

LARVITA

Fish Larvae Training School



Scientific Report



LARVANET COST Action FA0801

December 2010

LARVITA Fish Larvae Training School 2010 was organised jointly by the Centre of Marine Sciences (CCMAR) - Aquaculture Research Group and the National Institute of Biological Resources (INRB, I.P.) / IPIMAR - Aquaculture Research Station.

LARVITA intended to provide advanced training on emerging aspects of fish larval research for young researchers but also industry representatives. This objective was successfully achieved, as reflected in Figure 1, since 16% of the trainees were industry representatives (Hatchery or R&D managers).

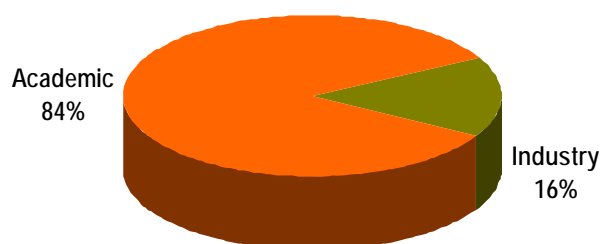


Fig. 1 - Participants background.

LARVITA as a multidisciplinary Training School aimed to:

- outline the state of the art of fish larval rearing;
- provide an integrated approach of the biochemical, physiological, nutritional and practical aspects of producing, feeding and rearing fish larvae;
- update the scientific techniques which are applied currently in research.

Fitting the objectives defined by the LARVANET COST action, the heterogeneous core of **LARVITA** (18 lecturers) assembled the expertise and competences required to disseminate the European wide scientific knowledge on larval research to the trainees (25 participants), in order to promote a sustainable aquaculture industry. The Lecturers came from six European countries (Fig. 2), being 55% of Portuguese origin.

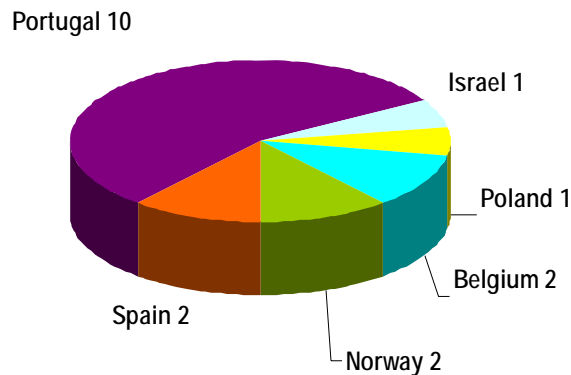


Fig. 2 - Lecturers by country.

LARVITA was held during 5 days, between the 22nd and 26th of November as presented in Table 1. Theoretical lectures comprised a significant part of the Training School and their structure was thought to guide trainees throughout a complete larval life cycle. Therefore, aspects affecting gamete quality and egg development were explored, followed by lectures identifying factors that affect larval quality, focusing on aspects such as bioenergetics, fish larvae ability to digest food and to cope with developmental and nutritional requirements, tissue differentiation and systems synchronization. After covering biological and physiological aspects, trainees learnt the importance of live food for marine fish larvae and the most up-to-date knowledge on microdiets formulations. Factors affecting ossification, the occurrence of malformations, as well microbiology of fish larvae were addressed in the last day of the training school. This sequence of lectures were framed by an initial topic on the current aspects of larval rearing in order to give the trainees an insight on how larval rearing is of pivotal importance in aquaculture. A final topic on the future trends in larval rearing was very important to broaden the trainees' knowledge for the future research in the distinct areas of interests.

"Hands-on" activities assumed also an important part in **LARVITA**. Laboratory practices allowed the participants to acquire knowledge in several indispensable aquaculture methodologies, namely gamete quality and larval feeding behaviour. Theoretical/practical lectures guided the trainees thorough the methodologies needed to identify muscle fibre types and gave them a chance to test

a mechanistic model that can be used as a tool to integrate existing knowledge and reveal gaps in larval research. A special session was held during **LARVITA**, where several practical tips were given to the trainees to help them improve the quality of their scientific writing. Based on a survey given to the trainees at the end of **LARVITA**, it was concluded that more than 90% of the participants considered the classes' duration adequate.

LARVITA Fish Larvae Training School intended to be an advanced course in larval rearing and research restricted to 25 trainees. The Organising Committee received 42 applications from 15 different countries, which were evaluated based on the applicant's academic degree, relevant experience in larval rearing and a geographical balance criterion. After the final selection, **LARVITA** was attended by 25 trainees studying/working in 14 countries and 3 continents (Europe, Africa and America) (Fig. 3), and even broader nationality representation (including nationals from France, Greece, Brazil, Mexico, Malaysia and Indonesia). In fact, 10 out of 25 course trainees were not nationals from the country where they are studying/working, demonstrating the high mobility of young Larvanet researchers.

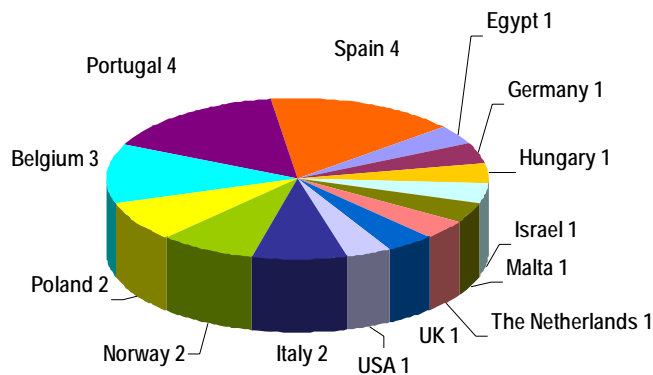


Fig. 3 - Trainees by country.

From the total of 25 participants, 15 European trainees were financed through the LARVANET Cost Action (Fig. 4). The grants included the costs for travel, subsistence and accommodation at the youth hostel in Faro, during the whole **LARVITA** duration.

LARVITA Fish Larvae Training School 2010

TABLE 1 – LARVITA schedule.

| | | MONDAY 22 ND | TUESDAY 23 RD | WEDNESDAY 24 TH | THURSDAY 25 TH | FRIDAY 26 TH |
|-------------|-------------|--|---|--|--|--|
| MORNING | 09.00-11.00 | MARIA TERESA DINIS <u>LARVAL REARING (T)</u> | EWA KAMLER <u>FISH LARVAL QUALITY: ECOLOGICAL AND BIOENERGETICAL ASPECTS (T)</u> | WILLIAM KOVEN <u>FATTY ACID AND LIPID METABOLISM OF FISH LARVAE (T)</u> | MANUEL YÚFERA <u>MICRODIETS (T)</u> | PAULO J. GAVAIA <u>OSSIFICATION AND MALFORMATIONS (T)</u> |
| | 11.00-13.00 | ELSA CABRITA SONIA MARTÍNEZ-PÁRAMO <u>BROODSTOCK: GAMETE QUALITY (T)</u> | LUISA M.P. VALENTE <u>GROWTH AND MUSCLE DIFFERENTIATION (T/P)</u> | KARIN PITTMAN <u>METAMORPHOSIS IN CULTURED TELEOSTS (T)</u> | PEDRO POUSÃO-FERREIRA <u>LIVE FEEDS (T)</u> | PETER BOSSIER <u>MICROBIAL INTERFERENCE (T)</u> |
| 13.00-14.00 | | LUNCH | LUNCH | LUNCH | LUNCH | LUNCH |
| AFTERNOON | 14.00-16.00 | FLORBELA SOARES ELSA CABRITA SONIA MARTÍNEZ-PÁRAMO <u>BROODSTOCK MANAGEMENT (P)</u> | IVAR RØNNESTAD <u>DIGESTION (T)</u> | LUIS E.C. CONCEIÇÃO <u>GROWTH SIMULATION: THE LAGS PROGRAM (T/P)</u> | CLÁUDIA ARAGÃO SOFIA ENGROLA LAURA RIBEIRO <u>FISH LARVAE FEEDING BEHAVIOUR (P)</u> | PATRICK SORGELOOS <u>FUTURE TRENDS IN AQUACULTURE (T)</u> |
| | 16.00-18.00 | | LUIS E.C. CONCEIÇÃO <u>PROTEIN AND AMINO ACID METABOLISM (T)</u> | EWA KAMLER <u>WRITING SCIENTIFIC PAPERS: FEW PRACTICAL TIPS (T)</u> | | |

Legend: T = Theoretical; T/P = Theoretical/Practical; P = Practical.

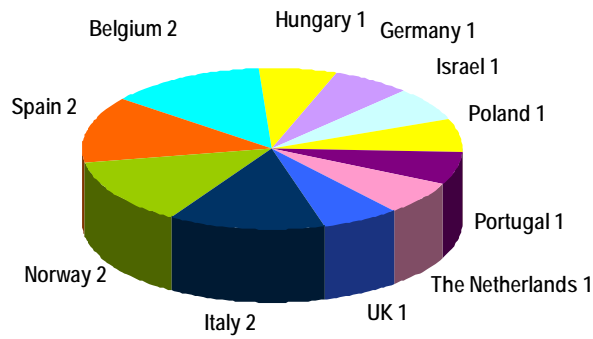


Fig. 4 - Financed participants by country.

The LARVITA trainees (25 in total) were mostly from the female gender (Fig.5).

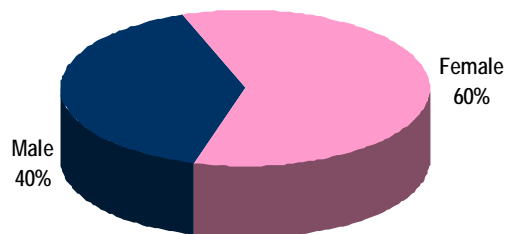


Fig. 5 - Participants by gender.

All participants received a manual including a chapter under the subject of each lecture for support during the Training School and for future reference. At the end of the LARVITA the Organising Committee gave to the trainees a survey in order to evaluate the Training School and assess if the knowledge provided was useful for their studies/activities (Fig. 6).

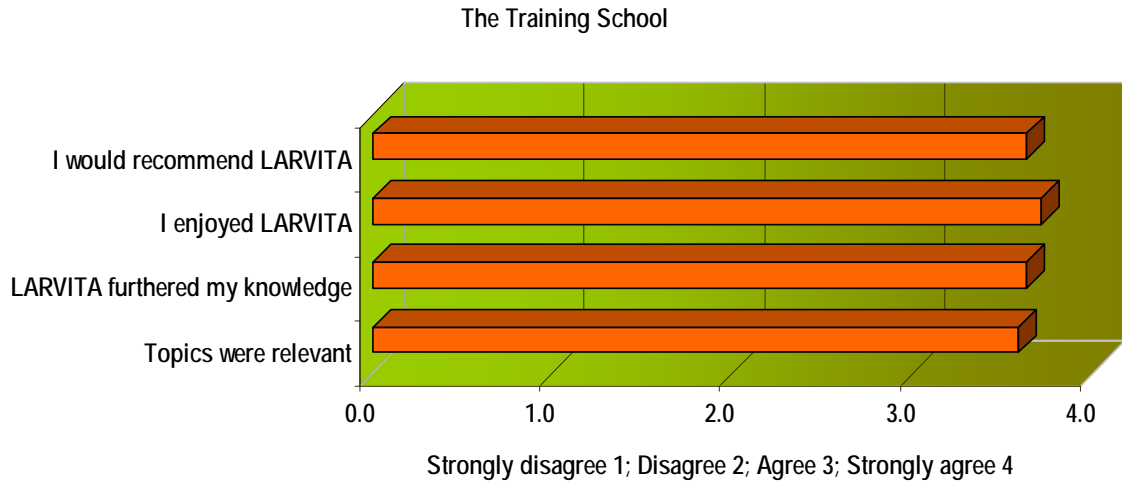


Fig. 6 - LARVITA success in survey (25 answers).

In general the trainees enjoyed **LARVITA** and considered the topics relevant and their knowledge furthered by the experience. The results are quite important if one analysed it together with the trainee's background on larval rearing. Although the trainees were selected considering their previous experience with larvae, it was possible to see that the final participants list included persons which larval background was quite wide. Hence, the overall classification for **LARVITA** by the trainees was Very good (Fig. 7).

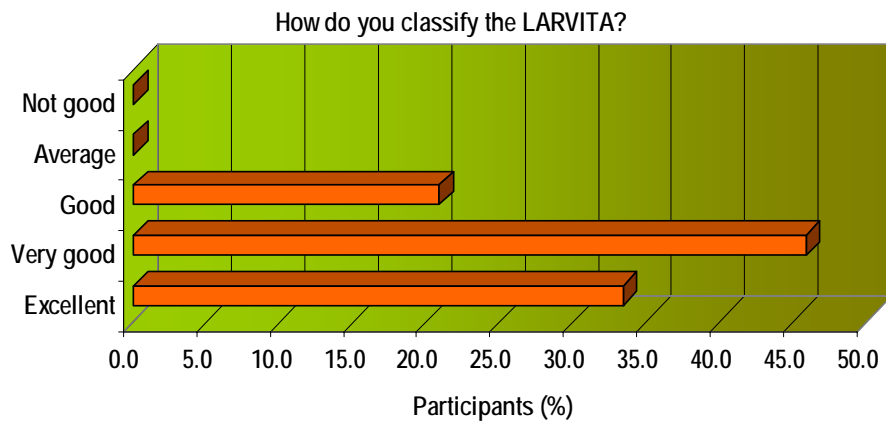


Fig. 7 – LARVITA classification in survey (25 answers).

Furthermore, 100% of the trainees answered that they would like to participate in further LARVANET activities, suggesting that **LARVITA** was a good initiative to promote the activities of this COST Action.

Therefore, in conclusion **LARVITA** provided appropriate and flexible learning opportunities through which trainees acquired fundamental knowledge and developed useful skills for future research.

LARVITA Organising Committee

Course Director: Maria Teresa Dinis (CCMAR)

Course Coordination: Cláudia Aragão (CCMAR), Sofia Engrola (CCMAR), Luís Conceição (CCMAR) and Laura Ribeiro (INRB, I.P./IPIMAR)