

LIFE HISTORY OF CAPELIN 1972-1983.

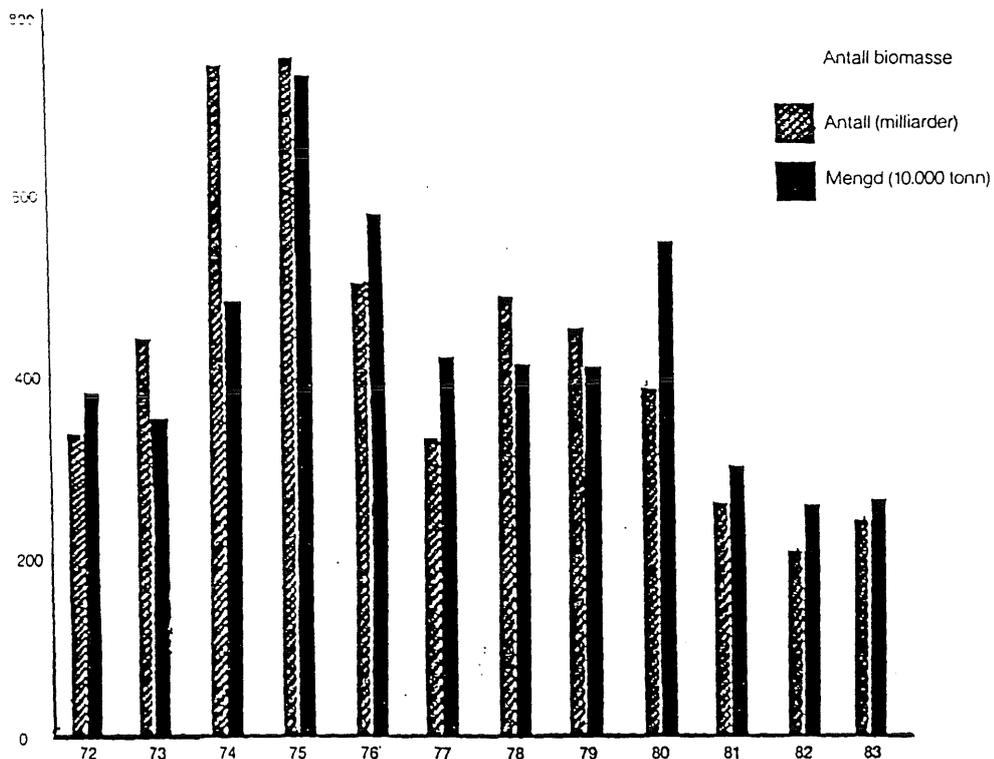
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The capelin is the largest fish stock in the Barents Sea. The capelin feed on plankton, and harvest the rich production area in the marginal ice zone of the northern Barents Sea. The maximum estimated stock of 7 million tonnes occurred in 1975 and amaturing stock of some 4 million tonnes was estimated in 1977 and 1980.

The capelin spawn in March-April on the coasts of Norway and USSR and the spawning migration used to channel huge quantities of biomass from the far northern Barents Sea to the spawning grounds on the coast. The spawning migrations were followed by predators, especially cod. This formed the basis for large coastal cod fisheries. The stock collapsed in 1983-1986 and is at present at a very low level. (Fig.1).



The stock built up in the period 1972-1975 because of a modest fishery and because of the very rich year-class 1972. The geographical distribution is far north and east in the autumn, and the growth was slow. The stock decline in 1975-1977 because of maturing and death after spawning of the 1972 year-class, and because of a large fishery in 1976 and 1977.

In the period 1977-1980 the adult stock had more or less stabilized at 4 million tonnes. The peak biomass in 1980 is due to exceptionally high growth that year. In the period 1981-1983 the stock level was at about 2.5 million tonnes. The decline in 1980-1981 was mostly due to rapid maturation in 1980 and subsequent death after spawning in 1981.

The mathematical model used for management incorporated those aspects of the population dynamics that were most important in the period 1972-1983: fishing, growth, maturation as function of size, and spawning mortality. Also, the data were utilised to estimate a spawning biomass/recruitment relationship.

On the basis of this model, and on the estimated growth parameters and natural mortality, a long-term yield of about 1.6 million tonnes was calculated, corresponding to a spawning biomass of almost 0.5 million tonnes. The assumptions of the model failed after 1983, and its applicability for management became dubious.