

Netarts Clam Survey
June 8-9 and 13, 1960

SR #30

Interviews

On the evening of June 7, 1960 Mr and Mrs Ted Cornet (Chuck's Boat Service) were interviewed at their place of business on Netarts Bay. In brief their comments were as follows: (1) recent tidal waves action caused by the Chilean earthquakes had altered clam beds by covering them with sand; (2) the biggest problem locally was from strict enforcement by the State Police of shellfish regulations (citations for crabs 1/8-inch under legal size and possession of gaper clams mistaken for Saxidomus) and this was driving customers away; (3) a lot of gaper clams (blues) were being destroyed on the east shore of the bay; (4) the problem was localized and did not occur on the westerly side of the bay; (5) they did not wish to see the bag limit increased on gaper clams and were surprised that this had been asked for (a subsequent phone call to Mrs Edner revealed that they meant to say 36 clams per day of which 18 could be gapers); (6) gaper clams were in widely scattered pockets and not as numerous as they used to be.

One party of 3 diggers from the state of Washington ~~was~~^{was} checked on the following morning (6-8-60). This party had at the time of checking 41 littlenecks (Protothaca staminea) and 8 Saxidomus giganteus (Quahog, Washington Clam, Coney Island, Beefsteak, Butter Clam, and Great Oregon Clam), they estimated that they had thrown away 24 gaper clams.

A party of 2 diggers (obviously inexperienced) had one littleneck and one Saxidomus at the time of checking. They had dug 4 gaper clams and thrown them away. When shown the difference in the siphon holes, they were able to dig (in the dry) 10 more littlenecks and Saxidomus without digging any more gaper clams.

Surveys

AREA 1: (See Bay Clams of Oregon, By L.D. Marriage; page 19). All counts were the standard counts of siphons felt in 100 square feet, skip 50 feet and count another 100 square foot area.

Date: June 8, 1960

Surveyors: C.D. Snow & R. MacIntyre

Start of Survey: 0430 hours. Survey completed: 1000 hours.

Tide Rating: -1.1 feet at 0549 hours corrected for Netarts.

Flat adjacent to public boat launching ramp and in front of Bishops Restaurant.

The substratum in this area is varied. Near the launching ramp it is very rocky (large rock rubble and broken shell) and has a scattered cover of brown algae. It is this area where digging is the heaviest as evidenced by many deep holes left by clam diggers. Apparently many gaper clams live in this area (this is considered to be atypical habitat for the gaper clam), unfortunately this pottom type makes surveying (accurately) impossible. Near the extreme east end, the clam population is comprised mainly of littlenecks and Saxidomus. The surveys were concentrated on the downbay end of the bed which has a sand substratum. In this area the clams are found in concentrated numbers in small pockets on small sand hummocks. Some Enteromorpha covers this part of the area. Ghost shrimp (Calinassia & Upogebia) abound in the sand and mud near the bank. At the far west end of the flat, a large high sand bank is present in which no gapers were found. However, near the shore, the sand has apparently not yet covered

Netarts Survey---Cont.

a portion of the bed which extends about 250 feet beyond the general western limit of clam bed. This part of the area is only about 50 feet wide but apparently has good numbers of Saxidomus and gaper clams. Much digging had previously taken place here. Some ghost shrimp holes were encountered. This part of the flat was surveyed on June 13, 1960 and the subsequent data is recorded under transect No. 3.

Transect No. 1: Run near the waters edge parallel to the shore at the west end of the flat and followed a northwesterly direction. (See Fig. 2 for approximate location)

<u>Plot No.</u>	<u>No. of Gapers</u>	<u>Comments</u>
1	27	Mixed sand, gravel, and shell, covered with eel grass. Adjacent 20 square inch area (not in plot count) 12 gapers were counted.
2	8	Mixed sand, rock and gravel, some eel grass. Two foot square area not in plot contained at least 14 gapers.

Transect No. 2: Run southwesterly and parallel to the shore and 50 feet shoreward from transect No. 1.

<u>Plot No.</u>	<u>No. of Gapers</u>	<u>Comments</u>
1	4	rock and sand
2	10	rock and sand, some <u>Saxidomus</u> shows noted.
3	4	Count low because of rock and shell substratum made it impossible to feel in holes far enough to contact clam siphons. 12 diggers counted at this time on both sides of the bay.

Transect No. 3: Located in part of flat between the shore and high sandy area at Western end of the clam bed. Aligned between boat launching sign and marker at end of grassy dunes on the sandspit across the bay. Run about 50 feet from the shore and parallel to it.

<u>Plot No.</u>	<u>No. of gapers</u>	<u>Comments</u>
1	10	mud and rocks, some standing water. Many butter clam shows noted (<u>Saxidomus</u>) Some ghost shrimp.
2	2	Same as above.
3	3	Sand substratum, standing water. 1 cockle found.

Random Plots:

1st: joining end of 2nd transect and start of transect no. 1

<u>Plot No.</u>	<u>No. of gapers</u>	<u>Comments</u>
1	36	Sand, eelgrass & standing water.

Netarts Survey---Cont.

2nd: Run parallel to the 1st plot of transect No. 1 and 50 feet further toward the bay.

<u>Plot No.</u>	<u>No of gapers</u>	<u>Comments</u>
1	39	Sand hummocks, standing water. Gapers found mostly on sand hummocks.

Wilson Beach Flat: This flat is composed of rock and shell at its northern end. The south half is mainly sand hummocks with a dense eelgrass cover. Rice Creek divides the southern and northern halves of the flat. The south portion of the area tapers off into a rather narrow mud flat bordering the eastern shore of the bay. About 50 yards south of the creek the gaper density drops off rapidly. The surveyors walked through about $1\frac{1}{2}$ miles of this flat (only the northerly portion known as Wilson's beach) to where the bay outs in close to the road again.

Random Plots: Because of the limited size of this bed it was decided that straight-line transects were of little value here.

1st plot: Run in a northerly direction parallel to the waters edge and about 100 feet from the new highway bridge (a new road is being constructed out to Cape Lookout State Park that will run along the edge of the bay and in this area will probably be filled in over a portion of this bed).

<u>No. of gapers</u>	<u>Comments</u>
22	sand substratum, eelgrass, standing water.

2nd: Run from end of plot number 1 to the waters edge.

<u>No. of gapers</u>	<u>Comments</u>
11	substratum same as above, except for some rocks.

3rd: Run shoreward 50 feet inside of plot No. 1

<u>No. of gapers</u>	<u>Comments</u>
17	sand, heavy eelgrass, standing water.

4th: Run parallel to plot number 1 but 50 feet closer to the water.

<u>No. of gapers</u>	<u>Comments</u>
32	Same as plot No. 3

Notes On Walk-through of Area South of Wilson Beach:

This area for the most part is composed of a uniform and slightly soft mud bottom, with a low central portion covered with eelgrass and standing water. Ghost and mud shrimp are very thick in this area, constantly keeping the bottom changing with their incessant digging. Only near the Wilson Beach area were gaper clams in any abundance. In the $1\frac{1}{2}$ miles covered, only 14 gaper clams were noted.

Area North and West of Chuck's Boat Service:

This area continues on the eastern shore around the bend of the channel to where it empties

Netarts Survey---Cont.

into the ocean. This area extends down into the channel and well below the lowest of minus tides. For the most part, digging in this area is conducted in water 1-2 feet deep. Most of the area is characterized by a heavy rock rubble substratum, densely covered with brown, red, and green algae. Here particularly are the gaper, Saxidomus? and littleneck Hemelys intermingled. In the water covered sections, these clams were found either on the surface or just under the first layer of heavy rocks. It is presumed that this shallow depth is caused by the nature of the bottom preventing the clams from digging in to any depth. Some sand is found at the upbay area near Chuck's Boat Service, and gapers are numerous here in pockets on the sand hummocks. Because of its favorable bottom, only this area was surveyed. (There seemed to be a good number of gapers in the rocky areas as noted from walking through the area.)

June 13, 1960

Surveyors: E. Wagner; M. Odemar; R. MacIntyre

Tide Rating: -1.1 feet at 0954 hours corrected for Netarts.

Transect No. 1: Started from the edge of the central rocky portion and run in a southerly direction, parallel to the waters edge and about 100 feet from the sand beach bordering the cliffs on the eastern shore (see fig. 2). Alignment was a point south of Chuck's boat service and the cliff just north of the jaws of the bay.

<u>Plot No.</u>	<u>No. of gapers</u>	<u>Comments</u>
1	265	rock, sand bottom, covered with brown algae and some standing water.
100 foot skip to avoid a deep water pocket		
2	61	Same as plot number 1.
3	35	Same as plot number 1.
4	5	" " "
5	6	" " "
6	1	" " "

Transect No. 2: Run 20 feet nearer the waters edge than transect number 1 and started near the end of transect number 1, plot No. 6. This area immediately adjacent to transect No. 1 contained many more gapers and is more representative of the bed whose most productive parts were rapidly being covered by the rising tide. Thus only a few plots could be run before the incoming tide forced the termination of the survey at 1145 hours.

<u>Plot No.</u>	<u>No. of gapers</u>	<u>Comments</u>
1	30	sand hummocks, rocks, standing water in places with a heavy cover of brown, red, and green algae.
2	26	" " "

Netarts Survey Cont.

Summary For Area Number 1:

Square feet surveyed-----2200
 Number of gapers observed-----654
 Gapers per square foot-----0.297
 Square feet per gaper-----3.36

AREA No. 4 (Page 19, Bay Clams of Oregon, by L.D. Marriage)

June 9, 1960
 Surveyors: D. Snow & R. MacIntyre
 On the Bay at 0500 hours
 Tide rating: -1.5 feet at 0639 hours corrected for Netarts.

The surveyors reached area 4 after being shown about the bay by Ted Cornet. Mr Cornet pointed out the more productive areas and assured us that we would not find any concentrations of gaper clams on the westerly side of the bay. He also was of the opinion that recent tidal wave action had covered a lot of the beds. He was particularly concerned with a cockle bed that had been covered with a heavy layer of silt-like material. He was also convinced that there was no problem from overpopulation of gapers on the west side.

Transect No. 1: This bed is located directly across the bay from the 4th creek above Rice Creek. The transect started at edge of the main channel and was ran in a south-westerly direction along the edge of a shallow channel that runs toward the sandspit on the ocean side of the bay. The bottom over which this transect ran was of a mixed mud-sand composition. Just adjacent to this area a heavy overburden of a pure sand that appears to be of a migratory nature seemed to have recently shifted. Several gaper shows were observed in this area. It is suspected that the sand recently covered this area and only the clams that were able to extend their siphons above the sand were able to survive.

<u>Plot No.</u>	<u>No. of gapers</u>	<u>Comments</u>
1	3	mud-sand bottom with eelgrass
2	1	" " "
3	0	" " "
4	0	" " "
5	0	1 littleneck found, many shrimp holes
6	0	sand bottom, many shrimp holes
7	0	" " "

Totals for this transect

Square feet surveyed: 700
 Number of gapers observed 4
 Gaper per square foot: 0.0057

Netarts Survey---Cont.

Square feet per gaper 175.0

These totals of little value because of the small size of the sample and are put in only to show the trend in this area.

Notes on walk-through on area no. 4.

Because of the scattered nature of the clams in area 4 the standard survey methods were abandoned in favor of a walk-through. This enabled us to see more of the flat and get a better idea of populations in this area. In a walk-through, personnel make notes of general bottom conditions and relative abundance of clams and any other pertinent observations. Although figures are only relative, much information can be gained from this type of observation.

Netarts bay is essentially a salt water lagoon that runs parallel to the ocean with only a minor amount of fresh water entering from several small creeks. Large portions of the bay bottom are covered with unstable sand that appears to be migratory in nature. This is particularly so in the lower (northerly portion) end/near the entrance. The lower area has few clams that are of a sedentary nature. ~~Clams~~ Sedentary clams occur where vagaries of the currents keep the sands from burying them. In the southerly or upper portion of the bay you find the more stable bottom conditions essential for gaper growth (westerly shore).

Going in a westerly direction and somewhat following the channel into this flat the bottom is a mixture of sand and mud or sand. The stability of this area is indicated by the presence of eelgrass and other algae. This area seemed to be ideally suited for gaper clam growth, however, only scattered gapers were noted throughout the area. Occasionally small concentrations were observed. Cockles were observed in large numbers in the majority of the area. Although over two hours were spent on this flat, only a small (relatively so) portion of it was covered. To make any conclusions as to the exact status of the gaper in this area would be ill advised, however, all indications are that this area is not overpopulated.

This area at one time had a planting of oysters on it. A few scattered oysters still exist here and in one case a lone surviving oyster was found. This oyster had a large cluster of egg cases on it that had been deposited by the oyster drill Ocenebra japonica, the drill was also present. This animal has been known to attack clams in Washington when oysters were not available, this might be part of the reason for reduced numbers of gapers in this area.

A sand spit area where geoducks (Panope generosa) had been observed by local residents was visited. The only animal observed here was one rough piddock (Zirfaea pilsbryi)

Biologists sample from Area 1.

In order to determine the wastage by personal-use diggers in the areas where gapers littlenecks, and Saxidomus are heavily intermingled, a sample was taken. In the area where digging took place, the flat was still covered with about 22 inches of water at low tide. The procedure followed was the same as that used by diggers observed in the area. A hole is started in the rocky bottom and then is enlarged. Each shovelful of sand and rock is examined for clams and occasionally the water is allowed to clear to look for clams not picked up on the shovel. It had been noted earlier that each hole left by diggers always contained several legal clams after the diggers had quit. This

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coupled with the fact that the biologist felt that he was trying to be more observant than the average digger it was decided to dig slightly more than a legal limit of littlenecks and Saxidomus. It is believed that the number of clams dug approximates the numbers dug by the average sports digger.

Results of the biologists sample

Total area dug out: Approximately 17 square feet to a depth of 7-12 inches.

Number of Saxidomus dug-----36

Number of littlenecks dug-----11

Number of gapers dug-----50

Total number of clams dug-----97

Number of clams per square foot----5.7

Ratio of gapers to legal clams (Saxidomus and littleneck)-----1:1.06

Number of gapers broken-----17 (would not have survived)

Number of gapers unbroken-----33 (would probably ^{have} only survived for a short period)

Number of gapers measured-----44 **

Summation-----4127mm

Mean length-----93.8mm (3.7")

Saxidomus (N=47)

Summation 3894mm

Mean 82.9mm (3.3")

Littlenecks (N= 15) ***

Summation 890mm

Mean 59.3mm (2.3")

** Only the gapers from the biologists sample were measured.

*** Littleneck measurement is that of the longest rib.

Ross, MacIntyre & Dale Snow

June 15, 1960.

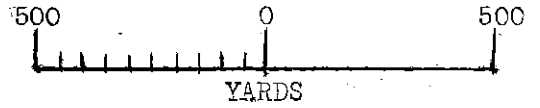
Lower Netarts Bay

Pacific Ocean



Sand

Transect
Random Plot



Chuck's

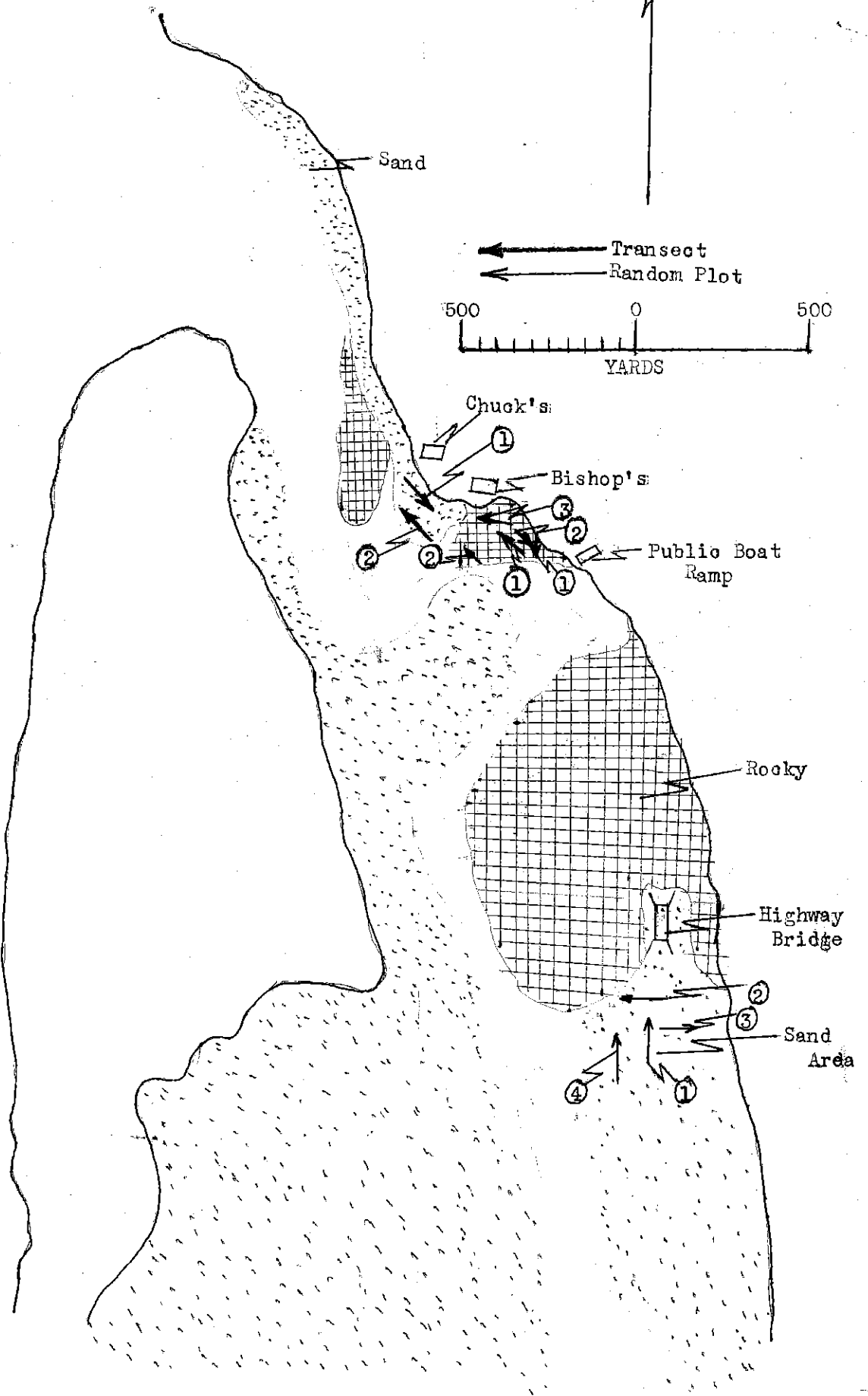
Bishop's

Public Boat Ramp

Rocky

Highway Bridge

Sand Area



Upper Netarts Bay

Sandy Mud
Standing Water,
Eelgrass - few
Gapers.

Walk-Through
Area

Channel of
Bay

Small
Channel

Fourth Creek
Above Rice Cr.

Pacific
Ocean

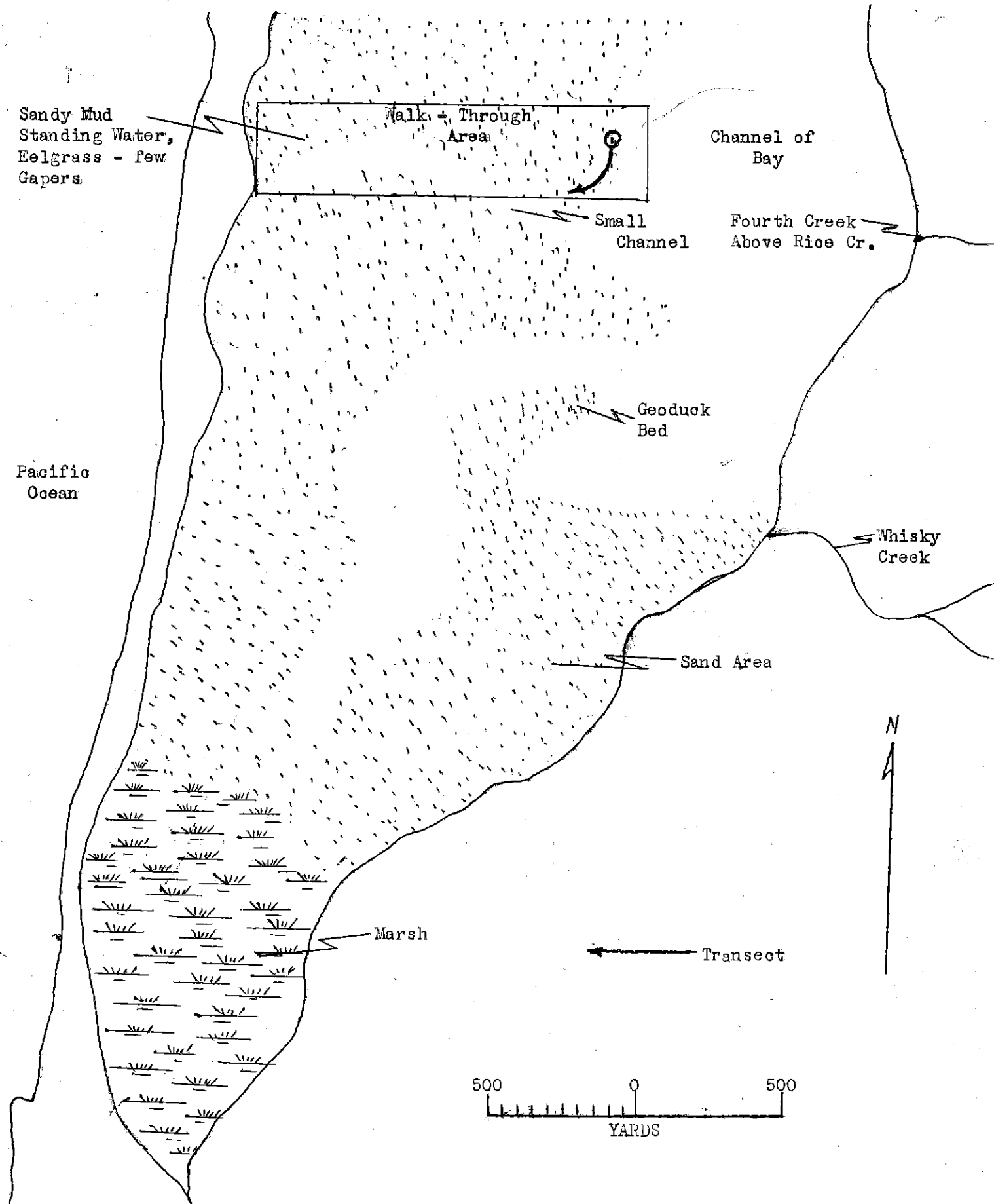
Geoduck
Bed

Whisky
Creek

Sand Area

Marsh

Transect



Ratio of gapers dug to each littleneck or butter clam : 1 : 1

Per cent broken gapers : 34 %

Measurements of clams dug by CDS and fellow biologists:

Gapers

	127	120	102	107	112	85	129	103	85	87	92	86
Same	101	95	90	83	98	86	96	63	78	89	90	82
	99	98	89	83	95	101	87	89	94	94	82	91
date	92	93	92	97	85	93	94	93				

(These were dug by CDS alone - 6 were not measurable)

No. measured: 44
 Total: 4127
 Mean length: 93.80 mm

Butterclams

	109	106	118	109	108	106	112	109	85	110	85	113
	79	96	87	89	76	95	79	88	75	81	79	76
	87	82	77	73	74	74	78	71	75	81	78	72
	69	77	72	67	71	61	71	50	49	45	70	

No. measured : 47
 Total : 3894
 Mean length: 82.85 mm

Littlenecks

	60	72	64	67	72	65	65	66	66	62	53	50	45	43	40
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No. measured : 15
 Total: 890
 Mean length: 59.33 mm

Ross MacIntyre
 June 15, 1960