

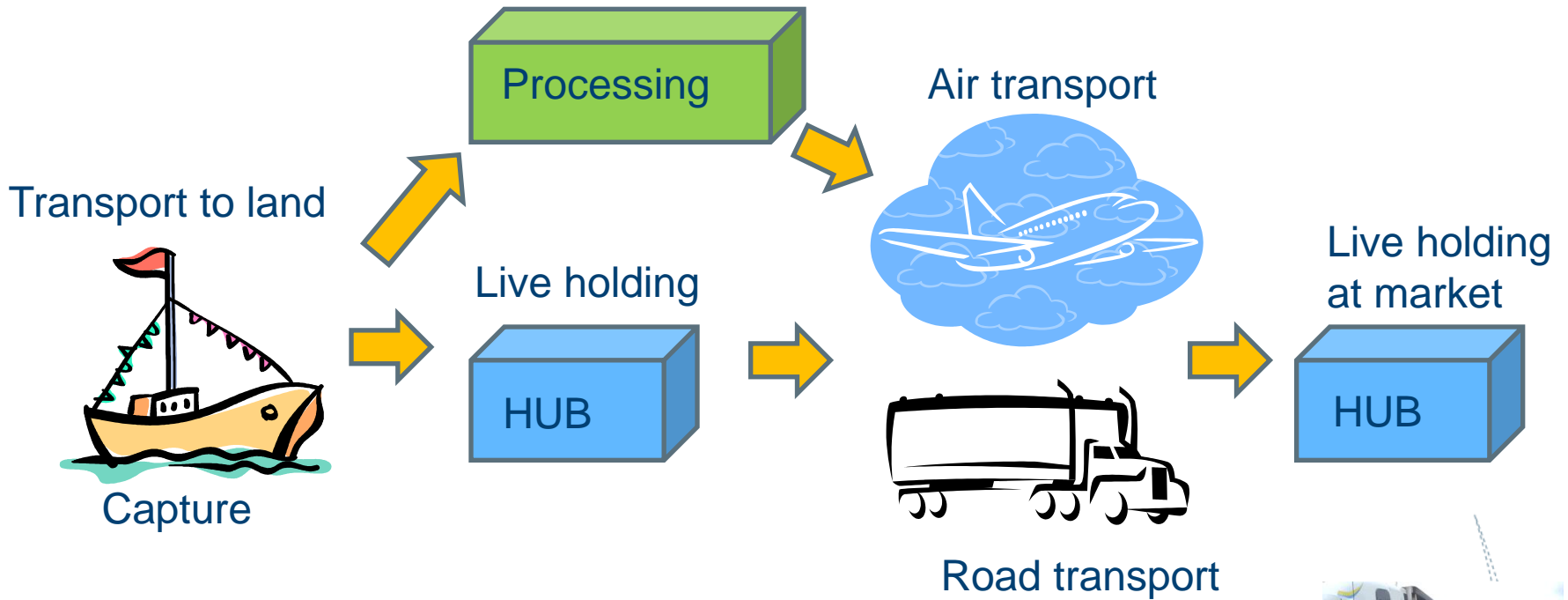
Live sea urchins; holding and transport and export



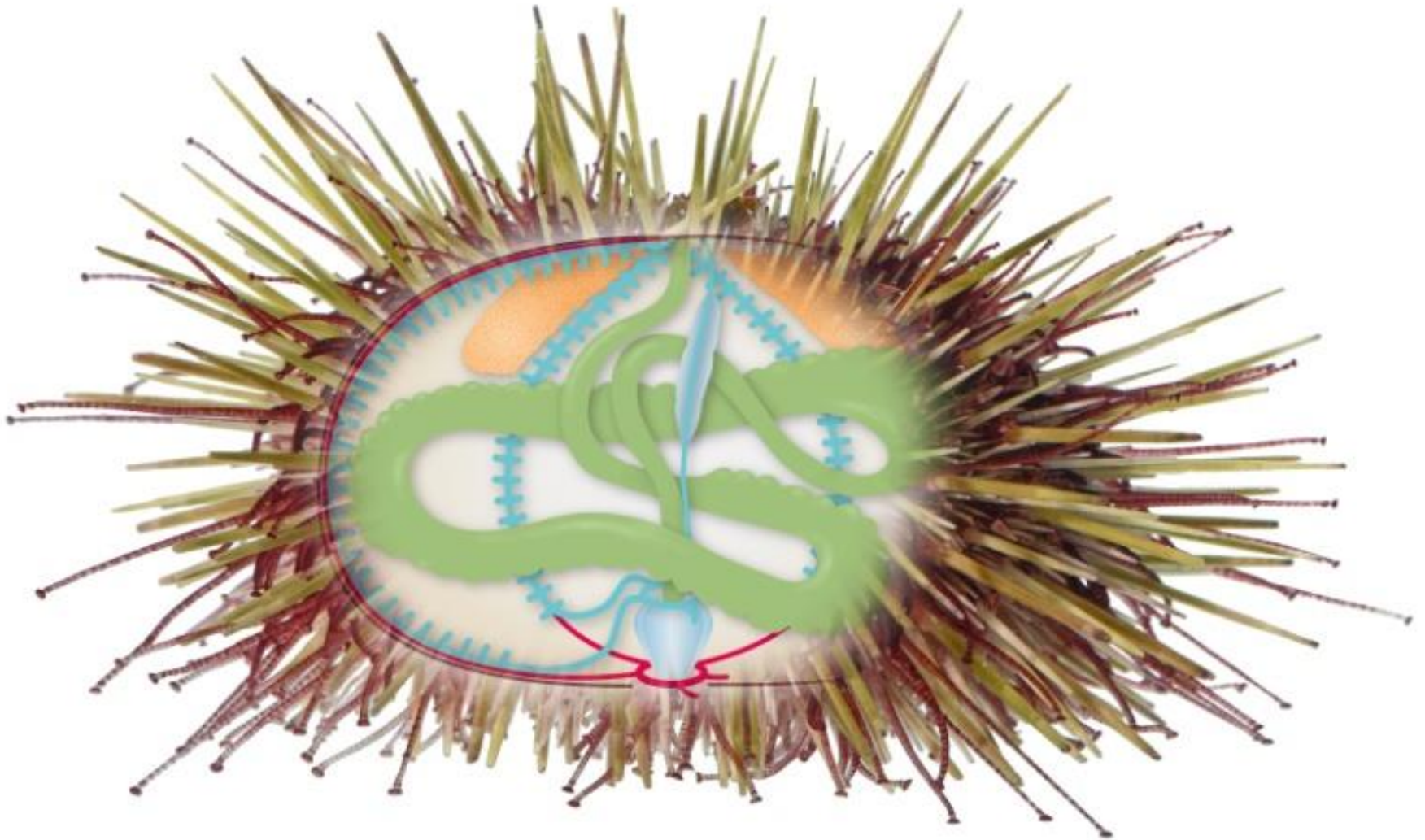
Philip James
Sten Siikavuopio

FHF Live seafood workshop, Feb 2014

Live seafood chain for urchins



Sea urchins: ideal for live transport



Sea urchin industry in Norway



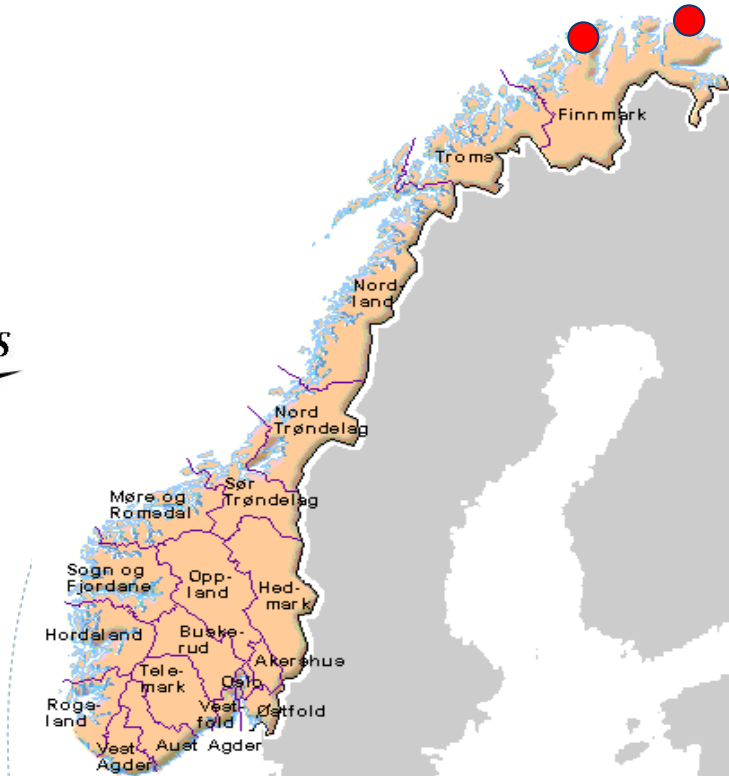
Green Sea Urchin
(*Strongylocentrotus droebachiensis*)



ScanAqua



NORWAY SEA URCHIN AS



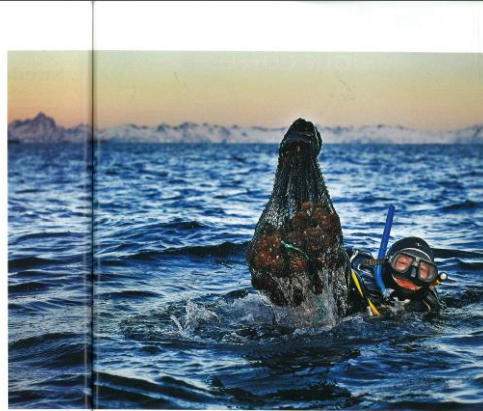
Sea urchin industry in Norway



"Norwegian Green" sea urchins, found off the coast of Arctic Norway, are considered by many to be the finest on Earth. Yet the locals weren't interested until "Mad Scot" Roderick Sloan started diving for them 10 years ago

The urchin man

WORDS: MICHAEL BROWN
PHOTOS: STEVE BRONKHORST/REUTERS/GETTY IMAGES; JACQUES TOFFI/REUTERS/GETTY IMAGES



They took the something that might seem like a simple but risky and frustrating, and not very appealing, but to many governments, including me, we can't see the most delicious harvest product on earth. And if you are one of the people who are, the only reason we do this is because we love it. It's called "Norwegian Green",

and it's off the coast of Norway with incredible, not to mention outrageous, diligence by our team, a great local manager from called Roderick Sloan, who combined with my mother-in-law takes me to some of the best places that have never been seen before. It's called "Norwegian Green",

and it's off the coast of Norway with incredible, not to mention outrageous, diligence by our team, a great local manager from called Roderick Sloan, who combined with my mother-in-law takes me to some of the best places that have never been seen before. It's called "Norwegian Green",



Green Sea Urchin
(Strongylocentrotus droebachiensis)



Sea urchin research in Norway

- Innovation Norway



ScanAqua



- FHF; ROV, passive trapping, Live seafood project



Nofima
Norwegian Institute of Food,
Fisheries and Aquaculture Research

Project Description

Cost effective and reliable methods of capturing sea urchin
for developing the sea urchin industry in Norway

Nofima

Processing sea urchins

Scan Aqua



Tsukuji market

European live sea urchin markets

(Sardinia, Italy)



(Grüne Woche, Berlin)



Sea urchin holding and transport research

Holding conditions:

- Effects of varying water quality (nitrite, nitrate, CO₂, oxygen, temperature)
- Stocking density
- Feeding regimes

Parametre	Optimale	Normale	Kritiske
Vanntemperatur °C	4.0 – 12.0	1.5 – 16.0	< 1.5 > 16.0
Salinitet ‰	30 - 35	34	Ukjent
Oksygenmetning %	> 80	> 80	Ukjent
pH	7.8 – 8.2	7.8 – 8.2	Ukjent
Total ammoniakk mg/l	< 0.2	< 0.2	

Transport:

- Troms Krakebolle AS (e.g. effects of chilling/wind)

Virtually no research:

- Transport between HUB's (road transport)
- Landing urchins in arctic conditions
- Length of transport/quality on arrival/packing temperatures



The challenges:

- Legislation (Norwegian Food Health Authority) categorised as a shellfish (EU standards) (Northern Periphery project, efforts by Arctic Cavier)
- Urchin supply (particularly in the far north)
- Transfer of urchins by road
- Packing and transport technology for export
- Quality control at market
- Measuring stress in urchins (ceolomic fluid)
- Optimising marketing strategies (supply at maximum value)
- FUNDING of research?

