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Fluctuations in Abundance of the Barents Sea Cod Related with
Environmental and Ecological Changes

by

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ABSTRACT

The cod in the Barents Sea has been the most productive gadoid stock in the Atlantic. The variation in catches has always been large, but during the last decade the catches and stock abundance have reached the lowest level in record. Three major causes of variation have been discussed; stock reduction through exploitation, environmental influence on recruitment, and species interaction effects on maturation and growth. In addition interactions between the three factors may be important. The influence of each specific factor is difficult to evaluate from incidental observations and short term data series. In that respect the database on catch, and on biological and environmental parameters of this stock, which partly goes back to the last century, takes an unique position compared to most other stocks, e.g. the commercial catch statistic is available from 1865.

Variation in catch caused in former times major survival problems for the coastal human populations, and therefore extensive investigations on cod biology and population dynamics was initiated at the turn of the century. Systematic environmental observations are also available from about the same period. The amount and quality of the data have gradually improved, but quantitative data on the stock size are restricted to the post second World War period. Finally, quantitative information on plankton production and interaction with other species in the area are provided during the last decade.

In this paper the fluctuation in catches and stock abundance will be compared with changes in recruitment, age at maturation and growth. This information will be discussed in view of historic information on ecological and environmental changes. The stock has been under particularly high exploitation pressure since the mid seventies. Further, large changes in growth rates and poor recruitment to the commercial exploited stock have characterized the 1980's. Emphasis will be put on elucidating this situation, and compare it with similar events in the first part of this century.