

Title: **Maximizing economic yield from a plankton feeding fish population on high latitudes**

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Abstract: Plankton feeding fish populations on high latitudes have a strong seasonal growth as food only is available when the sun is above the horizon. The rest of the year the biomass will be reduced as a result of natural mortality and reduced weight on each individual. Prices and costs per unit catch fluctuate seasonally when harvesting from such populations. Prices vary as content of fat and dry substance fluctuates. If the catch in periods has qualities that fit for human consumption - as an alternative to fishmeal or fish oil - the out put prices will vary even more. The catch related costs also have strong cyclic variation as the fish migrates between feeding and spawning grounds. In order to maximise economical yield from such populations multiple choices models are needed. Important inputs for such models are size and structure of the fishing fleet and seasonal fluctuations in out put prices and costs per unit catch. The paper is organised in four parts. The first part discusses what parameters needed to develop a multiple choice model for management of a plankton feeding fish population on high latitudes. The second part introduces what decision criterions needed to maximise economical yield, where seasonal starting and stopping points in fishing are essential. The third part presents the results of running a model developed on the Barents Sea capelin fishery. Theoretical and managerial implications are discussed in the last part of the paper.