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Catches of Redfish in Shrimp Research Trawling in Div. 1A and 1B, 1976 to 1986

by

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Introduction

Since 1976, trawl surveys with shrimp trawl have been carried out in July and August in the main area of the shrimp fishery in Div. 1A and 1B. A fixed-station grid has been established to cover the most important strata of the area (Doubleday, 1981). The number of trawl settings per year is given in Table 1.

General Biological Information

Great amounts of small redfish (*Sebastes mentella*) are discarded in the offshore shrimp fishery (Jensen, 1979), which take place on a nursery area for *S. mentella*. It is not known where the spawning (extrusion of larvae) of *S. mentella* takes place, only a few small larvae have been observed in annual June larvae surveys in the West Greenland waters.

Method and Results

It is not possible to use the catch figures from the research trawlings directly as CPUE indices. In the actual years the trawl design have been changed and the crews has in periods had little training in using the gear. Therefore, it is decided only to use the length and age distributions of the catches. Overall mean length and mean weight by year are summarized in Table 1. Fig. 1 and 2 show these mean length and weight by year. Figures 3 to 13 show the relative size distribution by cm groups, 1976-1986.

A standard age-length key has been combined by pooling age readings of scale samples from 1982-85. The age distributions in single years might be biased by the use of this standard age-length key but for young fish of a slow growing species as redfish the bias should not be too serious.

Length samples within single years and divisions have been pooled and combined with the standard age-length key to give the relative age distribution (Table 2).

Estimate of the quantities of the by-catch of redfish in tons and numbers are given in Table 3 and by numbers per age groups in Table 4. Catch curves for Div. 1A and 1B are shown in Fig. 14 and 15. From the catch curves total mortalities (2) for 3- to 13-year-old *S. mentella* can be estimated to 0.71 and 0.54 for Div. 1A and 1B respectively.

References

- Doubleday, W. G. (ed.). 1981. Manual of groundfish surveys in the Northwest Atlantic. NAFO Sci. Coun. Studies, No. 2: 16-21.
- Jensen, J. M. MS 1979. Redfish at West Greenland, Subaera 1. ICNAF Res. Doc., No. 54(rev.), Serial No. 5394, 22 p.

Table 1. Number of trawl sets, mean length and weight, of Sebastes mentella in Div. 1A and 1B by year.

Year	DIV 1A			DIV 1B		
	No. of sets	mean length, cm	mean weight, g	No. of sets	mean length, cm	mean weight, g
1976	14	13.5	40	15	15.5	60
1977	9	11.9	30	18	13.4	40
1978	6	9.8	10	6	14.3	40
1979	-	-	-	2	12.4	40
1980	-	-	-	11	11.6	30
1981	-	-	-	11	9.6	10
1982	2	8.1	10	8	10.6	20
1983	11	10.8	20	-	-	-
1984	-	-	-	8	11.0	20
1985	-	-	-	6	13.3	30
1986	-	-	-	20	14.5	80



Table 3. Estimated by-catch (discard) by number of small Sebastes mentella in SA 1 in the offshore shrimp fishery (From Scientific Council Report, 1986, p. 13).

Year	catch of shrimp, tons	Bycatch of redfish, %	Bycatch of redfish, ton	Bycatch of redfish, number x 10
1981	32,016	1	320	32.02
1982	35,015	1	350	17.51
1983	33,854	1	338	16.92
1984	34,441	2	689	34.44
1985	43,891	1.8	790	26.33
1986	44,584	2.1	936	11.70

Tabel 4. Estimated by-catch in numbers at age of small Sebastes mentella from Greenland shrimp trawlers in SA 1 (millions of fish)

Age group	Y e a r					
	81	82	83	84	85	86
1	5.28	0.82	0.74	1.38	-	0.36
2	8.77	2.52	2.23	4.10	-	1.39
3	9.76	8.49	8.58	18.22	7.32	4.10
4	4.74	2.36	2.18	4.24	8.19	0.66
5	2.15	1.79	1.85	4.00	6.00	0.83
6	0.74	0.96	0.89	1.72	2.95	1.05
7	0.54	0.46	0.38	0.65	1.42	1.18
8	0.16	0.11	0.08	0.14	0.21	0.81
9	0.03	0.02	0.02	0.03	0.05	0.30
10	-	-	-	-	-	-
11	-	-	-	-	0.05	-
12	-	-	-	-	0.16	-

FIG. 1. DIV. 1A AND 1B  
MEAN LENGTH OF S. MENTELLA CATCHES.  
RESEARCH TRAWLING BY R/V ADOLF JENSEN.

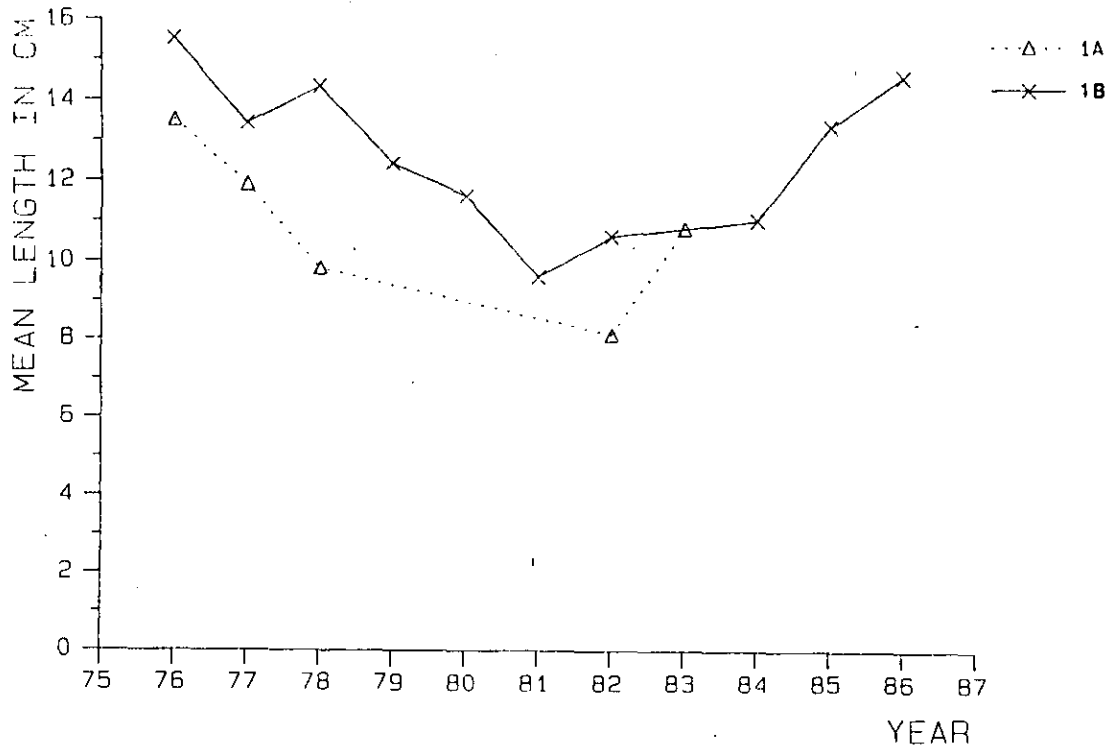
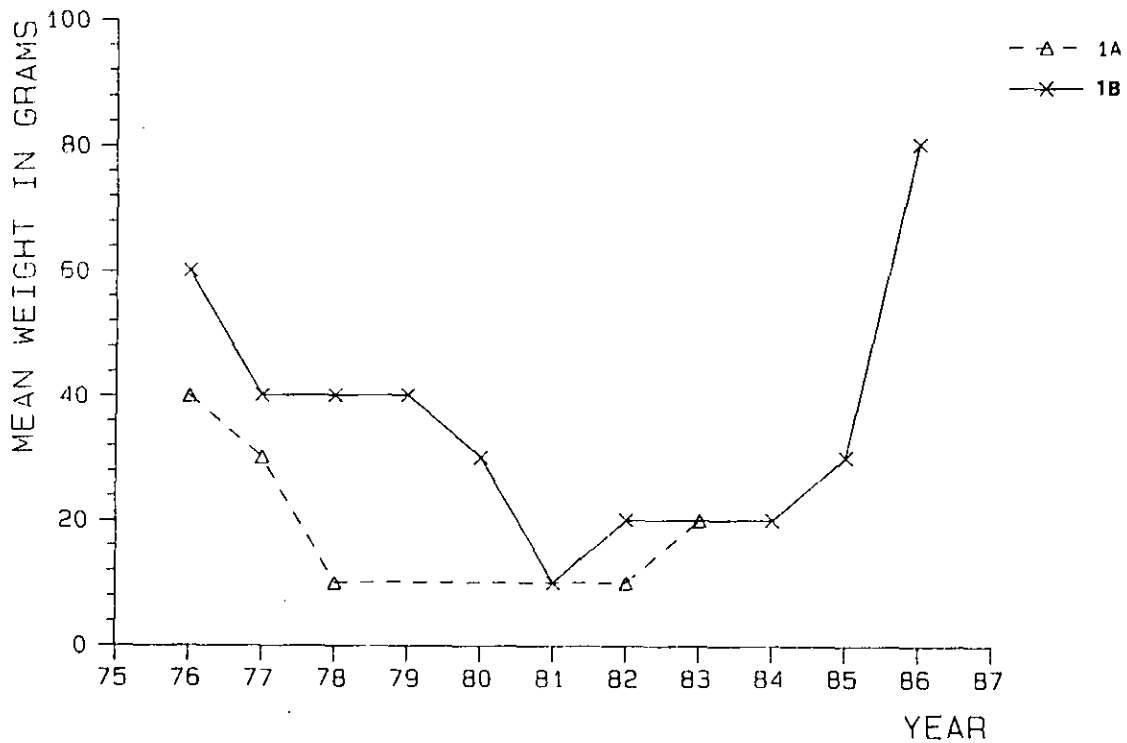


FIG. 2. DIV. 1A AND 1B  
MEAN WEIGHT OF S. MENTELLA CATCHES.  
RESEARCH TRAWLING BY R/V ADOLF JENSEN.



1976 NAFO DIV. 1A+1B  
BYCATCH OF SEBASTES MENTELLA IN SHRIMP TRAWL  
N= 17322

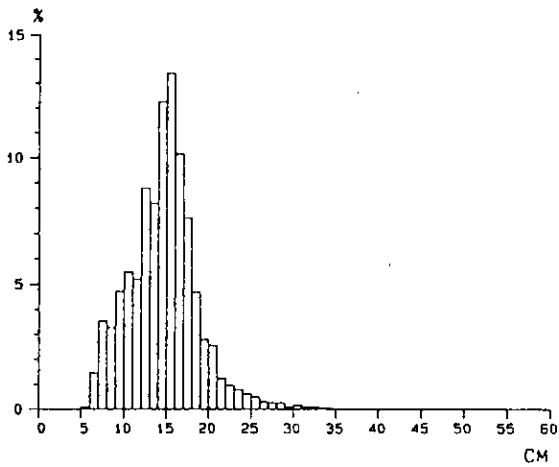


FIG. 3

1978 NAFO DIV. 1A+1B  
BYCATCH OF SEBASTES MENTELLA IN SHRIMP TRAWL  
N= 4306

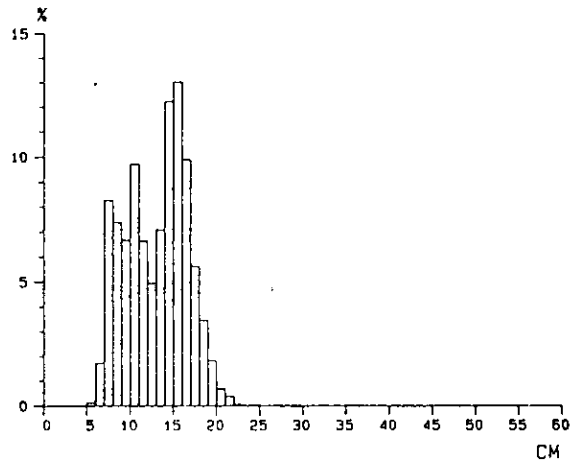


FIG. 5

1977 NAFO DIV. 1A+1B  
BYCATCH OF SEBASTES MENTELLA IN SHRIMP TRAWL  
N= 9131

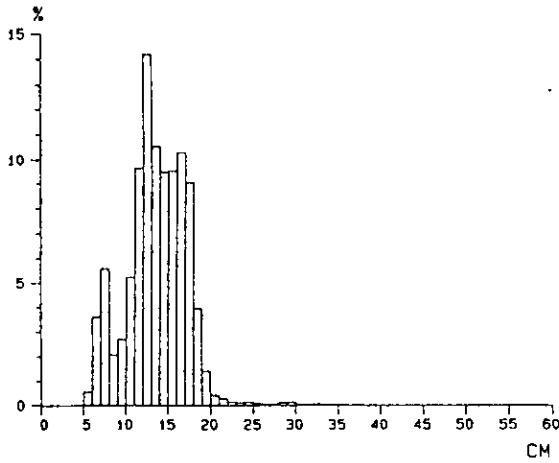


FIG. 4

1979 NAFO DIV. 1A+1B  
BYCATCH OF SEBASTES MENTELLA IN SHRIMP TRAWL  
N= 721

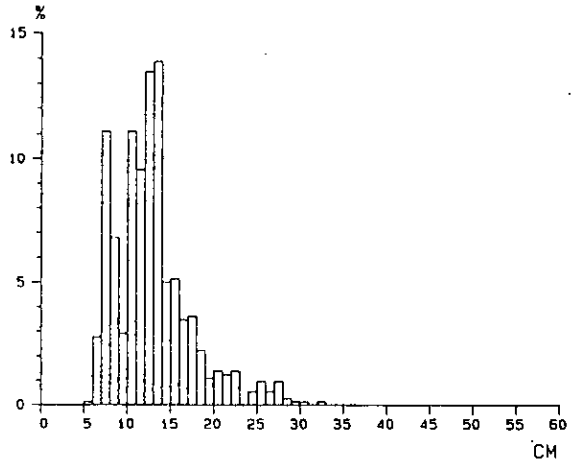


FIG. 6

1980 NAFO DIV. 1A+1B  
BYCATCH OF SEBASTES MENTELLA IN SHRIMP TRAWL  
N= 3651

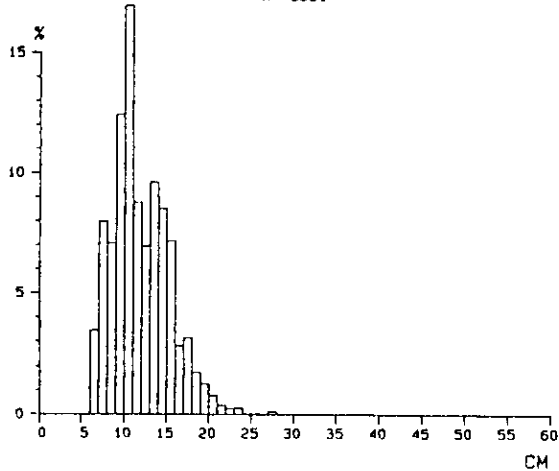
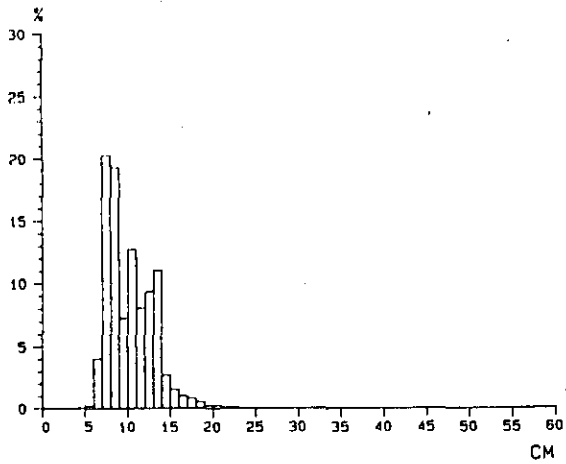
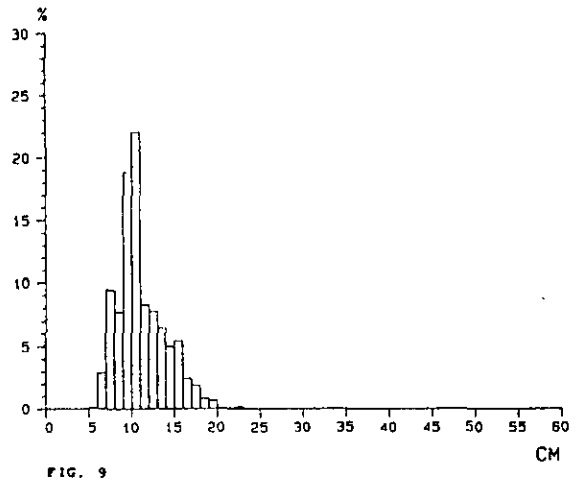


FIG. 7

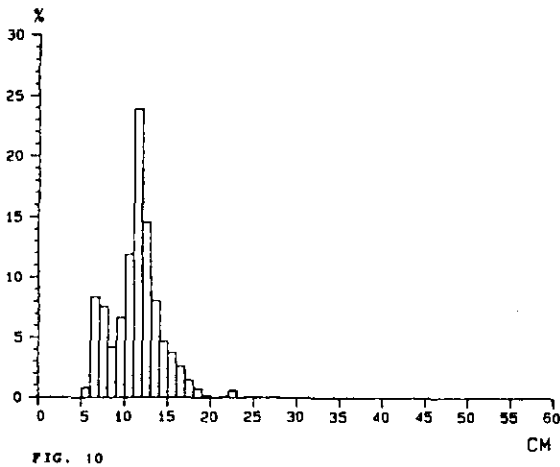
1981 NAFO DIV. 1A+1B  
BYCATCH OF SEBASTES MENTELLA IN SHRIMP TRAWL  
N= 8954



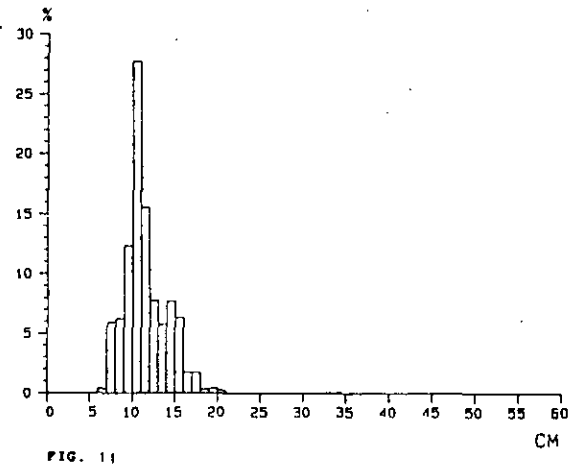
1982 NAFO DIV. 1A+1B  
BYCATCH OF SEBASTES MENTELLA IN SHRIMP TRAWL  
N= 1784



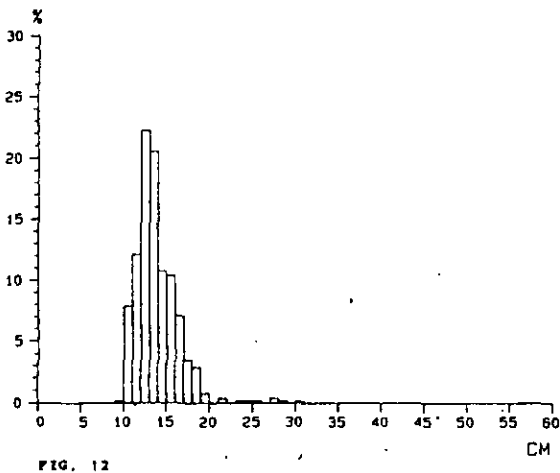
1983 NAFO DIV. 1A+1B  
BYCATCH OF SEBASTES MENTELLA IN SHRIMP TRAWL  
N= 2234



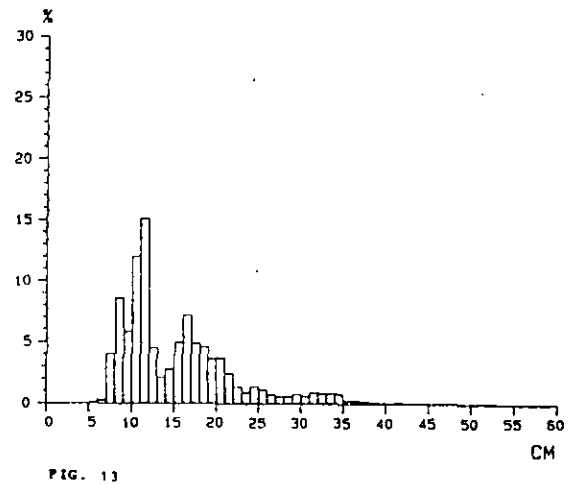
1984 NAFO DIV. 1A+1B  
BYCATCH OF SEBASTES MENTELLA IN SHRIMP TRAWL  
N= 1222



1985 NAFO DIV. 1A+1B  
BYCATCH OF SEBASTES MENTELLA IN SHRIMP TRAWL  
N= 521



1986 NAFO DIV. 1A+1B  
BYCATCH OF SEBASTES MENTELLA IN SHRIMP TRAWL  
N= 3877



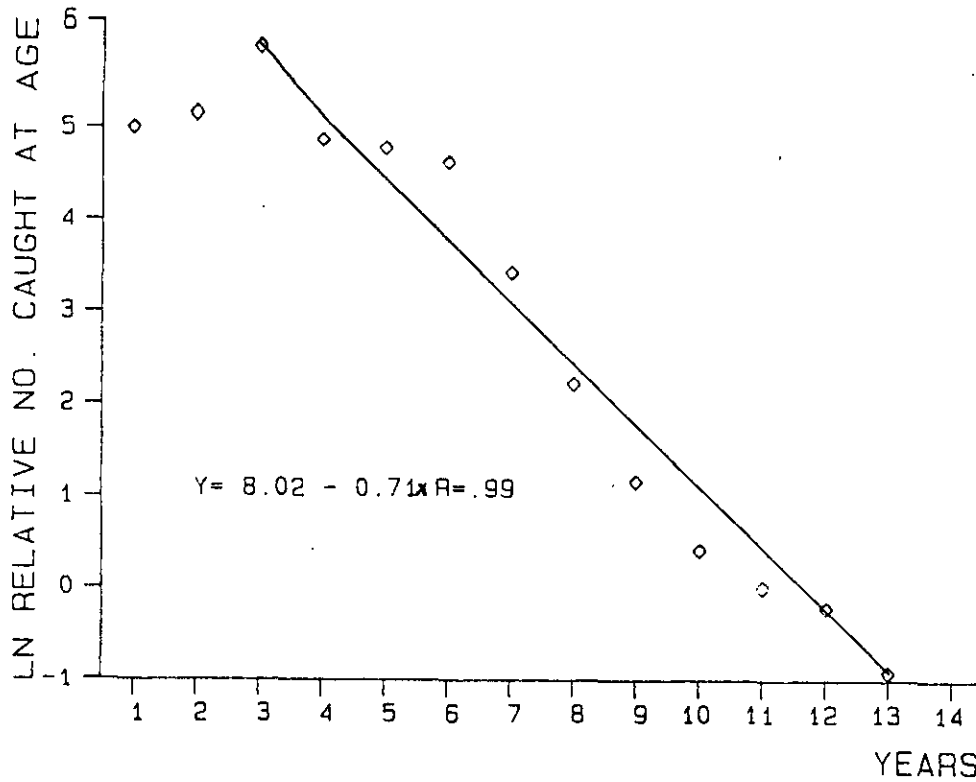


FIG. 14. Catch curve of S. mentella catches. Research trawling by R/V Adolf Jensen in div. 1A. Mean of relative catch number by age groups of 1975, 1977 1978, 1982 and 1983.

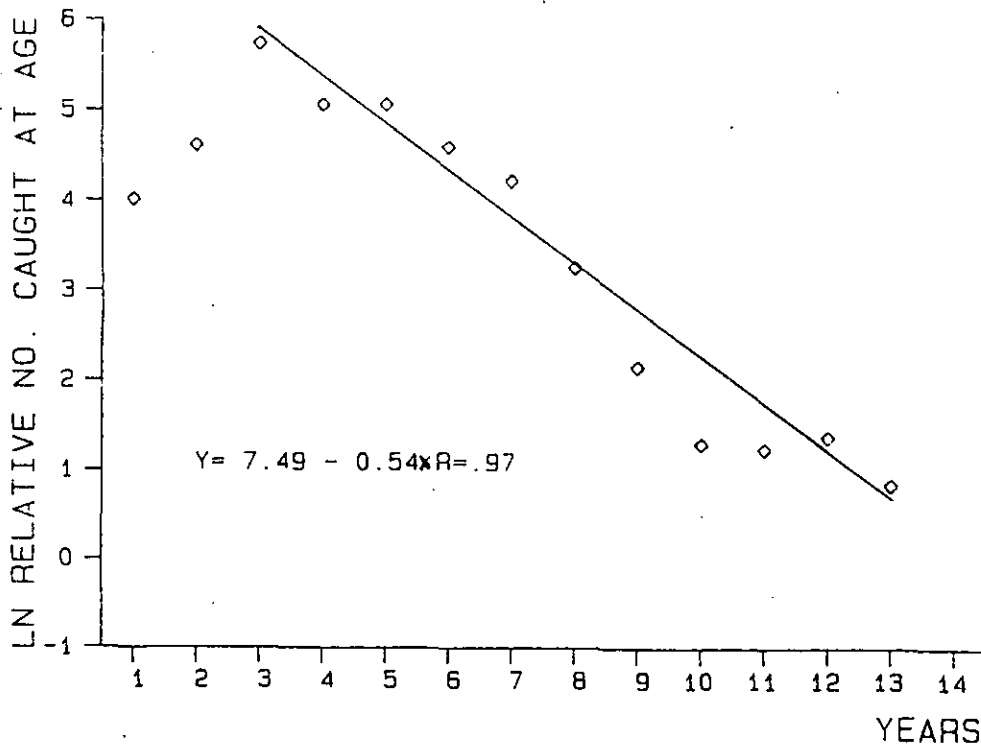


FIG. 15. Catch curve of S. mentella catches. Research trawling by R/V Adolf Jensen in div. 1B. Mean of relative catch