Avoiding and Eliminating By-catch

By-catch is the incidental capture of juvenile fish or non-target species that occurs, to some degree, in many fisheries and with many fishing gears. Avoiding by-catch through practical fishery steps is fundamental to achieving long-term sustainable fisheries. Through a combination of regulatory control and technological development Canada has made excellent progress in minimizing by-catch.

Dragging offshore cod off the coast of Nova Scotia

Canada's annual fishing plans prepared by industry and approved by the Minister of Fisheries and Oceans limit by-catch to a small percentage of the harvest. Fisheries regulations now require that by-catches not exceed specified levels and that, in general, by-catches be brought ashore. In some instances, the fishing industry exerts self-regulation by penalizing fishing captains and skippers who do not follow the rules.

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Fishing gear modification

Examples of some of the steps taken to avoid by-catch include:

- the use of special grids in several fisheries to significantly reduce groundfish by-catch. For example, in a shrimp trawl, such a grid directs groundfish to an opening in the net while allowing shrimp to be retained;
- increased mesh size and combinations of different shaped meshes in groundfish trawls that allow juvenile fish to escape; and
- escape vents and other techniques in lobster traps to allow undersized lobsters to escape.

In addition to strictly practical gear modifications, other more experimental programs involving the use of underwater cameras, advanced seabed discrimination and detection devices, flume-tank testing, comparative fishing, and fish behaviour studies are underway. The latter work is designed to avoid all but the target species during harvesting.

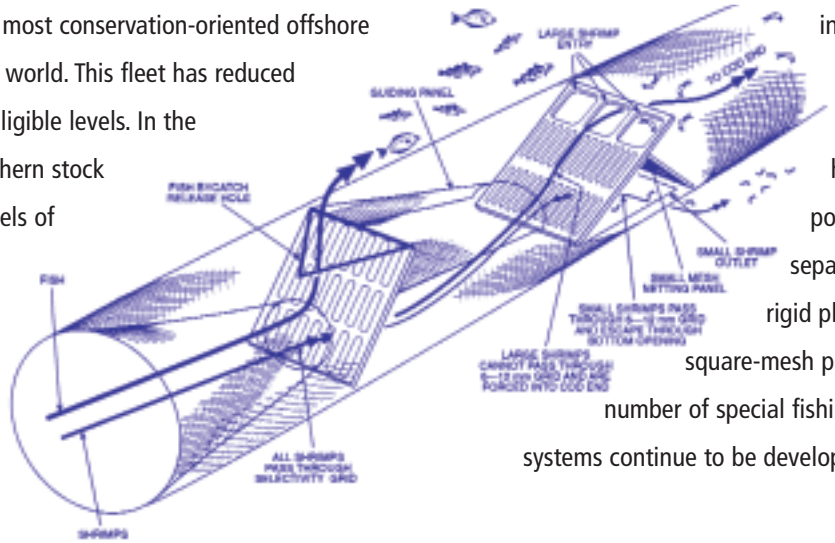
above: Winter fishing through the ice, Labrador Sea

below: Multiple grid by-catch and shrimp size sorting system

Northern Shrimp

An example of success in protecting non-target species is Northern Shrimp. Canada has almost solved the by-catch problem in its Atlantic shrimp fishery through a combination of gear modification and time-area closures.

Shrimp fisheries around the world can cause heavy damage to other species, but the Canadian northern shrimp fleet is the most conservation-oriented offshore shrimp fleet in the world. This fleet has reduced its by-catch to negligible levels. In the very sensitive southern stock areas, by-catch levels of cod, Greenland halibut and American plaice are less than one tenth of one percent.



Groundfish

Avoiding by-catch in the groundfish fishery is most difficult because different species intermingle in the water column or near the seabed. Techniques such as adjusting mesh size, closing certain areas at certain times and developing appropriate fishing gear and techniques have reduced by-catch. Grid systems similar to those used in the shrimp fishery are being adapted to separate groundfish species following previous success in the silver hake fishery to avoid capturing cod, haddock and pollock. Horizontal separator panels, rigid plasticized square-mesh panels and a number of special fishing-gear rigging systems continue to be developed.