

A B S T R A C T

Relationship of parent stock size and year-class strength
in Norwegian spring spawning herring, by Olav Dragesund
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Estimates of the size of the spawning stock were mainly obtained from tagging experiments. By extending the series of observations with data from the literature the size of the spawning stock could be compared with subsequent abundance of the resulting year-class (a) at the 0-group stage for the 1959-1969 year-classes and (b) as adults (6 years) for the 1947-1963 year-classes.

The results indicated a relationship between the parent stock size and subsequent abundance of the resulting year-class when favourable condition for spawning and hatching existed. However, in most of the years, year-class strength was determined by other factors which completely ruled out the effect of the parent stock size, when this was above a certain level.

Mortality estimates of 0- and I-group herring (i.e. small herring) indicated that the fishing mortality was relatively high, but because natural mortality was much higher, the exploitation rate was relatively low. A considerable increase in the exploitation rate of fat herring i.e. I- to IV-group herring has taken place during the 1960s, especially of the 1963-1966 year-classes. This increased exploitation rate has probably had a marked impact on subsequent numbers of recruits entering the adult stock.

A more detailed description of larval distribution and abundance in relation to spawning characteristics (stock size, age structure, location and time of spawning) is given for the years 1968 and 1969. Figures for mortality of herring larvae covering the period just after hatching are given, and the shape of the natural mortality curve during the larval and post-larval phases are discussed.

Some concluding remarks are given on the probability of the spawning stock to produce numerous year-classes when the stock size fluctuates at relatively low levels.