

# Sammenslåing av NRC- prosjekter knyttet til leppefisk

Arbeidsmøte oppdrett av berggyllt  
Gardemoen, Jan 2010

Olav Breck, MHN

# Bakgrunn

## **2 separete søknader innendt til NFR høsten 2009**

Villa Miljølaks, HI, NOFIMA Ingredients

*Development of the farming and the use of ballan wrasse in salmon farming to continuous control of sea lice - an extension of the project 180028*

Total ramme: 8.1 mill, søkt NFR 2.836 mill

Marine Harvest Labrus, NIFES, NOFIMA Ingredients

*Optimised nutrition and egg quality in the cleaner fish Ballan Wrasse (Labrus bergylta)*

Total ramme: 5.424 mill, søkt NFR 1.750 mill

# Desember 09: Tilslag fra NFR og FHF med anmodning om revidert søknad

- Støtte forutsatt utarbeidelse av felles prosjektbeskrivelse
- Total tilskuddsramme fra NFR: 4.6 mill (2010-2012)
- 4.6 mill skal utgjøre maks 40 % av total ramme  
→ total ramme 11.5 mill, in kind: 5.75 mill
- Skal inngås konsortieavtale
- MHL som kontraktspart

# Revidert søknad (under utarbeidelse)

## Primary objectives:

1. Further improve current production protocol for Ballan Wrasse (*Labrus Bergylta*) with focus on feed quality and feeding regimes, as well as feed composition.
2. Gain information on spectral quality and intensity of light required to culture ballan wrasse in indoor intensive systems
3. Optimize the use of farmed Ballan Wrasse in commercial scale salmon production

## **Specific objectives:**

1. To develop a broodfish diet that ensures good egg quality and healthy broodstock
2. To optimize technical and nutritional quality of diets that ensures good survival, growth and quality at larval (incl. weaning) and juvenile stages.
3. To determine optimal temperature regimes to ensure good uptake and utilisation of nutrients at larval and juvenile stages.
4. To identify correct weaning time point, based on studies on levels of digestive enzymes.
5. To characterize the spectral intensity thresholds for feeding in ballan wrasse larvae and juveniles using three-dimensional (3-D) silhouette video photography (SVP).
6. To optimize the use of ballan wrasse as cleaner fish under commercial productions, covering the periods:
  - post smolt and early ongrowing phase (0.1 to 2.0 kg)
  - later ongrowing phase (2.0 kg to 6.0 kg)
  - use of wrasse during winter time

# Research approaches

## Experiment 1. Temperature optimization

- Four temperature intervals (12, 14, 16 and 19 °C) – 2 months,
- Larvae and juveniles (IMR and MHL)
- The temperature found for optimum growth will be used in the rest of the experiments in this project

## Experiment 2. Optimal macronutrient composition

- a three-component mixture design, 13 diets
- 2 months, juvenile fish

## Experiment 3. Micronutrient requirements of broodstock

- Based on exp 2, analyses of eggs/gonads from wild fish just prior to spawning
- Feeding trial with three levels of micronutrients based on levels used for cod

## Experiment 4. Palatability

- feeding trial five different diets will be fed juvenile wrasse in triplicate tanks
- different protein sources which are referred to be good attractants, such as squid meal, krill meal, bivalve meals and shrimp meal

# Research approaches

## Experiment 5. Optimizing technical feed quality and timing of weaning

- weaning experiments at different ages
- the activity of different digestive enzymes as marker
- feed particle size, sink – flow characteristics and leakage

## Experiment 6. Optimizing light environment for in- door rearing (IMR)

- Characterizing the photoreceptor complement and the spectral intensity thresholds of the Ballan Wrasse retina
- Behavioural studies & growth experiment

# Research approaches

## Practical use of ballan wrasse as cleaner fish (Villa Miljølaks)

A number of field trials will be conducted at VM R&D site as well as at IMR Austevoll. The trial will focus on :

- a) Effective salmon lice grazing on young salmon (0.1 to 2.0 kg)
- b) Effective salmon lice grazing on large salmon (2.0 kg - 6.0 kg)
- c) Effective salmon lice grazing through winter-

The trials will be based on replicated cages holding farmed ballan wrasse as well as control cages, with systematic and thorough monitoring of lice levels, as well as survival, growth and health status of the ballan wrasse.



# Project organisation and management

- Anne Berit Skiftesvik (IMR) **WP Leader**
- Ingegjerd Opstad (IMR)
- Howard Browman (IMR)
- Sissel Albrigtsen (NOFIMA Ingredients) **WP Leader**
- Trond Mork Pedersen (NOFIMA Ingredients)
- Per Gunnar Kvenseth (VM) **WP Leader**
- Kristin Hamre (NIFES) WP Leader
- Andreas Nordgreen (NOFIMA Ingridiens) **WP Leader**
- Tor Andreas Samuelsen (NOFIMA Ingrediens)
- Espen Grøtan (MHL) **WP Leader**
- Olav Breck (MHL) – **Project leader**

**5-6 Work Packages (WPs) with separate objectives, milestones and fixed budgets, headed by WP leaders.**

**A steering committee consisting of WP leaders and representatives from all partners + FHF/FHL**

# FoU – behov og prioriteringer

- Fiskehelse (infeksiøse agens)
  - kartlegge årsak til tap i oppdretts- og jobbfasen (parasitter, bakterier, virus)
  - agens i villfiskpopulasjoner (inkl. geografisk utbredelse)
  - berggylt som bærer av laksepatogene agens
- Karmiljø og karhygiene
- Stamfisk: stryking, eggbehandling
- Ikke infeksiøse lidelser
- Stressfysiologi, sykdomsmotstand og immunologi
- Bestandsundersøkelser
- Ernæring; behovsstudier makro- og mikronæringsstoffer på ulike stadier
- Anatomi og fysiologi; øke basale kunnskaper

## **Vi trenger en koordinert FoU-innsats, basert på:**

- **god kjennskap til pågående forskning og resultater derfra**
- **kontinuerlig oppdatering på biologiske utfordringer i praktisk oppdrett**
- **dialog mellom bevilgende instanser**