MARINE RESEARCH *NEWS*

First fishing vessel to be built as a research platform

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Monitoring the marine resources and the environment is vital for Norway, with such huge resources spread throughout an extensive economic zone. Demands for sustainable harvesting and adequate monitoring are becoming ever more stringent, while the availability of the resources needed to carry out these tasks does not always match the sharpened requirements.

The most severe limitation is associated with the high cost of gathering marine biological and physical field data. Vessel time is extremely expensive, and this implies that adoption of modern technology and new approaches to collect these essential data in more cost-efficient ways are decisive factors in determining the success of our efforts.

"Libas" lies at the quay in the shipbuilding yard. The vessel is 94 m in length and its 8000 HP main machinery gives it a top speed of around 20 knots. A special propeller design makes a cruising speed of 15 kts possible at low propeller revolutions (90 rpm). This gives the advantage of low fuel consumption and, we expected, low noise emission (the noise generated by the vessel will be measured in the same way as is done for research vessels). If the estimates are confirmed under real conditions, "Libas" will be a worthy vessel for many types of research, offering almost 50 % greater effective coverage than the vessel we currently use as a standard for routine cruises.

ECOSYSTEM MONITORING BECOMING MORE DEMANDING

Until recently, monitoring resources and the environment has largely been a matter of large-scale field surveys which give us an "instantaneous" picture of the situation in a particular month of the year. Measurements of this sort can be compared with corresponding measurements made in previous years, providing a time series of biomass measurements, which do not need to be correct in absolute terms, but which offer a true picture of the development of stocks over time. The new requirements mean that in the future we will need to monitor the state and development of the ecosystem, with all its complex interactions, rather than just individual stocks. This implies, for example, that:

- when we carry out field studies there will be a need for more capacity than dedicated research vessels can supply, in order to cover all species and the environment at the same time.
- instantaneous measurements made once a year will no longer be sufficient. We are going to need a flow of data throughout the year that can provide better insight into stock migrations and distributions, and how these influence one another.
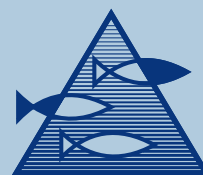
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FISHING FLEET TO THE RESCUE

Utilising the capacity of the fishing fleet could be a decisive factor in attempts to satisfy these requirements. Modern fishing vessels have an infrastructure and a level of technology that makes them very suitable as platforms for marine research. In many cases, such vessels can be fitted with appropriate technology to provide scientists with data without compromising their own activities. Indeed, cooperating in this way could give the fishing industry better insight and information that would help them to improve their own cost-effectiveness. Technology of this sort could help in the data-acquisition process throughout the year, as well as increasing research vessel capacity for major ecosystem investigations.

COOPERATION IN VESSEL DESIGN

For many years the Institute of Marine Research has been using a reference fleet to gather catch information as support for its stock evaluations. Now we are ready to take the next step, which is to develop ways of cooperating with vessel owners in planning and designing new boats. One such cooperative project has already been realised, with the new combined purse seiner/trawler "Libas" (see photo). In this project, the Institute has been able to install instrumentation and equipment that makes the vessel highly suitable as a platform for marine research. "Libas" has been fitted with the following types of equipment:

- acoustic instrumentation for fish biomass quantification
- hydrographical instrumentation or equipment for operating instrumentation of this sort
- laboratories
- drop-keel for instruments designed to improve the quality of acoustic data (i.e. eliminating air-generated noise)
- modern satellite communication for information transfer between the Institute of Marine Research and the boat

Scientists will be able to control the equipment from their offices, and hence, collect data while the vessel is in commercial operation. "Libas" is also well-equipped to supplement the Institute of Marine Research's research vessels when needed. The vessel has been designed to produce low levels of noise and for high-speed sailing, and is thus an efficient survey vessel. Its first cruise is planned for July 2004, when distribution, densities and behaviour of mackerel are the main tasks.

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