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Review of Status of Surf Clam Populations
in the Middle Atlantic

by
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The National Marine Fisheries Service has conducted resource survey cruises of surf clam populations since 1965. The primary purpose of many of the surveys was exploratory fishing and not population monitoring, nevertheless useful analyses of trends can be made. Although the entire surf clam population can be considered one stock as the larvae are subjected to distribution by currents, once the beds are established they can be subjected to differing fishing mortality rates and thus surf clams can be analyzed on an areal basis. For the purposes of this assessment the survey and catch data are grouped by eight areas (Figure 1).

Landings were prorated to area caught by using information from NMFS commercial surf clam vessel interviews (Table 1). Areas were considered inshore or offshore for depths less than or greater than 15 meters, respectively. The percent of bushels assignable to each area from interviews were multiplied by total landings for each port and summed to give total catch in each area. Values omitted from the tables indicate that insufficient data were available for those areas and dates. For the period 1974-76 NMFS Statistics Division personnel prorated catches to inshore and offshore for area of landing. These data are given for New Jersey in Table 1 but are overestimates to the extent vessels landing in New Jersey fished to the south.

A catch per tow index was obtained from NMFS surf clam survey data for Long Island, offshore northern New Jersey, offshore southern New Jersey, inshore and offshore Delaware, and for southern Virginia-North Carolina (Table 2). Survey stations (Figures 2-3) which consistently showed only 0 clams per tow were eliminated

from the calculations (beyond 35 meters off Long Island, beyond 45 meters off the mid-Atlantic, and beyond 50 meters off North Carolina). Since gear varied somewhat, results were standardized to a 48-inch dredge and 5-minute tow.

Prerecruit indices were obtained by applying the percentage of sample length frequency distributions in the recruiting size classes from the surveys to the total survey indices. As commercial size surf clams are generally larger than 4.5 inches (115 mm), size groups from 90-120 mm were examined (Table 3, Figures 4-5).

The survey indices remain stable off the Delmarva Peninsula with yields averaging 20 million pounds (plus the landings from this area which are made north of Maryland). Considering the stable recruitment indices as well as overall survey catches, yields of 20-25 million pounds for the area south of New Jersey would result in a stable fishery for the next few years. This allows for a small catch off North Carolina-southern Virginia, which has at present only a limited fishery; and based on the 1976 survey of the few resources off Long Island, the survey index has also remained stable with catches in the neighborhood of 3-4 million pounds.

In New Jersey the catches have declined drastically, paralleling the survey indices. From 1965 to 1968 cruise indices averaged 46 clams per tow and catches of 28 million pounds. In 1969 to 1970 the indices averaged 26 and the catches 12. The indices for 1976-1977 average 7.8. Adjusting the mortality to be equivalent to the early periods results in catches between 3.6 and 4.7 million pounds. Recruitment indices have been low in recent years, indicating that no recovery would be possible with these catches but that the stock might not decline further. However the clam kill resulting from 1976 low oxygen levels was devastating in the northern area as can be seen in the decline in the index for that area from 7.8 to 2.5. The overall New Jersey average did not decline

as a greater number of samples were taken from the southern area in an attempt to delineate the southern boundary of the kill area. If the north Jersey index were weighted equally with the southern one the equivalent catch would be between 2.5 and 3.4 million pounds. If the means were approximately weighted by area, i.e. twice as much weight given to northern New Jersey, the resulting values would be 1.8-2.8 million pounds. Values lower than these would be needed if a good probability of stock build-up is desired.

The New Jersey inshore stock are not thoroughly covered in the survey but the limited number of stations examined supported the conclusions of Dr. Harlen's studies of lower populations and lower numbers of prerecruit sizes in recent years.

Table 1. Estimated surf clam catch by area by millions of pounds

Year	Long Island	Northern New Jersey		Southern New Jersey		New Jersey		Delmarva	
		Inshore <15M	Offshore >15M	Inshore <15M	Offshore >15M	Inshore <15	Offshore >15	Inshore <15	Offshore >15
1965	1.5	.2	32.9	7.8	.1	8.0	33.0	-	-
1966	1.8	.2	32.4	16.2	.2	16.4	32.6	-	-
1967	2.3	-	22.6	13.3	2.1	13.3	24.7	-	-
1968	3.0	.1	13.4	9.1	8.6	9.2	22.0	-	-
1969	3.4	.6	10.9	17.0	2.0	17.6	12.9	-	-
1970	4.1	-	6.0	25.2	4.0	25.2	10.0	13.8	3.7
1971	3.7	-	-	-	-	-	-	3.1	9.3
1972	2.7	-	-	-	-	-	-	3.2	11.4
1973	3.3	-	-	-	-	-	-	1.1	23.9
1974	4.0	-.1	-.1	-.1	-	12.1 ¹	10.6 ¹	.6	19.4
1975	4.6	-.1	-.1	-.1	-	28.7 ¹	3.3 ¹	1.2	17.8
1976	3.4	-.1	-.1	-	-	11.3 ¹	21.3 ¹	2.1	18.9
1977								2.1	

(4 mo)

¹Based on estimates of New Jersey landings by NMFS Div. of Statistics. Value is high to the extent that New Jersey landings were not caught off New Jersey.

Vir. N.C.

1965
1966
1967
1968
1969
1970
1971
1972 15.1
1973 12.4
1974 43.6
1975 19.6
1976 -
1977

(4 mo)

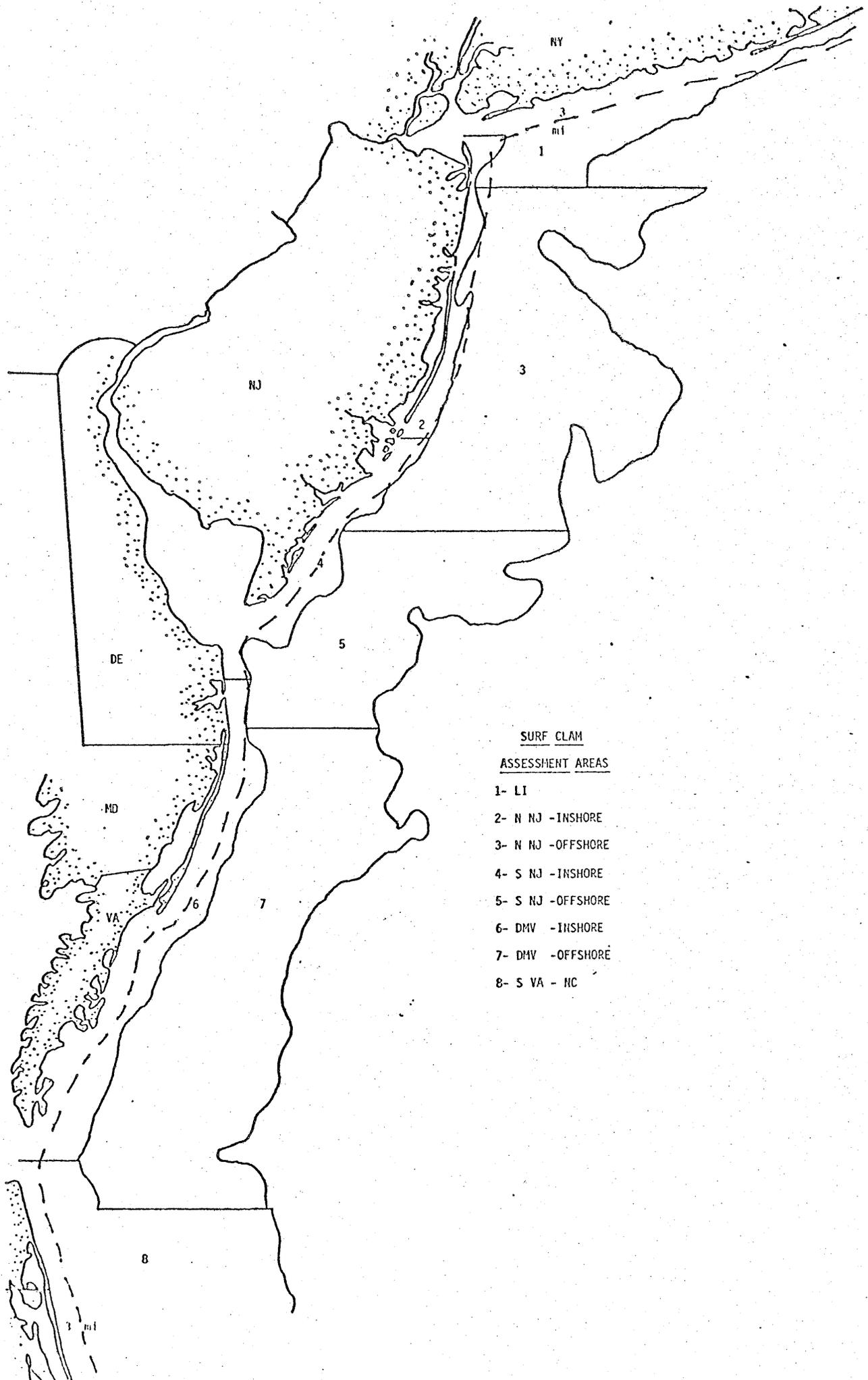
Table 2. Relative abundance of surf clams from NMFS shellfish cruises, 1965-1977 (Number per tow).

Cruise	-----AREA-----			
	N NJ (off)	S NJ (off)	NJ (off)	DMV (off)
1965-Spring	36.7	35.0	36.1	25.0
1965-Autumn	34.5	38.6	35.6	23.2
1966-Spring	58.2	--	58.2	13.3
1966-Summer	29.7	40.2	33.7	29.2
1967-Spring	66.7	--	66.5	17.2
1969-Spring	31.3	40.7	34.4	24.6
1970-Summer	19.1	12.6	18.0	18.8
1974-Spring	18.7	43.7	31.0	33.5
1974-Summer	15.6	--	15.6	--
1976-Spring	7.8	8.5	8.0	26.3
1977-Winter	2.5	8.6	7.9	32.0

Table 3. Relative abundance of recruiting surf clams, from NMFS shellfish cruises, 1965-1977 (number per tow).

Cruise	Size class (mm)	Area			
		N NJ (off)	S NJ (off)	NJ (off)	DMV (off)
1965 - Spring	90-100	0.70	3.57	1.79	1.88
	100-110	0.66	2.24	1.26	1.15
	110-120	1.29	2.66	1.81	1.20
1965 - Autumn	90-100	0.36	2.24	0.87	0.77
	100-110	0.66	4.36	1.66	1.21
	110-120	0.57	1.74	0.89	1.28
1966 - Spring	90-100	1.11	-	1.11	0.31
	100-110	1.63	-	1.63	0.77
	110-120	1.86	-	1.86	0.75
1966 - Summer	90-100	1.04	0.48	0.83	1.02
	100-110	0.83	0.36	0.65	1.69
	110-120	0.92	1.57	1.17	1.64
1967 - Spring	90-100	0.47	-	0.47	0.12
	100-110	1.13	-	1.13	0.28
	110-120	1.87	-	1.87	0.38
1969 - Spring	90-100	0.28	0.29	0.28	1.13
	100-110	0.38	0.77	0.51	0.59
	110-120	0.56	0.57	0.56	0.49
1970 - Summer	90-100	0.23	0.00	0.23	0.58
	100-110	0.40	0.28	0.38	0.55
	110-120	0.36	0.28	0.35	0.55
1974 - Spring	90-100	0.36	0.44	0.40	0.87
	100-110	0.26	0.44	0.33	3.45
	110-120	0.26	0.61	0.43	2.48
1974 - Summer	90-100	0.16	-	0.16	-
	100-110	0.22	-	0.22	-
	110-120	0.22	-	0.22	-
1976 - Spring	90-100	0.07	-	0.07	0.16
	100-110	0.21	-	0.21	0.53
	110-120	0.14	-	0.14	0.45
1977 - Winter	90-100	0.06	0.52	0.47	0.74
	100-110	0.25	0.69	0.64	1.63
	110-120	0.19	0.74	0.68	2.11

Figure 1. Surf Clam Assessment Areas.



SURF CLAM
ASSESSMENT AREAS

- 1- LI
- 2- N NJ - INSHORE
- 3- N NJ - OFFSHORE
- 4- S NJ - INSHORE
- 5- S NJ - OFFSHORE
- 6- DMV - INSHORE
- 7- DMV - OFFSHORE
- 8- S VA - NC

Figure 2. Relative abundance of surf clams from NMFS shellfish cruises, 1965-1977 (Number per tow). N NJ (offshore), S NJ (offshore).

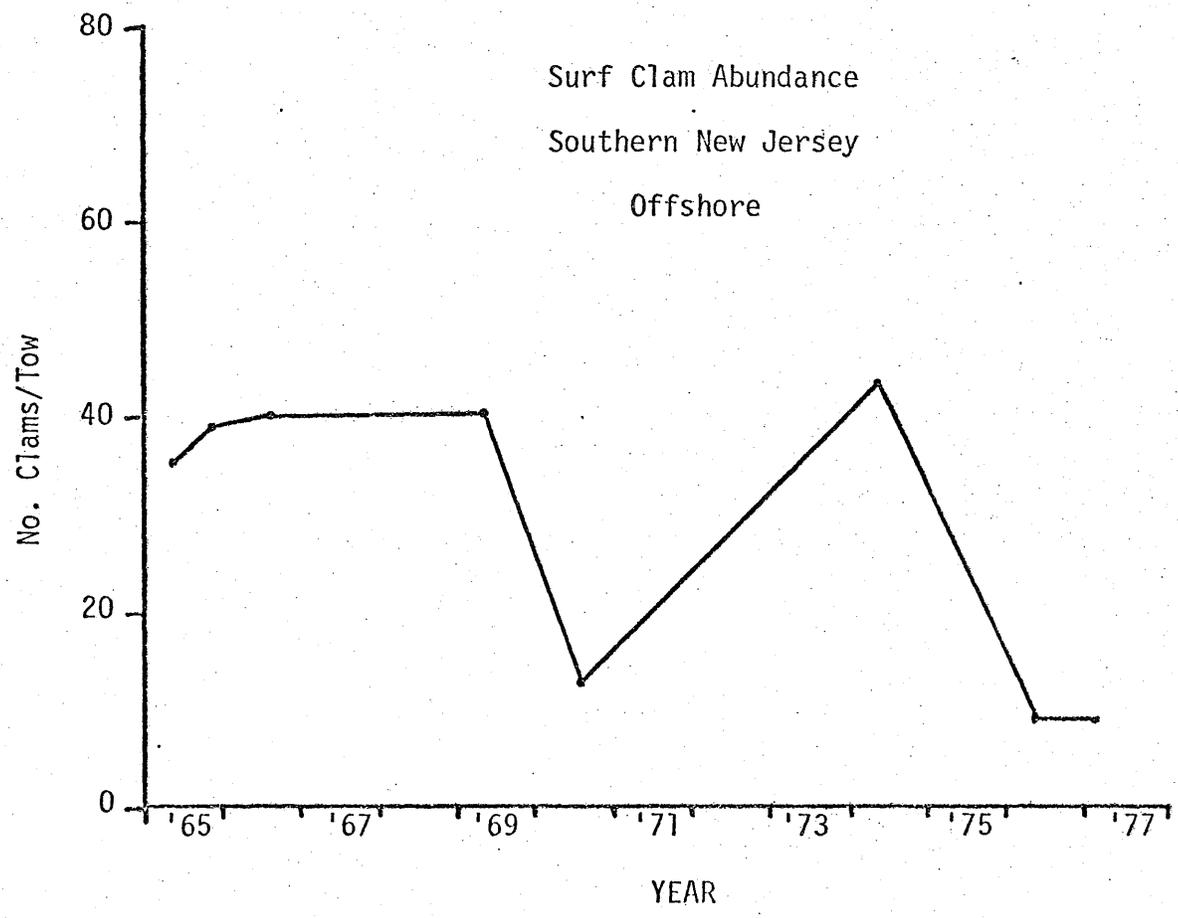
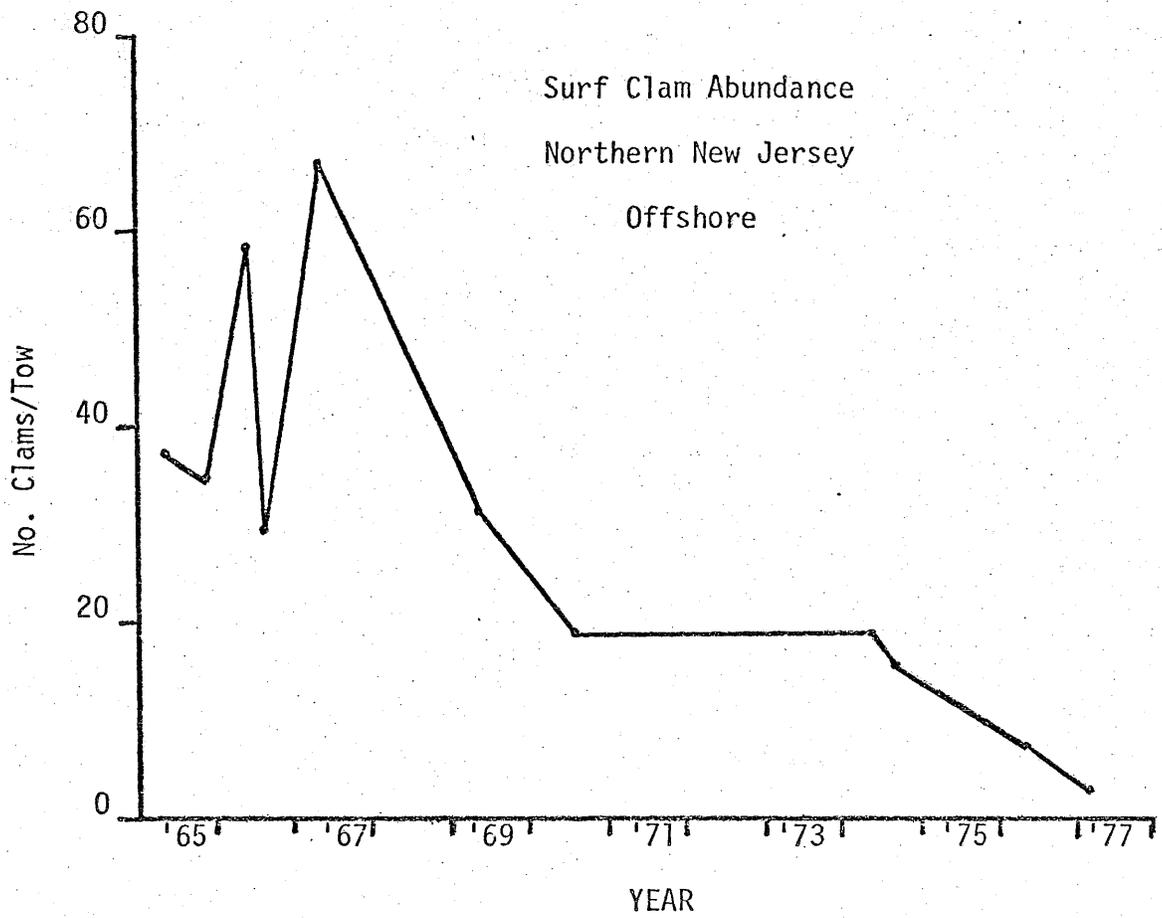


Figure 3. Relative abundance of recruiting surf clams from NMFS shellfish cruises, 1965-1977 (Number per Tow). (NJ (offshore), Delmarva (offshore)).

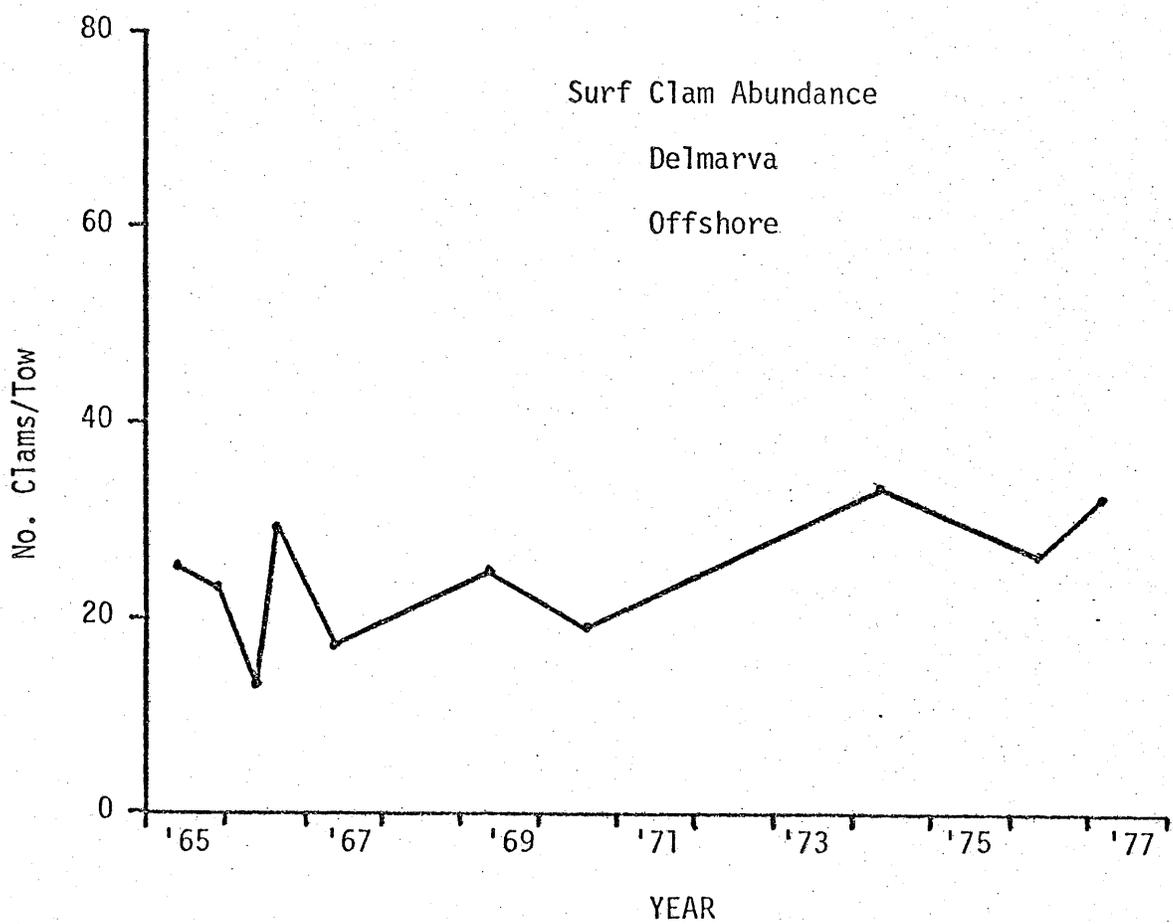
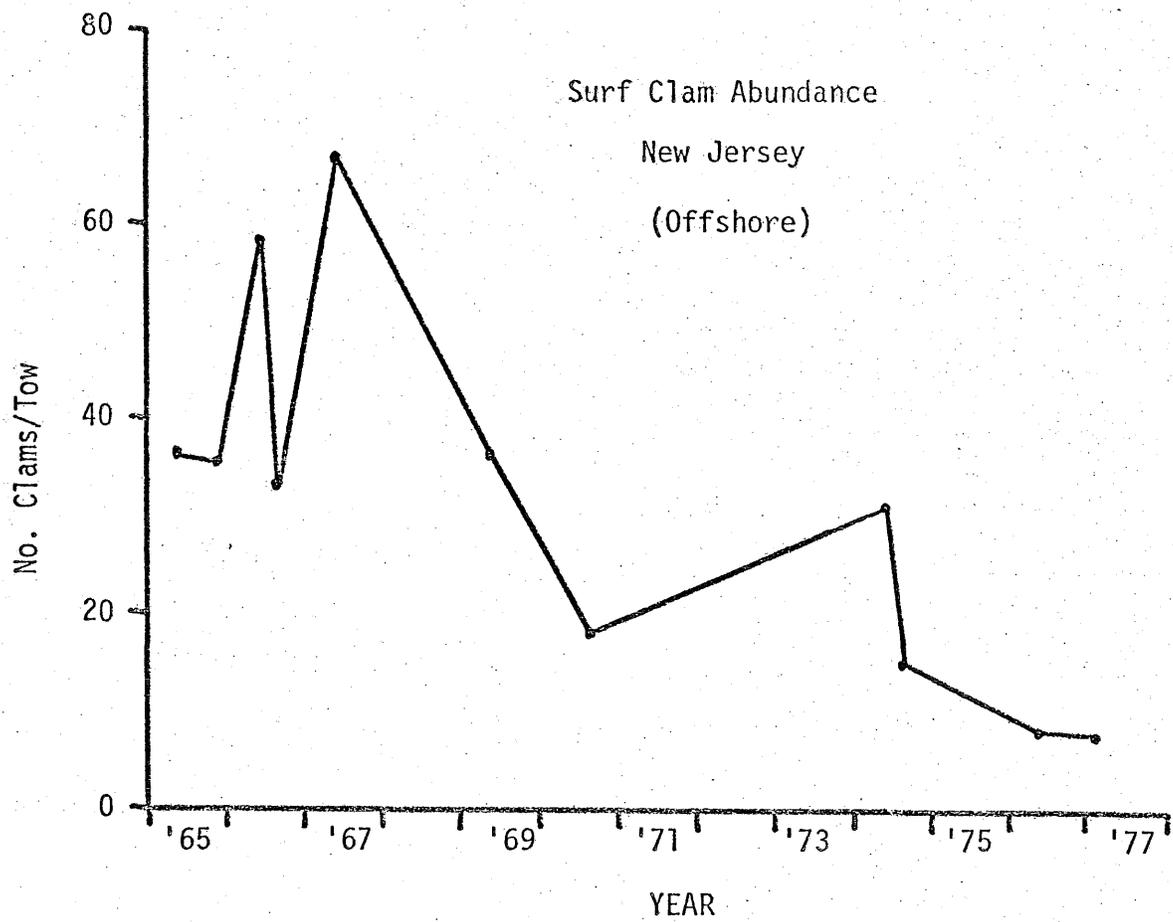


Figure 4. Relative abundance of recruiting surf clams from NMFS shellfish cruises, 1965-1977 (Number per Tow). N NJ (offshore), S NJ (offshore)).

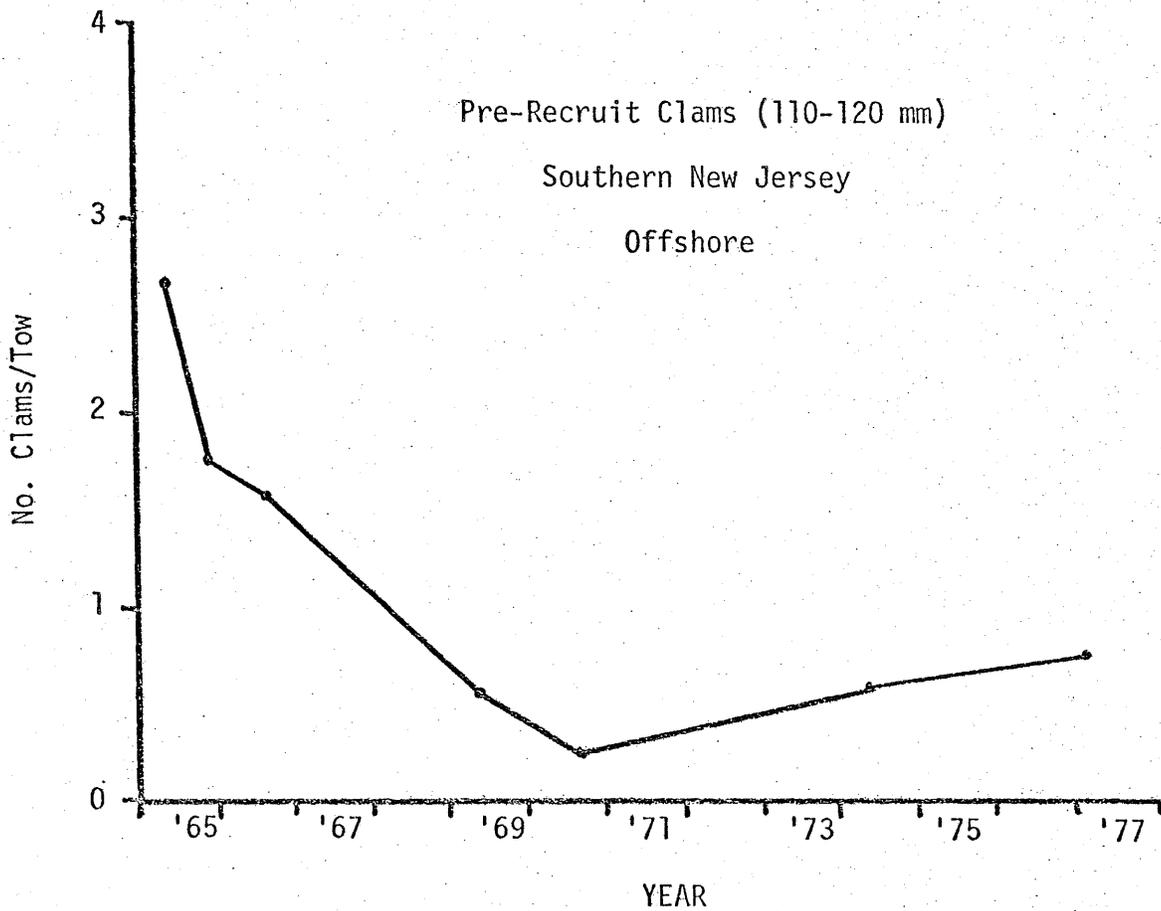
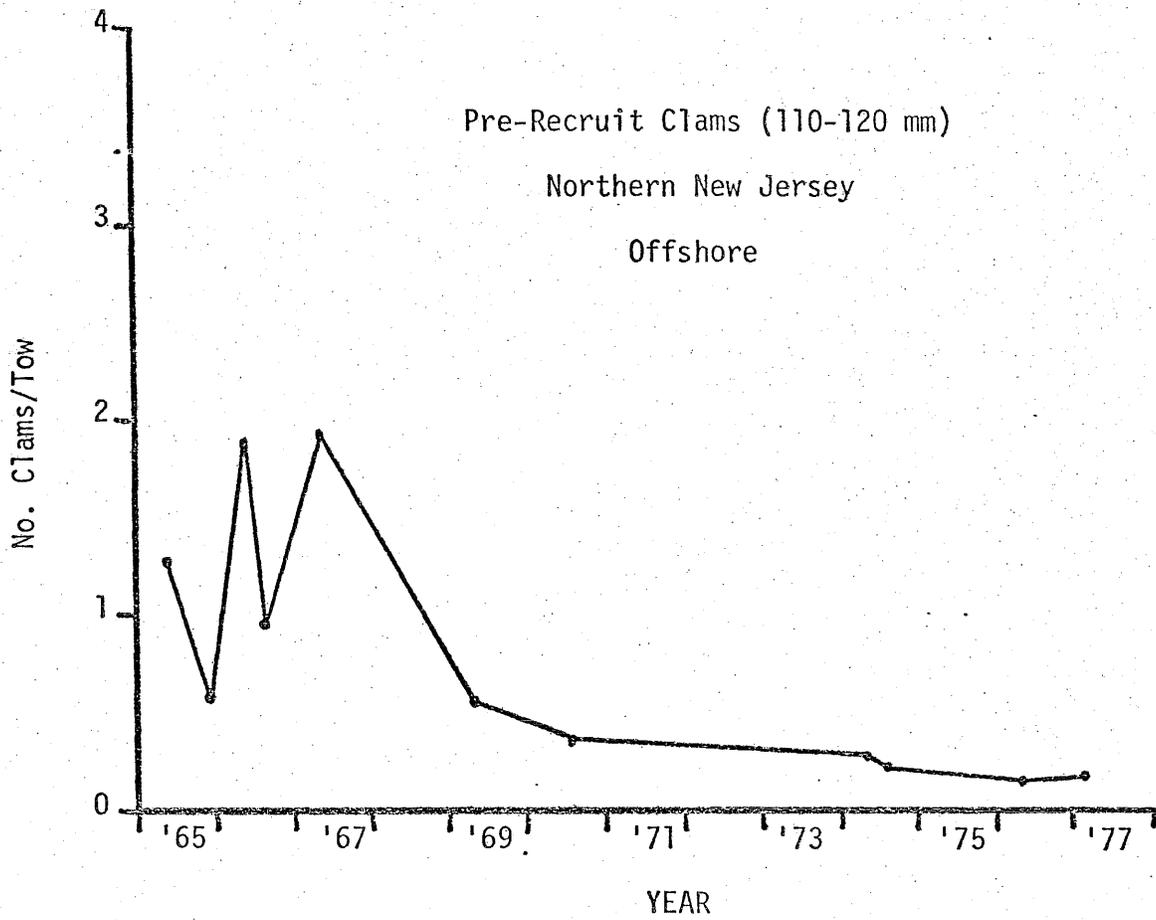


Figure 5. Relative abundance of recruiting surf clams from NMFS shellfish cruises, 1965-1977 (Number per Tow). (NJ (offshore), Delmarva (offshore)).

