FPU project

‘Unravelling marine biodiversity changes in African and Mediterranean ecosystems’

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Proposal of PhD

There is growing global concern that biodiversity decline is one of the most pressing world crises[1]. However, a recent study about global terrestrial and marine biodiversity changes was inconclusive[2], and detailed marine biodiversity studies are scarce. When available, these marine assessments typically only include data-rich areas[3] and worldwide initiatives to solve this limitation did not succeed yet[4]. This lack of information can be due to incomplete data collection systems but it can also be related to limits in the access of these data, as it is the case in many African and Mediterranean countries. In these areas, some ecosystems have been heavily exploited prior to good data collection that call for the need of indirect methods to investigate the human impact on marine biodiversity. With this PhD thesis, we propose to analyse marine biodiversity changes in several Mediterranean and African ecosystems that cover a wide latitudinal range. Working with local experts we will retrieve available data that are not typically included in global databases. We will produce an overview of marine biodiversity change in these regions by working collaboratively and using scientific trawl surveys and complementary local data sets from each case study and region. We will test scientific hypotheses about marine biodiversity changes using simple species, community, and ecosystem indicators based on richness and abundance, but also functional indicators based in life history traits of species that can help to assess the combined effects climate change and anthropogenic stressors on marine biodiversity. We will use a comparative approach combining ecological modelling and common statistical techniques to extract the key information and to identify common and unique changes in the study areas and at a macroecological scale. We expect to reveal changes by taxonomic group, species type, and functional groups. We will also consider commercially targeted, commercially non-targeted and vulnerable species. We are searching for a very motivated PhD candidate that is willing to get proficiency levels on data analyses and statistical modelling of marine biodiversity in tropical and sub-tropical marine ecosystems. The candidate should have a high academic record, a good level of English and capacity to travel internationally.

1 Tittensor, D. P. *et al.* A mid-term analysis of progress toward international biodiversity targets. *Science* **346**, 241-244 (2014).
2 Dornelas, M. *et al.* Assemblage Time Series Reveal Biodiversity Change but Not Systematic Loss. *Science* **344**, 296-299 (2014).
3 Worm, B. *et al.* Impacts of Biodiversity Loss on Ocean Ecosystem Services. *Science* **314**, 787-790 (2006).
4 Dornelas, M., et al. (2018). BioTIME: A database of biodiversity time series for the Anthropocene. *Global Ecology and Biogeography*, 27(7), 760-786.

DEADLINE: Contact supervisors as soon as posible; deadline for submitting the proposal **October 29**.