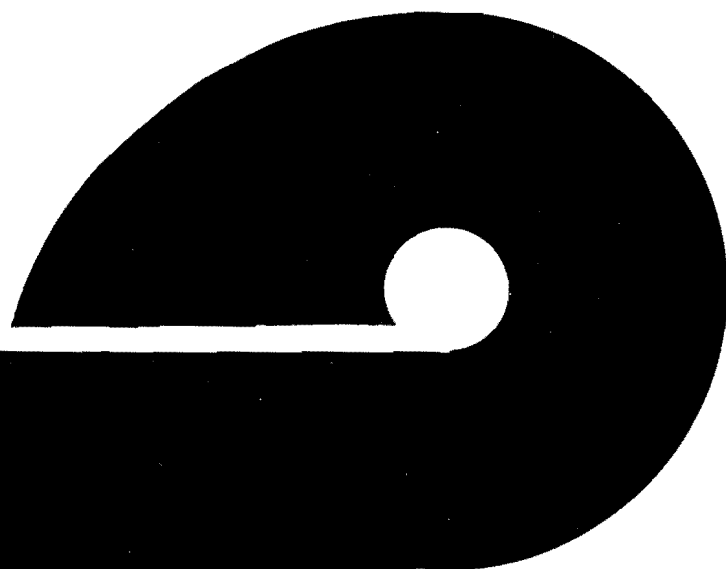


FISH COMMISSION OF OREGON

UMPQUA RIVER ESTUARY

A STUDY IN RESOURCE USE
DIVISION OF MANAGEMENT AND RESEARCH



1971 UMPQUA RIVER ESTUARY RESOURCE USE STUDY

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TABLE OF CONTENTS

	Page No.
INTRODUCTION	7
PROCEDURE	7
RESULTS	8
Boat Fishery	8
Shore Fishery	8
Tideflat Fishery	8
Scuba Fishery	9
Angler Origin	9
Combined Recreational Fisheries	9
Commercial Fishery	10
Eel Grass Beds	10
Food Production Areas, Fish Feeding Areas, Fish Migration Routes, and Known Herring Spawning Areas	10
ACKNOWLEDGMENTS	11

LIST OF FIGURES

Figure No.		Page No.
1	Location of Umpqua River Estuary	6
2	1971 FCO Resource Survey Sampling Areas	23
3	Principal Boat Fishing Areas	24
4	Clam Beds	25
5	Eel Grass Beds	26
6	Food Production Areas, Fish Feeding Areas, Fish Migration Routes, and Known Herring Spawning Areas	27

LIST OF TABLES

Table No.		Page No.
1	Location of Sampling Stations, Umpqua River Estuary, 1971	12
2	Number of Boat Angler Trips, by Month and Area, Umpqua River Estuary, March 1 through October 31, 1971	12
3	Hours of Boat Angler Use, by Month and Area, Umpqua River Estuary, March 1 through October 31, 1971	13
4	Marine Animals Caught by Boat Anglers, Umpqua River Estuary, by Species and Area, March 1 through October 31, 1971	13
5	Sport Boat Fishing Data, Umpqua River Estuary, All Areas, 1971	14
6	Number of Shore Angler Trips by Month and Area, Umpqua River Estuary, March 1 through October 31, 1971	15
7	Hours of Shore Angler Use by Month and Area, Umpqua River Estuary, March 1 through October 31, 1971	15
8	Marine Animals Caught by Shore Anglers, Umpqua River Estuary, by Species and Area, March 1 through October 31, 1971	16
9	Shore Fishing Data, Umpqua River Estuary, All Areas, 1971	17
10	Number of Tideflat User Trips by Month and Area, Umpqua River Estuary, March 1 through October 31, 1971	18
11	Hours of Tideflat Use by Month and Area, Umpqua River Estuary, March 1 through October 31, 1971	18
12	Marine Animals Caught by Tideflat Users, Umpqua River Estuary, by Species and Area, March 1 through October 31, 1971	19
13	Summary of Numbers of Angler Trips, Hours of Effort, and Animals Caught, Umpqua River Estuary, by Station, March 1 through October 31, 1971	20
14	Summary of Numbers of Angler Trips, Hours of Effort, and Animals Caught, Umpqua River Estuary, by Month, March 1 through October 31, 1971	21
15	Taxonomic List of Species Harvested by Estuarine Resource Users, Umpqua River Estuary, March 1 through October 31, 1971	22

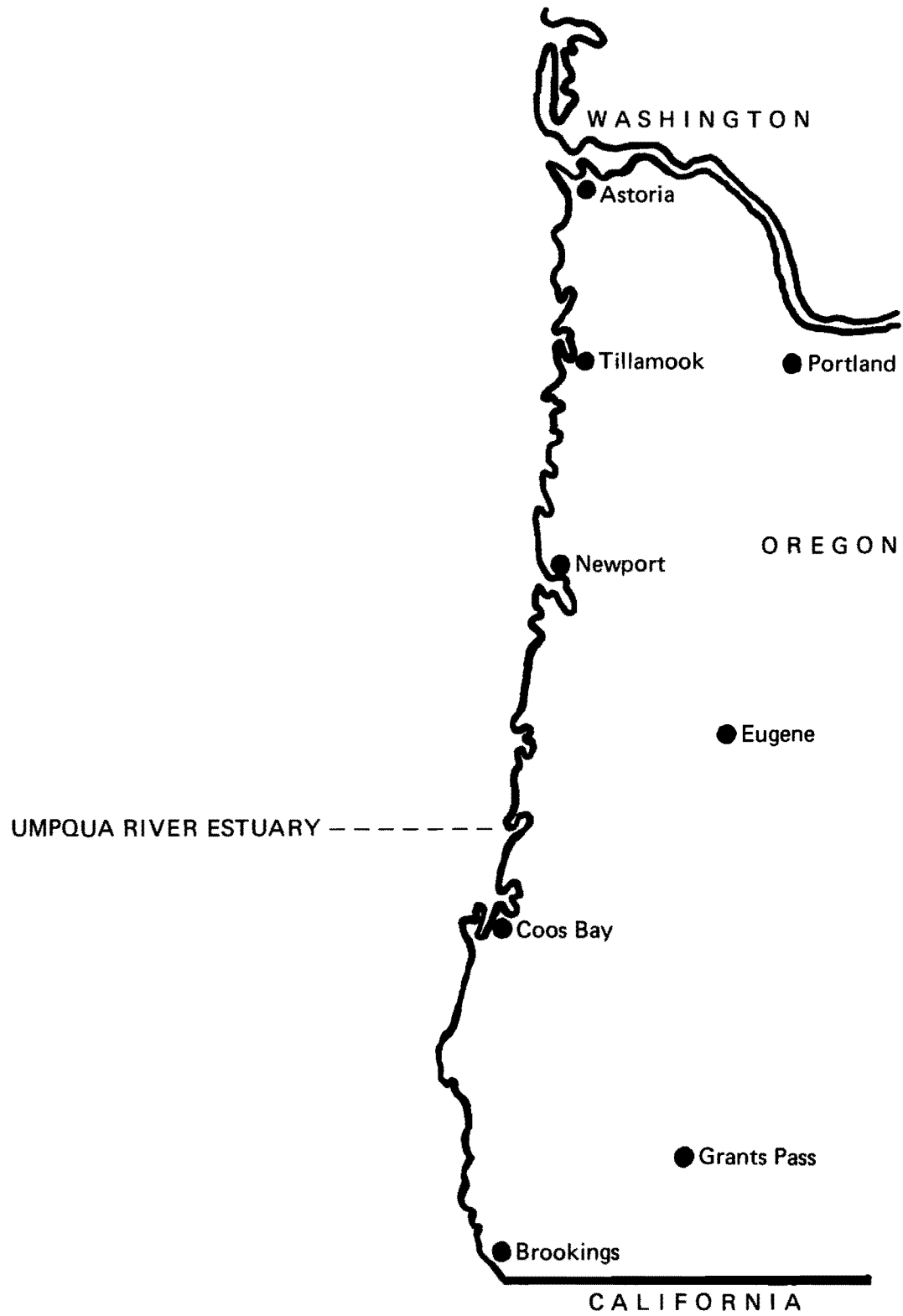


Figure 1. Location of Umpqua River Estuary.

1971 UMPQUA RIVER ESTUARY RESOURCE USE STUDY

INTRODUCTION

In 1971 the Fish Commission of Oregon conducted a comprehensive study of the recreational use of marine food fish, shellfish, and other miscellaneous invertebrates in 16 Oregon estuaries. The anadromous sport fisheries in the upper portions of most estuaries were not included in the study due to the lack of manpower to adequately sample those areas. The study was supported by state general funds and by the National Marine Fisheries Service under the Commercial Fisheries Research and Development Act. The U.S. Army Corps of Engineers funded portions of the data processing, preparation of a series of marine resource maps, and a special report for each estuary. This report summarizes the results of the Umpqua River Estuary study.

PROCEDURE

The Umpqua River Estuary is located 222 miles south of the Columbia River (Figure 1). The 5,712 acre bay contains 1,531 acres of tidelands.

From March 1 through October 31, 1971, boat and shore anglers, tideflat users, and scuba divers were interviewed for catch, effort, and origin data in a program designed for statistical analysis. Resource users were categorized as: (1) county, those people that reside within the county where the sampled estuary is found, but west of the coast range summit; (2) state, those people who are residents of Oregon, but are not classified as county; and (3) non-state, those people that are not residents of Oregon.

The study area extended from the seaward ends of the two jetties upstream 12 miles to the confluence of the Smith River. Included in the study area was Winchester Bay. The north jetty was not included in the shore sample due to limited access to anglers and samplers. Survey areas and their station numbers are outlined in Table 1 and are shown in Figure 2.

The 1971 Umpqua River Estuary commercial landings of fish and shellfish and their value, taken from Fish Commission catch statistic reports, are included in the results as supplemental information.

The following maps were prepared using information collected in previous Fish Commission studies and the 1971 resource use survey.

1. Principle boat fishing areas.
2. Clam beds.
3. Eel grass beds.
4. Food production areas, fish feeding areas, fish migration routes, and known herring spawning areas.

RESULTS

During the study 3,985 boat, shore, tideflat, and scuba resource user interviews were obtained to estimate catch and effort values and angler origin. The values presented in the tables are estimates, and have been rounded off when used in the text.

Boat Fishery

Figure 3 shows the principle boat fishing areas of the Umpqua River Estuary. Both sport and commercial boat fishing areas are combined on the map. Principle species of fish and shellfish caught and peak periods of fishing activity are outlined.

Interview data revealed that 7,600 boat angler trips were expended on the Umpqua River Estuary (Table 2). Of this total 6,300 or 84% occurred above Winchester Point. These boat anglers spent 28,600 hours fishing (Table 3). The peak months of activity were July, August, and September.

Fifteen species of fish and one species of crab were identified in the angler catch (Table 4). Dungeness crab and striped bass were the principle species taken and accounted for 72% of the total number of animals caught. The area between Winchester Point and the Highway 101 bridge was the principle area of catch, providing 2,500 animals or 63% of the harvest. The major catches occurred during the months of May through September (Table 5). Fishing success (catch per hour) was highest during April.

Shore Fishery

An estimated 48,700 shore angler trips were expended on the Umpqua River Estuary (Table 6). The south jetty was the principle fishing area; 25% of the anglers fished there. Shore anglers spent 107,600 hours fishing (Table 7). The peak months of activity were June, July, and August.

Twenty-seven species of fish and two species of crabs were identified in the shore anglers' catch (Table 8). Pacific tomcod, shiner perch, redbtail surfperch, and Pacific staghorn sculpin were the principle species taken, accounting for 81% of the total number of animals caught. The peak catch occurred during the months of June and July (Table 9). Fishing success was highest during July which can be attributed to an increase of tomcod in the bay.

Tideflat Fishery

Figure 4 shows the distribution of bay clams in the Umpqua River Estuary. The majority of the clams are dug between The Point (river mile 7) and Bolon Island (river mile 12). The principle areas of digging are outlined on the map.

Table 10 shows that 3,200 tideflat user trips were expended to harvest clams and miscellaneous invertebrates from the Umpqua River Estuary. These tideflat users spent 5,900 hours collecting marine animals (Table 11). The peak month of activity was July. The major digging effort (39%) was expended in the Bolon Island area where 1,200 tideflat users spent 2,200 hours collecting tideflat animals.

Softshell clam was the only species of clam dug (Table 12). Bolon Island was the principle area of catch providing 31,400 clams or 37% of the harvest. The small number of miscellaneous invertebrates collected precluded making estimates of numbers of these animals in the catch.

Scuba Fishery

The small number of scuba divers interviewed on the Umpqua River Estuary precluded making an estimate of catch and effort for this fishery.

Angler Origin

Over half (55%) of the anglers interviewed were residents of the state of Oregon living outside of western Douglas County as shown below. Thirty per cent of the resource users were local county residents and 15% were nonresidents.

	Angler Origin		
	County	State	Non-State
Boat	2,063	4,643	857
Shore	14,181	26,711	7,793
Tideflat	1,635	1,236	352
Total	17,879	32,590	9,002
Percentage	30.1	54.8	15.1

This is a high proportion of state residents compared to Coos Bay where 52% of the anglers were county residents. The large number of out of county residents using the estuary can be attributed to the lack of nearby population centers.

Combined Recreational Fisheries

Analysis of Umpqua River Estuary data revealed that 59,500 resource user trips (7,600 boat, 48,700 shore, and 3,200 tideflat) were expended in the estuary during the study (Table 13). Approximately 55% of the resource users for the three fisheries were state residents living outside of Douglas County. The 59,500 user trips represent 142,100 hours of effort (28,600 boat, 107,600 shore, and 5,900 tideflat). The peak month of activity was July for the shore and tideflat fishery, and August for the boat fishery (Table 14). Combining all fisheries, Table 14 shows that July was the peak month of activity. Areas receiving the principle use for boat, shore, and tideflat fishery were Winchester Point to Highway 101 bridge (84%), south jetty (25%), and Bolon Island (39%), respectively.

Anglers of the three fisheries harvested 196,300 marine animals (107,600 fish, 84,600 clams, and 4,100 crabs). Fish comprised 69% of the boat anglers' total catch. Striped bass was the principle species caught. Fish were also the principle marine animals harvested by shore anglers and represented 97% of the total take. Pacific tomcod was the principle species caught followed by shiner perch and redbait surfperch. Softshell clams comprised 100% of the tideflat users' total take. Comparing the catch for all three fisheries revealed

that shore anglers harvested 107,800 or 55% of the total animals taken. Tideflat users harvested 84,600 clams, and boat anglers caught 3,900 marine animals. Peak month of catch was July for the shore and tideflat fishery and August for the boat fishery. Combining all fisheries, July was the principle month of catch.

Commercial Fishery

Commercial landings of marine food fish and shellfish caught in the Umpqua River Estuary in 1971 totaled 333,376 pounds valued at \$60,791 (fisherman's level) according to Fish Commission landing statistics, listed below. Shad was the principle species landed.

Species	Pounds	Value
Shad	246,968	\$34,000
Herring	14,235	14,235
Striped bass	56,321	9,000
Smelt	5,976	2,000
Bay clams	7,459	1,000
Dungeness crab	2,417	556
Total	333,376	\$60,791

Eel Grass Beds

Eel grass beds are found scattered throughout the Umpqua River Estuary up to the confluence of the Smith River with the Umpqua River (Figure 5). These beds are usually found in areas of shallow water and high salinities. Clams and other important marine fauna are usually an integral part of the eel grass beds.

Food Production Areas, Fish Feeding Areas, Fish Migration Routes, and Known Herring Spawning Areas

Figure 6 shows the food production areas, fish feeding areas, and fish migration routes in the Umpqua River Estuary. The only known herring spawning area in the Umpqua River Estuary (Winchester Bay) is also shown on the map. This bay produces approximately 43% of the annual commercial harvest of herring in Oregon making it the top producer in the state.

Estuaries are some of the most productive lands on earth. The productivity of estuarial areas is directly related to length of shore line, depth of water, and geographical location. Within each estuary, tidelands are generally more productive than deep water channel areas.

In the Umpqua River Estuary, the production of food organisms occurs throughout the entire estuary. These food organisms include the microscopic phytoplankton and other algae, zooplankton, small crustaceans, mollusks, annelids, and fish which are all important in the estuarine food chain.

The fish feeding areas of the Umpqua River Estuary (for finfish and shellfish) include all areas of the estuary under tidal influence. Tideflats as well as deep water channels and rocky areas provide a variety of rearing habitat. Species of fish, numbers, and distribution within each area are generally related to type of food organisms, bottom type, water depth, and water quality.

Forty-eight species of fish have been identified in the Umpqua River Estuary (Bob Mullen, personal communication). A taxonomic list of the species of marine animals observed in this study is contained in Table 15.

Fish and shellfish typically found associated with tideflats include flounder, sole, perch, rockfish, salmon, crabs, shrimp, and clams. In addition to those species found on tideflats, shad, sturgeon, striped bass, herring, anchovy, and smelt reside in the estuary channels; period of residency is dependent on species, season, and location.

Rocky areas in the Umpqua River Estuary are the preferred feeding and rearing areas of perch, rockfish, greenling, and cabezon. These fish reside near the jetties and rock groins of the lower bay.

Fish migration routes are those areas traveled by fish to and from spawning, feeding, or rearing areas. Fish migration routes through the Umpqua River Estuary are as varied as the fish that use them. Species and age class of fish, season, water depth, and water quality all play an important role in fish migration patterns.

The use of channel areas throughout the estuary by salmon, trout, shad, sturgeon, striped bass, perch, flounder, and baitfish is well known. In addition, during high tide these same fish frequently swim across tideflats to reach their destination.

ACKNOWLEDGMENTS

The Fish Commission of Oregon personnel who contributed in the gathering, compiling, analyzing of data, typing, and editing of this report are too numerous to mention by name. However, special thanks are due Mrs. Linda Karlik for the work on the resource maps and Mr. Louis Fredd for his assistance in analyzing the data.

**Table 1. LOCATION OF SAMPLING STATIONS
Umpqua River Estuary, 1971**

Fishing Activity	Station Number	Location
Boat	B-1	Winchester Point downstream to the westward end of the jetties
	B-2	Smith River downstream to Winchester Point
Shore	S-1	South Jetty
	S-2	Training Jetty
	S-3	Social Security Bay
	S-4	Coast Guard Jetty
	S-5	Winchester Point
	S-6	Docks A, B, C, D & E
	S-7	Docks F, G, H & I and ramps
	S-8	Coast Guard Park
	S-9	Reedsport - Gardiner area
Tideflat	T-1	Winchester Bay
	T-2	Jerden Cove
	T-3	Macey Cove
	T-4	Hunt (Double) Cove
	T-5	Henderson Cove
	T-6	North Spit
	T-7	The Point
	T-8	Three Mile
	T-9	Steamboat Island
	T-10	Bolon Island

**Table 2. NUMBER OF BOAT ANGLER TRIPS
By Month and Area, Umpqua River Estuary
March 1 through October 31, 1971**

Month	Fishing Area and Station Number		Total	Percentage
	Below Winchester Point	Winchester Point to Highway 101		
	B-1	B-2		
March	0	76	76	1.0
April	0	89	89	1.2
May	48	470	518	6.8
June	281	854	1,135	15.0
July	331	1,368	1,699	22.5
August	212	1,621	1,833	24.2
September	320	1,486	1,806	23.9
October	57	350	407	5.4
Total	1,249	6,314	7,563	100.0
Percentage	16.5	83.5	100.0	

**Table 3. HOURS OF BOAT ANGLER USE
By Month and Area, Umpqua River Estuary
March 1 through October 31, 1971**

Month	Boat Fishing Area and Station Number		Total	Percentage
	Below Winchester Point B-1	Winchester Point to Highway 101 B-2		
March	0	152	152	0.5
April	0	295	295	1.0
May	180	1,741	1,921	6.7
June	943	2,866	3,809	13.3
July	1,418	5,856	7,274	25.4
August	758	5,781	6,539	22.9
September	1,231	5,708	6,939	24.3
October	231	1,424	1,655	5.8
Total	4,761	23,823	28,584	99.9
Percentage	16.7	83.3	100.0	

**Table 4. MARINE ANIMALS CAUGHT BY BOAT ANGLERS
Umpqua River Estuary, by Species and Area
March 1 through October 31, 1971**

Species	Boat Fishing Area and Station Number		Total	Percentage
	Below Winchester Point B-1	Winchester Point to Highway 101 B-2		
Dungeness crab	1,055	146	1,201	30.8
Striped bass	0	1,621	1,621	41.6
Redtail surfperch	83	110	193	4.9
Coho salmon (adult)	134	23	157	4.0
Starry flounder	53	91	144	3.7
Green sturgeon	0	130	130	3.3
White sturgeon	0	116	116	3.0
Cutthroat trout	0	83	83	2.1
Largemouth bass	0	67	67	1.7
Black rockfish	55	0	55	1.4
Kelp greenling	36	0	36	0.9
Chinook salmon (adult)	0	36	36	0.9
Pacific staghorn sculpin	0	28	28	0.7
Striped seaperch	18	0	18	0.5
Pacific tomcod	10	0	10	0.3
Shiner perch	0	5	5	0.1
Total	1,444	2,456	3,900	99.9
Percentage	37.0	63.0	100.0	

Table 5. SPORT BOAT FISHING DATA
Umpqua River Estuary, All Areas
1971

	March	April	May	June	July	Aug.	Sept.	Oct.	Total	Percentage
Angler trips (number)	76	89	518	1,135	1,699	1,833	1,806	407	7,563	—
Fishing effort (hours)	152	295	1,921	3,809	7,274	6,539	6,939	1,655	28,584	—
Fishing success (catch/hr.)	0.10	0.32	0.29	0.20	0.10	0.13	0.11	0.09	0.14	—
Catch (number)										
Dungeness crab	14	89	212	94	302	21	358	111	1,201	30.8
Striped bass	1	6	89	421	115	717	262	10	1,621	41.6
Redtail surfperch	0	0	136	57	0	0	0	0	193	4.9
Coho salmon (adult)	0	0	0	94	0	0	48	15	157	4.0
Starry flounder	0	0	22	47	43	32	0	0	144	3.7
Green sturgeon	0	0	0	0	130	0	0	0	130	3.3
White sturgeon	0	0	5	0	101	10	0	0	116	3.0
Cutthroat trout	0	0	0	0	0	21	52	10	83	2.1
Largemouth bass	0	0	67	0	0	0	0	0	67	1.7
Black rockfish	0	0	0	47	0	0	8	0	55	1.4
Kelp greenling	0	0	0	0	0	10	26	0	36	0.9
Chinook salmon (adult)	0	0	0	0	0	0	26	10	36	0.9
Pacific staghorn sculpin	0	0	0	0	28	0	0	0	28	0.7
Striped seaperch	0	0	18	0	0	0	0	0	18	0.5
Pacific tomcod	0	0	0	0	0	10	0	0	10	0.3
Shiner perch	0	0	5	0	0	0	0	0	5	0.1
Total	15	95	554	760	719	821	780	156	3,900	99.9
Percentage	0.4	2.4	14.2	19.5	18.4	21.1	20.0	4.0	100.0	

**Table 6. NUMBER OF SHORE ANGLER TRIPS
By Month and Area, Umpqua River Estuary
March 1 through October 31, 1971**

Month	Shore Fishing Area and Station Number									Total	Percentage
	South Jetty S-1	Training Jetty S-2	Social Security Bay S-3	Coast Guard Jetty S-4	Winchester Point S-5	Docks A,B,C, D,E S-6	Docks F,G,H,I Ramps S-7	Coast Guard Park S-8	Reedsport-Gardiner S-9		
March	306	0	0	279	0	0	47	0	95	727	1.5
April	1,003	470	533	528	148	0	91	18	140	2,931	6.0
May	1,302	514	514	901	119	63	542	1,077	830	5,862	12.0
June	2,977	360	684	1,758	402	50	1,746	727	1,491	10,195	20.9
July	3,684	999	586	2,639	586	26	2,093	259	1,868	12,740	26.2
August	2,250	840	686	2,970	242	66	2,516	66	731	10,367	21.3
September	402	122	169	1,281	289	74	785	76	556	3,754	7.7
October	128	64	233	1,257	138	0	197	14	78	2,109	4.3
Total	12,052	3,369	3,405	11,613	1,924	279	8,017	2,237	5,789	48,685	99.9
Percentage	24.8	6.9	7.0	23.9	4.0	0.6	16.5	4.6	11.9	100.2	

**Table 7. HOURS OF SHORE ANGLER USE
By Month and Area, Umpqua River Estuary
March 1 through October 31, 1971**

Month	Shore Fishing Area and Station Number									Total	Percentage
	South Jetty S-1	Training Jetty S-2	Social Security Bay S-3	Coast Guard Jetty S-4	Winchester Point S-5	Docks A,B,C, D,E S-6	Docks F,G,H,I Ramps S-7	Coast Guard Park S-8	Reedsport-Gardiner S-9		
March	669	0	0	618	0	0	103	0	207	1,597	1.5
April	2,230	1,033	1,176	1,167	323	0	201	42	310	6,482	6.0
May	2,898	1,144	1,147	2,006	264	140	1,198	2,392	1,837	13,026	12.1
June	6,580	795	1,515	3,885	890	110	3,840	1,600	3,305	22,520	20.9
July	8,191	2,224	1,287	5,817	1,287	60	4,580	572	4,111	28,129	26.2
August	4,945	1,862	1,513	6,537	542	145	5,532	146	1,610	22,832	21.2
September	890	272	379	2,840	639	165	1,738	171	1,241	8,335	7.8
October	288	144	520	2,754	308	0	442	32	176	4,664	4.3
Total	26,691	7,474	7,537	25,624	4,253	620	17,634	4,955	12,797	107,585	100.0
Percentage	24.8	7.0	7.0	23.8	4.0	0.6	16.4	4.6	11.9	100.1	

**Table 8. MARINE ANIMALS CAUGHT BY SHORE ANGLERS
Umpqua River Estuary, by Species and Area
March 1 through October 31, 1971**

Species	Shore Fishing Area and Station Number									Total	Percentage
	South Jetty S-1	Training Jetty S-2	Social Security Bay S-3	Coast Guard Jetty S-4	Winchester Point S-5	Docks A,B,C, D,E S-6	Docks F,G,H,I Ramps S-7	Coast Guard Park S-8	Reedsport- Gardiner S-9		
Dungeness crab	116	0	0	2,137	35	0	182	0	0	2,470	2.3
Red rock crab	0	0	0	389	0	0	0	0	0	389	0.4
Pacific tomcod	4,703	183	553	3,130	0	40	24,019	158	0	32,786	30.4
Shiner perch	35	273	123	4,255	251	0	13,667	144	2,531	21,279	19.7
Redtail surfperch	11,401	1,570	1,514	561	666	399	1,786	2,527	0	20,424	19.0
Pacific staghorn sculpin	140	84	625	4,093	1,042	150	6,160	807	129	13,230	12.3
Starry flounder	214	831	1,078	479	626	80	1,152	20	0	4,480	4.2
Black rockfish	2,277	148	0	0	0	0	0	0	0	2,425	2.3
Striped seaperch	496	223	0	252	55	40	0	497	0	1,691	1.6
Buffalo sculpin	176	516	284	338	0	0	63	0	0	1,377	1.3
Pile perch	77	94	0	54	0	0	223	766	0	1,214	1.1
Kelp greenling	872	109	39	33	22	0	0	0	0	1,075	1.0
Prickly sculpin	0	0	0	0	0	0	46	0	911	957	0.9
Silver surfperch	136	0	36	26	0	0	131	110	0	439	0.4
Lingcod	250	155	0	0	0	0	0	0	0	405	0.4
Rock greenling	261	16	0	0	0	0	0	44	0	321	0.3
Striped bass	0	0	128	23	0	0	0	0	285	308	0.3
Sand sole	117	0	51	0	0	0	0	0	0	168	0.2
Squawfish	0	0	0	0	0	0	0	0	166	166	0.2
Chinook salmon (adult)	143	0	0	0	0	0	0	0	0	143	0.1
Cutthroat trout	0	0	0	0	0	0	90	40	10	140	0.1
Cabezon	85	0	0	0	0	0	37	0	18	140	0.1
Coho salmon (adult)	122	0	0	0	11	0	0	0	0	133	0.1
Brown Irish lord	71	0	0	52	0	0	0	0	0	123	0.1
Pacific herring	0	0	0	26	71	0	0	0	0	97	0.1
White seaperch	65	0	12	0	0	0	0	20	0	97	0.1
Rainbow trout	0	0	0	0	74	0	0	0	0	74	<0.1
Whitespotted greenling	0	66	0	0	0	0	0	0	0	66	<0.1
Chinook salmon (juvenile)	0	0	0	0	0	0	27	0	0	27	<0.1
Surf smelt	0	0	0	26	0	0	0	0	0	26	<0.1
Unidentified fish	29	0	51	802	0	0	192	20	0	1,094	1.0
Total	21,786	4,268	4,494	16,676	2,853	709	47,775	5,153	4,050	107,764	100.0
Percentage	20.2	4.0	4.2	15.5	2.6	0.7	44.3	4.8	3.8	100.1	

**Table 9. SHORE FISHING DATA
Umpqua River Estuary, All Areas
1971**

	March	April	May	June	July	Aug.	Sept.	Oct.	Total	Percentage
Angler trips (number)	727	2,931	5,862	10,195	12,740	10,367	3,754	2,109	48,685	—
Fishing effort (hours)	1,597	6,482	13,026	22,520	28,129	22,832	8,335	4,664	107,585	—
Fishing success (catch/hr.)	0.54	0.89	0.99	1.16	1.17	0.86	0.80	0.61	1.00	—
Catch (number)										
Dungeness crab	0	111	52	340	223	485	193	1,066	2,470	2.3
Red rock crab	0	0	0	21	294	23	51	0	389	0.4
Pacific tomcod	0	122	63	6,698	13,775	9,849	1,772	507	32,786	30.4
Shiner perch	0	0	623	6,033	7,244	4,249	2,946	184	21,279	19.7
Redtail surfperch	669	3,331	6,574	5,320	3,594	330	346	260	20,424	19.0
Pacific staghorn sculpin	59	101	996	3,060	4,878	2,610	1,004	522	13,230	12.3
Starry flounder	138	1,474	1,374	491	590	269	144	0	4,480	4.2
Black rockfish	0	0	770	1,415	75	165	0	0	2,425	2.3
Striped seaperch	0	156	356	468	432	218	28	33	1,691	1.6
Buffalo sculpin	0	83	578	364	165	0	51	136	1,377	1.3
Pile perch	0	0	288	190	378	211	114	33	1,214	1.1
Kelp greenling	0	13	84	447	414	84	0	33	1,075	1.0
Prickly sculpin	0	0	693	176	81	0	0	7	957	0.9
Silver surfperch	0	0	26	275	130	0	0	8	439	0.4
Lingcod	0	0	35	148	206	16	0	0	405	0.4
Rock greenling	0	0	17	147	112	45	0	0	321	0.3
Striped bass	0	0	18	96	107	43	37	7	308	0.3
Sand sole	0	64	17	59	28	0	0	0	168	0.2
Squawfish	0	0	54	112	0	0	0	0	166	0.2
Chinook salmon (adult)	0	0	0	14	56	73	0	0	143	0.1
Cutthroat trout	0	0	40	21	0	37	0	42	140	0.1
Cabezon	0	37	18	29	56	0	0	0	140	0.1
Coho salmon (adult)	0	0	0	14	0	88	20	11	133	0.1
Brown Irish lord	0	0	123	0	0	0	0	0	123	0.1
Pacific herring	0	0	0	0	97	0	0	0	97	0.1
White seaperch	0	77	20	0	0	0	0	0	97	0.1
Rainbow trout	0	0	74	0	0	0	0	0	74	<0.1
Whitespotted greenling	0	0	0	0	0	66	0	0	66	<0.1
Chinook salmon (juveniles)	0	0	0	0	0	27	0	0	27	<0.1
Surf smelt	0	0	0	0	26	0	0	0	26	<0.1
Unidentified fish	0	220	20	92	46	716	0	0	1,094	1.0
Total	866	5,789	12,913	26,030	33,007	19,604	6,706	2,849	107,764	100.0
Percentage	0.8	5.4	12.0	24.2	30.6	18.2	6.2	2.6	100.0	

**Table 10. NUMBER OF TIDEFLAT USER TRIPS
By Month and Area, Umpqua River Estuary
March 1 through October 31, 1971**

Month	Tideflat and Station Number										Total	Percentage
	Winchester Bay T-1	Jerden Cove T-2	Macey Cove T-3	Hunt Cove T-4	Henderson Cove T-5	North Spit T-6	The Point T-7	Three Mile T-8	Steamboat Island T-9	Bolon Island T-10		
March	0	0	0	0	0	0	0	0	55	18	73	2.3
April	0	0	0	0	0	0	0	0	132	171	303	9.4
May	0	0	0	0	0	62	151	92	105	176	586	18.2
June	0	0	0	0	0	102	101	148	104	232	687	21.3
July	0	0	0	0	0	144	138	127	126	261	796	24.7
August	0	0	0	0	0	42	63	75	29	192	401	12.4
September	0	0	0	0	0	11	90	32	51	193	377	11.7
October	0	0	0	0	0	0	0	0	0	0	0	0.0
Total	0	0	0	0	0	361	543	474	602	1,243	3,223	100.0
Percentage	0.0	0.0	0.0	0.0	0.0	11.2	16.9	14.7	18.7	38.6	100.1	

-18-

**Table 11. HOURS OF TIDEFLAT USE
By Month and Area, Umpqua River Estuary
March 1 through October 31, 1971**

Month	Tideflat and Station Number										Total	Percentage
	Winchester Bay T-1	Jerden Cove T-2	Macey Cove T-3	Hunt Cove T-4	Henderson Cove T-5	North Spit T-6	The Point T-7	Three Mile T-8	Steamboat Island T-9	Bolon Island T-10		
March	0	0	0	0	0	0	0	0	99	33	132	2.2
April	0	0	0	0	0	0	0	0	263	342	605	10.2
May	0	0	0	0	0	111	270	164	187	315	1,047	17.7
June	0	0	0	0	0	160	158	232	162	363	1,075	18.2
July	0	0	0	0	0	335	322	295	294	606	1,852	31.4
August	0	0	0	0	0	69	103	123	48	314	657	11.1
September	0	0	0	0	0	15	128	45	73	276	537	9.1
October	0	0	0	0	0	0	0	0	0	0	0	0.0
Total	0	0	0	0	0	690	981	859	1,126	2,249	5,905	99.9
Percentage	0.0	0.0	0.0	0.0	0.0	11.7	16.6	14.5	19.1	38.1	100.0	

**Table 12. MARINE ANIMALS CAUGHT BY TIDEFLAT USERS
Umpqua River Estuary, by Species and Area
March 1 through October 31, 1971**

Species	Tideflat and Station Number										Total	Percentage
	Winchester Bay T-1	Jerden Cove T-2	Macey Cove T-3	Hunt Cove T-4	Henderson Cove T-5	North Spit T-6	The Point T-7	Three Mile T-8	Steamboat Island T-9	Bolon Island T-10		
Softshell clam	0	0	0	0	0	11,015	17,330	10,780	14,162	31,393	84,680	100.0
Total	0	0	0	0	0	11,015	17,330	10,780	14,162	31,393	84,680	100.0
Percentage	0.0	0.0	0.0	0.0	0.0	13.0	20.5	12.7	16.7	37.1	100.0	

Table 13. SUMMARY
Number of Angler Trips, Hours of Effort, and Animals Caught
Umpqua River Estuary, by Station
March 1 through October 31, 1971

Station Number	No. Angler Trips	Angler Hours	Catch			Total
			Finfish	Crabs	Clams	
B-1	1,249	4,761	389	1,055	0	1,444
B-2	6,314	23,823	2,310	146	0	2,456
Total	7,563	28,584	2,699	1,201	0	3,900
S-1	12,052	26,691	21,670	116	0	21,786
S-2	3,369	7,474	4,268	0	0	4,268
S-3	3,405	7,537	4,494	0	0	4,494
S-4	11,613	25,624	14,150	2,526	0	16,676
S-5	1,924	4,253	2,818	35	0	2,853
S-6	279	620	709	0	0	709
S-7	8,017	17,634	47,593	182	0	47,775
S-8	2,237	4,955	5,153	0	0	5,153
S-9	5,789	12,797	4,050	0	0	4,050
Total	48,685	107,585	104,905	2,859	0	107,764
T-1	0	0	0	0	0	0
T-2	0	0	0	0	0	0
T-3	0	0	0	0	0	0
T-4	0	0	0	0	0	0
T-5	0	0	0	0	0	0
T-6	361	690	0	0	11,015	11,015
T-7	543	981	0	0	17,330	17,330
T-8	474	859	0	0	10,780	10,780
T-9	602	1,126	0	0	14,162	14,162
T-10	1,243	2,249	0	0	31,393	31,393
Total	3,223	5,905	0	0	84,680	84,680
Grand Total	59,471	142,074	107,604	4,060	84,680	196,344

Table 14. SUMMARY
Number of Angler Trips, Hours of Effort, and Animals Caught
Umpqua River Estuary, by Month
March 1 through October 31, 1971

Fishery	Month	No. Angler Trips	Angler Hours	Catch			Total
				Finfish	Crabs	Clams	
Boat	March	76	152	1	14	0	15
	April	89	295	6	89	0	95
	May	518	1,921	342	212	0	554
	June	1,135	3,809	666	94	0	760
	July	1,699	7,274	417	302	0	719
	August	1,833	6,539	800	21	0	821
	September	1,806	6,939	422	358	0	780
	October	407	1,655	45	111	0	156
	Total	7,563	28,584	2,699	1,201	0	3,900
Shore	March	727	1,597	866	0	0	866
	April	2,931	6,482	5,678	111	0	5,789
	May	5,862	13,026	12,861	52	0	12,913
	June	10,195	22,520	25,669	361	0	26,030
	July	12,740	28,129	32,490	517	0	33,007
	August	10,367	22,832	19,096	508	0	19,604
	September	3,754	8,335	6,462	244	0	6,706
	October	2,109	4,664	1,783	1,066	0	2,849
	Total	48,685	107,585	104,905	2,859	0	107,764
Tideflat	March	73	132	0	0	1,900	1,900 ¹
	April	303	605	0	0	8,000	8,000
	May	586	1,047	0	0	15,400	15,400
	June	687	1,075	0	0	18,000	18,000
	July	796	1,852	0	0	20,900	20,900
	August	401	657	0	0	10,500	10,500
	September	377	537	0	0	9,900	9,900
	October	0	0	0	0	0	0
	Total	3,223	5,905	0	0	84,600	84,600
Combined	March	876	1,881	867	14	1,900	2,781
	April	3,323	7,382	5,684	200	8,000	13,884
	May	6,966	15,994	13,203	264	15,400	28,867
	June	12,017	27,404	26,335	455	18,000	44,790
	July	15,235	37,255	32,907	819	20,900	54,626
	August	12,601	30,028	19,896	529	10,500	30,925
	September	5,937	15,811	6,884	602	9,900	17,386
	October	2,516	6,319	1,828	1,177	0	3,005
Grand Total		59,471	142,074	107,604	4,060	84,600	196,264

¹ Catch data for the tideflat fishery determined by multiplying the average catch per year times the number of angler trips per month. Catch data totals consequently differ from those shown in Table 13.

**Table 15. TAXONOMIC LIST OF SPECIES HARVESTED
By Estuarine Resource Users, Umpqua River Estuary
March 1 through October 31, 1971**

Common Name	Local Names	Scientific Name
Fish		
Black rockfish	Black sea bass, black snapper	<i>Sebastes melanops</i>
Brown Irish lord	Bullhead	<i>Hemilepidotus spinosus</i>
Buffalo sculpin	Bullhead	<i>Enophrys bison</i>
Cabezon	Rock cod, bullhead	<i>Scorpaenichthys marmoratus</i>
Chinook salmon	King salmon, salmon	<i>Oncorhynchus tshawytscha</i>
Coho salmon	Silver salmon	<i>Oncorhynchus kisutch</i>
Cutthroat trout	Blueback, harvest trout, sea runs	<i>Salmo clarki</i>
Green sturgeon		<i>Acipenser medirostris</i>
Kelp greenling	Seatrout	<i>Hexagrammos decagrammus</i>
Largemouth bass	Largemouth black bass, bass	<i>Micropterus salmoides</i>
Lingcod		<i>Ophiodon elongatus</i>
Pacific herring		<i>Clupea harengus pallasi</i>
Pacific staghorn sculpin	Bullhead	<i>Leptocottus armatus</i>
Pacific tomcod		<i>Microgadus proximus</i>
Pile perch		<i>Rhacochilus vacca</i>
Prickly sculpin	Bullhead	<i>Cottus asper</i>
Rainbow trout		<i>Salmo gairdneri</i>
Redtail surfperch		<i>Amphistichus rhodoterus</i>
Rock greenling	Seatrout	<i>Hexagrammos lagocephalus</i>
Sand sole		<i>Psettichthys melanostictus</i>
Shiner perch	Shiners	<i>Cymatogaster aggregata</i>
Silver surfperch		<i>Hyperprosopon ellipticum</i>
Squawfish		<i>Ptychocheilus umpqua</i>
Starry flounder		<i>Platichthys stellatus</i>
Striped bass	Stripers	<i>Roccus saxatilis</i>
Striped seaperch	Rainbow perch	<i>Embiotoca lateralis</i>
Surf smelt		<i>Hypomesus pretiosus</i>
White seaperch		<i>Phanerodon furcatus</i>
White sturgeon		<i>Acipenser transmontanus</i>
Whitespotted greenling	Seatrout	<i>Hexagrammos stelleri</i>
Crabs		
Dungeness crab	Market crab	<i>Cancer magister</i>
Red rock crab	Japanese crab, rock crab	<i>Cancer productus</i>
Clams		
Softshell clam	Mud clam, bay clam	<i>Mya arenaria</i>
Miscellaneous Invertebrates		
Ghost shrimp	Sand shrimp	<i>Callinassa californiensis</i>
Kelp worm	Clam worm, mussel worm	<i>Nereis</i> sp.

