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Distribution of Some Groundfish Species and Short-finned Squid on Scotian Shelf
Slope During the 1982 Fishing Season from Data Obtained by USSR Observers

by

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Abstract

Distribution of catches of some groundfish species and short-finned squids per hauling hour in May-June 1982 was studied. Silver hake and squid distribution in May-June 1982 is shown to be rather different from that of 1981, which may be related to anomalous hydrometeorological conditions. Density of hake aggregations appeared to be a few times higher than in 1981. On the contrary, the squids on the shelf slopes were very sparse. Also, in May-July 1982, some peculiarities were observed in the distribution of haddock, cod and redfish. The size of the by-catch of these species, however, remained insignificant as in previous years.

Introduction

In 1982 the Soviet observers continued collecting of silver hake samples from commercial catches taken in NAFO Div. 4 VXA. Species composition of catches and by-catch taken in the area open for foreign fishery with bottom trawls with mesh size of 60 mm in the codend was also studied. In the present paper a comparative analysis of distribution of silver hake, short-finned squids and some other species in fishing seasons of 1981 and 1982 is given.

Materials and Methods

Samples were collected from May to July inclusive. During this time period two Soviet observers worked on board commercial

vessel. The methods used was the same as in the previous years (Rikhter et al., 1980). Length measurements were taken and otoliths collected in accordance with the previously used methods. 32 603 sp. of hake (163 samples) and 1 000 sp. of squid (5 samples) were measured. 1 000 pairs of otoliths were taken for age determination of hake. Mean catch (kg) per hauling hour by species and month was estimated for each rectangle, $10^{\text{I}} \times 10^{\text{I}}$, (Waldron, 1978, 1979). The number of hauls is indicated.

Silver hake

The distribution of hake catches by month in 1982 is shown in fig.1-3.

In May (fig.1), the aggregations were much more dense, though they occupied a smaller area than in the same period of 1981 (Rikhter et al., 1982). The highest observed abundance was between $61^{\circ}00$ and $61^{\circ}30$ W. In June (fig.2), the area occupied by aggregations considerably extended ($60^{\circ}00$ - $63^{\circ}10$ W) having covered a greater part of the area open for the fishery. Density of aggregations throughout the area did not change noticeably, and continued to be much higher than in 1981. In July 1982 (fig.3) and 1981 the influence of anomalous hydrometeorological conditions seemed to cease. The distribution and density of aggregations appeared to be almost identical. In both years the hake ranged between $60^{\circ}00$ and $63^{\circ}00$ W and was most numerous in the eastern part of the area ($60^{\circ}00$ - $61^{\circ}00$ W). The data given in table 1 show the difference between hake densities in 1981 and May-June 1982. It can be suggested that in May-June 1982 almost all hake aggregations were driven aside by cold waters and concentrated on the shelf slopes. In addition, in May-June, major aggregations were caught at greater depths than in 1981 (table 2).

Short-finned squid

The conditions contributing to moving of the squids onto the shelf in 1982 are believed to be unfavourable, unlike those

for hake. According to the data of observers the by-catch of squids was very insignificant in May (fig.4). In June, the squids were actually absent from the catches. In July, their abundance on the shelf slopes somewhat increased (fig.5), however, the catch per hauling hour appeared to be four times as low as in 1981 (table 1). The squids occurred between 60°00 and 63°00 W.

Haddock

As in 1981, the haddock occurred in extremely small numbers (fig.6,7). As compared with the previous year, the only difference was a complete absence of this species from the catches taken in June 1982 while in 1981 the maximum by-catch of haddock was recorded exactly in June (table 1). This peculiarity can be attributed to the fact that the depths fished in 1981 and 1982 markedly differed (table 2).

Cod

The species was absent from the catches taken in May and June. In July it appeared over a fairly vast area between 60°00 and 63°00 W, (fig.8). Nevertheless, the catch of the cod per hauling hour was nearly five times lower than in 1981 (table 1).

Redfish

Unlike cod and haddock, the redfish was found in the catches only in June in the area between 61°00 and 62°40 W (fig.9). During the same period last year the species was practically absent from the catches (table 1). This might be caused by shifting of the fishing to greater depths compared with June 1981.

Conclusions

On the whole, the commercial season of 1982 (April-June) was characterized by anomalous distribution of silver

hake and short-finned squid. The conditions appeared to be very favourable for fishing for silver hake on the shelf slopes. The abundance of short-finned squids was negligible.

Like in previous years, the by-catch of haddock, cod and refish was small, though the distribution somewhat changed compared with 1981.

References

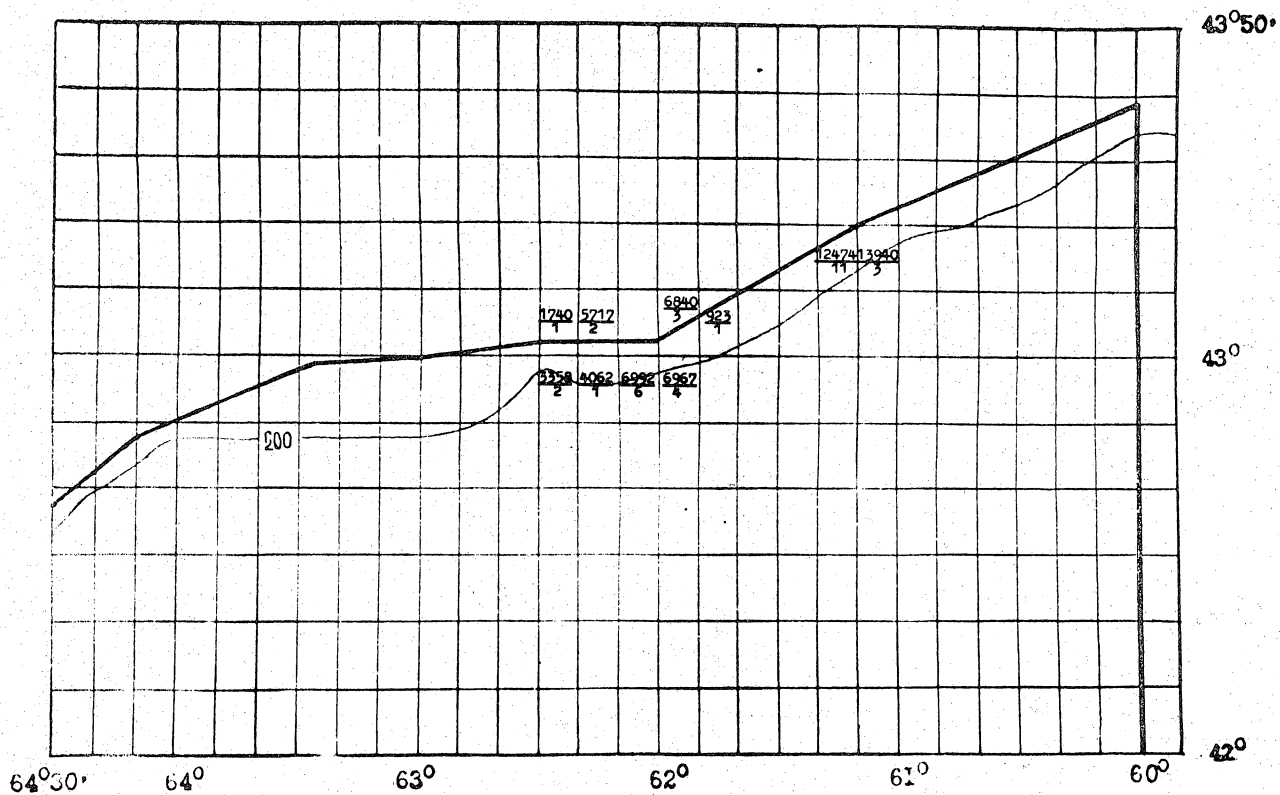
1. Rikhter V.A., Yu.S.Grinkov and V.F.Turok, 1980.
Distribution of short-finned squid and some groundfish species in Division 4W from data obtained by USSR observers during the 1979 fishing season. NAFO SCR Doc. 80/VI/78.
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3. Waldron D.E., 1978. Catch compositions during the 1977 Scotian shelf international fishery, with emphasis on the silver hake and squid (Illex) fisheries. ICNAF Res. Doc. 78/9.
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Table 1 Catches per hauling hour (kg) by species
and months in 1981 and 1982
(in brackets - number of hauls)

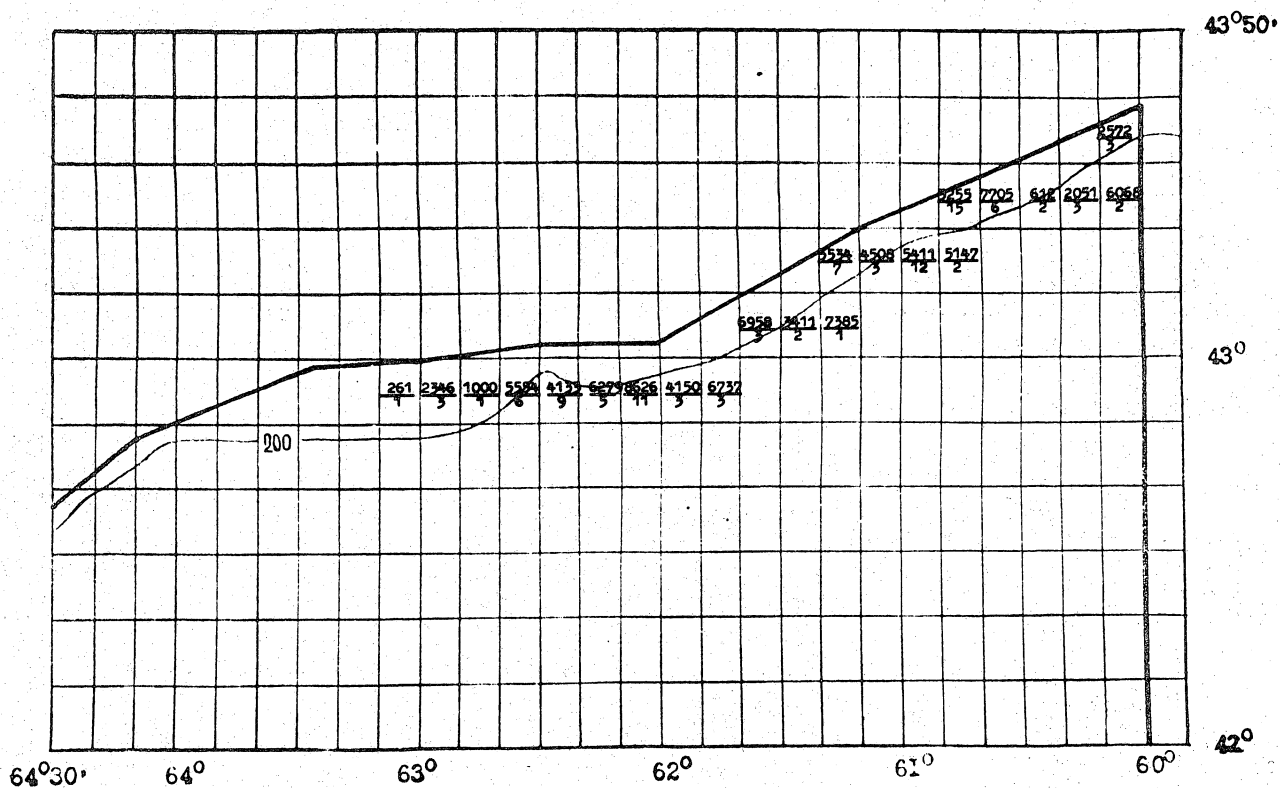
Species	1981			1982		
	May	June	July	May	June	July
Silver hake	2368 (33)	1121 (69)	1909 (68)	8654 (34)	5471 (103)	1724 (99)
Short-finned squid	86 (10)	99 (47)	398 (63)	16 (22)	-	95 (76)
Haddock	3 (10)	20 (46)	8 (37)	22 (23)	-	10 (74)
Cod	2 (4)	30 (31)	64 (67)	-	-	14 (94)
Redfish	106 (3)	1 (2)	-	-	96 (41)	-

Table 2 Hauling depths in 1981 and 1982

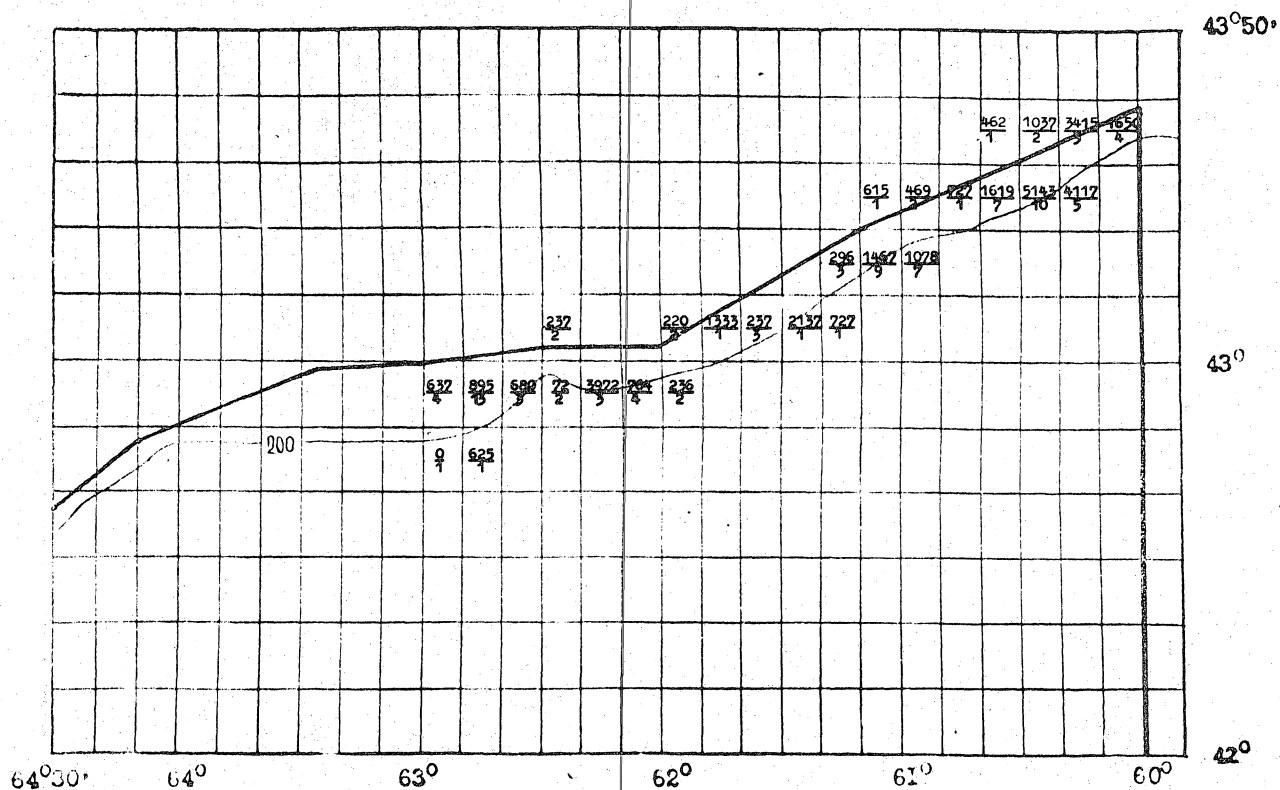
Years	Months	Major hauling depths	Maximum hauling depths	Number of hauls
1981	May	100-130	250	36
	June	100-170	250	98
	July	90-140	180	117
1982	May	130-200	350	72
	June	140-250	370	111
	July	100-165	220	99



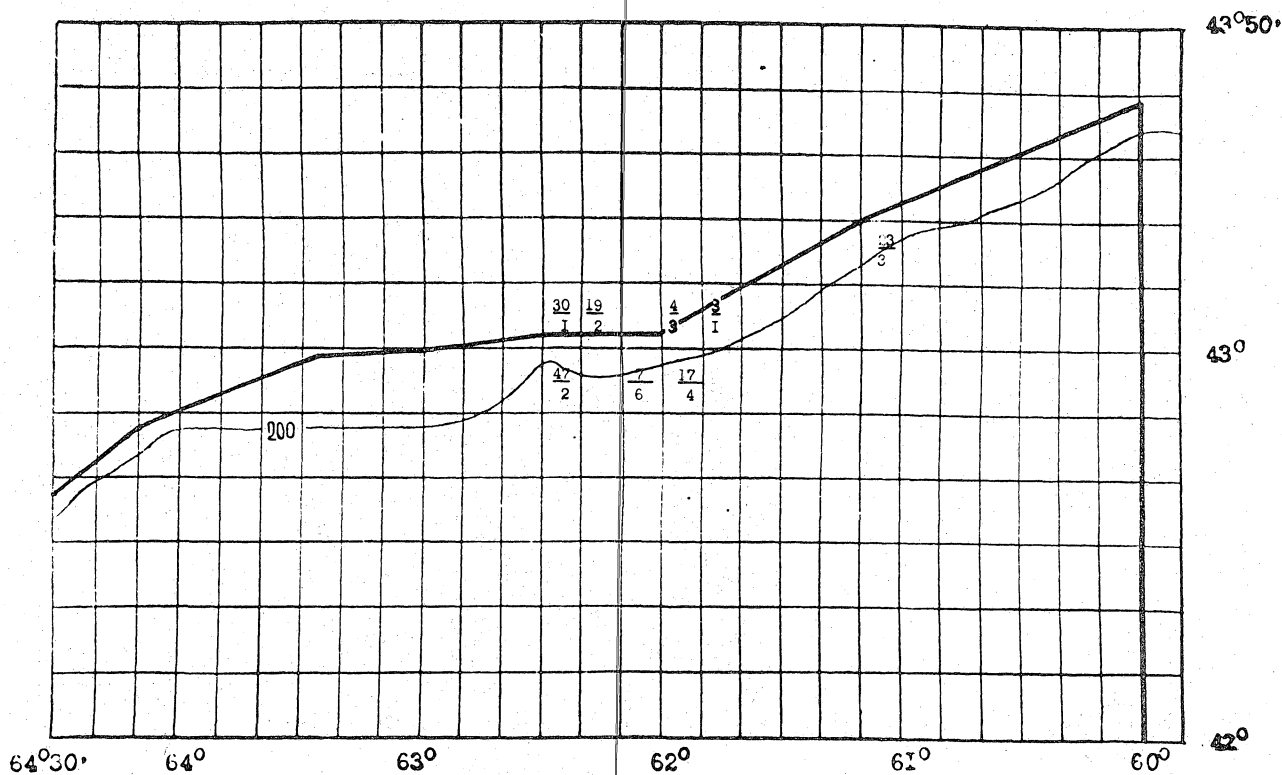
1. Silver hake catches per hauling hour (kg) in May 1982
(in denominator - number of hauls).



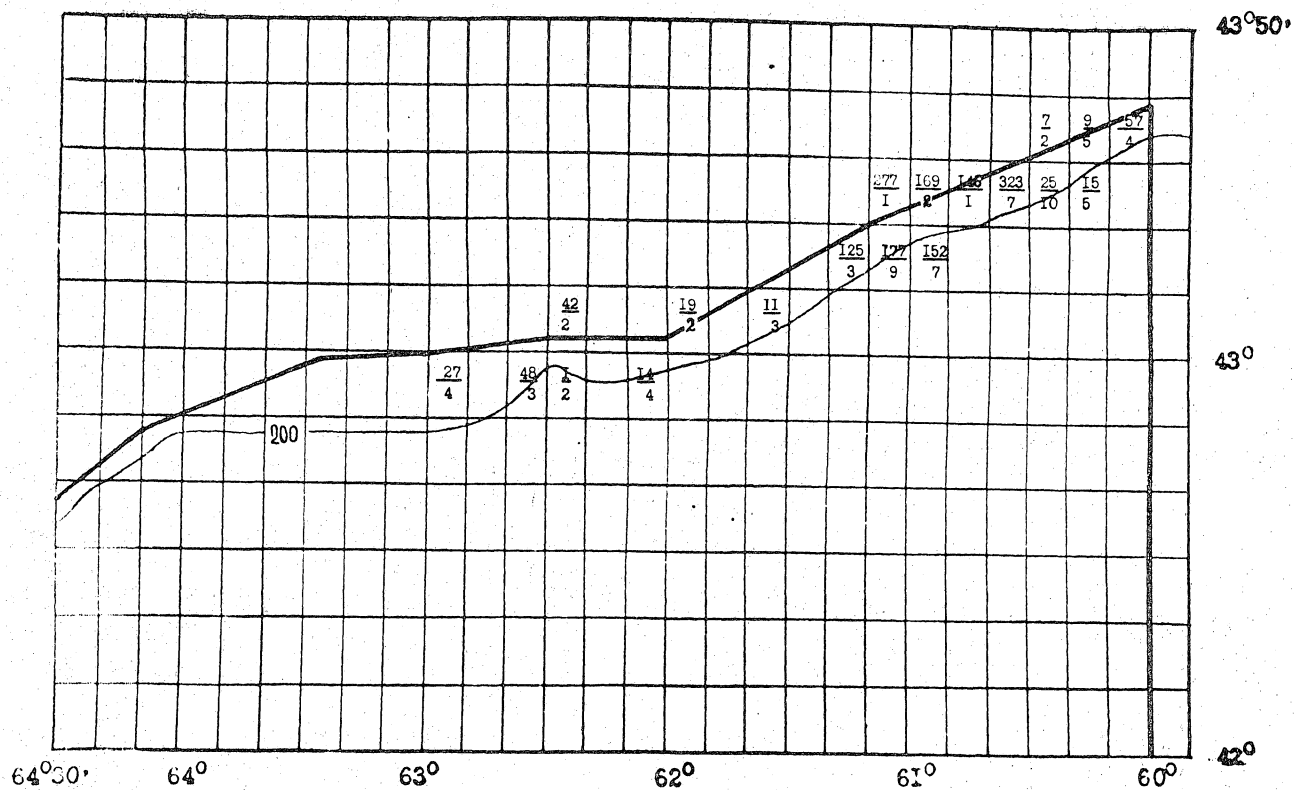
2. Silver hake catches per hauling hour (kg) in June 1982.



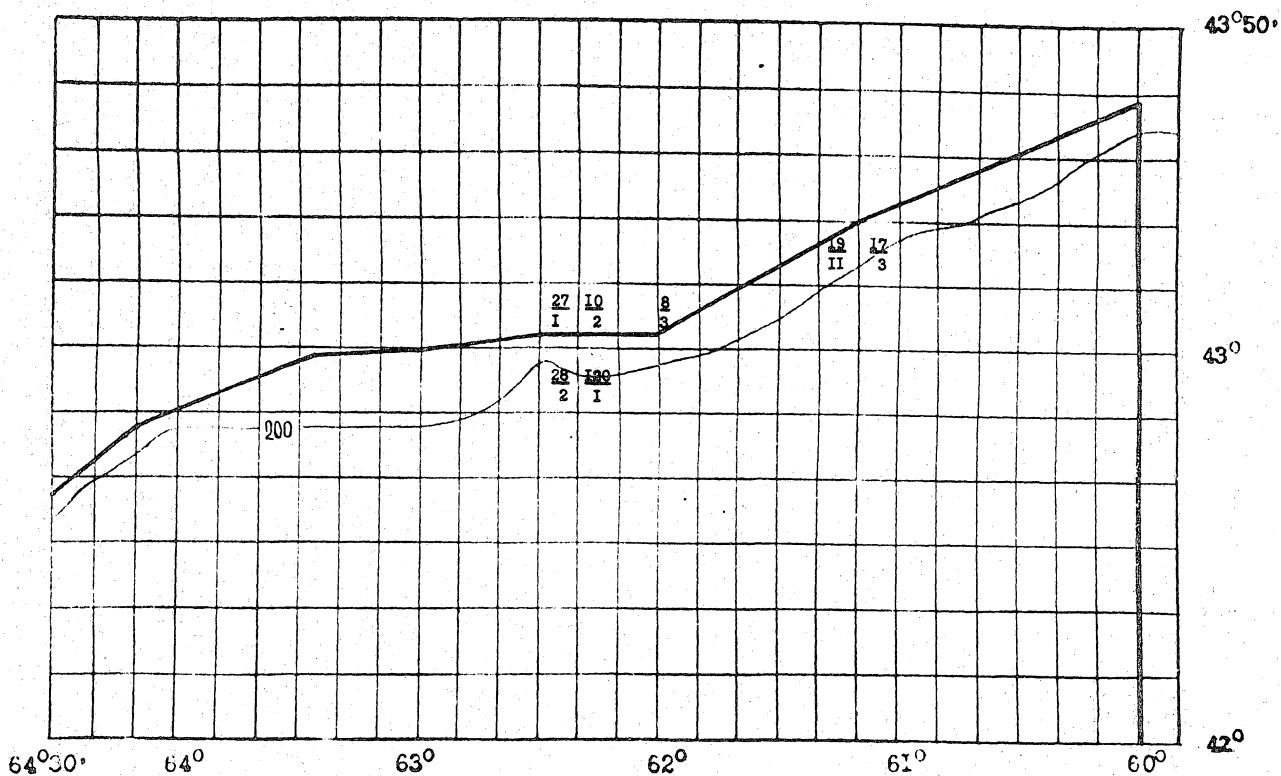
3. Silver hake catches per hauling hour (kg) in July 1982.



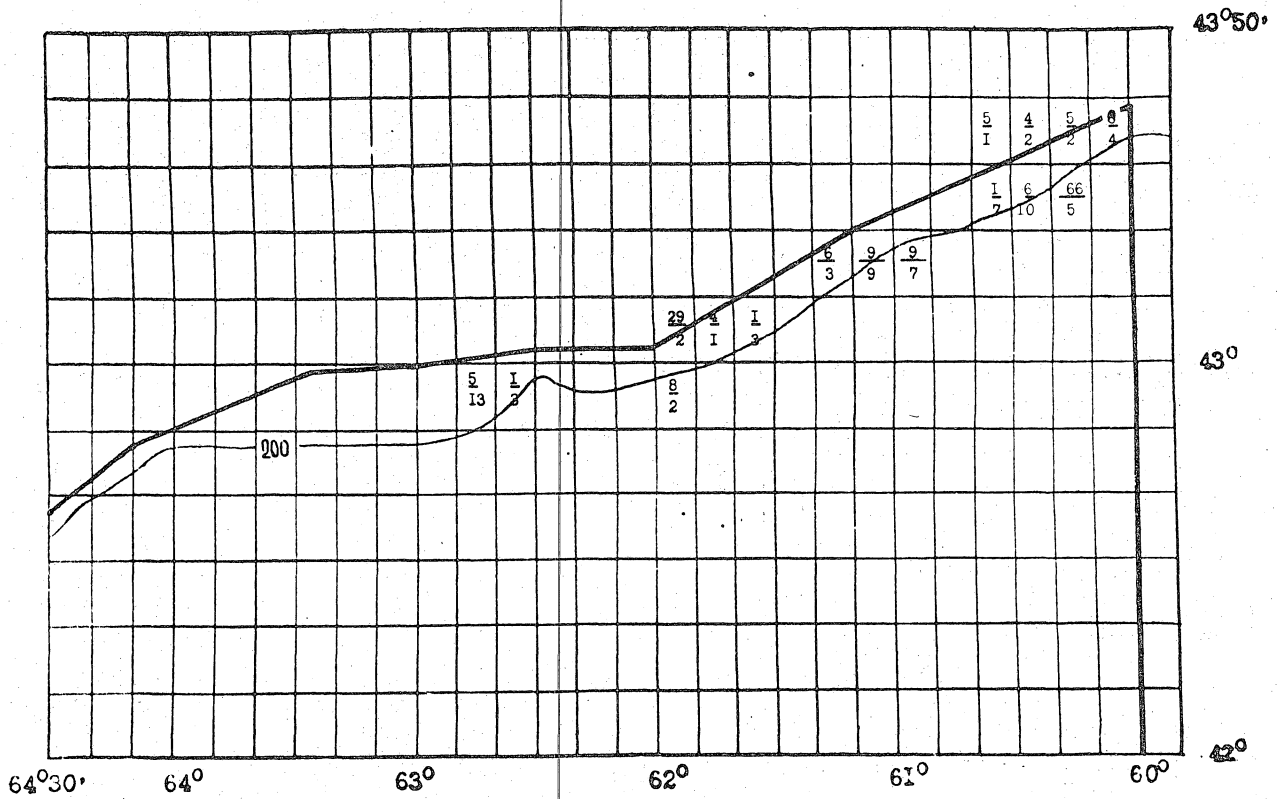
4. Short-finned squid catches per hauling hour (kg) in May 1982.



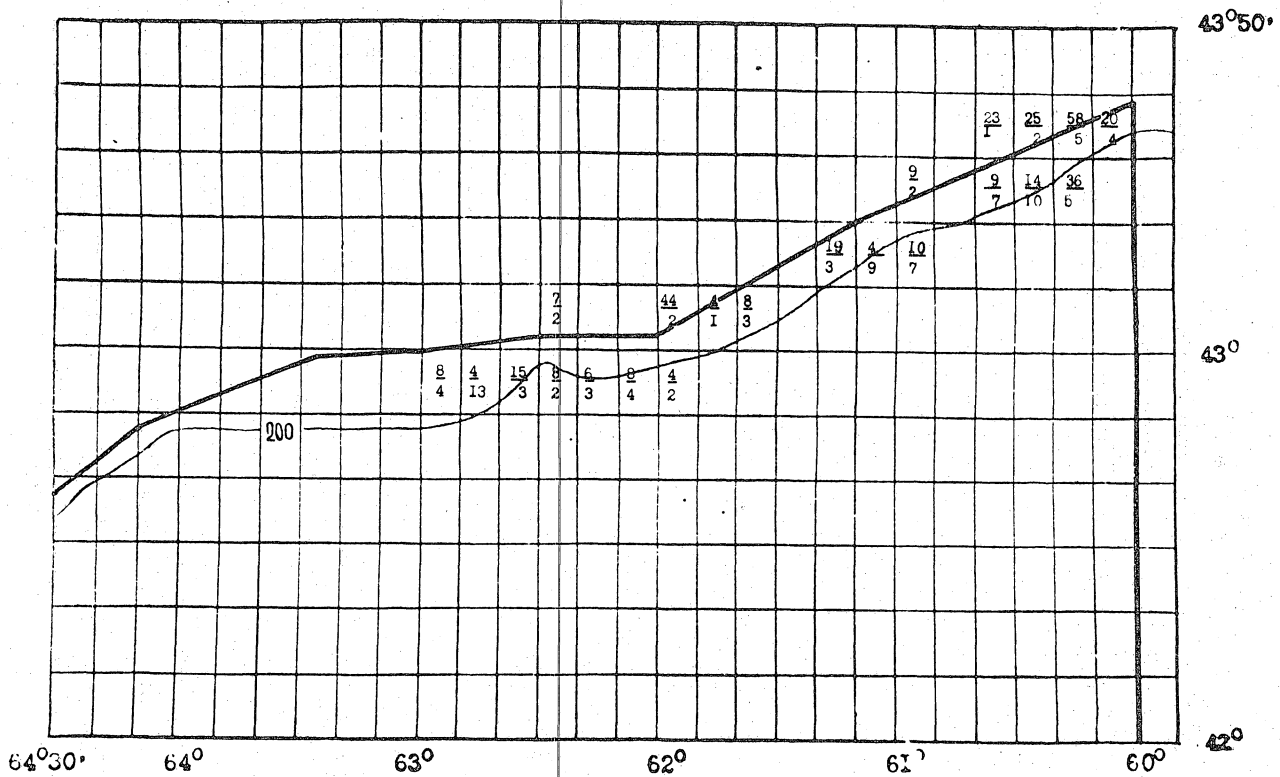
5. Short-finned squid catches per hauling hour (kg) in July 1982.



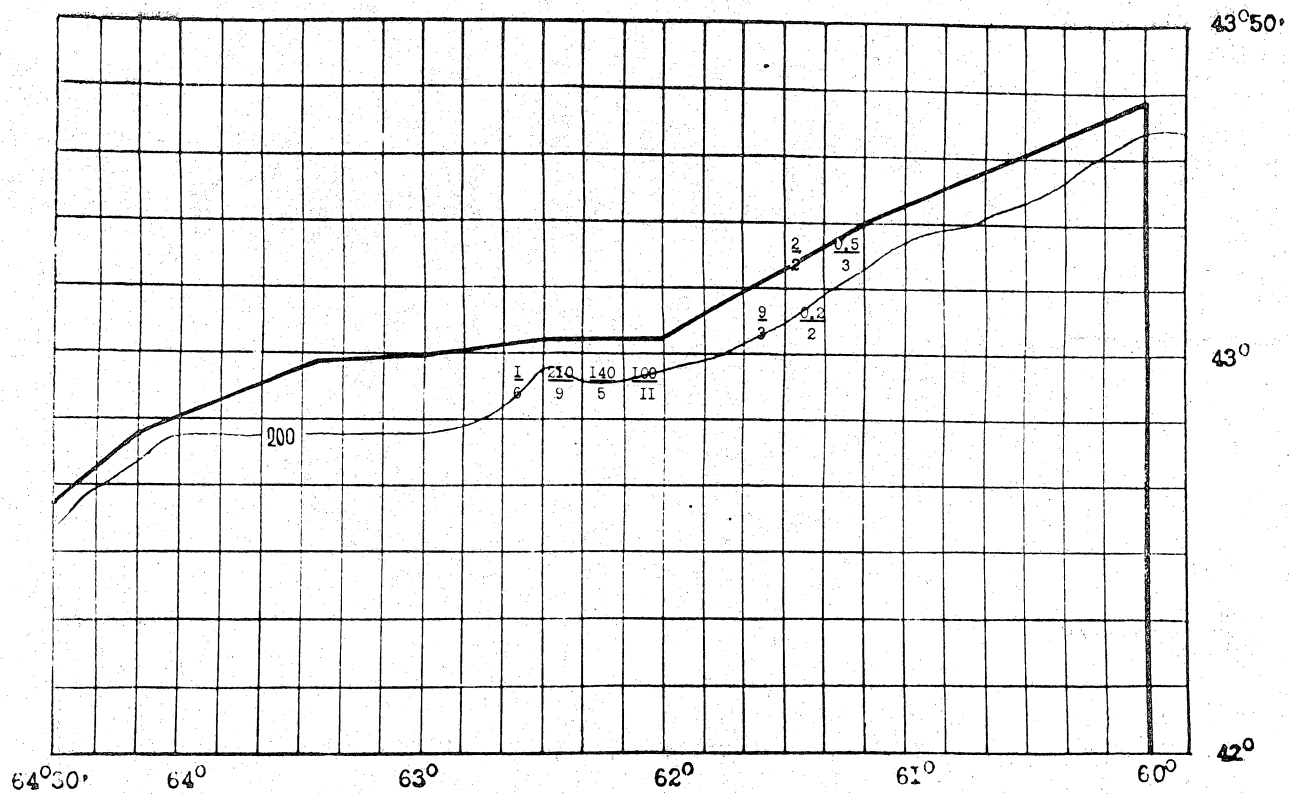
6. Haddock catches per hauling hour (kg) in May 1982.



7. Haddock catches per hauling hour (kg) in July 1982.



8. Cod catches per hauling hour (kg) in July 1982.



9. Redfish catches per hauling hour (kg) in July 1982.