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3. Mesh Selection Experiments on Redfish

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Investigations on the selection of redfish were carried out with FRV "Anton Dohrn" during July 1961 on the East Greenland fishing ground Angmagssalik (64°34'-64°50'N; 35°07'-35°20'W, depth: 360-450 m). A German deep sea bottom trawl was applied. Several codends made of "Perlon" and Manila were tested according to the cover method. The cover enveloped the whole topside of the codend, the underside of the codend was blinded with small-meshed netting.

The catches consisted of a mixture of both mentella-type and marinus-type of Sebastes marinus. Other species of fish and evertebrates never reached more than 25% of the catch weight. The quantities of catches mostly ranged between 20 and 40 baskets. Larger catches, up to 60 baskets, were very rare.

Sizes of fish were taken to the nearest centimeter from the mouth closed (including the hook of the mentella-type) to the tip of the caudal fin. The mesh measurements were made with the WESTHOFF 1959 model exerting a measuring pressure of 4 kg.

Table 1

Codend No.	29	6	17	28	26
Material	"Perlon"	"Perlon"	"Perlon"	"Perlon"	Manila
Mode of making	knotless, single twine	double braided	double braided	double braided	double braided
Average mesh size (mm)	122	131	139	146	147
Number of hauls	5	11	8	6	5
Total No. of redfish	5036	10960	7466	6414	3337
Selection range (cm)	10.0	14.5	13.0	14.5	15.0
No. of fish within the selection range: codend	1653	2929	2622	2651	1571
cover	1190	1795	1743	2935	1180
50% retention length (cm)	35.3	33.5	37.2	41.2	38.4
Selection factor	2.9	2.6	2.7	2.8	2.6

The following facts can be seen from Table 1:

1. The selection factors of knotted "Perlon" codends increase from 2.6 at a mesh size of 131 mm to 2.7 at 139 mm and to 2.8 at 146 mm mesh size.
2. In the knotless "Perlon" codend (mesh size 122 mm) the selection was much better (sf. 2.9) than in knotted "Perlon" codends.
3. The selection factor 2.6 was found for a Manila codend with 147 mm mesh size. This result confirms the well-known fact that codends made of polyamide fibre show a better selection than those made of Manila.

In spite of the small variation in quantities caught it was tried to demonstrate the influence of catch size on the selection. Unexpectedly a clear relationship was found by plotting the selection factors calculated for each catch against sizes (Fig.1). Only such hauls were included the towing duration of which was nearly the same (80-90 minutes). The broken lines show that the selection factors tend to decrease with increasing catch sizes. This result demonstrates definitely that a biologically sensible minimum mesh size for redfish can never be derived from selection data which are mainly based on small or medium catches. Redfish is often caught in large quantities in which the process of selection is supposed to be hindered to a high degree. Therefore, it must even be feared that a conservation of redfish stocks by means of mesh regulations is not possible.

Once more the redfish meshing problem was of particular interest. It could be shown that the number of meshed fishes is higher in larger catches than in smaller ones. - The Manila codend (147 mm) contained less meshed fish than the "Perlon" codends of the same or smaller mesh size. - The relation between quantity of meshed fishes and mesh size is not yet completely analysed. Under conditions as found during July 1961 off Angmagssalik "Perlon" codend meshes of about 139 mm appear most suitable for meshing of redfish. The number of meshed redfish was 96, i.e. 13.8% of the redfish caught in this codend and its cover. Larger-meshed as well as smaller-meshed codends contained less meshed fishes.

The average length of meshed individuals increases with the increasing mesh size from 40.8 $\pm$ 0.2 to 46.0 $\pm$ 0.3cm. At last it should be mentioned that the average sizes of meshed fishes correspond to the 70-89% retention length.

Reference: H. Bohl: German Mesh Selection Experiments on Redfish 1961 ICES, Comp.Fishing Committee, Paper No. 88, C.M. 1961.

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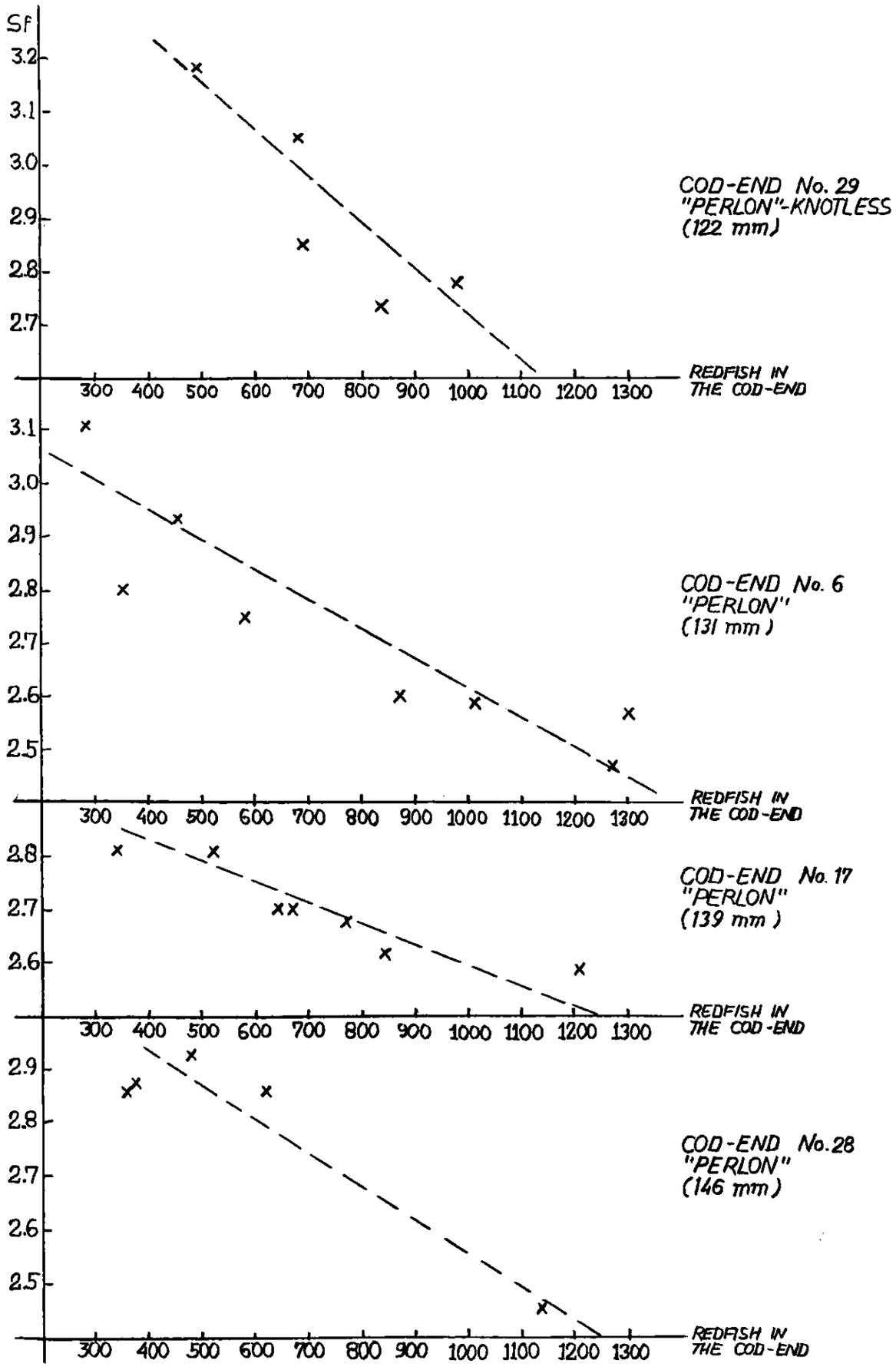

FIG. 1. RELATION BETWEEN SELECTION FACTOR AND CATCH SIZE