

Cox Island Estuarine Preserve:

a social, physical, and biological inventory
and management plan

John Hoffnagle, March 1979

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GENERAL GOALS AND OBJECTIVES FOR THE MANAGEMENT OF COX ISLAND PRESERVE

1. To protect the natural plant and animal communities on the island from man's influence and to maintain these communities in a natural state,

- A) Elimination of water-fowl hunting on the island to the fullest extent allowed by virtue of the Conservancy's ownership.
- B) Elimination of four duck blinds now on the island.
- C) Irradication of Spartina on S.E. side of island by least environmentally damaging method.
- D) Elimination of Nutria populations now in the interior channels of the island by the least environmentally damaging method.
- E) Continuation of historic clamming on the west channels of the island.
- F) Request for new planning commission hearing concerning Johnson Rock Products Asphalt plant.

2. To preserve the historic significance of the island.

- A) Seek to place the Benedict House on the National Historic Register.
- B) Preserve the structural integrity of the house through minimal maintenance
- C) LONG TERM: Restore the house as a rustic research station.

3. To promote non-degradative use of the island by local groups and scientific and historical researchs.

- A) Formation of a joint Audobon-Nature Conservancy bi-monthly bird population study of the island, spearheaded by local Audobon Society members.
- B) Active promotion of the Nature Conservancy and specifically Cox Island through slide presentations to local civic groups and newspaper coverage
- C) Presentations to school classes in the Florence area about Cox Island and its historic and scientific significance.

Preface:

Metallic at first, seen from the highway down through the trees, like an aluminum rainbow, like a slice of alloy moon. Closer, becoming organic, a vast smile of water with broken and rotting pilings jagged along both gums, foam clinging to the lips. Closer still, it flattens into a river, flat as a street, cement-gray with a texture of rain. Flat as a rain-textured street even during flood season because of a channel so deep and a bed so smooth: no shallows to set up buckwater rapids, no rocks to rile the surface... nothing to indicate movement except the swirling clots of yellow foam skimming seaward with the wind, and the thrusting groves of flooded bam, bent taut and trembling by the pull of silent, dark momentum.

A river smooth and seeming calm, hiding the cruel file-edge of its current beneath a smooth and calm-seeming surface.

The highway follows its northern bank, the ridges follow its southern. No bridges span its first ten miles. And yet, across, on that southern shore, an ancient two story wood-frame house rests on a structure of tangled steel, of wood and earth and sacks of sand, like a two-story bird with split-shake feathers, sitting fierce in its tangled nest. Look...

(Ken Kesey, Sometimes a Great Notion)

Physical Description:

Cox Island is a 180 acre estuarine-salt marsh ecosystem situated on the Siuslaw River Estuary which is located near the city of Florence, 60 miles west of Eugene, Oregon, on the Pacific Ocean (see figure 1). Seven river miles from the estuary's confluence with the Pacific, Cox Island is a brackish water ecosystem experiencing almost fully saline water during an incoming tide and experiencing almost fully fresh water in a winter freshet.

The official title description of the property reads:

Lots 13 and 14 in Section 30, Township 18 South, Range 11 West of the Willamette Meridian, Lot 1 in Section 31, Township 18 South, Range 11 West of the Willamette Meridian; Lots 8, 9 and 10 and the southeast quarter of Section 25, Township 18 South, Range 12 West of the Willamette Meridian; Lots 1 and 2 of Section 36, Township 18 South, Range 12 West of the Willamette Meridian; also all tide lands fronting and abutting said above-described property, in Lane County, Oregon, by deed recorded January 21, 1949 in Volume 389 page 187, Lane County Oregon Deed Records. . . .

Of note in this title is the ownership of all tidelands fronting and abutting Cox Island itself, that is, ownership down to Mean Low Water line rather than Mean High Water line as is common in this state. This ownership of tidelands stands as a remnant of bygone days when tidelands' ownership was needed to derive piling and booming rights: the rights to float log rafts and tie them to pilings adjacent to upland property. Foresightedly, the state reserved the right to public navigation and shellfish harvest on such tidelands, while other property rights are held by the owners (Stan Hamilton, Division of State Lands, personal communication).

Access to the island is exclusively by boat. The two most popular set in points are Cushman Dock, some two miles upstream from the island, and a graveled parking lot just east of the

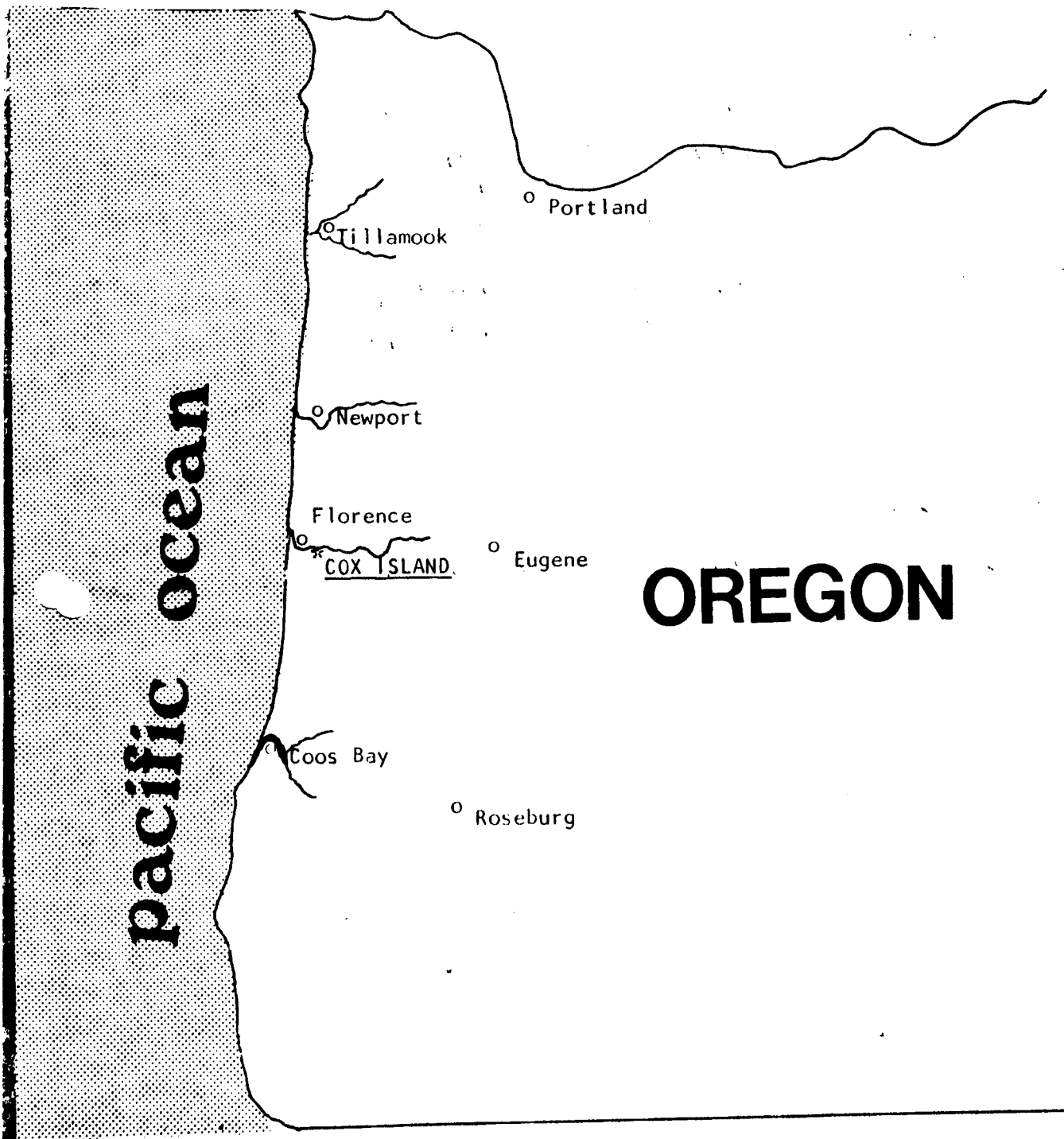


Figure 1: General location map of Cox Island Preserve

Johnson Rock Products Asphalt Plant, directly across from the island. The proprietor of Cushman Dock rents small motor boats for fishing. Both of these access points are located off of Highway 126, 3 and 4 miles east of Florence respectively.

The principal landing site on the island is as one approaches the old house. Lying directly in front of the house, the landing is not in any real sense a dock, but has deep enough water from the shoring remains of a past dock to offer the chance of a dry foothold as one steps ashore. If access to the interior of the island is desired, a better landing point exists further west at the end of the upland vegetation line, where spruce trees merge into salt marsh. This landing, while muddy, has few of the brambles and driftwood hazards which serve to dissuade the unwary explorer from reaching the major portion of the island should he land at the Benedict House.

A popular access for duck hunters and clammers who park at the graveled parking lot is to cut through a small channel on the north side of the island into the extensively channelized central portion of the marsh.

A current aerial photo and line drawn map showing the smaller details of the island are presented in figures 2 and 3 to be used as a reference during the latter portions of this report (Aerial Photo, U.S. Army, Corps of Engineers, 1974).

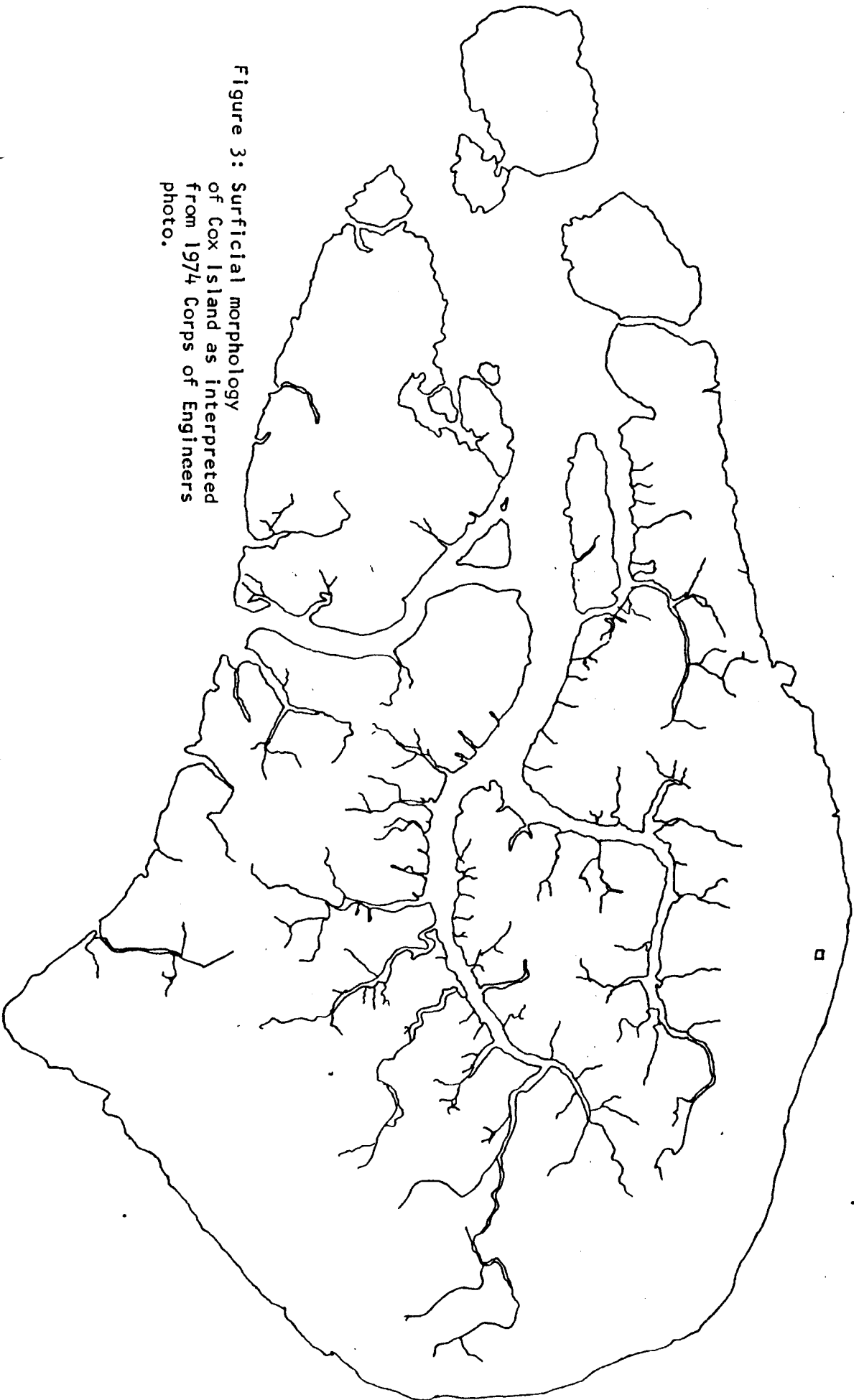


Figure 3: Surficial morphology
of Cox Island as interpreted
from 1974 Corps of Engineers
photo.

History:

Cox Island is full of a rich history reaching back into the 1880's. This colorful history is still so much alive that steps are being taken by the Nature Conservancy and local citizens in Florence to place part of the island on the National and State Historic Registers. Focal point for this historical drive is the aging Benedict house, beckoning from across the Siuslaw to travelers on Highway 126 as they approach Florence.

The history of the island, however, reaches further back, even before the time of the now aging homestead. While time has muddied much of the island's ownership records, searching a large share of the title records and reading the ownership documents has been an effort to clarify the ownerships through time. Figure 4 presents a chronological list of owners as they are believed to have existed. Credit for this undertaking lies with two sources, Cathy McDonald, an intern for the Nature Conservancy in summer 1978, and Annie Rudy and Daniel Hanson, two students from the 1977 Spring Program at the Oregon Institute of Marine Biology. The following is a summary of their findings (both unpublished).

The first white settler to claim ownership of Cox Island was John Lyle, who purchased it from the United States Government on May 1, 1884. While the records are unclear, sometime prior to 1895, a businessman sea captain from Nova Scotia, named William Cox, acquired ownership of the still undeveloped island and in that year sold piling rights (the right to drive pilings in the tide-lands surrounding the island) to Anna Marsh.

Cox's exploits of naming the town of Acme (now Cushman), being a founding father of Florence, an entrepreneur and a sea captain,

Figure 4

OWNERSHIP HISTORY COX ISLAND

John Lyle	1884
William A. Cox	1895 (?)
Anna Marsh (piling rights)	1895
Anna Marsh (booming rights)	1898
Siuslaw Boom Company	1903
Elbert Benedict	1909
Siuslaw Boom Company	1912
Charles Sandborn (labor lean)	1938
Grace Beistel (Thomas Bryant)	1939
Richard Shore Smith	1945
E.M. Hinshaw	1946
Siuslaw Forest Products	1949
U.S. Plywood (Champion International)	1953
The Nature Conservancy	1977

have all been documented (Siuslaw News, 1958). In short, Cox was less of a sea captain and more of an entrepreneur from San Francisco heading north in search of lumber and locations for lumber mills and land developments. It is probable that during the Captain's ownership the island was used for log storage but no house was built upon it.

In 1898, Anna Marsh (conjectured by McDonald to be a fictional relative of Cox's) was granted booming rights to Cox Island. These rights allowed the purchaser to store log rafts adjacent to the land owned. It is quite likely that between 1898 and 1903, the first home on the island was built some 100 yards east of the present structure (Charles Sanborn, personal communication).

In 1903 Anna Marsh sold her booming rights to the Siuslaw Boom Company (known to old locals as Sī Bō Cō). It was at this time that the current house was constructed, the Benedict House, so called after its builder Elbert Benedict, who was a caretaker of the island for SiBoCo. This arrangement began the long tradition of having the manager live upon and sometimes own, as the records suggest, the island.

The manager's job on the island was not an easy one and required long hours, especially in the fall when freshets would let logs arrive more rapidly at the island. As logs floated by the island, it was the manager's job to sort them into rafts according to brands stamped upon the end of the logs. While the logs came to some degree in every season, it was a common practice to build splash dams, environmentally devastating dams, constructed to block streams until the flood waters washed the dam out carrying the year's accumulation of logs and precious salmon spawning gravel also. As the fall rains began, the splash dams broke up the

Siuslaw sending hundreds of logs to Cox Island simultaneously.

In 1912, Sanborn, the new manager, modernized the house and brought it to self sufficiency. A water pipe was constructed under the Siuslaw to obtain freshwater from the nearby hills. With a source of freshwater, cows, pigs, and chickens could be raised. The old barn, now too small for the livestock, was converted into a blacksmith shop and machine shop for SiBoCo and a new larger barn was built. Figure 5, constructed from an aerial photograph, shows the approximate location of the outbuildings on the island in 1939. Lilly Wheeler talks of her memories of the island in a historical tape done by the Florence Library during the bicentennial (Wheeler, 1976). In this tape she describes the procedure of floating logs as well as the grazing of 100 cattle each spring on the island.

Sanborn obtained ownership of the house and the island in 1938 on a labor lean ~~60~~ from Siuslaw Boom Company and quickly sold the island to Siuslaw Forest Products Company who owned it for the next four years. Several quick sales followed until 1953 when Champion International acquired the island in a change of hands and held it for development of a pulp mill. Since approximately 1940 ~~when~~ nobody occupied the Benedict House and the rest of the outbuildings ~~were~~ destroyed, the island has been able to return to a near native state. In 1977 Champion International donated the island to the Nature Conservancy who has held it until the present as a nature preserve.

Remnants of this colorful past are few. No reminders of the self sufficient farm, save a few decaying fence posts, remain. The house which was once happily occupied now stands windowless and doorless. The outbuildings, once the sign of a flourishing homestead, are now gone. Apples and cherries bloom each spring and bear fruit

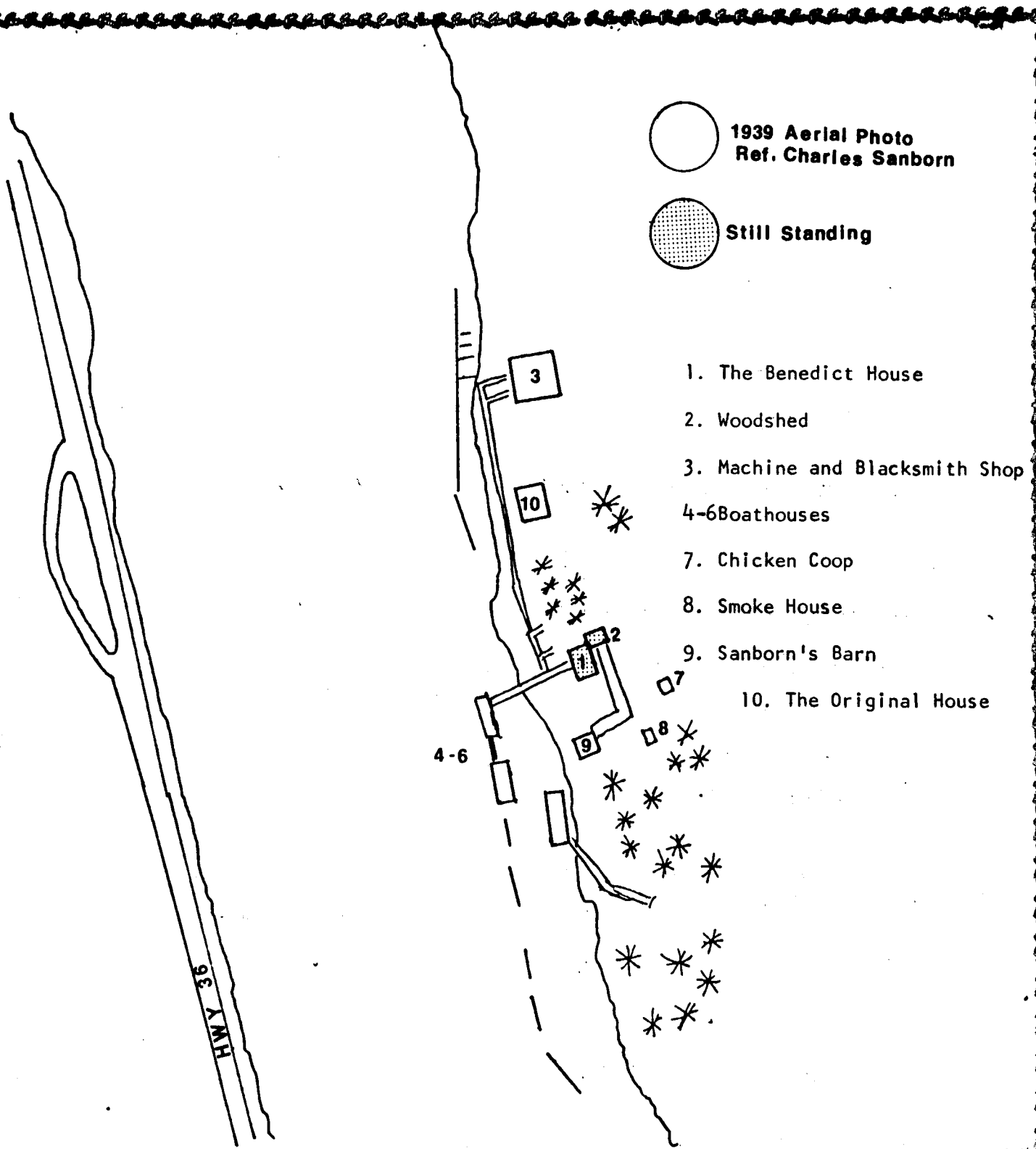


Figure: 5 .Building layout of the Cox Island House during its peak in 1939 and as reconstructed by Charlie Sanborn.

in the Fall as silent testimony to the onetime occupants.

Dredging History:

The channel of the Siuslaw from Florence to Cushman has been and continues to be a constant accumulator of silt. As well, the North Fork Shoals at the junction of the north fork and the Siuslaw River present hazards to shipping and have received attention. While no clear history of dredging near Cox Island or where the dredge spoils were placed has emerged, it seems that prior to the Second World War the channel was locally dredged, save the 1930 dredging of the channel to 150 feet width, 12 feet depth (Bella et al 1975). It is probable that the small islands (such as the scotch broom island) on the far western end of Cox Island were created at that time. A series of Corps maps from 1880 onward are offered in support of this theory (see figures 5, 6, and 7).

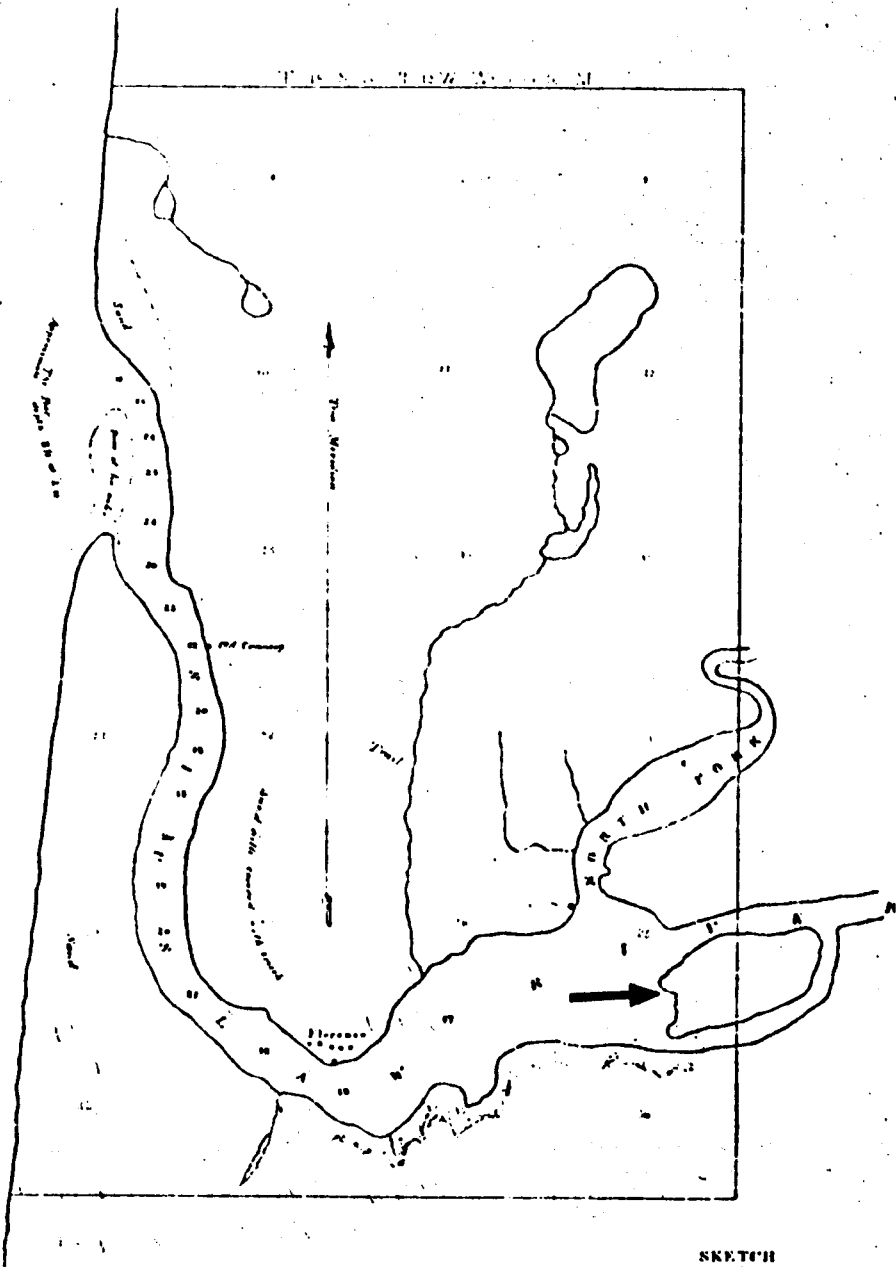
Physical Features of Cox Island: Climate, Hydrology, Geology, Water Quality and Substrate.

The notion so vividly constructed by Ken Kesey in Sometimes a Great Notion of a damp, oozing jungle of fog and dripping rain, is true to the letter on Cox Island. Being in the fog rain belt of the Pacific Coast, Cox Island is subjected to wet moderately cool winters and warm summers. The physical characteristics to be discussed are largely determined by the climate of the area.

Climate:

Cox Island is fortuitously located 4 miles northeast of Honeyman State Park, where park personnel have been recording weather data for the past 45 years. Functioning as an excellent, long-term base-

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SKETCH
of the
SIOUSLAW RIVER
AND BAY
OREGON

FROM EXAMINATION
made under the direction of
MAJ G. E. GILLENPIE, CORPS OF ENGINEERS, U.S.A.
by
J. S. Polhemus, Asst. Engr
OCTOBER - 1880

U.S. ENGINEER OFFICE

PORTLAND, OREGON, NOV. 18 1880

*3 drawings & 10 sheets of diagrams and
notes by the date.*

G. L. Sweeney

Major of Engrs. 1st Lt Col. U.S.A.

FIGURE 6 : First map of Cox Island. Completed in October 1880 by Corps of Engineers.

EXPLANATION

Soundings are expressed in feet and indicate the depth of M.L.L.W.
The 6 foot contour is shown thus
- 10 -
- 15 -
Proposed dredging is shown thus
Couch Map U.S. Number Line Run No. 2 of the corner of
Acme and Main Street in Fairport. Elev. 11.33
High water Line shown thus
Low water Line shown thus
Mean height of all high waters above plane of reference, 6.4 ft

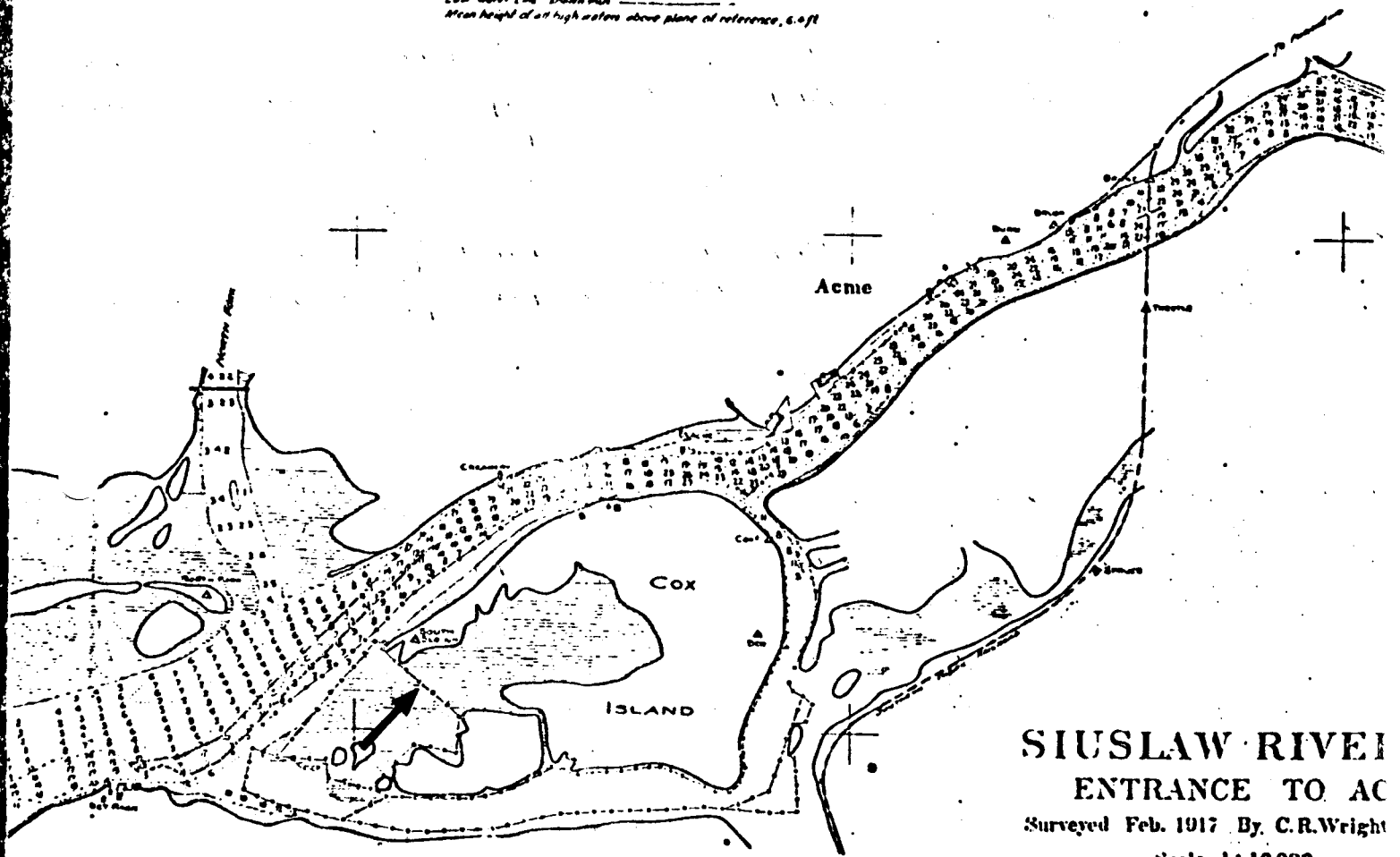


FIGURE 7: Map completed February 1917. Note that channel depth is indicated and pilings have been driven around the entire perimeter of the island. Pilings driven across entrance to interior of Cox Island may have been to keep logs out of pasture area.

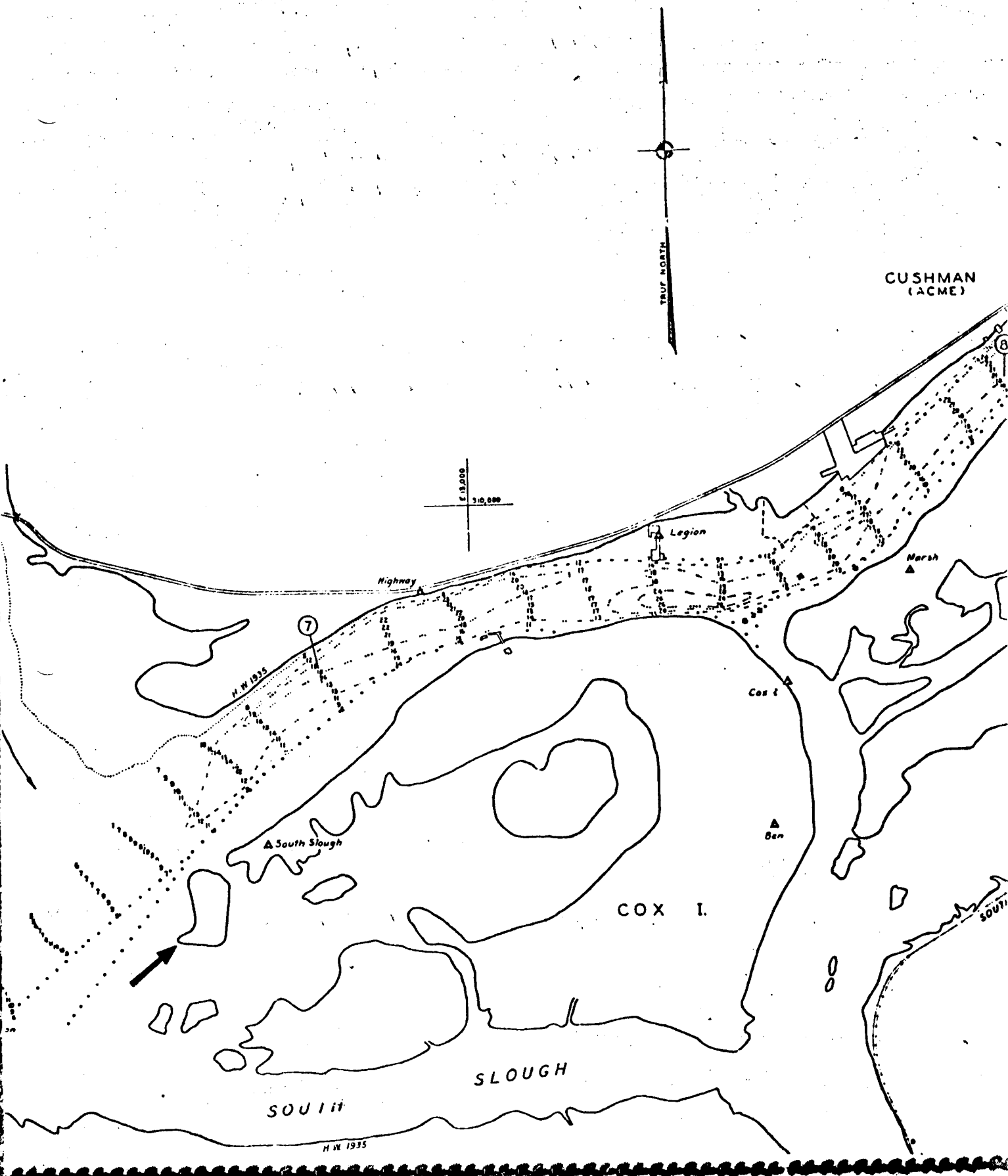


FIGURE 8 : Corps of Engineers map completed September 1939. Note channel soundings indicate channel has been dredged. Especially note presence of new spoil islands. The new spoil island in this map is not the obvious spoil island that now is vegetated largely with Scotch Broom.

line for climatic data on the island, it must be noted that Cox Island is in the middle of the Siuslaw River at near sea level. Honeyman, on the other hand, is located off the Siuslaw River at 115 feet elevation in the Oregon Coastal Dunes (Weideman and Dennis, 1971). While only 4 miles apart, microclimatic conditions in the Siuslaw and in a protected drier site will certainly vary.

Figure 9 is a 40 year average of monthly rainfall and temperature at Honeyman State Park. Figure 10 is a table of temperature extremes in the past 5 years at Honeyman and yearly averages of frost free growing periods and precipitation.

In summary, the average rainfall at Honeyman is nearly 80 inches and temperatures can reach nearly 100°F and plummet to 16°F as they did in 1973 and 1974 respectively. In actuality, temperatures are moderate with a long frost free growing period because of the moderation by the Pacific Ocean.

Soils:

In the past decade, the Soil Conservation Service has made an effort to map the lands in Lane County. As part of this effort, Cox Island soils were mapped and standard soil characterization tests were performed. While this data is still in draft form, it is unlikely that it will change much and is presented here with the understanding that it is not finalized in any sense. Figures 11 and 12 present the physical soil characterization data of the two types of soil found on Cox Island, roughly divided by the upland vegetation line.

The majority of the island is Brallier series tidal muck consisting primarily of plastic, organic material which is extremely acidic. This soil series is rated as either severe or unsuited for

FIGURE 9 : Forty year temperature & rainfall averages, Honeyman
 State Park, Oregon (US Weather Bureau, 1973)

	J	F	M	A	M	J	J	A	S	O	N	D	A V G Total Annual
Mean Monthly Temperature	43.2	45.1	46.4	49.4	53.2	57.2	60.2	60.8	59.3	54.6	48.4	45.2	51.9
Mean Monthly Rainfall	12.67	10.25	9.84	5.22	3.66	2.39	.85	64	2.66	7.12	10.71	12.94	79.35

FIGURE 10 : Temperature Extremes and yearly rainfall & frost-free days 1973-1977 (US Weather Bureau)

	Extreme high temperature of	Extreme low temperature of	Annual avg. temperature	Annual rainfall	Length of frost-free period
1973	99	24	51.9	80.16	186
1974	88	17	51.7	83.28	255
1975	93	24	51.3	81.66	203
1976	91	23	52.1	45.63	214
1977	91	24	52.7	64.22	203

RECREATION

USE	SOIL	RATING	RESTRICTIVE FEATURES	USE	SOIL	RATING	RESTRICTIVE FEATURES
CAMP AREAS	1,2,3	Severe	Floods, wet, excess humus	PLAYGROUNDS	1,2,3	Severe	Floods, wet, excess humus
PICNIC AREAS	1,2,3	Severe	Floods, wet, excess humus	PATHS AND TRAILS	1,2,3	Severe	Floods, wet, excess humus

CAPABILITY AND PREDICTED YIELDS - CROPS AND PASTURE (HIGH LEVEL MANAGEMENT)

SOIL	CAPABILITY		Pasture AOR/Ac												REMARKS
	NIRR	IRR	NIRR	IRR	NIRR	IRR	NIRR	IRR	NIRR	IRR	NIRR	IRR	NIRR	IRR	
1,2,3	IVw		12												

WOODLAND SUITABILITY

SOIL	POTENTIAL PRODUCTIVITY		WOOD SUIT. GROUP	MANAGEMENT PROBLEMS					NATIVE SPECIES	
	SPECIES	SITE INDEX		EROSION HAZARD	EQUIPMENT LIMIT.	SEEDLING MORTALITY	WINDTHROW HAZARD	PLANT COMPET.		
	NONE									

WINDBREAKS

SOILS	SPECIES	HT. AGE 20	PERFOR-MANCE	SPECIES	HT. AGE 20	PERFOR-MANCE	SPECIES	HT. AGE 20	PERFOR-MANCE
	NONE								

WILDLIFE HABITAT SUITABILITY

SOIL	POTENTIAL FOR HABITAT ELEMENTS								POTENTIAL AS HABITAT FOR:			
	GRAIN & SEED	GRASS & LEGUME	WILD HERB.	HARDWD TREES	CONIFER PLANTS	SHRUBS	WETLAND PLANTS	SHALLOW WATER	OPENLAND WILDLIFE	WOODLAND WILDLIFE	WETLAND WILDLIFE	RANGELAND WILDLIFE
1,2,3	Poor	Fair	Poor	Poor	--	Poor	Good	Good	Poor	Good	Good	--

RANGELAND

RANGE SITE NAME	SOIL	KEY SPECIES AND % COVER	POTENTIAL YIELDS		NORMAL SEASON	
			TOTAL lb/Ac	USABLE Ac/AUM	GROWING	GRAZING
		None				

FOOTNOTES

FIGURE 11

OR-SOILS-1 12/72
FILE CODE SOILS 12

SOIL INTERPRETATIONS FOR OREGON

U.S.D.A. SOIL CONSERVATION SERVICE

DATE: January, 1974 GEO.

BRALLIER

SERIES

SOILS:

1. Brallier peat, 0-1% slopes
 2. Brallier peat, 0-2% slopes
 3. Brallier peat, 0-3% slopes
- Tidal Muck

The Brallier series consists of very poorly drained peaty soils formed mainly of slightly decomposed fibrous organic residues from water tolerant plants. These soils occupy nearly level basins on tidelands and basins or flood plains along sluggish streams near tidelands. Where not cultivated, the vegetation is brush, willow, and spruce or tussock grasses. Elevation is from 0 to 8 feet. Average annual precipitation is 90 to 100 inches, average annual temperature is 50 to 52° F., and the frost-free period at 32° F. is 150 to 200 days.

Typically, the surface layer is about 6 inches of dark brown extremely acid peat. The subsoil is dark grayish brown and grayish brown strongly to extremely acid peat to about 40 inches, below which is very dark grayish brown and gray slightly acid peat and muck.

Permeability is moderate. Runoff is very slow to ponded. The erosion hazard is slight. The total available water holding capacity is 12 to 25 inches. The water supplying capacity is 20 to 26 inches.

Brallier soils are used mainly for hay, pasture, and wildlife habitat. These soils are in the Northern Pacific Coast Range and Valleys Land Resource Area (MLRA A1).

(Classification: Hemic Medisaprists; dysic, mesic family)

ESTIMATED SOIL PROPERTIES

DEPTH FROM SURFACE (in.)	CLASSIFICATION			COARSE FRACT: OVER 3 IN.	% OF MATERIAL PASSING SIEVE				LIQUID LIMIT	PLAS-TICITY INDEX	PERMEA-BILITY (in/hr)	AVAIL. WATER CAP. (in/in)	SOIL REAC-TION (pH)	SHRINK SWELL POTEN-TIAL
	USDA TEXTURE	UNI-FIED	AASHO		#4	#10	#40	#200						
0-60	Peat or muck	Pt	A-8	0	Organic material				Non-plastic		.6-2.0	0.3-0.4	4.1-6.5	Moderate
DEPTH (in.)	CONDUCTIVITY (mmhos/cm)	CORROSIVITY		EROSION FACTORS K T	WIND EROD. GROUPS	FLOODING			HIGH WATER TABLE			HYDRO-LOGIC GROUP		
		STEEL	CONCRETE			FREQUENCY	DURATION	MONTHS	DEPTH (ft.)	KIND	MONTHS			
0-60	---	High	High	-- --	--	Frequent	Long	Dec-Apr	0.0-2.0	Apparent	Jan-Dec	0		
						CEMENTED PAN		BEDROCK		FROST ACTION		REMARKS		
						DEPTH (in.)	HARDNESS	DEPTH (in.)	HARDNESS					
						--		>60		--				
SANITARY FACILITIES AND COMMUNITY DEVELOPMENT						SOURCE MATERIAL AND WATER MANAGEMENT								
USE	SOIL	RATING	RESTRICTIVE FEATURES			USE	SOIL	RATING	RESTRICTIVE FEATURES					
SEPTIC TANK ABSORPTION FIELDS	1,2,3	Severe	Floods, wet			ROADFILL	1,2,3	Poor	Wet, excess humus					
SEWAGE LAGOONS	1,2,3	Severe	Floods, wet			SAND	1,2,3	Unsuited	Excess humus					
SANITARY LANDFILL (TRENCH)	1,2,3	Severe	Floods, wet			GRAVEL	1,2,3	Unsuited	Excess humus					
SANITARY LANDFILL (AREA)	1,2,3	Severe	Floods, wet			TOPSOIL	1,2,3	Unsuited	Wet					
DAILY COVER FOR LANDFILL	1,2,3	Poor	Floods, wet, excess humus			POND RESERVOIR AREA	1,2,3	Severe	Excess humus					
SHALLOW EXCAVATIONS	1,2,3	Severe	Floods, wet, excess humus			EMBANKMENTS DIKES AND LEVEES	1,2,3	Severe	Low strength					
DWELLINGS WITHOUT BASEMENTS	1,2,3	Severe	Floods, wet, excess humus			DRAINAGE	1,2,3	Severe	Floods, wet					
DWELLINGS WITH BASEMENTS	1,2,3	Severe	Floods, wet, excess humus			IRRIGATION	1,2,3		Not needed					
SMALL COMMERCIAL BUILDINGS	1,2,3	Severe	Floods, wet, excess humus			TERRACES AND DIVERSIONS	1,2,3		Not needed					
LOCAL ROADS AND STREETS	1,2,3	Severe	Floods, wet, excess humus			GRASSED WATERWAYS	1,2,3		Not needed					

FIGURE 12

OR-SOILS-1 12/72
FILE CODE SOILS 12

SOIL INTERPRETATIONS FOR OREGON

U.S.D.A. SOIL CONSERVATION SERVICE

DATE: January, 1974 GBT-GEO Nestucca SERIES SC LS: 145A1. Nestucca silt loam, 0-3% slopes

The Nestucca series consists of somewhat poorly drained soils that formed in mixed alluvium. The soil has 0 to 3 percent slopes on stream bottoms with shallow swales and depressions. Native vegetation consists of red alder, Western hemlock, Sitka spruce, with shrubs, grasses, skunk cabbage, and tussocks. Elevation is 10 to 750 feet. Average annual precipitation is about 60 to 100 inches, average annual air temperature is 52°F, and the frost-free period at 32°F. is about 182 days.

The surface layer is mottled, dark brown and very dark grayish brown, strongly acid, silt loam about 14 inches thick. The subsoil is dark grayish brown very strongly acid silty clay loam with distinct mottles about 27 inches thick. It is underlain by prominently mottled stratified alluvial material.

Permeability is moderately slow. Rooting depth is limited by seasonal water table at 0 to 20 inches deep. Runoff is very slow to ponded. The erosion hazard is slight. 11.5 to 12.5 inches. The water supplying capacity is 20 to 25 inches.

Nestucca soils are used for pasture and forage crops. They are in the Northern Pacific Coast Range and Valleys Land Resource Area. (MLRA-A1)

(Classification: Fluventic Humaquepts; fine-silty, mixed, acidic mesic family).

ESTIMATED SOIL PROPERTIES

DEPTH FROM SURFACE (in.)	CLASSIFICATION			COARSE FRACT. OVER 3 IN.	% OF MATERIAL PASSING SIEVE				LIQUID LIMIT	PLASTICITY INDEX	PERMEABILITY (in/hr)	AVAIL. WATER CAP. (in/in)	SOIL REACTION (pH)	SHRINK SWELL POTENTIAL
	USDA TEXTURE	UNIFIED	AASHO		#4	#10	#40	#100						
0-14	Silt loam	ML	A-4	0	100	100	90-100	70-90	25-35	5-10	0.6-2.0	.19-.21	5.1-5.5	Low
14-41	Silty clay loam	CL	A-6	0	100	100	95-100	85-95	35-40	15-20	0.2-0.6	.19-.21	4.5-5.0	Moderate
41-60	Silty clay	CL	A-7	0	100	100	95-100	90-95	40-50	20-25	0.2-0.6	.15-.17	4.5-5.0	Moderate
DEPTH (in.)	CONDUCTIVITY (mmhos/cm)	CORROSION		EROSION FACTORS K T	WIND EROD. GROUPS	FLOODING			HIGH WATER TABLE			HYDROLOGIC GROUP		
		STEEL	CONCRETE			FREQUENCY	DURATION	MONTHS	DEPTH (ft.)	KIND	MONTHS			
0-14	-	High	Moderate	-	-	Frequent	Brief	Dec-Apr.	1.0-2.0	Perched	Dec.-Apr.	C		
14-41	-	High	High	-	-	CEMENTED PAV.		BEDROCK		REMARKS				
41-60	-	High	High	-	-	DEPTH (in.)	HARDNESS	DEPTH (in.)	HARDNESS	FROST ACTION				
							60							
SANITARY FACILITIES AND COMMUNITY DEVELOPMENT						SOURCE MATERIAL AND WATER MANAGEMENT								
USE	SOIL	RATING	RESTRICTIVE FEATURES			USE	SOIL	RATING	RESTRICTIVE FEATURES					
SEPTIC TANK ABSORPTION FIELDS	1	Severe	Floods, wet			ROAD	1	Poor	Wet, low strength					
SEWAGE LAGOONS	1	Severe	Floods, wet			SAL	1	Unsuited	Excess fines					
SANITARY LANDFILL (TRENCH)	1	Severe	Floods, wet			GRAV	1	Unsuited	Excess fines					
SANITARY LANDFILL (AREA)	1	Severe	Floods, wet			TOPSC	1	Fair	Thin layer					
DAILY COVER FOR LANDFILL	1	Fair	Too clayey, thin layer			PON RESEK ARE	1	Slight						
SHALLOW EXCAVATIONS	1	Severe	Floods, wet			EMBANK DIKES LEVE	1	Moderate	Shrink-swell, low strength					
DWELLINGS WITHOUT BASEMENTS	1	Severe	Floods, wet			DRAIN	1	Severe	Floods, percolates slowly					
DWELLINGS WITH BASEMENTS	1	Severe	Floods, wet			IRRIGA	1	Fair	Rooting depth					
SMALL COMMERCIAL BUILDINGS	1	Severe	Floods, wet			TERRA AND DIVERS	1		Not needed					
LOCAL ROADS AND STREETS	1	Severe	Floods, wet			GRASS WATER	1		Not needed					

RECREATION

USE	SOIL	RATING	RESTRICTIVE FEATURES	USE	SOIL	RATING	RESTRICTIVE FEATURES
CAMP AREAS	1	Severe	Wet	PLAYGROUND	1	Severe	Wet
PICNIC AREAS	1	Severe	Wet	PATHS AND TRAILS	1	Moderate	Wet

CAPABILITY AND PREDICTED YIELDS - CROPS AND PASTURE (HIGH LEVEL MANAGEMENT)

SOIL	CAPABILITY		Pasture AUM/A		CROPS		PASTURE		CROPS		PASTURE		REMARKS
	NIRR	IRR	NIRR	IRR	NIRR	IRR	NIRR	IRR	NIRR	IRR	NIRR	IRR	
1	IIw		7.5	15									

WOODLAND SUITABILITY

SOIL	POTENTIAL PRODUCTIVITY		WOOD SUIT. GROUP	MANAGEMENT			PROBLEMS			NATIVE SPECIES
	SPECIES	SITE INDEX		PROSTON HAZARD	EQUIPMENT LIMIT.	SEASONALITY	WINDTHROW HAZARD	PLANT COMPFT.		
	None									

WINDBREAKS

SOILS	SPECIES	HT. AGE 20	PERFOR-MANCE	SPECIES	HT. AGE 20	PERFOR-MANCE
	None					

WILDLIFE HABITAT SUITABILITY

SOIL	POTENTIAL FOR HABITAT ELEMENTS							POTENTIAL AS HABITAT FOR					
	GRAIN & SEED	GRASS & LEGUME	WILD HERB.	HARDWD TREES	CONIFER PLANTS	SHRUBS	WETLAND PLANTS	SHALLOW WATER	OPENLAND WILDLIFE	WOODLAND WILDLIFE	WETLAND WILDLIFE	RANGELAND WILDLIFE	
1	Poor	Fair	Fair	Good	-	Good	Fair	Fair to poor	Fair	Good	Fair to poor		

RANGELAND

RANGE SITE NAME	SOIL	KEY SPECIES AND % COVER	POTENTIAL YIELDS		NORMAL SEASON	
			TOTAL lb/Ac	USABLE lb/AUM	GROWING	GRAZING
		None				

FOOTNOTES

- Sand
- Mud
- ◐ Mixture Sand and Mud

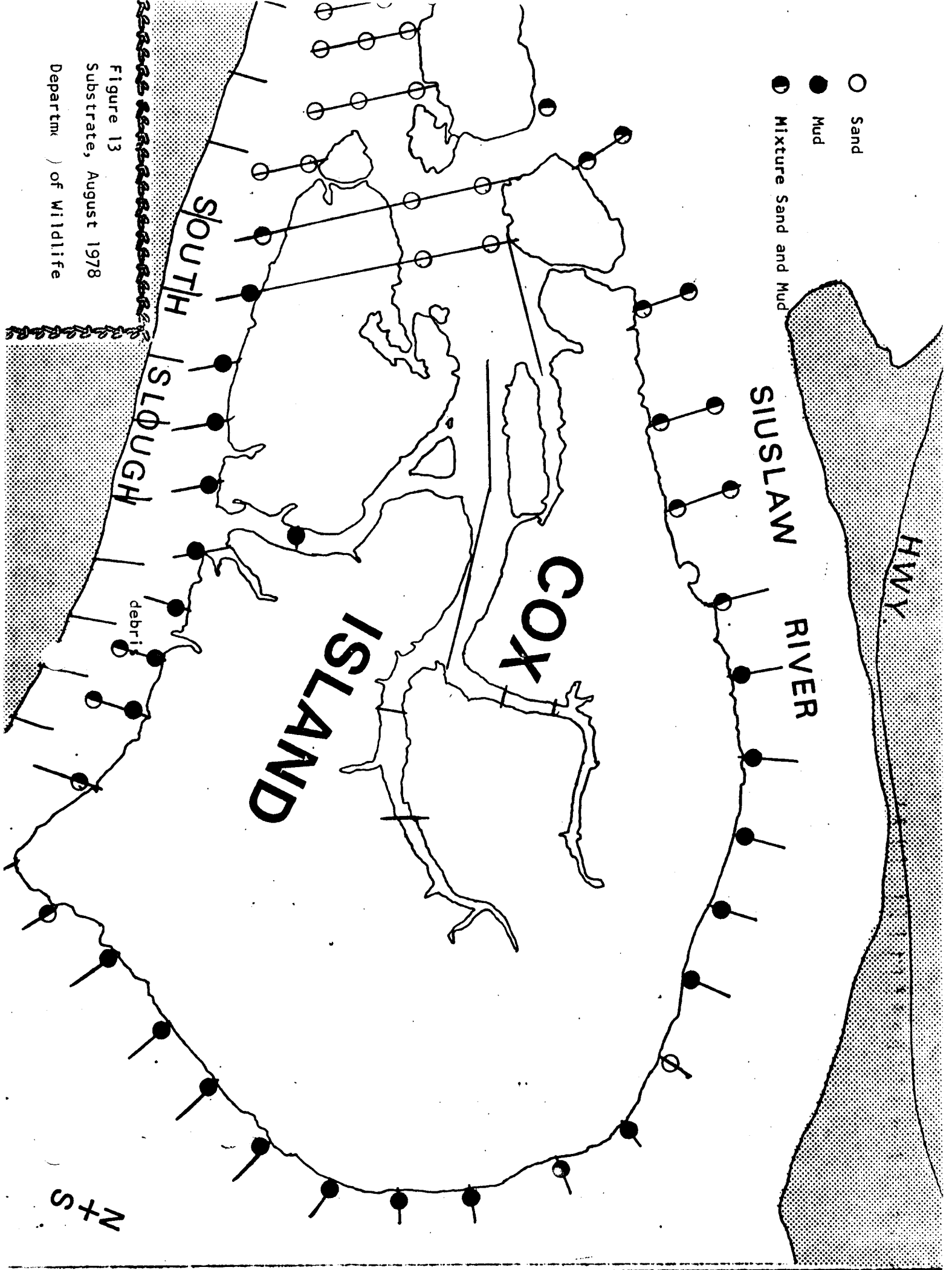


Figure 13
 Substrate, August 1978
 Department of Wildlife

most potential uses. Its suggested uses are wildlife habitat, pasture, and growing hay, with little potential for use as landfill, embankments or other civilized use.

The upland section of Cox Island, where the Benedict House is situated, is classified as Nestucca silt-loam which are poorly mixed alluvial soils tending to be mottled, dark brown, and acidic at the surface. Rooting depth is from 0-20 inches due to a seasonal water table. This soil is found unsuited for uses other than pasture and forage crops, hence the floodplain construction of the house.

As we might deduce from the following, the soils of Cox Island are naturally formed levees of the Siuslaw River. Joe Feireisen, a PhD student from the University of Oregon, is currently using Cox Island as a sampling location for his thesis on the formation of these river levee systems in the Siuslaw. From his work we can summarize that Cox Island is a naturally formed levee occurring on the Siuslaw River with the exception of the spoil islands mentioned earlier.

Hydrology:

Cox Island is surrounded by water. For this reason alone, it is important to know something of the physical characteristics of the Siuslaw River and its estuary. While little has been done to adequately characterize the Siuslaw River, not to mention the section which passes Cox Island, a few useful physical measurements have become available.

The Siuslaw is a moderate sized river carrying water into the Pacific Ocean with an average flow of $89.2 \text{ M}^3/\text{second}$. The estuary into which the Siuslaw flows has a surface area of 2245 acres at high tide (Percy et al), and is stratified in May and January,

partially mixed in March and well mixed in October.

Michael Ut recorded the following data on salinity, temperature, dissolved oxygen, pH, and turbidity as part of a Master thesis in Civil Engineering at Oregon State University (Ut, 1973). The following data, taken only from the river miles consequent with Cox Island, are presented as reference points for water quality tests in the future that may effect Cox Island.

FIGURE 14: Water quality measurements taken from River mile 7.5, Siuslaw River

January 30, 1973 high tide

depth	temp (°C)	dissolved oxygen	salinity	p.H	Jackson Turbidity Units
26	9.0	8.2	30.9	8.0	4
18	9.0	8.4			
13			30.9	7.6	1
10	9.1	8.5			
2	9.0	8.7	30.9	8.0	2

low tide

26	7.0	9.5		8.9	
15	7.0	9.2		8.5	
8	7.0	9.2		8.4	
1	7.0	9.2		8.3	

May 3 low tide

depth	temp (°C)	dissolved oxygen	salinity	p.H	Jackson Turbidity Units
28	12.0	9.8	13.4	7.8	8.0
14	12.5	9.7	13.0	7.7	6.0
1	12.5	9.9	12.8	7.7	5.1

May 3 high tide

31	10.0	9.8	33.5	7.6	3.0
15	9.5	10.3	33.6	7.9	1.8
1	9.5	10.8	33.6	8.0	1.3

August 2 low

10	12.0	8.6	31.2	7.6	2.8
5	11.5	8.9	30.9	7.6	2.3
1	12.0	8.8	31.0	7.5	1.4

August 2 high

24	7.0	7.9	33.9	7.6	1.9
12	8.0	8.2	33.8	7.7	2.5
1	8.0	8.5	33.8	6.9	3.2

Vegetation:

The vegetational makeup of the island is comprised of a unique and intricate array of smaller communities which have been divided for the purpose of discussion into nine communities (see figure 14). While these communities in most cases overlap, the primary criteria for their selection are the predominant plant species present and the "sense" of the community.

1. Spruce-Waxmyrtle-Crabapple Zone
2. Scotch Broom Zone
3. Blackberry Zone
4. Baccharis Zone
5. High-marsh Zone
6. Low-marsh Zone
7. Bullrush Zone
8. Spartina Zone
9. Eelgrass Zone

It must be emphasized that while we may distinctly refer to a zone, in fact, there is often a broad transition zone between communities rather than a sharp boundary. Wildlife in particular do not recognize our classification system, especially in the case of the various marsh zones.

In each zone a species list of plants will be presented with plants being either Dominant (D), Intermediate (I), Rare (R), or in the case of a monospecific community, Predominant (P).

Spruce-Waxmyrtle-Crabapple Zone

This zone (see figure 15) comprises the majority of the upland portions of Cox Island. It is characterized by large spruce trees

FIGURE 16 SPRUCE-WAXMYRTLE-CRABAPPLE ZONE

Sitka Spruce Picea sitchensis
Pacific waxmyrtle Myrica californica
Oregon crabapple Malus diversifolia
red alder Ainus rubra
domestic apple Malus sp.
cascara buckthorn Rhamnus purshiana
Holly tree
ivy

Oregon ash Fraxinus latifolia
Himalaya berry Rubus thyranthus
evergreen blackberry Rubus laciniatus
wild blackberry Rubus vitifolius
salal Gaultheria shallon
Kinnikinnick Arctostaphylos uva-ursi
evergreen huckleberry Vaccinium ovatum
salmonberry Rubus spectabilis
thimbleberry Rubus parviflorus
black twinberry Lonicera involucrata
Scotch broom Cytisus scoparius
Coyote brush Baccharis pilularis var. consanguia
red huckleberry Vaccinium parvifolium
willow Salix sp.
Gooseberry Ribes sp.

Yarrow Achillea millefolium
sea-coast angelica Angelica lucida
Slough sedge Carex obnupta
Common California Aster Aster chilensis
Giant vetch Vicia gigantea
Bedstraw Galium sp.
Sword fern Polystichum munitum
Western Bracken Fern Pteridium aquilinum
Creeping thistle Cirsium arvense
Pacific silverweed Potentilla pacifica
Australian fireweed Erechtites pernanthoides

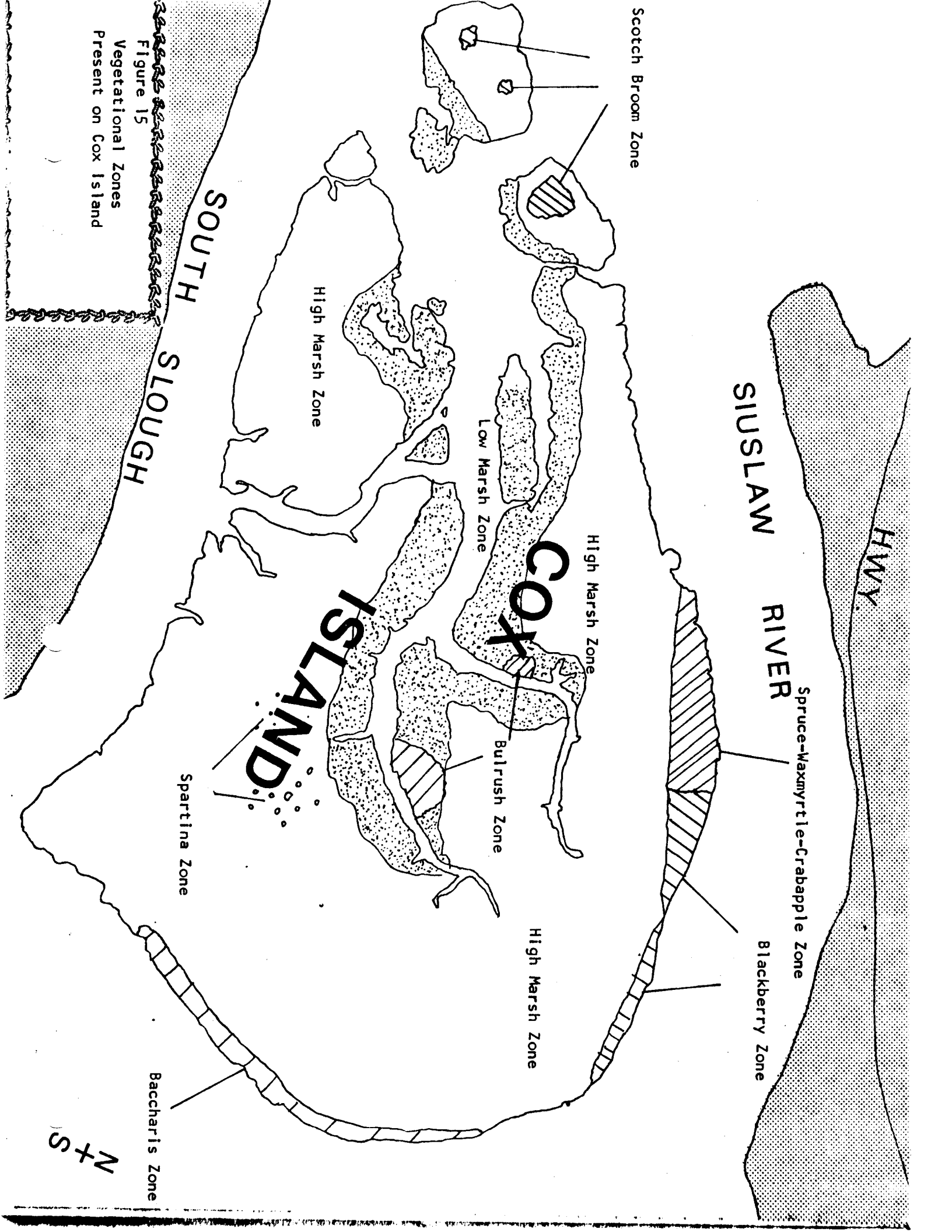


Figure 15
 Vegetational Zones
 Present on Cox Island

some 40 inches D.B.H. and 80 feet tall and an understory of wax-myrtle and salal bushes 10 feet tall. In some portions of this upland zone, orchards that were planted while the island was inhabited have remained a stable part of the community and persist as a reminder of introduced species on the island. In these orchards an understory of blackberries is often present. In a portion of this zone where neither spruce trees or crabapple trees are present, small clearings in which seacoast angelica and slough sedge flourish are found.

This upland zone is distinct from the more simple blackberry community primarily because it is of older origin. The spruce trees and orchard trees present in this zone were also present in the 1930 aerial photos of the island, while the blackberry zones were then pasture rather than a shrub community.

The spruce-waxmyrtle-crabapple zone being the most terrestrial of all zones provides an important cover and food source for wildlife on the island. As a long narrow zone, it is important to recognize its value as an edge community for a large portion of the adjacent marshes and shrublands.

Blackberry Zone

The blackberry zone (see Figure 16) contains almost exclusively blackberries except for small isolated clearings where California aster, sword fern and seacoast angelica exist. This zone appears to be a successional state from farm to forest and represents the opportunistic life-history characteristics of blackberries once the upland was taken out of pasture and garden. This zone is an impenetrable thicket which provides excellent cover and food for small wildlife, especially small upland birds. It is a frustration for

FIGURE 17 BLACKBERRY ZONE

Himalaya berry Rubus thyranthus
evergreen blackberry Rubus laciniatus
wildblackberry Rubus vitifolius
common california aster Aster chilenses
sword fern Polystichum munitum
seacoast angelica Angelica lucida
slough sedge Carex obnupta

the island explorer.

Scotch Broom Zone

The scotch broom zone (see Figure 17) is a disturbed community undoubtedly reflecting spoils disposal from the channel cleaning in the 1930's. Scotch broom, 15 feet tall, totally dominate the site with edge communities of yarrow, western dock, giant vetch, and pacific silverweed. An area of European beachgrass lies southeast of the margin of the scotch broom zone.

This zone should provide excellent cover for deer, but seems to attract few due to the paucity of browse in the area and the difficulties of crossing the small channel next to the island. While the zone provides a distinct change of pace to the island visitor and increases the diversity of the island to some small degree, this scotch broom would have been better left off the island, with the original marsh species remaining.

Baccharis Zone

The Baccharis or chapparel broom zone (see Figure 18) is more properly an edge community with characteristics of the high marsh in addition to a single species of shrub, Baccharis pilularis. This tall shrub, growing up to 10 feet, occupies the upper levy zone of the island. The eastern end of the island is skirted by this brush zone on the natural levee, raising the surface of the land just high enough to avoid too frequent dousings by saltwater.

Marsh Zones

While the vast majority of the island is classified as immature high salt marsh in the scheme of Jefferson (1974), it is instructive

FIGURE 18 SCOTCH BROOM Zone

Scotch broom Cytisus scoparius
Yarrow Achillea millefolium
western dock Rumex occidentalis
European Beach-grass Ammophila arenaria
Sedge Carex sp.
Giant vetch Vicia gigantea
red alder Alnus rubra
Pacific silverweed Potentilla pacifica

FIGURE 19 CHAPPARRAL BROOM ZONE

Chapparral broom Baccharis pilularis var. consanquinia
Yarrow Achillea millefolium
Giant vetch Vicia gigantea
Common California Aster Aster chilensis
Gumweed Grindelia integrifolia var. macrophylla
Pacific silverweed Potentilla pacifica

to further differentiate this rather large parcel into 4 different subtypes. It must be emphasized that these subdivisions are not distinct and above all are subjective. A more in-depth study would find in excess of 15 different plant communities and associations, based on species composition and the percent of each species in the zone.

High Marsh Zone (Jefferson's immature high marsh type)

This community is characterized by the presence of plant species (see Figure 19) in all combinations and proportions.

Diagnostic in this zone are gumweed, aster, dock, and yarrow in the uppermost portions of the marsh as well as salt bush, Baltic rush and gumweed in the more saline situation. The high marsh type represents the second largest community type on the island, following the low marsh type, and is especially valuable to the estuary for its function as a detrital source. Marsh wrens and sparrows use this community type extensively.

A fascinating variant of this community type is the driftwood marsh association next to the upland communities adjacent the Benedict House. This driftwood is deposited in high winter tides and is obviously an important, perhaps overriding determinant in the types of marsh plants represented. Along with a small mammal population that thrives in the habitat, beautiful shelf fungus adorn the rotting driftwood.

Channelization in this zone is not quite so extensive in this higher-marsh zone, but the channels which do occur are deep, leaving the explorer waist deep in mud.

FIGURE 20 HIGH MARSH ZONE

Gunweed Grindelia integrifolia var. macrophylla
Yarrow Achillea millefolium
Common California Aster Aster chilensis
western dock Rumex occidentalis
salt bush Atriplex patula
pickleweed Salicornia virginica
Pacific silverweed Potentilla pacifica
Baltic rush Juncus balticus
Lynbys sedge Carex lunqbei
Three square bulrush Scirpus americanus
Creeping bentgrass Agrostis alba var. palustris
Tufted hair grass Deschampsia caespitosa
seashore saltgrass Distichlis spicata

Low Marsh Zone

The low marsh zone (see Figure 20) mentioned here is not a low salt marsh type as described in Jefferson's work, but is rather a lower type of immature high salt marsh. This marsh type exhibits more extensive channelization than the high marsh just described. None of the terrestrial plants (yarrow, dock, or aster) frequently occurring in the high marsh zone are present. Vegetation in this zone is frequently inundated. In the interior of the island, this zone is frequented by Nutria and is currently being encroached upon by the Spartina zone to an unknown, but positive extent. The low marsh zone grades into relatively narrow zones of Salicornia or Scirpus americana, which colonize bare mudflat into emergent communities.

As eluded to earlier, these marsh types are represented by a compositional as well as species richness variation from area to area.

Bulrush Zone

The bulrush zone (Scirpus validus) is very limited in extent and is mentioned here primarily for two reasons. The zone comprises a unique assortment of wildlife (primarily rails) and the presence of bulrush forms a monospecific community not inhabited by other species. The primary characteristics of the soil in these bulrush sites is a mu k-peaty texture.

Spartina Zone

The Spartina zone is the most important zone in terms of management problems on Cox Island. Spartina altimflora is an eastern salt marsh species believed to be brought to the Pacific Coast in oyster culture or in stabilization plantings on dredgespoil sites.

FIGURE 21 LOW MARSH ZONE

Lyngbys sedge Carex lyngbei
Tufted hair grass Deschampsia caespitosa
seaside plantain Plantago maritima
seaside arrowgrass Triglochin maritima
Baltic rush Juncus balticus
pickleweed Salicornia virginica

Cox Island now contains a rather extensive series of "ringworm-like" patches of Spartina on its southeastern corner, previously reported only at Willipa Bay, Washington. These rings of rhizomal growth are potentially a serious challenge to the integrity of the marsh system and will be mentioned later under management options.

Eelgrass Zone

Primarily on the western side of the island beds of important eelgrass, Zostera marina, form a complex estuarine community. While not located entirely on the Conservancy owned portions of the island, any management plan should consider the importance of this community in future decisions concerning the island. The eelgrass beds serve as important constituents of shelter, food material, and substrate for marine communities. Figure shows a map of eelgrass beds constructed by the Oregon State Department of Fish and Wildlife outlining the eelgrass beds on Cox Island.

Birds:

The diversity of year round and migratory birds present on Cox Island is one of the greatest attributes of the ecosystem. While this diversity is appreciated by local birders, predominant use of the resource is made by duck hunters.

In two rather cursory studies, that of Graybill on a single fall day prior to the peak of fall migration and that of a local Audubon Society member on a single spring day, 71 species of birds were identified. Certainly twice that number of species could be seen using a more systematic approach (see Figure 21).

The birds occupying the island can be divided into several categories for discussion:

migratory shorebirds

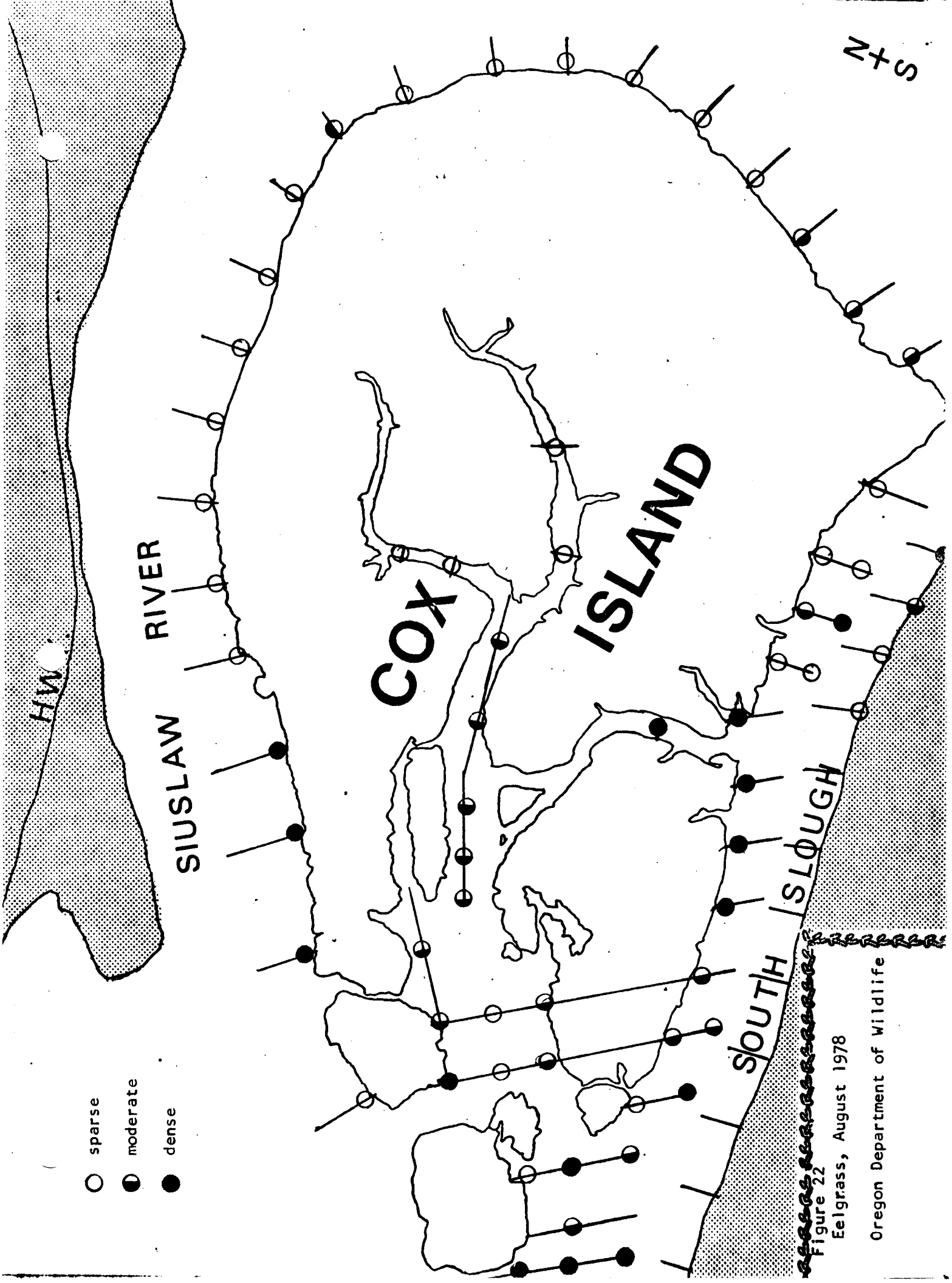


Figure 22
 Eelgrass, August 1978
 Oregon Department of Wildlife

Figure 23

COMBINED BIRD LIST

common loon	S
Arctic loon	S
red-necked grebe	S
horned grebe	S
eared grebe	S
red-billed grebe	S
double-crested cormorant	SF
whistling swan	S
white-fronted goose	F
mallard	SF (500)
plintail	S
american widgeon	S
shoveler	S
green-winged teal	SF
canvasback	S
greater scaup	S
white-winged scoter	S
ruddy duck	S
common merganser	S
red-breasted merganser	S
hooded merganser	S
white-tailed kite	S
marsh hawk	SF
red-tailed hawk	SF
bald eagle	S
osprey	S
kestrel	F
great white egret	SF
great blue heron	SF
american bittern	F (poss.)
rail sp.	F
black-bellied plover	SF
killdeer	SF
spotted sandpiper	SF
great yellowlegs	SF
long-billed dowitcher	F
pectoral sandpiper	F
dunlin	S
sanderling	S
phalarope	S
glaucous-winged gull	S
western gull	S
herring gull	S
California gull	F
ring-billed gull	SF
mew gull	S
Bonaparts gull	S
caspian tern	S
Belted Kingfisher	SF
red-shafted flicker	F

BIRDS (Cont.)

western wood peewee	F
barn swallow	S
cliff swallow	S
common raven	SF
common crow	SF
chestnut backed chickadee	F
wrentit	F
winter wren	F
bewicks wren	F
long billed march wren	F
robin	F
starling	SF
audobons warbler	F
song-sparrow	SF
red winged blackbird	F
meadowlark	SF
purple finch	F
American goldfinch	F
lesser goldfinch	F
rufous-sided towhee	F
vesper sparrow	F
song sparrow	SF

S = spring
F = fall

ducks
upland birds
gulls
hawks and allies

Noting the distinct limitations of their habitat, shorebirds and ducks utilize the most critical resource that Cox Island offers. The bufferstrip offered by the spruce zone and the upland brush communities offers relative insulation to the shorebirds and ducks utilizing the interior of the island. In addition, a relatively large section of mudflat and associated marsh in this interior provides good habitat for these species. A large number of migratory birds are present during migration seasons and Cox Island provides one of the best areas for habitat and seclusion of these species. On October 13, one week prior to duck season opening, several hundred mallard ducks were seen on the island, with the fall migration too early to tell how many other species of ducks would also use the resource. As evidenced by the great number of species listed in the shorebird category on Figure it is clear that the marsh is providing a prime habitat for abundant shorebirds.

The upland sections of the island, with their impenetrable thickets of blackberries, salal, and waxmyrtle form a seemingly perfect habitat for upland birds. Because of the tremendous area on the island which can truly be called an ecotone, upland birds do make extensive use of the area. Both on the river side of the island but more so on the marsh side of the island, upland birds thrive.

Larger predacious birds, owls, hawks, eagles, and osprey have all been spotted frequenting the island. A bald eagle's nest, further up the estuary is active and local birders occasionally see the eagle pair near Cox Island. On any late afternoon, a marsh hawk can be seen hovering over the island's marshes waiting for its

flying to the island on a silent, moonlit night to hunt through the night.

In all, birds on the island, sheltered from direct effects of human interference have maintained a healthy and vigorous existence on the island with the glaring exception of the duck hunting on the island which will be dealt with in a later section.

Fish:

While possibly overlooked during the visitor's first few trips to the island, and if the season is right completely unnoticed, fish and their consequent need for appropriate habitat comprise one of the greatest positive benefits to the island. Fishing serves as the Siuslaw River's major sports money making contribution to the community.

Fish habitat can be crudely divided into the Siuslaw and its larger channels, and the interior marsh and the smaller channels that dissect it.

Jim Hutchinson, State Wildlife Biologist for the Florence area, has made monthly hauls with a 75 foot seine net in the channel of the Siuslaw west of Cox Island, as part of a resource inventory for the State Department of Fish and Wildlife. The area surveyed was silt and sand substrate with a moderate growth of eelgrass. Data collected is listed on Table . From this data it is easy to see that large numbers of fish use the resource area adjacent to Cox Island. These same nettings in addition to the species of fish listed also produced Cancer crabs and Cragon shrimp, two species more commonly found in the lower bay.

The channels of the interior marsh are less thoroughly studied

Figure 24

Number of Fish Collected Monthly at Low Tide, By Species, With 75 Foot
Beach Seine at Cox Island, April 1977-April 1978

Common Name Genus and Species	Number Collected By Month												Total	
	A	M	J	J	A	S	O	N	1)	J	F	M		A
American Shad 2)														
<i>Morone Sapidissima</i>		1												1
Bay Pipefish														
<i>Syngnathus Griseolineatus</i>				2	6							1		9
Coho Salmon 2)														
<i>Oncorhynchus Kisutch</i>	7	4												11
Chinook Salmon 2)														
<i>Oncorhynchus Tshawytscha</i>			10	1	4							1	1	17
English Sole 2)														
<i>Parophrys Vetulus</i>		9												9
Pacific Staghorn Sculpin														
<i>Leptocottus Armatus</i>	2	4	11	4	5			7		40	1	48	31	153
Saddleback Gunnel														
<i>Pholis Ornata</i>				1	3									4
Shiner Perch 2)														
<i>Cymatogaster Aggregata</i>		5	41	575	85	248							1	955
Starry Flounder 2)														
<i>Platichthus Stellatus</i>		1	3						2	3	1			10
Surf Smelt 2)														
<i>Hypomesus Pretiosus</i>			2								8		1	11
Threespine Stickleback														
<i>Gasterosteus Acoleatus</i>					1			12				3	3	19
Topsmelt 2)														
<i>Atherinops Affinis</i>				1	3	227								231
Surface Temperature (2)		15	17	20	18.5	16.5	13							
Surface Salinity (0/00)		2	11	14	24	18	21							

1) No Sampling in December Due To Flooding

2) Juveniles

and therefore both species and numbers are less clear. In occasional seines taken in the channels in the interior of Cox Island, juvenile sticklebacks, shiner perch, staghorn sculpins and topsmelt were seined at moderate to high tides. This is thought to be convincing evidence that the island channels are used as a nursery area for juvenile fish species.

While not commonly known to nonfishermen, some species of trout become anadromous much like a salmon. Known as bluebacks or sea-run cutthroat trout, these fish are actively pursued by sport fishermen. The Siuslaw channel which passes Cox Island stands as the world's best fishing river for searun cutthroats.

Cutthroat trout migrate two times in their life. In May-June they travel to the ocean from their juvenile rearing grounds with their stomachs full of insect larvae and the estuarine shrimp Craxon franciscanum. In September, after being at sea for one year, the fish return to the stream where they were born. Upon their return they will not enter the river water which is as much as 75-80°F after having spent the year in some 30 degree colder ocean water. During this time they seek the deep relatively cool channels of the Siuslaw River to await the cool fall rains. It is during this fall hold up that fishermen swarm to the river to fish for the satiated cutthroats fresh from the ocean.

Thus it appears that the deep channel of the Siuslaw which flows next to Cox Island serves three definite purposes: 1. It furnishes a limited amount of food both to the adult and young cutthroat. 2. It serves as a staging area for fish entering the ocean and 3. It serves as a grouping area for adult fish awaiting cool waters to enter the streams.

The importance of this fishery to sport fishermen will be

discussed at a later time, but it is well to recognize at this point that annually 12,000 of these fish are caught in the Siuslaw at the expense of 57,000 man-hours of fishing.

Clams:

Another aspect of Cox Island not clearly visualized upon first examination is the extent and population of clam stocks on the island.

While other estuaries are noted for their huge gapers or goeey-ducks, the Siuslaw and especially Cox Island are recognized in the state as having the finest soft-shelled clamming along the coast. Not a monster by any measure, the soft-shelled clam is not actively sought in other estuaries because bigger clams are available. The soft-shell however, is noted for its excellent taste in chowders.

Due to the popularity of clamming in the Siuslaw, especially at Cox Island, the State Department of Fish and Wildlife has censused the clams of Cox Island well in the past 25 years. This history of clamming presents an interesting and relevant story of management of a resource. Figure 25 shows a chronology of clamming in the Siuslaw, as drawn from a collection of material dealing with the estuary being prepared by the State Department of Fish and Wildlife. Figures 22-26 show the distribution of various clam species on Cox Island. Figure 25 shows the length distribution of clams present on Cox Island. From this information the following can be deduced. While in 1965 the department believed that clam populations could not be sustained at Cox Island, in fact, the clamming and the clams have increased in the past 10 years. The clams are not native, but are relatively recent additions to the intertidal community at the island. Finally, clam populations appear to

Figure 25

TABLE SUMMARY OF SOFTSHELL CLAM SURVEYS, SIUSLAW ESTUARY
 Number of Square Feet Surveyed, Clams Counted and Clams per Square Foot, 1953-69

Year	Tide Island Flat			Cot Island Flat			North Fork Flat		
	Square Feet Surveyed	Clams Counted	Clams/Sq. Foot	Square Feet Surveyed	Clams Counted	Clams/Sq. Foot	Square Feet Surveyed	Clams Counted	Clams/Sq. Foot
1953	9,062	94	0.01	22,040	173	0.01	1,915	18	0.001
1955	5,900	158	0.03	4,000	79	0.02	-	-	-
1956	5,400	146	0.03	4,100	114	0.04	-	-	-
1957	10,600	640	0.06	1,740	308	0.18	-	-	-
1958	4,000	190	0.05	2,200	272	0.12	-	-	-
1959	6,000	647	0.11	3,200	825	0.26	2,100	226	0.11
1960	5,800	753	0.13	3,000	456	0.15	-	-	-
1961	8,300	438	0.05	4,200	621	0.15	2,700	122	0.45
1962	9,100	452	0.05	3,700	1,008	0.27	-	-	-
1963	5,600	169	0.003	3,400	479	0.14	-	-	-
1964	7,500	123	0.02	3,400	71	0.02	-	-	-
1965	5,900	227	0.04	3,200	69	0.02	900	7	0.01
1966	7,200	512	0.07	3,400	256	0.07	1,000	20	0.02
1967	5,900	228	0.03	2,300	313	0.13	900	57	0.06
1969	5,700	1,793	0.31	3,000	964	0.32	-	-	-



1-5/ft²



greater than 5/ft²

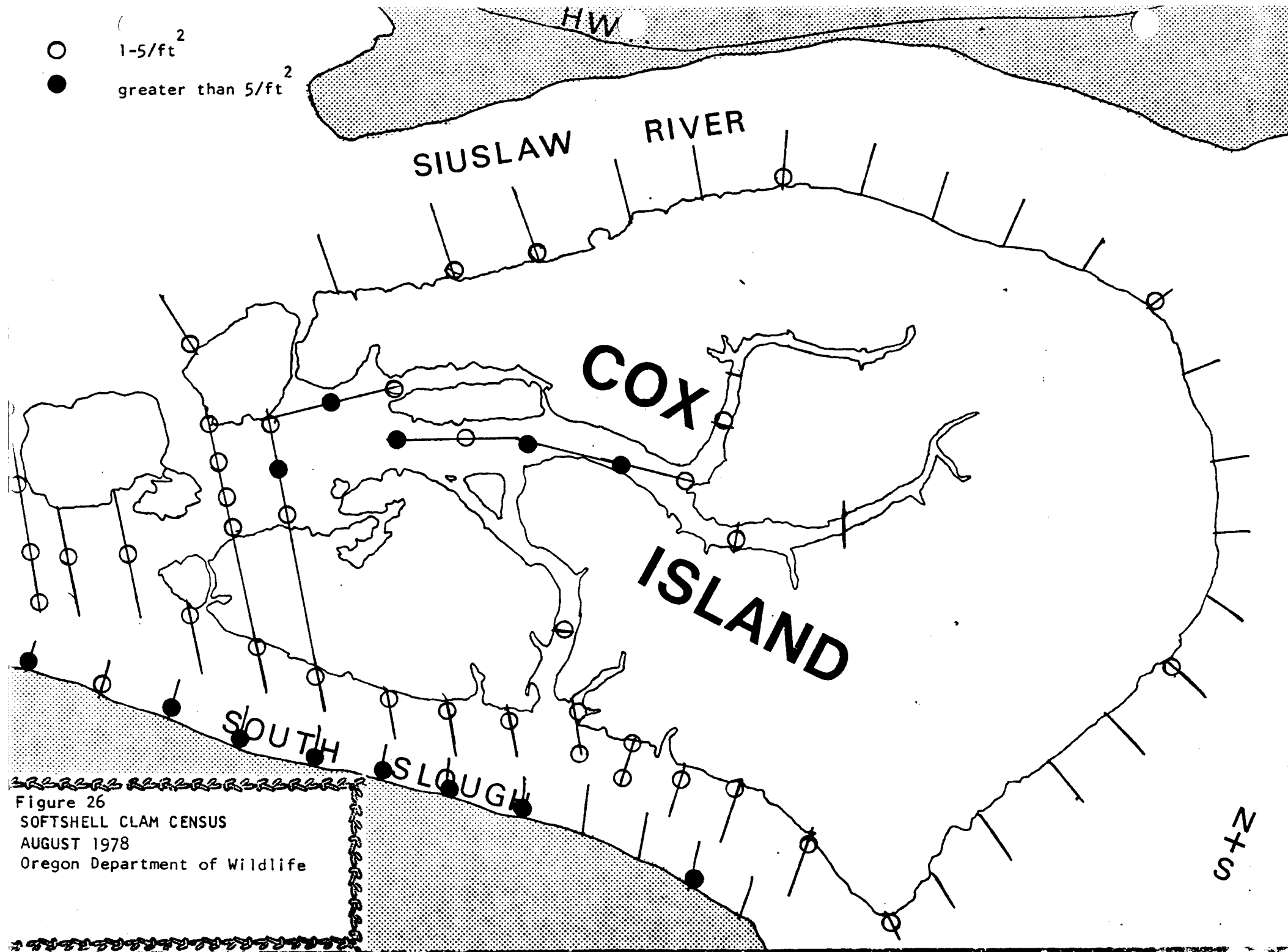


Figure 26
 SOFTSHELL CLAM CENSUS
 AUGUST 1978
 Oregon Department of Wildlife

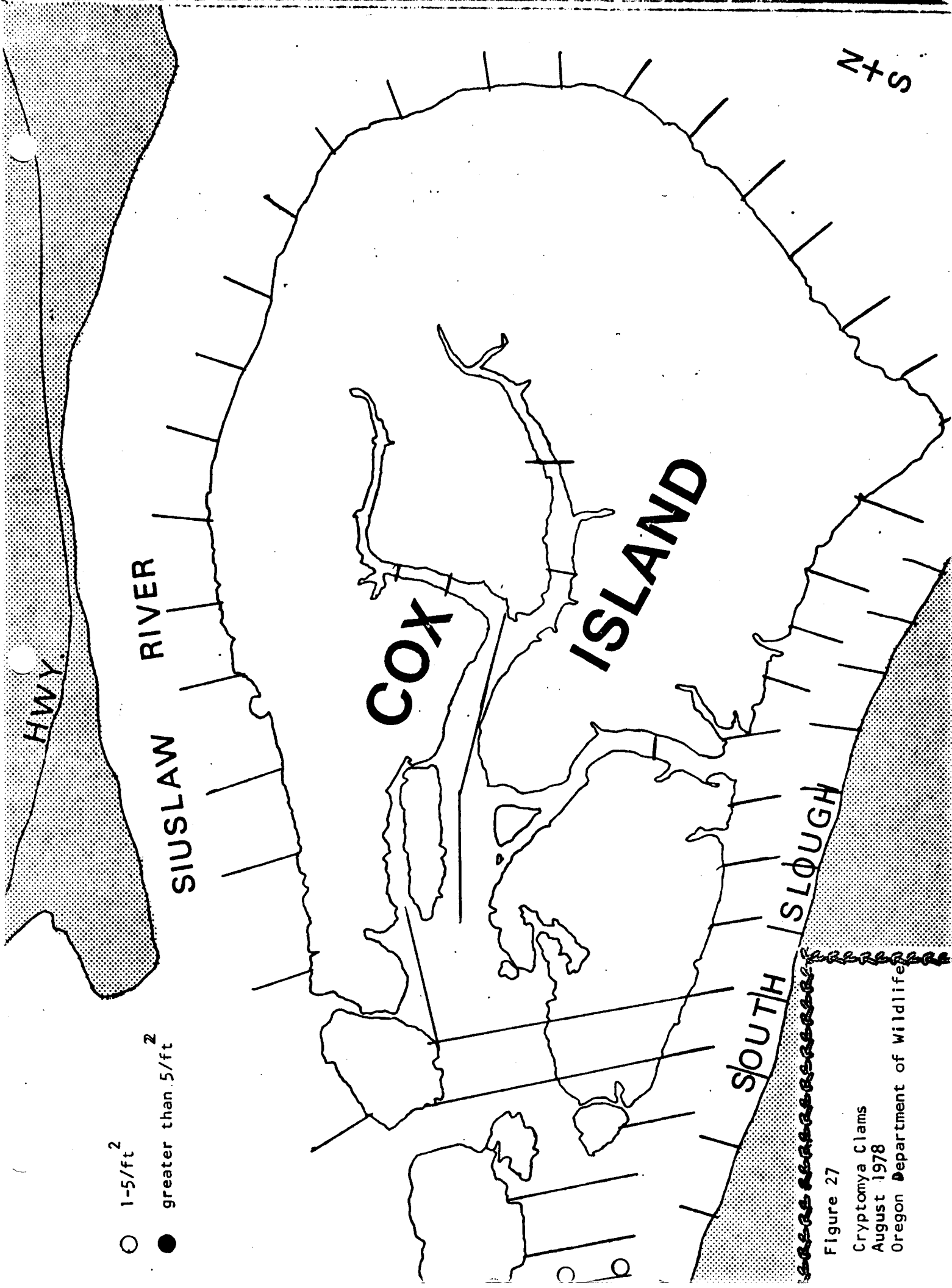
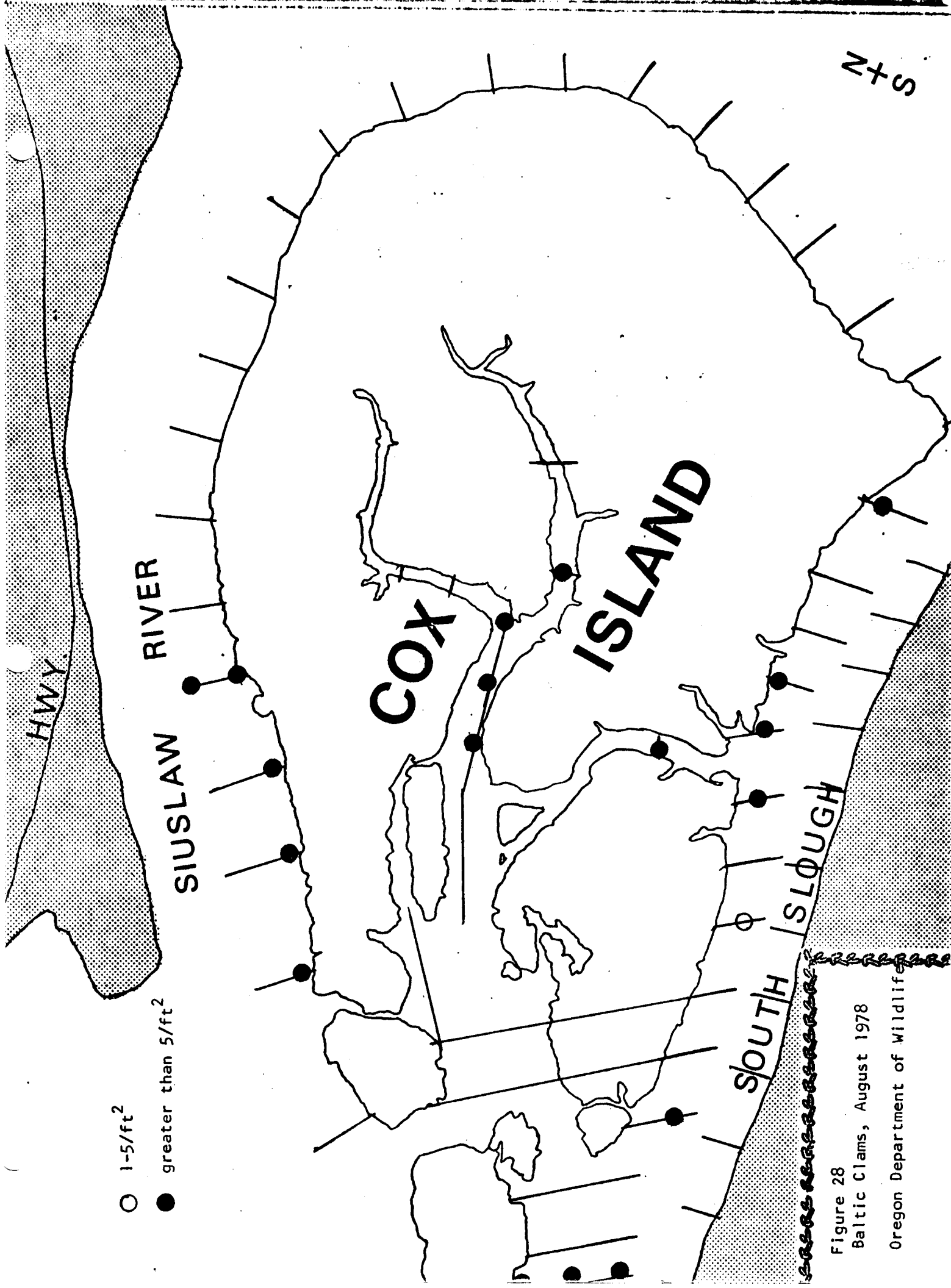


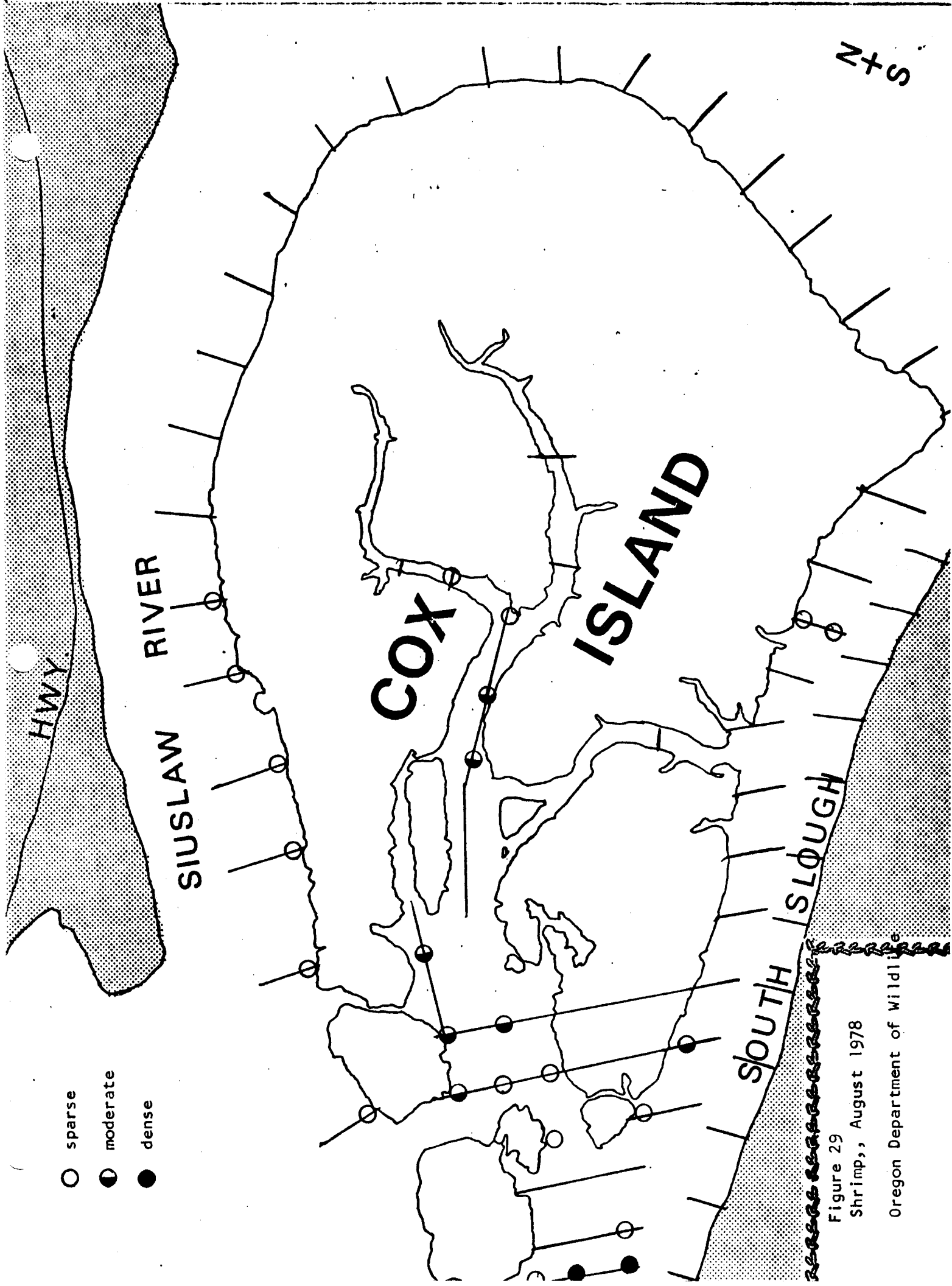
Figure 27

Cryptomya Clams
 August 1978
 Oregon Department of Wildlife



- 1-5/ft²
- greater than 5/ft²

Figure 28
 Baltic Clams, August 1978
 Oregon Department of Wildlife



- sparse
- ◐ moderate
- dense

Figure 29
 Shrimp, August 1978
 Oregon Department of Wildlife

be able to sustain current levels of harvest.

Mammals:

While mammals are generally an intensively studied group, Cox Island presents a turn of events. Although Ken Kesey claims to have seen a bear run out of the Benedict House and harbor seals are commonly sited up the Siuslaw as far as Cox Island, no studies have dealt specifically with mammals on the island and little is really known about them. The clams of Cox Island are much more intensively studied than the mammals on the island.

No published data or research of any type has been carried out on the island with the exception of two trapping nights, one of 50 traps and one of 100 traps carried in October, 1978 as part of this management plan. Although traps during these two nights were carefully set in upland meadows, ecotones and salt marshes, only one vagrant shrew was captured, a very low success rate.

Evidence of large mammals is clear. Deer tracks and deer scat in large numbers are present on the island especially in the upland. As well, evidence of meadow mouse runways were seen in the drift-wood piles in the upper marsh zone. Raccoon scat and raccoon tracks witness to their hunting in the wrack line at each low tide. Foxes are reputed to occur on the island (Hanson and Rudy, 1978) but this report is without further substantiation.

Clearly the most pressing problem in mammalian terms on the island is the presence of Nutria and their aggressiveness in taking habitat once occupied by more benign natural hosts such as muskrat and beaver. On several different occasions, Nutria were witnessed

Figure 30 Mammals present on Cox Island

vagrant shrew	<u>Sorex vaqrans</u> Baird
meadow mouse	<u>Microtus sp.</u>
muskrat	<u>Ondatra zibethica</u>
nutria	<u>Myocastor coypu</u>
harbor porpoise	<u>Phocaena phocoena</u>
black bear(?)	<u>Euarctos americanus</u>
raccoon	<u>Procyon lotor</u>

swimming in the interior of the island and seem well established in burrows adjacent these interior channels. Around the state few controls for Nutria have been found to be successful.

Current Social Uses:

At several places in the preceding biological and physical inventory of Cox Island, man's presence and the significant role he plays has been eluded to. Social uses of the island will be broken into three major sections: characteristics of the surrounding communities, industries, and recreation.

Social Characteristics of the Surrounding Area

Cox Island should not be viewed as an island in the midst of pristine forests and agricultural land, nor should it be viewed as an island just minutes away from a major coastal tourism center. In fact, it is both of these. By virtue of its island nature, Cox Island can be adjacent to a major transportation artery between the Willamette Valley and the coast and still remain the beautiful visual relief that it has been for past decades.

The following population centers are near Cox Island and therefore impact it in some significant manner.

Population Centers at Siuslaw Bay (Klingman and Bella)

NAME	GENERAL LOCATION	RIVER MILE	1970 POPULATION
Florence	N side Siuslaw	3.5-5.4	2,246
Glenada	S side Siuslaw	4.7	200
Cushman	N side Siuslaw	8.2	none
Beck (Tiernan)	N side Siuslaw	14.7	130
Wendson.	N side Siuslaw	9.9	none
Mapleton	N side Siuslaw	20.5	900

These communities derive their income from logging and related industries, with a significant but lesser proportion coming from tourism.

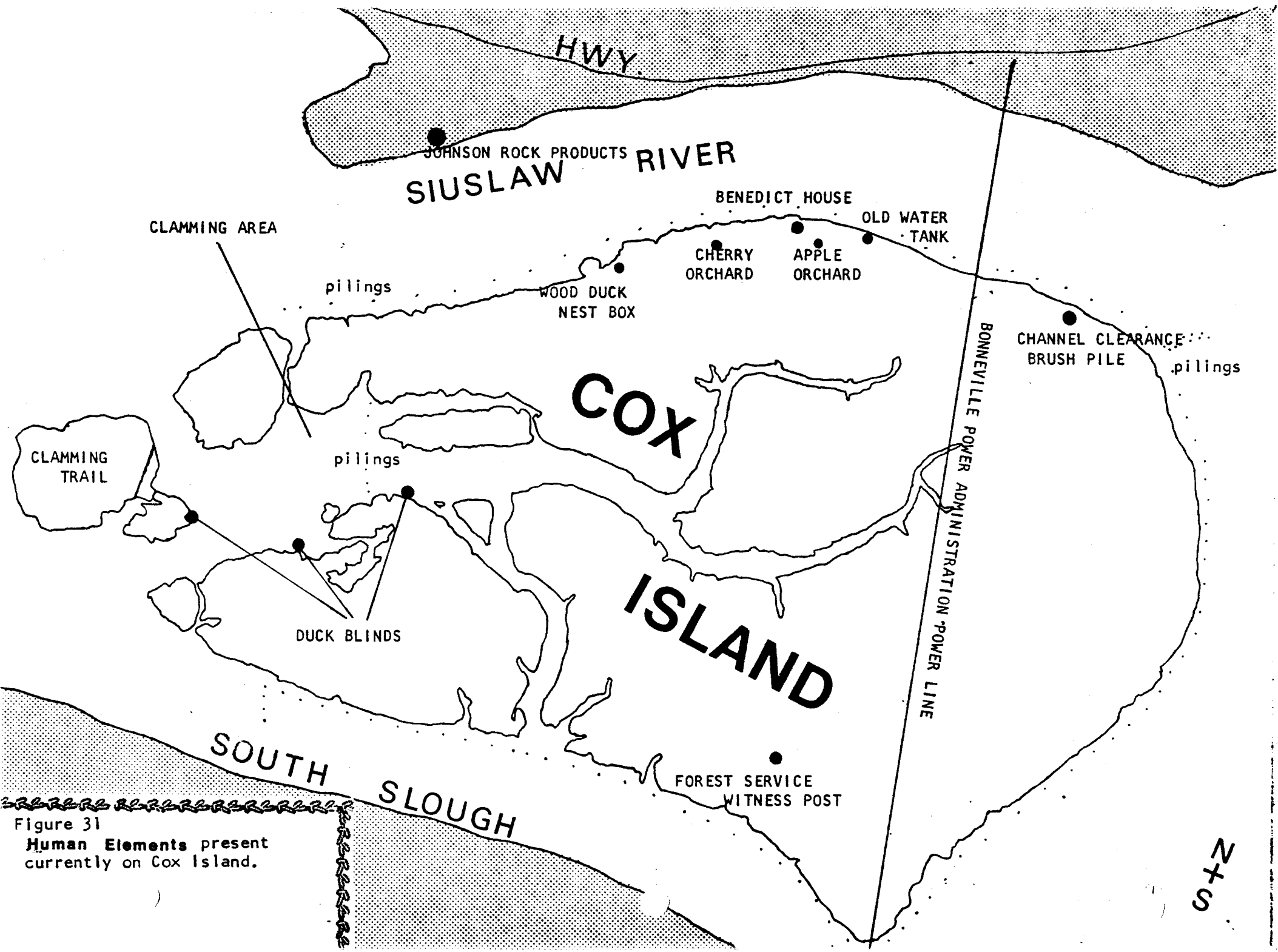


Figure 31
Human Elements present currently on Cox Island.

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Industries

Log storage, towing and barging are lumber related industries which might be suspected of impacting Cox Island in some way. The principal effects of these industries upon Cox Island are those which historically have been related to log storage. While the pilings and docks sit ancient and rotting at the island, log storage and its effects are still currently practiced near the island with little visible effect, on the entire eastern edge of the island.

Towing and dredging of the channel are a lesser problem currently, as the Port of Siuslaw and the Army Corps of Engineers must now specify in advance and notify owners prior to spoils disposal or log debris dispersal upon the island.

Johnson Rock Products-

A current controversy of hot debate associated with Cox Island is the location of Johnson Rock Products rock crushing and asphalt plant on the shore opposite the Siuslaw. Approved in early 1978 by the West Lane Planning Commission without notifying the Conservancy, the plant was deemed a good use of this last remaining estuarine industrial site because of the economic necessity of barging gravel to the site rather than trucking it in. This necessary barging seems not to be the case, in fact, no gravel material has been barged to the plant to date. Efforts by the Port of Siuslaw to review the plant application have appeared in the fall of 1978, presumably because the Port is disgruntled by the lack of barging revenues it is receiving from the corporation.

While a good case can be made for the economic necessity of low cost gravel and asphalt in the Florence area, the Johnson Rock Products plant is currently impacting Cox Island in several ways. The major impacts of the plant upon the island cannot as of yet be

quantified, but include noise, visual, and air pollution impacts. Public agencies have also expressed their concern that the retaining dike presently surrounding the rock products plant in order to prevent an oil spill from entering the estuary is not sufficient to contain an oil spill should it occur.

The plant is seasonal and sporadically used, but when it is operating a great deal of noise, smoke and visual pollution, clearly not coinciding with the objectives of the Conservancy becomes evident. Should a leak occur at the plant, the effects might not only be mildly disgusting but tragic to the integrity of Cox Island.

Recreational Use

Recreational use of the island clearly is the most important short termed social benefit derived by people of Oregon. It can be divided into the following categories: clamming, searun cutthroat trout fishing, and duck hunting.

A. clamming:

A 1971 Siuslaw Rivier Estuary Resource Use study conducted by the Fish Commission of Oregon outlines the following clam recreational uses on Cox Island.

<u>MONTH</u>	<u>NO. OF USER TRIPS</u>	<u>NO. OF HOURS USE</u>	<u>ANIMALS CAUGHT</u>
M	144	156	
A	348	496	
M	313	414	
J	385	550	
J	297	480	
A	258	389	
S	258	311	
O	0	0	
total	2,003	2,796	55,051 (soft-shelled clams)

Six months of the year are important clamming months, April through September. Cox Island accounts for 32.3 percent of the clamming use in the estuary and accounts for 38.3 percent of the

catch, in which all are soft-shelled clams.

B. Searun Cutthroat Trout Fishing:

The following data is taken from Fisheries Research Bulletin #6 by the Oregon State Game Commission. It is inclusive of river mile 7.6-15 of which Cox Island is a part. However, it must be emphasized that while Cox Island is only a part of the 7 mile stretch of river, it does provide prime blueback fishing habitat as well as fishing area.

Siuslaw River Estuary Searun Cutthroat Trout Fishermen's Use 1967-1970

	Spring		Fall		Total	
	Hrs	Catch	Hrs	Catch	Hrs	Catch
1967	5737	5762	52,117	7117	57,904	12,879
1968	3207	1623	51,831	9574	55,038	11,197
1969	3657	3432	47,465	6370	51,122	9802
1970	5300	4712	58,972	11,115	64,272	15,827
average	4473	3882	50,397	7618	57,084	12,426

In summary, on the total 7.5 mile fishing stretch of the river 57,000hours are spent on the average annually with an annual average harvest of 12,426 fish which are harvested mostly in the fall. For purposes of comparison only 10 percent of these totals will be used in future discussions of recreational use of the island.

C. Duck Hunting

Estimates of the hunters' use of Cox Island at the present time are not published in a form similar to that presented for both fishing and clamming. Unofficial estimates of hunting pressure, compiled by the Oregon State Game Commission, show pressure at 15 hunters/day on the weekends throughout the duck season and 1-2 hunters/day during weekdays. The average success rate of these hunters is 2 birds/hunter. My observations estimate mean hunting time to be 3 hours. Utilizing the data we project:

# of huntertrips	# hours use	Success Rate
480	1440	960

Note: My observations are more conservative than the game commission, based upon an opening weekend survey. I found only 12 hunters on opening day at Cox Island with only 8 on the following Sunday. Week-days during opening week saw no hunters present. For purposes of estimation, I am using the State Game Commission results rather than my own. The Game Commission is quick to point out that Cox Island is the major duck hunting area near Florence with few substitutes available for hunters should it be closed.

Summary Of Recreation Uses, Cox Island

	User Trips	# Hours Use	Success
Clamming	2003	2796	55,051 19.7/hour
Searun Cutthroat Trout Fishing	—	57,084	12,426 .22/hour
Duck Hunting	480	1440	960 .66/hour

While the spectre of conflicting social uses may come up, it must be asserted that both temporal and spatial separation of resources serve to insulate users of the island. Fishing pressure is in the river channel, clamming is in the westward interior mudflats, and duck hunting is in the island marsh interior. Duck hunters and clammers do spatially overlap, but temporal separation protects one user from the other. In the fall, the low clamming tides are late in the afternoon into the evening while hunting pressure is primarily confined to the early morning until the early afternoon.

A point that must be mentioned in analysis of the three recreational activities is that all three do have some social impact. A fisherman throws a pop bottle that floats onto the island, a clammer disturbs the mudflat by not covering his digging holes and

a duck hunter speeds up marsh erosion by driving his boat into the bank of the marsh. In a long term regard, however, none of these lesser impacts rank high enough in seriousness to make the decision to close the island to recreational users. Indeed the fishermen and the clambers are present whether we choose or not, because they are on state property.

The one exception to this general rule is the special problem of duck hunting. While I was observing for two days during the opening of duck hunting season, I witnessed at least two violations of federal shorebird protection laws.

One group of hunters I was surveying shot at a group of black-bellied plovers. Upon returning to the boat landing I saw the remains of 9 long-billed dowitchers (a not too common shorebird in this state) strewn upon the landing their breasts cut out for a bite of meat, clearly in violation of federal law. Had these been buffalo, their tongues cut out as a delicacy, the effect could not have been greater personally, since the week prior I sat with a friend observing these same birds from a canoe in the interior of the island. My friend, an ornithologist visiting the island, related to me as we watched the dowitchers probing for food, how birders would go to Alaska to see dowitchers and perhaps not be lucky enough to see as many as we had. What good fortune we had that week at Cox Island.

Management:

An intensive biological, physical, and social inventory behind us, what are our management options in the future? How well is Cox Island going to be in 50 years?

Disregarding for a moment a few areas of particular concern,

Cox Island is in good shape. It is a rich natural area well protected from casual visitors by water on 4 sides. Management opportunities and problems confront us however, with the chance to make Cox Island a better place. The following issues of particular importance need to be acted upon in the near future. They are:

1. The Benedict House
2. Recreational Uses: clamming, fishing, and duck hunting
3. Publicity and local support and involvement
4. Spartina
5. Nutria
6. Johnson Rock Products plant

The following are a list of management options for the site with a preferred option listed. The intent of these options are to illustrate the range of possible reasonable alternatives. Depending upon existing laws, the financial ability of the Conservancy, and the enhancement of local support any one of the listed alternatives might be particularly suitable.

The Benedict House:

The Benedict House is a piece of architecture historically invaluable to the surrounding community. The restoration is, however, expensive and future use by either a caretaker or a visiting scientific researcher is questionable. In addition, vandalism and upkeep may be a problem if the house is renovated.

preferred alternative: In the short term, invest enough money into the house (with Conservancy funds) to prevent irreparable harm from occurring (keep the structure intact). In the long term, investigate means of acquiring historical register funds for renovation of the house. The house is currently in the register of state historical sites.

alternative 2: Aggressively seek funds from the Conservancy, local merchants, and local industries and enlist local help in renovation of the house. Renovation might include replacement of sashes and windows, installation of new flooring, and installation of a new roof, outdoor toilet, and water tank. This alternative would require tremendous community support, substantial commitment of Conservancy funds, and a half-time coordinator.

alternative 3: Allow the Benedict House to stand for as long as possible, but invest no money into its upkeep until future funds are forthcoming.

Recreational Use of the Island: duck hunting and clamming

While clamming and duck hunting have historically occurred on the island, they are specifically against national Nature Conservancy Goals, that is, to preserve species in as near a natural state as possible. Any attempt to enforce closures or restrict clamming or hunting on the island, however, must meet with Oregon state laws and would involve substantial loss of community support for the ideal of Cox Island as well as for the Nature Conservancy in a broader sense.

preferred alternative: Restrict duck hunting to the extent allowed by law (remove blinds, post no hunting signs, have Conservancy officials present on some weekends), and request strict enforcement of hunting regulations by the State Police, recognizing that we have no clear legal right to restrict entry and hunting if it is carried out from a boat rather than on foot. Allow clamming to continue unaltered, as the clam species present has been artificially stocked in the past and appears to be maintaining a strong population.

alternative 2: Post natural area signs, remove blinds, and request strict enforcement of state regulations by State Police. Allow clamming to continue unaltered.

alternative 3: Seek to curtail clamming and duck hunting to the greatest extent possible by strict enforcement of laws, posting of no hunting signs, and the presence of Conservancy members on weekends.

alternative 4: Allow maintainance of the status quo, that is, allow citizens to clam and hunt on Cox Island without restricting access.

Conservancy publicity at the local level:

While Cox Island is recognized as a valuable resource to the Conservancy and to the state of Oregon, local interest in the island and in the ideal of a natural preserve need to be improved. Specifically, citizens need to be informed of the presence of the Cox Island Preserve and its importance to the Siuslaw Estuary as a whole.

preferred alternative: Minimally commission (\$100) a slide show dealing with Cox Island and its relationship to the local community and the Siuslaw Estuary emphasizing its scientific, social, and local values. Present this show to Lions Club, Rotary Club, and high school science classes in the area. Coordinate a twice quarterly bird census of Cox Island with the local Audubon Society members and Conservancy representatives. Arrange interviews with local papers in order to get feature articles written on the values and attributes of Cox Island.

alternative 2: Alternative 1 and finance the construction of an ~~informal~~ sign designed to acquaint highway travelers with Cox Island and its importance as an estuarine preserve.

alternative 3: Maintenance of the status quo. Do not seek publicity, but rather accept it if it avails itself.

Spartina:

The presence of Spartina alterniflora on Cox Island presents a threat of unknown magnitude to other vegetational communities on the island. While the species is clearly surviving and happily increasing its dominance of the community, too little information exists to establish growth rates and determine the extent of the problem. In addition, methods of destroying Spartina have unknown effects on other plant and animal communities and the ability of native plant species to reinvade the Spartina areas is uncertain.

preferred alternative: Communicate with east coast authorities concerning the growth rates of Spartina and determine if the species is a threat to west coast salt marsh communities. Drive P.V.C. pipe into the marsh around the perimeter of the Spartina in order to establish growth rates. All of this research is with the intent of eradicating the Spartina population within the next 2 years.

alternative 2: Irradiate Spartina alterniflora using the least environmentally damaging method for removal, probably burning 3 times each year coupled with transplant of Carex lyngbei.

alternative 3: Allow Spartina to grow without attempting to influence its growth rate either positively or negatively.

Nutria:

Nutria are well established on Cox Island and are noted for their invasion of beaver and muskrat habitat. While the problem of this introduced species is easily verbalized, few successful attempts at reducing Nutria populations have been noted.

preferred alternative: Consult Oregon State Department of Fish and Wildlife concerning optimal methods of reducing Nutria popul-

ations, with the intention of eliminating Nutria on possible an annual basis using the most environmentally safe methods known (e.g. not rodenticides, but perhaps trapping or shooting).

alternative 2: Take no active role in reducing Nutria populations because prospects of significant population reduction are slim, and the problem is statewide and not localized to the Cox Island Preserve.

Johnson Rock Products Plant:

In addition to noise and visual pollution, the Johnson plant is currently discharging an undetermined amount of smoke and particulates over Cox Island. These stresses affect bird populations on the island to some unknown degree and would make caretaking of the island, should the Benedict House be rennovated, a less than pristine experience. In addition, the environmental affects of a spill at the plant which could overrun the current dike would be environmentally destructive. The water-relatedness of the plant has recently been questioned by the Port of Siuslaw which is currently asking the West Lane Planning Commission for a new hearing. Care must be taken to avoid unneccessary antagonism to the company, however, since the principal access point to Cox Island is on Johnson Rock Products' land adjacent to the plant itself.

preferred alternative: In our capacity as landowners who were not notified of the companies intent to construct a plant in the vicinity, the Conservancy should seek another hearing of the Johnson Rock Products proposal and at the time of the hearing should present testimony as to the environmental affects of the plant upon the island.

alternative 2: Recognizing that while the plant is noisy, it is probably not exceedingly harmful to Cox Island. Avoiding confrontation

the Conservancy will testify if a new hearing request by the Port is successful.

alternative 3: Minimally fund (\$250) a study of the effects of Johnson Rock Products plant upon Cox Island with the intent of using the data collected (perhaps on noise and dust levels, the likelihood of a spill) to validate our claims that J.R.P. is harming Cox Island as a natural preserve.

While the preceding management problems and some alternative proposals for solving these problems are not a great expense, they are of immediate and long lasting importance to the well-being of Cox Island.

If Cox Island is to become the preserve it really must be, without sacrificing biological integrity, social purpose and research potential for the furthering of our knowledge of estuaries, an active program of management needs to be conducted.

The following proposal is a projected guide for the next five years to promote a program of research and interpretation as well as a broad base of community support. This proposal also minimizes the effects of currently damaging problems to the extent possible and makes possible future goals more readily obtainable by tackling problems when they are small rather than after they are out of hand.

PROPOSED 5 YEAR BUDGET FOR COX ISLAND PRESERVE

1. Benedict House: 2500 dollars is requested to minimally restore the Benedict House to the extent that it is not deteriorating beyond repair. At this point the house will probably be nearly weather-proof and minimally liveable, although no interior work would be done, and no effort to put water or sewage to the house would be undertaken.

2. Recreation Alternative: 1000 dollars is requested to post signs about the preserve that restrict hunting as well as to pay a caretaker to be at the island during weekends in the fall when the hunting season is at a peak.
3. Conservancy Publicity Campaign: 500 dollars is requested to fund a 20 minute slide show/1 hour classroom presentation to acquaint local individuals with Cox Island and its potentials as an estuarine showplace. Mileage and per diem would be forthcoming to finance the interpreter to speak at schools, clubs and organizations concerning Cox Island.
4. Spartina: A small amount of money in the range of 250 dollars is requested to fund research and investigation subsequent to the eradication of Spartina on the island. This degree of allocation could go well toward eliminating the unwanted species from the island.
5. Nutria: A small amount of money is necessary to investigate possible means of control and elimination of Nutria to provide a suitable native species habitat on the island.
6. Johnson Rock Products: Legal fees are requested to renew the hearing of Johnson Rock Products as well as to carry out further legal work in the protection of Cox Island from the rock plant.

While the proposed budget is requesting only 5000 dollars over the next 5 years, results of these funds will mean Cox Island is on its way to becoming a vital research, natural area, free of unwanted species and with a historically valuable residence which

almost livable. In addition, an active research/interpretive program will be underway and a limitation of duck hunting on the island will be enforced. Should publicity and local support from these measures, the island may become self-sustaining in near future.

PHYSICAL DESCRIPTION OF COX ISLAND HOMESTEAD

I. BASIC SHAPE AND DIMENSION OF PLAN

- A. Two storied, gabled, simple rectangular building with a one st lean-to comprising the back
- B. 24 x 45 approximately
- C. 3 "bays" wide
 - 1. Central door
 - 2. Coupled windows on either side
 - 3. Central "bay" consists of a two foot projection, six feet wide with side lights.
- D. Suggestive of colonial revival style (early though)
- E. New England Tudor look
- F. Boxed in eaves
- G. Porch on middle bay with
 - 1. 4 x 4 champford (beveled) posts
 - 2. xx'ed detailing trim
- H. Second porch, blocked to the north, off kitchen

II. Subframe, foundation

- A. Flood plane construction, lifted approximately 4 ft. off the ground.
- B. Wood Subframe on 12 x 12 sleepers running the length of the building spaced 8 ft. apart.
- C. was enclosed by 1 x 12's

III. Wall and floor construction (wall system)

- A. Balloon frame
- B. Full size 2 x 4 studs on center 12 inches
- C. Second story floor joists full size 2 x 8
- D. Upstairs floors, walls and ceiling covered with 12 x 3/4 inch paneling (varies in size but similar for all)
- E. Downstairs floor in double layer 3 inch Tongue and Groove
- F. Windows, 1 over 1 sash

IV. Roof Construction

- A. Rafters 2 x 6 full size 2 ft. on center
- B. Original wood shingles
- C. Structure and roofing strips fairly intact.

V. Spatial Organization

- A. 5 rooms downstairs - 9 foot ceiling
 - 1. Kitchen SE corner
 - 2. Livingroom 14 x 16 front of house (North)
 - 3. Bathroom adjacent to kitchen
 - 4. Dining Room SW corner with triplet of windows
- B. Upstairs 9 foot ceiling
 - 1. 2 large bedrooms
 - 2. Stair hall
 - 3. large attic in lean-to

VI. Subsequent alterations

- A. Bathroom added by Sanborns in 1912
- B. Minor alterations
 - 1. Kitchen door moved approximately 1 foot west
 - 2. Dining room door moved approximately 1 foot west
- C. Originally stairs came up into one of the bedrooms which opened into the east room through a since closed off door
- D. Archway to the east of front door in livingroom may have been added or altered
- E. 1 x 12's closing off stairs from the living room added by Sanborns

VII. Interior finish

- A. Walls covered with muslin (sheeting) and layers of wallpaper
- B. Some rooms whitewashed
- C. Floors painted
- D. Upstairs stair rail 1½ x 1½ square base spindles 9 inches on center, most missing
- E. Baseboards of 8 inch shiplap
- F. 4 x 4 paneled doors
- G. Few cabinets intact
- H. 1 chimney with brick base in kitchen
- I. opening for a stove pipe from kitchen to livingroom
- J. Kitchen has screened vents for a pantry
- K. Newer acoustical tile on ceiling downstairs

VIII. Exterior Finish

- A. 8 inch shiplap
- B. Painted white

IX. Condition

- A. Southwest corner badly weathered and rotted
- B. Out of plumb
- C. Roof in fairly condition
- D. Upstairs ceiling in good shape
- E. Upstairs floor 20% in need of repair
- F. 75% of downstairs floor in need of repair
- G. Most door and window sashes gone, doors and windows likewise
- H. Porches fallen down
- I. Subframe should be rebuilt.

X. Woodshed

- A. Perpendicular to North corner of house
- B. Connected to porch off kitchen
- C. 32 x 16 foot approximately
- D. Also raised up on base wall approximately 4 foot
- E. Exterior covered with vertical boards
- F. Gabled
- G. Inside finished with shiplap siding into a work area.

Appendix 2

A SURVEY OF PAST YEAR CLAM WORK AT SIUSLAW BAY, 1948-PRESENT

Past Fish Commission shellfish progress reports and special reports were surveyed and noteworthy information abstracted for this report. A chronological listing of events is followed by data on clam densities in certain tideflats and limited information on clam length-frequencies from sport creel checks or biologist samples. More detailed information is available from the progress reports and special reports in the Marine Region's library in Astoria or in the Shellfish Management files.

Synopsis of Shellfish Progress Reports:

- 1953: The Siuslaw Rod and Gun Club said that the Fish Commission should restrict the soft-shell clam harvest because the population is low. Biologists' survey showed low clam densities and a closure was recommended but not acted on.
- 1957: For unknown reasons, soft-shell clam stocks declined sharply prior to 1953. A slow increase was noted in 1955. On August 25, 1957, the Siuslaw Estuary was closed to digging east of Highway 101 until October 1, 1959. To help in the repletion, 17,000 adult soft-shell clams were dug by commercial clambers in Nehalem and planted by FCO biologists in the Siuslaw. A 1956 pilot study where 200 adults were transplanted from the Nehalem to Siuslaw showed a 75% survival and growth. Of the 17,000 clams, 400 were marked with opaque ink and put in control plots. An additional 1200 clams from Tillamook Bay were measured and marked with opaque ink and planted in Siuslaw (P.R. #32). A separate report is available on the transplant work.

- 1962: Digging is still reasonable but there is a decline in abundance since beds were reopened for digging (P.R. #3)
- 1963: Soft-shell clam digging is still declining. Clams/sq. dropped from .15 in 1960 to .072 in 1963. There are at 300 acres of soft-shell beds but only about 150 are productive.
- 1964: The Alaska earthquake on March 27 resulted in a tidal wave that resulted in some damage to soft-shell beds in the area. A state police officer received unconfirmed reports about a large number of small soft-shell clams laying on the surface of the clam beds on Tide Island Flat. The officer had Cox Island and found a small area that had been washed away. The damage to the clam bed was not great.

The Tide Island Flat was checked on April 9 by FCI biologists. They concluded that there had been some real damage to the clam beds from erosion. The damage was extensive and limited primarily to the area around runoff channels (Special Report, Seward and DeBen).

- 1965: There is evidence that the digging has shifted from the Tide Island and North Fork flats to Cox Island. This area has "small beds where growth is excellent but the population doesn't appear capable of maintaining a high level of abundance under intensive digging" (P.R. #37).

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Marshy isle deeded to conservation

The Champion International Co., formerly U.S. Plywood Corp., Tuesday presented 187-acre Cox Island near the mouth of the Stuslaw River to the Nature Conservancy for preservation as a wildlife refuge and study area.

"Cox Island is the last extensive immature salt marsh on the Southern Oregon Coast and one of the biggest and most productive high salt marshes on the entire Oregon-Washington coasts," said Tom McCall, Oregon's former governor and a member of the Conservancy's national board of governors.

The island, nearly untouched, is a haven for 80 species of birds and is said to contain the best clamming beach on the Southern Coast. The beach will still be open to clammers under Conservancy management, according to Ken Margolis, Oregon representative of the Conservancy. The island is accessible only by boat.

Entirely a salt marsh except for a little high ground on its northern side, the island was bought by Capt. William Cox in 1902. A two-story frame house was built on the high ground and a small orchard was planted. The picturesque house, which was author Ken Kesey's model for the Stamper house in his novel "Sometimes a Great Notion," is still standing and will eventually be restored for use as a field headquarters, Margolis said.

The island was part of a timber purchase by U.S. Plywood in 1950 but was never logged or used by the firm in any way. "We decided the best use for Cox Island would be for an estuarine reserve," said William O. Larson, vice president and general manager of Champion's West Coast timberlands. "We presented it to Nature Conservancy for preservation of the ecological heritage of the area and for research."

The island is one of the biggest and most valuable of eight such nature preserves managed by the Nature Conservancy in Oregon. It brings to 1,800 the total of such areas, valued at \$300 million, managed by the non-profit organization throughout the United States.

"The island is valued at only \$28,000 for residential use," Margolis said. "But its value as a preserve and research site is incalculable. We know little about the value of such salt marshes in the life cycle of birds like the snowy egret, the peregrine falcon, hawks, ospreys and the ducks which frequent the island seasonally," Margolis said.

Two University of Oregon students are mapping the vegetation on the island as the basis for an active program of research and educational activities, Margolis said.

Asphalt Plant

Target Of

Conservation Group

Johnson Rock Products' Florence asphalt plant is named as "a significant threat to the biological integrity of the Siuslaw Estuary's finest salt marsh" in a Nature Conservancy Stewardship Master Plan for the Cox Island Preserve, scheduled for release early next year. County and local government officials, however, dispute the findings of the conservancy.

Cox Island, a 180-acre salt marsh directly across the Siuslaw River from the plant, has been receiving the brunt of

the plant's noise, smoke and particulates, the plan says. Further, it says a threat exists in the form of a potential leak which might not be contained by the plant's dike. The Northwest Land Steward for the Conservancy, Dr. Robert Pyle, said, "If we are to maintain a viable estuarine resource in an undisturbed site it is essential that outside environmental stresses be minimized. The asphalt plant should be relocated."

Pyle and Cox Island master-planner John Hoffnagle feel that the West Lane Planning Commission was negligent in its notification procedure for hearings concerning the plant last January. "If the Conservancy had been aware of the proposal, our concerns would have been voiced," Hoffnagle said. "The plant is a direct threat to the estuarine resources of which we are owners and stewards. The Nature Conservancy acquired the island for its natural diversity, and this is now being affected by the plant."

Hoffnagle added that the smoke from the plant discharges directly onto the island, where it clouds the old Benedict House. The Benedict House, a local landmark, has a colorful history related to Florence pioneers and early log-booming on the island. The Conservancy has applied for State Historical Monument designation of the house, and hopes to restore it as a residence for visiting researchers or a preserve manager. The smoke, according to Hoffnagle, would make the site unliveable.

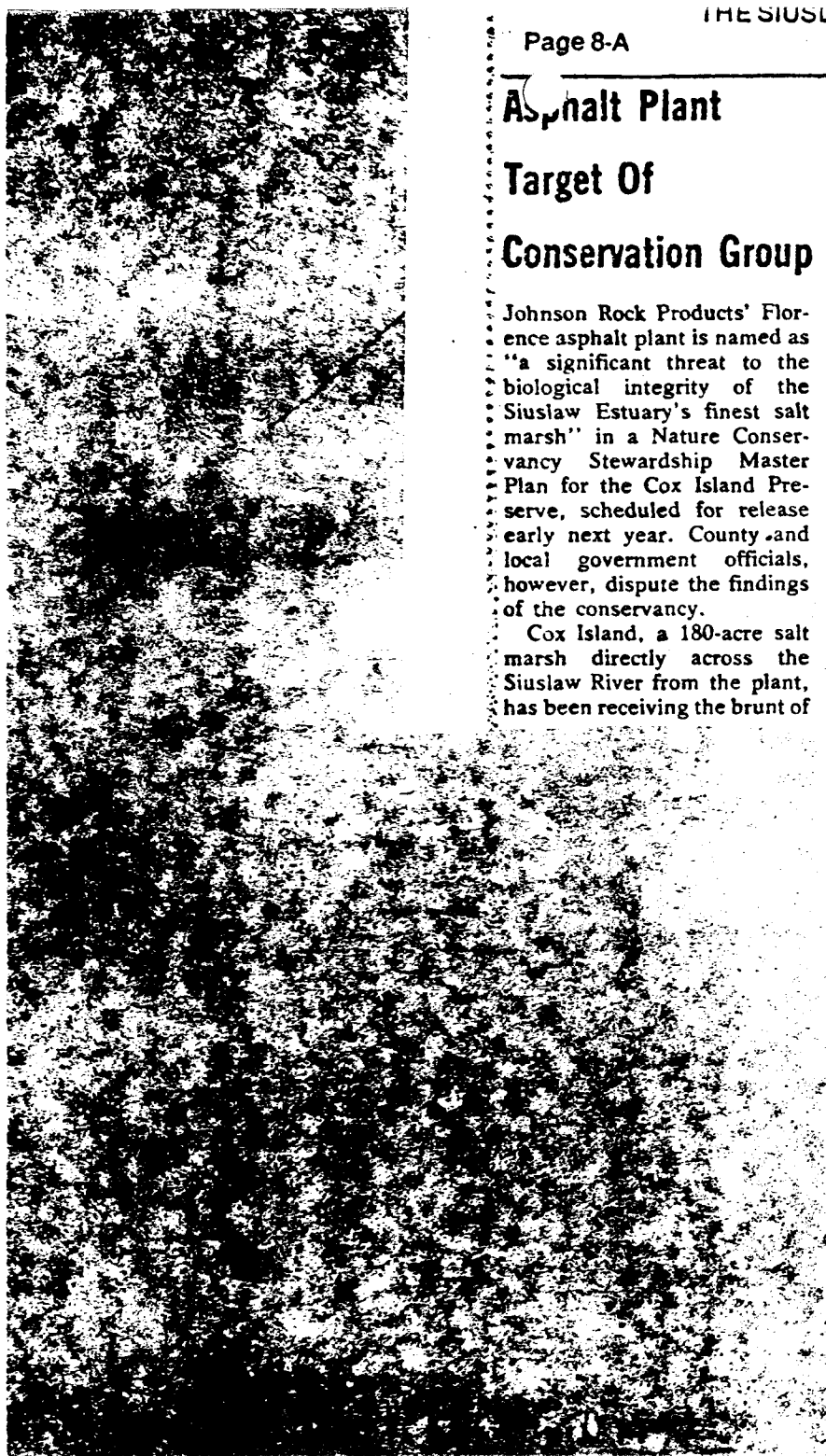
A recent evaluation of the plant's emissions disputes the charges levied by the Nature Conservancy. In a letter to Kip Johnson, president of Johnson

note that the particulate loading was 0.081 grains per dry standard cubic foot of exhaust. The mass emission rate was 22.1 pounds per hour, and the opacity was consistently less than five per cent. These results certify your plant's operation as being in compliance with emission standards for existing asphalt plants."

Al Wysong, chairman of the West Lane Planning Commission, acknowledged that adjoining property owners should have been notified of the hearings on the asphalt plant. But he added that notices of the hearings were advertised in the local newspaper, as required by law. Further, he stated, "They have an obligation to keep track of their property."

Kip Johnson, president of Johnson Rock Products, was unavailable for comment at the time of this writing.

Cox Island was a gift to the Conservancy in 1977 from Champion International Corporation. The Nature Conservancy is a private non-profit organization dedicated to natural land conservation. In Oregon, the Conservancy presently owns and operates nine preserves, including Cascade Head near Lincoln City. Nationwide, the Conservancy has a large private system of nature reserves managed for the protection of wildlife, scientific research and education.



One fact stands out strikingly at the conclusion of a study such as this, each piece of land, regardless of its location, be it an Iowa cornfield, a block on Manhattan, or a salt marsh in Oregon is unique and this quality makes management decisions all the more difficult to access.

At the initiation of this work one month seemed a long time for a study of only 185 acres; in retrospect a year is not enough, ~~for~~ with each management decision we make we affect not only Cox Island, but populations of plants and animals, ~~and~~ maybe most importantly we affect people. Our choices as a private organization are implicitly decisions for the public at large. How we approach duck hunting on Cox Island not only affects hunters in Florence, it affects a different society ~~in South America~~ where the ducks overwinter. How we approach the renovation of the Benedict House not only pleases or displeases the State Historical Society, it measures our sensitivity to the past and its richness. How we tackle the difficult management problems posed by exotic species such as Spartina and Nutria taxes our ability to see the future.

Perhaps we can place too much emphasis on our estuarine preserve and its ability to rescue us from too rapid coastal development and the squandering of too limited resources, but a start needs to be made somewhere and in the words of Hank Stamper, "Never give an inch".