

# SEA URCHIN REMOVAL TO RESTORE NORWAY'S KELP FORESTS

Kelp forests are among the most ecologically and socioeconomically important habitats in Norway and around the world.



Large areas of Norwegian kelp forests were replaced by urchin barrens and their recovery via urchin removal provides a unique opportunity for Norway to tackle key climate and environmental challenges, while creating an economically viable urchin fishery.




**Kelp forests** are extremely important and biodiverse habitats that **provide food, nutrients and shelter** for many other species. You can find around **300 species** here, such as young fishes, crabs and anemones.

Fishermen in the early 1970s were the first to notice the extensive decline of kelp forests. This was further documented by scientists during the early 1980s and was found to be caused by the green sea urchin (*Strongylocentrotus droebachiensis*).


This led to a total depletion of all subtidal kelps, other seaweeds, and associated organisms, from mid Norway and further north into Russia, leaving only a remnant population of kelps at sites too rough and exposed for the urchins.


Scientists, together with the fishing industry and local communities, are devising strategies to restore Norway's kelp forests through sea urchin removal.

 **8400 km<sup>2</sup>**  
of urchin barrens formed in the 70's

 **84 million tonnes**  
of kelp grazed

 **>30 urchins per m<sup>2</sup>**

 **84 000 tonnes/year**  
large fish lost

 **\$16.7 million / km<sup>2</sup>**  
Value of Laminaria kelp forests of the N Atlantic





## DID YOU KNOW THAT ...

The total kelp forest area along the Norwegian coastline was estimated at **7400 km<sup>2</sup>**. This is almost **4 times larger than Norway's populated area on land!** This might sound like a large area, but it is less than 50% of the original kelp forest we had in Norway in the 1960s.

Kelp forests in Norway store about 18 million tonnes of CO<sub>2</sub>. If the grazed area of kelp forests re-established, Norway's kelp forests would store about 30 million tonnes of CO<sub>2</sub>. This is the equivalent of the average yearly CO<sub>2</sub> emissions from around 6.5 million cars.

Pieces of kelp also provide nearby deep-sea ecosystems with organic matter and nutrients.

**Sea urchin roe (gonads) is a seafood delicacy with traditional markets in many countries across the world.**



You can create delicious dishes using urchin roe with pasta, sushi or even with omelettes! The taste is sometimes described as a «salty melon». To get the roe, cut the urchin gently in half and if you're lucky, they are filled with roe. Autumn and winter are the best seasons in Norway.

## WHAT CAN YOU DO?

In Norway, the student group Tarevoktere, led by the student's underwater club in Tromsø and volunteer scientists from NIVA, was established in 2019 to organise and conduct urchin clearing events to recover kelp forests.

<https://www.tarevoktere.org/>

If you don't live in the Tromsø area, contact your local research institutes to see if similar initiatives are being implemented.

### Do you want to know more?

Download the full report

<https://niva.no/en/reports/restoring-norways-underwater-forests>

<https://seaforester.org/#project-norway>

Collaborating Institutions

