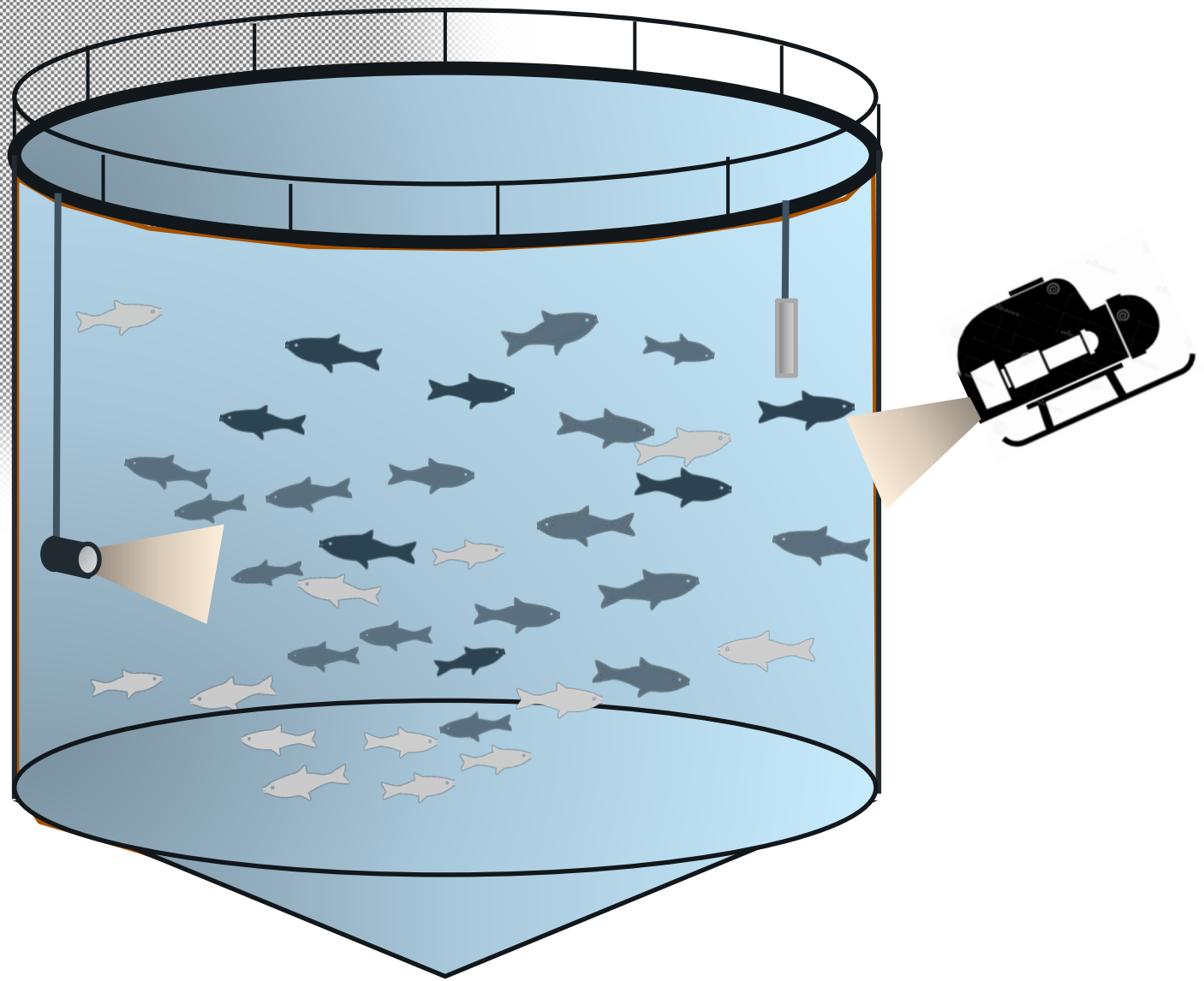
Lyd i merd

Carolyn M. Rosten, John Reidar Mathiassen,
Kristbjörg Edda Jónsdóttir og Zsolt Volent



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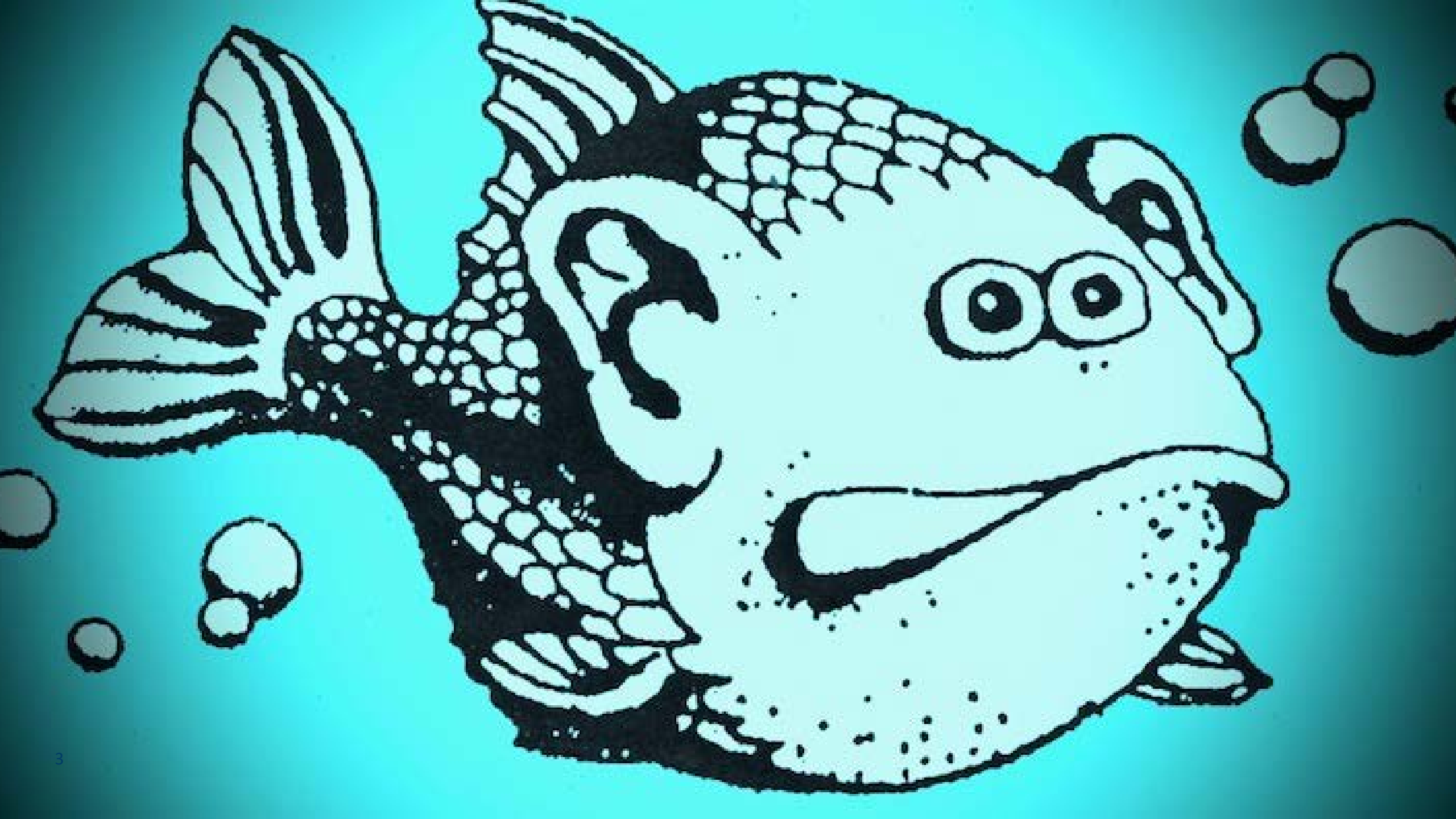
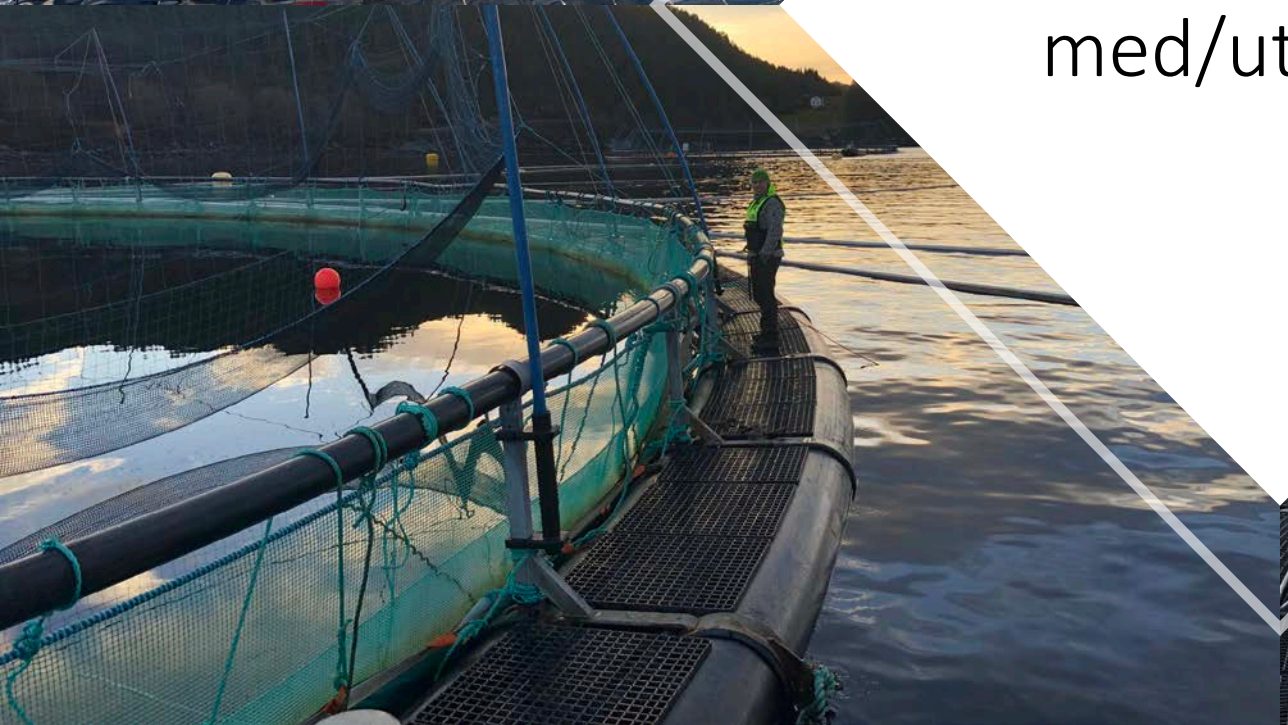
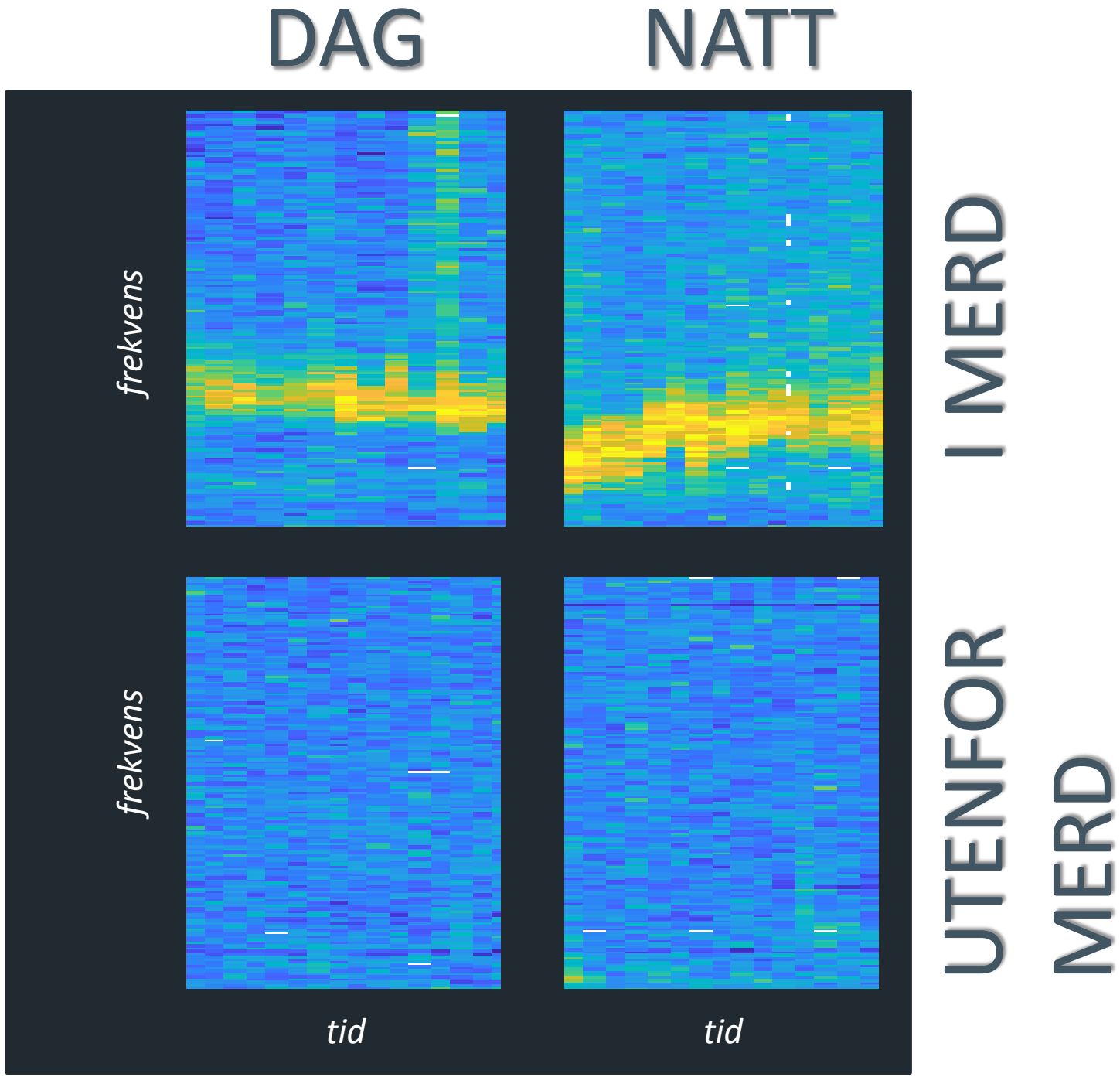


Lydbildet i merd med/uten fisk



Kilde: NFR prosjekt SoundWell II / FHF prosjekt OWITOOLS



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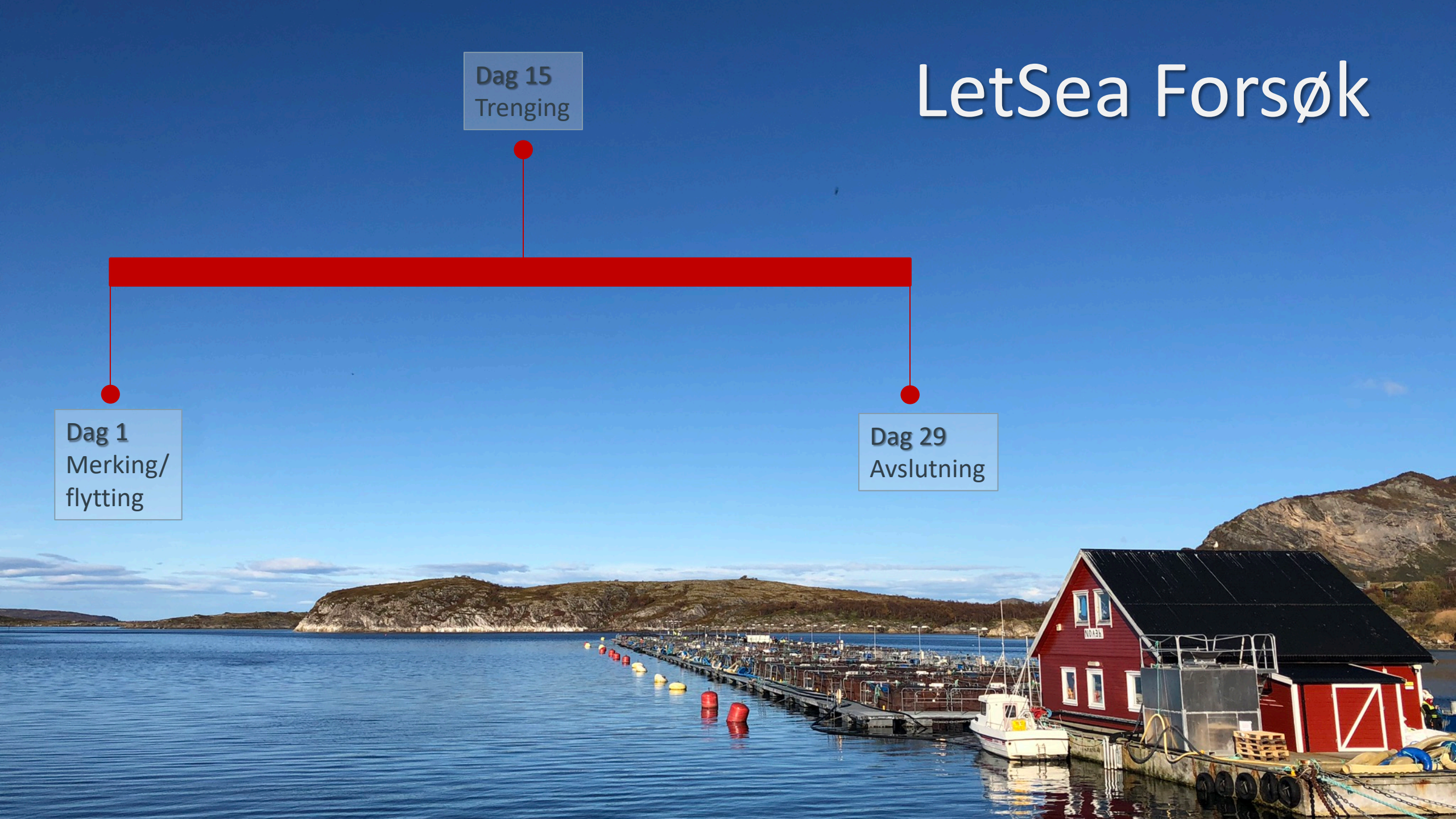
Å ***utvikle teknologiske verktøy*** og ***validere biologisk betydning*** av tekniske målinger for å sikre objektiv dokumentasjon av **fiskevelferd ved håndteringsoperasjoner** av laksefisk

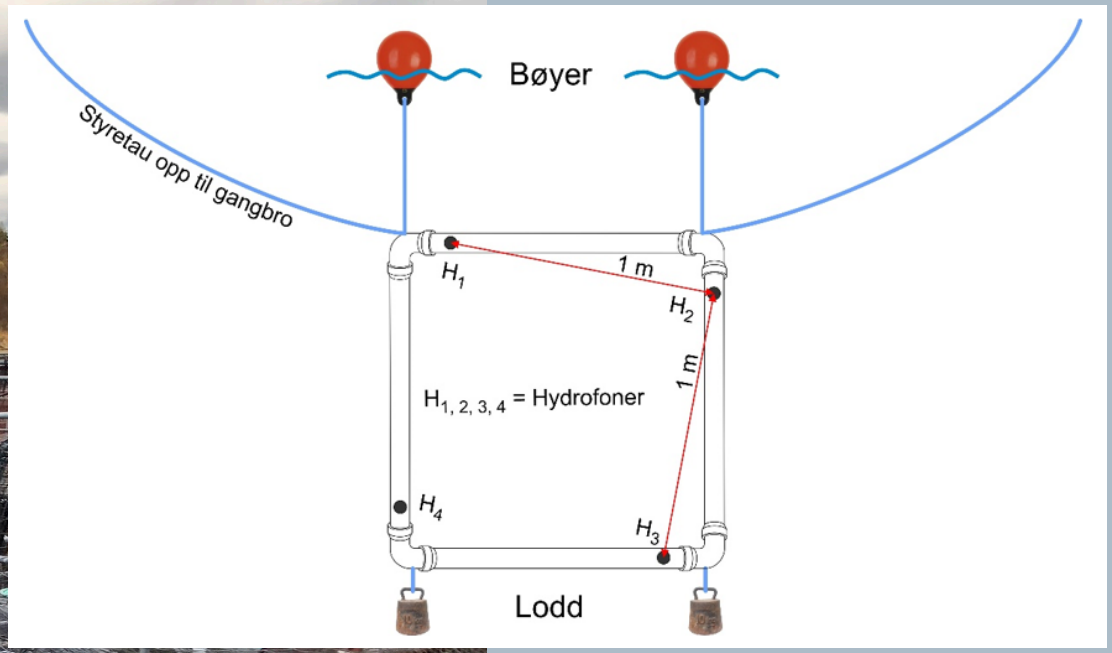
NINA


#1
S
N
E
R
FREEMAN
N

Labforsøk

LetSea Forsøk




Bøyer
Styretau opp til gangbro
H1
1 m
H2
1 m
H1, 2, 3, 4 = Hydrofoner
H4
H3
Lodd

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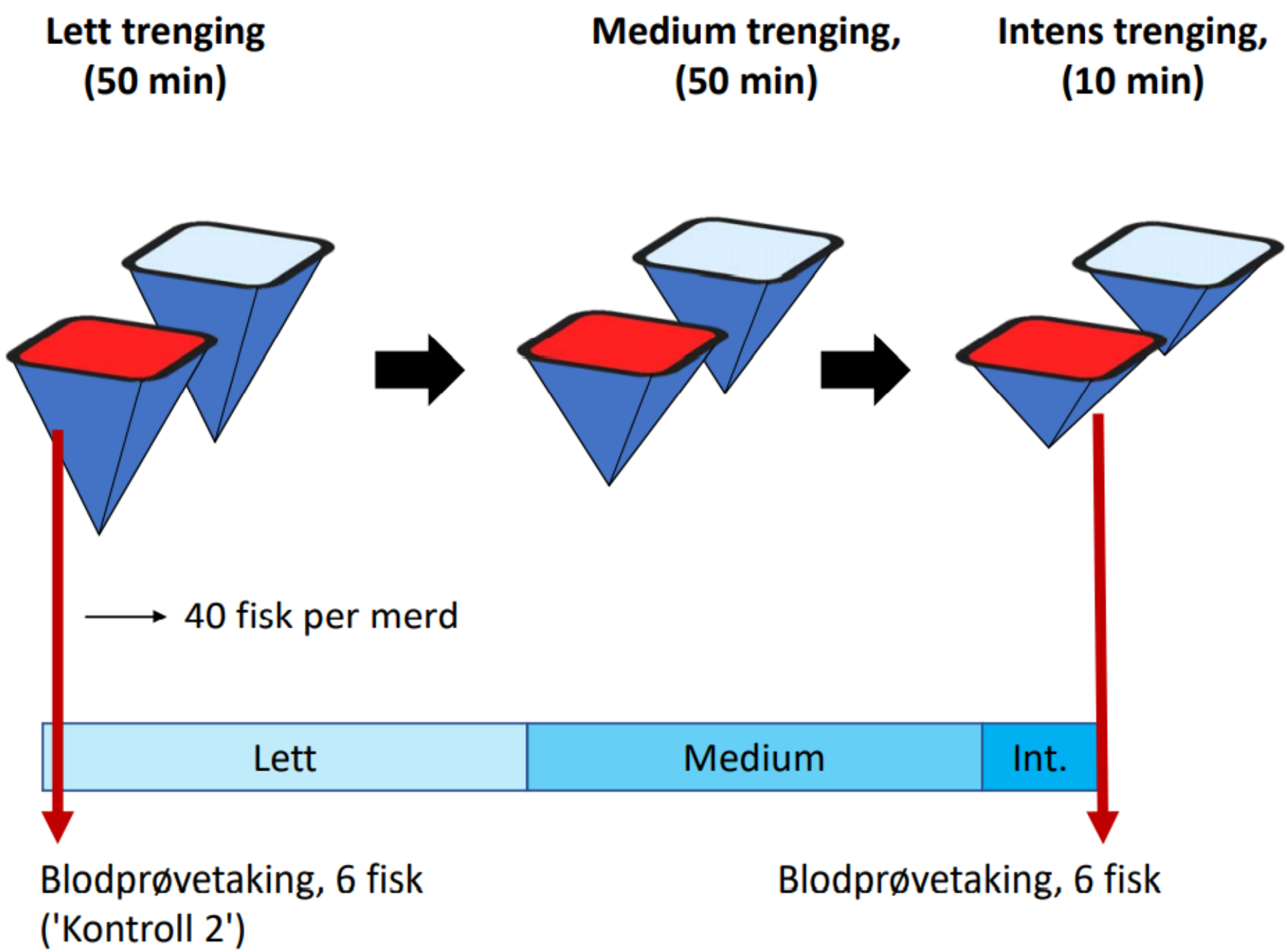
DAG 15


Lett trenging
(50 min)
Medium trenging,
(50 min)
Intens trenging,
(10 min)
40 fisk per merd
Lett
Medium
Int.
Blodprøvetaking, 6 fisk
('Kontroll 2')
Blodprøvetaking, 6 fisk

Noble et al. 2018 FishWell report:

1. Goal: low stress, no vigorous activity

- ✓ Fish in the sides of the crowd swimming slowly
- ✓ Normal swimming behaviour, but not all in the same direction
- ✓ No dorsal fins on surface
- ✓ No white sides on surface

2. Acceptable: some fins on surface

- ✓ Normal swimming behaviour at suction point, low stress
- ✓ Few dorsal fins on surface
- ✓ No white sides on surface

3. Undesirable:

- Over-excited swimming behaviour (different directions)
- More than 20 dorsal fins on surface
- Some white sides constantly on surface

4. Unacceptable: overcrowding

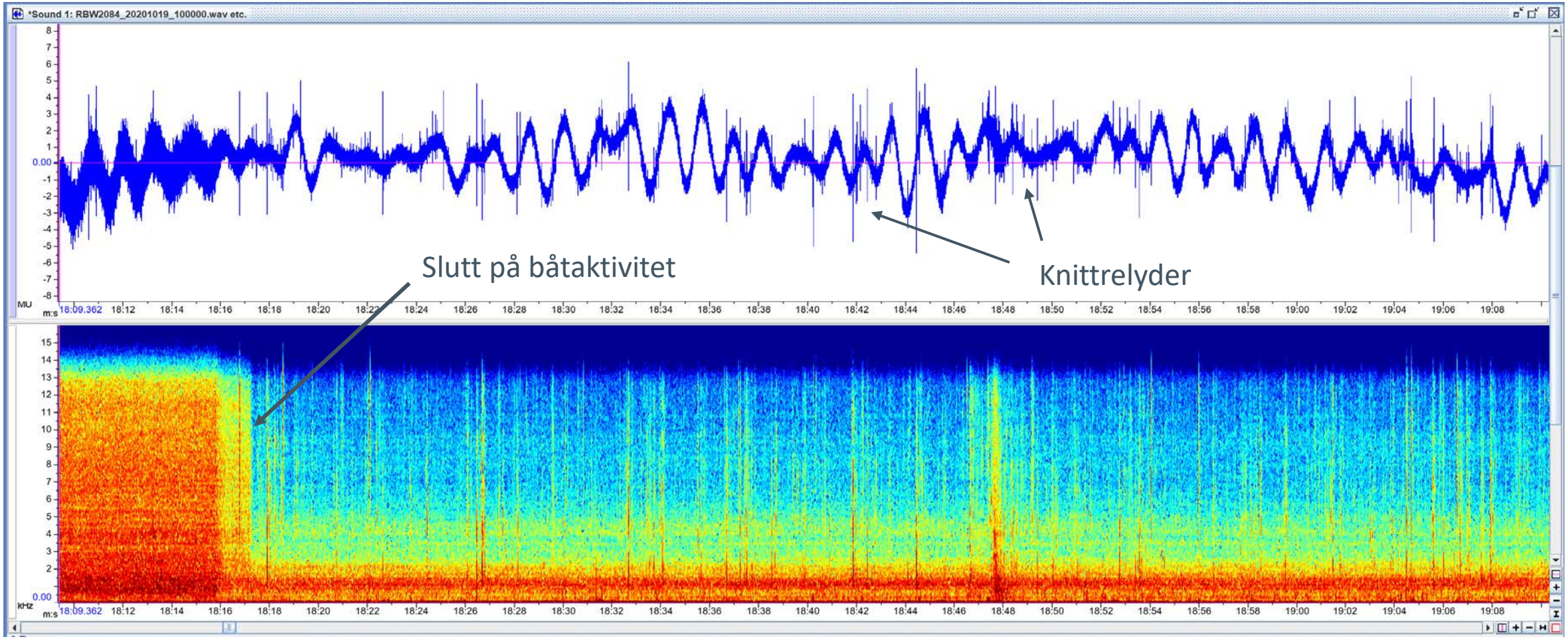
- Over-excited swimming behaviour (different directions). Some fish decreasing activity
- Pumping rate: Not possible to keep a constant rate
- Many fish stuck up against the crowd net
- Many dorsal fins on surface and numerous white sides on surface
- A few very lethargic fish

5. Unacceptable: extreme overcrowding

- Whole crowd boiling
- Potential for large fish kill without rapid release
- *Panic in the population, the fish are exhausted*
- *Many fish floating on their side*

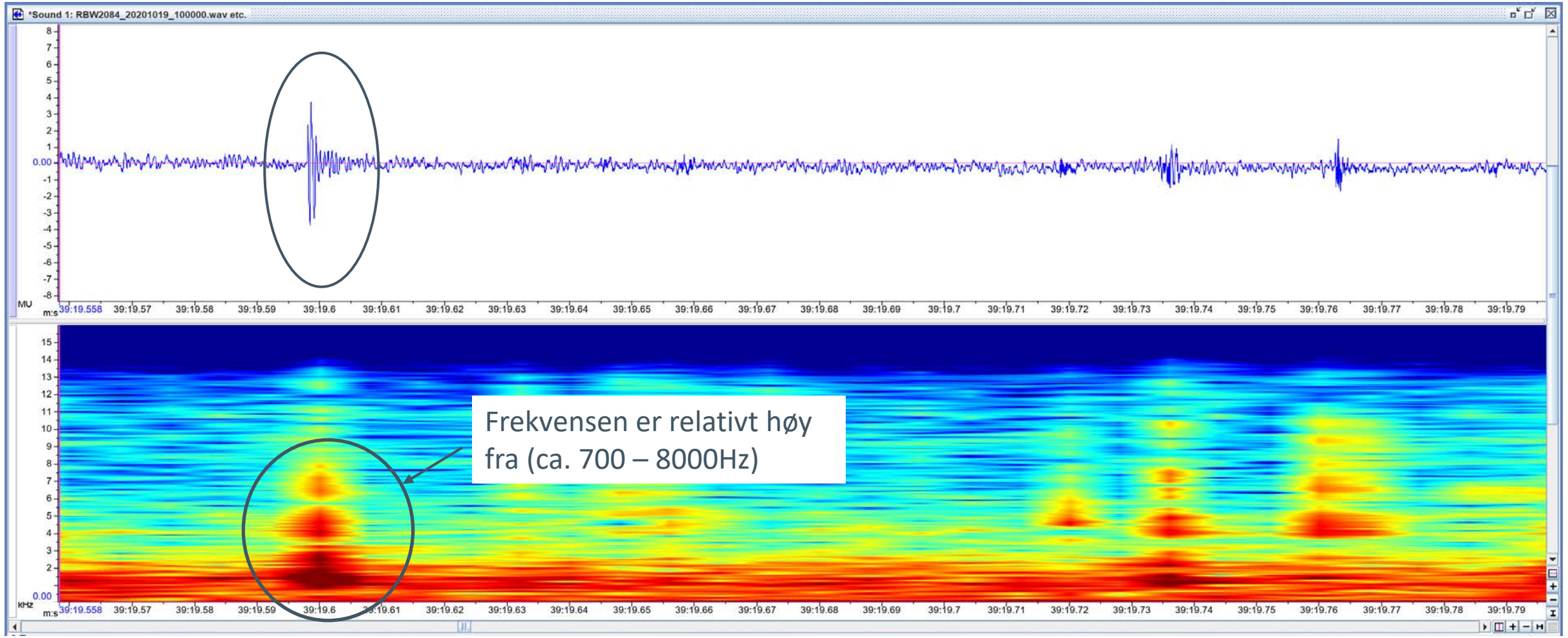
LetSea data fra 19.10.2021 kl. 10:00 – 12:00 UTC, rett etter trengeoperasjon

- Spektrogram med knittrelyd

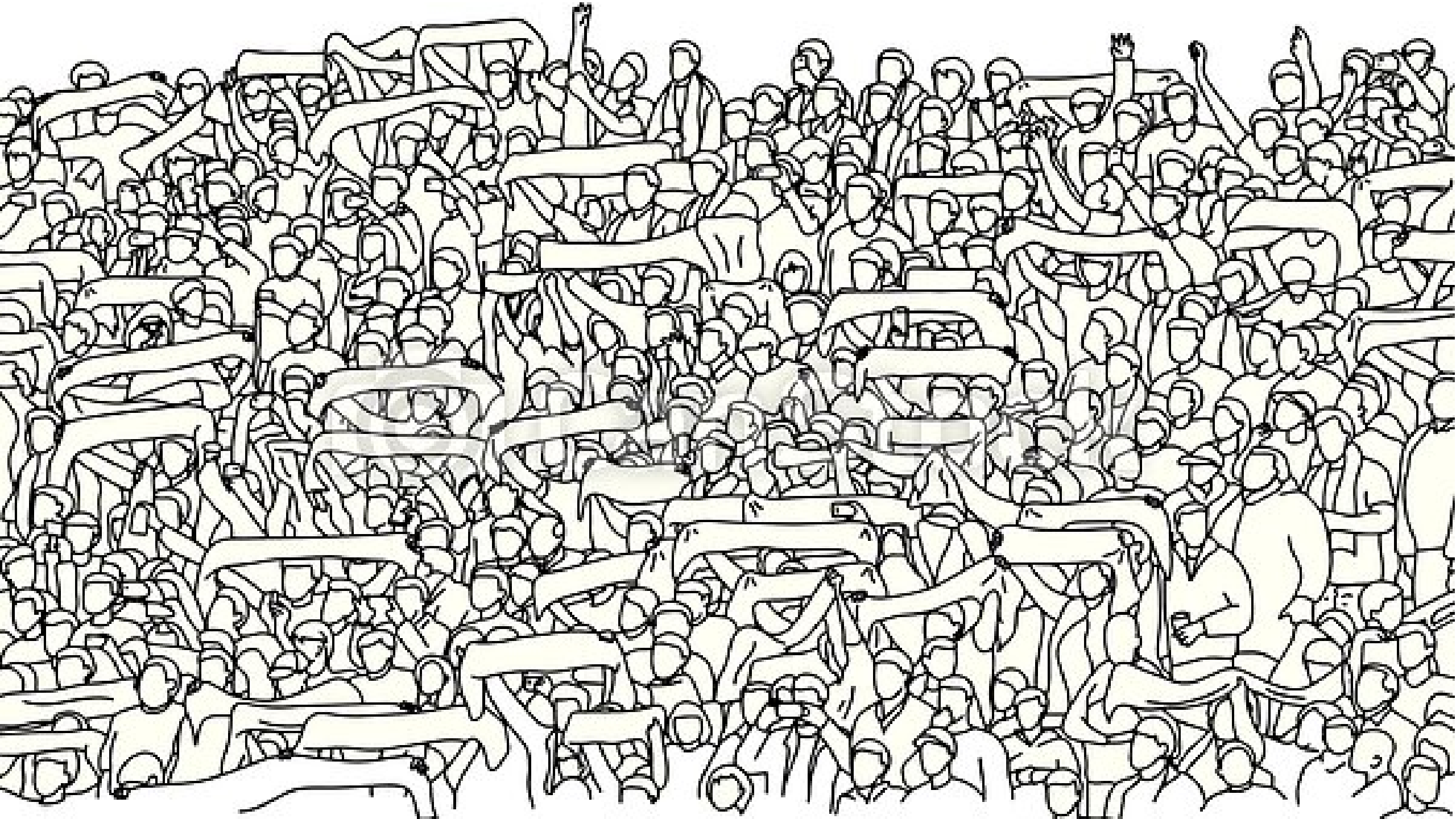


Lakselyd

Karakteristisk signalform på lakselyd



Storskala forsøk



SINTEF ACE
Rataren

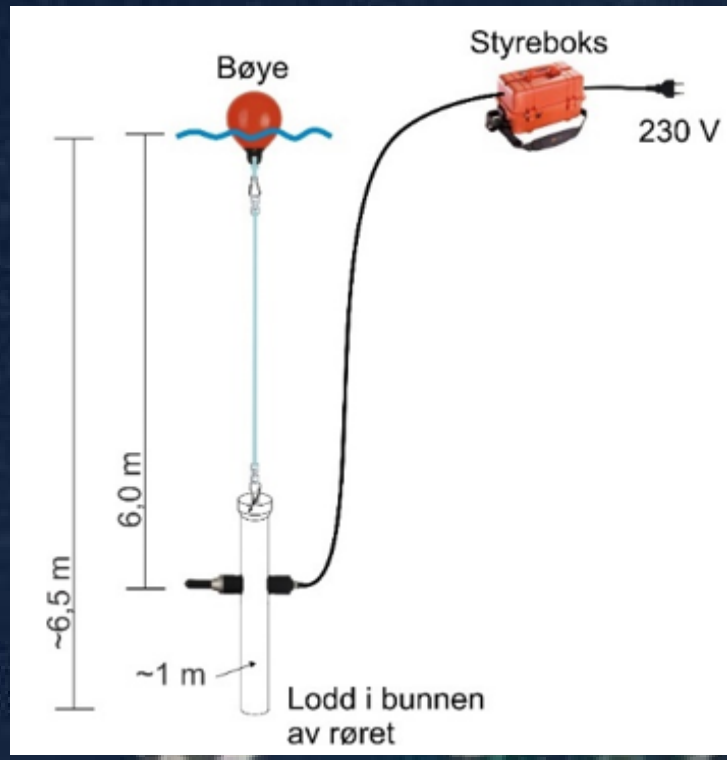
Rataren I

Merd 2

Merd 7

Merd 3

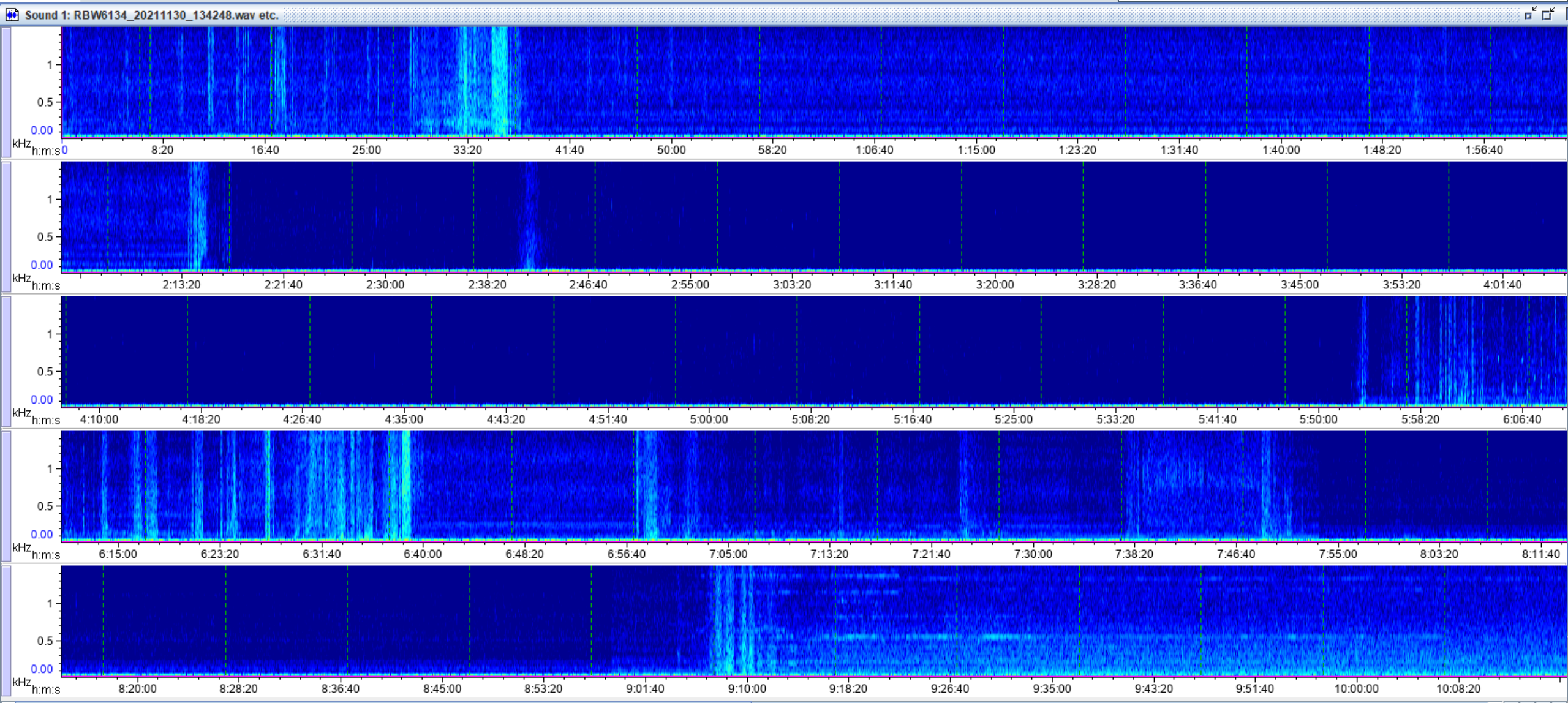
Rataren II



Fullskala trenging

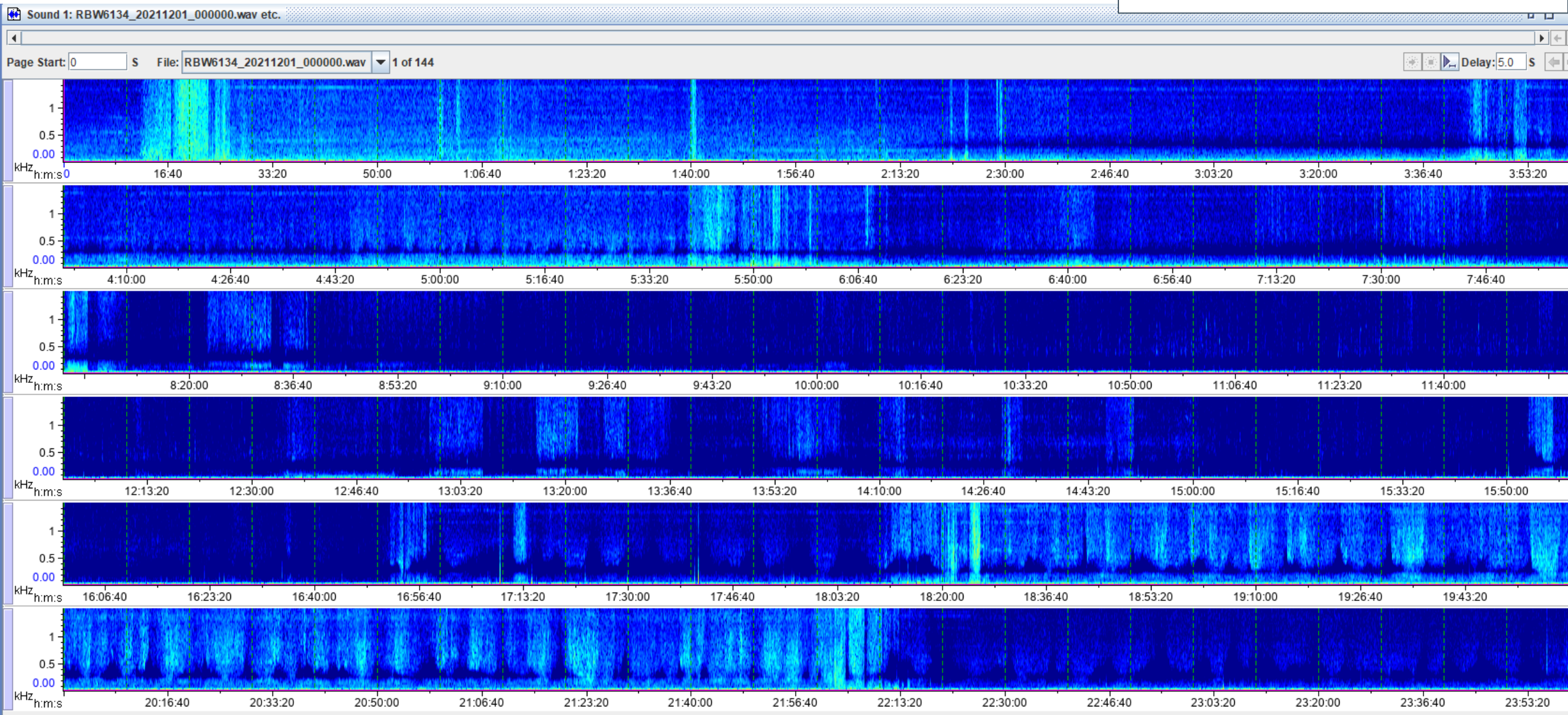
Rataren resultater (merd 3)

Start:30.11.2021 – 13:42:33 UTC

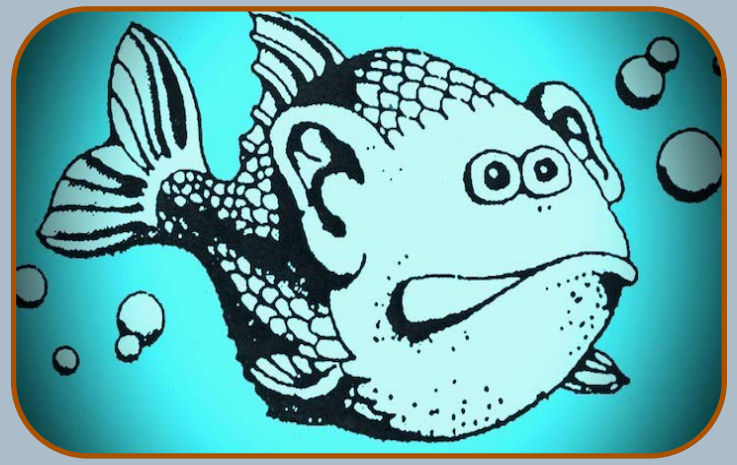


Rataren resultater (merd 3)

Start:01.12.2021 – 00:00:00 UTC



Å ***utvikle teknologiske verktøy*** og ***validere biologisk betydning*** av tekniske målinger for å sikre objektiv dokumentasjon av fiskevelferd ved **håndteringsoperasjoner av laksefisk**



- Detekterer endringer med akustikk
- Endringer reflekterer biologisk respons
  - Generert lyd, reflekterer "stress" ved trenging
  - Dempet lyd, reflekterer tetthet, svømmemønster

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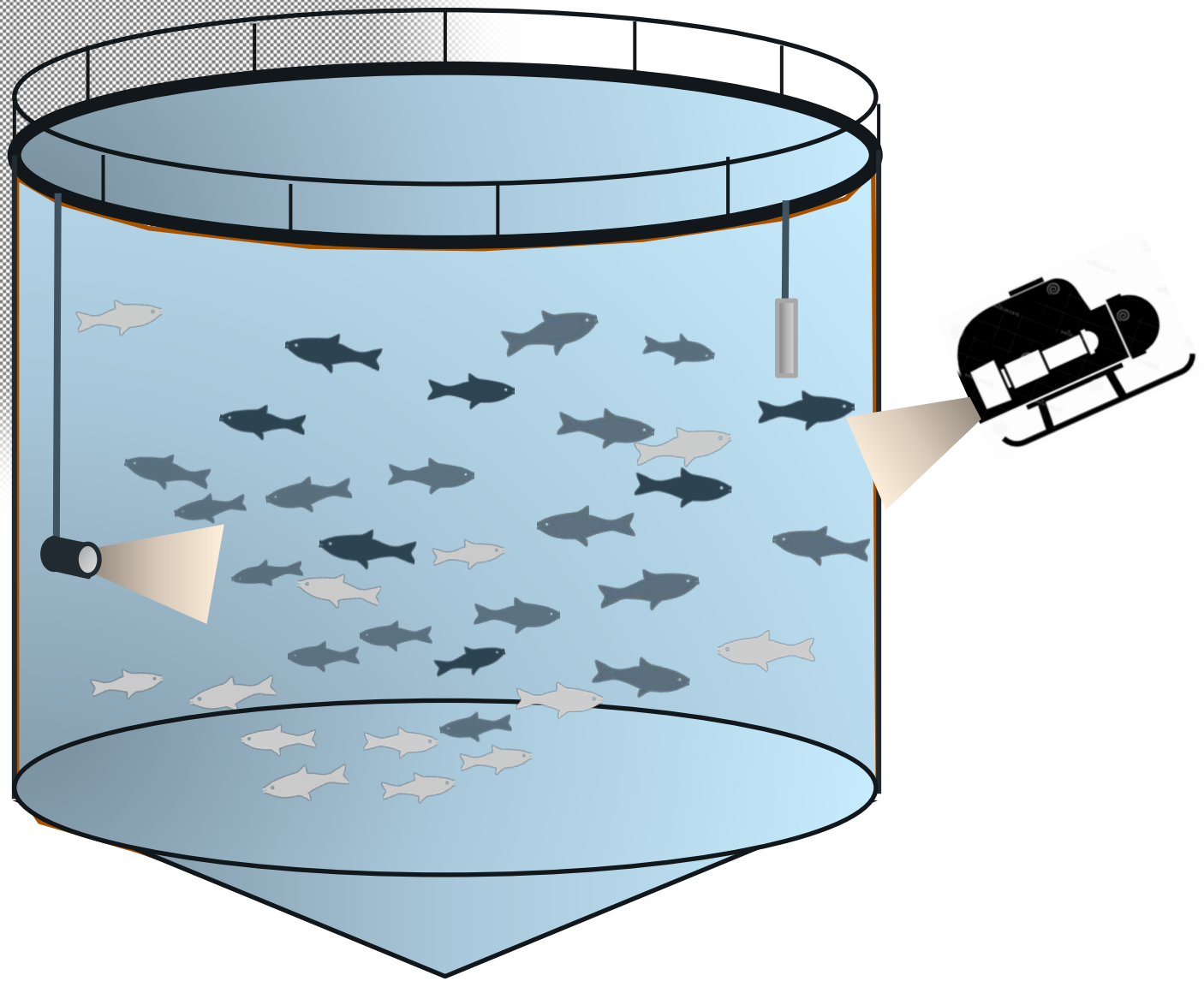

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Samarbeid og kunnskap for framtidas miljøløsninger

carolyn.rosten@nina.no