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INCIDENTAL FISHING MORTALITY IN HERRING PURSE SEINING

By

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INTRODUCTION

The total unaccounted fishing mortality in the Norwegian spring-spawning herring fishery for all gear categories has been estimated to 150.000 tons for the period 1985-1987 (Anon. 1989). In purse seining, such incidental fishing mortality may occur during net burst, caused by the fish itself, and during storing of live herring in net pens.

For the fishermen, the consequences of net bursts are unwanted expenses to repair the gear damages, and reduced income as both catch and fishing time are lost. If net burst also results in instant and/or long term fishing mortality, the consequences are biasses in stock assessment based on fisheries statistics.

The contemporary incidental fishing mortality caused by net bursting appear to be most noticeable in the herring fishery. The Institute of Fishery Technology Research and the Institute of Marine Research have therefore made a project proposal to verify and quantify the problem, find reasons for the fishing mortality, and improve the fishing operation with the aim to reduce the incidental fishing mortality.

PROJECT PROPOSAL

The project proposal includes the following items:

1. Collection and analysis of fishery and catching statistics.
2. Small scale and laboratory tests:
   - Investigate the mortality of herring when exposed to scale loss, stress, high density and activity, low oxygen content, and a combination of these factors.
3. Meso scale trials with a small purse seine and net pens:
   - Simulate the strain which the herring will experience during net burst.
   - Transfer the herring to a net pen, and measure the instant and long term mortality.
4. Full scale trials with a large purse seine and a small research vessel:
   - Shooting the net on a large school, let the fish burst the net, and observe the behaviour of the fish and the net during the whole fishing operation, using sonar and UTV-camera.
   - Follow the school after escaping the net.
   - Search the sea bottom underneath the bursted net with underwater TV-camera for dead fish.

Proposals for reducing the incidental fishing mortality:

- Avoid shooting the net on large schools during daytime.
- Use of stronger webbing in the net.
- Reduce stops during hauling the net.
- Improve the school dimensioning device on the sonar.

The proposed project started this year, but items 2 and 4 have to be postponed due to reduced fund.

Data collected by a fishery organization last winter showed that net burst during the late phase of the net hauling occurred in about 30% of the daytime sets, while there was no net burst during nighttime sets (Beltestad and Misund 1989). This year daytime fishing was prohibited during the winter fishery for spring-spawning herring, and no net burst have

been reported. This indicate that net bursts are more frequent at daytime when shooting on large and dense schools. At night the herring are usually more dispersed.

Meso scale trials with a small purse seine and net pens will be conducted later this year. Schools of herring will be caught by a purse seine, and the fish will be stressed against the net for different periods of time, e.g. 15, 30 and 45 minutes. The behaviour of the herring swimming against the net will simultaneously be observed with UTV-camera. The school, or a part of it, will thereafter be transferred to a net pen and the instant and long term mortality will be measured over a 14 days period.

REFERENCES

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