Health management strategies for cleanerfish

ParaFishControl Workshop “North European Fish Parasite Management Strategies in Aquaculture Farms”

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Challenge and Impact

➢ Challenge

➢ Sea lice

➢ Impact

➢ Estimated to be a problem of 6Billions nok/ year in Norway

➢ Treatment for sea lice the first cause of mortality in A.salmon

STATE OF ART

➢ Treatment ?
➢ Vaccine?
➢ Laser?
➢ Phisical/mechanical control (heat, FW)
➢ BIOLOGICAL CONTROL

Resistence
Not available
Prototype released ?
High mortality
CLEANERFISH

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Our approach and our team

• **Brief description of the proposed solution**

  ➢ By establishing proper surveillance scheme, diagnostic methods and risk assessment it is possible to control viral diseases in cleanerfish, minimize risk for co-habiting salmon stocks and enhance proper "cleaning" performances

• **Team involved in the development**

  ➢ DTU-AQUA (Niccoló Vendramin and Niels Lorenzen) and University of Stirling (James Bron)
A few number on Cleanerfish

- Cleanerfish production and use has significantly increased in recent years (around 30 millions in 2017 in Norway and 46 tonns produced in Scotland in 2017)
- New pathogens emerged -> risk for the salmon production and reduced performance of the cleanerfish in their feeding activity (less lice removed).

Among others...

- VHS outbreak (Scotland genotype III, Iceland genotype IV)
- Ranavirus detection (Iceland, Scotland, Ireland, Faroese Island)
- Nodavirus detection (Norway-Sweden)
- New flavivirus (Norway)
- New totivirus-like (Norway)
- Etc.
Cohabitation challenge models for viral pathogen in Cleanerfish

- Define surveillance systems for relevant viral pathogens in Cleanerfish
- Develop diagnostic procedures
- Establish challenge model
- Test model for VHSV (Genotype IV) and Ranavirus
- Provide know-how and Technologies for future preventive measures (e.g. Vaccines)
Outbreak of viral haemorrhagic septicaemia (VHS) in lumpfish (*Cyclopterus lumpus*) in Iceland caused by VHS virus genotype IV

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Survival rate of VHSV cohabitation challenge

VHSV kinetics in cohabitation trial
Cleanerfish now listed as susceptible species in legislative framework for control of diseases in aquatic animals
Expected benefits for the industry

Following guidelines provided by the project:
- Minimize risk for Atlantic salmon stocks
- Minimize risk of spreading pathogens
- Healthier and more efficient cleanerfish
Current status and next steps

- Increased number of new pathogens detected in connection to disease outbreak in Lumpfish
- Need of standardized diagnostic methods
- Development of vaccines
Conclusions

Health surveillance and disease control are pivotal for development of sustainable cleanerfish production.
Thank You

ParaFishControl

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