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CLAM RESOURCES IN A PROPOSED CHARLESTON BOAT BASIN EXPANSION SITE

by

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CLAM RESOURCES IN A PROPOSED CHARLESTON BOAT BASIN EXPANSION SITE

INTRODUCTION

The Port of Coos Bay is considering expanding their marina facilities in Charleston. Several sites are being considered; one to the north of the present boat basin and one to the south (Figure 1). The southern proposal is for an area that historically has supported an important recreational clam fishery. A Fish Commission of Oregon resource use survey of that tideflat in 1971 showed that 974 clam digging trips representing 1,603 hours of effort were made to harvest nearly 20,000 clams (Table 1). Cockle, gaper and littleneck clams were the principal species collected.

Because of the importance of this tideflat to recreational clam diggers, we conducted a biological inventory of the clam flat during July 1977. Results of this survey are presented in this report.

Table 1. Number of Digger Trips, Hours of Effort and Clams Harvested in South Slough at Coos Bay in 1971.

	Tideflat				
	Boat Basin	Charleston Flat	South Slough	Peterson's Flat	Total
No. Digger Trips	974	2,233	1,043	156	4,406
No. Digger Hours	1,603	3,656	1,701	264	7,224
No. Clams Harvested					
Cockle	9,690	14,310	7,663	221	31,884
Gaper	5,145	7,120	5,248	736	18,249
Littleneck	4,041	3,799	46	88	7,974
Butter	844	1,005	2,080	44	3,973
Softshell	0	935	371	0	1,306
Bentnose	113	654	0	0	767
Total	19,833	27,823	15,408	1,089	64,153

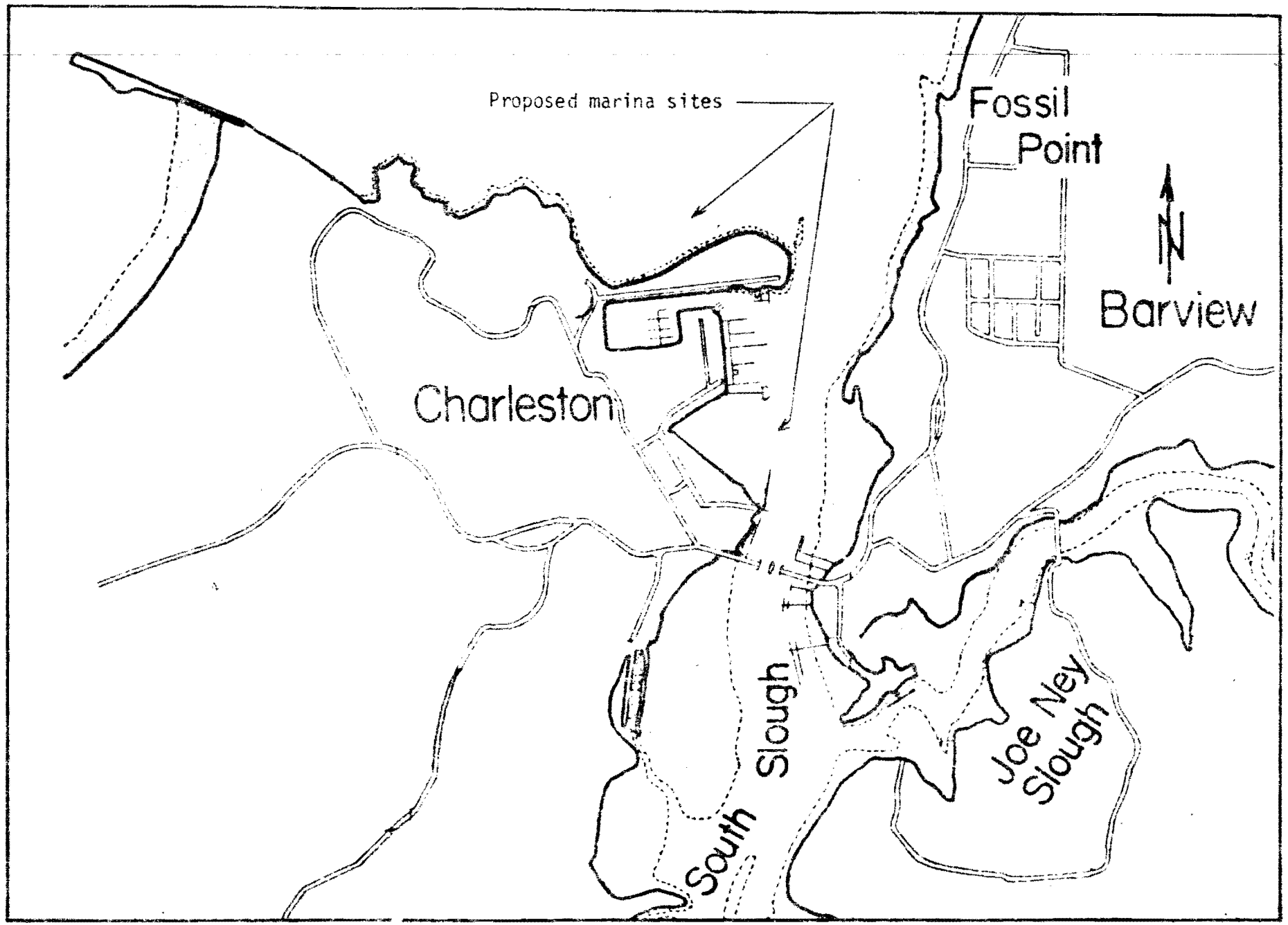

Figure 1. Proposed Construction Sites for Expansion of Charleston Boat Basin

Methods

Standard transects were established across the 11.5 acre (4.7 ha) tideflat (Figure 2). Transects were 150 feet (45.7 m) apart and parallel to each other. Sample stations were 100 feet (30.5 m) apart along each transect line.

Samples were taken by ODFW scuba divers using a 6-inch (15.2 cm) suction pump that was fitted with a 1/2-inch (1.3 cm) mesh wire basket. Forty-nine samples were collected. Each $2ft^2$ ($0.2\ m^2$) sample was excavated to a depth of approximately 12 to 18 inches (30.5 to 45.7 cm) or until the operator was confident all clams had been removed. All retained pump material was emptied from the basket and sorted in the boat. All clams obtained were saved and taken to the laboratory where the gaper, butter, cockle and littleneck clams were measured, weighed and aged. Length measurements (in mm) were taken from all clams except the cockle where height (rib length) was used. All clams were weighed to the nearest lower gram. The clams were weighed alive. Gaper clams were aged by counting the annual growth rings in the ligament scar. Butter, cockle and littleneck clams were aged by counting the annual rings on the exterior surface of the shell.

Results

Figure 2 shows the occurence and distribution of clams in the proposed South Slough marina site. Two different observed concentrations of clams per sample are illustrated; those with less than two clams/square foot ($0.092\ m^2$) and those with more than two clams/square foot.

Nine species of clams were recorded from the area. Five species, gaper *Tresus capax*, cockle *Clinocardium nuttallii*, native littleneck *Venerupis*

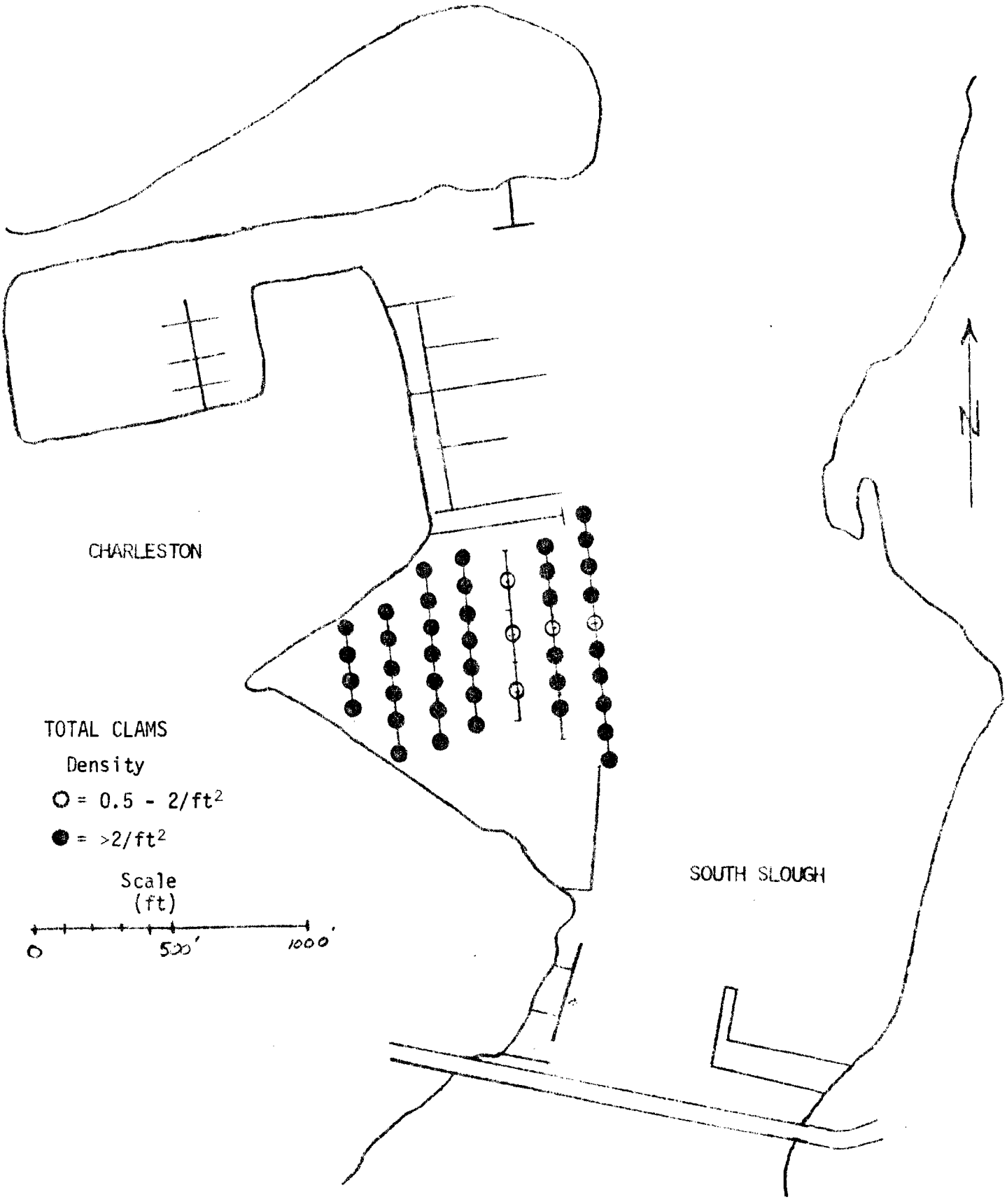

Figure 2. Clam Survey Project Area, South Slough of Coos Bay, 1977

staminea, butter *Saxidomus giganteus*, and softshell clam *Mya arenaria* are routinely dug by clam diggers. The other four species, irus *Macoma irus*, piddock *Zirfaea pilsbryi*, bentnose *Macoma nasuta*, and jackknife clam *Solen sicarius*, although not generally taken by clam diggers, are important biologically to the estuary. The distribution and relative abundance of each of the nine species of clams are shown in Figures 3-11.

We estimate that 10.1 million clams inhabited the area (Table 2). Of this total, 6.4 million were irus clams, 1.5 million were bentnose and 1.3 million were gaper clams. The 95% confidence limits for gaper clams were 663,600-1,998,200.

Age compositions of butter, cockle, gaper and littleneck clams are shown in Figure 12. Except for the littleneck clam, spawning or survival of set appears to be sporadic. Irregular spawning or survival of clam set has also been noted on other subtidal clam beds in Coos, Tillamook and Yaquina bays.

Biomass estimates were calculated for butter, cockle, gaper and littleneck clams and totaled 502,200 pounds (227.8 m.t.). Gaper clams comprised 442,500 pounds (200.7 m.t.) of the total. Gapers averaged 0.34 pounds (153.0 grams) each.

The length frequency for gaper clams is shown in Figure 13. Mean size of gaper clams was 83.1 mm (3.27 in.). Size composition for butter, cockle and littleneck clams is not shown due to the small numbers taken.

Table 2. Summary of Numbers of Clams, South Slough Proposed Marina Site, Coos Bay, 1977.

Species	Number
Irus	6,427,000
Bentnose	1,482,000
Gaper	1,333,000
Cockle	348,000
Native littleneck	289,000
Butter	119,000
Softshell	50,000
Jackknife	20,000
Piddock	10,000
Total	10,078,000

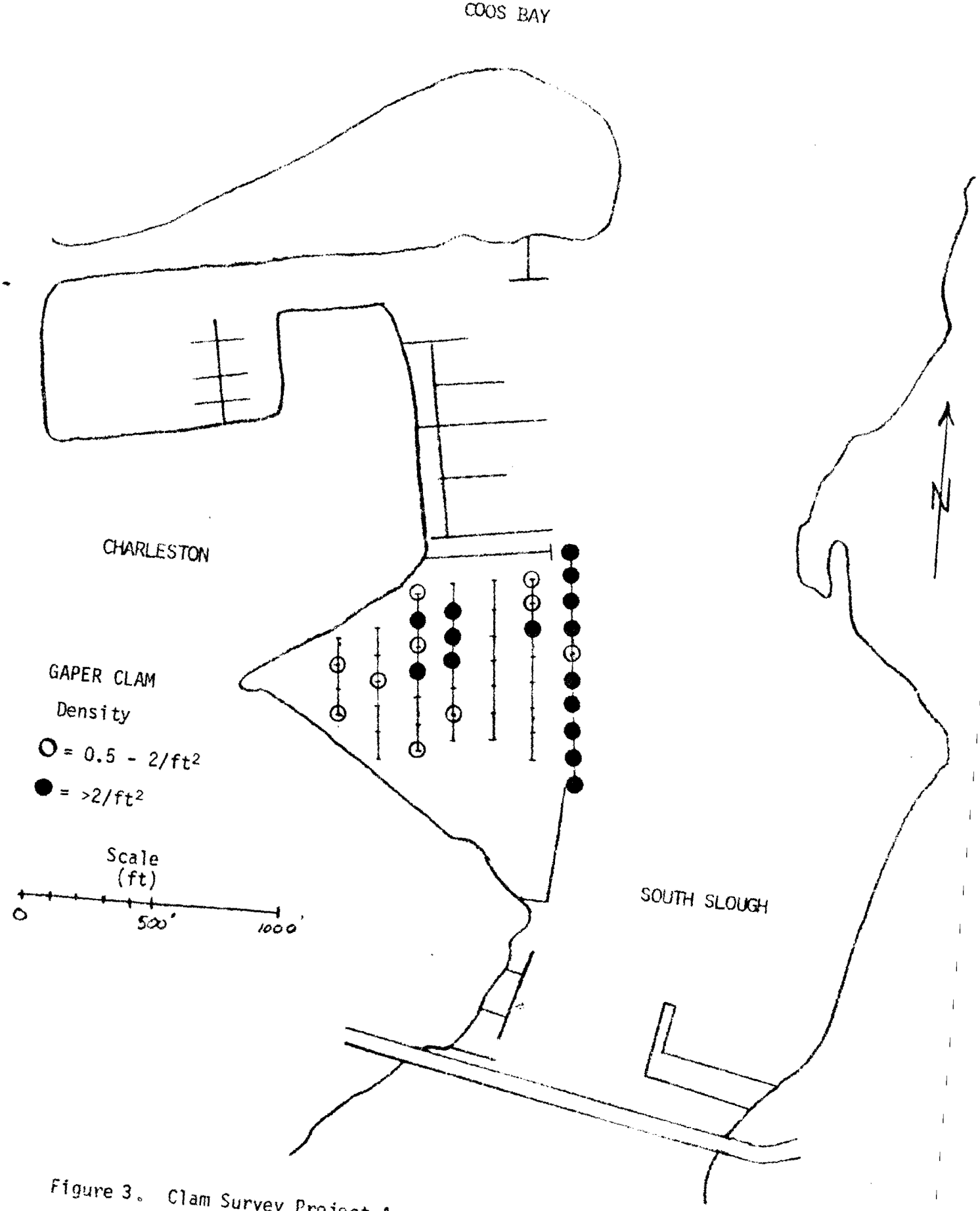

Figure 3. Clam Survey Project Area, South Slough of Coos Bay, 1977

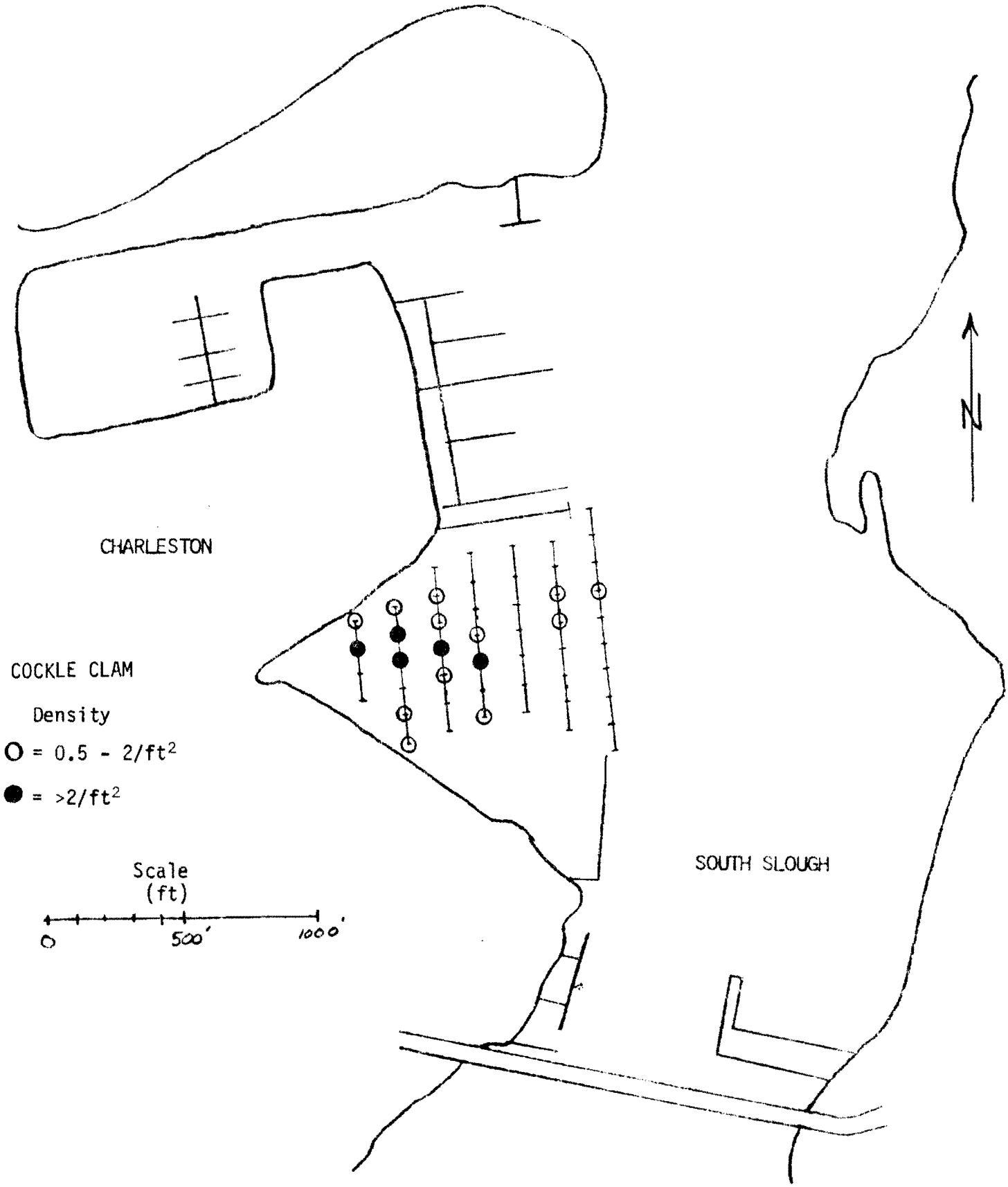

Figure 4. Clam Survey Project Area, South Slough of Coos Bay, 1977

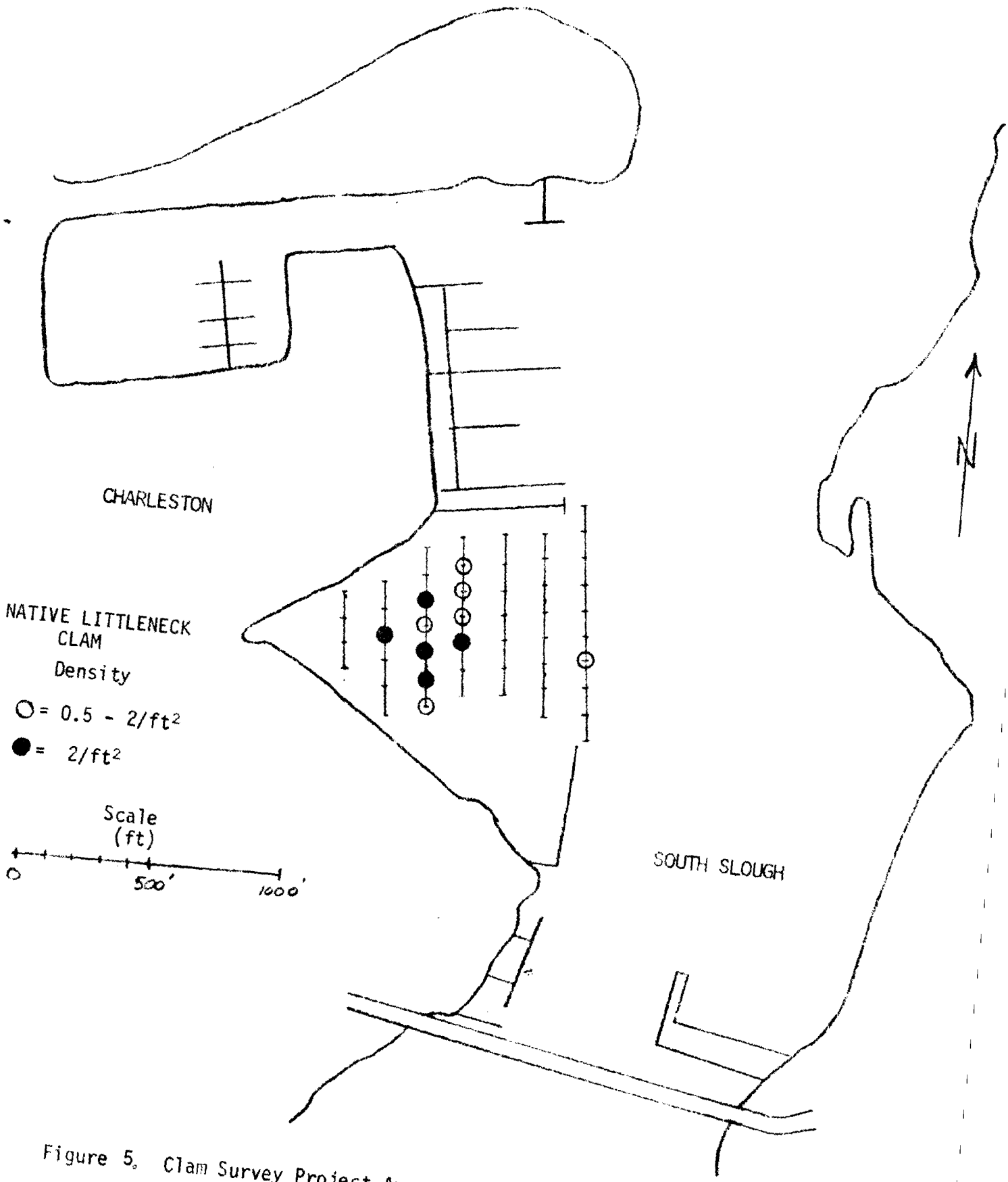

Figure 5. Clam Survey Project Area, South Slough of Coos Bay, 1977

COOS BAY

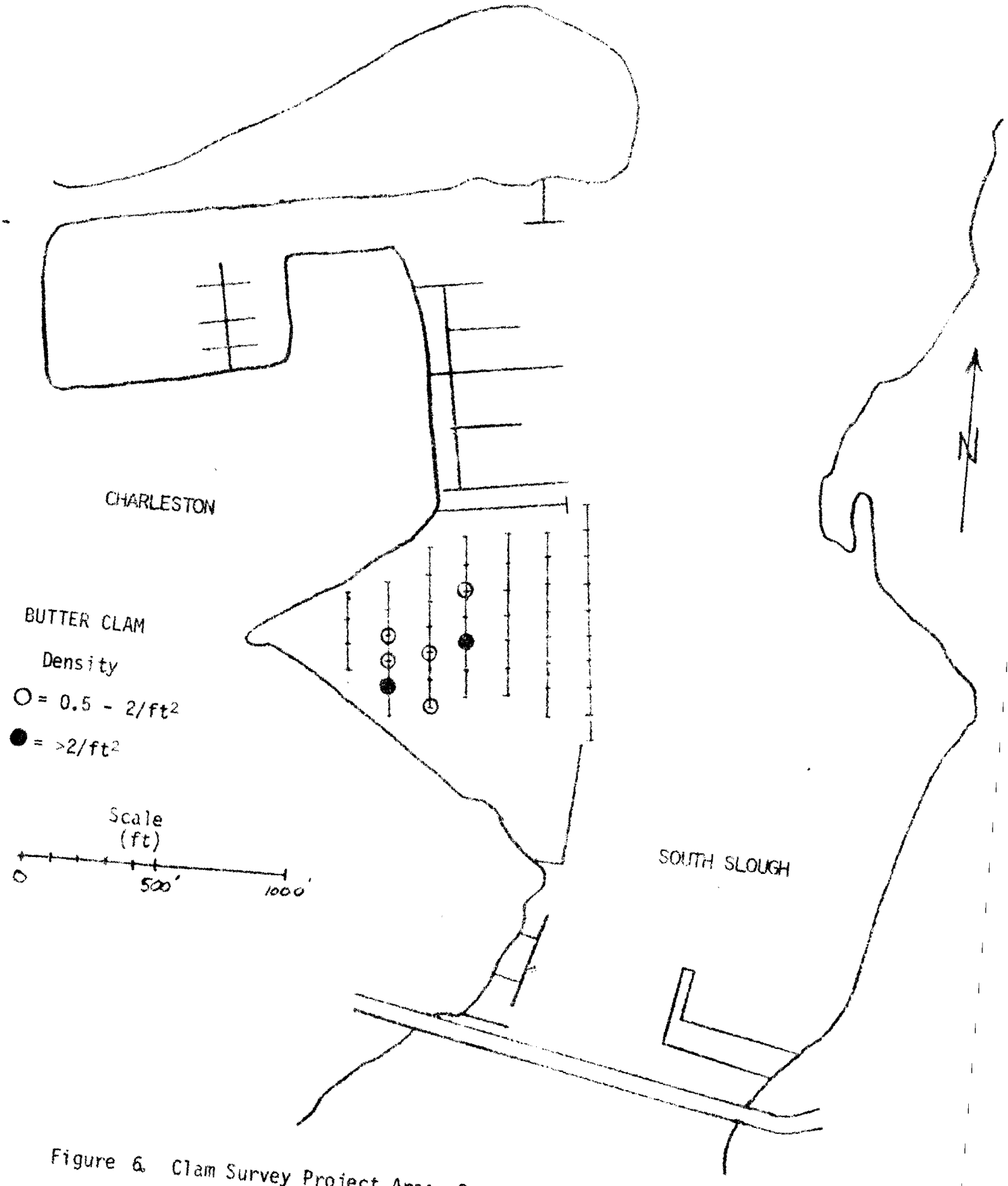

Figure 6. Clam Survey Project Area, South Slough of Coos Bay, 1977

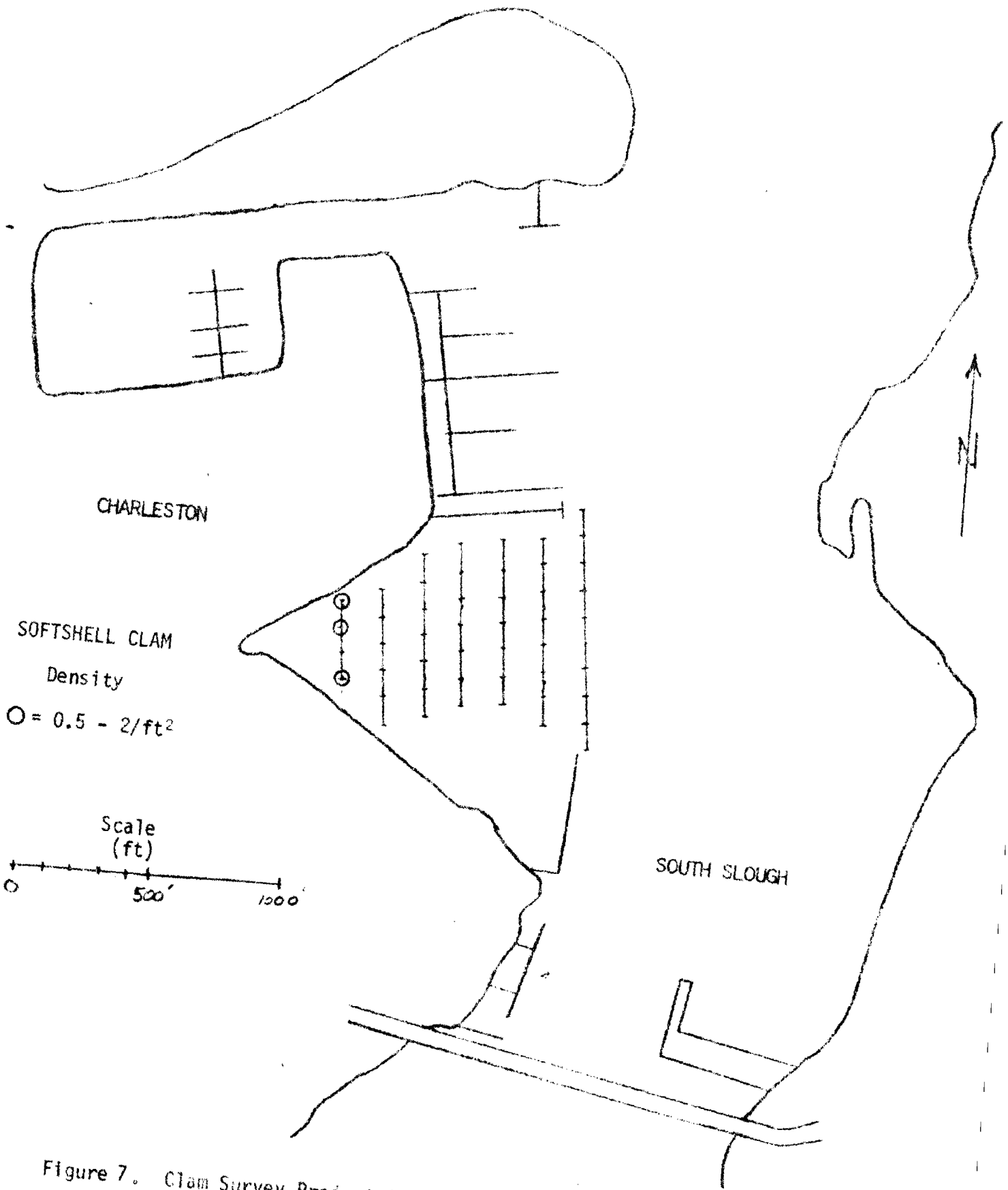

Figure 7. Clam Survey Project Area, South Slough of Coos Bay, 1977

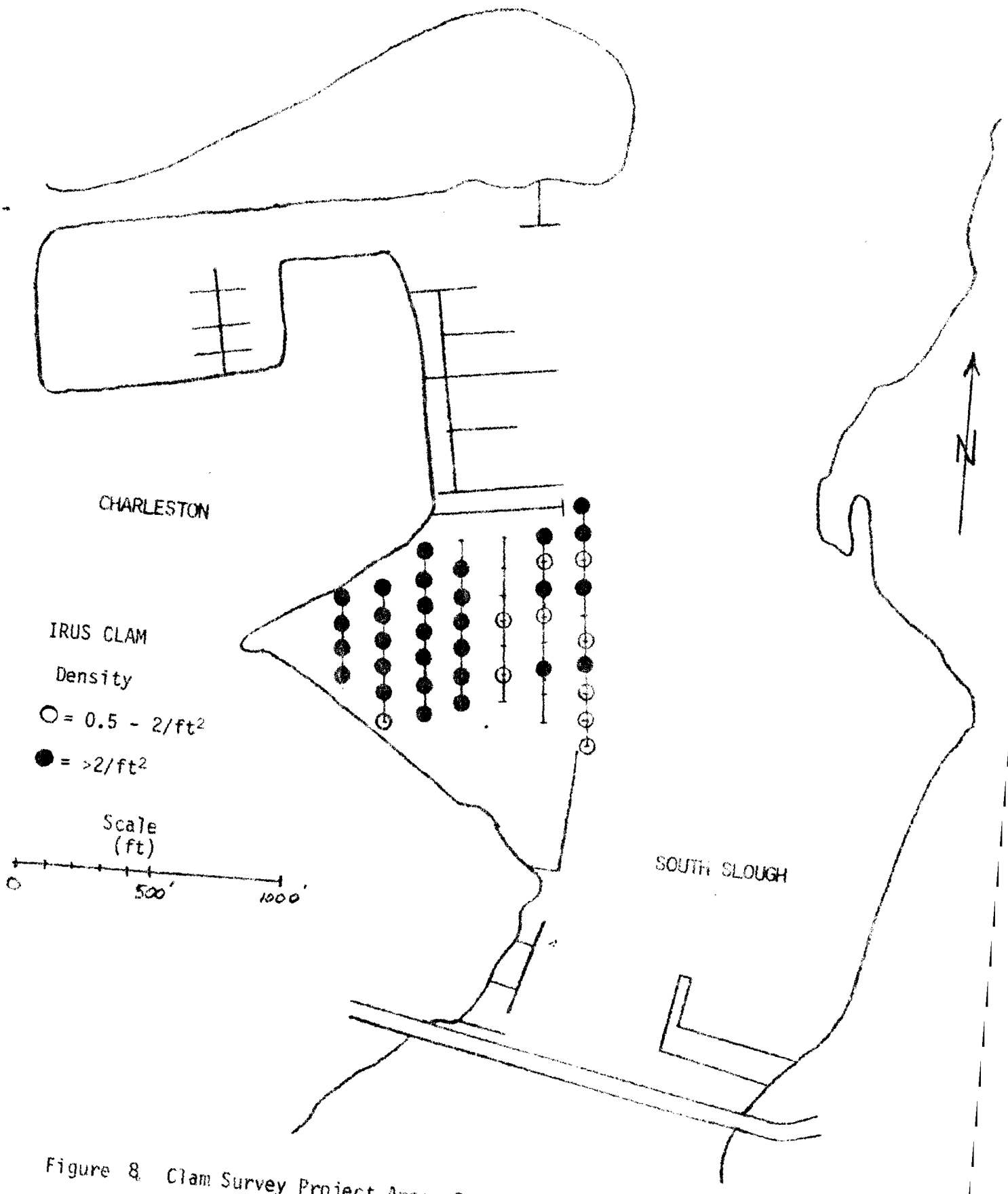

Figure 8 Clam Survey Project Area, South Slough of Coos Bay, 1977

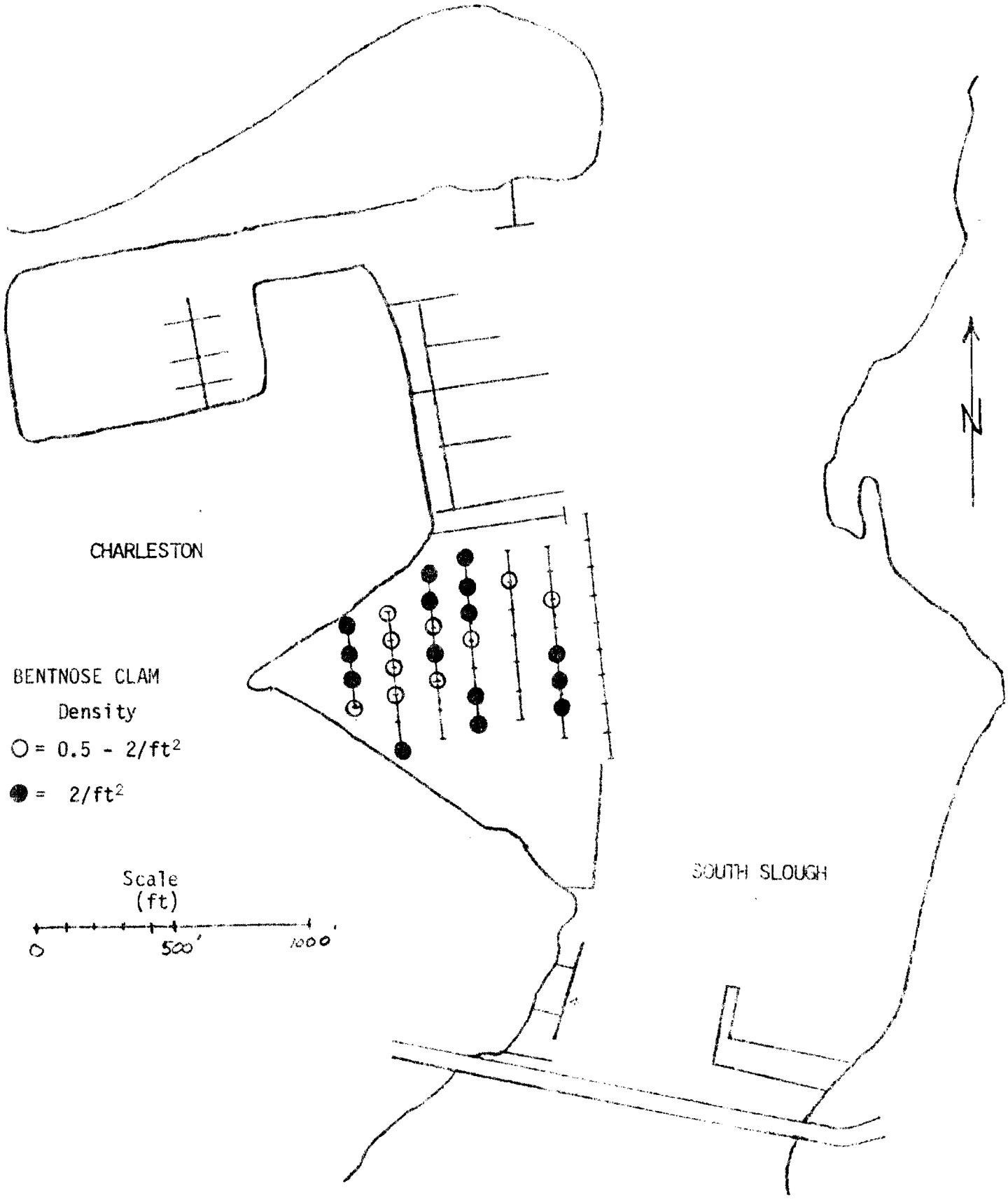

Figure 9. Clam Survey Project Area, South Slough of Coos Bay, 1977

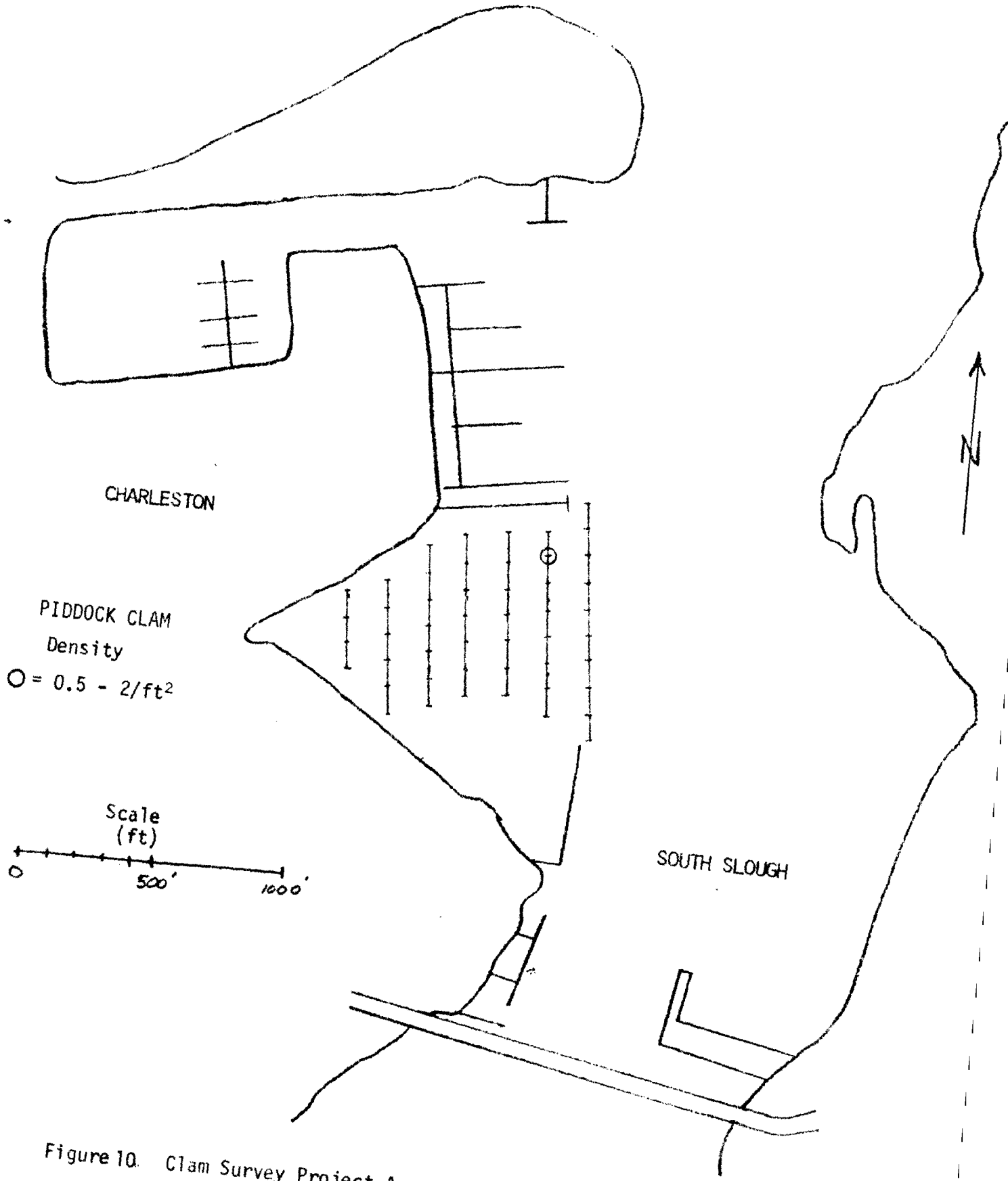

Figure 10. Clam Survey Project Area, South Slough of Coos Bay, 1977

COOS BAY

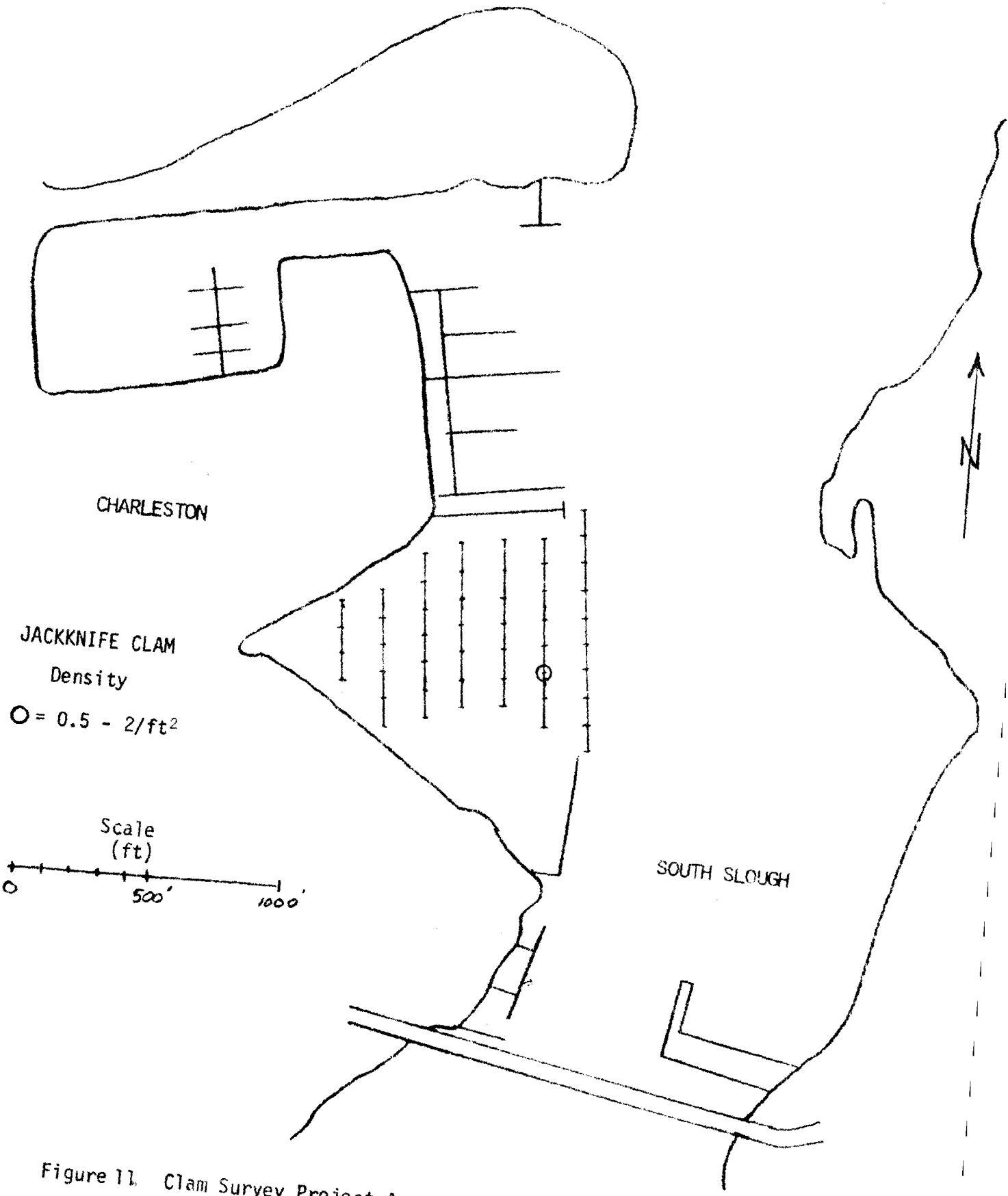

Figure 11. Clam Survey Project Area, South Slough of Coos Bay, 1977

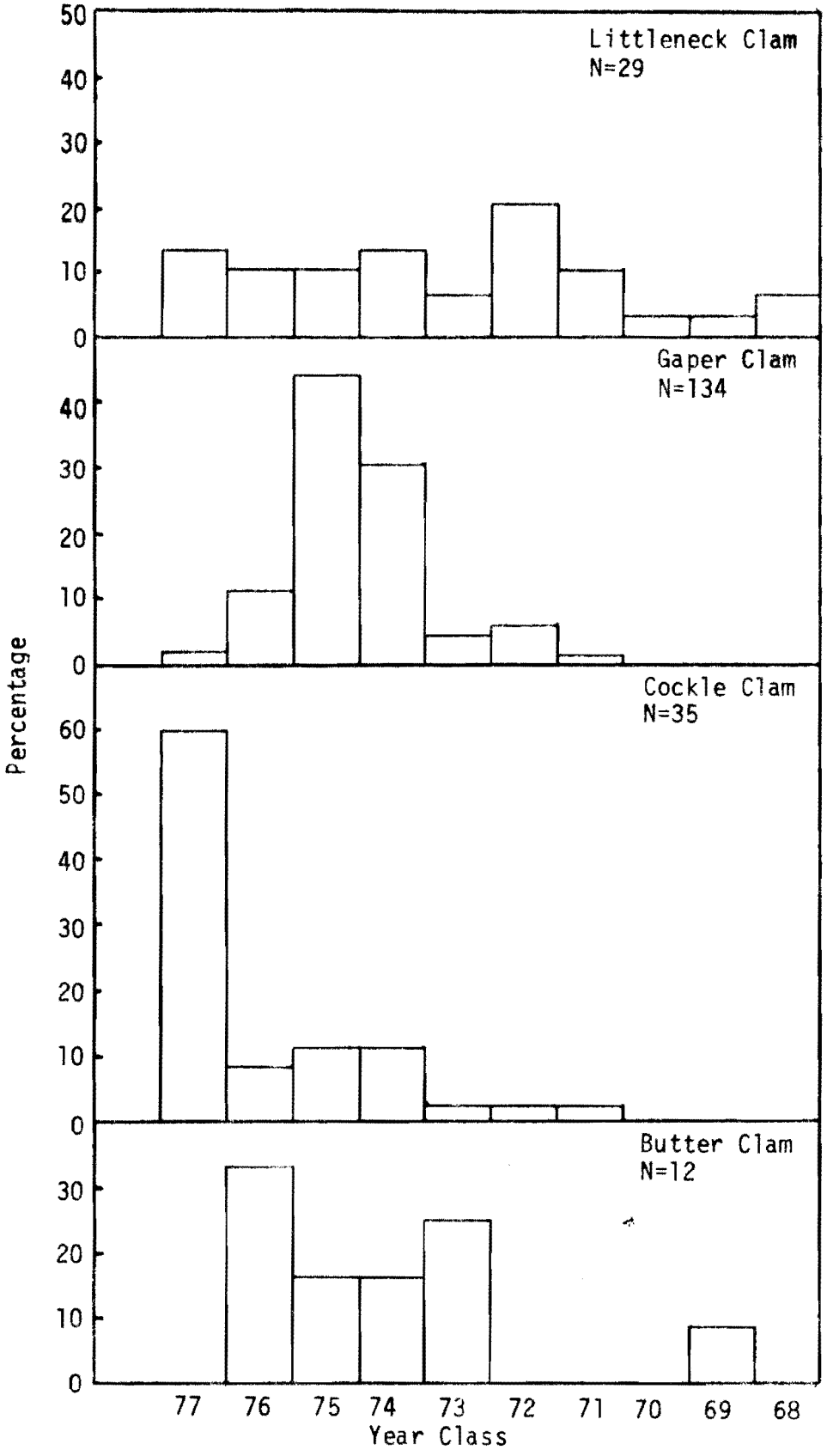

Figure 12. Age Composition of Clams, South Slough Marina Site, Coos Bay, 1977.

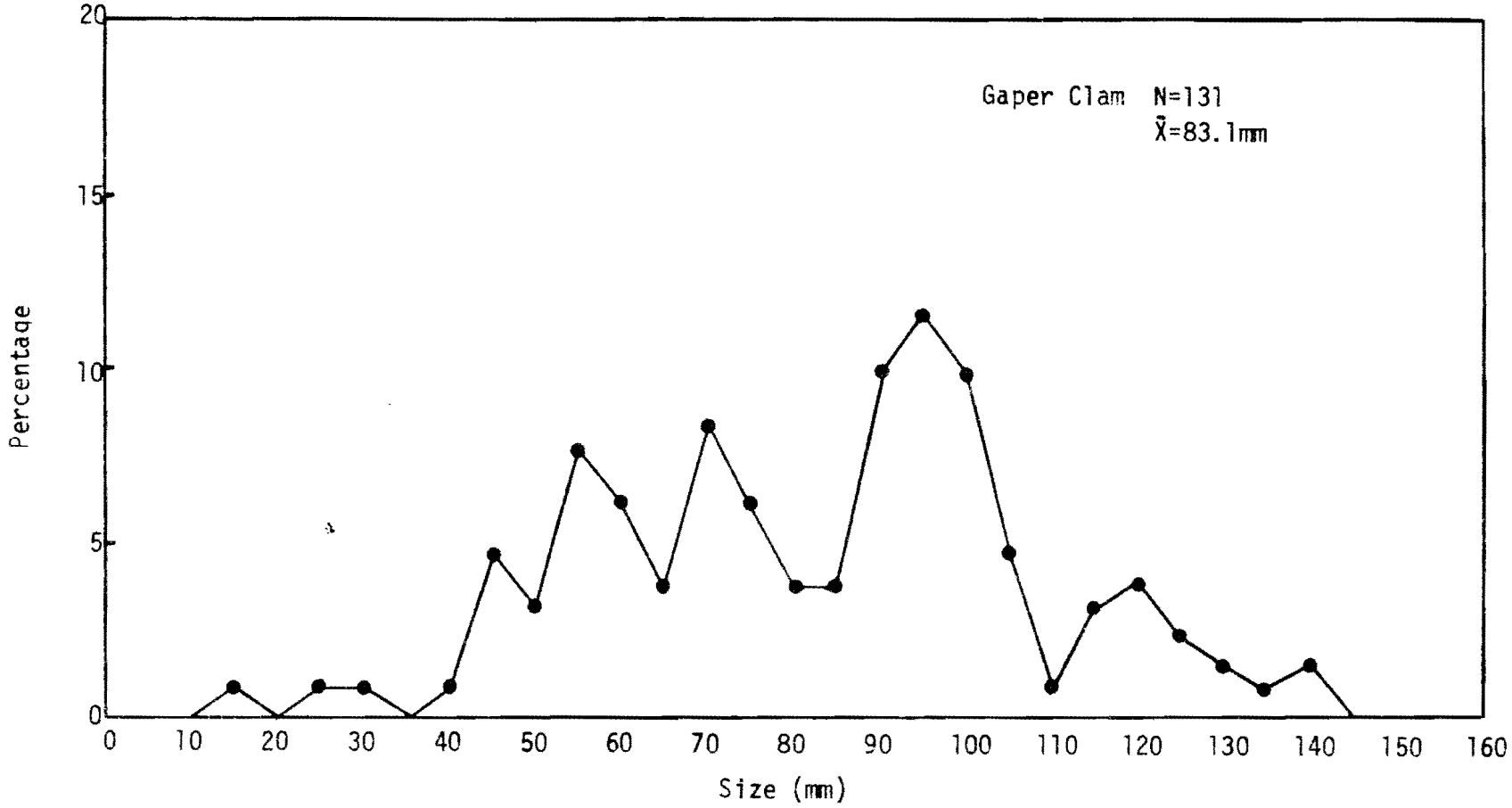

Figure 13. Length Frequency of Gaper Clams, South Slough Marina Site, Coos Bay, 1977.

DISCUSSION

Our observations on the clam resources of the proposed South Slough marina site substantiates the fact that this area is not only an important component to the overall clam stocks of South Slough but is also a valuable resource to the recreational clam digger in Coos Bay and Charleston.

Although South Slough has substantial clam resources both intertidally and subtidally, limited shore access has always been a problem. In the 1971 resource use survey of Coos Bay, only four areas on South Slough were easily reached from shore. In numbers of clams harvested, the proposed marina site ranked second in production to the "Charleston" clam bed above the Charleston bridge on the west shore. Since 1971, reduced parking, due to new industrial development, and restricted access to the "Charleston" clam bed has substantially increased the importance of the proposed marina site to recreational clam diggers.

Although much of Coos Bay and South Slough remains to be surveyed, it seems reasonable that other areas of the bay should be considered as alternative sites for development. One of these areas is immediately north of the existing boat basin. This area has been suggested for development for some time and although the tideflat has not been surveyed for clams, historically this area has supported only an incidental razor clam fishery.

It therefore seems appropriate that the proposed South Slough marina site be preserved as a clam producing area and that any further development or encroachment into that area be strongly opposed by our agency.