

Kurt Kvalsvik, Ole Arve Misund, Kjell Gamst, Roar Skeide, Ingvar Svellingen, Håkon Vetthus – Size selectivity experiment using sorting grid in pelagic mackerel (*Scomber scombrus*) trawl. Written contribution and oral presentation.

A high exploitation rate makes it necessary to use size-selective fishing gear to maximise the growth potential of the resource. There is also a strong price differential according to fish size that also favours the selective harvest of larger fish, especially fish weighing 600 gm or more. Experiments were carried out on the west coast of Norway with a single grid installed in a pelagic trawl. The grid was 3 m long by 2 m wide with an aluminium frame and GRP bars spaced 42 mm apart. A guiding ramp was installed in front of the grid, which was held at a 30-degree angle within the extension piece. The grid was attached at its leading edge to the tope of the extension and sloped down and aft. with a gap between its bottom edge and the floor of the extension allowing passage of retained fish into the codend. Towing speeds were around 4.5 kn. and flows through the grid were about the same except when there were large fish concentrations in the grid section. The first trials yielded 48% selection, with smaller fish escaping through the grid were about the same except when there were large fish concentrations in the grid section. The first trials yielded 48% selection, with smaller fish escaping through the grid into a collection bag. In the second trial 40% of the fish were selected out, again with reasonable size selection- The L50's in both trials were about 37 cm, with a wider selection range on the first trial where more small fish were encountered. It appears that reductions in the bar spacing may be needed in order to optimise selectivity. A Scanmar grid sensor proved useful for detecting when fish were passing through the grid and indicated when fish were schooling too heavily in front of it. No escapee survival studies were carried out, but results from tests on survival of mackerel escaping from a purse seine through a grid suggest that survival should be high. The grid was large relative to the deck space typically available on this class of vessel, causing some handling problems. A new version has been developed, articulated in four sections to roll up on the net drum and employing 38-mm bar spacing, but no trials have been carried out yet.

Unlike other studies with similar gear and species, no cases were observed with very large pulses of fish accumulating in front of the grid and blowing out the trawl before they could pass through the grid. There are no plans at the present time for focused escapee survival studies, but video observations during upcoming experiments should indicate likelihood of injury rates. High catch rates in this fishery are problematic for present survival research methodologies.

Comments and discussion – The presence of a cover has affected mackerel behaviour in other grid experiments. Grid sensors can be used to detect high concentrations accumulating before the grid to allow tactical adjustments in the fishing operation. Mackerel swam through the grid headfirst. There may be interest in the industry to use such grids to high-grade fish. Fish were heterogeneous in size because these tows were made through layers of scattered fish and small schools rather than large dense homogeneous schools. It was felt that using relatively large diameter bars in the grid should lead to lower injury levels.

Hans Polet –Experiments with sorting grids in the Belgium brown shrimp (*Crangon crangon*) fishery. Written summary and oral presentation.

Tests were done on a research vessel, then replicated on a commercial vessel. On the research vessel a cover was installed over the grid outlet, but on the commercial vessel an 80-mm outer codend was used surrounding the entire codend as well as the outlet to permit retention of marketable fish. Small shrimp were excluded by the grid, apparently entrained in the water flow. Small flatfish also seemed to be carried out the outlet, especially on the commercial vessel perhaps due to improved flow. Other bycatch species also seemed to be substantially excluded. Large numbers of starfish caused severe clogging, resulting in high shrimp loss. Plans are underway to develop means to pre-sort starfish. Apparent advantages of grid use: cleaner catch, exclude small shrimp, conservation of pre-recruit finfish for other fisheries, and less impact on habitat. However, to the individual fisherman there are losses of marketable catch. Also, juveniles of species preying on shrimp will be conserved, and perhaps lower discards of fish will reduce a food resource for shrimp.

Comments and discussion – The grid bar blockage ratio is about 25%. The grid was installed just behind the trawl body, about 5 m from the end of the codend. No flapper or guiding funnel was used. When the grid was not used, most small shrimp escaping through the body netting escaped through the bottom panel, but with the grid installed most small shrimp escapes were through the upper panel suggesting a change in water flow patterns throughout the trawl body. Codend mesh selectivity seemed to increase substantially when the grid was installed.