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THE REPRODUCTION OF COD (GADUS MORHUA L), WITH SPECIAL REFERENCE TO THE ARCTO-NORWEGIAN AND BALTIC POPULATIONS

By

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INTRODUCTION

Solemdal (1970) described the intraspecific variation in some egg and larvae parameters of the Arcto-Norwegian cod and attempted to split the variation in relation to environmental and parental characters. The material, however, was too scanty to give reliable results.

The investigations on cod eggs and larvae, both in Lofoten and in the Baltic, have been continued and extented in 1971 and 72, and the results are presented in this paper together with the data from 1968-70.

In addition to the biological data, hydrographical and meteorological data are brought into the discussion of the survival of eggs and larvae, as proposed by Rollefsen (1929) and Ottestad (1942).

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Investigations of fish eggs and larvae in the surface layer, which is the most important part of the water column, are carried out in different parts of the world, especially in Japan (Kawai, Sakamoto and Momota 1969). Equipment for sampling dead eggs and larvae sinking to the bottom have also been developed (Kiel).

Recent research on the "imprinting" of organisms on the egg stage (Hess 1972) is also of interest in the discussion of the survival of fish larvae.

The proportion of first time spawners is still very high among the Lofoten cod. For 1970 97.5% of the spawning cod in the Lofoten area were first time spawners (Hylen 1972). For 1971 the percentage was on the same level, but for 1972 a larger amount of the rich 1963 yearclass were spawning for the second time (Hylen personal communication). These facts are also of importance, and their relevance to the experiments reported in this paper is discussed.

MATERIAL AND METHODS.

Detailed descriptions of the experiments are found elsewhere. (Solemdal 1967, 197o and 1971.) The cods where caught by various gears in Lofoten and in the Baltic, and the material transported to the laboratory in Bergen.

Batches of eggs from the same cod were hatched at different temperatures. Likewise, the larvae groups were kept at constant temperature until mass mortality occured due to starvation. Measurements of the length of the larvae were obtained during the yolk-sack stage. All measurements were taken on live or anaesthetized material. MS 222 were used and the larvae measured within 5 minutes.

RESULTS.

The results of the experiments will be presented on slides at

the ICES meeting. Data on the quality of the eggs and the parents will be shown. Time from hatching to mass mortality at the differnet temperatures will be given, together with hydrographical data from the Vestfjord, Lofoten. Data on eggs naturally spawned at different times during the spawning season and at at different stages are also given. One figure shows the spawning shoals in the Vestfjord and in the Baltic.

DISCUSSION AND SUMMARY.

Recent investigations (Morita & Kitahara 1971) have shown that the quality of fish eggs varies and is of great importance for the survival of the fish larvae and later stages. The present paper have shown:

1) Great differences in egg and larvae quality exist between Arcto-Norwegian and Baltic cod.
2) The intraspecific variation in egg and larvae quality among Arcto-Norwegian cod is considerable. This is the result of environmental and hereditary influences.

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