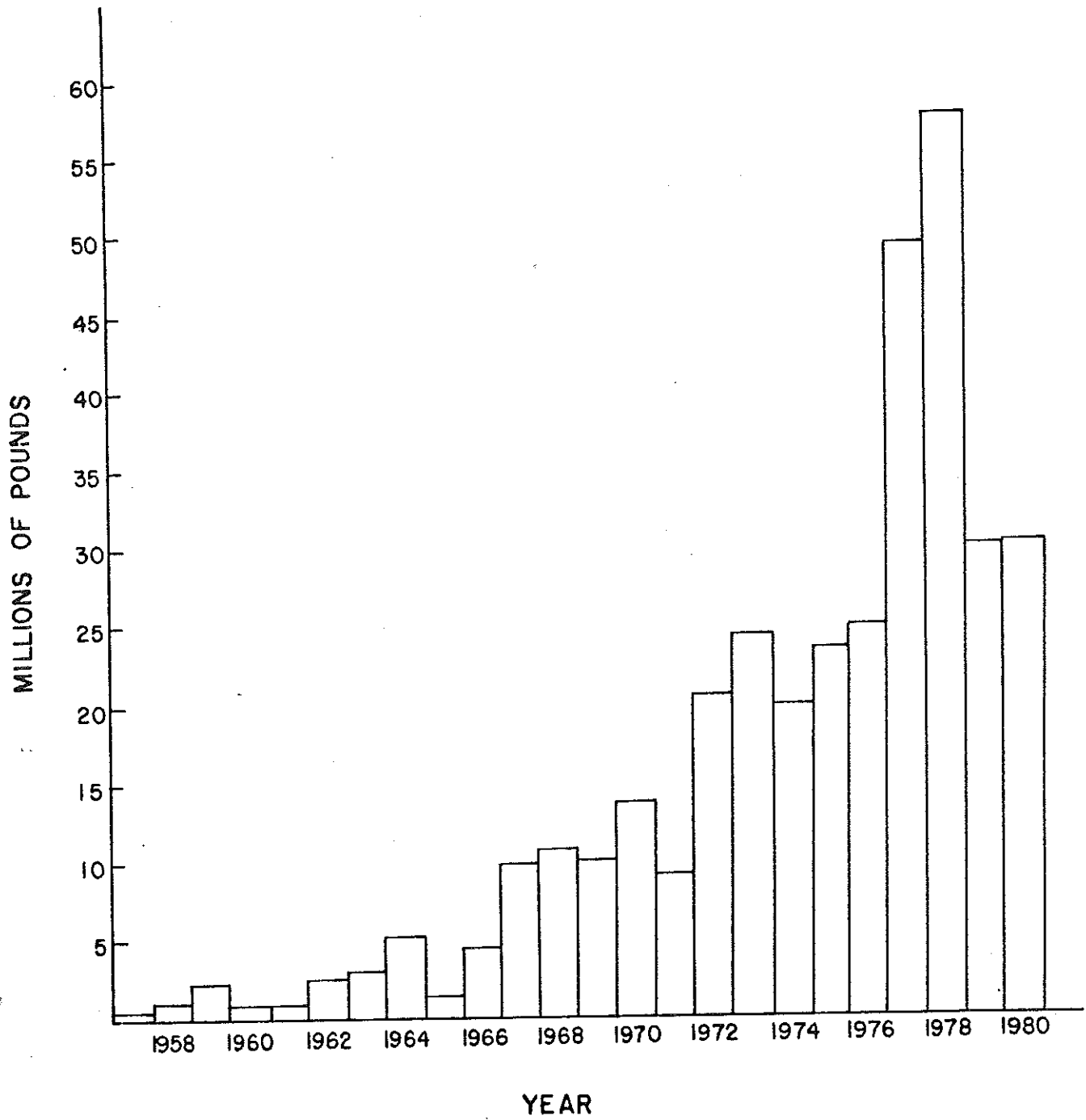


FIGURE I. Annual Oregon shrimp landings.

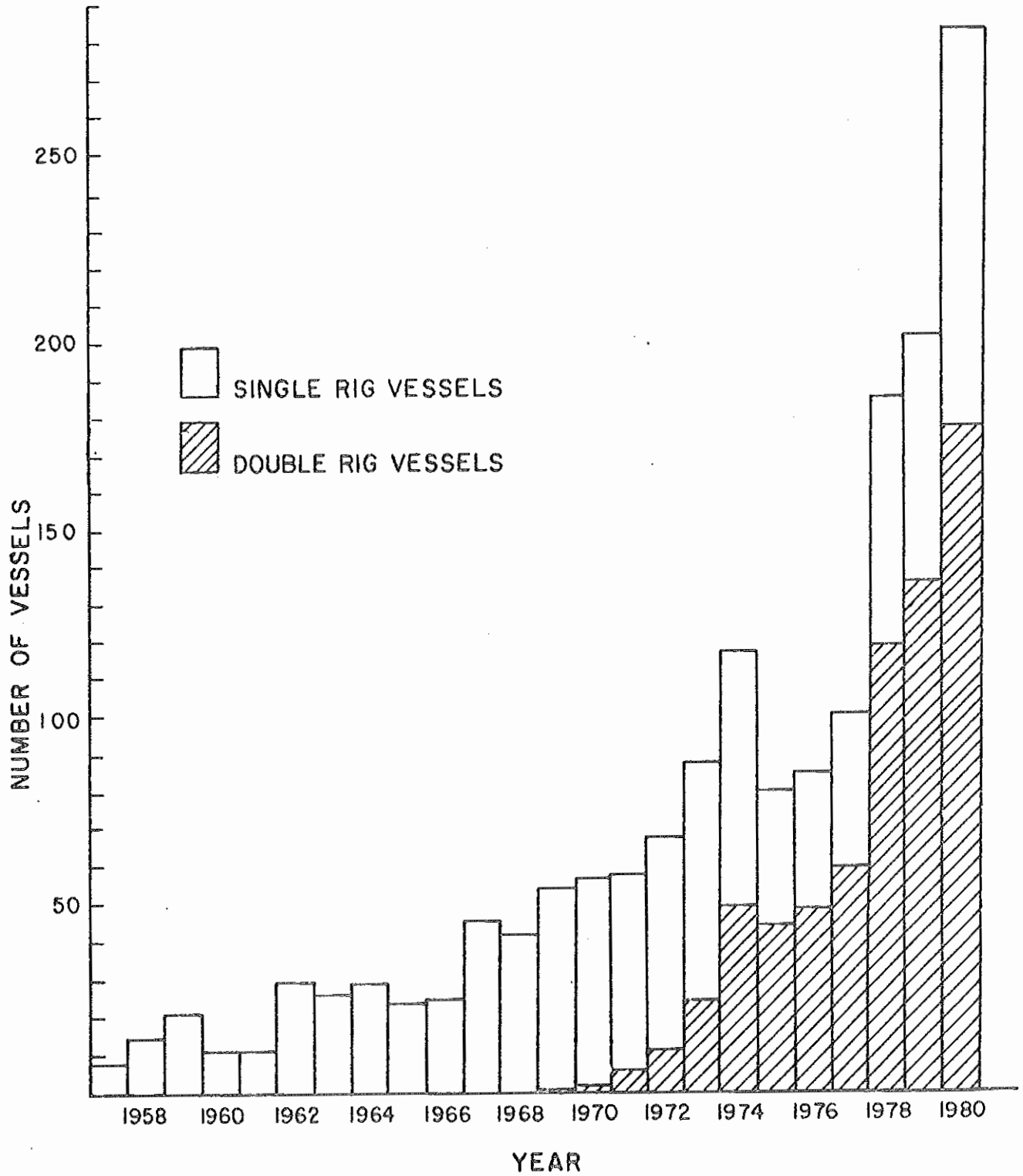


FIGURE 2. Annual number of shrimp vessels.

Table 2. NUMBER OF VESSELS DELIVERING SHRIMP BY PORT, 1979-80.

PORT	HOME PORT		OREGON TRANSIENT ^{1/}		OUT-OF-STATE		TOTAL	
	1979	1980	1979	1980	1979	1980	1979	1980
Astoria	28	45	29	39	10	8	67	92
Garibaldi	18	19	2	4	1	-	21	23
Newport	37	59	14	9	5	6	56	74
Winchester Bay	8	7	6	13	4	2	18	22
Coos Bay	54	69	28	36	22	28	104	133
Bandon	-	1	-	-	-	-	-	1
Port Orford	-	-	3	3	-	4	3	7
Brookings	20	22	13	13	15	19	48	54
Gold Beach	-	-	2	-	-	-	2	-
Total Oregon	165	222						
Out-of-state								
California	33	45						
Washington	5	17						
Total Vessels delivering to Oregon ports	203	284						

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

Note: Oregon double-rig count is 143 for 1980.

Coos Bay accommodated 133 (47%) of the total fleet, and also had the largest increase in fleet size (29 vessels). Astoria experienced the greatest increase in home port fleet (17 vessels).

The number of processors in 1980 decreased by one for a total of 25. As in 1979 there were 87 peeler machines; however, Astoria showed a decrease of two machines while Newport increased by two machines. The number of buying stations^{2/} continued to decrease from 12 in 1979 to only 9 in 1980.

The ex-vessel price for shrimp was 52 cents per pound from April through May, with some processors paying from 30 to 48 cents for smaller grade shrimp. In June price ranged upwards to 58 cents from port to port. By August all processors and buyers were paying greater than 57 cents. September through October 15 found the average ex-vessel price stabilized at 60 cents. Skippers were paid a seasonal average of 55 cents per pound, up from an average of 33 cents in 1979.

PACIFIC COAST

Pacific coast landings of pink shrimp exceeded 101 million pounds (45,900 mt) in 1980 which was only 2% greater than the 99 million pounds (44,962 mt) landed in 1979 (Table 3). At 30.2 million pounds (13,677 mt) Oregon 1980 landings were exceeded only by Alaska where shrimpers delivered 52.9 million pounds^{1/} (24,000 mt). Alaska's seasonal total exceeded the combined totals of all other west coast States and Provinces.

Washington reported 12.6 million pounds (5,715 mt) or 4% more than the 1979 total. Washington landings in 1980 were the second highest on record for the State (Table 3). Washington closed its shrimp season from Pt. Grenville north on November 15th due to the high percentage of small shrimp in landings. This closure remained in effect until March 31, 1981.

California's shrimp landings were 4.4 million pounds (1,996 mt), down 11% from 1979 (Table 3). The season ran from April 16 to November 1 with in-season closures off Eureka (California statistical area A) from June 1 to July 1 and from August 25 through the end of the season. California's closure criteria were met when catch per unit effort fell below 350 pounds per hour and when the percentage of one year old shrimp exceeded 70%. Off southern California (area C) the season remained open until November 19th.

Washington, Oregon and California combined average CPUE dropped to a record low of 202 pounds per hour (single-rig equivalents) while fishing effort reached an all time high (Figures 3 and 4). Combined catch for the three states has held steady for the last two years (Figure 5).

AREA SUMMARIES

WASHINGTON

Oregon-landing vessels fishing off Washington landed 8.3 million pounds (3,751 mt), up 3% from the previous record of 8.0 million pounds (3,629 mt)

^{1/} Pink shrimp caught in Alaska waters are predominantly *Pandalus borealis*.

^{2/} Excluding processors that buy on location.

Table 3. Annual landings of shrimp by State, Province, and entire Pacific coast 1968-1980 (in thousands of pounds; primarily *Pandalus sp.*) source PMFC Crab & Shrimp Data Series and PMFC Annual Report for 1980.

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	73,397	2,969	13,987	56,997	13,167	160,517
1979	50,916	1,578	12,135	29,587	4,922	99,138
1980	52,865	1,175	12,600	30,152	4,400	101,192

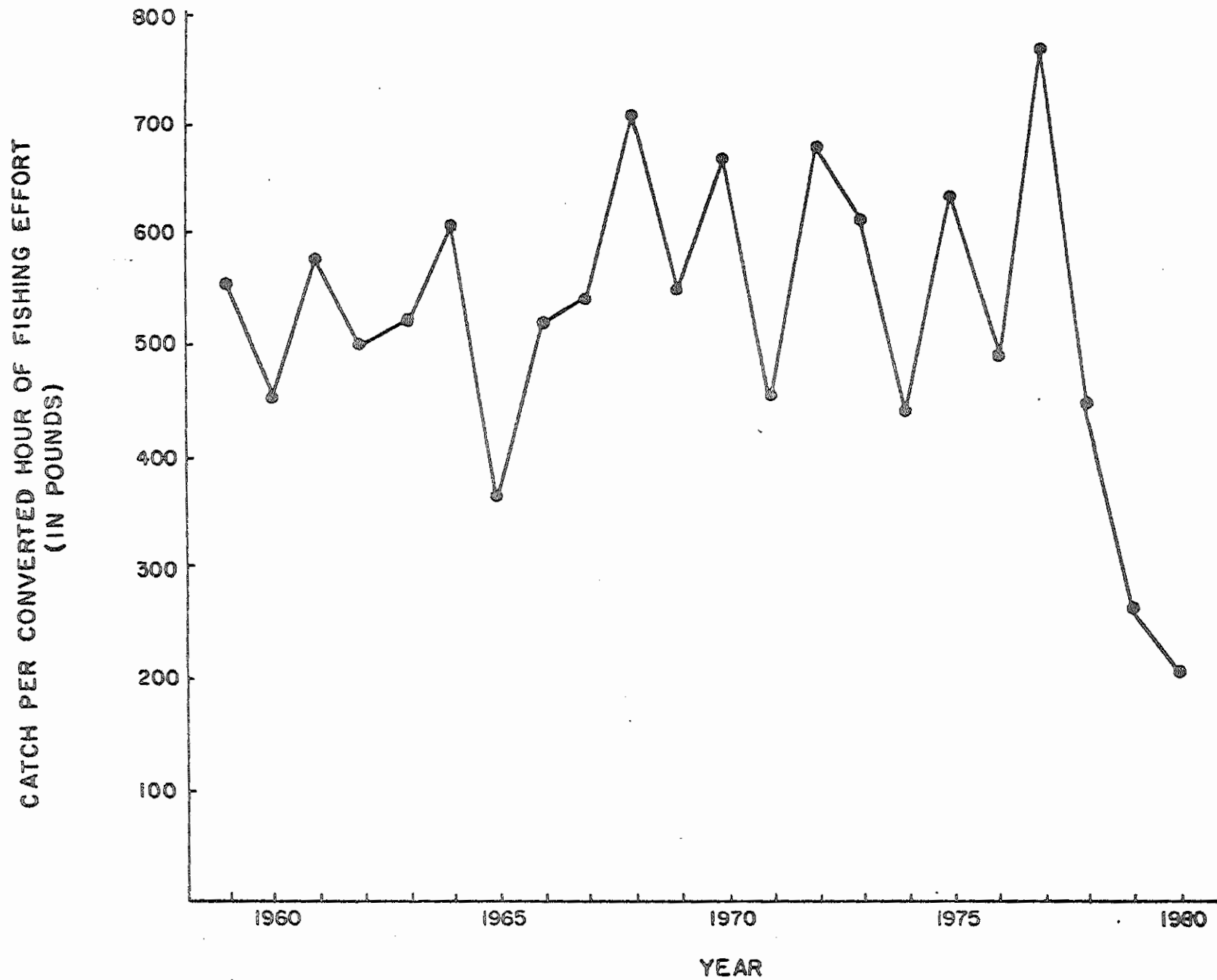


Figure 3. Washington, Oregon, and California pink shrimp catch per hour, 1958-1980. Fishing effort adjusted to single-rig equivalent hours.

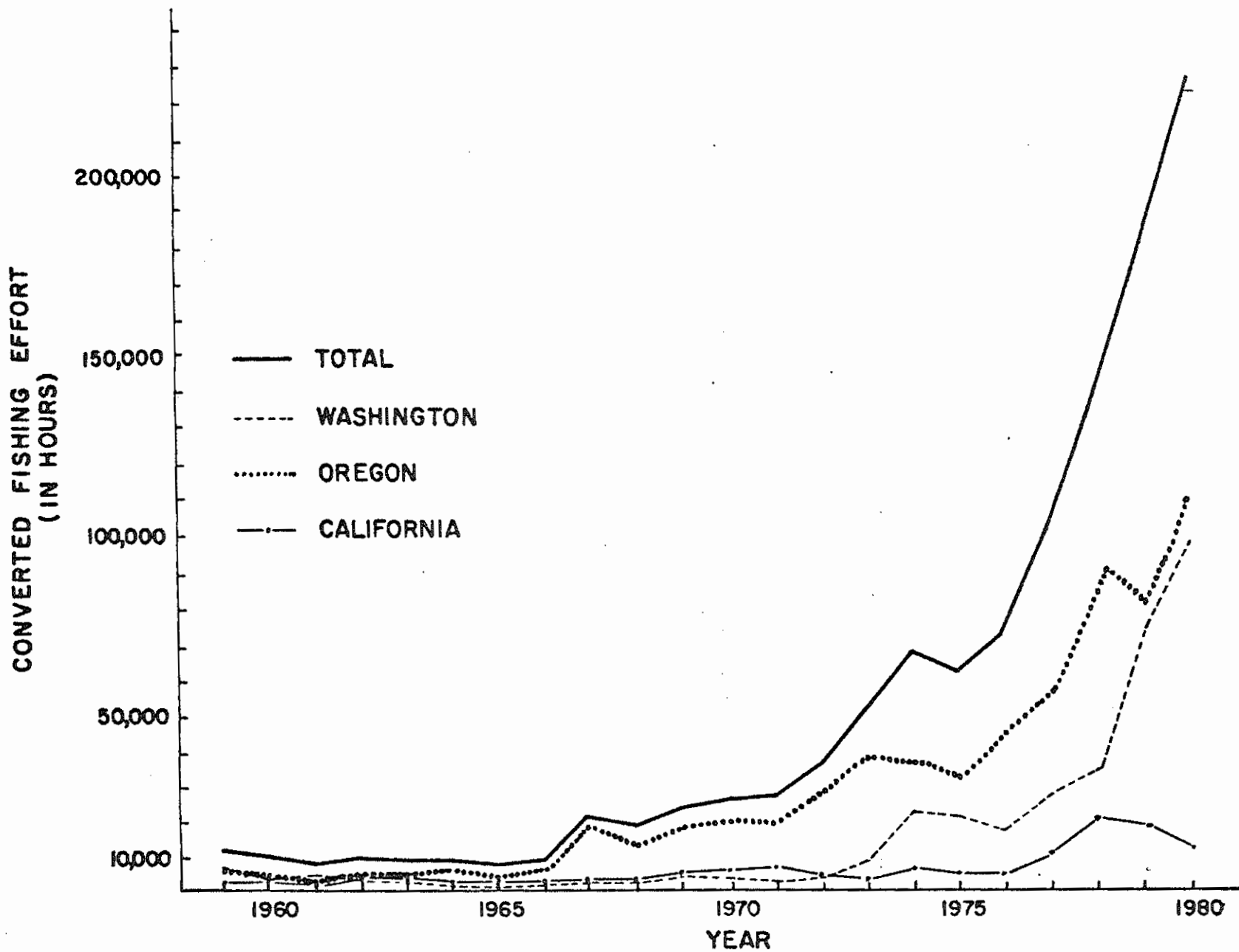


Figure 4. Converted fishing effort (in hours) for ocean pink shrimp by U.S. vessels coastwide and by state in adjacent waters.

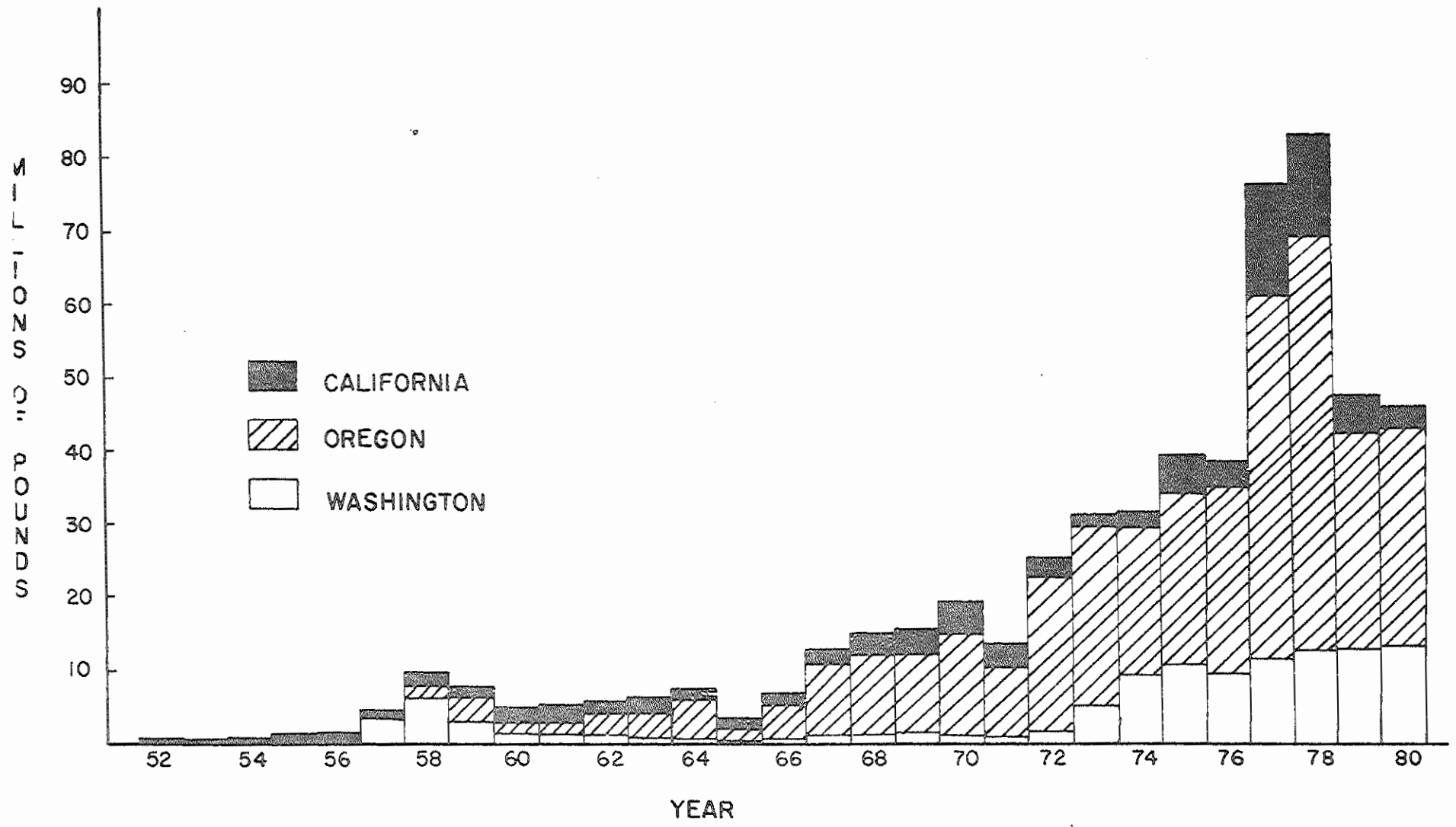


Figure 5. Pink shrimp landings by state, 1952-1980.

caught in 1977 and up 6% from the 1979 catch (Figure 6, Table 4). The total catch off Washington was 27% of Oregon's total landings. The Destruction Island grounds (State Area 32) yielded a record 4.0 million pounds (1,804 mt) in 1980. At 4.1 million pounds (1,875 mt) the Grays Harbor bed (Area 30) yielded nearly the same amount produced in 1979. Only 157 thousand pounds (71 mt) were produced north of the Columbia River in Area 29.

Average seasonal catch per unit effort (CPUE) by double rig vessels in Area 32 was 344 pounds per hour. This was the highest seasonal average CPUE of the three Washington areas (Table 4). At 215 pounds per hour average seasonal CPUE for single rig vessels was also highest in Area 32.

Market sample data indicated a good grade through June due to a high percentage of age II shrimp (1978 year class) in the catch. From July through October, the grade was poor with an average heads-on count per pound of 150 ranging from 141 to 160 shrimp per pound (Table 5). This was due to the increase in percentage of age I shrimp in the catch from 10% in April to 80% by October.

NORTHERN AND CENTRAL OREGON

Shrimp landings from south of the Columbia river in Area 28 totalled 834 thousand pounds (378 mt), more than 5 times that produced in 1979 (Figure 6). Areas 26 and 24 also had increased production over 1979 with 3 and 2 million pounds (1,364 and 930 mt) taken from each area, respectively. CPUE was low for these areas however, Area 26 having the lowest double-rig CPUE at 221 pounds per hour (Table 4). Single-rig CPUE for these areas was also lowest of all areas with the exception of Area 29.

Market samples indicated that the grade was good and progressively improved throughout the season (Table 6). Age I shrimp contributed 62% of the 1980 shrimp count for these areas with Age II shrimp making up 30% for the season (Table 6).

COOS BAY

The greatest shrimp production off Oregon occurred from Cape Perpetua to Cape Blanco (State Areas 21 and 22). Together, these areas yielded 45% of Oregon's 1980 total shrimp landings. For the second consecutive year Area 21 (Blanco bed) landings were the highest for the season at 7.8 million pounds (3,542 mt) or 92% of the 1979 area total landings (Figure 6). Area 22 (Coos Bay and Mudhole) yielded 5.7 million pounds (2,578 mt) or 93% of the total for that area in 1979. The levels of effort remained high through June due to heavy fishing by Oregon vessels, and by an influx of out-of-state vessels. About 35% of Newport shrimp landings came from Areas 21 and 22.

Average CPUE for both single and double-rig vessels in Area 21 were the highest reported in the state at 271 and 414 pounds per hour respectively (Table 4). Catch rates declined in both areas after the first month of the season, except for single-rig vessels in Area 22 that had increasing CPUE through June.

Combined market samples for Areas 21 and 22 indicated a poor grade through June with an average count per pound ranging from 138 to 175 shrimp per pound (Table 7). The 1979 year class (Age I) was the predominant age group which

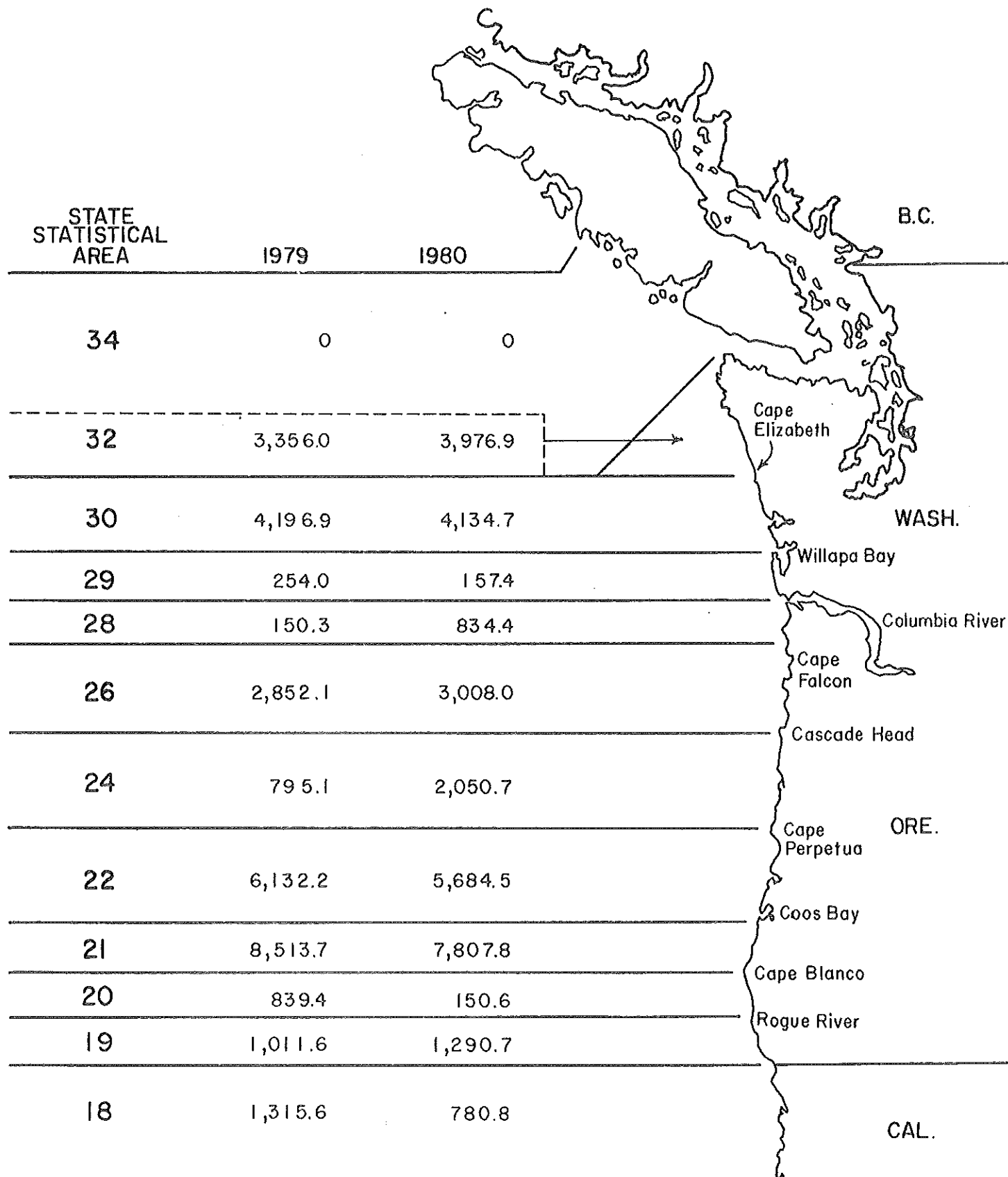


FIGURE 6. Oregon 1979 and 1980 shrimp landings, in thousands of pounds, by state statistical area of catch. 1979 catch by area based on preliminary landing estimates of 29,417 thousand pounds.

Table 4. OREGON 1980 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	August	Sept.	Oct.	Total
32 C	89.2	239.1	633.5	1253.5	808.0	829.4	124.1	3976.8
C/E ₁ ^{1/}	129.2	109.4	0	241.1	272.2	191.1	0	214.9
C/E ₂ ^{2/}	350.5	225.6	242.5	439.0	382.2	357.0	413.6	344.2
30 C	104.0	439.1	1103.6	899.0	967.9	523.0	98.0	4134.6
C/E ₁	95.8	144.9	156.5	61.9	147.6	392.6	0	153.8
C/E ₂	334.8	263.8	331.7	272.9	281.6	277.4	214.6	287.7
29 C	0.1	6.3	0.	33.4	73.4	24.8	19.4	157.4
C/E ₁	0.	4.9	0.	17.0	168.1	0.	0.	95.2
C/E ₂	21.9	124.9	0.	282.1	230.8	241.6	452.4	246.7
28 C	8.6	356.1	178.2	61.0	170.4	15.3	44.7	834.3
C/E ₁	0.	140.0	95.7	0.	150.5	109.8	0.	112.1
C/E ₂	584.8	484.4	208.4	212.8	327.2	94.6	248.4	304.8
26 C	681.2	304.4	510.0	311.0	582.4	420.7	198.3	3008.0
C/E ₁	241.2	104.0	242.2	253.1	147.9	102.6	88.1	148.4
C/E ₂	373.4	213.8	199.2	239.8	202.4	202.8	114.5	221.1
24 C	372.5	483.9	166.9	277.7	382.3	264.6	103.0	2050.9
C/E ₁	211.8	169.9	213.3	113.4	140.2	81.1	84.1	138.3
C/E ₂	344.5	246.6	240.1	258.0	182.0	158.8	172.4	224.6
22 C	876.3	1033.6	1358.7	928.7	384.3	1003.3	99.7	5684.6
C/E ₁	162.9	211.4	244.9	191.8	115.8	118.3	94.4	180.0
C/E ₂	323.7	267.9	256.9	235.9	200.1	262.7	150.2	258.5
21 C	1829.9	2315.4	2050.6	600.1	543.2	369.4	99.2	7807.8
C/E ₁	431.5	315.0	248.6	217.7	184.6	217.1	131.9	270.8
C/E ₂	684.8	472.6	368.9	289.9	260.8	246.6	231.2	413.6
20 C	0.	114.4	127.3	0.3	0.	6.3	2.3	150.6
C/E ₁	0.	123.6	228.0	0.	0.	108.7	0.	159.2
C/E ₂	0.	90.7	376.2	62.4	0.	76.8	132.4	292.4
19 C	173.2	571.4	119.5	168.1	76.5	140.1	41.9	1290.7
C/E ₁	211.4	228.2	158.8	181.4	127.2	197.7	0.	195.3
C/E ₂	407.1	358.8	263.9	432.4	238.6	199.7	214.6	318.4
18 C	439.1	76.4	5.7	256.1	34.7	11.6	25.7	849.3
C/E ₁	333.4	107.2	456.0	264.8	79.8	82.4	255.4	242.7
C/E ₂	906.7	457.3	0.	569.8	321.6	252.8	115.3	616.2
Total C	4573.1	5840.1	6254.0	4789.0	4023.2	3608.5	856.2	29944.0
C/E ₁	308.2	241.6	233.5	203.7	157.2	152.8	108.9	210.3
C/E ₂	441.6	324.9	287.0	304.6	257.6	254.3	184.8	298.7

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

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

Table 5. Count per pound and age composition by number of shrimp caught off the Washington coast.

Month	Number Sampled	Shrimp per pound	Age composition in % by number		
			I	II	III
April ^{1/}	877	119	10	72	18
May ^{1/}	727	120	15	59	26
June ^{2/}	408	122	29	51	20
July ^{3/}	1,399	160	64	32	4
August ^{3/}	1,151	141	70	28	2
September ^{1/}	721	142	75	22	3
October ^{3/}	105	154	80	20	0

^{1/} Area 30 and 32 only

^{2/} Area 30 only

^{3/} Area 32 only

Table 6. Count per pound and age composition by number of shrimp in Areas 24, 26 and 28 (northern Oregon).

Month	Number Sampled	Shrimp per pound	Age composition in % by number		
			I	II	III
April ^{1/}	2,932	122	58	30	12
May	508	116	39	47	14
June	1,367	113	62	26	12
July ^{1/}	681	109	66	31	3
August ^{1/}	958	98	72	24	4
September	458	86	69	30	1
October	524	99	77	19	4

^{1/} Area 24 and 26 only

Table 7. Count per pound and age composition by number of shrimp in Areas 21 and 22 (Cape Blanco to Cape Perpetua).

Month	Number Sampled	Shrimp per pound	Age composition in % by number		
			I	II	III
April	1,965	142	69	23	8
May	750	175	89	8	3
June	1,401	138	80	16	4
July	1,084	118	78	17	5
August ^{1/}	1,006	108	83	13	4
September	628	92	76	22	2
October ^{2/}	903	100	72	21	7

^{1/} A trace of zero-age shrimp were found in Area 21, which amounted to 0.1 percent for the combined area.

^{2/} A trace of zero-age shrimp were found in Area 22, which amounted to 0.4 percent for the combined area.

averaged 77% throughout the season. The 1978 year class (Age II) contributed 18% of the total 1980 shrimp counts for these areas.

SOUTHERN OREGON AND NORTHERN CALIFORNIA

Shrimp landings from the Port Orford grounds (State Area 20) totalled only 151 thousand pounds (68 mt), 18% of the 839 thousand pounds (381 mt) landed in 1979. May and June were the most productive months but the fishing remained scratchy and little effort was expended in this area.

The Brookings area (State Area 19) yielded 1.3 million pounds (587 mt), 22% higher than the 1979 catch. Shrimp caught off California (State Area 18) and landed in Oregon totalled 849 thousand pounds, down 40% from the 1979 catch.

Of the three areas mentioned Area 18 had the highest overall catch per unit effort averaging 243 and 616 pounds per hour for single and double-rig vessels respectively.

The heads-on count per pound ranged from 80-85 shrimp per pound during the latter half of the season, indicating a very good grade of shrimp from the Brookings area (Area 19). Although market samples indicated that Age I shrimp dominated the catch, the low count per pound reflected the influence of older shrimp as well as excellent growth of the one-year olds (Table 8).

Table 8. Count per pound and age composition by number of shrimp in Area 19 (Brookings).

Month	Number Sampled	Shrimp per pound	Age composition in % by number		
			I	II	III
April	557	86	17	56	27
May	406	103	53	43	4
June	404	141	92	6	2
July	356	77	84	14	2
August	305	80	64	30	6
September	638	85	79	18	3
October ^{1/}	517	85	77	16	2

^{1/} Zero-age shrimp accounted for five percent of the age composition.

SUMMARY

If the 1979 year class is strong in terms of absolute abundance, it should contribute significantly to the harvest in 1981 as two year old shrimp. Samples taken towards the end of the season as well as during the winter by the State of Washington indicate a potential for another strong year class (1980 year class). At this writing 1981 market samples indicate that this is true and that along with two-year old shrimp, "pinheads" or one-year olds will be abundant during the 1981 season.

Nearly all state statistical areas have shown a decreasing trend in catch per unit effort over the past 3 years (Table 9). Increasing effort has had the effect of distributing the available resource among increasing numbers of participants in the fishery. The trend towards harvesting younger shrimp can be expected as a result of full exploitation at high levels of effort. Whether these trends will continue and whether or not they may have a significant impact on subsequent stock production is unknown.

Table 9. Annual Oregon shrimp landings in 1,000's of pounds and catch-per effort by statistical area for single and double-rigged vessels, 1968-1980.

Year	Area of Catch											
	34	32	30	29	28	26	24	22	21	20	19	18
1968 C		0	25.2	<u>1/</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>1/</u>	1,220.0	3,852.1	251.1	3,666.9	159.4	2.1	15.0	140.4
C/E		692	690		662	567	430	431	398	58	157	551
1970 C		475.2	787.1	<u>1/</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>1/</u>	430.2	5,575.9	<u>4/</u>	1,534.4	<u>5/</u>	656.0	576.0	46.7
C ₂ ^{2/}		1.9	190.2		337.0	1,762.1		0		0	0	0
C/E ₁ ^{3/}		416	497		368	465		357		879	472	341
C/E ₂		552	902		926	720		-		-	-	-
1972 C		0	1,553.6	<u>1/</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>1/</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	6,048.1	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	-

1/ Areas 30 and 29 combined through 1973

2/ C₂ is landed catch by double-rig vessels; included in C, all columns

3/ C/E₁ = catch per hour by single-rig vessels; C/E₂ = catch per hour by double-rig vessels

4/ Area 24 included with Area 26 data

5/ Area 21 included with Area 22 data

Table 9. 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	658	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	1,838
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	248	490	461	420	927	1,085	769	1,112	855
1979 ^{a/} C	-	3,356.0	4,196.9	254.0	150.3	2,852.1	795.1	6,132.2	8,513.7	839.5	1,011.6	1,315.6
C ₂	-	3,223.3	4,050.6	225.8	150.3	2,756.1	719.7	4,994.0	6,937.9	650.7	608.0	1,045.0
C/E ₁	-	434	225	181	6	182	189	260	280	292	285	305
C/E ₂	-	413	325	212	300	311	257	419	490	565	477	635
1980 C	-	3,976.9	4,134.7	157.1	834.4	300.8 ^{3,008.0}	205.1 ^{2,050.9}	5,684.5	7,807.8	150.6	1,290.7	780.8
C ₂	-	3,844.6	4,060.3	149.4	817.3	276.8	185.5	4,425.8	5,643.6	114.9	795.1	537.2
C/E ₁	-	215	154	95	112	148	138.3	180.0	270.8	159.2	195.3	242.7
C/E ₂	-	344	288	246	305	221	224.6	258.5	413.6	292.4	318.4	616.2

a/ Catch and catch per unit effort based on preliminary landing estimates of 29.4 million pounds.

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