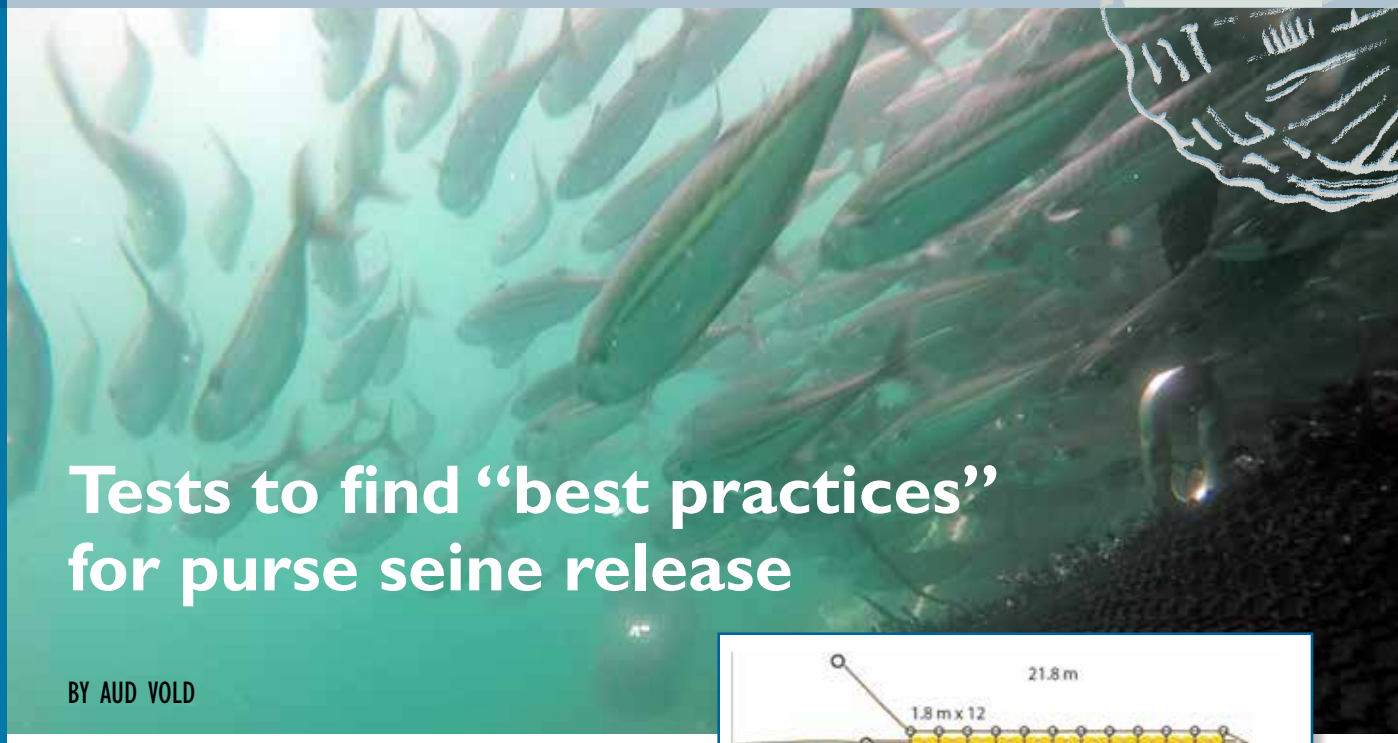

Tests to find "best practices" for purse seine release

BY AUD VOLD

Norwegian fishermen, fishery managers and researchers are working together to find the best way to release herring and mackerel from purse seine fishing gear, when needed. Trials are currently underway to investigate the functionality of "best practice" purse seine rigging and handling techniques during release operations.

Representatives from the Norwegian purse seine fishing fleet, fishing gear industry, Norwegian Directorate of Fisheries, Coast Guard, and Institute of Marine Research have tested and agreed on a set of criteria that characterizes "best practices" for catch release in the purse seine fishery (see fact box).

The project "Methods for Release of Mackerel and Herring from Purse Seine Nets" is funded by the Norwegian Seafood Research Fund (FHF) and aims to establish "best practices" for the release of mackerel and herring from purse seines (see fact box).

SMALLER RELEASE OPENING

The release process was documented through measurements of the release opening (depth loggers and laser meter), and with video-recordings above and below the water's surface, using GoPro cameras placed on the bunt-end (Figure 2) and on board the fishing vessel. Measurements indicated that the actual release opening area was usually less than the theoretical maximum which assumes the shape of the release opening is determined by gravity. However, in reality, the shape of the opening will also be influenced by other forces, including wind, currents, drift of the vessel, and the use of thrusters.

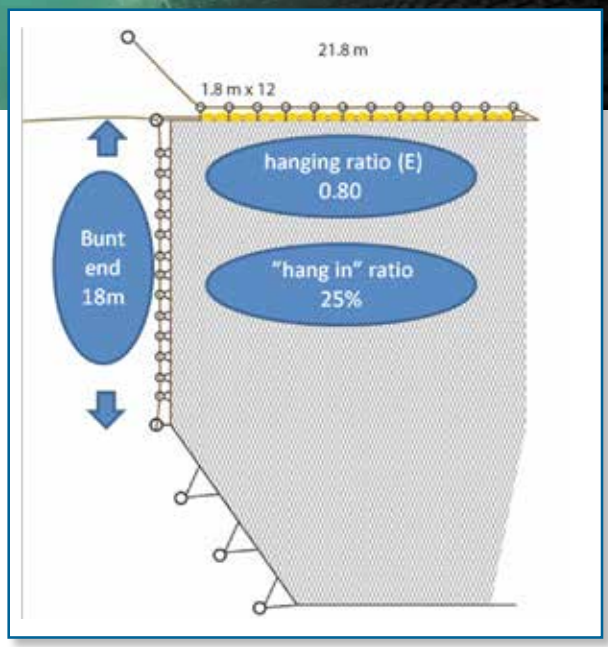

Figure 1: Proposed rigging for the codend/extension of purse seines in keeping with "best practices" for the release of fish from purse seines: Stretched length of the bunt-end should be at least 18 m; the minimum hanging ratio (E) of the bunt netting should be 0.8 or alternatively the maximum "hang in" of the meshes should be 25%.

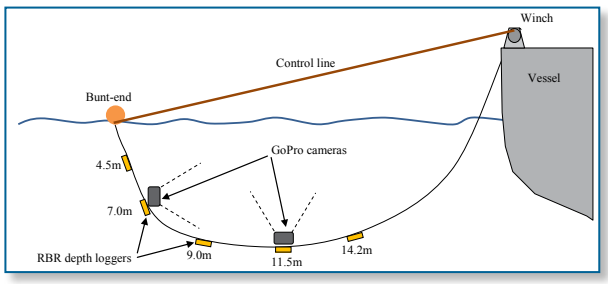

Figure 2: To document the release opening shape and to observe fish behaviour during release, depth sensors and GoPro video cameras were placed on the codend/extension.

VARIABLE FISH BEHAVIOUR

Observed fish behaviour varied greatly between seine sets, as well as between vessels. It is believed that the swimming behaviour of schooling fish indicates their

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level of stress. Interestingly, for much of the release event the fish do not escape through the opening, preferring to remain with the school in the net. When they do escape, they often swim out of the net with structured schooling behaviour during early stages of release (Figure 3). However, towards the end of the release process, when the fish were densely crowded in the net, fish can be seen escaping in an unstructured / chaotic manner (Figure 4), which is not consistent with good fish welfare.

The Institute of Marine Research will continue to investigate factors that affect fish during the release process, in order to maximize the likelihood of fish survival after release. Although some factors affecting fish behaviour are beyond fishermen's control, careful handling of both the vessel and seine during release operations is important to maximise fish survival. We hope the majority of purse seine skippers and crews will voluntarily adopt the "Best practices for releasing fish from purse seines".

Fact Box

Who do the "best practice" rules apply to?
Coastal and ocean-going purse seine vessels; but not vessels with live fish storage.

Which fisheries do they apply to?
Purse seine fisheries for mackerel and herring.

When do they apply?
When attempting to regulate catch size through release. When the intention is to release the entire catch, the seine net is usually opened by lowering the purse rings.

How should a catch release be carried out?

A. Upon arrival at fishing grounds, where high fish concentrations are expected, utmost care is required when setting the net.

B. Before fishing, each vessel should establish good routines for conducting release operations.

C. Releases must be carried out in a calm and controlled manner. Captured fish must be given the opportunity to swim freely out of the net throughout the entire release process.

D. Controlled release should be done over the bunt-end of the net. Uncontrolled release can occur when large catches force the top/float line to sink below the surface.

E. The hanging ratio (E, Figure 1) of the bunt should not be less than 0.8.

F. The bunt-end must not be shorter than 18 m. The lifting strop must not reduce the length of the bunt-end.

G. It must be possible to adjust the release opening using a rope, from the vessel to the junction between the bunt-end and the top/float line, to control the escape of fish from the net.

Figure 3: A group of mackerel escaping through the release opening in a structured schooling formation.

Figure 4: An unstructured release from a purse seine where mackerel clearly come into contact with the netting, ropes and other fish.

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