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Distribution of Short-finned Squid and Some Groundfish Species in Division 4W
from Data Obtained by USSR Observers During the 1979 Fishing Season

by

V. A. Rikhter, Yu. S. Grinkov and V. F. Turok
AtlantNIRO, Kaliningrad, USSR

Introduction

In accordance with the bilateral agreement between the USSR and Canada, the collection of the length-age data and the study on the species composition of commercial catches continued in 1979. In the given paper the results of the studies on the catch species composition and the distribution of the groundfish and shortfin squids on the Nova Scotian shelf accomplished by the Soviet observers are presented.

Materials and Methods

The sampling was made in May, June and August. During this period two Soviet observers were regularly aboard commercial ships. Daily collections included the data on the hauling place, depth, time and duration, and on the catch species composition for at least four hauls a day. Following the methodical instructions recommended by NAFO, the observers also made length measurements of massive fish species and short-finned squids, and collected silver hake otoliths using the method adopted in AtlantNIRO. The observers noted that silver hake and short-finned squid predominated the catches in August, with other species occurring only individually.

In order to gain comparable results the study of the species distribution in the fishing ground followed a scheme used by Waldron (1978, 1979). The entire area was subdivided into 10-minute side squares, and the mean catch (kg) taken with the bottom trawl per hauling hour was estimated for each square by species and month.

Results and Discussion

Silver hake (Merluccius bilinearis)

The distribution of the silver hake catches in May, June and August is shown in Figs. 1-3. In May this species was mainly caught over the shelf slopes within the depth range of 100 to 300 m. North of the line limiting the use of small mesh fishing gear the silver hake occurred occasionally. In June, the fishery moved to the Emerald Deep area, although the silver hake catches from southern slopes of Emerald and Sable Island banks were still large. In August, practically all silver hake was yielded from the area north of the above-mentioned limit. Thus, the general migration pattern, same as in previous years, persisted during the spring-summer season of 1979.

Shortfin squid (Illex illecebrosus)

In May, the squids were taken as an insignificant by-catch in the directed silver hake fishery (Fig. 4). In June, a gradual rise of the squid proportion in the catches was observed as well as a certain shift towards Emerald Deep (Fig. 5). The explanation for small squid catches in May and June appears to be based not only on the regulation prohibiting the conduction of directed squid fishery until July 1, but also on the peculiarities of the distribution and biology of the species in question. In August, the squids were mainly caught in the Emerald Deep area (Fig. 6). Reports were made of occasional directed fishery.

Haddock (Malanogrommus aeglefinus)

The haddock by-catch was small over the entire observation period, although, occasionally, the catch per hauling hour exceeded 1 000 kg (Figs. 7, 8). Unfortunately, no comparison can be made with the Waldron's data (1979) as they are not reported by month. It can be only noted that in 1978 most considerable haddock by-catches were taken outside the line limiting the use of small-meshed fishing gear.

Cod (*Gadus morhua*)

In both May and June the species occurred in the catches occasionally as an insignificant by-catch (Figs. 9, 10).

Redfish (*Sebastes mehtella*)

The species was common in the May catches, when the fishing was chiefly conducted over the southern slopes of Emerald and Sable Island banks within the depth range of 100 to 300 m. Redfish was episodically taken in the Emerald Deep area. The redfish by-catch was negligible over the entire observation period (Figs. 11, 12).

Conclusion

The above-stated information, when summarized, reveals many common features in the silver hake and squid fishing strategy, which can be related to a certain identity in the behaviour and distribution of the two species. Beginning in July it is practically unrealistic to conduct a strictly selective fishing for silver hake or squids.

As regards other species, the by-catches of cod and redfish are insignificant. Haddock is more numerous in the catches, however, we believe that more detailed study of the species distribution during the spring-summer period in the future will enable to avoid any considerable haddock by-catch.

References

1. 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. 78/11/9.
2. WALDRON D.E., 1979. Preliminary results of a joint international observer program to evaluate the silver hake Small Mesh Year Line in ICNAF Division 4VWX. ICNAF Res.Doc. 79/11/17.

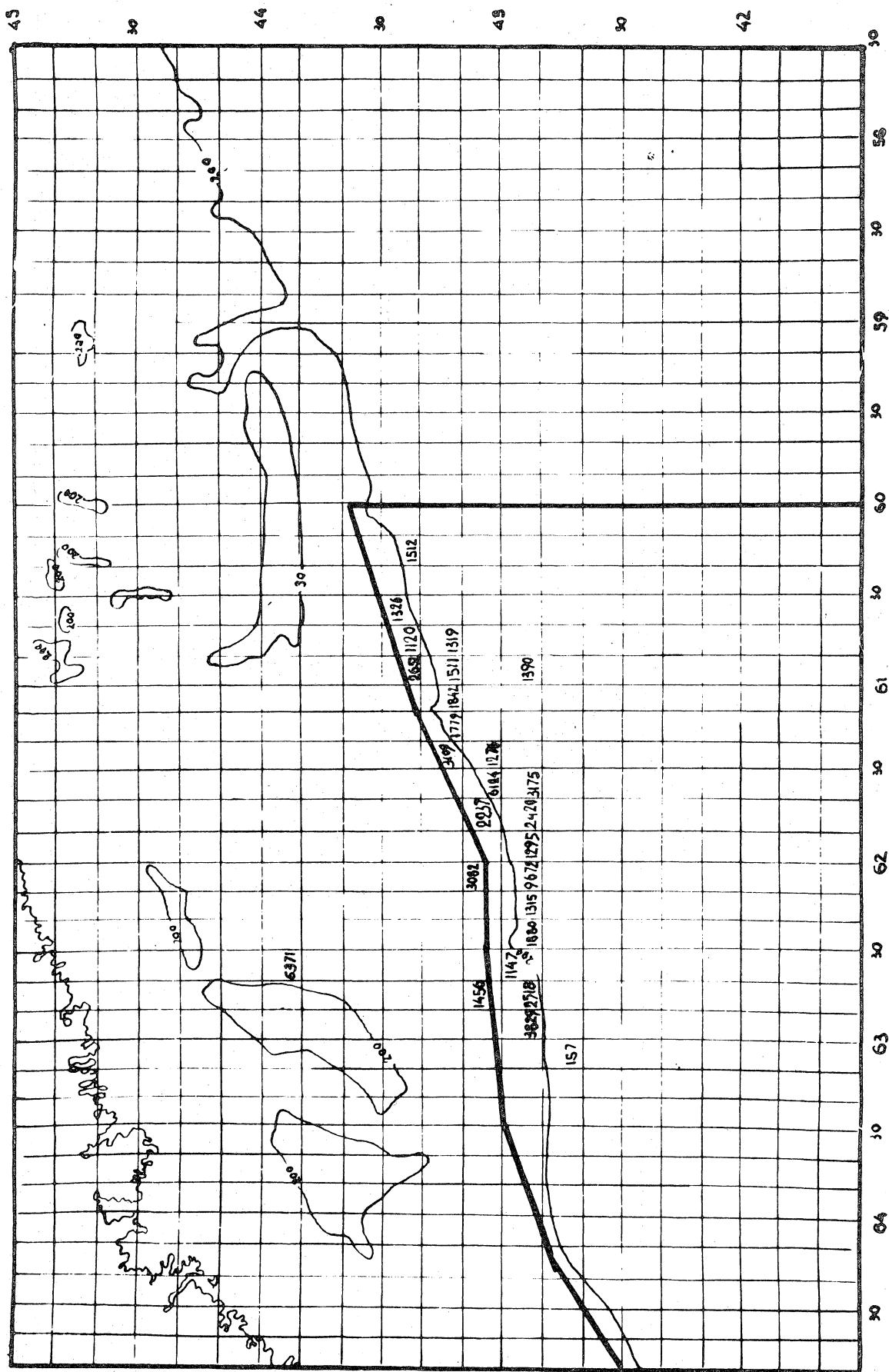


Fig. 1. The distribution of silver hake catches per hauling hour (kg) in May.

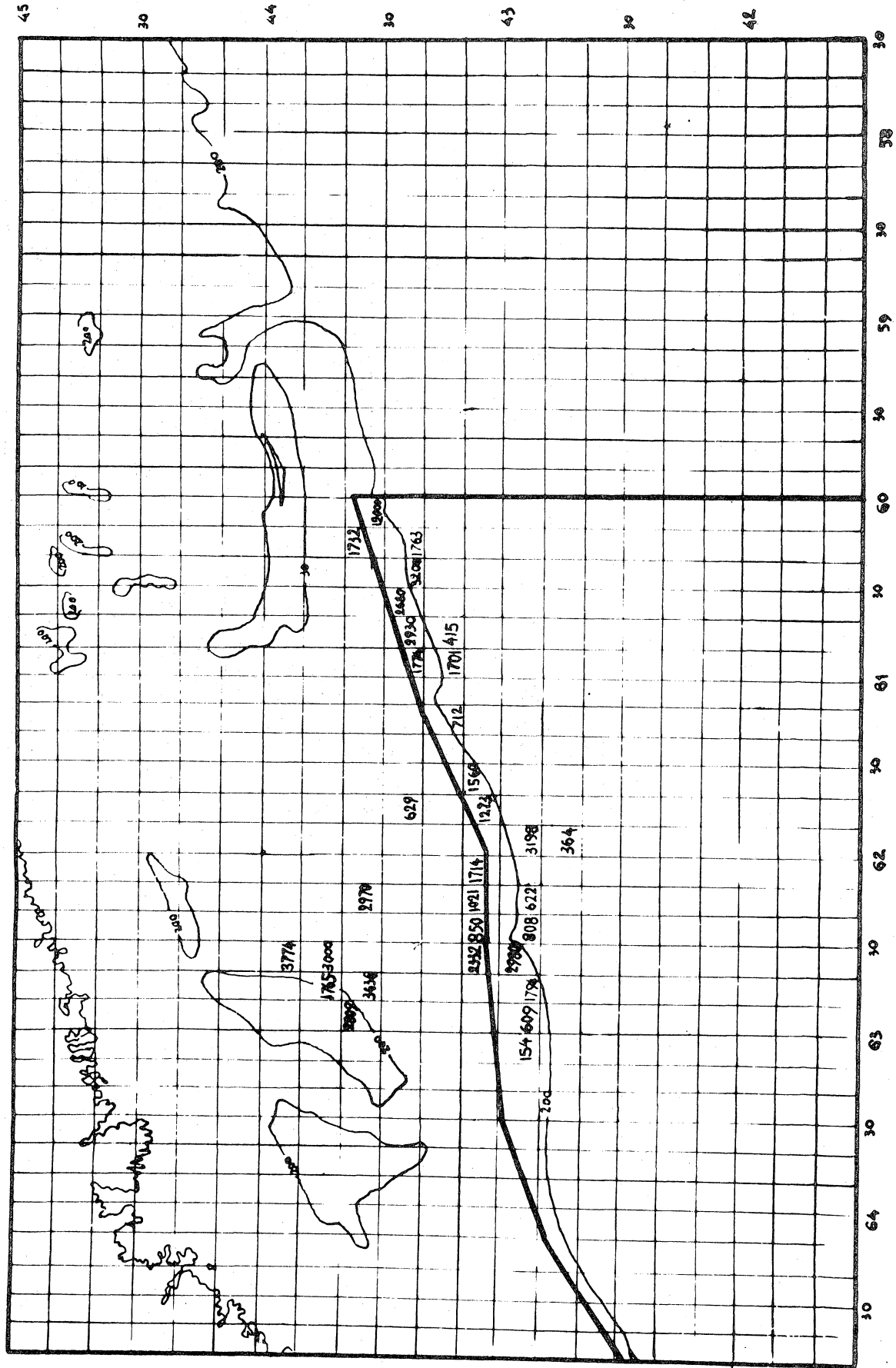


Fig. 2. The distribution of silver hake catches per hauling hour (kg) in June.

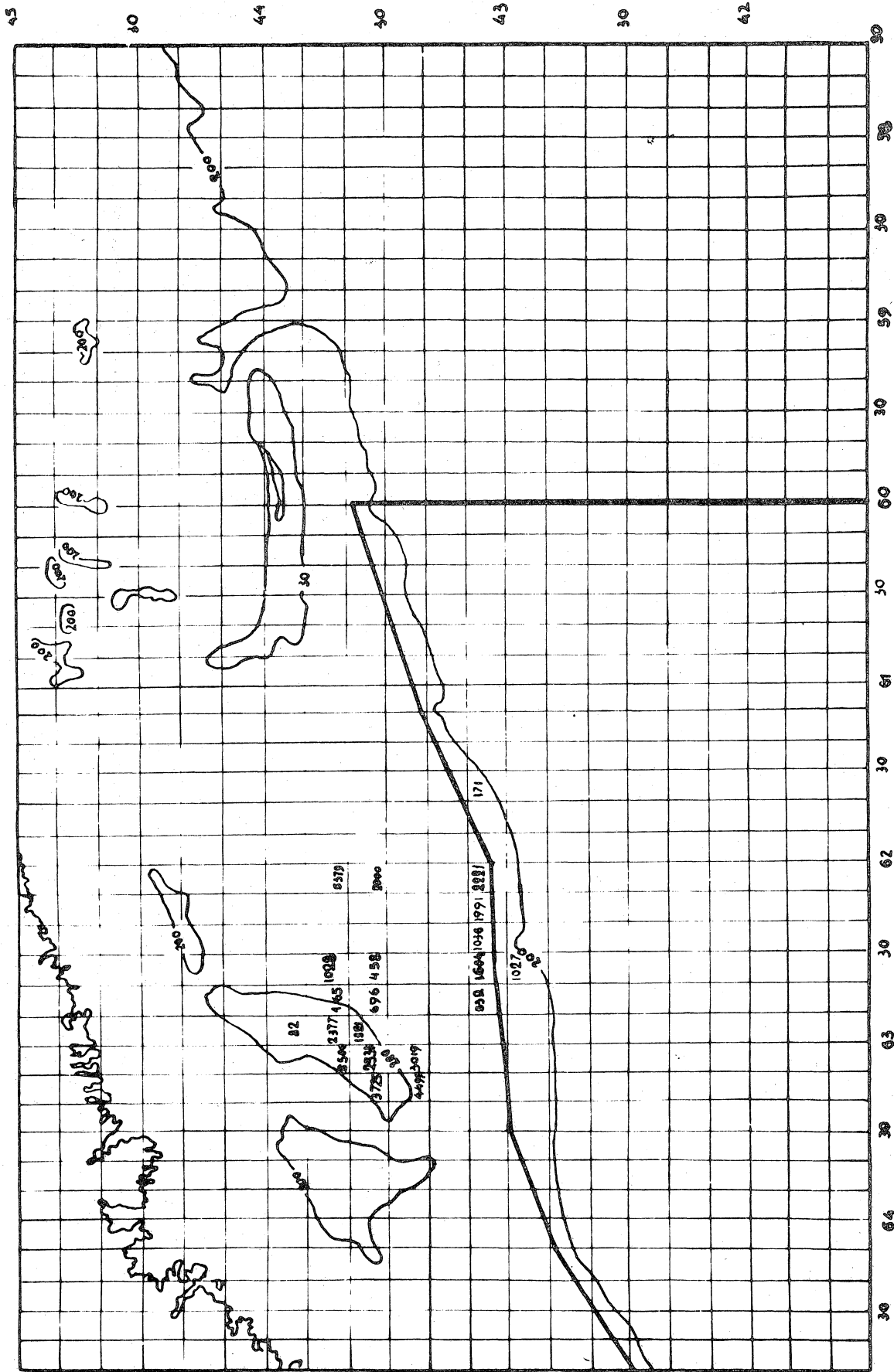


Fig. 3. The distribution of silver hake catches per hauling hour (kg) in August.

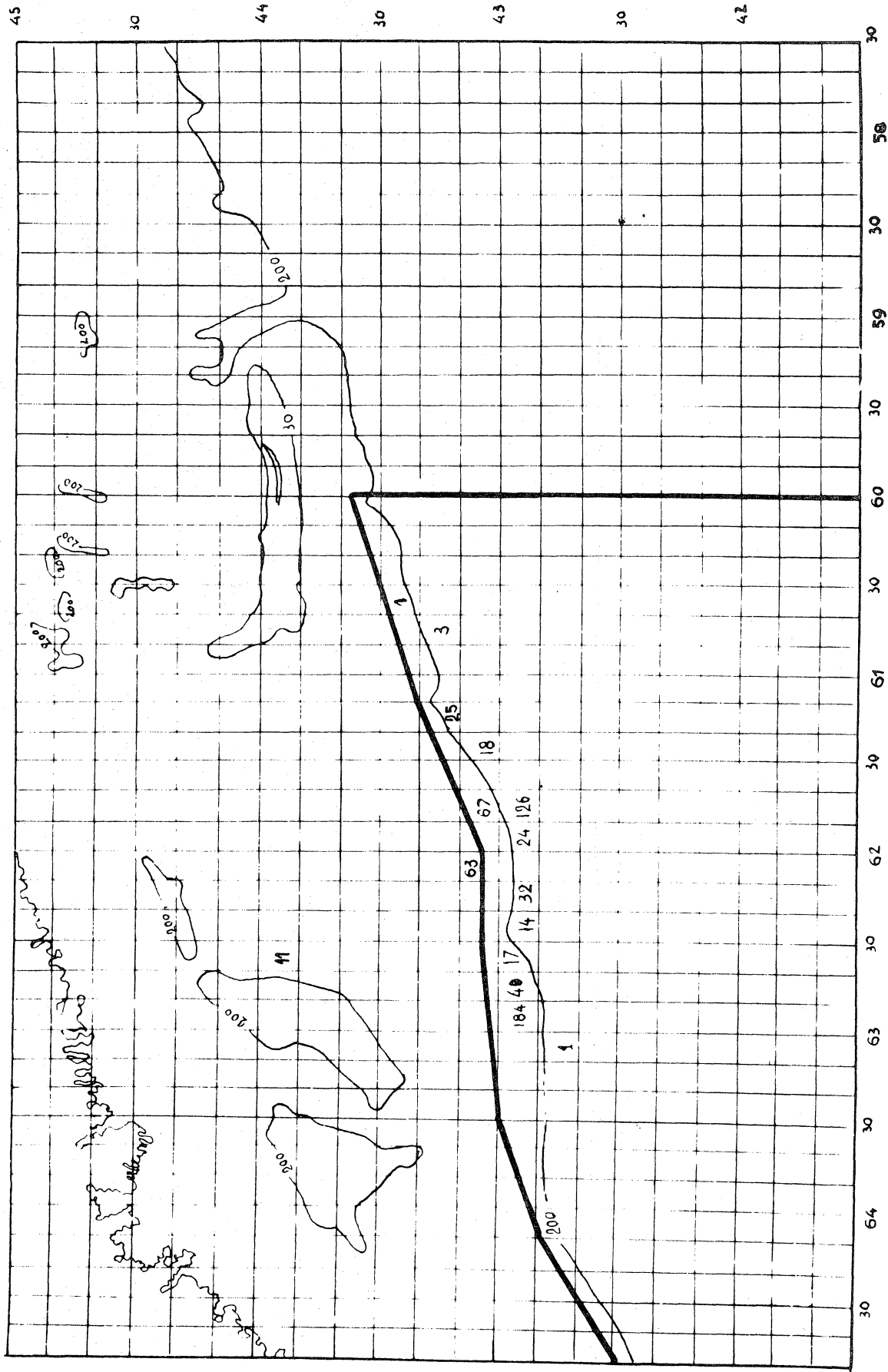


Fig. 4. The distribution of squid catches per hauling hour (kg) in May.

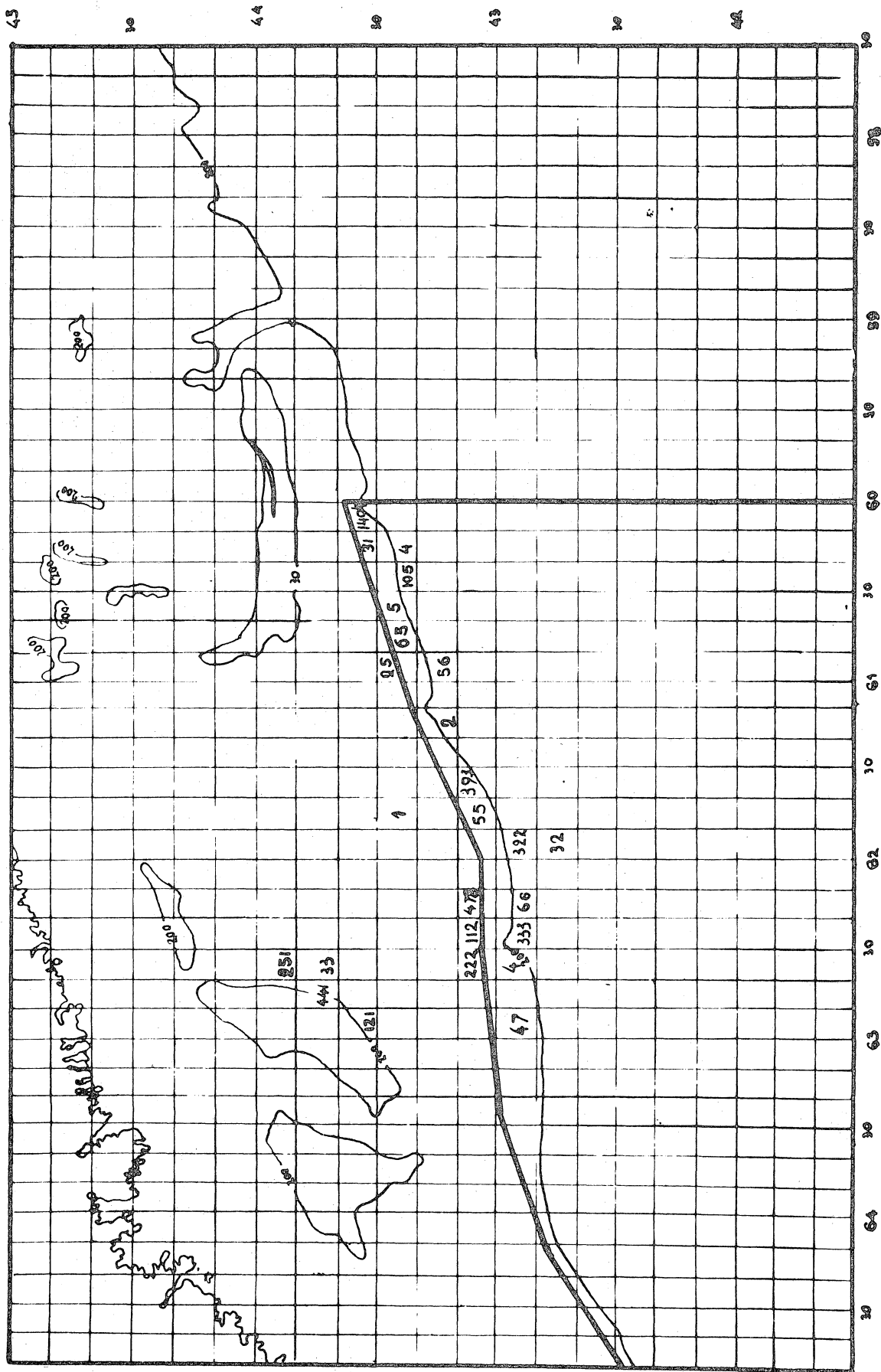


Fig. 5. The distribution of squid catches per hauling hour (kg) in June.

Fig. 6. The distribution of squid catches per hauling hour (kg) in August.

Fig. 7. The distribution of haddock catches per hauling hour
(kg) in May.

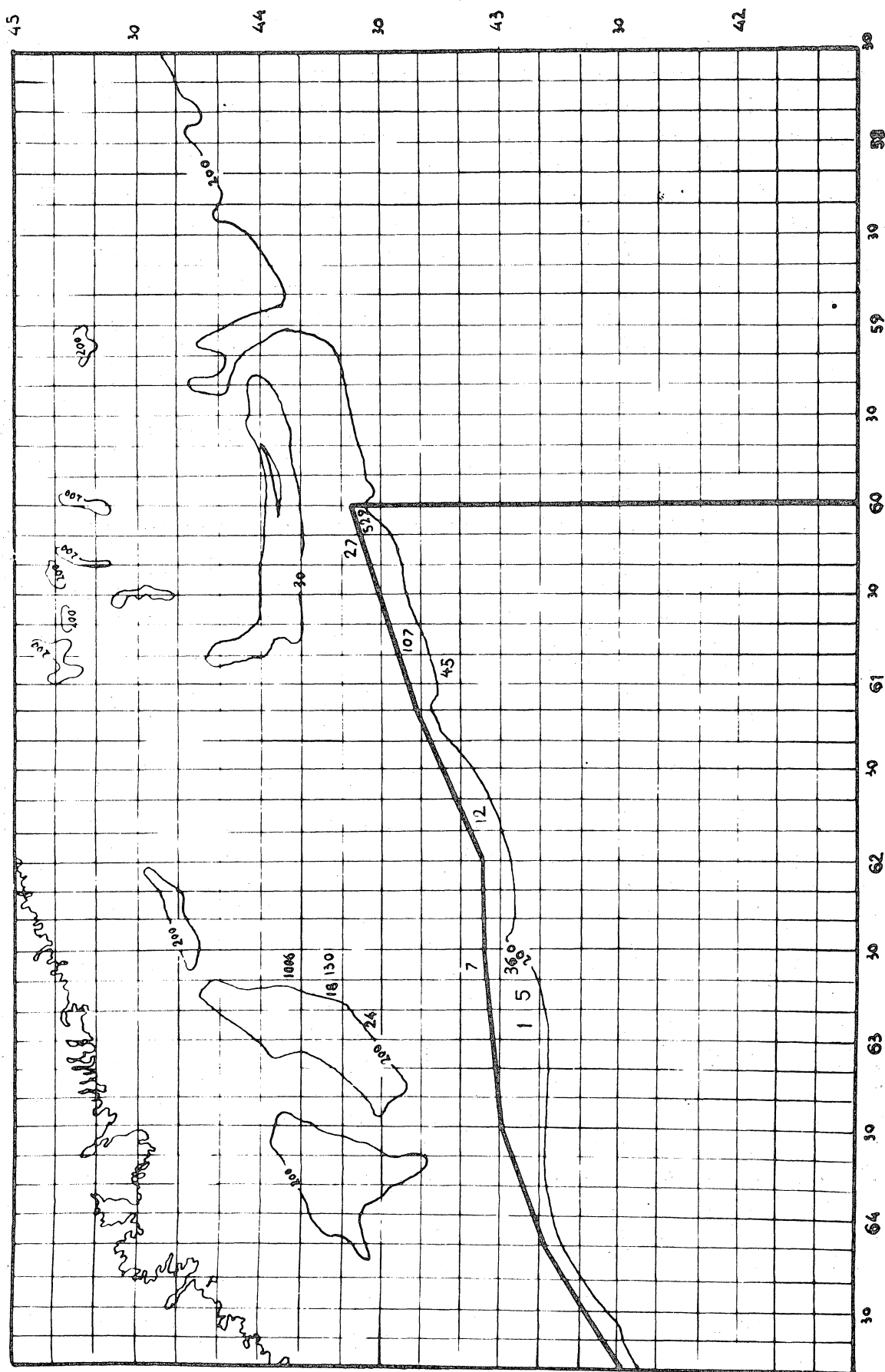


Fig. 8. The distribution of haddock catches per hauling hour
(kg) in June.

Fig. 9. The distribution of cod catches per hauling hour (kg) in May.

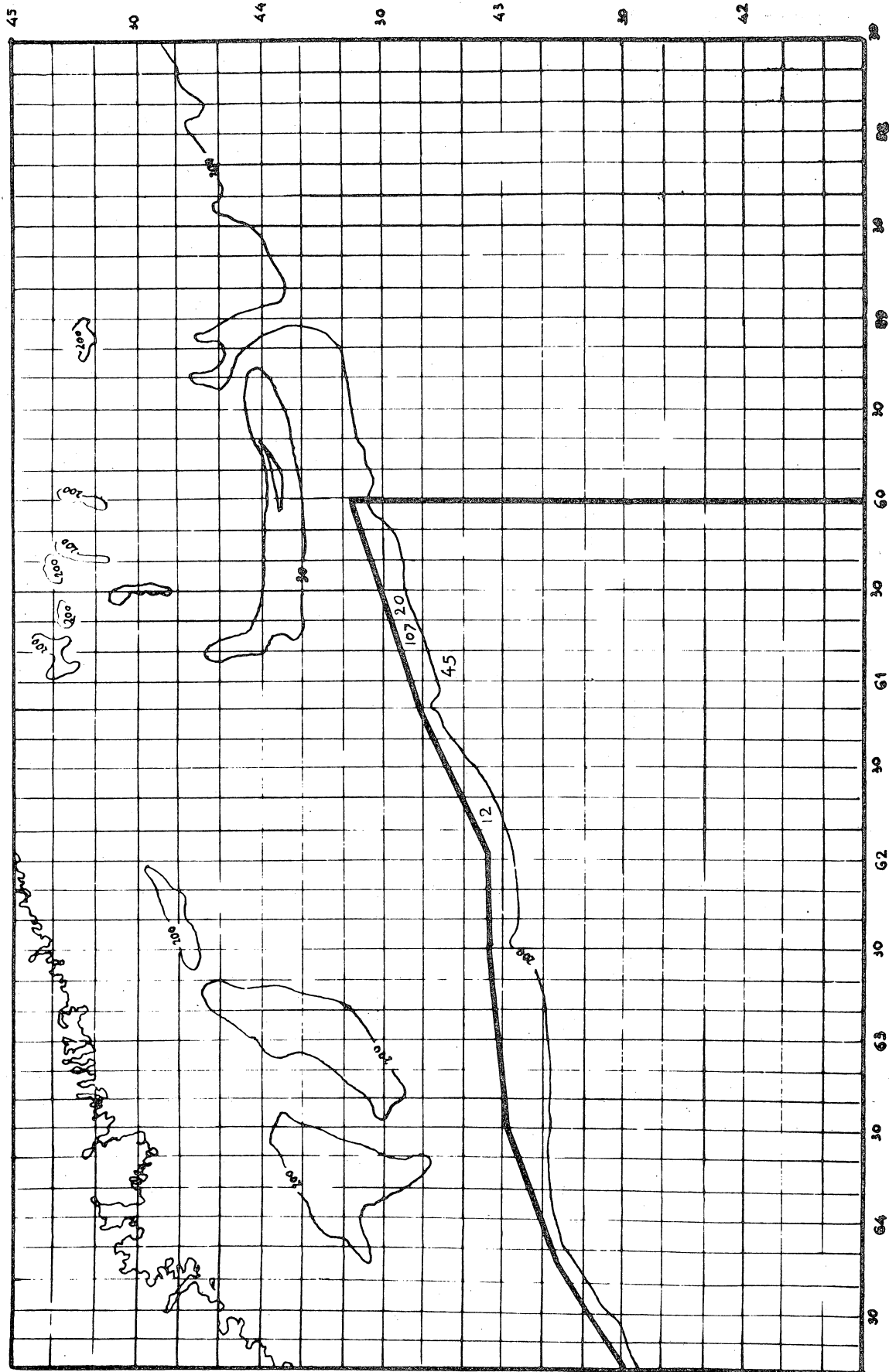


Fig. 10. The distribution of cod catches per hauling hour (kg) in June.

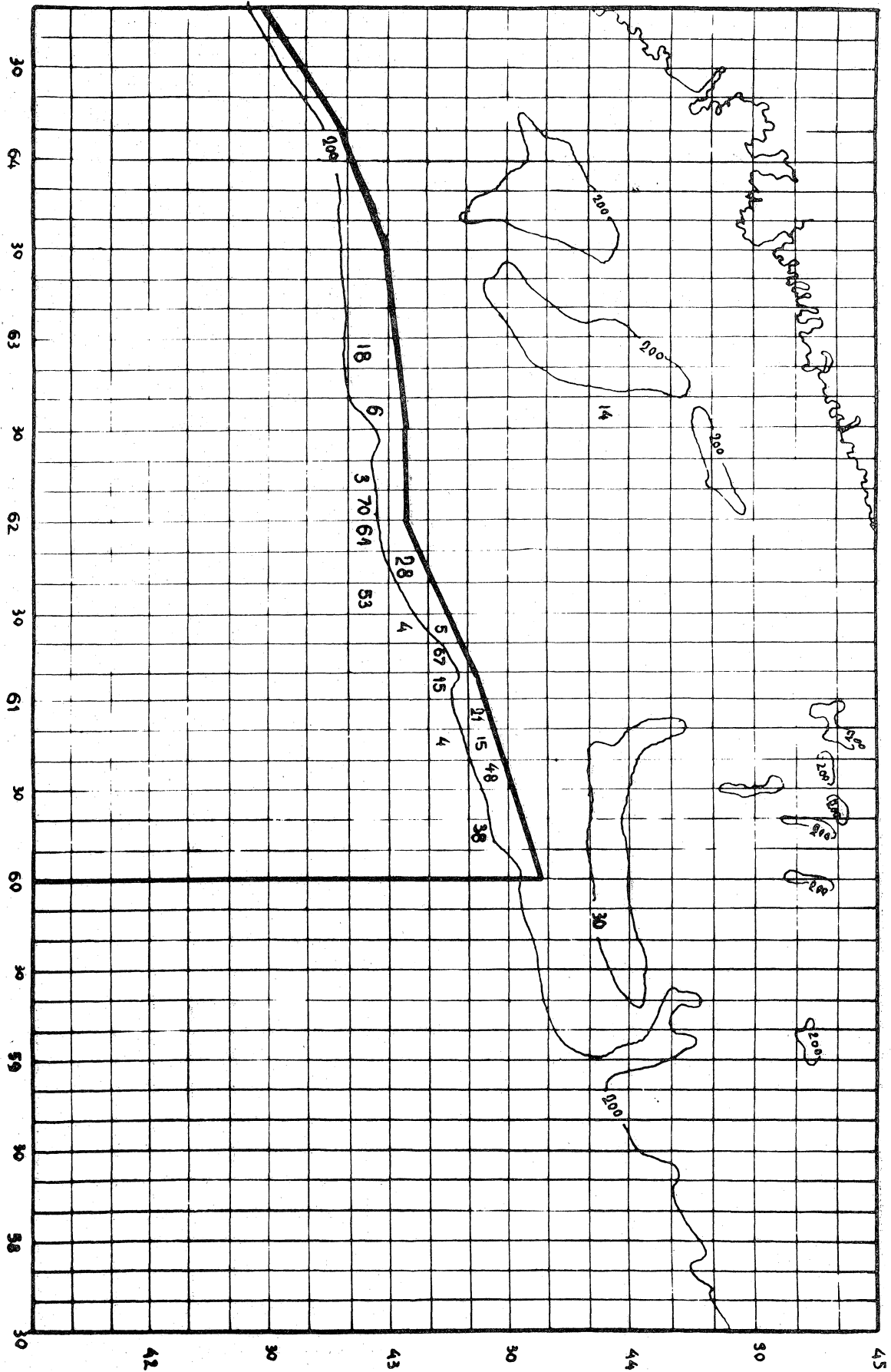


Fig. 11. The distribution of redfish catches per hauling hour
(kg) in May.

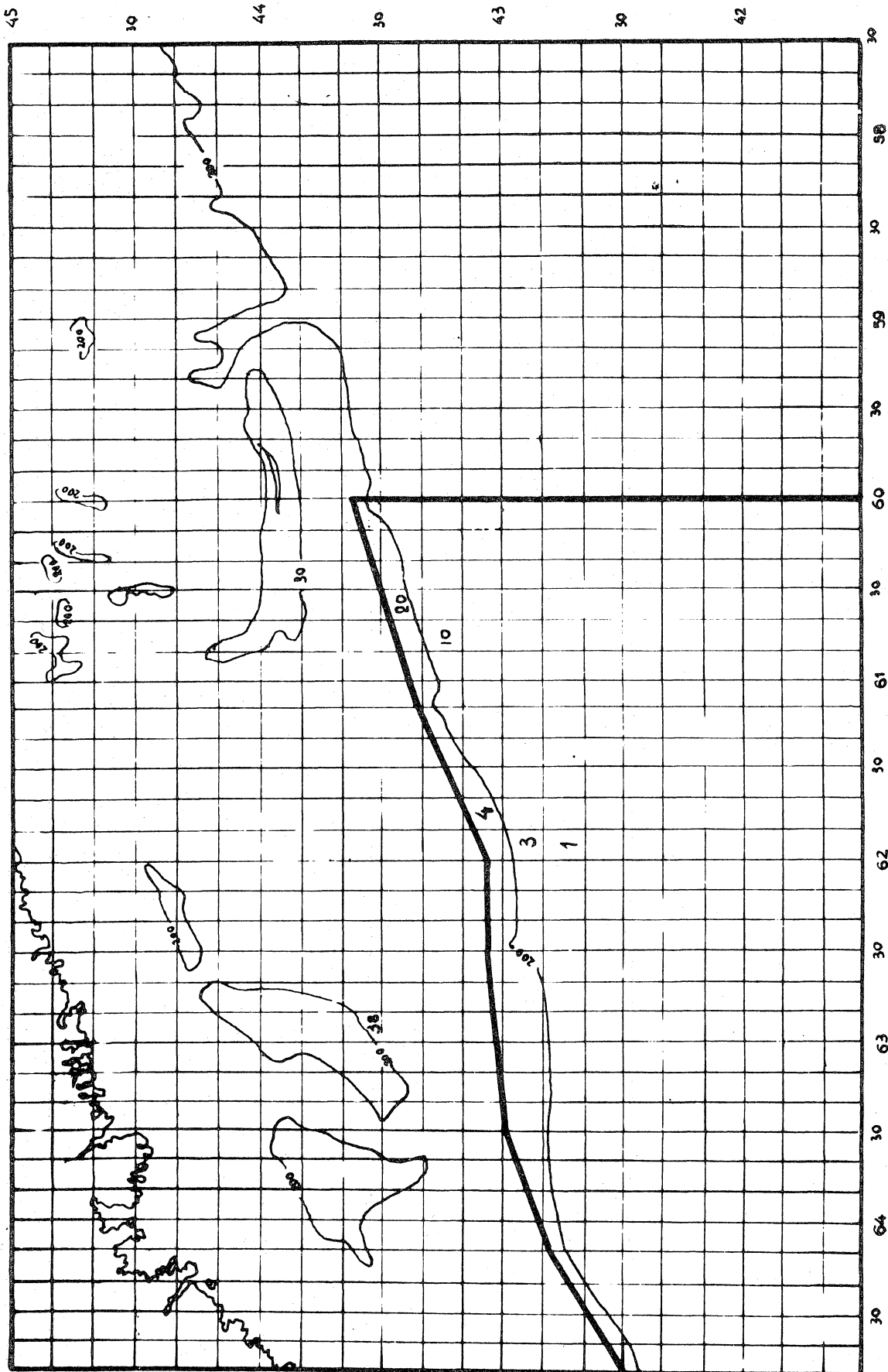


Fig. 12. The distribution of redfish catches per hauling hour
(kg) in June.