

# MIRA

## Member teams

- \* ECOBIOP Behavioral Ecology and Biology of Fish Populations, UMR INRA 1224
- \* IPREM
- \* LIUPPA
- \* Laboratory of Mathematics and its Applications, UMR 5142
- \* LHRA - Aquitaine Fisheries Resource Laboratory, South Gascogne Fisheries Unit
- lfremer
- \* NuMéA - Nutrition, Metabolism, Aquaculture, UMR INRA 1419
- \* SIAME, Sciences of Applied Engineering for Mechanics and Electrical Engineering EA 4581

## Skills

Environment, life sciences, ecology, ethology, genetics, molecular biology, microbiology, biochemistry, epigenetics, biodiversity, quantitative ecology, coastal oceanography, biology of migrating fish populations, fisheries resources, fisheries, nutrition, metabolism, aquaculture.

Environmental chemistry, contamination ecodynamics, aquatic bio-geo-chemistry, interface physico-chemistry, isotopic and molecular tracers, development of analytical methodologies and instrumentation, environmental materials, chemical and electrochemical sensors.

Impacts of pollution on microbial communities, role of microorganisms in pollution.

Coastal engineering, coastal hydrodynamics.

Observations, reliability, evaluation, sampling strategies, modeling.

Signal, image, information systems, big data, signal and information processing.

Mathematics for environmental science, data analysis, analysis of partial differentiation equations, dynamic systems, control and optimisation, digital analysis and simulation, statistics, applied probabilities, topology, geometry.

## Research themes

Characterization of organic and chemical populations (micropolluants, emerging pollutants), pollution impact, pollution reduction and attenuation.

Climate change, global climate change: consequences for the environment and for living organisms.

Extreme events. Storms and floods.

Coastal fragility. Coastline modifications.

Harvested natural populations in aquatic environments.

Nutritional physiology: digestive tract, metabolism and growth regulation.

New nutritional strategies for farmed fish: new ingredient, new foods, adaptation to new foods (genetic selection, precocious or transgenerational nutritional programming), nutrient flow in aquaculture systems.

## Instrumentation

### See the details of the member laboratories

- \* Analytical chemistry (IPREM)
- \* Molecular biology (IPREM, NuMéA, ECOBIOP)
- \* PREMICE: Environmental microbiology (IPREM)
- \* Biochemistry (NuMéA)
- \* Computer science (LIUPPA)
- \* Computation cluster, MCIA (Aquitaine Mesocenter for Intensive Computing) (LMAP)
- \* Technical sites for fish nutrition, metabolism and ecology (NuMéA, ECOBIOP)
- \* Experimental Fish-farming (NuMéA, ECOBIOP)
- \* Experimental river (ECOBIOP)
- \* Coastline monitoring station (SIAME)
- \* Sea research (Ifremer)

## Associated Technological Center

- \* Institute for Aquatic Environments (IMA)
- \* Laboratory for the Analysis of Hydrobiological Samples (LAPHY)
- \* Biarritz Marine Center
- \* AZTI Tecnalia Technology Center
- \* Rivages Pro Tech
- \* Bureau of Geological and Mineralogical Research (BRGM)

## Application Sectors

- \* Bacterial transformations of pollution in aquatic environments
- \* Decay of organic pollutants - oil spills
- \* Treatment of micropollutants in aquatic environments
- \* Mucilage development in marine environments
- \* Microbial biomarkers
- \* Observation of the sources and the reactivity of micropollutants in coastal and estuary environments
- \* Impact of contamination on the behavior of migratory fishes

- \* Nutritional adaptation of fish in extreme environments
- \* Adaptation of natural populations to global changes
- \* Observation and modeling of storms and their impact on the Basque coast.
- \* Knowledge of fisheries and their interactions with sensitive marine ecosystems.
- \* Interactions between the environment, commercial exploitation and natural functioning of exploited aquatic populations

## Partnerships

- \* University of Bordeaux, UMR EPOC
- \* University of La Rochelle, UMR LIENs
- \* University of the Basque Country (UPV/EHU)
- \* Aquitaine Coastal Research Network (RRLA)
- \* Departmental Council of the Pyrénées Atlantiques
- \* GIS Basque Coast
- \* Basque Coast-Adour Urban Area
- \* Southern Basque Country Urban Area
- \* Diputación Foral de Gipuzkoa
- \* Adour Garonne Water Agency

## European and international projects

Study of the state and evolution of the environmental quality of the Basque coast and the Adour estuary (project MICROPOLIT, FEDER, AEAG)

Observation and modeling of storms and their impact on the Basque coast (MAREA, project lead Departmental Council Pyrénées Atlantiques, POCTEFA, FEDER)

## Staff

MIRA has no permanent staff. Its activity concerns around 130 people in the seven member research laboratories:

- \* Full Professors and Associate Professors (UPPA)
- \* Research directors and researchers (INRA, CNRS, Ifremer)
- \* Engineers and technicians (UPPA, INRA, CNRS, Ifremer)