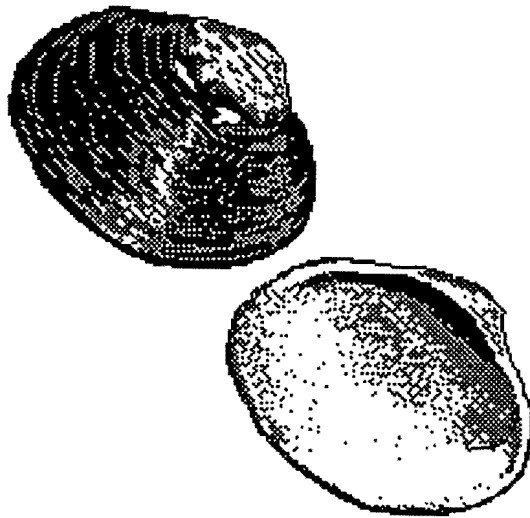


OREGON DEPARTMENT
OF
FISH AND WILDLIFE

BAY CLAM
DATA SERIES REPORT

1994



1994 BAY CLAM DATA SERIES REPORT

by

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1994 BAY CLAM DATA SERIES REPORT

INTRODUCTION

This report summarizes the results of our bay clam studies in 1994. Activities summarized include recreational and commercial clam fishery. This report is presented as a series of tables and figures with a minimum of discussion; other reports will evaluate the data presented here. The tables and figures included give a historical overview of clam harvesting activities and are presented in a manner to allow future analysis to show trends of changes in stock status and fishing activities. This report is intended primarily to be an internal document, to be used as a reference by the shellfish staff.

RECREATIONAL CLAM FISHERY

Recreational clam digger interviews were conducted annually on each of the major clam harvesting tideflats of the Tillamook, Netarts, Nestucca, Yaquina, Alsea, Siuslaw, and Coos estuaries. Also, the lower Umpqua triangle was added for 1991. Recreational clam digger interviews for 1992 were eliminated totally due to budgetary restraints for the first time since 1976. We decided to initiate a volunteer recreational clam use survey for selected estuaries in 1994. Volunteers conducted 4,090 interviews during selected low tides from April through July at key locations in Netarts, Tillamook, Yaquina, Umpqua and Coos bays. Volunteers examined 79,975 clams and gathered valuable data concerning catch per effort, species composition, digger origin, and peak use. Staff effort since 1976 has averaged only about 1,200 interviews each year at a very heavy cost of staff time and money. We hope to expand this program to cover other estuaries for 1995. These data are presented in Tables 1-11 and Table 12 shows peak counts of clam diggers taken at low tide for each of the surveyed tideflats.

In 1994 volunteers interviewed 4,090 clam diggers that expended 3,525 hours to harvest 79,975 clams (Table 13). The clam diggers averaged 19.5 clams/trip and 22.7 clams/hour. Digging success was better than in 1993 when 18.5 clams per trip and 20.3 clams per hour were taken.

The Commission approved a reduction in bag limit in 1977 from 36 to 20 as over-harvest was a real concern. Diggers have averaged from 14.7 to 19.6 clams per trip since that time.

Oregon clam diggers normally travel some distance to harvest clams. In 1994, 30.3% of the diggers were local county residents, 64.2% were from Oregon but living outside the county of harvest, and 5.5% were out-of-state residents (Table 13).

The cockle clam was, as usual, the most frequently observed species in the recreational fishery representing 52.2% of the 1994 harvest (Table 13). Gaper, littleneck, softshell and butter clams comprised 4.3, 20.1, 7.8, and 15.6% of the bag respectively.

No major changes in digging effort were evident for 1994. The peak count at Garibaldi Flat was an estimated 500 people making it the most popular bay clam flat in Oregon. Effort in Netarts Bay at Happy Camp continues to decline. Peak count summary for 1994 is summarized in Table 12.

COMMERCIAL CLAM HARVEST

We issued 113 permits to commercial fishermen to harvest bay clams in 1994 (Table 14).

Thirty-two fishermen reported landings of 180,934 lbs of clams. In 1993, 38 fishermen reported landings of 127,730 lbs. Cockle clams represented the bulk of the commercial catch in 1994 at 163,295 lbs (90.3%) (Table 15). Tillamook Bay was the major producer of bay clams in Oregon with 149,494 lbs (82.6%). The Coos, Umpqua and Nehalem estuaries followed in order producing 12,042, 7,403, and 5,533 lbs of clams in 1994 respectively (Table 16).

Commercial harvest of cockle clams in Tillamook Bay had a great increase from 76,103 lbs in 1993 to 163,295 lbs in 1994. Native littleneck commercial harvest in Nehalem Bay had a dramatic decrease from 31,966 lbs in 1993 to 5,533 lbs in 1994. As a result, we will pay particular attention to commercial harvest in these two bays in 1995.

SPECIAL STUDIES

Native Oyster Enhancement

Netarts Bay

We initiated a project to reestablish the native oyster into Netarts Bay in 1993. We spawned 300 Yaquina Bay native oysters at Whiskey Creek Oyster Hatchery in Netarts Bay. We set seed on culch and 6 million juvenile oysters were planted in July of 1993. A field investigation in August of that year showed quarter-sized juveniles. The natives continued to survive well in 1994 and many reached 1.5 inches in size.

Alsea Bay

We planted Yaquina Bay native oysters in five locations in Alsea Bay the summer of 1994 and the animals had survived through December in at least two locations. Should the natives survive the winter of 1995, we plan a major enhancement effort.

APPENDIX

Table 1. Annual summary of recreational interview data; Garibaldi Flat, Tillamook Bay.

	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
No. Diggers Sample	597	456	359	219	132	200	107	290	277	421	476	450	272	-	2,031	3,028
No. Clams Sampled	11,104	8,728	6,558	4,249	2,471	3,729	2,128	5,598	5,491	8,067	9,150	8,665	4,879	-	39,816	59,573
No. Digger Hours	715	549	443	220	158	243	143	311	312	452	631	568	354	-	1,469	2,168
Hours/trip	1.2	1.2	1.2	1.3	1.2	1.2	1.3	1.1	1.1	1.1	1.3	1.3	1.3	-	0.7	0.7
Clams/trip	18.6	19.1	18.3	19.4	18.7	18.7	19.9	19.3	19.8	19.2	19.2	19.3	17.9	-	19.6	19.7
Clams/hour	15.5	15.9	14.0	14.6	15.6	15.4	14.9	18.0	17.6	17.9	14.5	15.3	13.8	-	27.1	27.5
Digger Origin (%)																
Local	30.2	22.4	27.6	38.8	37.7	30.0	28.0	17.9	23.5	35.2	21.0	17.6	30.1	-	36.0	28.1
State	64.7	72.6	63.5	57.1	46.9	67.5	66.4	78.6	67.9	57.0	69.1	79.8	60.3	-	56.9	67.1
Non-state	-	-	-	4.1	15.4	2.5	5.6	3.4	8.7	7.8	9.9	2.7	9.6	-	7.1	4.8
Species Comp. (%)																
Butter	13.5	28.7	42.8	45.8	39.7	38.8	39.5	32.9	41.6	34.0	45.6	49.0	17.8	-	27.9	16.9
Cockle	64.0	46.5	24.2	27.4	27.4	28.5	43.2	51.0	48.7	35.6	32.0	35.9	18.5	-	45.8	55.4
Gaper	9.6	7.1	5.7	6.0	4.5	0.7	1.8	1.0	1.3	0.9	1.1	1.5	1.3	-	1.8	1.0
Littleneck	12.7	17.7	27.2	20.8	28.4	32.1	15.4	15.1	8.0	29.6	21.3	13.4	62.4	-	24.2	26.2
Softshell	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.5
Clams/trip																
Butter	2.5	5.5	7.8	8.9	7.4	7.2	7.9	6.3	8.2	6.5	8.8	9.4	3.2	-	5.5	3.3
Cockle	11.9	8.9	4.4	5.3	5.1	5.3	8.6	9.9	9.7	6.8	6.2	6.9	3.3	-	9.0	10.9
Gaper	1.8	1.4	1.4	1.2	0.9	0.1	0.4	0.2	0.2	0.2	0.2	0.3	0.2	-	0.4	0.2
Littleneck	2.4	3.4	5.0	4.0	5.3	6.0	3.1	2.9	1.6	5.7	4.1	2.6	11.2	-	4.7	5.2
Softshell	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0
Clams/hour																
Butter	2.1	4.6	6.3	6.7	6.2	6.0	5.9	5.9	7.3	6.1	6.6	7.5	2.5	-	7.5	4.6
Cockle	9.9	7.4	3.6	4.0	4.3	4.4	6.5	9.2	8.6	6.4	4.6	5.5	2.6	-	12.4	15.2
Gaper	1.5	1.1	0.9	0.9	0.7	0.1	0.3	0.2	0.2	0.2	0.2	0.2	0.2	-	0.5	0.3
Littleneck	2.0	2.8	4.0	3.0	4.4	4.9	2.3	2.7	1.4	5.3	3.1	2.0	8.6	-	6.6	7.2
Softshell	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.2

Table 2. Annual summary of recreational interview data, central bay, Tillamook Bay.

	1993	1994
No. Diggers Sampled	343	402
No. Clams Sampled	6,420	7,965
No. Digger Hours	375	511
Hours/trip	1.1	1.1
Clams/trip	18.7	19.8
Clams/hour	17.1	15.6
Digger Origin (%)		
Local	51.3	43.0
State	45.2	56.2
Non-state	3.5	0.8
Species Comp. (%)		
Butter	16.2	27.8
Cockle	79.0	67.4
Gaper	3.8	1.5
Littleneck	1.0	3.3
Softshell	-	-
Clams/trip		
Butter	3.0	5.5
Cockle	14.8	13.4
Gaper	1.4	0.3
Littleneck	0.2	0.7
Softshell	-	-
Clams/hour		
Butter	2.8	4.3
Cockle	13.5	10.5
Gaper	0.6	0.2
Littleneck	0.2	0.5
Softshell	-	-

Table 3. Annual summary of recreational interview data, buoy 10, Tillamook Bay.

	1993	1994*
No. Diggers Sampled	63	-
No. Clams Sampled	1,174	-
No. Digger Hours	64	-
Hours/trip	1.0	-
Clams/trip	18.6	-
Clams/hour	18.3	-
Digger Origin (%)		
Local	57.1	-
State	41.3	-
Non-state	1.6	-
Species Comp. (%)		
Butter	80.5	-
Cockle	18.7	-
Gaper	0.8	-
Littleneck	-	-
Softshell	-	-
Clams/trip		
Butter	15.0	-
Cockle	3.5	-
Gaper	0.1	-
Littleneck	-	-
Softshell	-	-
Clams/hour		
Butter	14.8	-
Cockle	3.4	-
Gaper	0.1	-
Littleneck	-	-
Softshell	-	-

* Not sampled in 1994.

Table 4. Annual summary of recreational interview data; Happy Camp, Netarts Bay.

	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
No. Diggers Sampled	222	106	71	168	280	84	99	60	103	108	91	62	27	-	23	13
No. Clams Sampled	2,823	1,293	991	2,020	2,994	1,009	1,010	579	709	1,068	870	398	390	-	255	251
No. Digger Hours	204	68	67	151	290	84	124	92	205	209	182	92	48	-	24	17
Hours/trip	0.9	0.6	0.9	0.9	1.0	1.0	1.3	1.5	2.0	1.9	2.0	1.5	1.5	-	1.0	1.3
Clams/trip	12.7	12.2	12.9	12.0	10.7	12.0	10.2	9.7	6.9	9.9	9.6	6.4	14.4	-	11.1	19.3
Clams/hour	13.8	19.1	14.8	13.4	10.3	12.0	8.1	6.3	3.5	5.1	4.8	4.3	8.1	-	10.6	14.8
Digger Origin (%)																
Local	28.4	17.9	40.3	48.2	22.5	29.8	32.3	31.7	10.7	16.7	25.3	16.1	55.6	-	43.5	-
State	59.9	73.6	50.6	44.0	72.9	64.3	53.5	66.7	87.4	65.7	65.9	51.6	37.0	-	56.5	100
Non-state	11.7	8.5	9.1	7.7	4.6	6.0	14.1	1.7	1.9	17.6	8.8	32.3	7.4	-	-	-
Species Comp. (%)																
Butter	7.7	5.4	13.7	5.0	0.7	3.7	4.0	7.9	15.9	20.8	16.3	14.8	52.6	-	82.0	53.0
Cockle	-	0.1	-	<0.1	0.1	4.0	0.4	2.1	2.1	3.4	1.8	1.3	10.5	-	4.7	10.4
Gaper	90.3	92.5	82.7	94.3	98.5	89.5	93.6	84.6	73.1	68.8	72.5	81.4	31.8	-	13.3	36.6
Littleneck	0.2	2.0	3.4	0.6	0.8	2.9	2.1	5.4	8.3	7.0	9.2	2.5	5.1	-	-	-
Softshell	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Clams/trip																
Butter	1.0	0.7	1.8	0.6	0.1	0.4	0.4	0.8	1.1	2.1	1.6	1.0	7.6	-	9.1	10.2
Cockle	-	<0.1	-	<0.1	<0.1	0.5	<0.1	0.2	0.1	0.3	0.2	0.1	1.5	-	.5	2.0
Gaper	11.5	11.3	10.6	11.3	10.5	10.8	9.5	8.2	5.0	6.8	6.9	5.2	4.6	-	1.5	7.1
Littleneck	0.2	0.2	0.4	0.1	0.1	0.4	0.2	0.5	0.6	0.7	0.9	0.2	0.7	-	-	-
Softshell	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Clams/hour																
Butter	1.1	1.0	2.0	0.7	0.1	0.4	0.3	0.5	0.6	1.1	0.8	0.6	4.3	-	8.7	7.8
Cockle	-	<0.1	-	<0.1	<0.1	0.5	<0.1	0.1	0.1	0.2	0.1	0.1	0.9	-	.5	1.5
Gaper	12.5	17.7	12.3	12.7	10.2	10.8	7.6	5.3	2.5	3.5	3.5	3.5	2.6	-	1.4	5.4
Littleneck	0.3	0.4	0.5	0.1	0.1	0.4	0.2	0.3	0.3	0.4	0.4	0.1	0.4	-	-	-
Softshell	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 5. Annual summary of recreational interview data; Cape Lookout Sand Spit, Netarts Bay.

	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
No. Diggers Sampled	85	63	80	56	118	71	52	42	71	147	100	117	35	-	244	253
No. Clams Sampled	1,560	1,074	1,397	1,029	2,174	1,362	1,040	819	1,409	2,765	1,713	2,314	387	-	4,649	3,658
No. Digger Hours	178	89	150	83	197	87	85	92	151	237	196	232	43	-	316	344
Hours/trip	2.1	1.4	1.9	1.5	1.7	1.2	1.6	2.2	2.1	1.6	2.0	2.0	1.2	-	1.3	1.4
Clams/trip	18.4	17.0	17.5	18.4	18.4	19.2	20.0	19.5	19.8	18.8	17.1	19.8	11.1	-	19.1	14.5
Clams/hour	8.8	12.1	9.3	12.4	11.1	15.8	12.2	9.0	9.4	11.7	8.8	10.0	9.1	-	14.7	10.6
Digger Origin (%)																
Local	36.5	17.5	12.5	44.6	38.1	43.7	53.8	31.0	26.8	18.4	44.0	31.6	8.6	-	52.0	36.1
State	61.2	76.2	81.3	51.8	53.4	52.1	44.2	40.5	62.0	67.3	43.0	64.1	57.1	-	40.0	58.6
Non-state	2.3	6.3	7.5	3.6	8.5	4.2	1.9	28.6	11.3	14.3	13.0	4.3	34.3	-	8.0	5.2
Species Comp. (%)																
Butter	5.5	1.9	7.7	0.3	11.0	11.0	16.0	7.0	10.6	4.1	18.2	13.9	9.8	-	44.0	-
Cockle	74.4	93.3	76.7	84.9	80.4	78.0	82.1	89.5	83.1	88.9	67.7	68.0	34.6	-	47.0	82.6
Gaper	16.0	4.8	13.3	12.1	5.9	9.0	0.2	3.4	3.2	3.0	5.7	11.9	52.5	-	6.9	17.2
Littleneck	3.8	-	1.9	2.6	2.6	0.1	1.7	0.1	0.9	0.9	7.7	0.6	0.8	-	2.1	0.2
Softshell	-	-	-	-	-	1.8	-	-	-	-	-	3.2	2.3	-	-	-
Clams/trip																
Butter	1.0	0.3	1.4	0.1	2.0	2.1	3.2	1.4	2.1	0.8	3.1	2.7	1.1	-	8.4	-
Cockle	13.6	15.9	13.4	15.6	14.8	15.0	16.4	17.5	16.5	16.7	11.6	13.4	3.8	-	9.0	12.0
Gaper	2.9	0.8	2.3	2.2	1.1	1.7	-	0.7	0.6	0.6	1.0	2.4	5.8	-	1.3	2.5
Littleneck	0.7	-	0.3	0.5	0.5	<0.1	0.3	-	0.2	0.2	1.3	0.1	0.1	-	.4	-
Softshell	-	-	-	-	-	0.4	-	-	-	-	-	0.6	0.3	-	-	-
Clams/hour																
Butter	0.5	0.2	0.7	<0.1	1.2	1.7	2.0	0.6	1.0	0.5	1.6	1.4	0.9	-	6.5	-
Cockle	6.5	11.3	7.2	10.5	8.9	12.3	10.0	8.0	7.8	10.4	5.9	6.8	3.2	-	6.9	8.8
Gaper	1.4	0.6	1.2	1.5	0.7	1.4	-	0.3	0.3	0.4	0.5	1.2	4.8	-	1.0	1.8
Littleneck	0.3	-	0.2	0.3	0.3	<0.1	0.2	-	0.1	0.1	0.7	0.1	0.1	-	.3	-
Softshell	-	-	-	-	-	0.3	-	-	-	-	-	0.3	0.2	-	-	-

Table 6. Annual summary of recreational interview data; Bridge Bed, Yaquina Bay.

	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
No. Diggers Sampled	143	142	342	149	202	191	207	120	110	102	108	91	72	-	319	94
No. Clams Sampled	1,313	1,222	3,773	1,609	1,543	1,383	1,765	1,363	960	814	834	1,031	818	-	3,612	976
No. Digger Hours	120	160	354	154	274	265	304	153	160	155	109	159	106	-	457	126
Hours/trip	0.8	1.1	1.0	1.0	1.4	1.4	1.5	1.3	1.5	1.5	1.0	1.7	1.5	-	1.4	1.3
Clams/trip	9.2	8.6	11.0	10.8	7.6	7.2	8.5	11.4	8.7	8.0	7.7	11.3	11.4	-	11.3	10.4
Clams/hour	10.9	7.7	10.7	10.4	5.6	5.2	5.8	8.9	6.0	5.3	7.7	6.5	7.7	-	7.9	7.7
Digger Origin (%)																
Local	22.4	18.3	44.7	48.3	32.2	45.5	34.3	25.8	32.7	18.6	38.0	28.6	26.4	-	26.3	26.6
State	76.2	70.4	49.1	48.3	67.8	49.7	62.8	72.5	64.5	72.5	62.0	64.8	63.9	-	67.1	62.8
Non-state	1.4	11.3	6.1	3.4	-	4.7	2.9	1.7	2.7	8.8	-	6.6	9.7	-	6.6	10.6
Species Comp. (%)																
Butter	0.2	1.7	0.8	1.9	3.2	2.4	5.8	4.3	4.4	1.8	3.9	1.9	1.6	-	2.8	0.7
Cockle	7.9	1.4	15.7	7.2	12.9	5.2	11.2	14.4	2.8	10.1	9.9	12.1	1.9	-	9.8	8.8
Gaper	89.6	94.8	81.0	85.4	72.9	80.1	62.4	65.1	83.6	39.9	69.1	60.2	93.3	-	85.0	88.0
Littleneck	0.4	2.1	1.7	4.5	2.8	4.5	7.4	2.6	5.3	3.7	3.6	3.8	3.1	-	-	2.1
Softshell	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Other ¹	-	-	-	-	-	7.8	13.2	-	-	-	-	-	-	-	2.4	-
Clams/trip																
Butter	<0.1	<0.1	0.1	0.2	0.3	0.2	0.5	0.5	0.4	0.1	0.3	0.2	0.2	-	.3	0.1
Cockle	0.7	<0.1	1.7	0.8	1.0	0.4	1.0	1.6	0.6	0.8	0.8	1.4	0.2	-	1.1	0.9
Gaper	8.2	8.2	8.9	9.2	5.6	5.8	5.3	7.4	7.3	3.2	5.7	6.8	10.3	-	9.6	9.1
Littleneck	0.1	0.2	0.2	0.5	0.2	0.3	0.6	0.3	0.5	0.3	0.3	0.4	0.3	-	-	0.2
Softshell	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Clams/hour																
Butter	<0.1	0.1	0.1	0.2	0.2	0.1	0.3	0.4	0.3	0.1	0.3	0.1	0.1	-	.22	0.1
Cockle	0.9	0.1	1.1	0.8	0.7	0.3	0.6	1.3	0.2	0.5	0.8	0.8	0.1	-	.77	0.7
Gaper	9.8	7.3	8.6	8.9	4.1	4.2	3.6	5.8	5.0	2.1	5.6	3.9	7.0	-	6.7	6.8
Littleneck	-	-	-	-	0.2	0.2	0.4	0.2	0.3	0.2	0.3	0.2	0.2	-	-	0.2
Softshell	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

¹ Bentnose 7.0%, Inquinata 0.2%, other 0.6%.

Table 7. Annual summary of recreational interview data; Umpqua Triangle.

	1991	1992	1993	1994*
No. Diggers Sampled	59	-	66	-
No. Clams Sampled	894	-	569	-
No. Digger Hours	81	-	97	-
Hours/trip	1.4	-	1.5	-
Clams/trip	15.2	-	9.6	-
Clams/hour	11.1	-	5.8	-
Digger Origin (%)				
Local	52.5	-	47.0	-
State	33.9	-	25.8	-
Non-state	13.6	-	27.2	-
Species Comp. (%)				
Butter	0.0	-	-	-
Cockle	82.4	-	79.8	-
Gaper	17.4	-	20.0	-
Littleneck	0.1	-	-	-
Softshell	-	-	-	-
Clams/trip				
Butter	0.0	-	-	-
Cockle	12.5	-	6.9	-
Gaper	2.6	-	1.7	-
Littleneck	-	-	-	-
Softshell	-	-	-	-
Clams/hour				
Butter	0.0	-	-	-
Cockle	12.5	-	4.7	-
Gaper	2.6	-	1.2	-
Littleneck	-	-	-	-
Softshell	-	-	-	-

* Not sampled in 1994.

Table 8. Annual summary of recreational interview data; Smith River Bridge.

	1993	1994
No. Diggers Sampled	48	135
No. Clams Sampled	1,566	5,691
No. Digger Hours	58	143
Hours/trip	1.2	1.1
Clams/trip	32.6	42.2
Clams/hour	27.0	39.8
Digger Origin (%)		
Local	37.5	53.0
State	52.1	32.1
Non-state	10.4	15.0
Species Comp. (%)		
Butter	-	-
Cockle	-	-
Gaper	-	-
Littleneck	-	-
Softshell	100	100
Clams/trip		
Butter	-	-
Cockle	-	-
Gaper	-	-
Littleneck	-	-
Softshell	32.6	42.2
Clams/hour		
Butter	-	-
Cockle	-	-
Gaper	-	-
Littleneck	-	-
Softshell	27.0	39.8

Table 9. Annual summary of recreational interview data; Charleston Triangle, Coos Bay.

	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
No. Diggers Sampled	40	32	20	58	91	50	96	107	40	-	-	43
No. Clams Sampled	771	588	410	1,193	1,647	814	1,535	1,742	606	-	-	438
No. Digger Hours	44	27	25	75	105	75	115	141	47.5	-	-	69
Hours/trip	1.1	0.8	1.2	1.3	1.2	1.5	1.2	1.3	1.2	-	-	1.6
Clams/trip	19.3	18.4	20.5	20.6	18.1	16.3	16.0	16.3	15.2	-	-	10.2
Clams/hour	17.5	22.0	16.7	16.0	15.7	10.9	13.4	12.4	12.8	-	-	6.3
Digger Origin (%)												
Local	22.5	40.6	50.0	29.3	34.1	20.0	21.9	20.6	22.5	-	-	26.8
State	72.5	56.3	35.0	62.1	47.3	52.0	68.8	71.0	37.5	-	-	51.2
Non-state	5.0	3.1	15.0	8.6	18.1	28.0	9.4	8.4	40.0	-	-	22.0
Species Comp. (%)												
Butter	19.6	10.9	13.2	2.6	13.2	11.8	2.7	3.3	0.2	-	-	0.5
Cockle	55.1	69.2	56.6	66.5	47.3	43.2	47.5	34.6	57.6	-	-	3.0
Gaper	3.9	15.0	20.5	17.5	31.3	32.9	44.9	48.1	41.7	-	-	91.6
Littleneck	23.2	4.9	9.5	8.5	5.8	8.8	5.0	9.4	0.5	-	-	-
Softshell	-	-	-	0.3	0.1	-	-	0.1	-	-	-	-
Clams/trip												
Butter	3.8	2.0	2.7	0.5	2.4	1.9	0.4	0.5	-	-	-	0.1
Cockle	10.6	12.7	11.6	13.7	8.6	7.0	7.4	5.6	8.7	-	-	0.3
Gaper	0.8	2.8	4.2	3.6	5.7	5.4	7.0	7.8	6.3	-	-	9.3
Littleneck	4.5	0.9	1.9	1.8	1.1	1.4	0.8	1.5	0.1	-	-	0.5
Softshell	-	-	-	0.1	-	-	-	<0.1	-	-	-	-
Clams/hour												
Butter	3.4	2.4	2.2	0.4	2.1	1.3	0.3	0.4	-	-	-	-
Cockle	9.7	15.2	9.5	10.6	7.4	4.7	6.2	4.3	7.3	-	-	0.2
Gaper	0.7	3.3	3.4	2.8	4.9	3.6	5.9	6.0	5.3	-	-	5.8
Littleneck	4.1	1.1	1.6	1.4	0.9	1.0	0.7	1.2	0.1	-	-	0.3
Softshell	-	-	-	0.1	-	-	-	<1.2	-	-	-	-
Size Comp. (x size)												
Butter	73.3	80.2	82.5	75.3	78.2	80.7	85.9	80.6	85.3	-	-	-
Cockle	51.2	66.3	62.6	63.2	61.2	61.4	59.1	60.6	55.1	-	-	-
Gaper	88.6	95.2	98.2	97.3	99.1	103.3	98.7	113.3	107.7	-	-	-
Littleneck	55.2	57.6	61.3	61.1	58.9	62.1	64.8	63.9	66.0	-	-	-
Softshell	-	-	-	-	-	-	-	-	-	-	-	-
No. Clams Measured												
Butter	39	17	52	15	118	88	30	19	3	-	-	-
Cockle	45	218	185	175	298	149	169	97	238	-	-	-
Gaper	26	54	67	30	187	165	158	125	192	-	-	-
Littleneck	18	159	41	51	64	63	29	57	3	-	-	-
Softshell	-	-	-	-	-	-	-	-	-	-	-	-

Table 10. Annual summary of recreational interview data; Charleston Flat, Coos Bay.

	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
No. Diggers Sampled	60	27	18	100	113	97	61	65	65	-	-	90
No. Clams Sampled	859	435	341	1,980	2,145	1,523	974	887	938	-	-	925
No. Digger Hours	125	29	32	180	185	176	103	113	110	-	-	113
Hours/trip	2.1	1.1	1.8	1.8	1.6	1.8	1.7	1.7	1.7	-	-	1.26
Clams/trip	14.3	16.1	18.9	19.8	19.0	15.7	16.0	13.6	14.4	-	-	10.3
Clams/hour	6.9	15.1	10.7	11.0	11.6	8.7	9.5	7.8	8.6	-	-	8.2
Digger Origin (%)												
Local	21.7	40.7	16.7	35.0	28.3	20.6	14.8	36.9	41.5	-	-	11.4
State	73.3	51.9	38.9	57.0	48.7	66.0	68.9	49.2	46.2	-	-	65.9
Non-state	5.0	7.4	44.4	8.0	23.0	13.4	16.4	13.8	12.3	-	-	22.7
Species Comp. (%)												
Butter	2.0	4.6	6.7	2.8	2.7	10.2	4.8	5.5	19.4	-	-	3.6
Cockle	46.6	60.9	72.4	83.3	63.9	35.4	31.8	9.1	16.5	-	-	4.5
Gaper	38.8	27.6	17.3	8.8	26.2	42.5	47.7	71.6	58.3	-	-	84.7
Littleneck	10.6	3.7	3.5	4.1	4.7	10.8	14.5	11.6	5.8	-	-	7.0
Softshell	-	3.0	-	0.1	-	0.4	1.3	-	0.0	-	-	-
Clams/trip												
Butter	0.3	0.7	1.3	0.6	0.5	1.6	0.7	0.8	2.7	-	-	0.4
Cockle	6.7	9.8	13.7	16.5	12.1	5.6	4.9	1.2	2.3	-	-	0.5
Gaper	5.6	4.4	3.3	1.8	5.0	6.7	7.3	9.8	8.1	-	-	8.7
Littleneck	1.5	0.6	0.7	0.8	0.9	1.7	2.2	1.6	0.8	-	-	0.7
Softshell	-	0.5	-	<0.1	-	0.1	0.2	-	-	-	-	-
Clams/hour												
Butter	0.1	0.7	0.7	0.3	0.3	0.9	0.4	0.4	1.6	-	-	0.3
Cockle	3.2	9.2	7.7	9.2	7.4	3.1	2.9	0.7	1.4	-	-	0.4
Gaper	2.7	4.6	1.8	1.0	3.0	3.7	4.3	5.6	4.8	-	-	6.9
Littleneck	0.7	0.6	0.4	0.5	0.5	0.9	1.3	0.9	0.5	-	-	0.6
Softshell	-	-	-	<0.1	-	-	0.1	-	-	-	-	-
Size Comp. (x size)												
Butter	84.0	78.1	75.0	78.9	81.3	78.3	93.7	79.3	72.5	-	-	-
Cockle	59.9	63.2	62.2	66.9	65.6	62.3	62.6	56.2	67.2	-	-	-
Gaper	100.6	105.9	110.1	109.1	109.0	106.9	102.4	103.1	107.2	-	-	-
Littleneck	55.0	65.0	62.2	60.5	58.4	65.8	59.3	61.8	50.8	-	-	-
Softshell	-	-	-	-	-	-	-	-	-	-	-	-
No. Clams Measured												
Butter	1	13	20	43	44	86	39	46	129	-	-	-
Cockle	38	92	247	234	128	193	163	88	135	-	-	-
Gaper	13	80	58	70	188	271	109	150	166	-	-	-
Littleneck	3	2	13	30	86	96	102	98	42	-	-	-
Softshell	-	-	-	-	-	-	-	-	-	-	-	-

Table 11. Annual summary of recreational interview data; Pigeon Point, Coos Bay.

	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
No. Diggers Sampled	111	43	10	68	64	24	59	37	44	-	-	18
No. Clams Sampled	1,681	679	190	1,160	1,003	444	927	485	700	-	-	163
No. Digger Hours	95	70	19	145	119	42	105	67	78	-	-	24
Hours/trip	0.9	1.6	1.9	2.1	1.9	1.8	1.8	1.8	1.8	-	-	1.3
Clams/trip	15.1	15.8	19.0	17.1	15.7	18.5	15.7	13.1	15.9	-	-	9.0
Clams/hour	17.7	9.7	10.0	8.0	8.4	10.6	8.9	7.3	9.0	-	-	6.8
Digger Origin (%)												
Local	45.9	65.1	20.0	51.5	32.8	41.7	23.7	40.5	43.2	-	-	35.3
State	48.6	27.9	60.0	41.2	51.6	58.3	61.0	51.4	20.5	-	-	52.9
Non-state	5.4	7.0	20.0	7.4	15.6	-	15.3	8.1	36.4	-	-	11.8
Species Comp. (%)												
Butter	27.1	36.4	47.9	56.5	48.6	44.8	40.5	37.7	57.7	-	-	37.4
Cockle	0.7	8.0	2.1	1.3	6.0	-	4.5	-	-	-	-	5.5
Gaper	51.2	32.7	10.0	17.2	11.1	15.3	3.0	23.9	15.5	-	-	3.1
Littleneck	20.9	22.5	39.5	24.1	33.3	32.9	51.9	37.5	26.9	-	-	52.8
Softshell	-	0.6	-	0.8	-	0.7	-	-	-	-	-	-
Clams/trip												
Butter	4.1	5.4	9.1	9.6	7.6	8.3	6.4	4.9	9.2	-	-	3.4
Cockle	0.1	1.3	0.4	0.2	0.9	-	0.7	-	-	-	-	0.5
Gaper	7.7	5.2	1.9	2.9	1.7	2.8	0.5	3.1	2.5	-	-	0.3
Littleneck	3.2	3.6	7.5	4.1	5.2	6.1	8.1	4.9	4.3	-	-	4.8
Softshell	-	0.1	-	0.1	-	0.1	-	-	-	-	-	-
Clams/hour												
Butter	4.8	3.5	4.8	4.5	4.1	4.7	3.6	2.8	5.2	-	-	2.5
Cockle	0.1	0.8	0.2	0.1	0.5	-	0.4	-	-	-	-	0.4
Gaper	9.1	3.2	1.0	1.4	0.9	1.6	0.3	1.7	1.4	-	-	0.2
Littleneck	3.7	2.2	3.9	1.9	2.8	3.5	4.6	2.7	2.4	-	-	3.6
Softshell	-	0.1	-	0.1	-	0.1	-	-	-	-	-	-
Size Comp. (x size)												
Butter	85.9	84.8	84.3	84.0	87.2	81.0	76.0	81.1	74.1	-	-	-
Cockle	37.9	-	40.0	-	-	-	-	-	-	-	-	-
Gaper	108.0	104.5	85.3	107.9	102.6	109.5	92.1	84.7	109.1	-	-	-
Littleneck	67.2	62.0	60.6	63.3	54.6	58.6	57.2	60.2	57.6	-	-	-
Softshell	-	-	-	-	-	-	-	-	-	-	-	-
No. Clams Measured												
Butter	44	93	51	145	186	108	214	123	291	-	-	-
Cockle	7	-	4	-	-	-	-	-	-	-	-	-
Gaper	46	52	19	15	82	20	42	86	128	-	-	-
Littleneck	9	50	74	22	172	29	234	102	119	-	-	-
Softshell	-	-	-	-	-	-	-	-	-	-	-	-

Table 12. Peak counts of clam diggers¹.

Estuary	Tideflat	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Tillamook	Garibaldi Flat	300	460	516	487	350	118	380	400	257	547	585	127	-	482	500
	Bay Ocean	-	33	13	10	4	-	17	3	-	-	-	-	-	-	-
Netarts	Happy Camp	160	425	500	478	200	191	314	265	116	163	126	-	-	150	30
Yaquina	Bridge Bed	84	225	625	275	84	107	204	225	110	235	158	176	-	61	22
Umpqua	Smith River Bridge	-	-	-	-	-	-	-	-	-	-	-	-	-	23	-
	Umpqua Triangle	-	-	-	-	-	-	-	-	-	-	-	43	-	31	-
Coos Bay	Charleston Triangle	-	-	-	31	24	41	39	87	82	59	66	36	-	-	44
	Charleston Flat	-	-	-	64	30	26	27	66	103	54	84	65	-	-	34
	Pigeon Point	-	-	-	62	50	42	67	97	52	51	74	44	-	-	7

¹ Number of clam diggers actually on tideflat at time of count. Count occurred at or near low tide.

Table 13. Annual summary of recreational interview data; all estuaries combined.

	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
No. Diggers Sampled	1,603	1,284	1,276	870	1,506	1,800	898	1,392	1,508	1,324	1,549	1,363	1,131	-	3,137	4,090
No. Clams Sampled	24,697	21,601	19,610	12,928	22,189	33,916	14,614	24,691	25,313	21,986	26,708	22,847	19,059	-	58,061	79,975
No. Digger Hours	1,986	1,718	1,606	1,104	2,113	2,589	1,303	2,128	2,154	1,876	2,259	2,029	1,662	-	2,859	3,525
Hours/trip	1.2	1.3	1.3	1.3	1.4	1.4	1.5	1.5	1.4	1.4	1.5	1.5	1.5	-	.91	.86
Clams/trip	15.4	16.8	15.4	14.9	14.7	18.8	16.3	17.7	16.8	16.6	17.2	16.8	16.9	-	18.5	19.6
Clams/hour	12.4	12.6	12.2	11.7	10.5	13.1	11.2	11.6	11.8	11.7	11.8	11.3	11.5	-	20.3	22.7
Digger Origin (%)																
Local	29.3	22.9	30.6	40.5	33.6	42.7	37.8	36.9	35.6	33.2	32.6	31.3	41.1	-	38.7	30.3
State	63.8	70.5	60.0	54.0	60.7	52.7	53.7	56.7	53.4	56.7	58.2	62.7	45.6	-	54.3	64.2
Non-state	7.0	6.6	9.4	5.5	5.7	4.7	8.6	6.4	10.9	10.1	9.2	5.9	13.3	-	7.0	5.5
Species Comp. (%)																
Butter	8.5	12.8	15.8	16.2	9.9	7.8	10.6	13.3	15.3	16.5	19.4	22.7	10.3	-	26.6	15.6
Cockle	53.1	44.3	29.3	31.3	31.2	22.7	32.2	40.7	41.7	37.7	26.8	30.4	28.9	-	45.7	52.2
Gaper	25.1	17.9	24.9	31.8	35.6	26.1	23.6	20.8	24.0	20.0	19.8	23.6	24.2	-	7.8	4.3
Littleneck	6.5	7.5	9.9	8.1	7.8	6.2	5.0	6.7	5.2	14.1	11.9	8.7	18.5	-	16.9	20.1
Softshell	6.7	17.5	20.1	12.5	15.4	37.2	28.7	17.1	12.4	9.3	20.9	12.4	18.2	-	2.9	7.8
Clams/trip																
Butter	1.3	2.2	2.4	2.4	1.4	1.5	1.7	2.4	2.6	2.7	3.4	3.8	1.7	-	4.9	3.1
Cockle	8.1	7.4	4.5	4.6	4.5	4.3	5.1	7.2	7.0	6.3	4.6	5.1	4.8	-	8.5	10.2
Gaper	3.8	3.0	3.8	4.7	5.1	4.9	3.8	3.7	4.0	3.3	3.4	4.0	4.0	-	1.4	0.8
Littleneck	1.0	1.3	1.5	1.2	1.1	1.2	0.8	1.2	0.9	2.3	2.0	1.5	3.1	-	3.1	3.9
Softshell	1.0	2.9	3.1	1.9	2.2	6.9	4.6	3.0	2.1	1.5	3.6	2.1	3.0	-	0.5	1.5
Clams/hour																
Butter	1.0	1.6	1.9	1.9	1.0	1.0	1.2	1.5	1.8	1.9	2.3	2.6	1.2	-	5.4	3.5
Cockle	6.5	5.6	3.6	3.6	3.2	3.0	3.5	4.7	4.9	4.4	3.2	3.4	3.3	-	9.3	11.8
Gaper	3.1	2.2	3.0	3.7	3.6	3.4	2.6	2.4	2.8	2.3	2.3	2.7	2.7	-	1.6	1.0
Littleneck	0.3	0.9	1.2	1.0	0.8	0.8	0.5	0.8	0.6	1.7	1.4	1.0	2.1	-	3.4	4.6
Softshell	0.8	2.2	2.4	1.5	1.6	4.8	3.2	2.0	1.5	1.1	2.5	1.4	2.1	-	0.6	1.8
Size Comp. (x size)																
Butter	78.9	69.2	78.1	75.1	71.0	79.5	76.5	79.8	83.0	83.9	78.5	78.5	81.6	-	-	-
Cockle	63.1	60.2	55.3	63.2	60.8	62.0	64.2	63.3	61.9	63.9	63.5	61.4	63.0	-	-	-
Gaper	93.0	98.0	104.3	101.4	103.6	104.2	108.0	111.6	107.9	110.3	110.4	113.7	120.0	-	-	-
Littleneck	47.0	39.8	44.2	40.2	41.4	50.1	66.5	47.7	53.2	52.0	51.8	53.4	46.3	-	-	-
Softshell	89.5	86.4	88.2	81.8	87.7	86.0	88.4	91.0	92.7	87.9	87.5	89.6	89.0	-	-	-
No. Clams Measured	8,643	6,661	5,372	4,044	6,774	5,152	7,438	6,997	6,403	5,990	6,853	5,448	6,781	-	-	-

Table 14. Oregon commercial clam harvest in pounds, 1970-94.

Year	Harvest (lb)	# Diggers	# Landings	Ave. lb/landing	# Permits Issued
1970	25,884	40	258	100.3	0
1971	28,526	50	230	124.0	0
1972	61,523	37	354	174.8	0
1973	17,156	19	187	91.7	0
1974	16,315	23	182	39.6	0
1975	25,908	19	116	227.3	0
1976	88,054	7	97	946.8	0
1977	85,733	29	155	304.0	0
1978	216,926	15	218	943.2	0
1979	94,912	19	128	741.5	0
1980	80,467	36	176	442.1	0
1981	81,138	30	336	222.5	0
1982	134,105	46	538	245.3	0
1983	136,185	41	811	168.0	0
1984	120,574	30	704	171.3	0
1985	99,254	44	614	161.7	65
1986	82,829	36	664	124.7	65
1987	46,283	34	385	120.2	121
1988	44,696	28	258	173.2	136
1989	60,482	24	221	273.7	111
1990	72,756	38	384	189.5	92
1991	87,842	40	473	185.7	126
1992	62,044	29	410	151.3	115
1993	127,730	38	733	174.3	111
1994	180,934	32	422	428.8	113

Table 15. Summary of pounds of bay clams reported commercially harvested in Oregon by species, 1970-94.

Year	Butter	Cockle	Gaper	Littleneck	Softshell	Macoma	Total
1970	885	12,257	1,218	863	10,661	0	25,884
1971	217	9,391	10,345	639	7,714	220	28,526
1972	52	7,269	34,006	1,406	18,772	0	61,505
1973	95	5,756	185	9,771	1,349	0	17,156
1974	412	6,073	0	8,987	843	0	16,315
1975	0	6,855	15,024	4,311	360	0	26,550
1976	816	322	85,831	455	630	0	88,054
1977	607	859	81,775	232	1,366	894	85,733
1978	1,452	6,717	207,685	1,056	52	0	216,962
1979	606	2,299	91,028	0	979	0	94,912
1980	40	2,244	74,459	4,268	456	0	81,467
1981	2,409	4,580	68,508	4,892	749	0	81,138
1982	3,654	10,517	106,440	13,231	248	0	134,090
1983	4,035	2,579	95,091	34,444	36	0	136,185
1984	4,842	17,912	50,573	46,874	366	0	120,567
1985	1,646	29,412	20,121	46,266	1,809	0	99,254
1986	2,862	31,681	17,021	27,487	3,558	0	82,609
1987	3,046	20,202	6,368	14,140	2,527	0	46,283
1988	2,492	30,068	3,816	6,884	1,436	0	44,696
1989	3,806	44,344	5,164	6,032	1,136	0	60,482
1990	4,604	45,607	10,391	7,521	4,633	0	72,756
1991	3,690	58,282	8,660	8,708	9,215	0	87,842
1992	475	35,800	8,609	10,980	6,180	0	62,044
1993	6,382	72,340	4,169	35,913	7,312	0	127,730
1994	1,961	163,295	2,146	6,084	7,448	0	180,934

Table 16. Summary of pounds of bay clams reported commercially harvested in major Oregon estuaries, 1970-94.

Year	Nehalem	Tillamook	Netarts	Yaquina	Alsea	Siuslaw	Umpqua	Coos	Coquille	Total
1970	258	7,819	2,210	444	0	0	10,631	4,522	0	25,884
1971	589	6,168	1,598	1,819	0	0	7,459	10,893	0	28,526
1972	80	9,637	914	57	70	0	6,105	44,642	0	61,505
1973	329	11,997	1,191	0	0	0	786	2,853	0	17,156
1974	882	9,309	2,049	398	0	0	445	3,232	0	16,315
1975	0	4,637	0	0	13	0	309	21,553	38	26,550
1976	0	998	0	0	480	0	0	86,576	0	88,054
1977	0	2,619	0	71,013	0	0	35	12,066	0	85,733
1978	0	3,111	0	172,047	0	0	0	41,804	0	216,962
1979	174	433	0	74,565	0	3,432	0	16,308	0	94,912
1980	373	5,320	486	244	0	9,109	0	65,935	0	81,467
1981	65	4,259	0	128	0	684	0	76,002	0	81,138
1982	10,862	11,501	37	15	0	223	25	111,427	0	134,090
1983	31,856	3,144	200	5,253	0	15	0	95,717	0	136,185
1984	23,069	42,663	0	22	0	50	0	54,763	0	120,567
1985	40,349	34,148	240	0	0	895	268	23,030	324	99,254
1986	30,545	28,737	480	6	0	1,206	0	19,557	2,078	82,609
1987	10,723	22,936	0	1,114	250	654	0	10,214	392	46,283
1988	0	34,450	0	1,153	230	1,200	28	7,086	549	44,696
1989	80	49,650	0	2,790	993	600	150	6,183	36	60,482
1990	5,810	47,198	0	1,543	410	0	3,432	14,363	0	72,756
1991	6,331	50,860	7,451	1,013	530	120	8,322	12,501	60	87,842
1992	4,597	35,935	879	7,067	1,398	0	6,095	5,986	87	62,044
1993	31,966	76,103	54	2,843	1,495	93	7,105	5,698	0	127,730
1994	5,533	149,494	422	2,413	3,441	0	7,403	12,042	25	180,934