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Peculiarities of the blue whiting distribution in the Norwegian Sea in May/June 1978 and 1979

by

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Abstract

The blue whiting distribution in the Norwegian Sea in May/June 1978 and 1979 is analysed on the basis of data from echo surveys. The relationship between the position of the frontal zone and the direction of blue whiting migration routes from spawning grounds to feeding areas is revealed.

Résumé

Les résultats des écho-sondages ont servi de base à l'analyse de la distribution du poutasson dans la mer de Norvège en mai et juin 1978 et 1979. On indique le rapport entre la position de la zone frontale et l'orientation des voies de migration du poutassou des frayères jusqu'aux lieux de l'engraissement.

Introduction

On the basis of the analysis of echo surveys data for 1970-1971 Dragesund and Jakupsstovu (1971) assumed that there are two possible ways of blue whiting post-spawning migration from spawning grounds to northern areas. The first one is in the north-western direction along the warm side of the front between cold waters of the East-Icelandic Current and warm atlantic waters; the second way is in the northern direction across the central part of the Norwegian Sea.

Observations made in subsequent years showed that the western or

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eastern directions of migration routes are determined mainly by the corresponding position of the frontal zone. In the years when the East-Icelandic Current is weaker, the North-Atlantic Current is stronger and the frontal zone is situated farther west spent fish migrate northwards to the feeding areas mainly across the central and western parts of the Sea. In this case they reach the coast of Eastern Iceland in the first/second decade of June.

In cold years when the East-Icelandic Current is very active and the frontal zone is situated farther east migration routes go across the central and eastern parts of the Sea. Under such conditions blue whiting leave the economic fishing zones already in late May/early June and enter the feeding areas much earlier.

The above-mentioned peculiarities revealed themselves most markedly in summer 1978 and 1979.

Discussion

Results of the hydrological survey showed that in 1978 the frontal zone between atlantic waters and those of the East-Icelandic Current was located farther west as compared to the long-term mean position (Fig.1a). The "wedge" of cold waters in the 100-400 m layer was registered at 1°W, the thermocline was shifted far to the west and distributed at the depths of 30-50 m, whereas the usual depths of its occurence were 300-400 m. In accordance with this in May/June 1978 spent blue whiting migrated from the spawning grounds to the feeding areas mostly across the western part of the Sea (Fig.2a). The most dense concentrations distributed to the west of 3°W inhabiting the depths from 150-200 m in southern areas to 40-60 m in northern ones which resulted from a similar pattern of the thermocline distribution by depths. In June migrating blue whiting reached the eastern coasts of

Iceland. The Icelandic blue whiting fishery in this zone started in the second half of June as reported by R/V "Arni Fridriksson" and concentrated at 66°N, 13°W.

Hydrological conditions in summer 1979 differed profoundly from those in 1978. Water temperature on all standard sections in the Norwegian Sea was abnormally low. The East-Icelandic Current was extremely intensive. Well expressed frontal zone was situated far to the east, reached 2°40'E (Fig.1b) and was characterized by almost a vertical "wall" of cold waters in the 100-400 m layer. Thermocline depth was 350-400 m. Post-spawning blue whiting migrated mostly in the eastern direction (Fig.2b). In May stable concentrations inhabiting the Faeroe and Norwegian economic zones shifted gradually to the north across the central and eastern parts of the Sea. By the beginning of June commercial concentrations migrated to the off shore areas of the Sea outside the fishing zones. As for the vertical distribution of blue whiting, shoals inhabited mostly the depths of 250-350 m what corresponded to the depth of thermocline distribution. Fig.2b shows that blue whiting practically did not approach the eastern coasts of Iceland. Reports from the Icelandic fishery which was not successfully conducted in this area in June 1979 proved this.

References

Dragesund O., Jakupsstovu S.H. 1971. Observation on distribution and migration of Micromesistus poutassou (Risso, 1810) in the Northeast Atlantic. ICES C.M.1971/H:26.

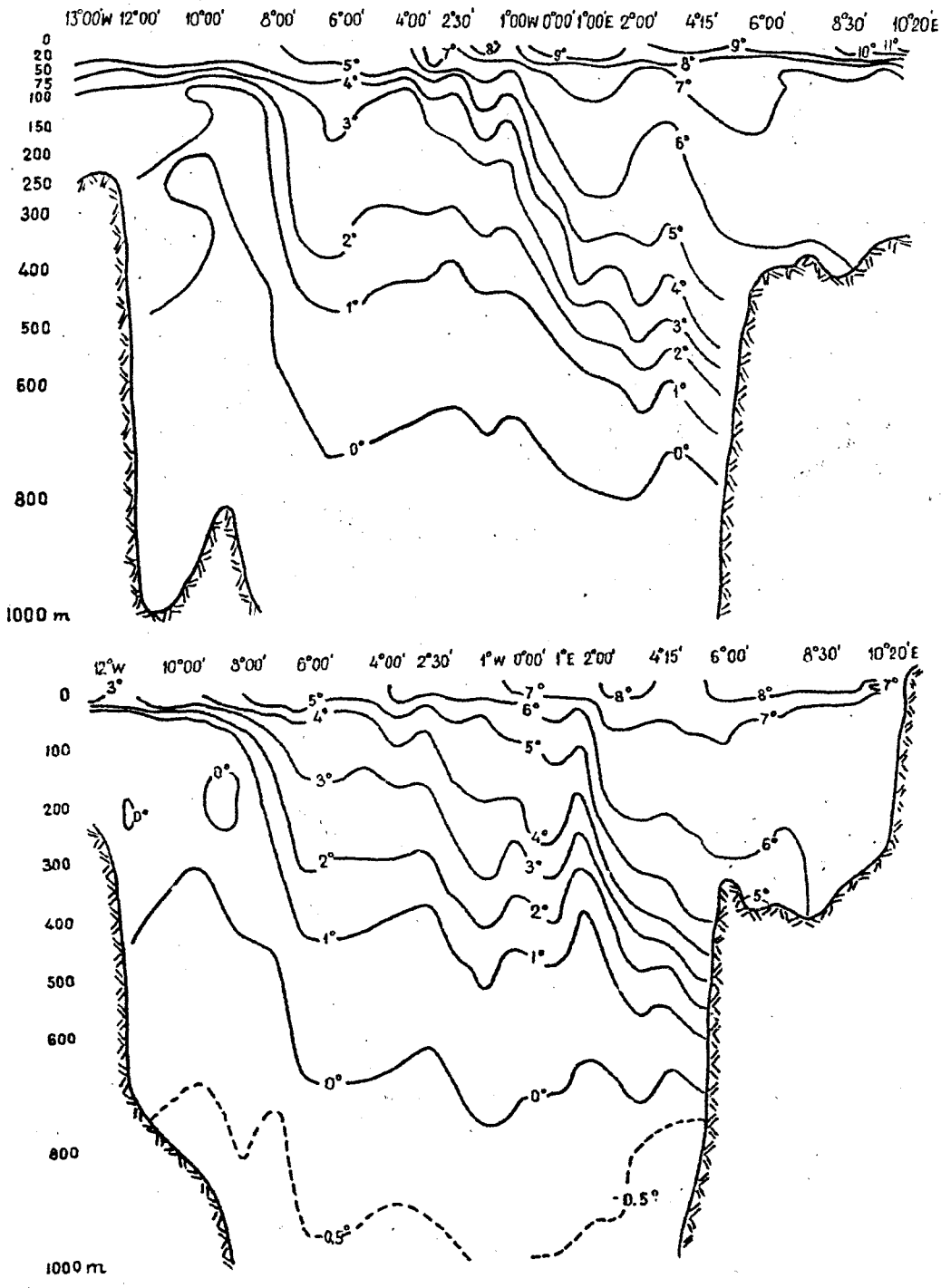

Fig. 1. Distribution of water temperatures on the section along 65°45'N

a) in June 1978

b) in June 1979

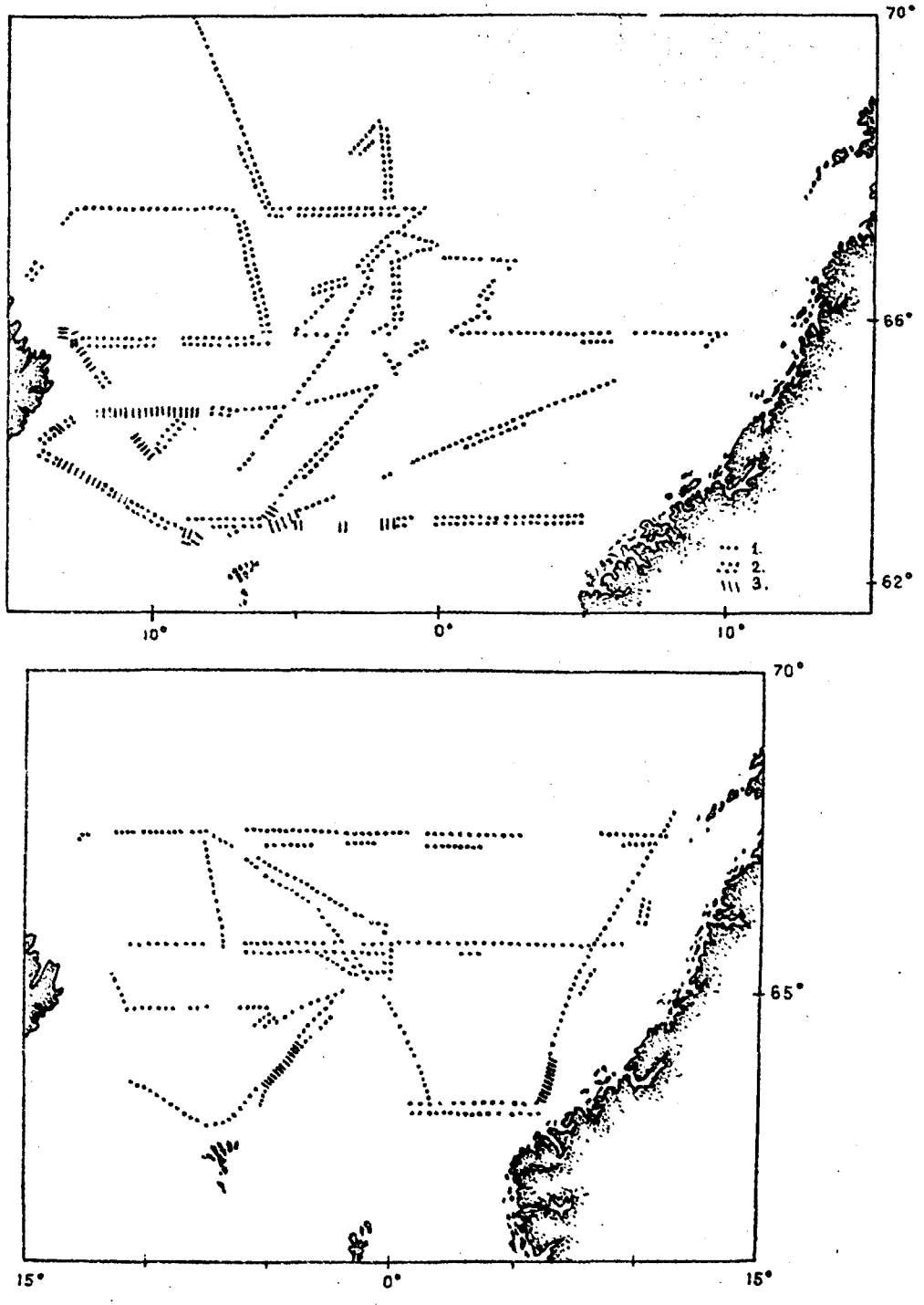

Fig. 2. Distribution of blue whiting in May/June according to data from echo surveys

a) 1978

b) 1979

1. very poor recordings
2. poor
3. dense