

Photo: Karan, Masrad



# A CRISP approach to sustainable fish capture

BY JOHN WILLY VALDEMARSEN

*Centre for Research-based Innovation in Sustainable fish capture and Pre-processing technology (CRISP) is an initiative to develop smarter technologies to meet future challenges for a sustainable and economical viable fishing industry. CRISP is a partnership between research institutions and the industry with a pending application to the Research Council of Norway to become a Center for Research-based Innovation.*

Trawling and purse seining are among the most important harvesting technologies, although tarnished by excess by-catch, wasteful discard practices, damage to demersal organisms and habitats, high energy con-

sumption with resulting air pollution, and to some extent reduced quality of fish products due to suboptimal handling of fish during capture. The purpose of CRISP is to establish a platform for cooperation where scientists, fishermen,

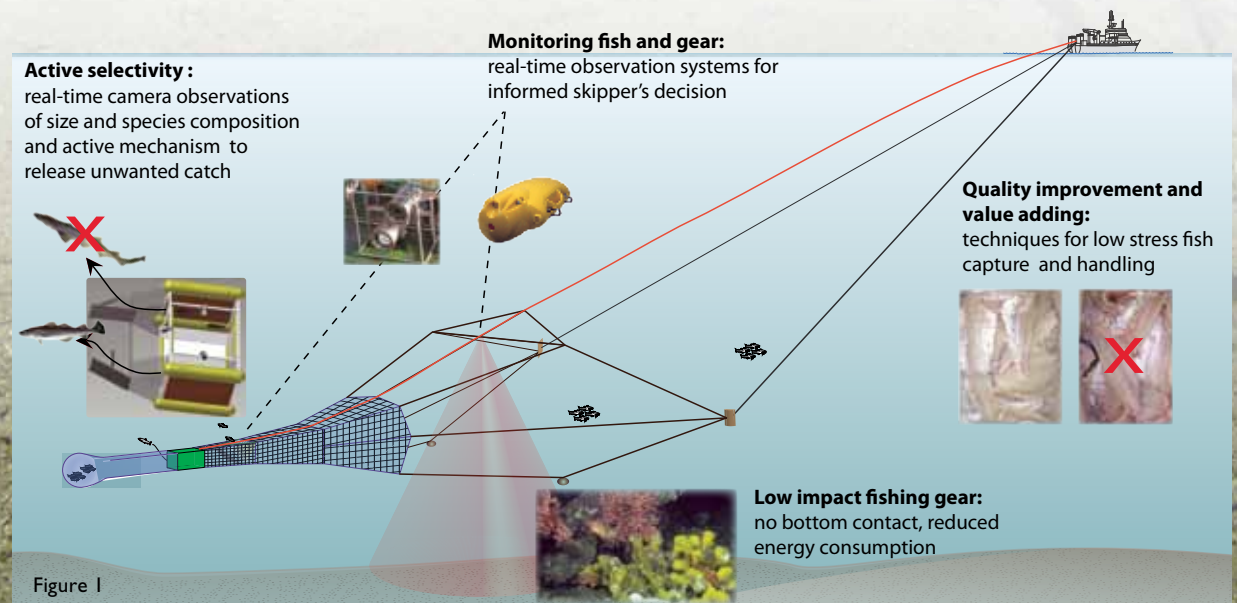
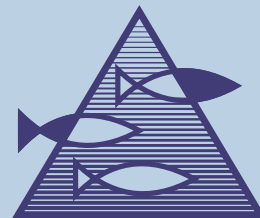


Photo: MAREANO

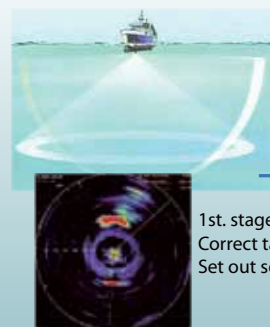




INSTITUTE OF MARINE RESEARCH  
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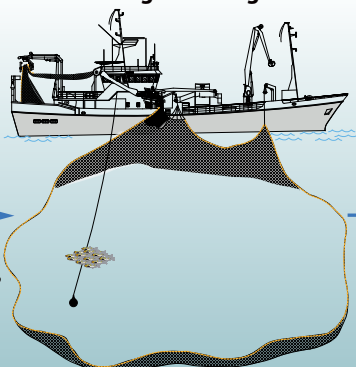
### 1. Pre-catch identification



1st. stage decision:  
Correct target fish?  
Set out seine?

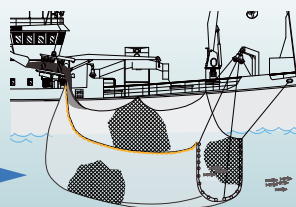
Challenges:  
Develop techniques for  
pre catch identification  
of fish schools

### 2. Monitoring fish and gear



Challenges:  
Develop techniques and instruments  
for in-net sampling (species, size, quality) of  
fish, and instrument for measuring  
crowding density

### 3. Active selectivity



2nd. stage decision:  
Correct target fish?  
Slipping or not?

Challenges:  
Develop fishing gear and techniques  
for release of fish with no post slipping  
mortality

Figure 2

fishing gear manufacturers and electronic instrument producers will work together to solve these challenges.

### RESEARCH AND SOLUTIONS

Future trawl solutions will include better monitoring of the capture process combined with active manipulation of gear performance during fishing, in order to release non-target fish and to optimize fishing efficiency. The goal is to develop integrated solutions that will involve real-time camera observations and automatic release systems, as well as mechanisms to adjust gear performance, e.g. adjustment of depth and spreading efficiency of trawl doors during trawling. Off-bottom trawling is an obvious solution to reduce bottom impact and therefore future trawl concepts that have no or only minor bottom contact will be developed (Figure 1).

A major challenge in purse seining is to determine the quantity, size, quality and species composition of the fish prior to shooting the net or in an early phase of pursing. Researchers at IMR have in-depth competence in using acoustic instruments to measure fish, and also a long tradition of developing commercial instruments in cooperation with the Simrad Company. After the catch has been encircled by a purse seine, acoustic sounders or optical instruments may be used to identify species and size distribution as well as density. It is also essential to develop purse seine net constructions that facilitate quick and gentle release of unwanted catch without harming the fish (Figure 2).

Fish products harvested by any fishing method need to meet quality and ecolabelling standards to be

competitive in a global market. Capture-based aquaculture (CBA) technology represents a potential solution to such challenges, and will therefore be addressed by this initiative. An impact evaluation of introducing sustainable harvesting technologies and improved fish quality will be done by expertise from Nofima Market.

### COORDINATION NEEDED

The complexity of the fishing processes and their interaction with the environment require intelligent solutions to meet future demands for acceptable harvesting practices. Sector-based industries and research groups alone are not optimal for developing equipment and processes that can meet these new requirements. By coordinating leading research groups and relevant industry partners it is envisaged that innovative solutions can be found and developed to commercial products that will bring the harvesting practices into a new acceptable and responsible era. Such innovations may give the Norwegian fishing industry trade benefits at the global market.

The Institute of Marine Research has therefore initiated a process by seeking funding to establish a Centre for Research-based Innovation in partnership with the research institute Nofima and the companies Scantrol AS, Kongsberg Maritime AS, Egersund Group AS, The Norwegian Fishermen's Sales organization for pelagic fish, The Norwegian Fishermen's Sales Organization, Nofima Marin, and Nergård Havfiske AS.

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