



**Institut Français de Recherche
pour l'Exploitation de la Mer
(IFREMER - MES)**

Research Infrastructure Information

www.aquaexcel.eu

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1 IFREMER in AQUAEXCEL

1.1 Introduction

Operating institution:	IFREMER (Institut Français pour l'Exploitation de la Mer), http://wwz.ifremer.fr/institut
Type Operating Institution:	Research Institute
Research Infrastructure(s):	1. Marine Eco-tolerance section (MES) 2. Experimental facilities for marine fish larvae (MFL)

1.2 IFREMER Research Infrastructure 1: Marine Eco-tolerance Section (MES)

Name of the infrastructure:	Marine Eco-tolerance Section (MES)
Location:	Chemin de Maguelonne 34250 Palavas les Flots France
Web site address:	http://wwz.ifremer.fr/mediterranee/bienvenue
Contact:	Emmanuel REZZOUK Tel: +33(0)467130400 E-mail: Emmanuel.Rezzouk@ifremer.fr
AQUAEXCEL TNA facility:	Yes, and Marine Eco-tolerance section (MES) has facilities which are open for Access to external research groups within the framework of the AQUAEXCEL project.
Short description	The infrastructure offered to TNA activities, is located in a 4000m2 research station. It comprises a room (185 m2) of 12 same tanks each, running with seawater and working in flow through or in recirculation systems
Keywords	marine fish physiology, nutrition, feeding behaviour, genetics, welfare, domestication and recirculation rearing systems
Technical labs	Technical labs Three technical labs are available for measurements in water chemistry (ammonia, nitrite, nitrate, phosphate..) fish pathology and preparations for molecular biology. The Ifremer station of Palavas is associated with nearby specialized laboratories in Montpellier (University, Cirad, INRA and IRD) which creates a scientific environment of good quality with numerous researchers involved in aquatic living resources and ecosystems.
Processing labs	No
EU projects	Benefish, Wealth, Aquamed, TNA-ASEFAF programme (2001-2004)
Number of researchers	10
Number of technicians	6
Lodging facilities	No lodging facilities on site, but the infrastructure has preferential relationships with a local real estate agency.
SERVICES - scientific support	Scientific advice, recommendations and/or explanations could be given by several of the seniors scientists on site.
SERVICES - electronic databases	Access to the La Pérouse- library: Archimer database and full

	text articles
SERVICES - electronic databases	ISO 90001 procedure for quality insurance in progress
Safety and ethical issues	<p>The technical team has a strong background and interest in the ethical treatment of fish and is made up of licence-holding members with the world's strictest requirements for the ethical use of animals.</p> <p>Any work carried out with fish will be undertaken with approval from local (e.g. university) or national ethical committees. All research, including that which requires anaesthetisation or euthanasia of fish will be carried out under the auspices of national licensing authorities.</p> <p>Legal requirements for reduction, refinement and replacement of the use of animals in experimentation will also help to ensure ethical and parsimonious experimental design.</p>

1.2.1 Fish Line information

Name Fish Line 1:	West Mediterranean base population
Species:	Sea bass (<i>dicentrarchus labrax</i>)
General description	Wild Sea bass, collected in the west of the Mediteranean sea (Lion Golf)
Type:	Base population
Traits selected (if relevant):	No
Nb generations:	0
Effective population size:	20 Males, 20 Females
Other:	No

Name Fish Line 2:	North Atlantic base Population
Species:	Sea bass (<i>dicentrarchus labrax</i>)
General description	Wild Sea bass, collected in the North Sea
Type:	Base population
Traits selected (if relevant):	No
Nb generations:	0
Effective population size:	46 Females, 18 males
Other:	No

Name Fish Line 3:	Growth
Species:	Sea bass (<i>dicentrarchus labrax</i>)
General description	3rd generation of a massal selection on growth, based on North Atlantic wild population
Type:	Selected population
Traits selected (if relevant):	Growth
Nb generations:	3
Effective population size:	2 nd Generation, 36 Females, 30 Males (stored in a Cryo bank)

Other:	The third generation is in the on-growing facilities and will reach the broodstock in 2013. The second generation is still available in the breeding facilities. Selected control males from the first generation are in a cryo-bank
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Name Fish Line 4:	SEX Female +
Species:	Sea bass (<i>dicentrarchus labrax</i>)
General description	TFish selected for giving mostly female in their offspring (from 80% to 97% of females in the offspring), based on West Mediterranean wild population.
Type:	Selected population
Traits selected (if relevant):	Sex ratio in the offspring
Nb generations:	1 pressure of selection and 3 generations to maintain the line
Effective population size:	40 females, 25 males- Some control fish (50% of females in the offspring) and contrasted fish (10% of females in the offspring) are still available (18 females alive and 14 males cryo-preserved)
Other:	No

Name Fish Line 5:	Food Efficiency
Species:	Sea bass (<i>dicentrarchus labrax</i>)
General description	Fish selected for their good or bad Food Efficiency. Based on West Mediterranean wild population.
Type:	Selected population
Traits selected (if relevant):	Contrasted selections on starvation and post starvation growth correlated to Food Efficiency
Nb generations:	2 – The first generation is in broodstock, the second generation is on-growing
Effective population size:	1 st Generation- 32 Females, 63 Males (54 cryo-preserved and 9 alive) 2 nd Generation- sex not determined yet.
Other:	No

Name Fish Line 6:	Vegetal
Species:	Sea bass (<i>dicentrarchus labrax</i>)
General description	Fish selected for their good growth performance with plant based diet, based on West Mediterranean wild population.
Type:	Selected population
Traits selected (if relevant):	Good or bad growth dependant on plant based fish feed with control fish feed with fish meal and oil diet.
Nb generations:	2
Effective population size:	The first generation is in the broodstock stage and contains: 30 females, 30 males cryo-preserved. The control fish: 30 females, 46 males cryo-preserved. The second generation is on on-growing and will reach the broodstock stage in 2013.
Other:	No

Name Fish Line 7:	Albinos
Species:	Sea bass (<i>dicentrarchus labrax</i>)
General description	Albinos line

Type:	Selected population
Traits selected (if relevant):	Albinos
Nb generations:	1
Effective population size:	300 fish in ongrowing facilities, they will reach the broodstock stage in 2014
Other:	No

Name Fish Line 8:	Atlantic Domesticated
Species:	Sea bass (<i>dicentrarchus labrax</i>)
General description	First generation of domestication of the North Atlantic population
Type:	Control population
Traits selected (if relevant):	No
Nb generations:	1
Effective population size:	26 Females, 30 Males
Other:	No

1.2.2 Facility Unit 1 Information: Marine Eco-tolerance Section (MES)

Name Facility Unit 1	Marine Eco-tolerance Section (MES)
TNA	Yes
Contact (Researcher)	Lemarié Gilles Email: glemarie@ifremer.fr Tel: +33 (0) 4 67 13 04 08
URL	http://www.ifremer.fr/mediterranee/bienvenue
Postal Address	Station Ifremer 34250 Palavas les Flots France
General description	The infrastructure offered to TNA activities, is located in a 4000m2 research station. It comprises a room (185 m2) of 12 same tanks each, running with seawater and working in flow through or in a recirculation system.
Technical description	The experimental tanks are 1 cubic meter each, black coated, u-shaped with a central outlet for efficient self cleaning. Each tank is covered with a black plastic sheet to protect fish against external visual stress. Light intensity (from 0 to 500 lux at the water surface) and the photoperiod including an artificial dawn and dusk can be controlled. Tanks are fitted with efficient feeders and particle traps allowing a high level of the control of feed intake and uneaten feed, especially when fish are fed at satiation. For dedicated studies, feeders can be use on-demand by the fish in combination with a PIT-tag antenna device in 12 tanks in order to identify individual fish feed-demand. Therefore complex studies can be operated simultaneously at a significant scale, with a great number of replicates in these facilities quite rare and unique. These facilities are reliable as they have run for some years.
Remote monitoring & control	No remote control via internet
Water and environmental conditions	Sea water is sand-filtered at 15 *m, UV sterilised, heated or cooled and degassed in a packed column. Seawater is provided to tanks by gravity from a header tank with small overflow. This

	system guarantees a very stable water pressure for long periods at the inlet valve. Water temperature can be maintained in a range from 10 to 25°C. Water flow-rate per tank ranges from 10% per hour to 250% per hour. Seawater can be enriched with oxygen or other gas by injecting an adequate flow in a bi-cone running under pressure.
Flowrate	Flow rate per confinement unit: 0,1 to 1,5 m ³ /h manually monitored
Temperature	10 to 25°C, monitored manually and controlled automatically.
Salinity	Stabilized in a range 10 ‰ to seawater salinity, parameter manually monitored and controlled.
Oxygen	Stabilized in a range 5 to 15 ppm, parameter manually monitored and controlled.
pH	Range from 6.8 to 7.9, manually controlled.
Light intensity and wavelength	Light intensity (from 0 to 500 lux at the water surface) and the photoperiod including an artificial dawn and dusk can be automatically controlled.
Photoperiod	Controlled automatically in a wide range 0 to 24h/d light
Fish measurements	Sizes (various measurements), weight, tag number and fat content are manually monitored and automatically recorded on a dedicated laptop.

Pictures/video



Water treatment system



Experimental 1M³ tank

1.3 Modality of access

The access will comprise the use of the high-quality facilities and access to the laboratories. Fish will be available at various mean weight (2, 10, 50 or 150g) originated from strains genetically identified and reared in Palavas research station or from commercial farms located not far away. The duration of the experiment can last up to 2 months (3 months including the preparation time before experimentation and put back in service). Usually, trained and experienced staff will carry out the standard procedures and the general maintenance. Nevertheless, the external user will be strongly integrated in all processes.

Support offered under this proposal: The unit of access is defined as 1 tank/week, equalling the occupation of 1 standard fish holding unit (1m³) for 7 days. One trial is expected to comprise 12 tanks during 8 weeks. The access will comprise the use of tanks including fish supply, maintenance, water supply, daily feeding, handling, sampling and husbandry of fish. On request, access to laboratories facilities on site (water quality measurements and biometry) and other infrastructural, logistical, technical and scientific support to external users are offered. Scientific support will include advice on experimental design and methodology, documentation of results for all experiments conducted during the project, and appropriate sampling and conservation of samples. Outreach of new users: Potential new users will be informed about the access possibilities to Ifremer facilities of Palavas through calls for proposals targeting a specialised scientific audience. Finally, several teams will meet each other during the stay in Ifremer aquaculture research stations and can thus elaborate on a list of common interest research issues, making the Ifremer infrastructure as a place for the exchange of aquaculture scientific ideas.

1.4 Unit of access

The unit of access is defined as 1 tank/week, equalling the occupation of 1 standard fish holding unit (1m³) for 7 days. One trial is expected to comprise 12 tanks during 8 weeks.