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Distribution of Some Groundfish Species and Short-
finned Squid on the Scotian Shelf during the
1981 Fishing Season, Based on Data from
USSR Observers

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Abstract

The distributions of some groundfish species and short-finned squid catch per hour trawling during the 1981 fishing season are given from data collected by USSR observers. The peculiarities of distribution of silver hake and squid during the period from late July to early August are compared with the same periods of 1979-80. The dense aggregations of these species kept to the shelf slope up to early August 1981. The local changes in the distribution of haddock, cod and redfish are noted and compared with 1980.

Introduction

In accordance with NAFO recommendations, USSR observers continued to collect data for estimating the length and age composition of commercial catches of the species for which quotas were allocated to the USSR in NAFO Division 4VWX. The species composition of the catches and the by-catch of other species were also studied. This paper describes the distribution and density of aggregations of some groundfish species and the short-finned squid on the Scotian Shelf allocated for fishing with bottom trawls containing 60-mm mesh codends.

Materials and Methods

The sampling was carried out in the period from late May to early August inclusive. Two or three USSR observers were constantly present aboard the commercial vessels throughout this time. The data were recorded according to the same procedure used in previous years (Rikhter *et al.*, 1979, 1980). The length measurements (Table 1) were taken in accordance with NAFO methodical directions. The otoliths were collected according to standard AtlantNIRO methods. The whole area was divided into 10' x 10' rectangles (Waldron, 1978, 1979), and the mean catch (kg) per hour trawling by species and month was estimated for each rectangle.

Results and Discussion

Silver hake (*Merluccius bilinearis*)

The distribution of silver hake catches by month in 1981 are shown in Fig. 1. In May 1981, the catches south of the limit-line occurred in a smaller area compared to previous years, partly due to the short period of data collection during this month. In June, the species occurred in the area similar to that of the three previous years of observation. The large aggregations of hake kept mainly to the shelf slope between 60°00' and 63°00'W during the whole of July, which was different from 1980. Early in August, the successful fishing was still continued in the area south of the limit-line. In this period, the hake scattered over a greater area and occurred between 60°00' and 64°00'W. In August 1979 and 1980, the species was practically absent on the shelf slope and occurred to the north of the limit-line (Rikhter *et al.*, 1980, 1981). This difference can be attributed to the peculiarities of the hydrological regime on the Scotian Shelf during the 1981 summer.

Short-finned squid (*Illex illecebrosus*)

Squid were caught as insignificant by-catch during the directed fishery for silver hake in May (Fig. 2) which is consistent with previous data. The squid aggregations were more abundant but the species occurred over a smaller area than in 1980. In June 1981, squid ranged between 61°40' and 64°00'W along the shelf edge. Maximum density of aggregations was higher than in the same period of 1979 and 1980 (Rikhter *et al.*, 1980, 1981). In July 1981, the distribution of squid catches was about the same as in 1980, catches being taken between 60°00' and 63°00'W. Maximum density of aggregations in August was lower in 1981 than in 1980. In early August 1981, large numbers of squid occurred mainly on the shelf slope south of the limit-line, the catches being made between 60°00' and 64°30'W. It can be noted that the distribution of squid was similar to that of silver hake during August 1981. Moreover, the highest recorded catches of silver hake and squid were practically from the same area (62°30' to 62°40'W for hake and 62°40' to 62°50'W for squid). As is evident from the data, this coincidence is not occasional and can be related to the same reasons.

Haddock (*Melanogrammus aeglefinus*)

The distributions of haddock catches are shown in Fig. 3. During May, July and August 1981, the haddock by-catch was much smaller than in the same months of 1980 (Rikhter *et al.*, 1981). In June, the by-catch was at approximately the same level in both years. In May and August of 1981, haddock were practically absent from the catches, due to the short period of observation during these months.

Atlantic cod (*Gadus morhua*)

During May to August 1981, cod by-catch was insignificant (Fig. 4), although in June and July it was larger than in 1980. Compared to 1980, the June 1981 catch occurred mainly in the eastern part of the area allowed for fishing with 60-mm mesh bottom trawls.

Redfish (*Sebastes mentella*)

Compared with previous years, redfish occurred in the catches occasionally in 1981 (Fig. 5). The catches were taken mainly in May when fishing was conducted at greater depths in the next months.

Conclusions

In 1981, the dense aggregations of silver hake were observed in the area south of the limit-line during May to early August, i.e. during a longer period in 1981 than in 1980. This applied equally to squid which were observed in large numbers on the shelf slope in June. The longer period of occurrence of these species along the slope may be explained by peculiarities of the hydrological regime on the Scotian Shelf during the summer of 1981. The by-catches of haddock, cod and redfish continued to be insignificant in 1981, but local changes in distribution between 1980 and 1981 were evident.

References

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Table 1. Materials collected by USSR Observers on the Scotian Shelf in 1981.

Species	Length measurements		Number for ageing
	Samples	Measured	
Silver hake	181	36,482	1,498
Redfish	5	1,018	-
Argentine	3	653	84
Haddock	1	165	-
Cod	1	58	-
Short-finned squid	34	6,643	-
Total	225	45,019	1,582

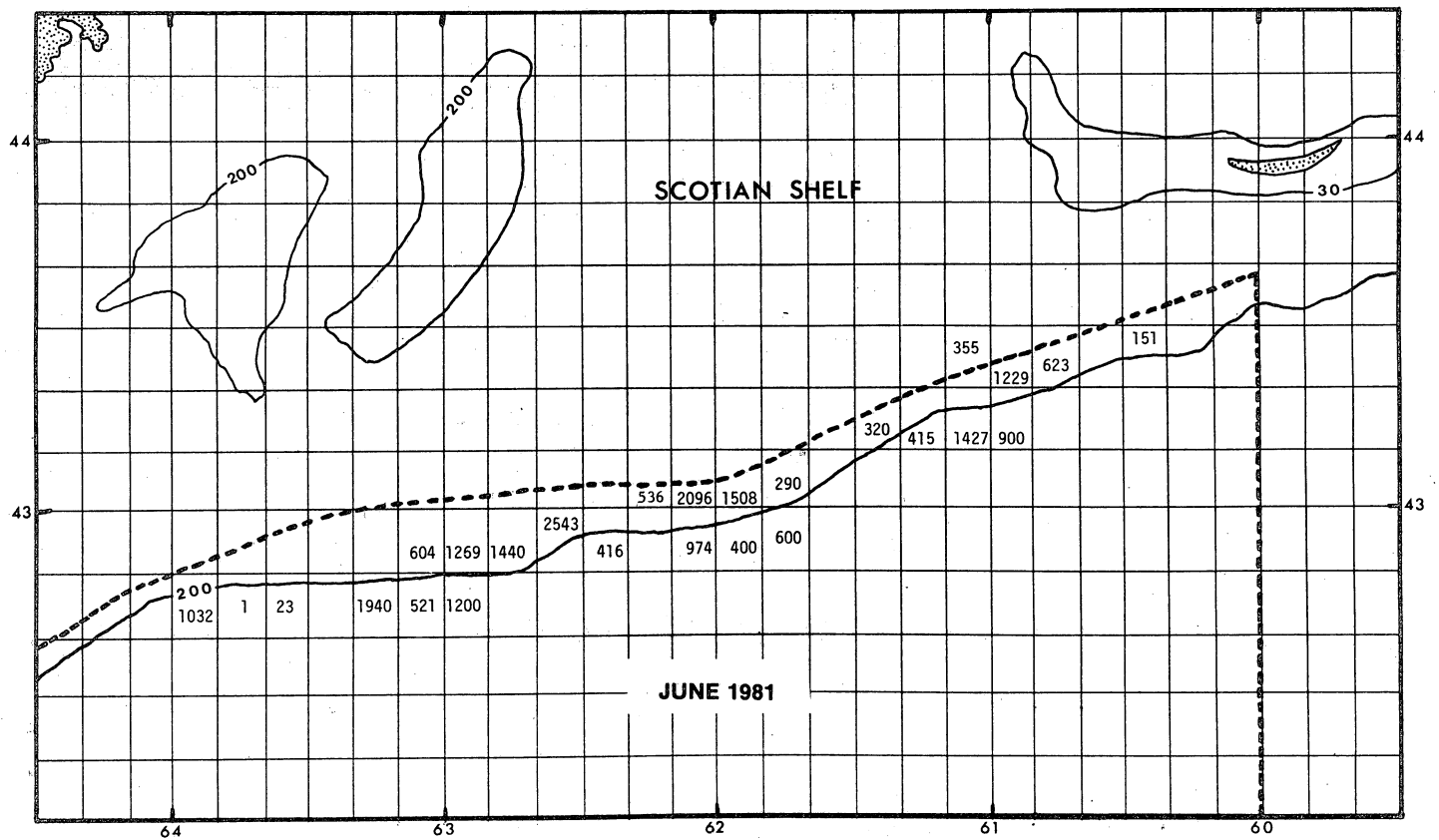
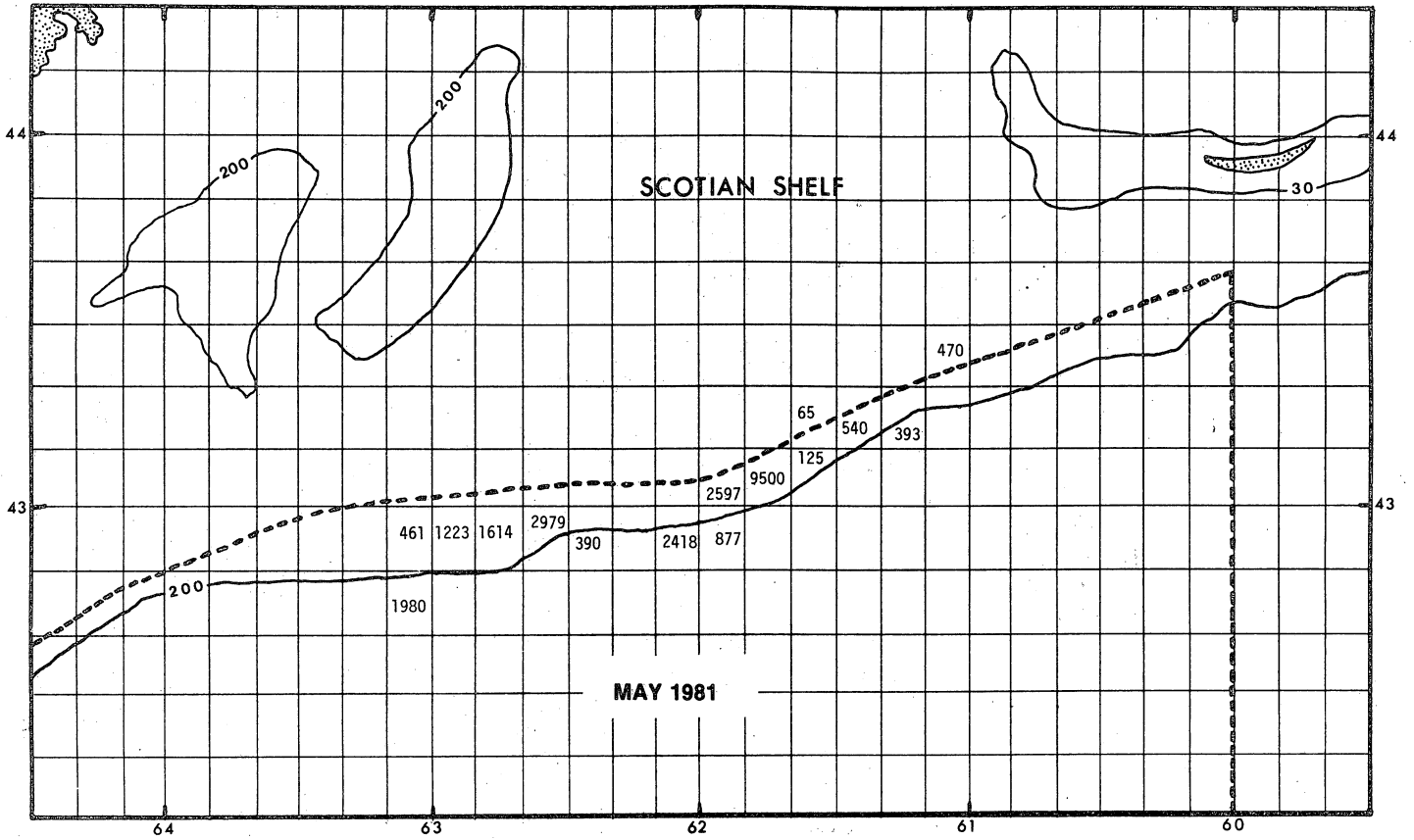


FIGURE 1. SILVER HAKE CATCH PER HOUR TRAWLING, MAY AND JUNE 1981

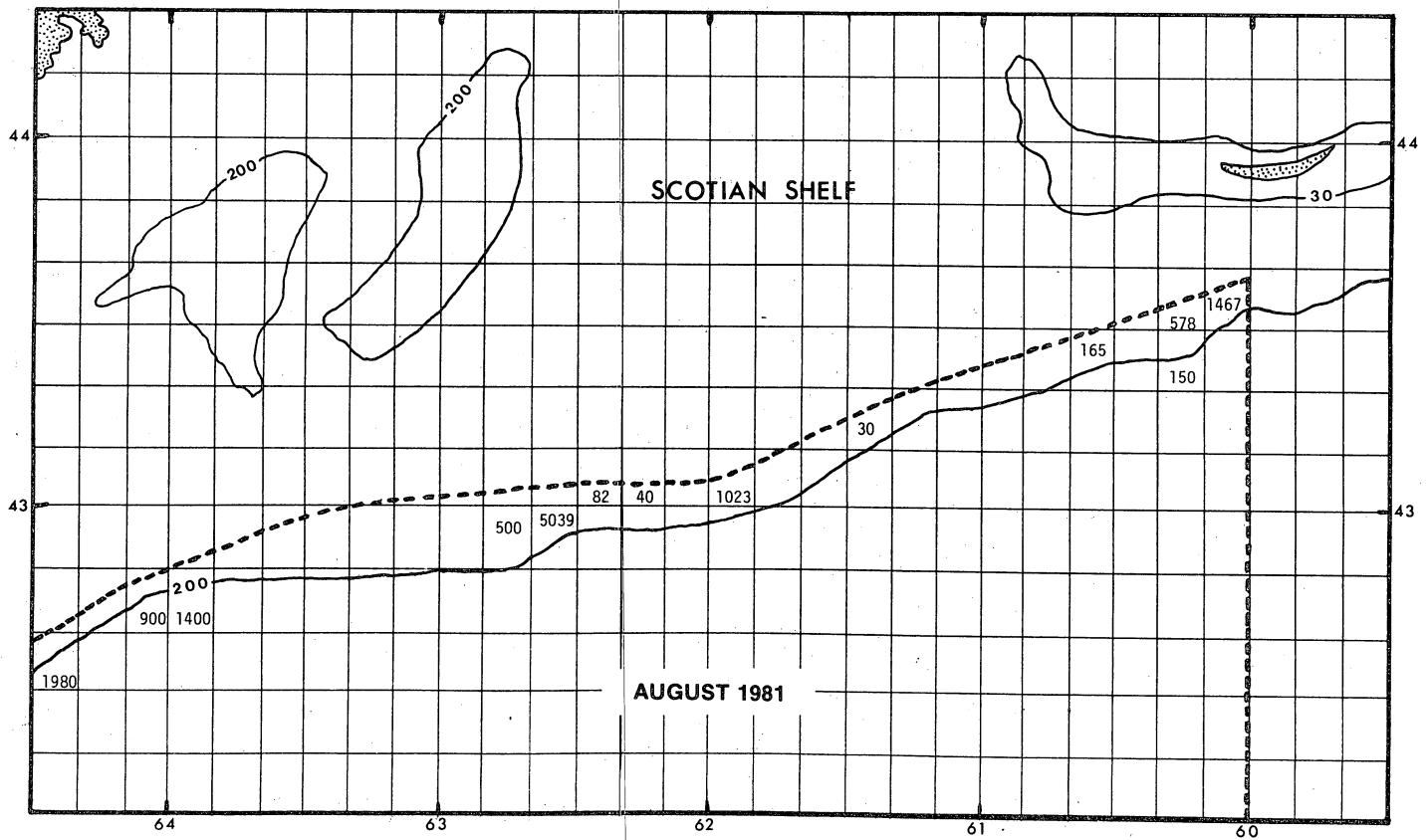
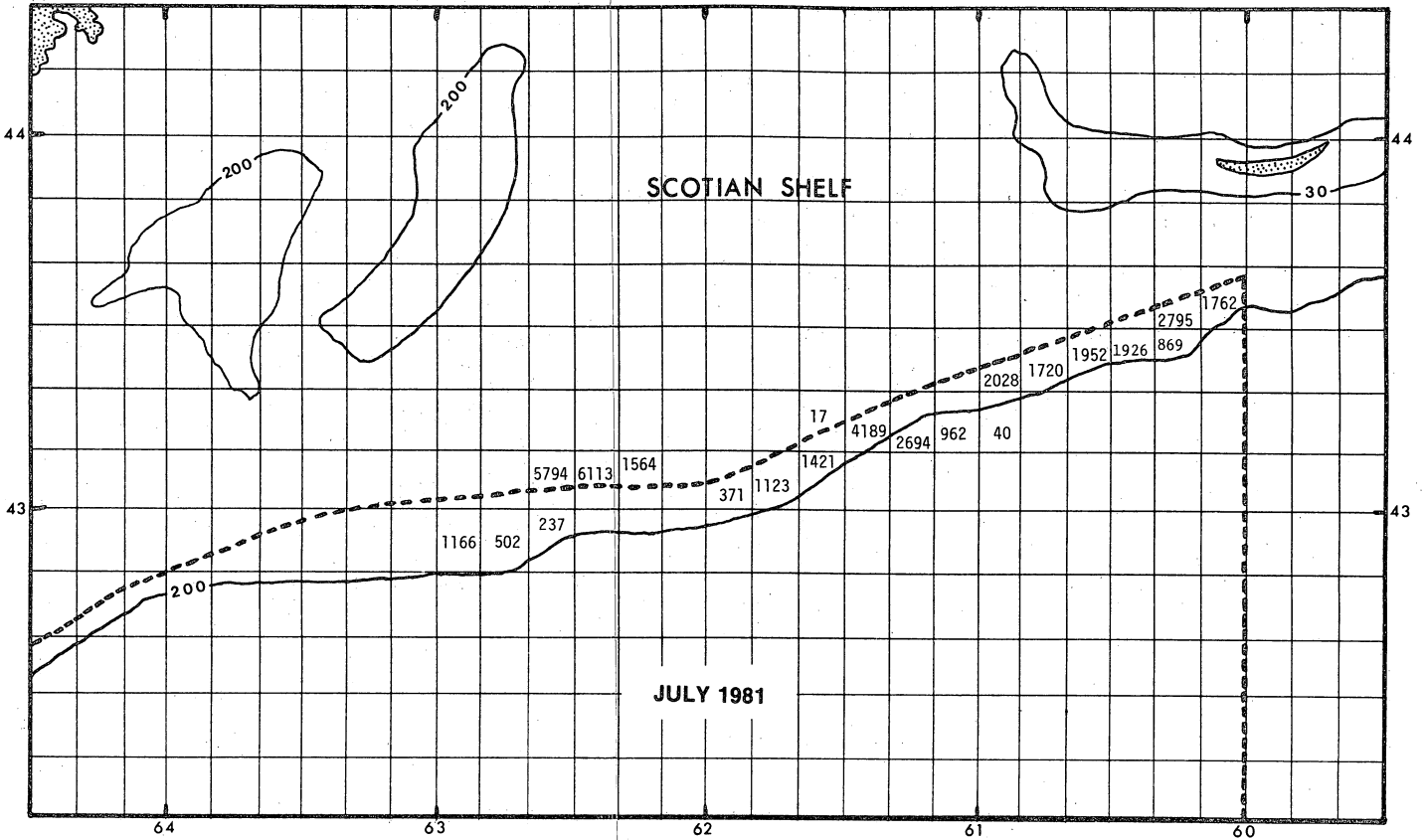


FIGURE 1 (CONT'D). SILVER HAKE, JULY AND AUGUST 1981.

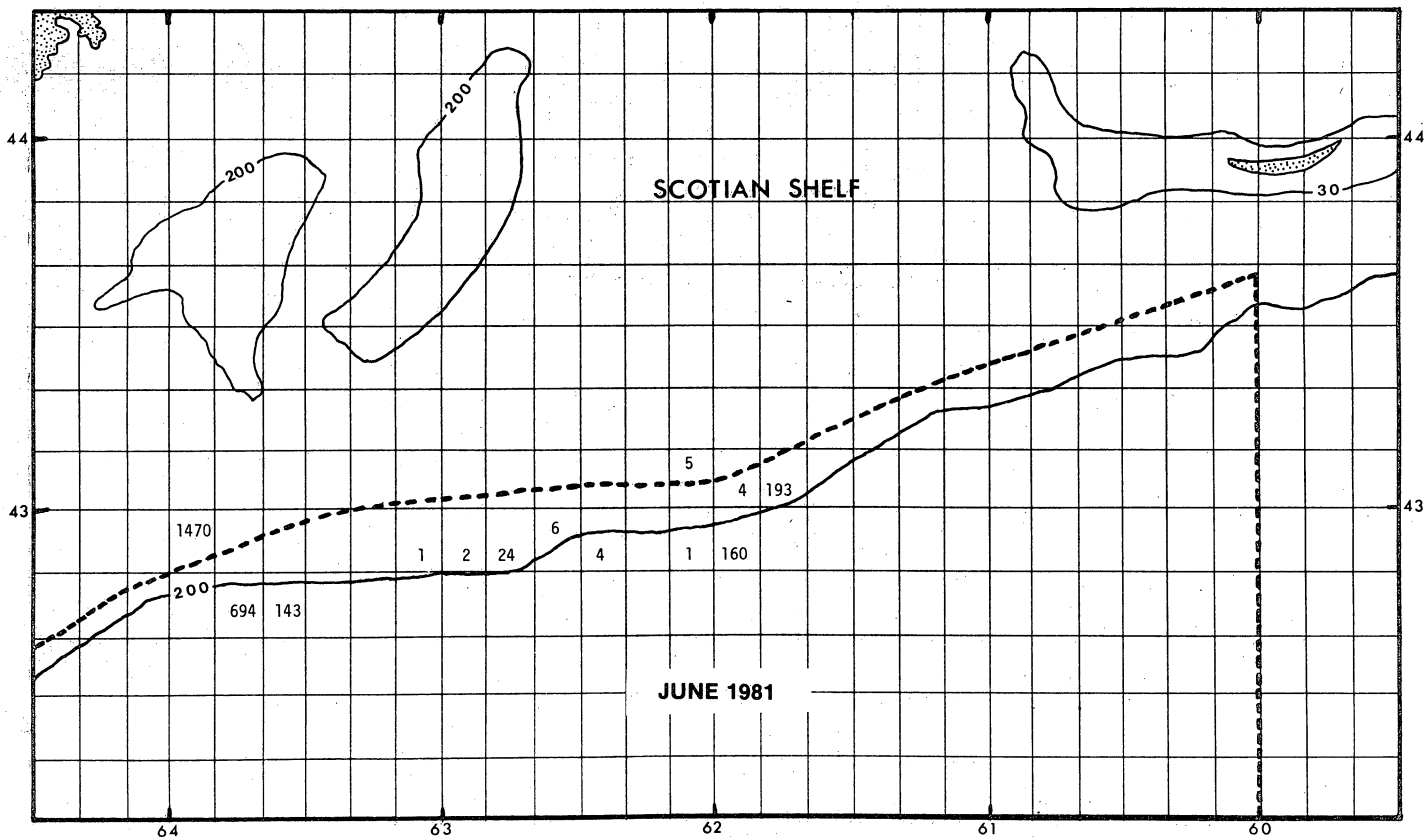
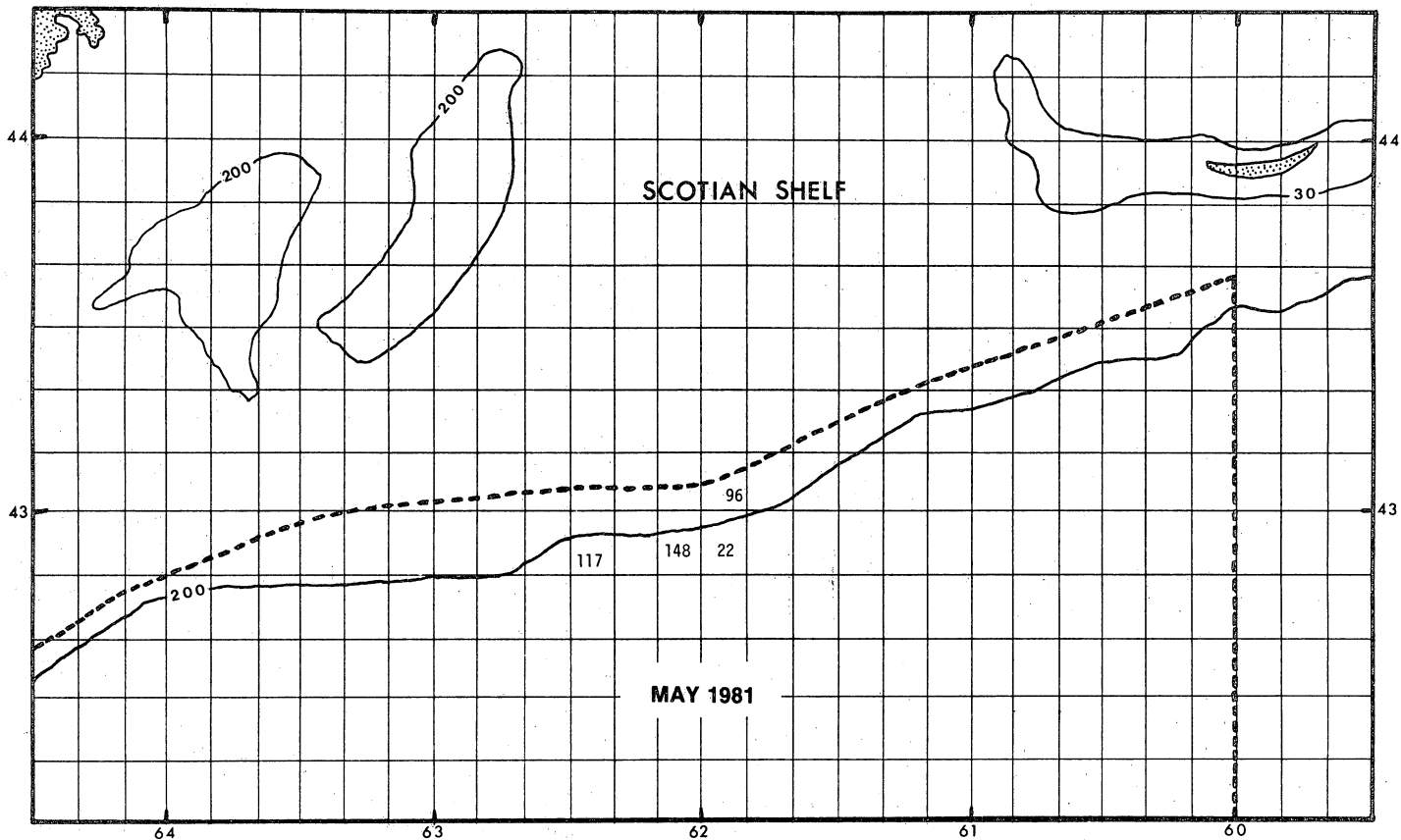


FIGURE 2. SQUID-ILLEX CATCH PER HOUR TRAWLING, MAY AND JUNE 1981

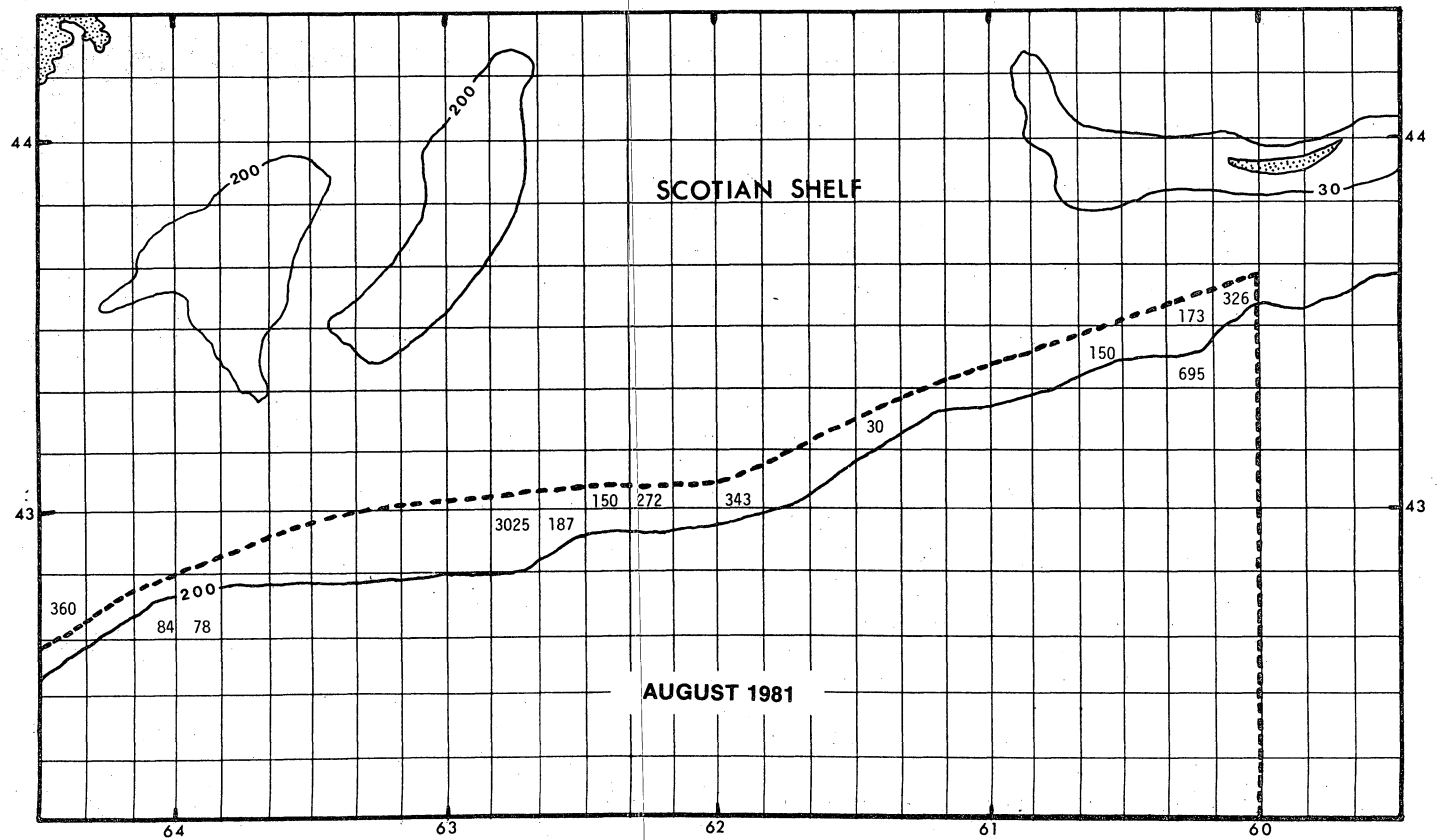
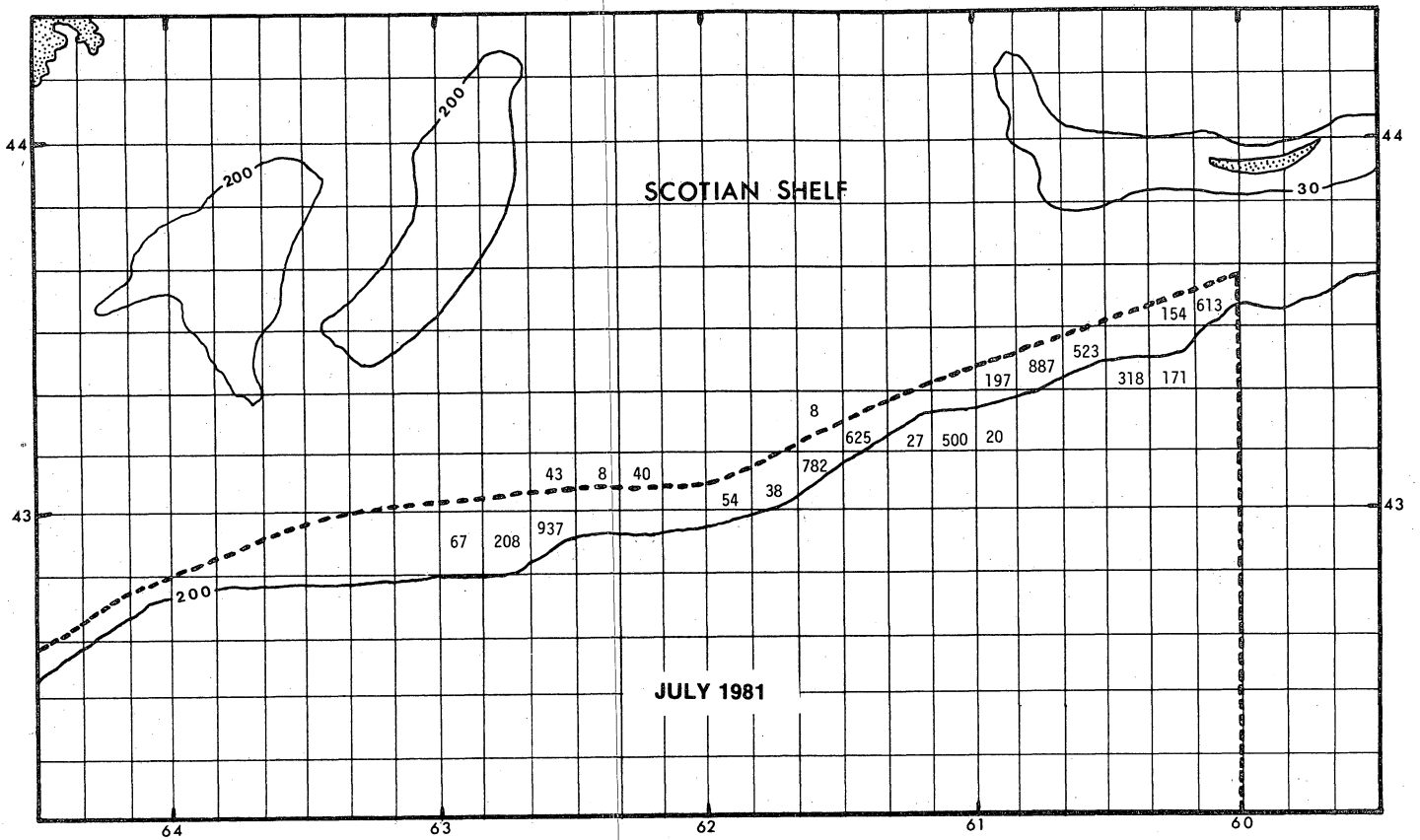


FIGURE 2 (CONT'D). SQUID-ILLEX, JULY AND AUGUST 1981.

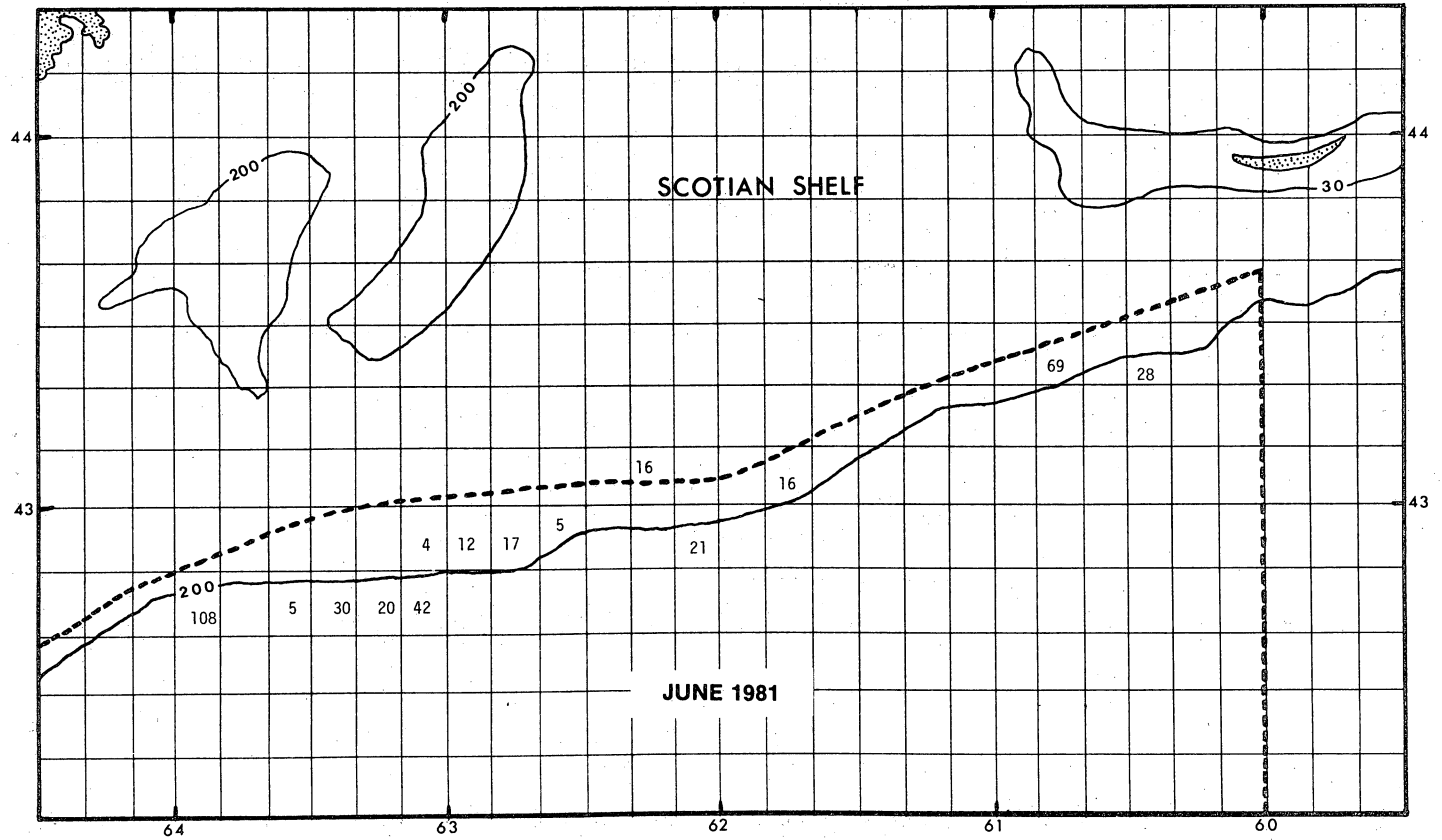
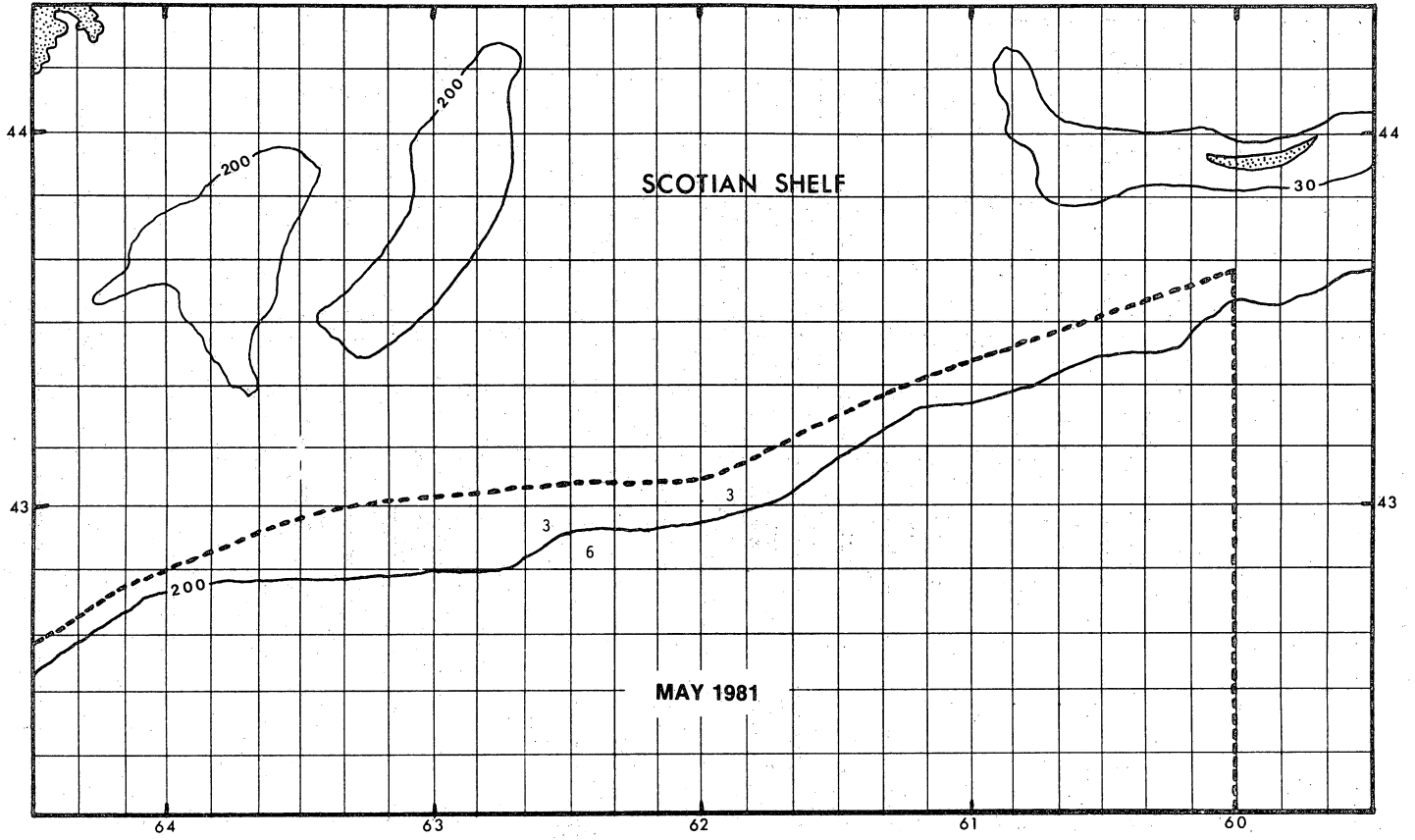


FIGURE 3. HADDOCK CATCH PER HOUR TRAWLING, MAY AND JUNE 1981.

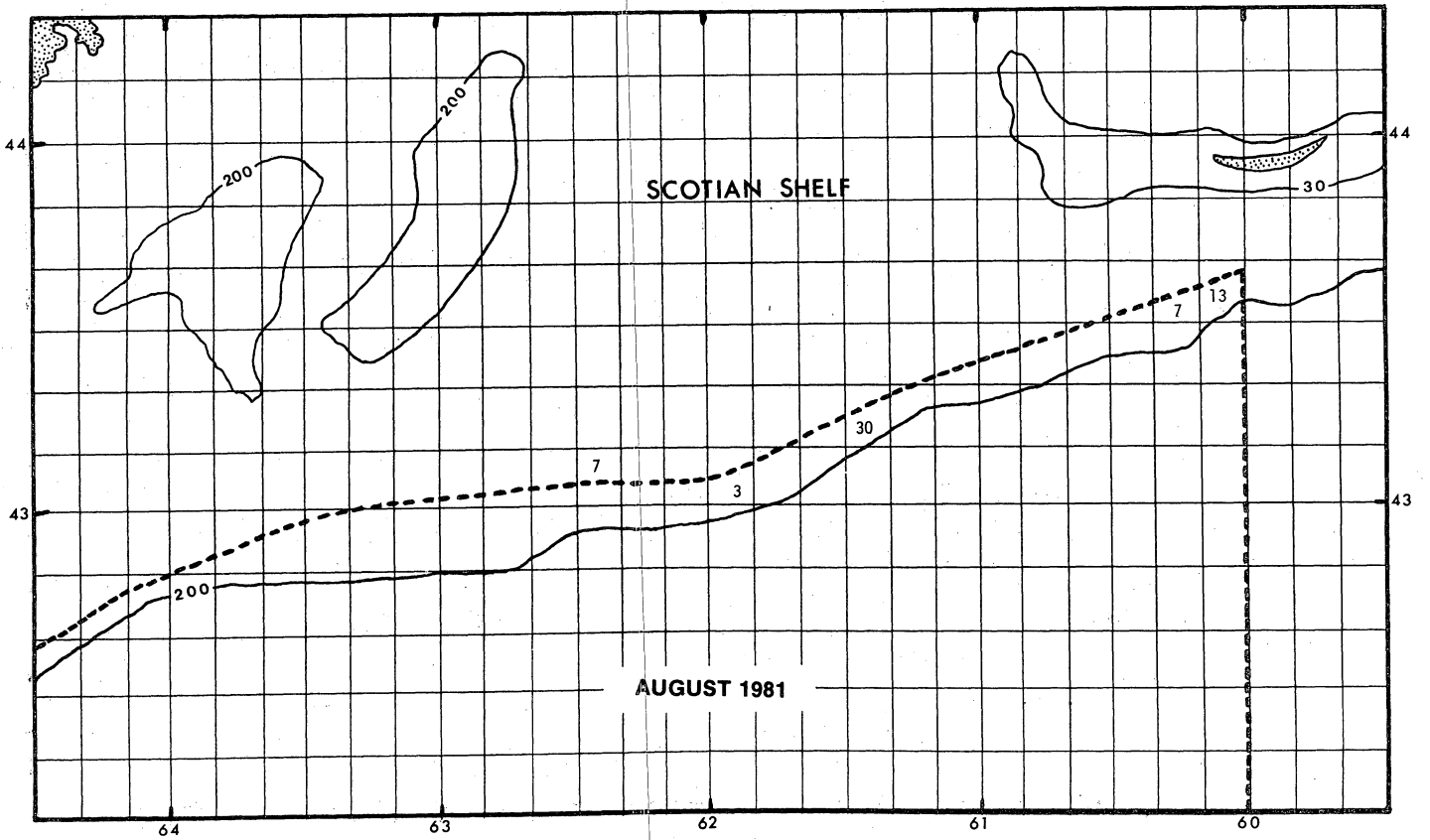
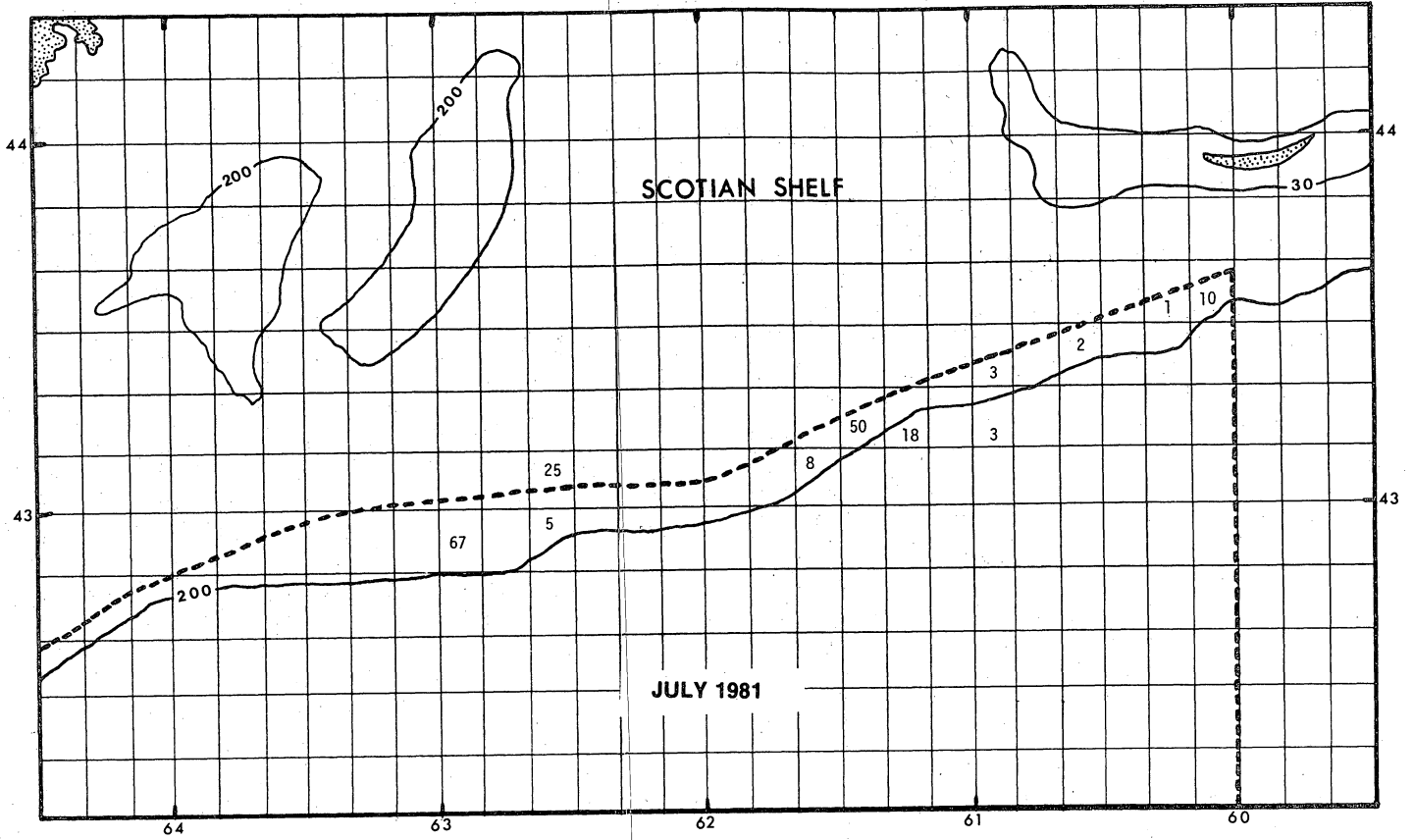


FIGURE 3 (CONT'D). HADDOCK, JULY AND AUGUST 1981.

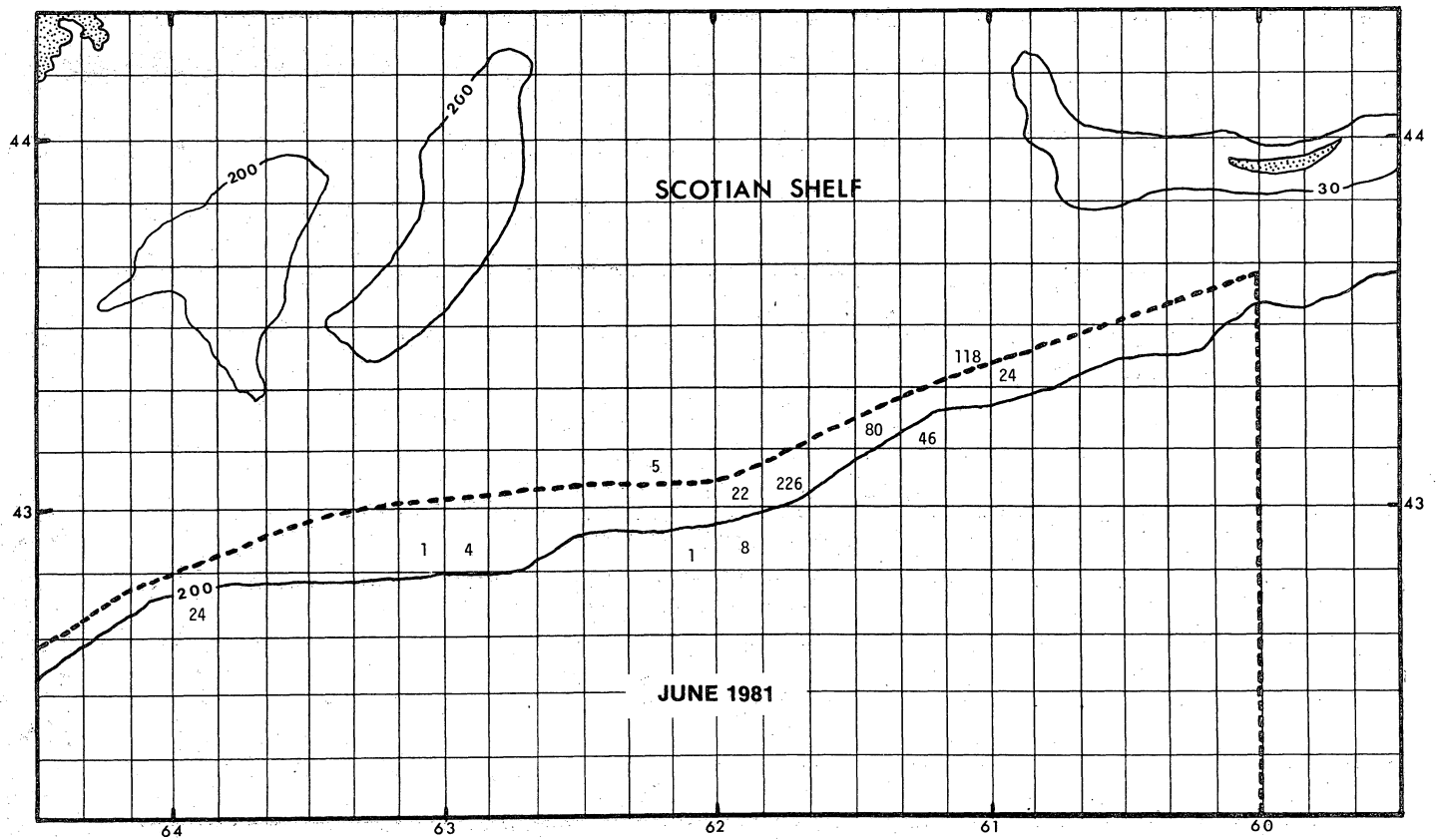
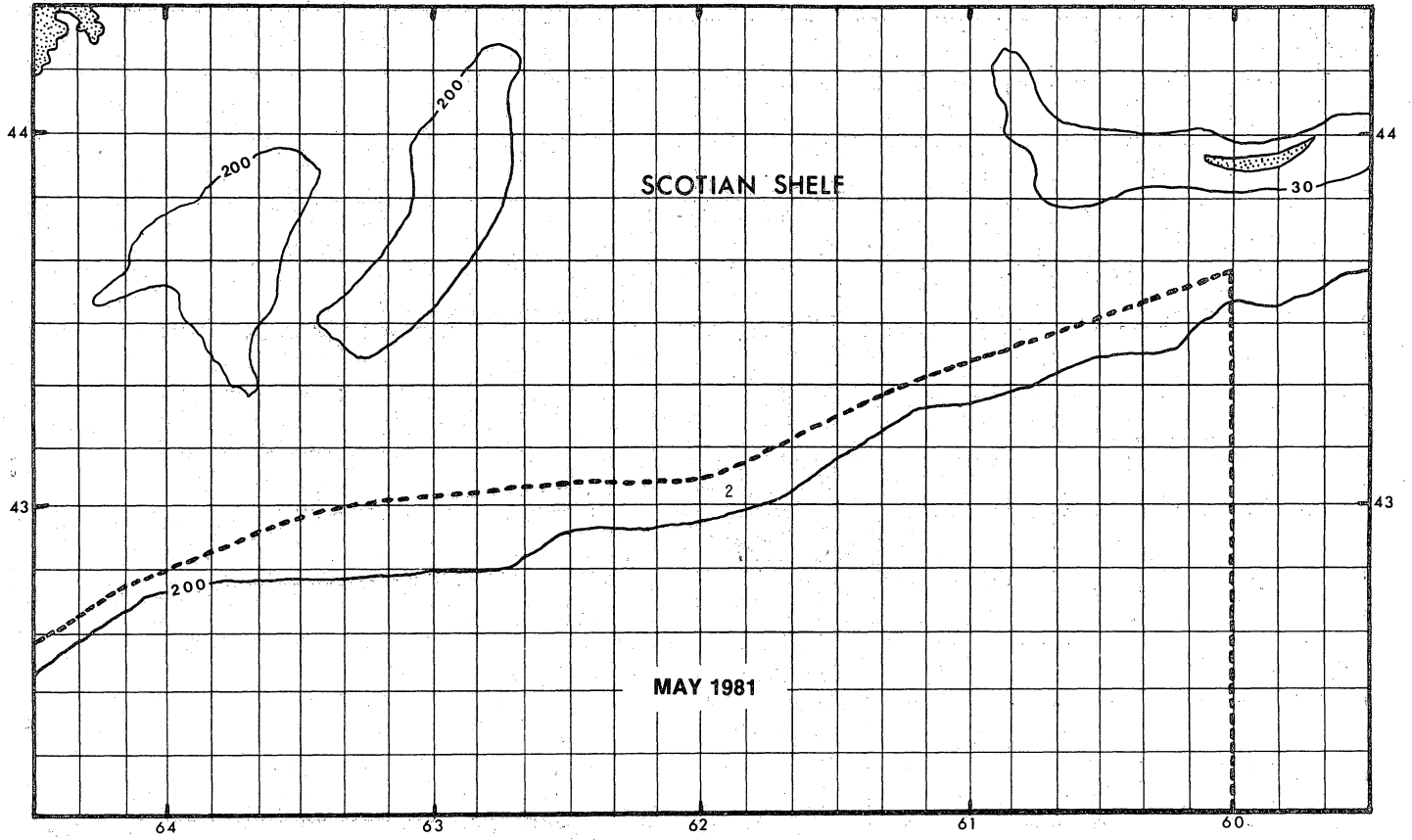


FIGURE 4. ATLANTIC COD CATCH PER HOUR TRAWLING, MAY AND JUNE 1981.

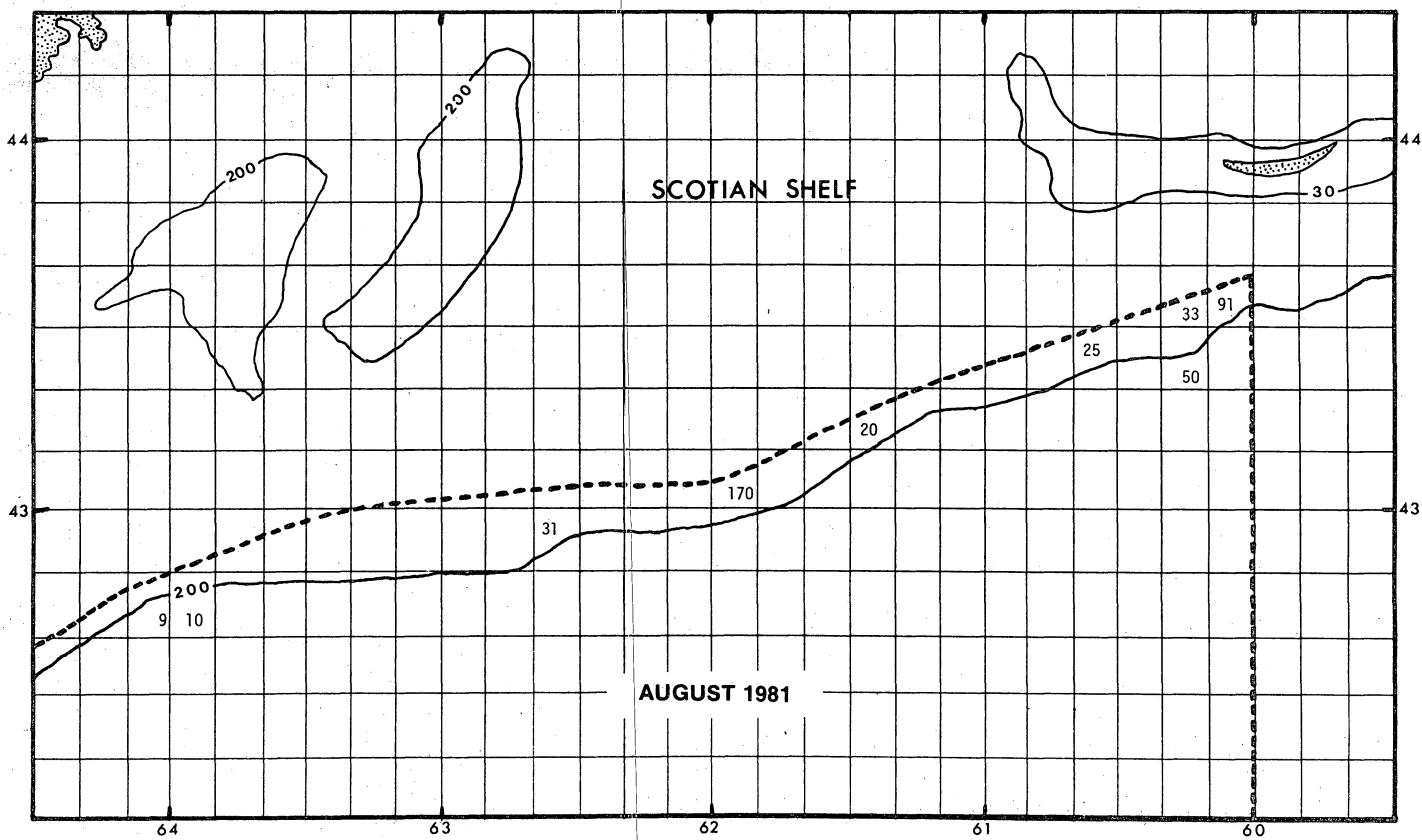
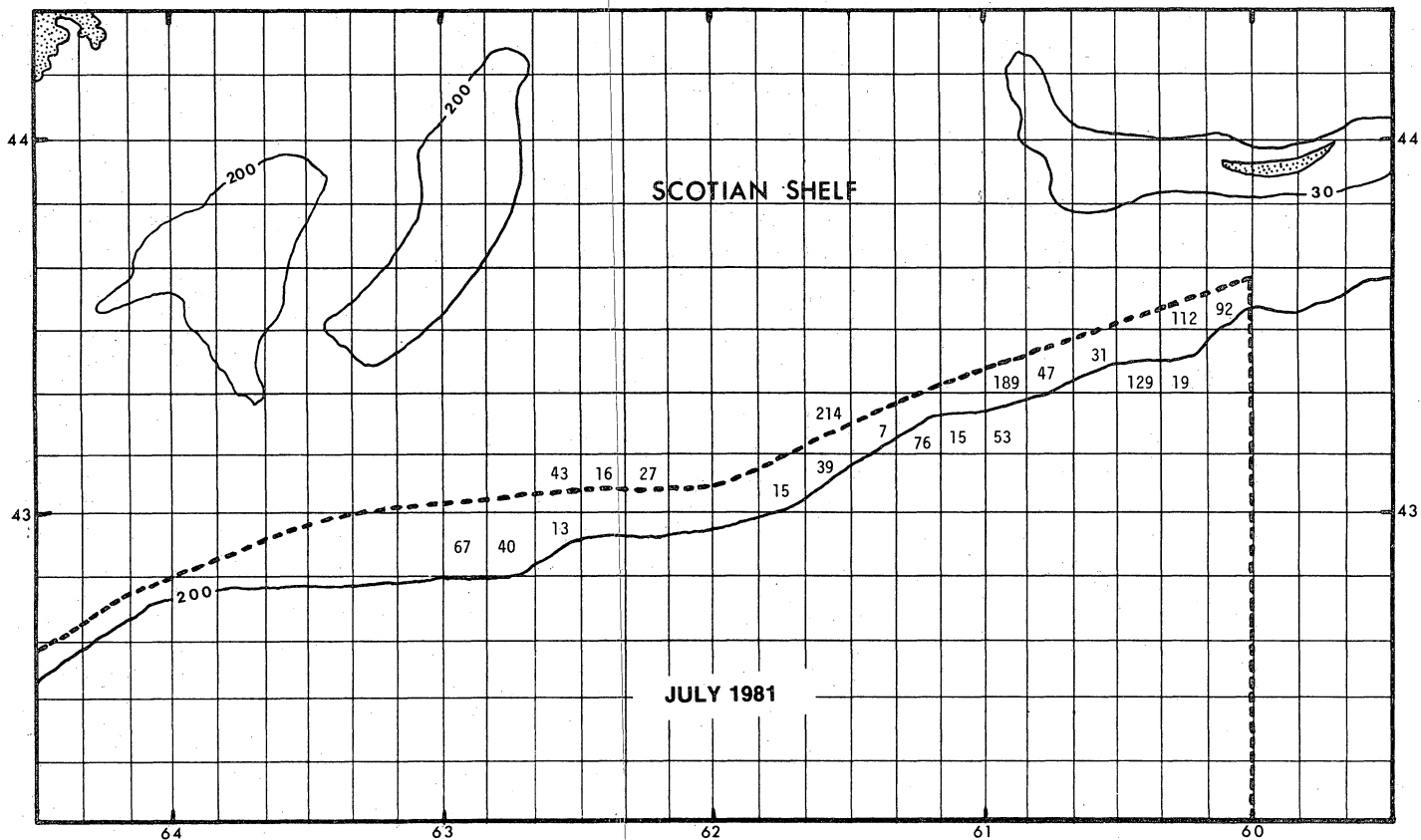


FIGURE 4 (CONT'D). ATLANTIC COD, JULY AND AUGUST 1981.

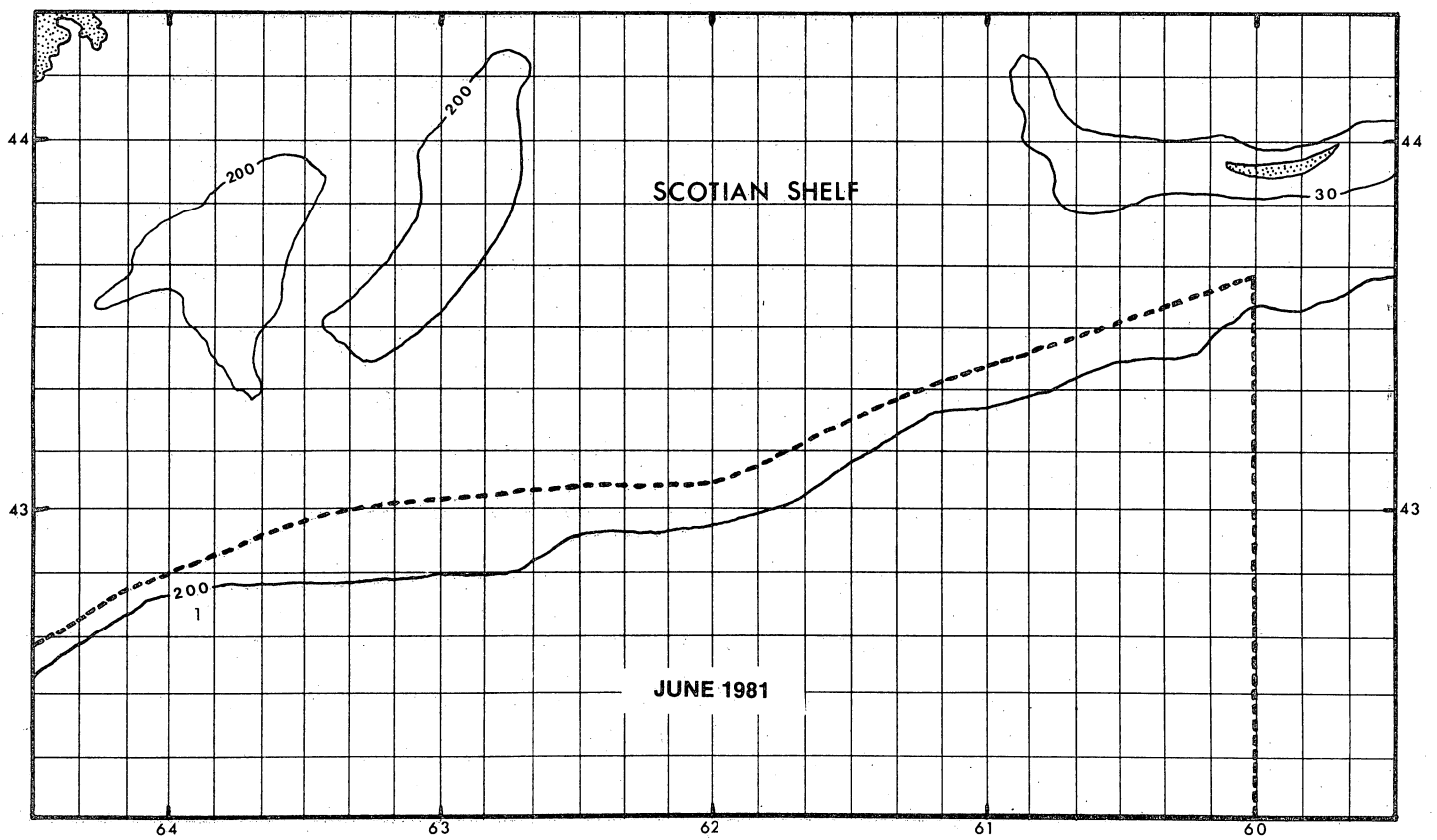
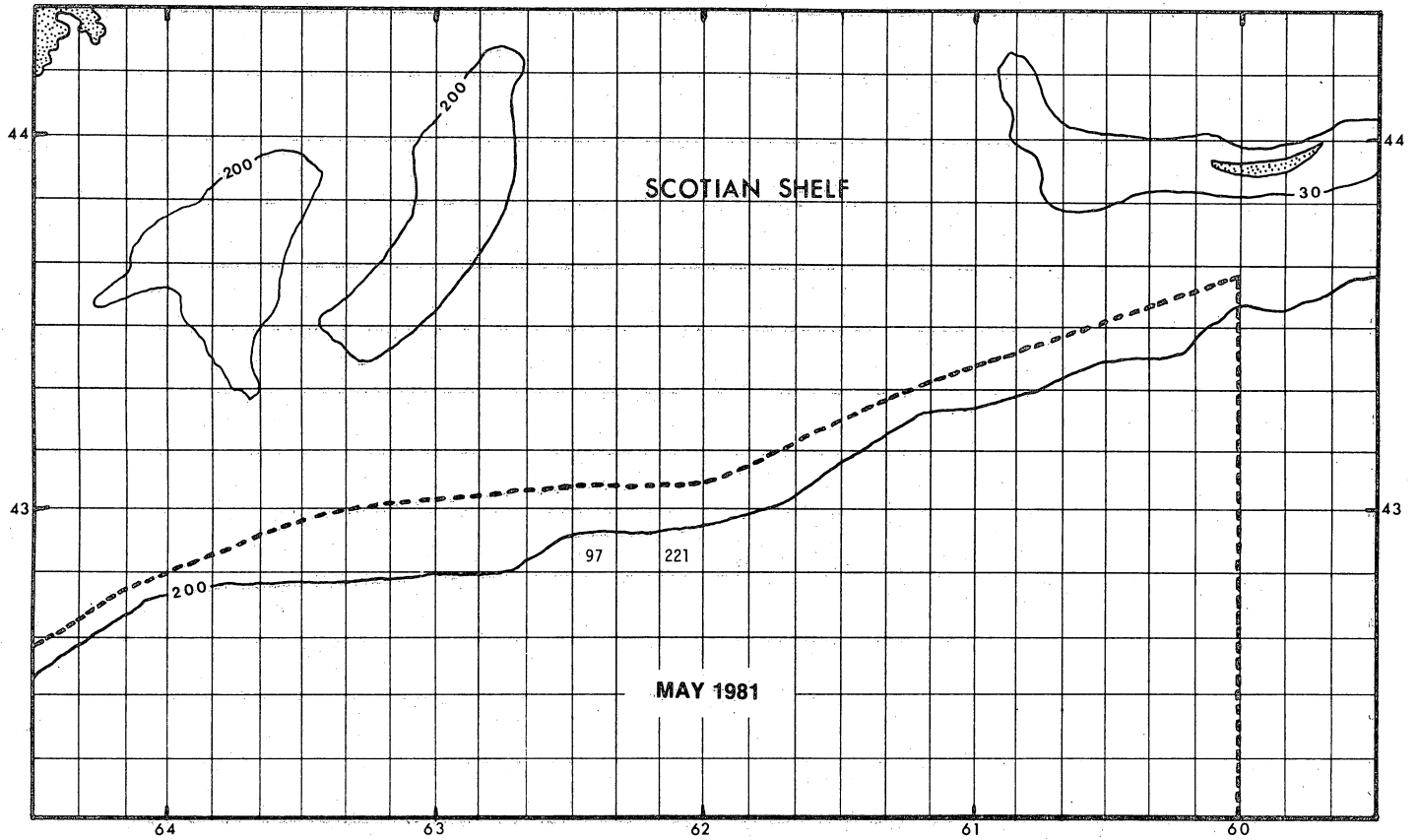


FIGURE 5. ATLANTIC REDFISH CATCH PER HOUR TRAWLING, MAY AND JUNE 1981.