

Sea urchins—from pest to plate

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Sea urchin gonads. Credit: Marco Busdraghi/Wikimedia Commons

It is one of the most valued seafood products and destroys kelp forests worth millions of NOK. Can sea urchin harvest be profitable? This is the subject of a project led by the Norwegian Institute of Water Research

(NIVA). The project is part of a research program at The Fram Centre in Tromsø.

Sought-after delicacy

The gonad of a sea urchin stores nutrients and contains milt and roe during the spawning season in spring. The gonads are very popular in sushi dishes in especially in Asia, but also in other parts of the world.

Researcher Wenting Chen, who leads a research project called ECOURCHIN, says that sea urchin gonads are used commercially in Canada, the U.S., France, Iceland, Ireland, Chile, Mexico, China, Japan, New Zealand, Russia, South Korea, Spain and the Philippines. The project is a cooperation between NIVA, UiT—The Arctic University of Norway, the food research institute NOFIMA, and the University of California, Berkeley.

There are billions of [sea urchins](#) along Norway's coastline, and catching them does the marine ecosystems a favor. But as a viable industry, the amounts of milt—or gonads—collected have to be worth the effort of harvesting sea urchins and extracting the gonads.

The green Drøbak sea urchin is the most common sea urchin in Norway. It is popular in Japan, but the harvest is unprofitable since the amounts of milt per sea urchin are too small. Milt extraction is costly, and high yields are a key factor for an economically sustainable sea urchin industry.



The green Drøbak sea urchin is popular in Japan. Credit: Janne Kim Gitmark, NIVA

Even sea urchin farming has shown to be challenging, both in Norway and internationally. But new innovative solutions are emerging, and new feed might be one solution to achieve a profitable sea urchin industry. February 21st this year, the Norwegian Government presented their new strategy for the development of marine industries in Norway. In addition to continued support to existing important marine industries, the government sought to facilitate research, innovation, and development of new technologies to ensure Norway's position as one of the leading maritime nations in the world. OECD, Organisation for European

Economic Co-operation and Development, says sustainability is crucial for blue growth.

"We want to facilitate both harvest and farming of new species. More research is necessary to ensure that this is done within sustainable frames, the Norwegian minister of fisheries," Per Sandberg says.

From pest to plate

In the ECOURCHIN project (Sea urchin harvest: Ecosystem recovery, integrated management of social-ecological system, ecosystem service and sustainability), economists and natural scientists work together to find strategies for sustainable sea urchin harvest in Norway. In addition to possible economic benefits, sea urchin harvest has positive consequences for the coastal ecosystems. The ECOURCHIN researchers are working on bigger socioeconomic analyses that include the economic benefits from reestablished kelp forests.



Sea urchin feeding on kelp, leaving nothing but open areas of rock. Credit: NIVA

"Reestablishment of kelp forests and increased biodiversity are some of the ecosystem effects of sea urchin harvest. These are factors we include in the calculations," Wenting Chen says.

Kelp [forest](#) researchers at NIVA have previously estimated the economic value of a healthy kelp forest at 15 million NOK per square kilometer per year. Kelp forests are important habitats for fish, and the populations of cod and pollock will benefit from the reestablishment of kelp forests. Several NIVA-reports describe the challenge of sea urchins feeding on

kelp forests, and sustainable harvest of these pests would be a win-win.

The ECOURCHIN project will conclude by the end of this year. Current data indicate that there is a market for sea urchins, and that gourmet companies are willing to pay high prices for the Drøbak sea urchin. Costs related to logistics and marketing are, however, uncertain, considering the sea urchin should still be fresh when served in countries like Japan, after transport all the way from Norway. The profitability of sea urchin [harvest](#) is also dependent on the time it takes for degraded [kelp](#) forests to reestablish.

Provided by NIVA

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