What is the ideal cage size?
Or “Is bigger always better?”

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Structure to the discussion

The optimal cage seen from the view of

• Health and safety
• Environment
• Fish health & welfare
• Fish performance
• Industry change
Health and Safety

• Industry has reasonably low LTI rate compared to other industries, but we may still improve

• Sites have become more exposed
• Less comfortable and more risky to access and moving around at cage
• Large cages necessitate automation, boats, cranes and machinery fit to the job -> less hard on the people
• Large scale necessitate industrial mindset
Environmental safety

- Benthic foot print is less by use of plastic circles than of concentrated steel cages
- Easier to look after a lower number of units
- All staff familiar with all units
- More robust units
- All units and its components are standardized
- Standardization gives less errors and component failure
- In case of structural collapse, - more fish will escape
Fish health and welfare

• More demanding to handle mass mortality?
• More difficult to handle chemical treatment against sealice

• Equal access to feed?

• Less control?
• Representativity when drawing samples?
Fish performance

• Generation benchmarking MHN tends to show slightly lower FCR with steel farms than plastic circles – irrespective of size

• Large cages at more exposed sites -> higher lost feeding days and due to starving at harvest

• Large cages is more demanding for smolt feeding

• Oxygen flux is influences by diameter and biomass – i.e. max cages are not ideal at all sites
Industry change – drivers towards...

- Production efficiency
  - Capex
  - Tonne per concession and site
  - Turnover
  -> Cost per kilo

- Access to new sites which require new and stronger cages
  - Restructuring into zones
  - Some areas are crowded
  - Some old sites are too small

- Potential for growth – new concessions
  - Societal and political accept
  - Handling our environmental challenges
Conclusions

• The ideal cage size is site-specific

• We prefer one size all – if possible -> sets limitations to which sites we can use

• However – we are pushing our limits with current max size due to oxygen flux, disease and sealice

• New technology may change the game