

Contribution of IRD and EME Research to an Ecosystemic Based Approach of Mediterranean Fisheries

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Exploited Marine ecosystems Research Unit

- Located in Sète
- Partners ; IRD, IFREMER, University of Montpellier
- Main scientific domains : food webs, essential fish habitats, exploitation and governance of marine resources and ecosystems
- Research areas ; Indian Ocean, Benguela current ecosystem, Humboldt current ecosystem, Mediterranean sea (a new priority for IRD)

Exploited Marine ecosystems Research Unit

- 45 researchers from IRD, IFREMER and UM2
- Biologists, ecologists, chemists, economists
- Chief of research Unit, Dr Philippe CURY, ecologist IRD, assisted By Dr Nicolas Bez (IRD) and Dr Jean-Marc Fromentin (IFREMER)
- Three teams : Fish Habitats (Dr Marsac), Food Webs (Dr Ménard) and Resource exploitation and governance (Dr Chaboud)

Six research projects dealing with mediterranean Sea ecosystems and fisheries

IRD Institut de recherche pour le développement **Ifremer**

Mediterranean and East Atlantic bluefin Tuna
repROduction strategy, POpulation structure,
Life cycle and Spatial dynamics
(METROPOLIS)

Understanding the key biological and ecological processes that affect and determine the life cycle and the dynamics of Atlantic bluefin tuna

- Improve knowledge in BFT reproduction and early-life history, i.e. BFT reproductive strategy and potential in the Mediterranean, parental effects and recruitment dynamics.
- Determine BFT population structure and test if BFT is a panmictic population, separate regional populations or meta-population. This topic also aims to understand the process of extinction/re-colonization.
- Investigate, through a novel modeling approach, alternative conservation measures, using new knowledge being acquired during the project.
- Partnership : Ifremer, IRD, Spain, Italy, UK, Portugal, Cyprus , Turkey
- Submitted to EU FP7 funding

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Marine Ecosystem Evolution in a Changing Environment (MEECE)
Impacts of climate change and anthropic factors on marine ecosystems

- Synthesis on main natural and human impacts
- Model building and parameterization
- Develop coupled models : physic + plankton + Fishes
- End to end models
- Testing climate changes and human impact scenarios on syruture and functioning of marine ecosystems
- Develop tools to help for decision making related to climate change risk analysis
- Indicators of marine ecosystems perturbation
- Knowledge transfer
- **Partnership** : UK, Norway, Germany, Spain, Italy, France, Denmark...
- EU FP 7 **Funding**

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Mitigating ADverse Ecological impacts of open ocean fisheries (MADE)
Regulation of negative impacts of high seas fisheries

- **Objectives.** To propose measures to targeting large pelagic fish in the open cean (longliners and purse seiners using FADs), mitigate adverse impacts of fisheries
- **LONGLINERS**
- Study the survivorship and movements of sharks (blue sharks and oceanic whitetip sharks) and juveniles swordfish.
- Study the biology of blue sharks and oceanic whitetip sharks.
- Propose fishing strategies and practices to reduce negative impacts on the ecosystems.
- Develop and test an ecological-based artificial bait.
- Identify hotspots of biodiversity or essential fish habitat to investigate the need and effects of time-area closures.
- Study mitigation measures through economic efficiency indicators.

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Mitigating ADverse Ecological impacts of open ocean fisheries (MADE)
Regulation of negative impacts of high seas fisheries

- **TUNA PURSE SEINERS**
- Design and test technical solutions to reduce catches of sharks around FADs.
- Design and test ecological FADs which reduce mortality of turtles.
- Identify zones/seasons with high rates of by-catch to investigate the need and effects of time-area closures.
- Improve remote information on composition of fish aggregations around FADs with instrumented buoys.
- Improve knowledge on biology and ecology of silky sharks.
- Study the respective roles of FADs and environment on the determinism of movements of tuna and time evolution of aggregations around FADs (including the study of the ecological trap hypothesis).
- Study mitigation measures through economic efficiency indicators.
- Partnership : France, Belgium, Seychelles, Spain, Greece, Brazil, Portugal
- France and EU funding

Governance of Protected Marine Areas For Sustainable management of Biodiversity and coastal Uses (GAÏUS)

- ■ Data collect on less documented aspects of MPAs
- Identify and proposal of socio economic evaluation tools for MPAs.
- ■ Promote an integrated approach for a multidisciplinary research on public policy and management related to MPAs
- ■ Promote a close collaboration with MPAs managers.
- ■ Partnership : France (IRD, IFREMER, University of West Brittany, University of Perpignan)
- ■ Funded by French National Agency for Research

Evaluation of Marine Protected Areas as a management strategy for valuable migratory marine resources (AMPED)

Evaluation of Marine Protected Areas for pelagic and demersal species

- **Objectives.** To describe how different types of fish movement behavior will alter the effectiveness of a network
- of marine protected areas (MPAs), and to apply this knowledge to the analysis of the potential effects of
- MPAs in the Gulf of Lions (hake, small pelagics), South Africa (hake, ecosystem wide) and the Indian Ocean
- (tuna, by-catch species).

Amped...

- **Actions ;**
 - Empirical work
 - Data compilation
 - Modeling efforts
 - Governance issues
 - Synthesis
- **Partnership :** IRD, IFREMER, University of Nantes, University of Cape Town
- ■ Funded by French National Agency for Research

Diversity of Mediterranean Fishes and ecosystemic approach (DPMAE)

- **Objectives :** *a new Mediterranean on fishes biodiversity, its relationships with physical environment and fisheries, promoting new tolls for an ecosystemic management of fisheries. Comparative analysis : Gulf of Gabes and Gulf of Lion*
- **Actions :**
 - ■ Analysis of environment and productivity data linked to climatic change.
 - ■ Analysis of available scientific campaigns and fisheries statistics.
 - ■ Spatialization of data and identification of biodiversity hot spots
 - ■ Modeling of changes and responses of ecosystems to climatic and exploitation change (scenario approach).
- **Partnership :** IRD, IFREMER, University of Montpellier, Spain, Tunisia, Morocco...
- **Funding :** to be defined, looking for specific Mediterranean support,