

I-2004



THE REFERENCE FLEET

*– cooperation between fisheries
scientists and fishermen*



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In order to provide proper advice to managers, it is vital for fisheries scientists to have detailed knowledge about how the fishing fleets operate during the season, what species they catch and where they operate. In particular, it is important to know the age distribution of catches, since this is the basic input in models used to estimate the abundance of fish stocks.



The Institute of Marine Research (IMR) in Norway has always cooperated closely with the fishing industry. For example, personnel from IMR regularly sample fish from commercial landings and IMR charters fishing vessels for scientific surveys. A drawback with this form of contact is that it is somewhat sporadic. The Reference Fleet is a relatively new project where the objective is to improve data- and information collection through operational cooperation between fisheries scientists and fishermen.

WHAT IS THE REFERENCE FLEET?

The Reference Fleet is a small group of Norwegian fishing vessels that are contracted to provide IMR with detailed information about their fishing activity and catches on a regular basis. Their sampling and data management procedures are similar to the system used on board IMR's research vessels. The Reference Fleet was initiated in autumn 2000 and currently comprises eight vessels (see pictures).



“K. ARCTANDER”

Gear: bottom/shrimp trawl
Length: 53.1 m
Owner: Lofoten Trålerederi A/S



“UTFLESA”

Gear: purse/Danish seine
Length: 21.3 m
Owner: Utflesa AS



“LEINEBRIS”

Gear: longline/gillnet
Length: 44.85 m
Owner: Leinebris A/S



“PRESTFJORD”

Gear: bottom trawl
Length: 56.9 m
Owner: Prestfjord AS



“GEIR”

Gear: longline
Length: 45.65 m
Owner: H.P. Holmeset AS





“VAREGG”

Gear: bottom trawl
Length: 62.9 m
Owner: AS Varegg



“HAUGE SENIOR”

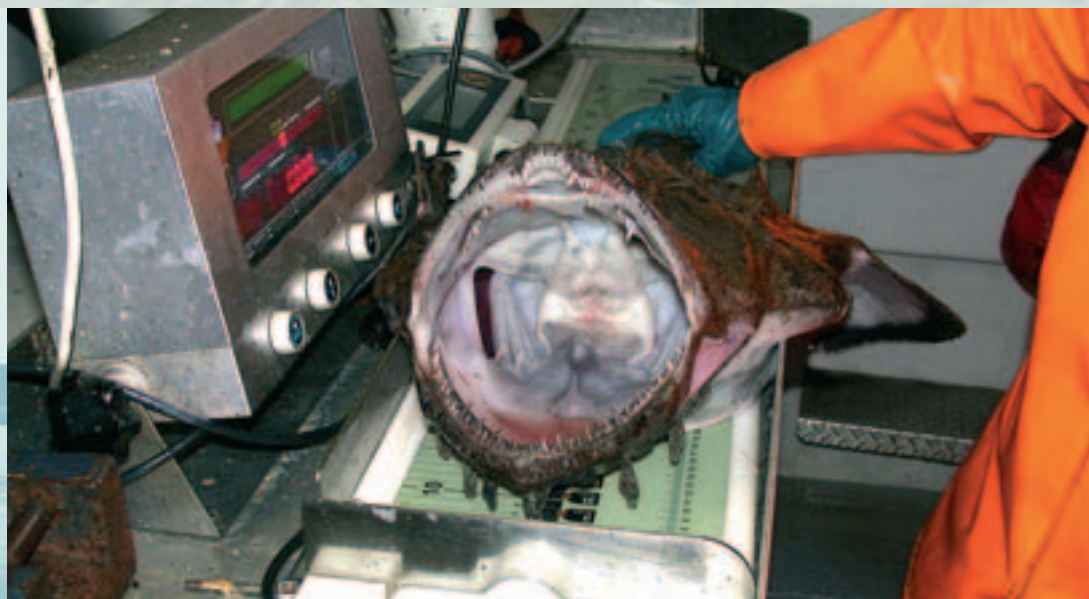
Gear: longline
Length: 43.2 m
Owner: Hauge & Hauge AS



“KATO”

Gear: gillnet
Length: 38.24 m
Owner: Kato ANS

An anglerfish is measured on “Utflesa”.



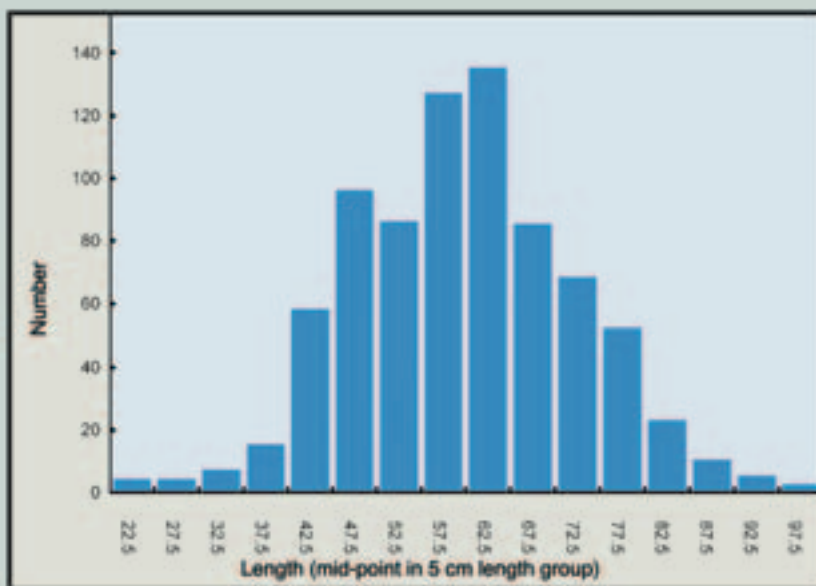
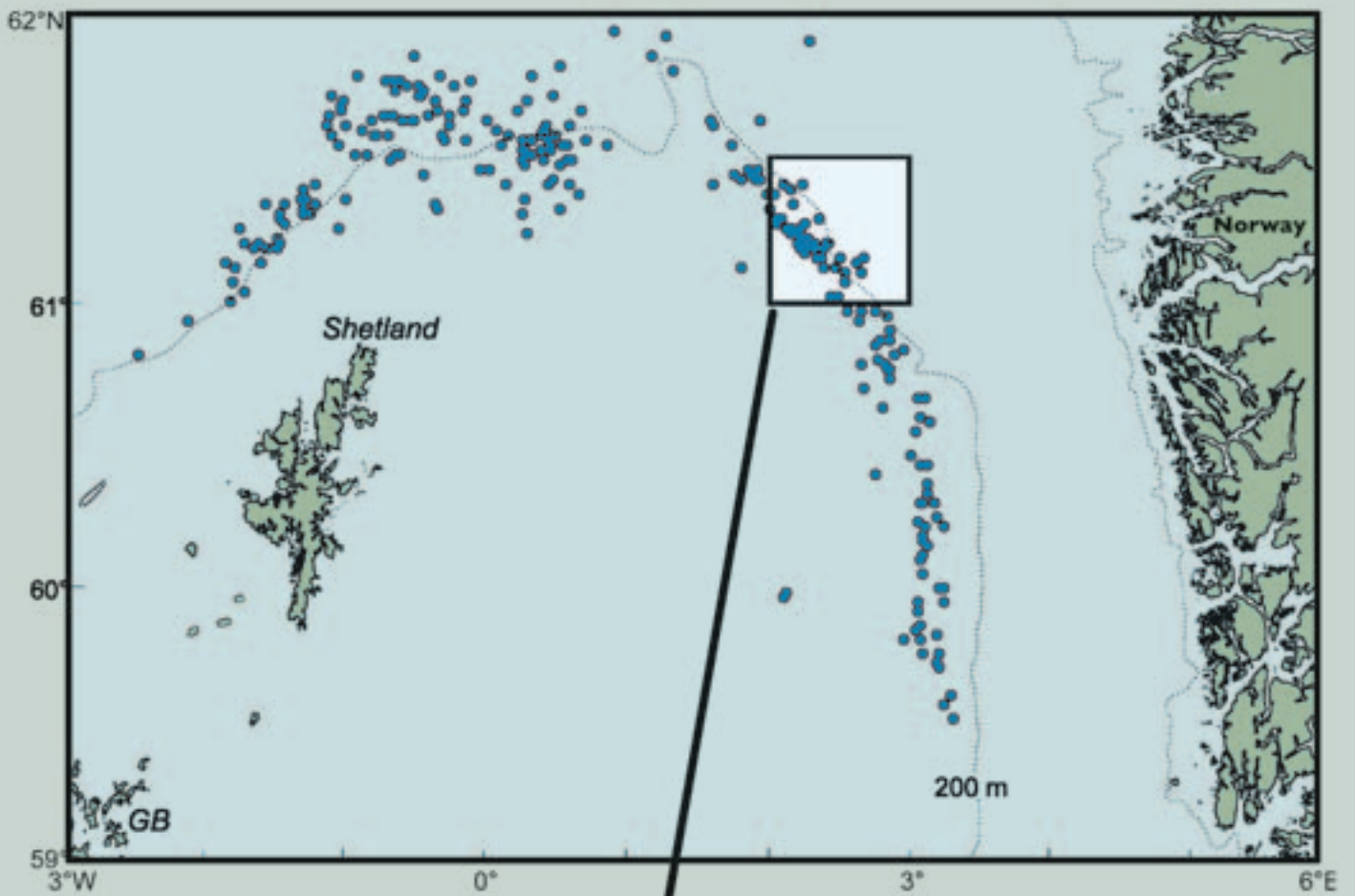
SAMPLING SYSTEM

Each vessel in the Reference Fleet is equipped with an electronic fish sampling board (Scantronic), scales, otolith sampling device and PC with specialised software. IMR provides training support and updates the scientific equipment on an ongoing basis.

The agreement between IMR and the Reference Fleet includes a requirement for the vessels to record their catch logbooks electronically (trawlers: for each haul, longliners/gillnetters: for a representative set of longlines/gillnets and for the total catch each day). The electronic logbooks provide information about the species composition (in weight) of the catches, together with positions and fishing depths. Every week, a selection of catches is sampled in more detail: 60 individuals of each species are length measured (in addition, otoliths are sometimes collected for age measurements). Data are recorded electronically and transmitted to IMR via a satellite link (together with the electronic logbooks). This information is continuously added to IMR's research database.

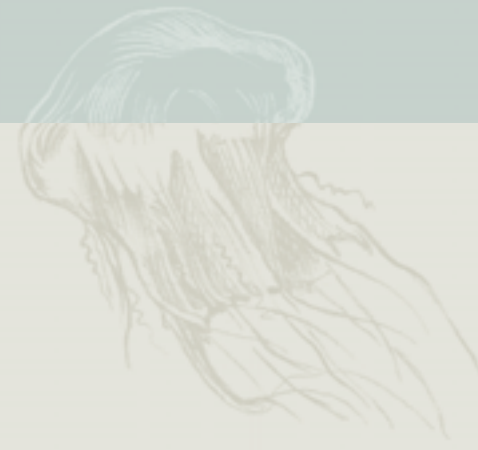
IMR also has access to data from the vessel monitoring system (satellite tracking) operated by the Norwegian Directorate of Fisheries (this only applies to seven of the vessels in the Reference Fleet). The satellite tracking data provide even more detailed information about the vessels' movements than the logbook data. The Reference Fleet vessels are also sometimes requested to conduct specific observations, e.g. of marine mammals, birds and king crabs. IMR is currently working on an expansion of the Reference Fleet to include vessels from the pelagic fisheries.





Top: positions of trawl hauls with catches of saithe from the Reference Fleet in February 2003 (North Sea west of the Norwegian trench).

Bottom: length frequency distribution of saithe from trawl catches in the marked square on the map, based on length samples from the Reference Fleet.



SCOPE OF SAMPLING - EXAMPLES

1580 individual catches were sampled in 2003:

Species	Length measurements	Otoliths (age measurements)
Cod	46 300	1606
Haddock	41 700	870
Saithe	25 100	750
Shrimp (Pandalus)	23 800	
Tusk	20 600	
Greenland halibut	9 700	
Ling	12 000	

HOW IS THE INFORMATION FROM THE REFERENCE FLEET USED?

- Estimating catch of different age groups. More samples from the ocean-going part of the fleet are needed, and the Reference Fleet is helping to improve this situation.
- Monitoring where various fleets operate and what they catch in the course of the season. This enables the Institute of Marine Research, for example, to decide how to allocate commercial catch sampling resources in time and space.
- IMR constantly receives information from the Reference Fleet about technological developments and improvements in the fisheries.
- Information about species which are not normally caught during IMR's regular research cruises, e.g. tusk, ling, skates and sharks (and other deep-sea species) is provided by the longline vessels in the Reference Fleet.
- Testing of new technology such as electronic logbooks.
- IMR receives biological samples throughout the season, whereas regular research cruises only supply information from a limited period of time during the year.
- Important biological information is obtained from the Reference Fleet's observations of sea mammals, sea birds, red king crabs and by-catch in the shrimp fishery.
- Through the relationship of trust with the Reference Fleet, it is possible for IMR to discuss controversial issues in the media with the crew on board the vessels, in order to obtain a common understanding between fishermen and scientists.

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