Universidad de Las Palmas de Gran Canaria (ULPGC)

Research Infrastructure Information

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Type Operating Institution:	University
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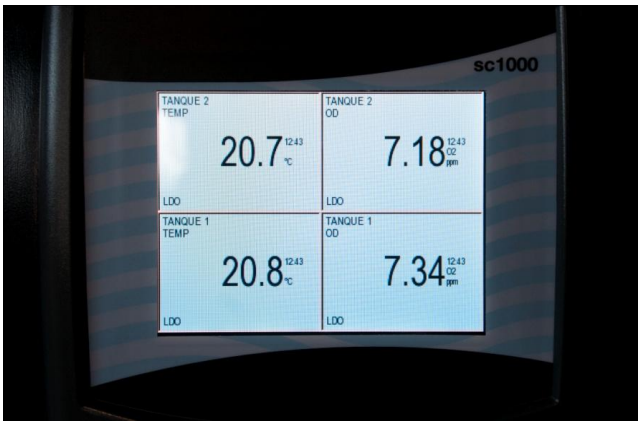
1.2 Research Infrastructure 1: ULPGC WWSSU (Warm Water Species Selection Unit)

Name of the infrastructure:	**Warm Water Species Selection Unit (WWSSU)**
Location:	Technological Scientific Park of ULPGC
Web site address:	http://www.giaqua.org/
Contact:	Juan Manuel Afonso López Email: jafonso@dpat.ulpgc.es Tel: +34 9289735 / +34 928459734
AQUAEXCEL TNA facility:	Warm Water Species Selection Unit (WWSSU)
Short description	WWSSU is an infrastructure where genetic selection programs can be done for families of, at least, 48 half sibs or 96 full sibs, containing culture tanks (1 m3 and 0.5 m3) and breeders tanks (10 m3, 40 m3 and 80 m3), where fish culture is possible from larvae until adults
Keywords	On-growing, breeders, quantitative and molecular genetics, microsatellite, breeding program
Technical labs	Laboratory of Molecular Biology and Quantitative Genetics techniques, including manual and automatic sequencers, gel documentation systems, 5 colour gene expression equipment, quality quantifier of nucleic acids, design and planning of breeding schemes, development of individual identification systems for physical and molecular reconstruction of genealogy, estimation of genetic parameters and evaluation of breeders.
Processing labs	Our facility has different kind of laboratories for molecular genetics, quantitative genetics and meat and fish quality analysis
EU projects	FAIR, RAFOA, AQUAFIRST, ARRAINA
Number of researchers	4
Number of technicians	4
Lodging facilities	No
SERVICES - scientific support	Design of experiments, support of staff (sampling, etc.), realizing of experiments and data analysis
SERVICES - electronic databases	No
SERVICES - quality assurance	In our facility, our own protocols are carried out for monitoring the quality of experiments, which are in agreement with regional, national and European legality for ethical and welfare issues
Safety and ethical issues	A guide for housing and care of marine fish

1.2.1 Facility Unit Information: Warm Water Species Selection Unit (WWSSU)

Name Facility Unit	Warm Water Species Selection Unit (WWSSU)
TNA	Yes
Contact (Researcher)	Juan Manuel Afonso López Email: jafonso@dpat.ulpgc.es Tel: +34 9289735 / +34 928459734
URL	http://www.giaqua.org/
Postal Address	University of Las Palmas de Gran Canaria. Instituto Universitario de Sanidad y Seguridad Alimentaria. C/. Trasmontaña s/n. 35413 Arucas
General description	WWSSU is a flexible infrastructure containing tanks for mating, tanks for rearing larvae and on-growing process, and tanks for breeders. All of them are prepared for on-line monitoring of temperature, oxygen, pH, flow and feed. The tank volumes are 0.5 m3, 1 m3, 10 m3, 40 m3, 80 m3. Total biomass around 624 kg for on-growing and 1,040 kg for breeders. Species: gilthead seabream, red porgy, redbanded seabream, dentex sp, seabass, meagre, seriola sp, etc...
Technical description	As relevant technical features: this infrastructure contains biofilter and monitoring for feeders, pH, oxygen, temperature, flow and photoperiod
Remote monitoring & control	WWSSU allows remote experimentation via the Internet, and at the end of 2012 will include information about video monitoring
Water and environmental conditions	WWSSU is an open water system
Flowrate	The flow rate range per rearing tanks is 2-4 twice per day, while this rate is 4-6 twice for breeder's tanks. The flow is monitored automatically and controlled automatically
Temperature	17.8 – 22.3 ºC. It is monitored manually or automatically, and controlled manually
Salinity	36 ± 1‰. It is monitored manually
Oxygen	Range: 6 – 8 mg/l. It is monitored manually or automatically, and also controlled automatically
pH	8.2±0.2
Light intensity and wavelength	Visible light controlled manually
Photoperiod	Up to 200 lux, monitored manually or automatically and controlled automatically
Fish measurements	Manually are measured the following parameters: size, weight, dressing percentage, visceral fat, gutted body weight, fillet weight and deformity. Automatically are measured the following parameters: morphological traits, tag, behaviour, muscle fat, moisture, ash, collagen, genotype by multiplex and molecular markers.

Pictures/videos	   

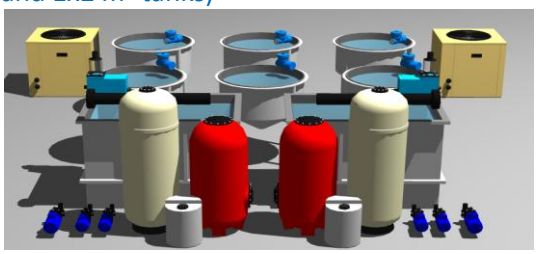
1.3 Research Infrastructure 2: ULPGC MBS (Marine Biosecurity Station)

Name of the infrastructure:	Marine Biosecurity Station (MBS)
Location:	Technological Scientific Park
Web site address:	http://www.giaqua.org/
Contact:	
AQUAEXCEL TNA facility:	Marine Biosecurity Station (MBS)
Short description	The MBS is located in the Marine Scientific and Technological Park of the ULPGC and the ULPGC itself and comprises three main RAS units completely equipped to separately challenge with up to three different pathogens at the same time in all phases of fish life cycle including broodstock, larvae and juveniles of marine fish species. Each of them is provided with automatic and programmable control of flow, oxygen concentration, temperature, pH and feeders and is designed to content up to 18 circular tanks of 0.5 m3. Therefore 6 treatments in triplicates can be run at the same time in each unit, but up to 48 tanks can be used if all units are included in the same experiment. The design of the recirculation units is versatile, which allows a great amount of testing conditions and assays in vivo with any pathogen. It also has a support laboratory in situ, as well as access to the Fish Pathology Laboratory of the Institute of Animal Health and Food Safety (IUSA) and the Microbiology Laboratory, both at the ULPGC, with microbiology and anatomo-pathology techniques ready for all fish and mollusc tissues (including anterior kidney, brain, muscle and bone, among others). These characteristics make the MBS the most versatile and controlled research station in Europe to challenge marine fish with virus, bacteria or parasites. These kinds of studies have been conducted by GIA and the Fish Pathology Lab for the last 10 years, fish health and welfare being a main research line of this group. The MBS is a reference center for disease prevention in the Canary Islands and adjacent African countries.
Keywords	Pathogens, microbiology, anatomo-pathology, challenge test, closed circuit system
Technical labs	Specific and technical labs of bacteriology, virology and anatomo-pathology. All these labs are in our University Institute of Animal Health (IUSA; http://www.iusa.eu/)
Processing labs	Our facility has different processing labs: – Bacteriology and Virology, containing all devices for diagnostic in microbiology (PCR, cellular culture systems, gel documentation systems, 5 color gene expression equipment, quality quantifier of nucleic acid, ELISA systems, etc...). Furthermore, our facility has a bank of pathogens from natural population and aquaculture companies. – Anatomo-Pathology, containing all devices for histological analysis, including hybridisation in situ and image diagnostic,
EU projects	RAFOA, SUDEVAB, AQUAFIRST, LARVANET, ARRAINA

Number of researchers	8
Number of technicians	6
Lodging facilities	No
SERVICES - scientific support	In marine fish, facilities to provide pathogen-free animals with which to develop large-scale experiments are scarce. In this sense, the MBS supplies pathogen-free animals, which are highly demanded by experimental and industrial laboratories, offering services on pathogen challenge for researchers, feed producers and pharmaceutical companies, developing vaccines, immuno-stimulants and therapeutical products. The service includes standardised models for several pathogens and infection by intramuscular or intra-peritoneal injection, cohabitation, immersion and rectum canulation as well as the development of combined experiments in nutrition and disease. All experiments are supported by biochemical, enzymatic histological and microbiological analysis.
SERVICES - electronic databases	No
SERVICES - quality assurance	In our facility, in-house protocols are carried out for monitoring the quality of experiments, which are in agreement with regional, national and European legality for ethical and welfare issues
Safety and ethical issues	A guide for housing and care of marine fish

1.3.1 Facility Unit Information: Marine Biosecurity Station (MBS)

Name Facility Unit	**Marine Biosecurity Station (MBS)**
TNA	Yes
Contact (Researcher)	Fernando Real Valcárcel Email: freal@dpat.ulpgc.es Tel: +34 928451181
URL	http://www.giaqua.org/
Postal Address	University of Las Palmas de Gran Canaria. Instituto Universitario de Sanidad y Seguridad Alimentaria. C/. Trasmontaña s/n. 35413 Arucas
General description	MBS is a flexible infrastructure containing, tanks for challenge test under closed circuit system. This RI consists in 18 independent closed circuit units with three replicate for each, and prepared for on-line monitoring of temperature, oxygen, pH, flow and feed. The tank volumes are 0.5 m3 and 2 m3. The total biomass around 250 - 300 kg. Species: gilthead seabream, red porgy, redbanded seabream, dentex sp, seabass, meagre, seriola sp, etc...
Technical description	As relevant technical features: this infrastructure contains closed circuit systems including biofilters, skimmers and monitoring for feeders, pH, oxygen, temperature and flow.
Remote monitoring & control	MBS allows remote experimentation via the Internet, and at the end of 2012 will include information about video monitoring

Water and environmental conditions	MBS has control of water quality (biofilters), water treatment (ultraviolet) and oxygenation (air and oxygen injection is optional.)
Flowrate	The flow rate range per rearing tanks is 2-4 twice per day, while this rate is 4-6 twice for breeder's tanks. The flow is monitored automatically and controlled automatically.
Temperature	It is monitored manually or automatically, and controlled automatically according to the pathogen
Salinity	36 ± 1‰. It is monitored manually
Oxygen	Range: 6 – 8 mg/l. It is monitored manually or automatically, and also controlled automatically
pH	8.2±0.2
Light intensity and wavelength	Visible light controlled manually
Photoperiod	No
Fish measurements	The following parameters are manually measured: size, weight and mortality. Automatically measured are the following parameters: morphological traits, tag, behaviour, and genotype by multiplex and molecular markers and pathogens.
Pictures/videos	Two closed circuit systems (biofilters, skimmer, pumps, 3x0.5m^3 and 1x2 m^3 tanks)   

1.4 Research Infrastructure 3: ULPGC FITU (Feed Ingredients-additives Testing Unit)

Name of the infrastructure:	Feed Ingredients-additives Testing Unit (FITU)
Location:	Technological Scientific Park
Web site address:	http://www.giaqua.org/fitu
Contact:	Daniel Montero Vítores Email: dmontero@iccm.rcanaria.es Tel: +34 928132900 / +34 928132904
AQUAEXCEL TNA facility:	Feed Ingredients-additives Testing Unit (FITU)
Short description	Several successful EU and national projects have been conducted in this facility of more than 10 years that has been completely renewed one year ago allowing complete automatisation and control for rearing, feeding and nutritional requirements research on larval, juvenile and broodstock including nutritional requirements determination, alternative nutrient sources search, development of feeding tables and feeding methods, etc.
Keywords	Larval rearing, feeding protocols, brood stock feeding, weaning diets, rearing conditions, new species, nutrition, juveniles.
Technical labs	The infrastructure includes an ingredient processing laboratory, a feed production hall, two series of 15 digestibility tanks (200 and 500 litres) and three wet labs with 170 tanks of 100, 200, 500 and 1 000 litres, as well as two lines for commercial scale testing, provided with computer controlled automatic, auto-demand or manual feeding and waste feed collectors (feed intake control), to test diets and ingredients for either larvae (including automated start feeding), juveniles or broodstock of marine fish species, both commercial or new species for aquaculture. Photoperiod control is also available in 100, 200 and 500 litres tanks.
Processing labs	It also has access to a complete nutrition laboratory equipped with 3 GLCs, GC-MS, 3 HPLCs, Densitometer, Iatroscan, Khjeldahl, ovens, muffles, etc., where all lipid, protein, amino acids, fatty acids, lipid classes, vitamins, pigments, toxins, dioxins, PCBs and certain minerals from ingredients, feeds, live preys, seaweeds, molluscs, fish, turtles and marine mammals are daily analysed.
EU projects	STRESS, RAFOA, PUFAFeed, COLORED, AQUAFIRST, ARRAINA,
Number of researchers	8
Number of technicians	2
Lodging facilities	In ULPGC Campus
SERVICES - scientific support	The facility allows determination of ingredient and feed quality, as well as feeding, rearing conditions and nutritional studies, in relation to growth, nutritional status, health, welfare and juvenile and flesh quality of fish and mollusc.
SERVICES - electronic databases	Feed formulation, data analysis
SERVICES - quality assurance	Up to now the facility has been used in cooperation with researchers from more than 20 countries at student, post-doc or sabbatical stages. It has also given service to more than a dozen of local, national and multi-national companies, working at

	present for four of them.
Safety and ethical issues	Users must follow the guide for housing and care of marine fish developed by the Bioethics Committee
Other relevant information	http://www.giaqua.org/fitu

1.4.1 Facility Unit Information: Feed Ingredients-additives Testing Unit (FITU)

Name Facility Unit	**Feed Ingredients-additives Testing Unit (FITU)**
TNA	Yes
Contact (Researcher)	Daniel Montero Vítores Email: dmontero@iccm.rcanaria.es Tel: +34 928132900 / +34 928132904
URL	http://www.giaqua.org/fitu/description.htm
Postal Address	Grupo de Investigación en Acuicultura, Instituto Canario de Ciencias Marinas & Universidad de Las Palmas de Gran Canaria P. O. Box 56, 35200 Telde, Canary Islands, Spain
General description	FITU is a flexible infrastructure containing tanks for larval, juvenile and brood stock rearing of species such as: gilthead seabream, red porgy, redbanded seabream, dentex sp, seabass, meagre, yellowtails, seahorses, abalone, zebrafish, etc...
Technical description	The infrastructure includes an ingredient processing laboratory, a feed production hall, two series of 15 digestibility tanks (200 and 500 litres) and three wet labs with 170 tanks of 100, 200, 500 and 1 000 litres, as well as two lines for commercial scale testing, provided with computer controlled automatic, auto-demand or manual feeding and waste feed collectors (feed intake control), to test diets and ingredients for either larvae (including automated start feeding), juveniles or broodstock of marine fish species, both commercial or new species for aquaculture. Photoperiod control is also available in 100, 200 and 500 litres tanks.
Remote monitoring & control	Automatic control of certain parameters
Water and environmental conditions	FIFU ia an open water system
Flowrate	Adjusted at users requirements
Temperature	17.8 – 22.3 ºC. It is monitored manually or automatically, and controlled manually
Salinity	36 ± 1‰. It is monitored manually
Oxygen	Range: 6 – 8 mg/l. It is monitored manually or automatically, and also controlled automatically
pH	8.2±0.2
Light intensity and wavelength	Visible light controlled manually or automatically
Photoperiod	Monitored manually or automatically and controlled automatically

Fish measurements	Manually are measured the following parameters: size, weight, dressing percentage, visceral fat, gutted body weight, fillet weight , feed intake, stress resistance, behaviour, deformity.
Pictures/videos	  

1.5 Modality of access

Warm Water Species Selection Unit (WWSSU)

Users can also have access to individuals from the different lines in order to conduct trials in their own laboratories. Fish are shipped by airplane in cube-containers by GIA researchers which have a wide experience and success in this process. The number of trials per year will depend on the numbers of families demanded and the requests by the different partners.

Marine Biosecurity Station (MBS)

One project is expected to comprise 18 tanks on average during eight weeks. Users are given access to this infrastructure for an average of 8 weeks for in vivo infection experiments. The number of trials per year will depend on the numbers of treatments demanded and the requests by the different partners.

Feed Ingredients-additives Testing Unit (FITU)

Users can also have access to individuals from the different lines in order to conduct trials in their own laboratories. Fish are shipped by airplane in cube-containers by GIA researchers which have a wide experience and success in this process. The number of trials per year will depend on the numbers of families demanded and the requests by the different partners.

1.6 Unit of access

Warm Water Species Selection Unit (WWSSU)

The unit of access is defined as 1 tank/week, equalling the occupation of 1 tank of 1m3 for 7 days. Occupation of small (500 L) tanks will be assigned a fraction or a multiple, respectively, of the standard tank unit. One project is expected to comprise 45 tanks on average during twelve weeks.

Marine Biosecurity Station (MBS)

The unit of access is defined as 1 tank/week equalling the occupation of one standard tank for seven days.

Feed Ingredients-additives Testing Unit (FITU)

The unit of access is defined as 1 tank/week, equalling the occupation of 1 tank of 1m3 for 7 days. Occupation of small (500 L) tanks will be assigned a fraction or a multiple, respectively, of the standard tank unit. One project is expected to comprise 16 tanks on average during twelve weeks.

1.7 News and Updates

Warm Water Species Selection Unit (WWSSU) & Marine Biosecurity Station (MBS)

Different national and European projects are being realized like are PROGENSA (Selection program in gilthead Seabream) and ARRAINA

Feed Ingredients-additives Testing Unit (FITU)

Different national and European projects are being conducted such as ARRAINA, Aquatrans, etc.