



Bottlenecks to the development of a sea urchin industry in Norway

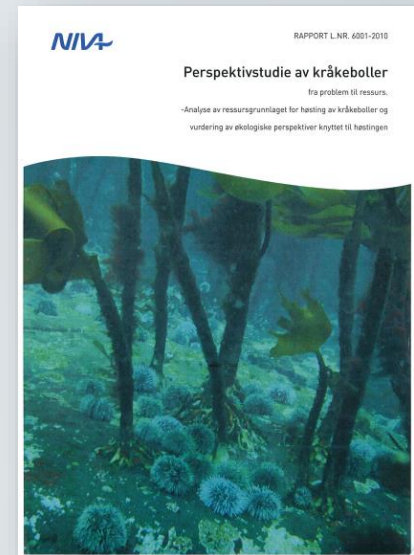
How to overcome them!

**ECOURCHIN / URCHIN stakeholder seminar
Oslo, Norway, Oct 3rd 2017**



Size of sea urchin resource in Norway

- NIVA estimates (2010):
 - grazed area of 3,500 km²
 - 80 billion individuals (approx. 4 million tonne)
- Previous estimate 50,000 tonnes of harvestable urchins (*Sivertsen K.*)
(Conservative < 1.5% of standing stock)
- Current market value of 50,000t = 6.2 billion NOK
- Restoration of seaweed
 - binding 14 million tonnes of CO₂
 - production of 35 million tonnes of algae



Sea urchin fishing in Norway

Arctic Caviar AS



Lysefjorden skjell og kråkeboller AS

Sea urchin farming in Norway

Troms Kråkebolle AS
Tromsø
(sea urchin farming)
(2001-2017)



Sea Urchin Farm
Stavanger
(sea urchin farming)

Sea Urchin Farm

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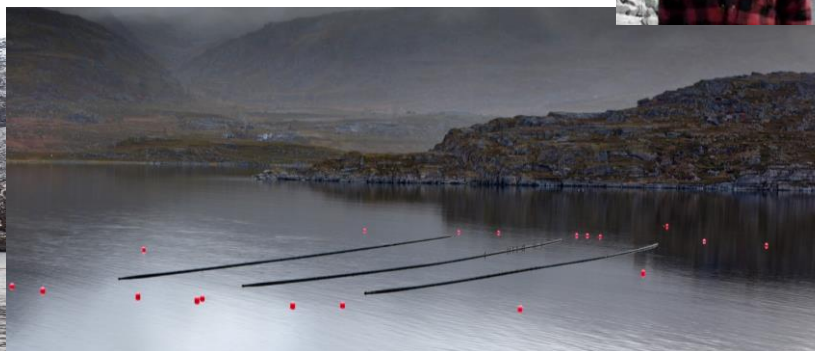
Sea urchin roe enhancement in Norway

ScanAqua (2006-2009)

Hammerfest



ScanAqua



Norway Sea Urchin AS (2013-2014)

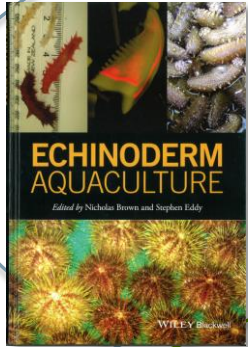
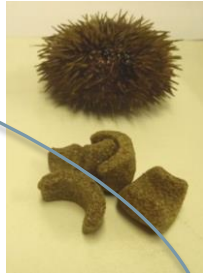
Båtsfjord



Sea urchin roe enhancement advances



Manufactured
feed production
and availability



Sea urchin
biology



Knowledge + Impact = INNOVATION

Market Access



Proof of concept and
commercial application

- Value
- Placement
- Japan/Europe

URCHINOMICS

Business innovation
meets marine conservation

Remaining bottlenecks



**Sea urchin
reproductive cycle**

**Optimising harvesting
techniques**

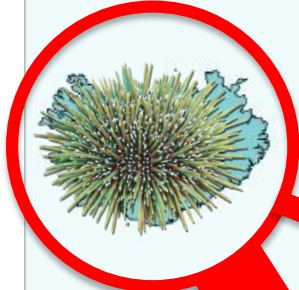
**Fisheries
Regulations/Testing**

**Transport techniques
(road)**

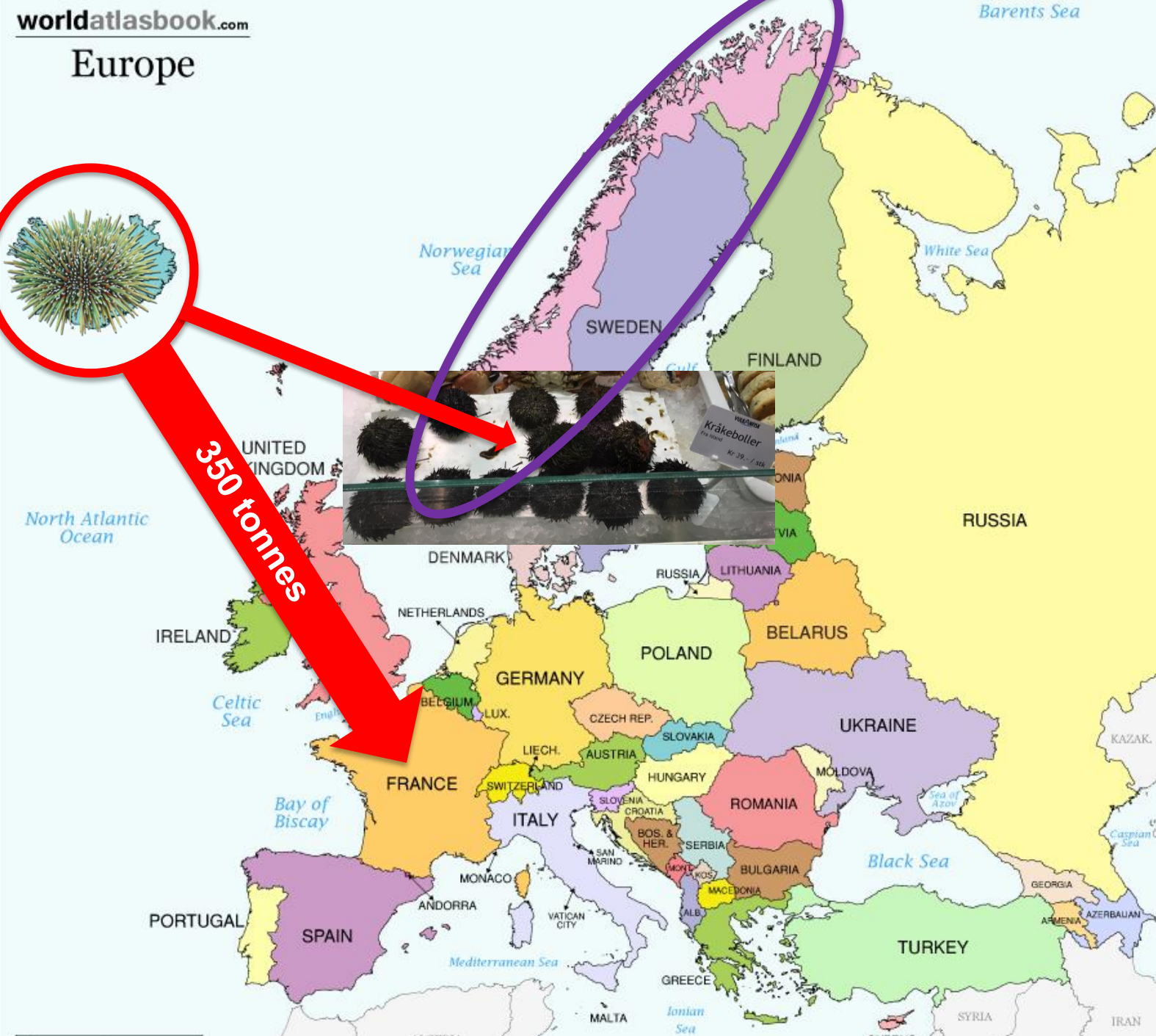
**LAND-BASED
HOLDING SYSTEMS**

Markets

Europe



350 tonnes





How to move the sea urchin industry forward in Norway?

Creating an action plan



Questions?

- 1. What do you see as the major bottlenecks to the development of an urchin industry in Norway?**
- 2. In your opinion how can these bottlenecks be overcome?**
- 3. How can the benefits of ecosystem restoration be incorporated into an urchin industry in Norway?**

