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A sea full of immigrants

Our coast is about to be invaded by belligerent jellyfish in incredibly large numbers. Millions of huge king crabs are on their way south while floating Japanese seaweed is on its way north. What exactly is happening in the sea?

Marine Researcher Jan Helge Fosså at the Institute for Marine Research is glad he's not a sea-bed fish from a fjord up north. He shivers at the thought of the encounter between the flounder and the gigantic Russian crab.
King crab is the official name of this immigrant from the east.
Millions of them are to be found on the coast of Finnmark and further south towards Troms. They are absolutely gigantic, says Fosså, spreading his arms to illustrate the size.
Originally this species of crab comes from the northern Pacific. From there he was brought by rail to Murmansk and put out in the Berring sea by soviet authorities. The huge crab has wandered towards the west and at the moment he is providing fishermen in Finnmark with bulk hauls and longed for income.

What we are witnessing is a huge ecological experiment. We are unsure as to how far this species will spread and what consequences it will have for other species along the coast. The king crab is potentially a dominant species and may well be the win the competition for food, while sea bed fish may be the losers,says Fosså.

However, we are aware of the fact that marine life is constantly changing, he explains. The North Sea is a relatively young and uncompleted marine environment. It is a mere ten thousand years since the ice receded. All the species of fauna found here have appeared after that time and new species are continually floating in on the current. If the environment is condusive they will stay.

As well as the changes already mentioned, there are those incurred by human intervention and these can couse a problem for marine ecology.

New species may arrive in the ballast water of ships or as growths on the outside of the ship's hull. New species are also imported by the aqua culture industry while others come as stowaways with these, eg. **algae** on oysters.

Biologists agree that it is unwise to move species from one environment to another. Norway has signed international agreements that non-native species will not be introduced to the environment.
When a new species has been introduced it is usually very difficult to get rid of. However, all species movement does not mean an ecological catastrophe, says Fosså.

The arrival of new species to our area may also be due to changes in the temperature of the sea. This may be the reason for the invasion of jellyfish currently threatening southern Norway.

The belligerent Maneta Apolemia is a huge predator, which can be up to30 m in length. In 1997 when it was first observed in these parts in large quantities, it was an unknown species for Norwegian scientists. However, Norwegian fishermen Were familiar with the species, which they had frequently observed when at sea and named the pearl necklace.

As far as we know it does no damage to wild fish strains but is a threat to fish in cages. Maneta burns the skin and the fish go into a coma. Fish farmers all along the coast fear huge losses because of the invasion.

We are unsure what this predator will mean for the ecological balance. The maneta has hundreds of mouths along its body. It lives on plankton, fish larvae and small animals caught with its tentacles. It has an extreme burning effect, which is worse this year than before, according to Fosså.

Japanese driftweed
This first came to Europe in the seventies with Japanese oysters, imported by French oyster farmers. This seaweed thrives in the Oslofjord, along the south coast, by Egersund, Haugesund and north to Solund.
The Japanese floating seaweed has spread rapidly and flourishes here, growing to a larger size here than in Japan. It is still too early to say whether it will affect local species of seaweed, says Fosså.

Britain has tried to get rid of the Japanese seaweed without success.
Poisonous Chattonella had its first outbreak here in 1998. This was repeated last year and huge amounts of fish on the south coast perished. The algae came with the ballast water and contains a type of ribbed jellyfish which has created an ecological crisis in the Black Sea. It has wreaked havoc on the fishing industry because the maneta eats up the plankton, which the fish feed on.

The yuppy days with their leanings to lobster, caviar and champagne have resulted in a new type of lobster. In the eighties American lobster was imported for sale from boats in the inner fjords of Oslo. In connection with the sale, several of the species were dumped in the fjord. The species was also introduced to various other parts of southern Norway in recent years.

Marine researchers fear this can represent a serious threat to native lobster strains as well as other organisms in coastal waters.

The American lobster is an omniverous predator and thrives in cooler waters and can wander several hundred kilometres in the course of a year. We also have grounds to believe that this lobster may carry serious diseases, which may result in sterile females if it mates with the European lobster. As it is, the European lobster has more than enough to cope with, due to excess fishing.

Sea Urchins

This is not a newcomer to Norwegian coastal environment, but has nonetheless,in the last thirty years, proved a considerable headache for researchers. The sea urchin feeds on the surrounding seaweed, destroying large areas of growth from Frøya and northwards. Worst hit is Vega near Nordland, where fishermen complain that their fishing grounds have been destroyed.

Others blame the large numbers of seals for this widespread massacre of the seaweed. They argue that the seals eat up the catfish, which would normally feed on sea urchins.
However, according to Jan Helge Fosså, this explanation is too simple.
We are not convinced either that the catfish enjoy sea urchins or that the seals feed on catfish.

We feel the explanation lies in some other part of the ecological system. The shooting of seals in these areas would probably have no effect.

New international regulations are being compiled to avoid the continued spread of species through ballast water. Other sources like eg. climate are not possible to influence.

As we already know, climatic change means change in fauna but we also know that the human factor can play decisive role in influencing marine life. The fisheries extract huge amounts of biological masses from the sea every year and this leads to extensive change in the ecological system.

In addition, we have Sellafield as well as the gradual pollution from the oil installations in the North sea which reduces the reproduction capacity in cod. However, marine pollution has not made big headlines. Steps to alleviate this could have considerable economic consequences for the national economy, says Jan Helge Fosså.

Without a visa
The American lobster has arrived on our shores without a visa. The new species makes itself at home and can create problems for the ecological balance. Perhaps they are here to stay along the Norwegian coast.