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Evaluation of the 1977 Bay Clam Regulations

by

Tom Gaumer

INFORMATION REPORT 78-5

Oregon Department of Fish and Wildlife

September 1978

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## INTRODUCTION

In 1976, the Oregon Department of Fish and Wildlife Commission approved regulation changes for the sport harvest of bay clams. The changes were made at the request of the shellfish staff; our concern was the gradual deterioration in the status of the stocks as reflected in annual census work on several key tideflats in Tillamook, Netarts, Yaquina and Siuslaw bays. Public comments during the census taking also suggested support for regulation change.

Regulation changes approved for the 1977 season included: (1) a reduction of the hardshell bay clam limit from 36 to 20 clams per person; (2) sorting of unbroken hardshell clams was allowed; and (3) an additional bag limit of 36 soft-shell or other incidental clams was allowed (before 1977, these had to be included in the overall bay clam 36-bag limit).

In 1977 Oregon State Police from Tillamook County questioned the effectiveness of our regulation changes. One officer in particular was unhappy with the sorting provision in the new regulations. He outlined four examples of where he thought the law was being abused;

- (1) Broken clams were not being kept.
- (2) Clams sorted out by diggers were being picked up by younger family members and therefore they were not digging their own.
- (3) Seagulls were eating the sorted clams before they were able to reburrow into the substrate.
- (4) Sorted clams were put in piles and many did not reburrow back into the substrate.

This report summarizes the results of our clam census surveys and addresses the effects of our regulation changes. Due to the volume of data collected during the 1978 season, only data collected from Garibaldi Flat of Tillamook Bay is presented.

## RESULTS AND DISCUSSION

Digger Census

Table 1 summarizes interview data collected on Garibaldi Flat since 1962. Keeping in mind the changes in sport harvest regulations in 1977, we have seen a decrease in catch per trip from 23.3 clams in 1976 to 19.4 clams per trip in 1978. Digging efficiency has improved with catch per hour increasing from 17.0 to 17.7 clams per hour.

Table 1. Summary of Clam Digger Information, Garibaldi, Flat of Tillamook Bay 1962-78.

	Year						
	1962	1965	1971	1975	1976	1977	1978
No. Diggers Sampled	149	319	13,048	104	207	252	239
No. Clams Sampled	3,296	8,414	389,946	2,472	4,825	4,647	4,631
No. Digger Hours	-	-	20,439	-	283	336	261
Hours/Trip	-	-	1.6	-	1.4	1.3	1.1
Clams/Trip	22.1	22.9	29.9	23.8	23.3	18.4	19.4
Clams/Hour	-	-	19.1	-	17.0	13.8	17.7
Species Composition (%)							
Butter	31.9	-	16.3	20.7	18.2	10.5	11.5
Cockle	38.2	-	16.8	43.4	28.5	46.7	66.6
Gaper	6.3	-	5.4	5.3	18.5	17.2	7.1
Littleneck	23.6	-	60.8	29.7	34.7	24.9	14.7
Mean Size (mm)							
Butter	-	-	-	77.3	81.6	83.8	83.0
Cockle	-	-	-	63.9	64.3	55.9	55.2
Gaper	-	-	-	67.5	56.8	69.3	82.0
Littleneck	-	-	-	36.7	36.8	39.4	38.2

Species composition data showed a large shift in emphasis with cockle clams increasing from 28.5% of the harvest in 1976 to 66.6% in 1978. Butter, gaper and littleneck clams all showed a reduction of occurrence in the bag since 1976. The decrease in digging effort on littleneck clams was especially noteworthy since this species was of particular concern and one of the primary reasons for the 1977 regulation changes.

Allowing sorting of unbroken hardshell clams produced a favorable trend in increased size composition for butter and littleneck clams. Average size of cockles has continued to decrease, probably reflecting the increased digging effort on this species. . -

Figures 1-6 show the age and size composition of butter, cockle, gaper and littleneck clams harvested from Garibaldi Flat since 1975. Age composition of butter clams showed a healthy age structure with as many as 15 year classes present in the catch (Figure 1). The bulk of the harvest was on 5 to 10 year-old clams. Mean sizes ranged from 77.3 mm in 1975 to 83.2 mm in 1977 (Figure 2).

Age composition data for cockle clams revealed that mainly 1 to 3 year-old clams were being kept (Figure 3). Mean sizes of cockles ranged from 55.2 mm in 1978 to 64.3 mm in 1976 (Figure 3).

Figure 4 shows the age composition of gaper clams harvested. The exceptionally strong 1975 year class is evident for each year of data. The average size taken increased from 67.5 mm in 1975 to 82.0 mm in 1978 (Figure 5). This increase reflects growth of the 1975 year class clams in the catch.

Figure 6 presents the age and size composition of littleneck clams in the sport harvest. The majority of the harvest was on 2 to 5 year-old clams. Size composition data show an increase in mean size from 36.7 mm in 1975 to 38.2 mm in 1978.

Figure 7 shows the number of clams being kept per digger for the 1978 season. Of the clam diggers interviewed, 71.7% had their legal bag limit; 5.7% had exceeded their bag limits.

On two occasions, once in 1977 and again in 1978, staff biologists visited Garibaldi Flat to evaluate the effectiveness of the 1977 regulation changes. Little evidence of intentional abuse of the sorting regulation was seen. Of the broken clams being discarded most of those seen were 1975 year class gapers which were not affected by the 1977 regulation change (all gapers must be kept regardless of size or condition). Most of the sorted clams were discarded back into the area

of removal and little evidence of seagulls working on discarded clams was seen.

Staff's opinion is that the regulation changes were effective in reducing the harvest on small littleneck clams and what wastage was seen, would have occurred under either of the clam regulations. As a consequence no change in our existing regulations seems justified. It is also realized that several additional years of data are needed to adequately evaluate the overall effects of the regulation changes.

Marine Region  
August, 1978

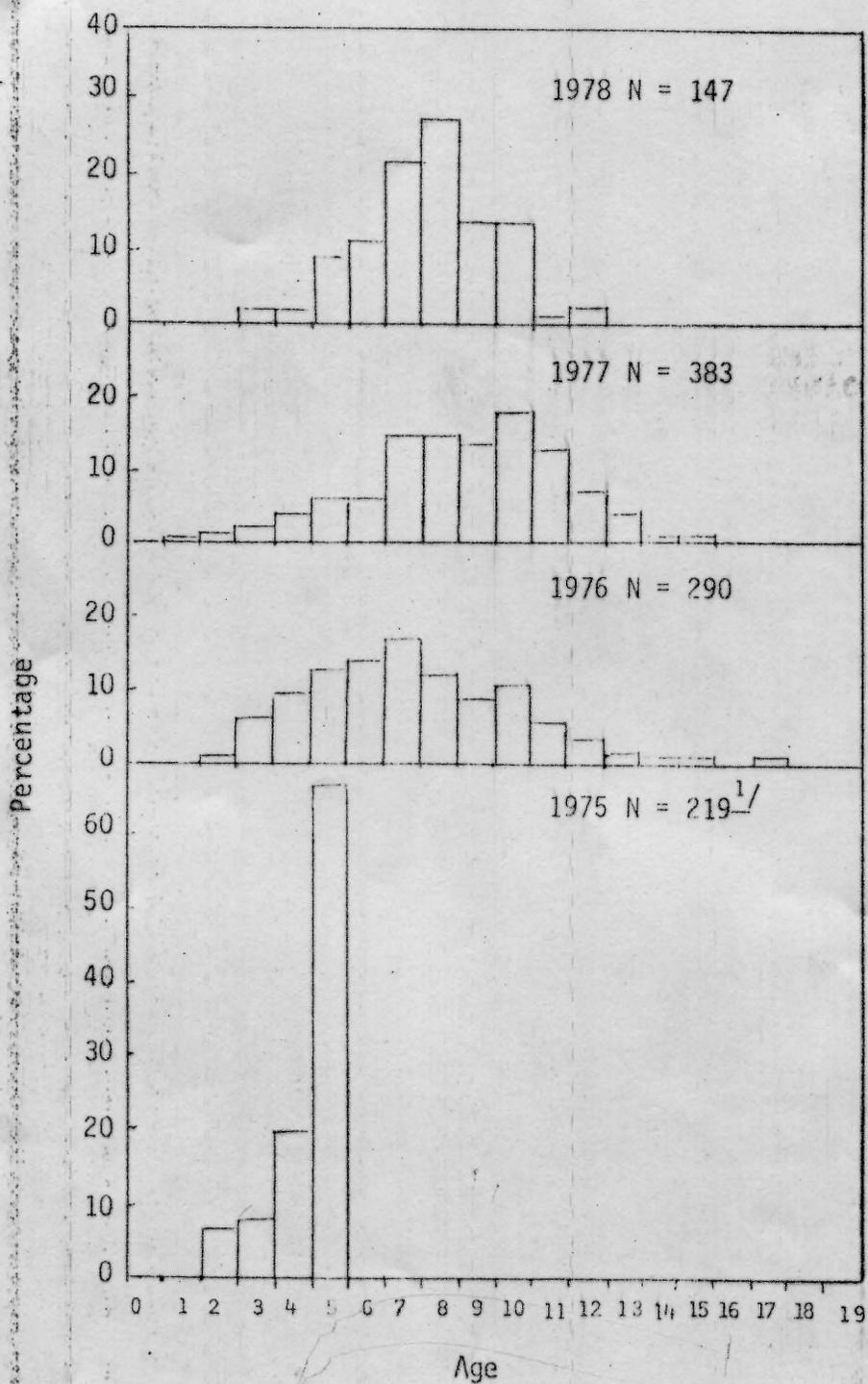


Figure 1. Age Composition of Butter Clams, Garibaldi Flat of Tillamook Bay.

<sup>1/</sup> All clams older than 5 years were combined with the 5 year old clams in 1975.

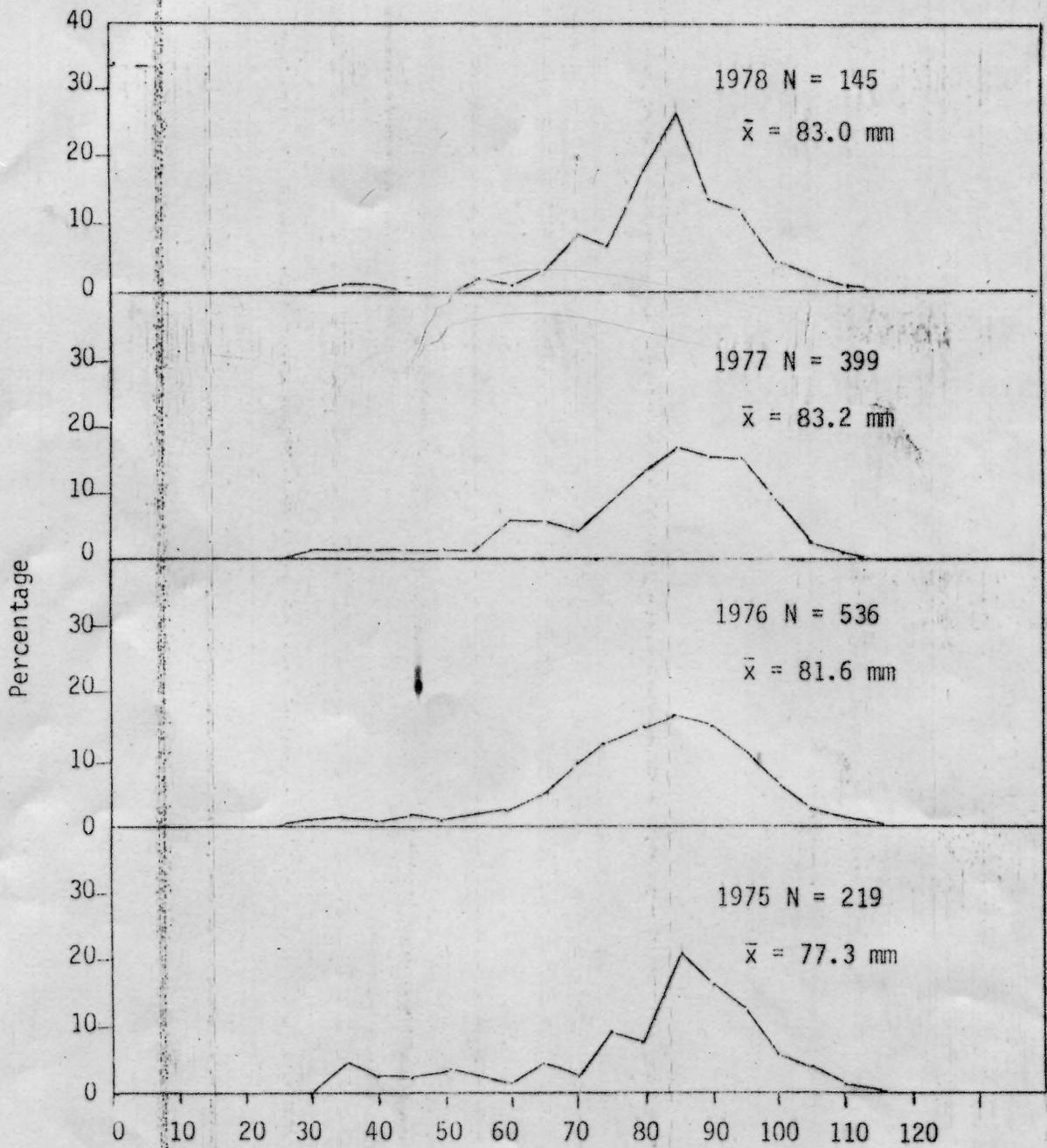


Figure 2. Size Composition of Butter Clams, Garibaldi Flat of Tillamook Bay.

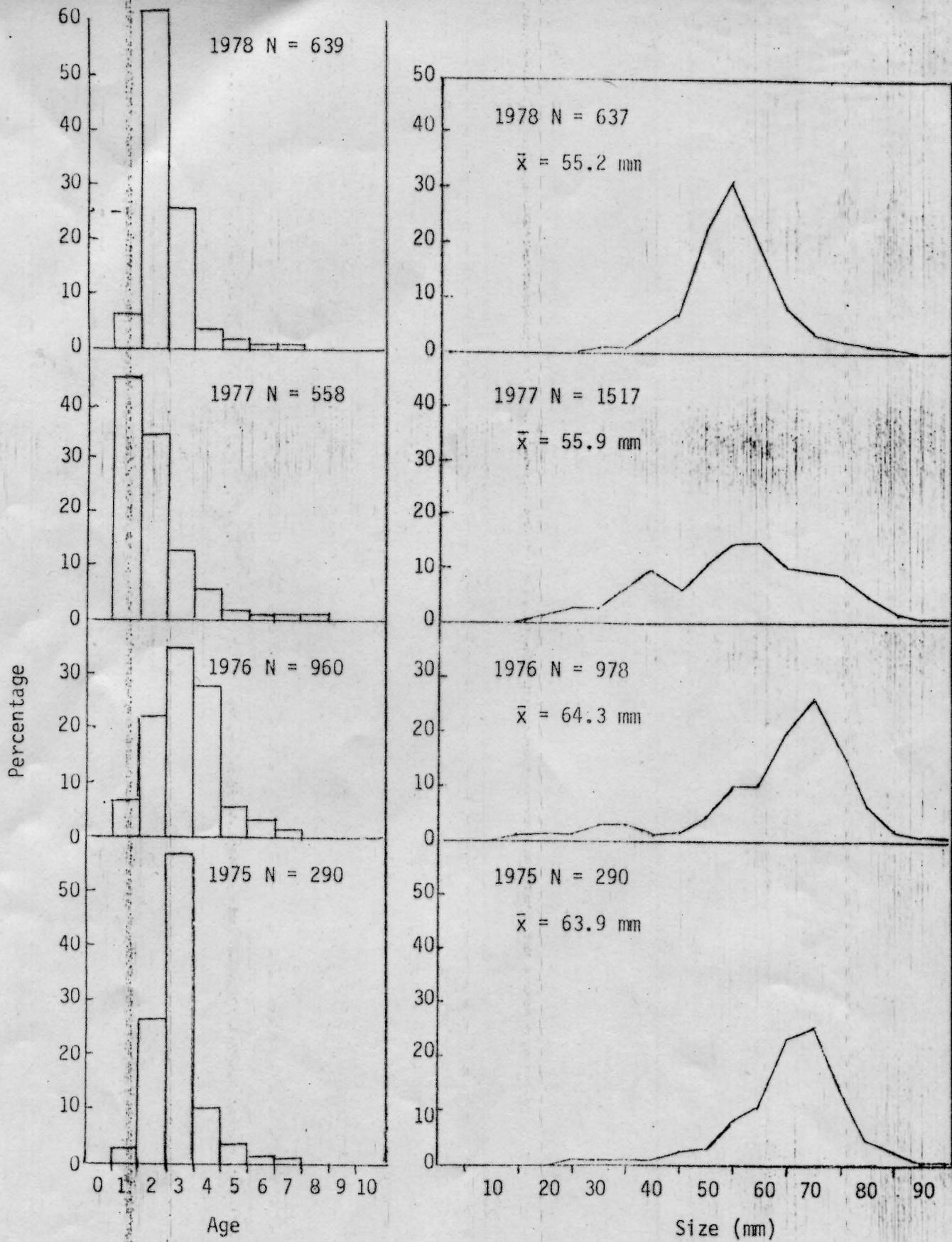


Figure 3. Age and Size Composition of Cockle Clams, Garibaldi Flat of Tillamook Bay.

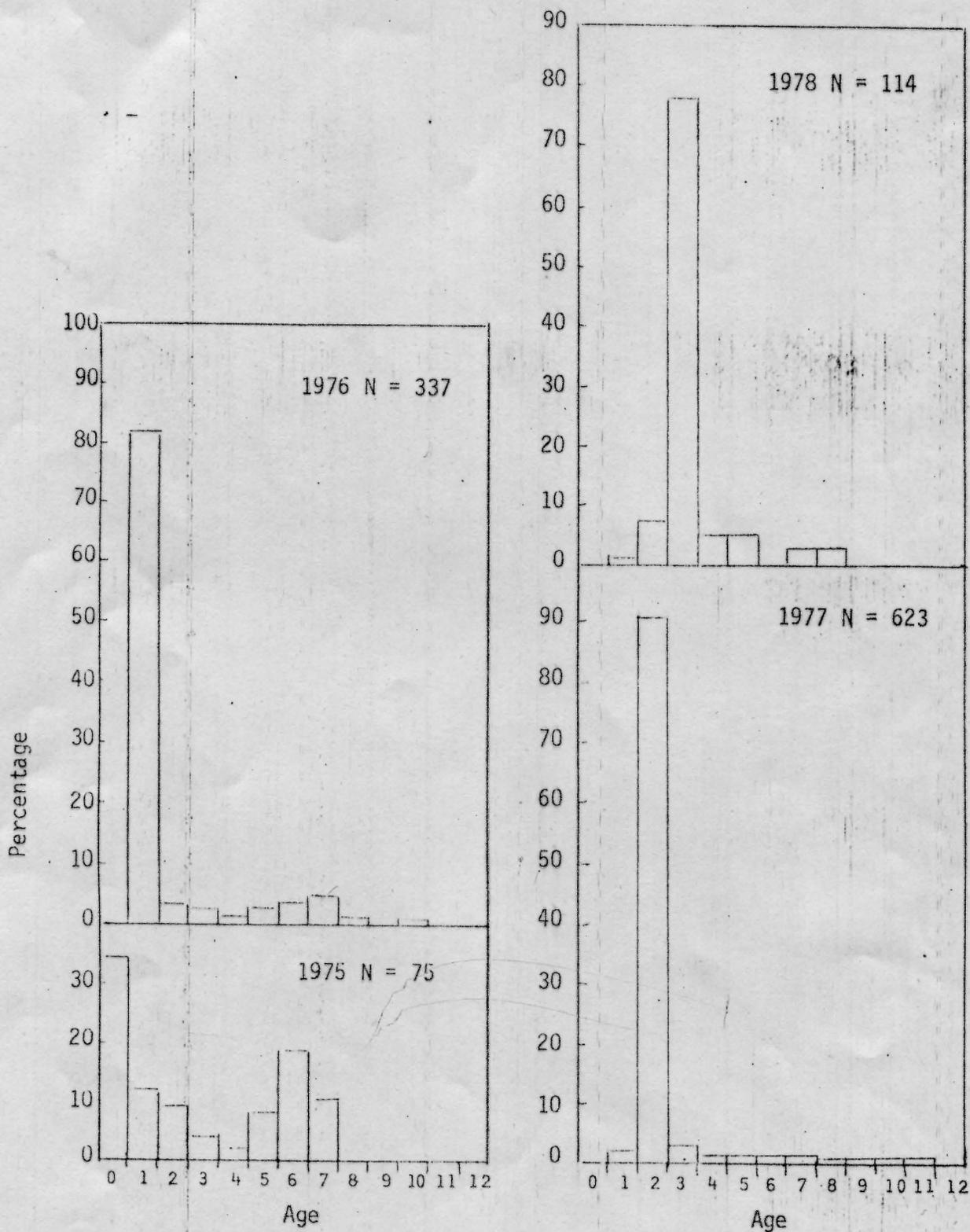


Figure 4. Age Composition of Gaper Clams, Garibaldi Flat of Tillamook Bay.

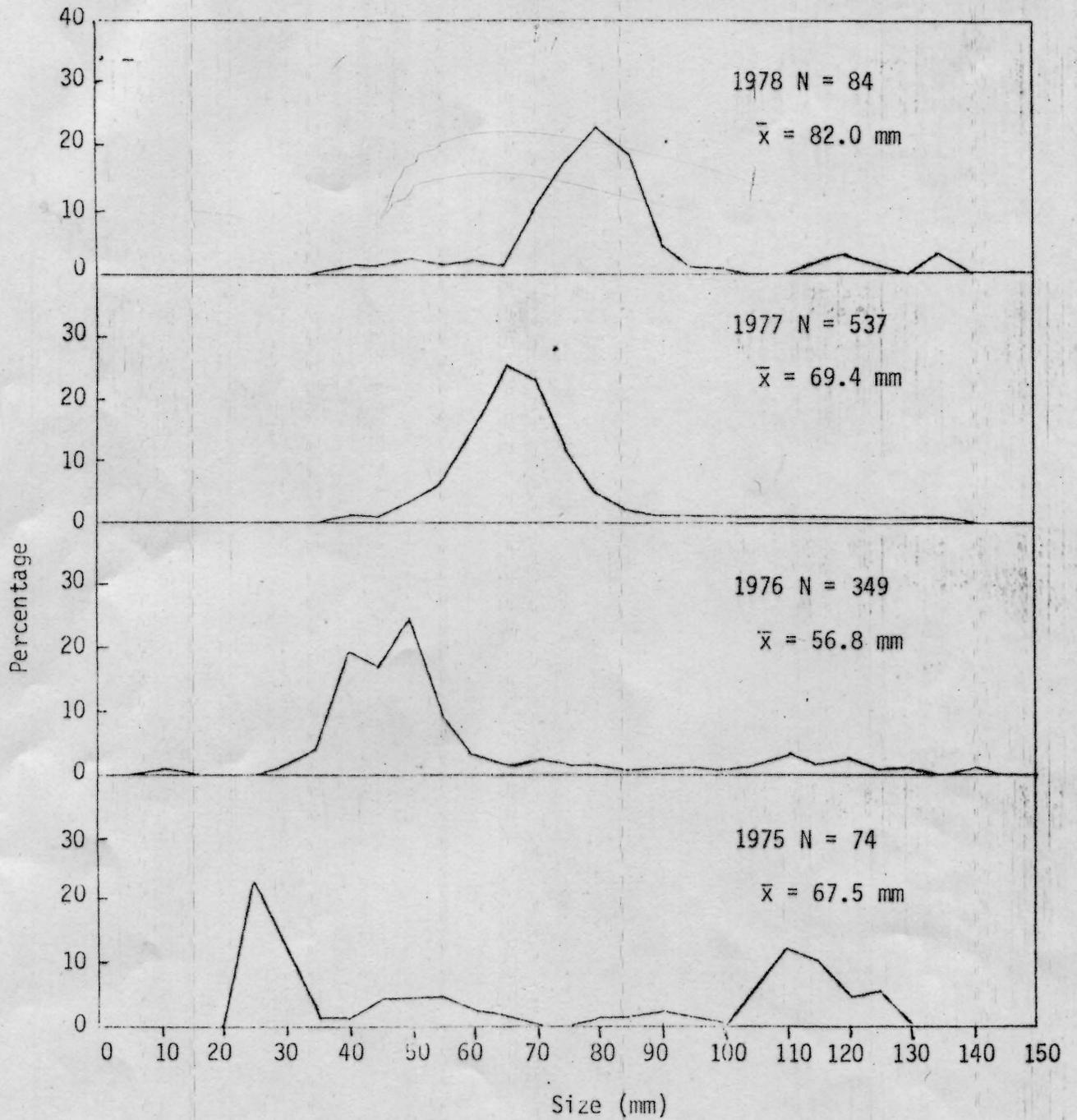


Figure 5. Size Composition of Gaper Clams, Garibaldi Flat of Tillamook Bay.

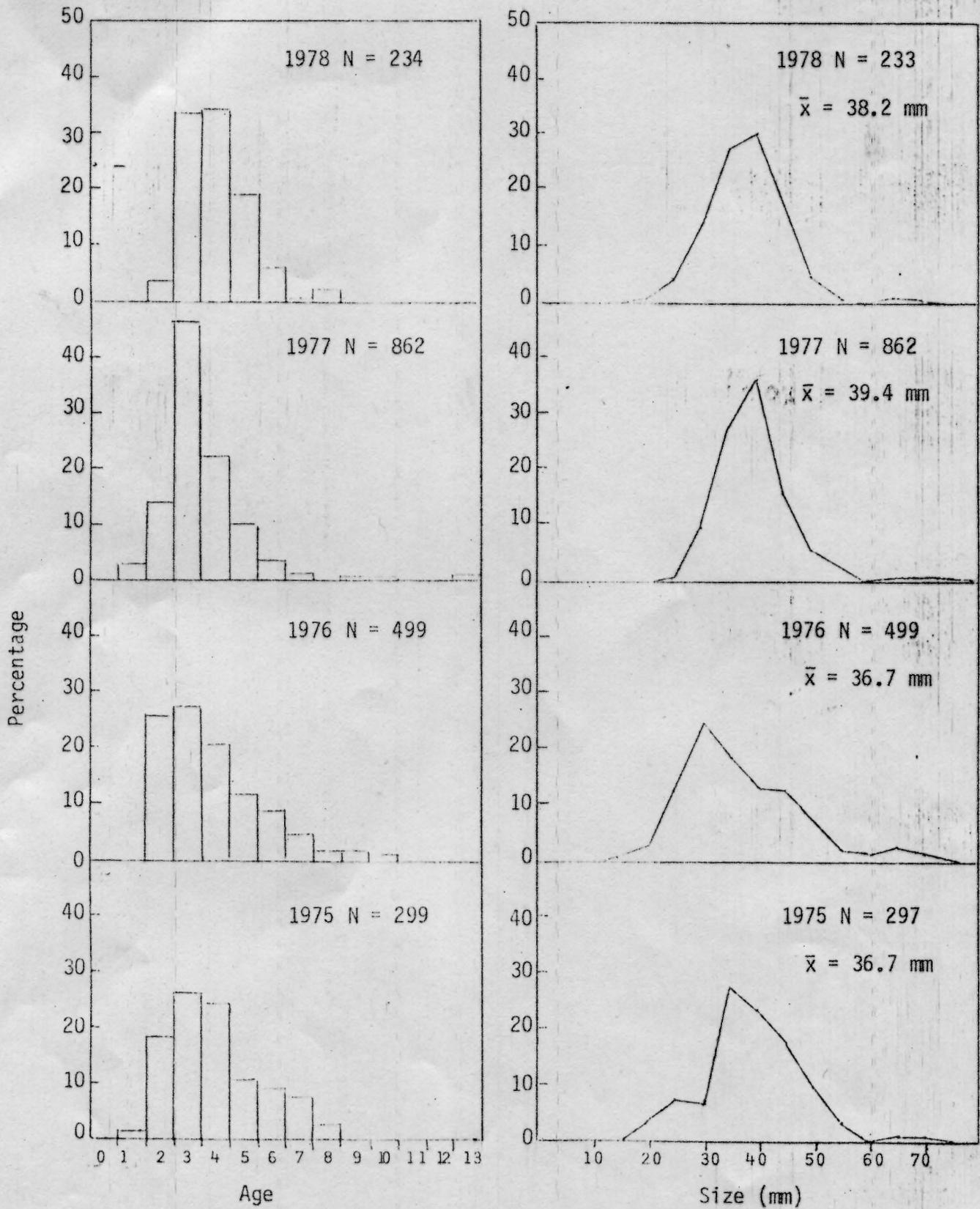


Figure 6. Age and Size Composition of Native Littleneck Clams, Garibaldi Flat of Tillamook Bay.

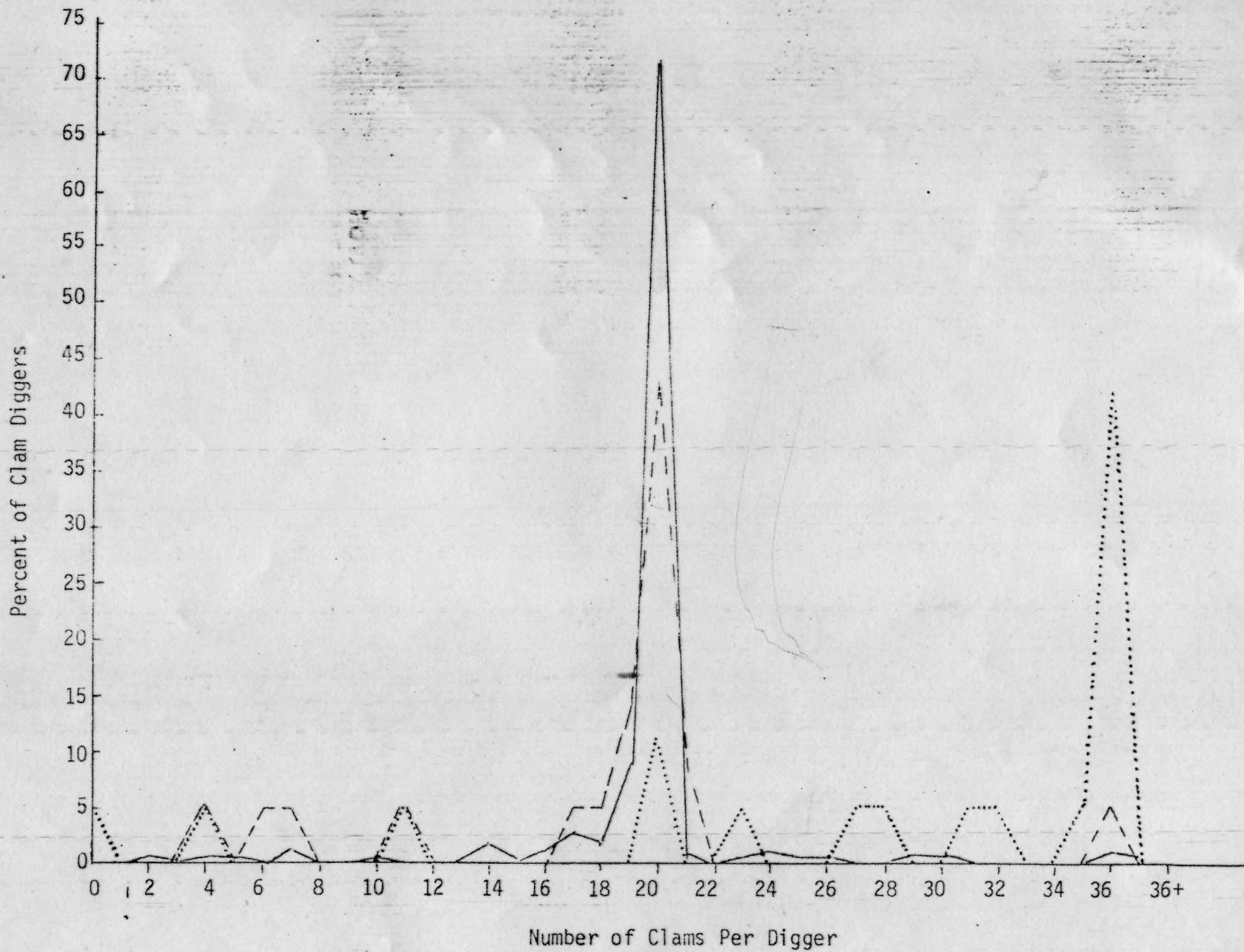


Figure 7. Number of Clams Taken, By Digger (As Percent of All Diggers) Garibaldi Flat, Tillamook Bay, ——— 1978, - - - - 1977, ..... 1976.