



**DIVERSIFY**



## WP 15 LARVAL HUSBANDRY-GREATER AMBERJACK

**Participants: HCMR, FCPTC, IEO, ULL, FORKYS**



# Objectives

1. Effect of different feeding strategies on larval performance in intensive systems

2. Development of feeding protocol and rearing system in mesocosm semi-intensive systems

3. Development of industrial protocol for larval rearing



## **D15.2 Efficient prey density and protocol of using immune modulators**

**In Greater amberjack larval rearing. M27**

**Y2 actions (2015)**

**With the best results obtained in Y1, density and frequency supply of Enriched prey will be assayed.**

**Determinations:**

**Larval performance (IEO)**

**Development of skeletal deformities and larval nutritional status, Oxidative Stress and humoral parameters (O)**

**Digestive tract ontogeny: proteases, lipases, amylases and ATPase activities (ULL)**

**Exchange of samples: IEO will provide samples to ULL to be analysed**



## Task 15.1 Effect of feeding regime and probiotics **Leader: IEO. Participants: ULL**

### Y1 actions (2014)

*Echium* oil (four experimental treatments by triplicate) was used to enrich the rotifers considering 4 different enrichment periods (3, 6, 10 and 24 hours). The *Echium* oil was combined with either a commercial emulsion or a marine lecithin rich in LC-PUFA.

Biochemical analysis of enriched rotifers are currently being carried out at ULL to establish the best combination (time and concentration) to feed the larvae.

### Deviation of initial plan

The lack of spawning of F1 broodstock forced to postpone the beginning of the trial with larvae to the next spawning season.



# Task 15.2 Comparison of semi-intensive and intensive rearing

**Leader:** HCMR. **Participants:** FCPCT, ULL



## Sub-task 15.2.1 Comparison between intensive and semi-intensive

**Leader: HCMR**

### Semi-intensive Culture

Tanks = 40 m<sup>3</sup> (x3)

Larval density 40

Photoperiod= 18L:06D

Temperature =24 °C

Light Intensity= ~ about 25  $\mu\text{mol m}^{-2} \text{s}^{-1}$ .

Feeding schedule:

enriched rotifers (3 to 18 dph)

Instar II Artemia nauplii (from 15 to 30 dph)

occasionally eggs and prelarvae since 16dph

Artificial diet delivery was initiated on 22dph

Phytoplankton was added daily until 20 dph.

Biometry (DW- LT),





## Sub-task 15.2.1

## RESULTS:

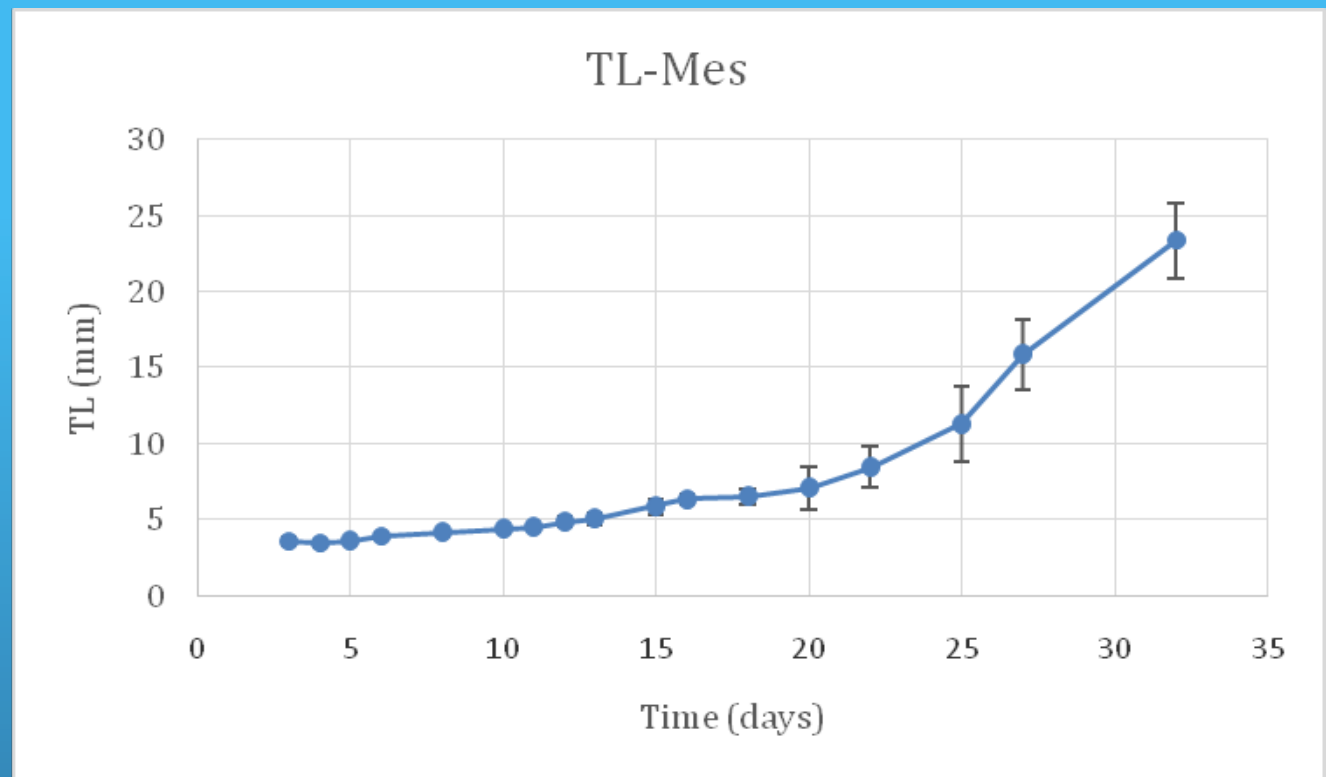
Semiintensive

On day 30:

950 individuals

transferred for

pre-growing.



Evolution of total Length during the rearing in Mesocosm (error bars is the standard deviation of the mean, n=10)



## Sub-task 15.2.1 Comparison between intensive and semi-intensive **HCMR**

### Intensive culture

Tanks = 500 l

Larval density 40

Photoperiod= 18L:06D

Temperature =22 °C

Light Intensity= ~ about 25  $\mu\text{mol m}^{-2} \text{s}^{-1}$ .

Feeding schedule:

enriched rotifers (3 to 21 dph)

Instar II *Artemia nauplii* (from 12)

Artificial diet delivery was initiated on 21dph

Phytoplankton was added daily until 22 dph.

Biometry (DW- LT),





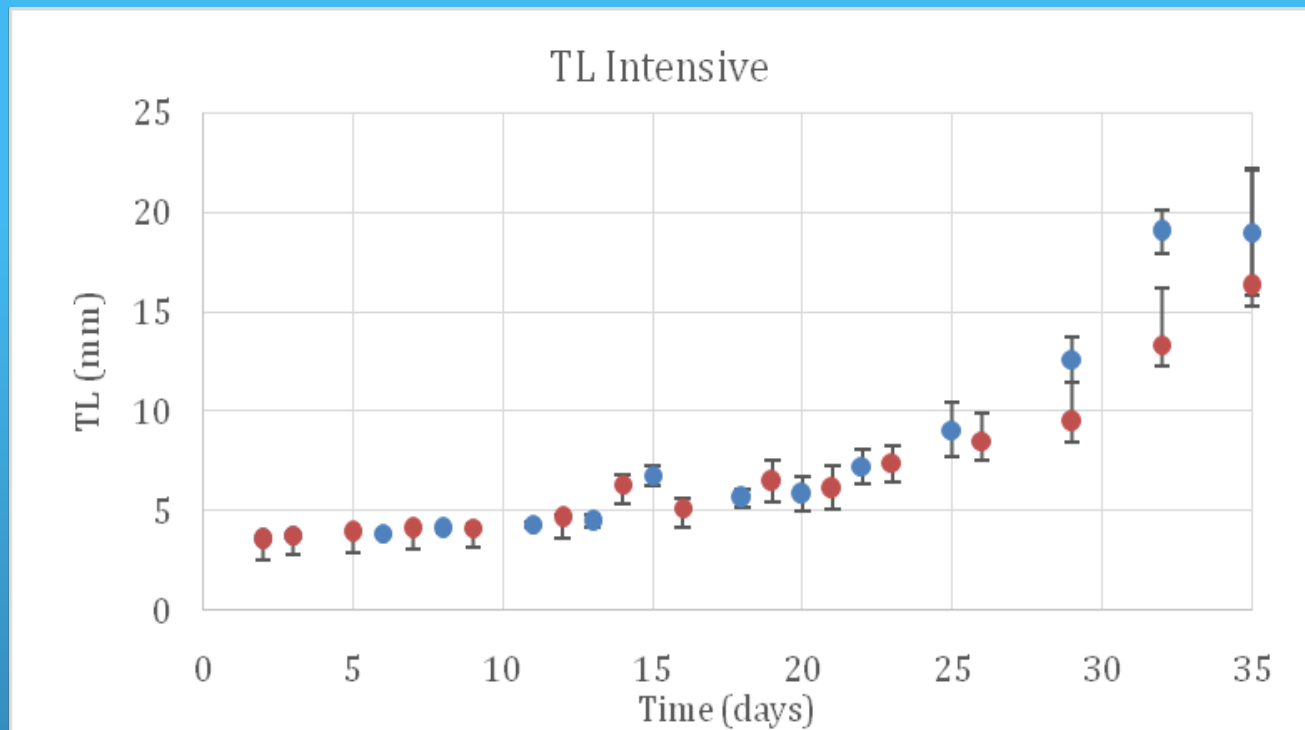


Sub-task 15.2.1

## Results: Intensive

On day 30:

2500 individuals  
transferred for  
pre-growing.



Evolution of TL during intensive rearing (error bars is the standard deviation of the mean, n=10)



## Sub-task 15.2.2 The effect of stocking density **FCPCT**

Tanks: 2000 l (x3)

Eggs density: 25, 50, 75 eggs/l

Photoperiod: natural

Temperature: 23-25°C

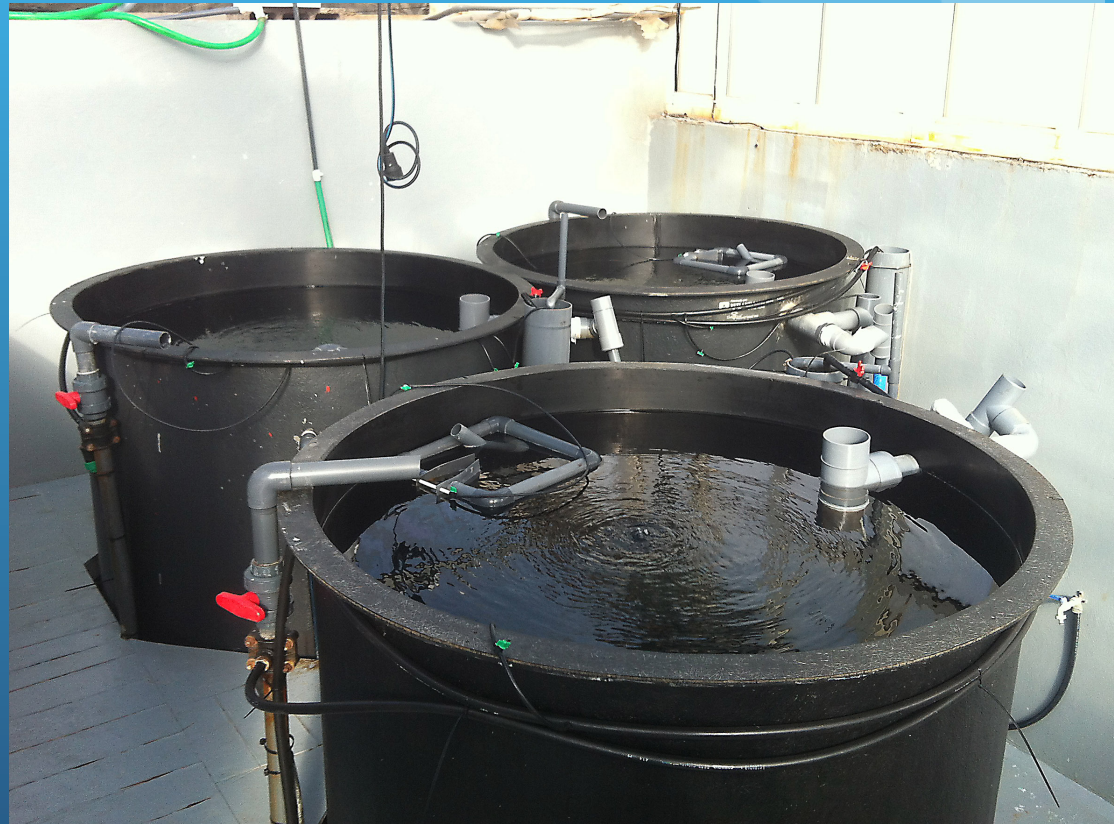
Feeding schedule:

Enriched rotifers, Artemia nauplii , Artificial diet

Phytoplankton

Larval samples: 0-5-10-15 dph

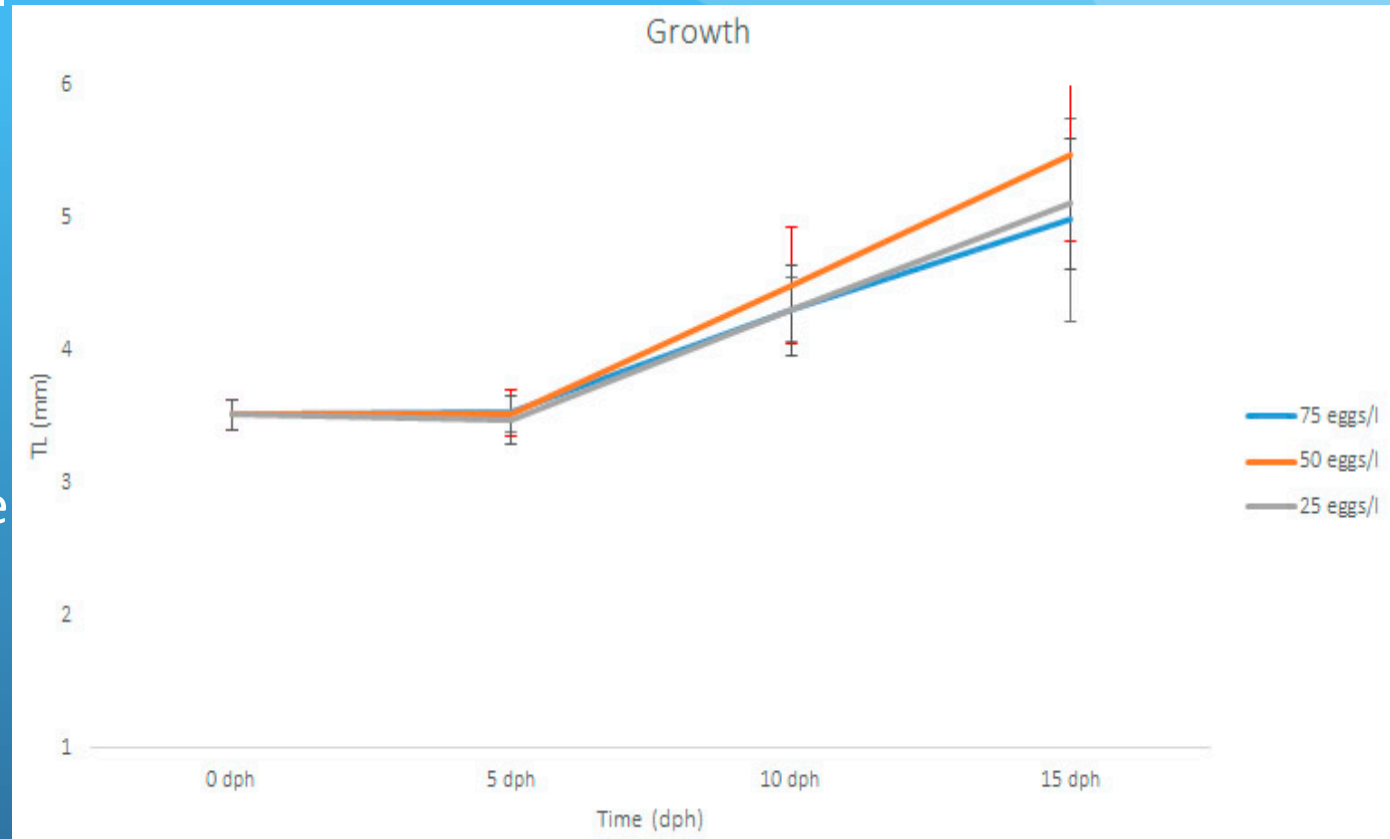
Biometry (DW- LT), Histology.



**Larval rearing tanks**



Larvae 15 dph  
were given to ULL  
To analyse digestive  
enzymes



**Total length evolution during the 15 days of experiment**



## Task 15.3 Effect of environmental parameters during rearing

**Leader: FCPCT. Participants: HCMR**

- Sub-task 15.3.1 The effect of tanks hydrodynamics (FCPCT)
- Sub-task 15.3.2 Effect of light on larval rearing (HCMR)

**These studies were not planned for 2014**



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Task 15.3 Effect of enviromental parameters during rearing

Leader: FCPCT. Participants: HCMR

These studies were not planned for 2014



## Task 15.4 Development of industrial protocol

**Leader: IEO. Participants: FCPCT, FORKYS**

Sub-task 15.4.1

Sub-task 15.4.2

Sub-task 15.4.3

**These studies were not planned for 2014**



## FCPCT-GIA

In order to produce fry for ongrowing test to be performed in different WPs:

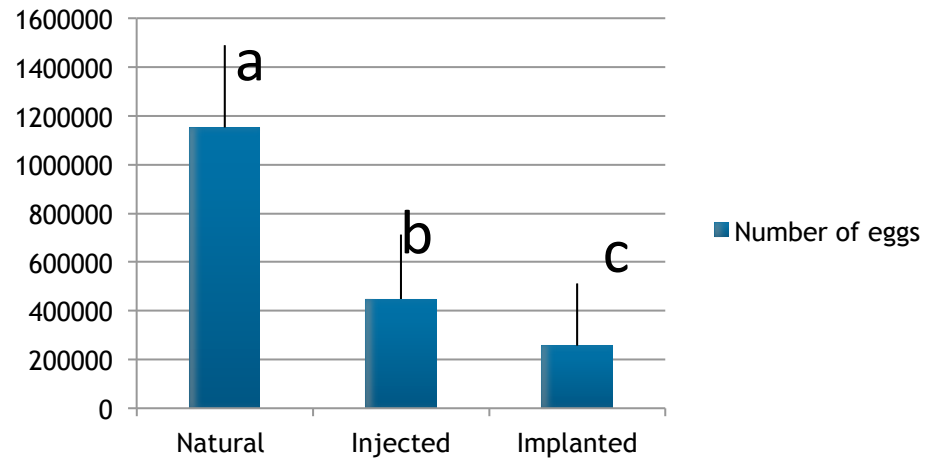
- Two 40 m<sup>3</sup> mesocosm tanks where stoked at 10 eggs/ L with eggs from a naturally occurring spawning event.
- Another set of nine 2000 L tanks were also stoked at 80 eggs/ L (according to the traditional method) with eggs from the same natural.



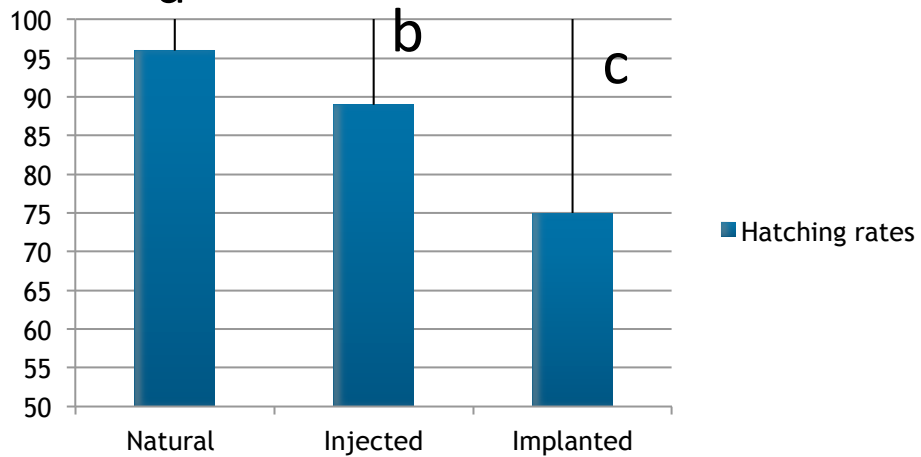




### Number of eggs



### Hatching rates









Thanks for your attention

