



**THEME:
FISHERIES
AND MARKETS**

This edition of *Fiskeriforskning Info* deals with the results from the research project **Market-based harvesting strategies**, which is financed by the Fishery and Aquaculture Industry Research Fund (FHF).



PHOTO: FRANK GREGERSEN, FISKERIFORSKNING

Stable quotas increase profitability

The Norwegian fisheries industry can earn more if quotas are maintained over years. Potential benefits are improved predictability in the supply of raw materials and unnecessary build-up of capacity in the fleet and industry in periods when the quotas increase. Both cause economic problems and bankruptcies when stocks decrease and quotas must be lowered.

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“The past 30 years have seen three periods, each lasting from 3-5 years, where cod quotas have reached peak levels. The result has been over-investments in fishing vessels and industrial plants, with ensuing problems when, after a few years, the quotas must be reduced to avoid overexploitation”, says Senior Scientist Bent Dreyer.

The last decline came in 2001/2002, with many bankruptcies along the coast.

– **Can fluctuations in the fisheries industry be avoided when the size of the fish stocks varies?**

“Variations in the size of fish

stocks will always exist, but the quotas can be maintained from year to year. By keeping the quotas lower than what is possible to fish this year with a high stock estimate, more fish will be left in the sea. In periods with lower stocks, we can take the same quantity of fish because the quotas are at a sustainable level. The quota adjustments should be gradual, e.g. with an increase or decrease of 10% from one year to the next. Seen as a whole over several years, a stable withdrawal will give just as much fish as when the withdrawal fluctuates with stock size.”

– **Why isn't it most profitable to take the maximum of what nature can give?**

“Large catch peaks are

followed by big investments, for which there is no basis in the long run. This causes a huge gap between the raw material supply the industry needs and what actually is possible to extract from the sea. Profitability is weakened as the debt increases, which ultimately means a new decline with liquidations and bankruptcies. The problems are enhanced in that new vessels and industrial plants investments, due to time lags, first become fully operative when the quotas are on their way down.”

Dreyer also says that these fluctuations complicate long-term marketing efforts, which are dependent on building up products and markets and holding the supply stable over time.



Senior Scientist Bent Dreyer is leader of the project **Market-based harvest strategies**. Works specially with business economics and strategies in the marine sector. Doctorate in Business Strategy.

Fish can become more valuable

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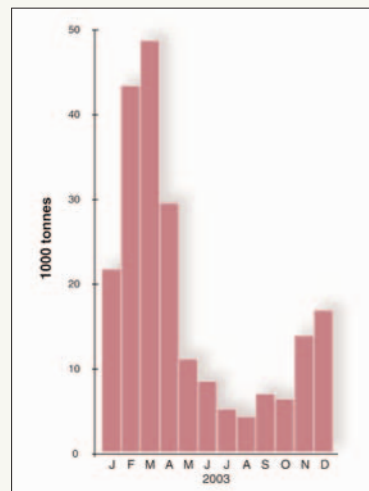
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The fishing industry has normally been preoccupied with efficiently catching as much fish as possible in the least time. The processing industry has created various products based on the possibilities of the raw materials, and then sold where sales have been possible. The project “Market-based harvesting strategies” has revealed that the value of seafood resources can be considerably increased without fishing more than we do now. Basically, we have to organise fisheries and industrial production based on the needs for different types of seafood products in the various markets.

Too much in too little time

Today, large quantities of fish are taken in a short time. The result is often low quality and falling prices. To increase the value, the catch should be better distributed throughout the year.



Large fluctuations in landed quantities of fish limit the possibilities to exploit competitive advantages in the markets. The figure shows Norwegian vessels' monthly landings of cod in Norway in 2003.

“The lowest possible catch costs and the largest possible catch volume is the ruling strategy in the fisheries industry”, says Scientist John Isaksen.

“One example of this is our spring cod fishery on the coast of Finnmark. While the cod are usually of high quality, the young fish that head for the coast of Finnmark in the spring are more susceptible to lower quality after catch because they feed on capelin. This results in low priced products which means lost revenues for the industry”, says Isaksen.

Fiskeriforskning's estimates show that the fishing fleet alone can have lost more than 300 MNOK from 1999 to 2002 because much of the cod was taken in an unfavourable period with regard to price and quality.

“Another example is the saithe fishery. Today, large quantities of small saithe are sold in a short period of the year and in competition with low-priced products of Alaska pollock and different white-fish species from other countries. Saithe will become much more valuable if it is taken when large because i.a. it will be better suited for production of salted and dried fish because size itself is a highly valued attribute in these markets.”

Other strategies for increasing value

Fewer catch rights and further specialisation of individual vessels are some of the ways to improve the quality of raw materials.

Vessels with many licenses prioritise catch efficiency and volume before quality, such that they can maximally exploit the various quotas. They alternate between fishing for cod, haddock, saithe, mackerel and herring, and the tempo in the fishery intensifies when they try to secure their share before the total quota is taken.

“Specialised vessels, fishing only a few species, is one way to avoid quality problems and large fluctuations in catch quantities”, says Scientist Stein Arne Rånes.

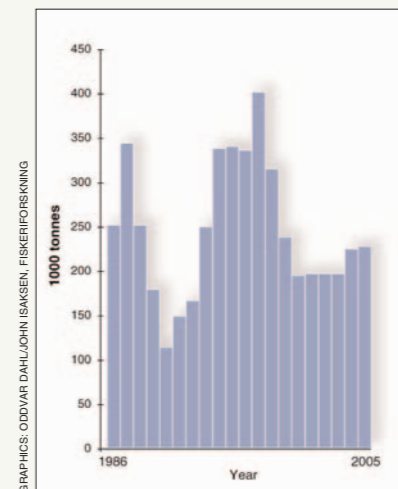
– **How can fleets and the processing industry collaborate to produce products that give improved value in the markets?**

“The fish processing industry consists of companies that produce a variety of products, and the fleet is made up of vessels varying in size and fishing pattern. Long-term contracts between vessels and companies are one way of ensuring supplies of the right species and sizes at the right time. The fresh fish auction is another way to promote competition to deliver raw materials. Price-rewards for quality will also help to implement technology for careful handling and storage on board the vessels.

Other schemes include quota banks and multi-annual quotas. With quota banks, vessels that have not fished their entire quota can transfer the rest to the next allocation period. Multi-annual quotas instead of one-year quotas will also help reduce uncertainty, which seems to generate over-capacity in this industry.”

– **Some argue that the quotas should reflect the fluctuations in the stocks. Why?**

“For some of the stakeholders, it will be most profitable to choose this short-term strategy. However, for the fisheries industry as a whole, there is greater profitability in quotas that are maintained from year to year. Profitability will increase because the supply of raw materials becomes predictable.”



Fishing quotas that are kept stable over several years will increase the profitability in the Norwegian fisheries industry. The figure shows Norwegian quotas of Northeast Arctic cod from 1986 to 2005.

Stable quotas give competitive advantages

With stable quotas, it is easier to build up sustainable fish stocks. More fish in the sea will make it easier to catch the species and sizes required.

Large stocks will improve the chances for a more stable supply of raw materials. This is important if, for example, one produces fresh fillet products where buyers often demand year-round, continuous supply.

“A large stock will also make it easier to catch fish suitable for producing saltfish, clipfish and stockfish which, because of their size, have competitive advantages,” says Scientist Stein Arne Rånes.

– **Why is fish caught when it is poorly paid or has too low quality?**

“An important reason is the competition between the vessels. When the total quota is less than the sum of the individual quotas, they compete to secure their share.

Such an “Olympic fishery” is effective and rational for many fishing vessels, but also leads to large catch peaks resulting in bottlenecks and production problems in the companies. The quality is reduced and the prices fall. At other times, the problem is a lack of fish. To avoid this negative effect, each vessel should be ensured a fixed quota that can be taken whenever it suits the vessel.”



Scientist John Isaksen works specially with industrial economics in the marine sector. Studies the interaction between fishing fleet and fishing industry, and how this influences added value and the markets for seafood products.



Scientist Stein Arne Rånes has fisheries regulations and the interaction between fleet and industry as his main area. Working on his doctoral thesis on experiences with new administrative systems in the Norwegian fisheries industry.

We know more about fish than about fishermen

We know a lot about the fish in the sea, but little about the fishermen. In order to realise the market value potential in the fisheries industry, we must also understand the behaviour of the fishing fleet and how it can be motivated to supply the demanded raw materials.



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Little research has focused on the fishing fleet's catch behaviour and how this is controlled and motivated.

"This research project will help the authorities and the fisheries industry find a better tool for understanding what motivates behaviour in the fishing fleet, and thus how management systems

should be developed to help create greater values. The starting point will be the consumers' needs and the potentials for exploiting the competitive advantages of Norwegian seafood", says Senior Scientist Bent Dreyer, who has led the project.

– Why is it so difficult to motivate for optimal utilisation of the seafood resources”?

"Due to efficiency claims, the largest possible volume and lowest cost per produced unit have been emphasised in the industry. When the fish is on land, different products are created based on the raw material's potentials, and then sold where sales have been possible.

At the same time, industry heterogeneity creates various needs for species and sizes of fish. Also, there are some factors over which we have no control, such as climate, the fish's migration patterns and biology – which means that the quality varies in different seasons and in different geographical areas. These and several other factors make it difficult to control the fisheries."

Even though fisheries management is complicated, Norway is in the international front.

"However, the volumes won't increase in the future, thus it is important to choose harvesting strategies that emphasise how to reduce uncertainty and how we can improve the market value from the seafood resources", says Dreyer.

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From Fiskeriforskning's analyses laboratory.



Fiskeriforskning performs research and development for the fisheries and aquaculture industries, mainly within aquaculture, processing and marketing.

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