THE PRODUCTION OF BIGGER SMOLT, STRENGTHS AND WEAKNESSES CONCERNING FISH HEALTH

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- **Fish Health Service**
- **South-western part of Norway**

- 5 offices
- 12 employees,
- 5 veterinarians
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Bigger smolt – benifits: reduced time in sea


Reduced number of lice treatments

Background/ Experience:

Fresh water - large number of farms has increased smolt size 100 gram to 200-300 gram, RAS and flow through

Brackish water - some farms with postsmolt up to 500 grams -

Sea water – some farms with postsmolt up to 500 grams – RAS and flow through

Bigger smolt needs

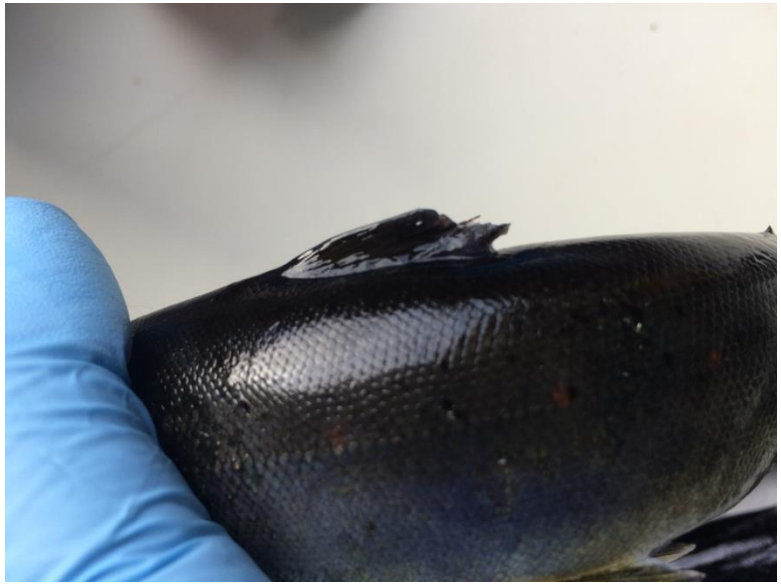
More water

Increased tank volume

More energy

Risk :
- the longer production time in tanks,
- the higher risk to develop damages

-Fin rot



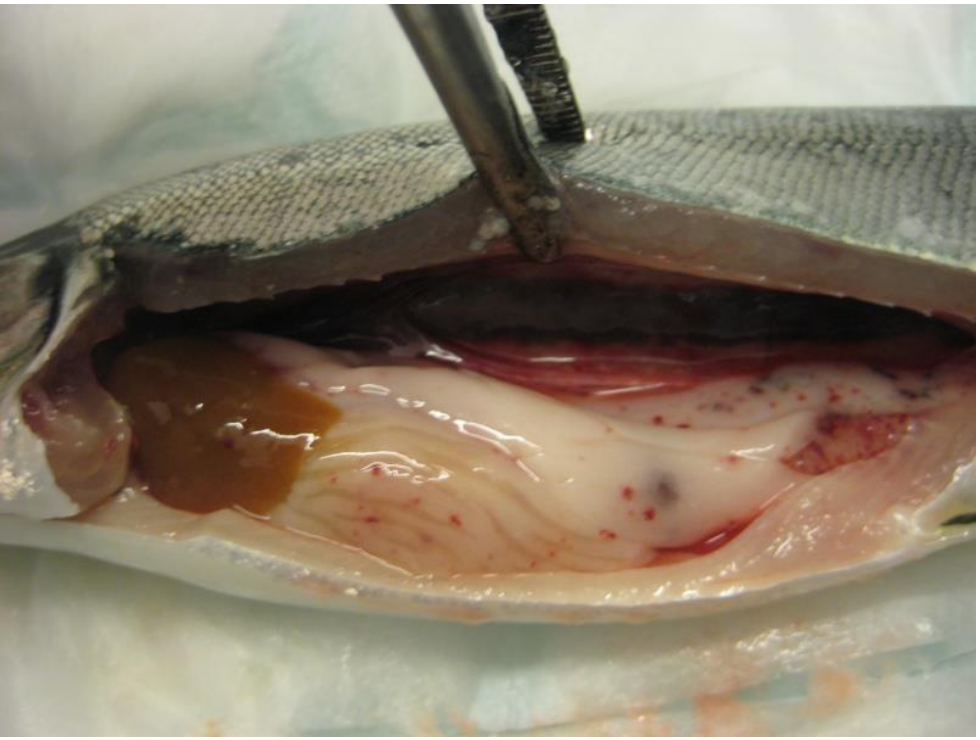
Nose deformities – linked to large smolt/small tanks ?

Main problem in freshwater: not planned smoltification

What`s the problem with too early smoltification?

- use energy til smoltify
- increased susceptibility to diseases and bad water quality
- difficult to handle smolt (grading, vaccination etc)
- The salmon has to stay smoltified or desmoltify-smoltify

Smolt bleeding syndrome (Hemorhagic smolt syndrome, hemorhagic diathese)
increased mortality prior to sea transfer



Just a part of the group og the whole group

Smolt stimulation factors:

Examples:

S1 (sea transfer in Norway - March-May):

- 24 hours light up to appr 70 gram (august-sept?)
- Transferring fish between tanks with differences in illumination level → **Smoltification**

- Natural light october in Norway (10/14, 80-90 grams transferred to hall with 12/12 light → **Smoltification**

Examples:

S1 (sea transfer in Norway - March-May):

- 12/12 light 80 gram (august-sept)
- Increased water temperature 2-3 degrees C

  → **Smoltification**

- Water quality in RAS (probably salt content) and salt in feed speeds up **Smoltification**

Pipes- pumps- vaccination machines etc have to be adapted larger smolt

Summary larger smolt in freshwater:

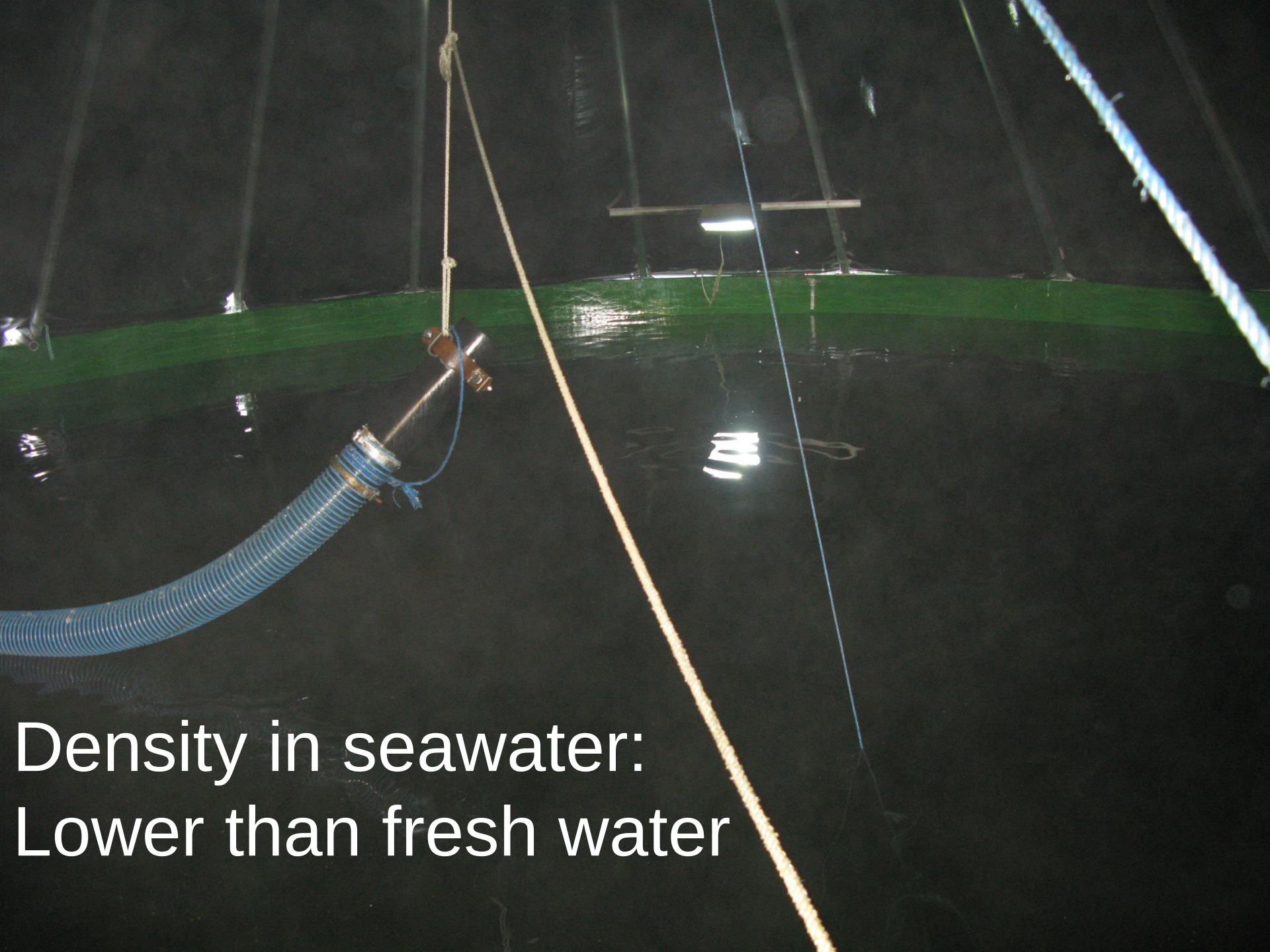
- too early smoltification /twice smoltificatin main challenge
- trend in our area: transferring smolt to tanks with brackish or seawater at 100-200 gram

Frode Mathisen; previous smolt manager in Grieg Seafood:

-Summed up results after sea transfer

- higher mortality in smolt < 100 gram and > 250 gram. He was not sure why….


Postsmolt production in
brackish and seawater


Density in seawater:
Lower than fresh water

Lack of knowlegde about

- Optimal current in sea water

-Optimal salinity/ risk of toxic metals

- Acceptable limits for CO2, pH, TAN

In ras:

- Acceptable limits for pH, TAN, No3, NO2

Wounds 1- often start at pectoral fins, not linked to any special bacteria

Later on….

High salinity = high risk

Wounds 2: erosions in ventral areas in sea water

Summary larger smolt:

- Requires more water and tank volumes
  - RAS often implemented

- Risk of too early smoltification in freshwater

-Trends in Norway to produce smolt from100-150 gram to 400-800 grams in seawater or brackish water in tanks