Project Update: March 2018

Indian Ocean fish biodiversity revealed by traditional Malagasy fisheries

The western Indian Ocean is considered as a secondary hotspot for marine fishes. However, fish biodiversity has been understudied and is heavily exploited by small-scale fisheries using several types of fishing gears in southwestern Madagascar. This project is aimed to describe the diversity of fish caught in seagrass beds before further change occurs. A local workshop was conducted by the project team in mid-September 2017 for presenting the project activities and addressing the involvement of some representative fishermen in the implementation of the project activities. This allowed the team to identify the fishermen whose catches will be monitored during the survey period.

The monitoring period started in October 2017. Until now, six sampling campaigns have been completed. For each campaign, research assistants were on board of each outrigger canoes; each canoe being equipped with GPS trackers for precisely locating the fishing area.

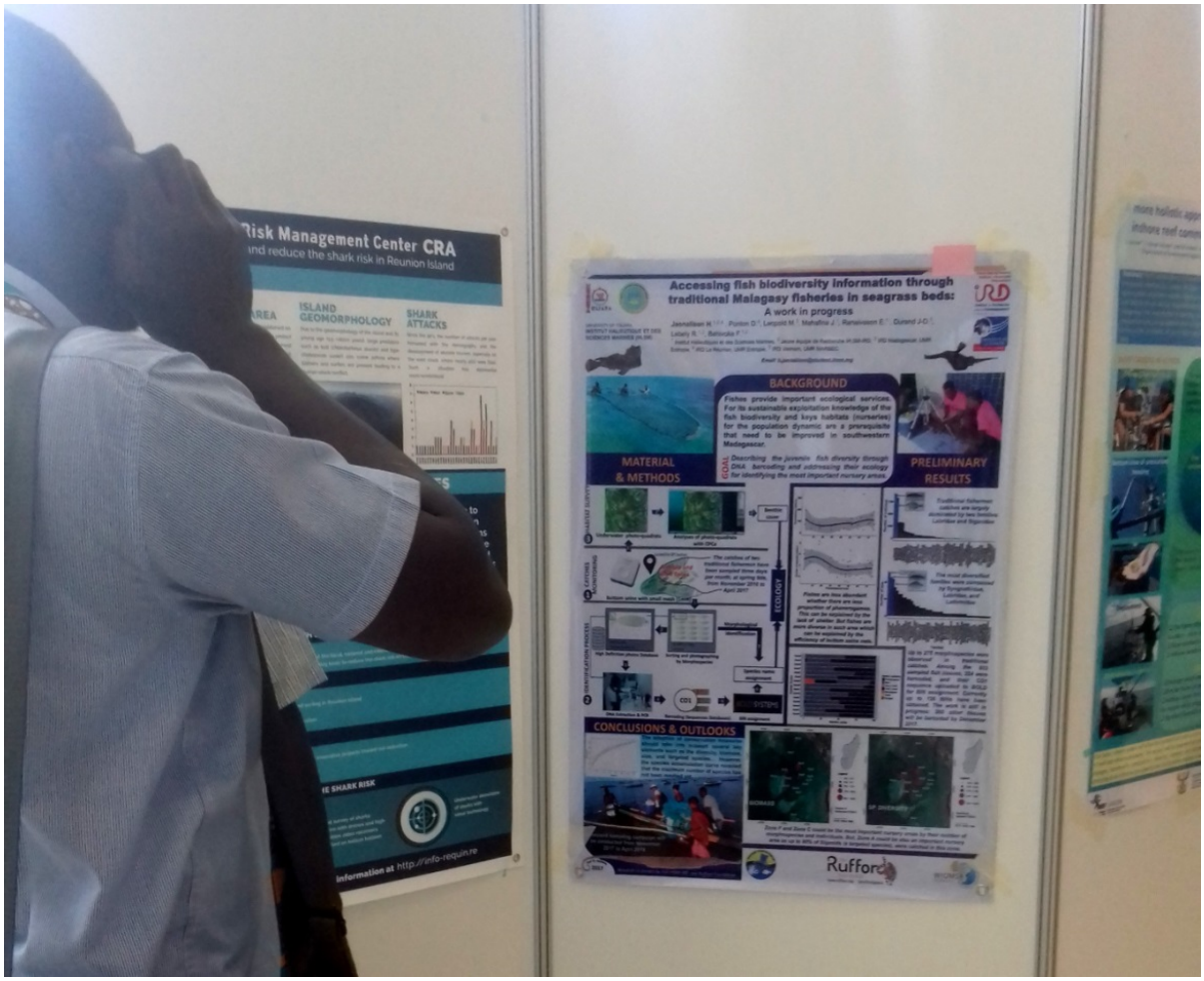
Small scale fisheries monitoring.

Each campaign was performed during the spring tide period of the warm season. In the lab, the fishermen's catches were sorted out, identified to the lowest taxonomic level, and sub-sampled for describing the taxonomic diversity. Up to 2780 individual seagrass fish belonging to more than 160 morpho-species, i.e. similar-looking individuals probably belonging to the same species were obtained from the six sampling campaigns. All the specimens of each morpho-species were photographed for measuring the standard length of each individual and determining the temporal and spatial distribution pattern of fish size. A Masters student also assessed whether the individuals were juveniles or adults by checking for the presence of gonads. One specimen per morpho-species was then selected for taking high definition photo and its caudal fin tissue was sampled for DNA barcoding. Up to 360 high definition photos were obtained and 180 caudal fin tissues will be barcoded in the coming month.

Left: Taking photo for each morphospecies. Right: High definition photo for each individual per morhospecies.

Some of the high definition photo of seagrass fish from small scale fisheries.

We attended the 10th symposium of WIOMSA which was held in Dar es Salaam, Tanzania from 30th October to 4th November 2017. This scientific event allowed us to present our survey approach and its preliminary result entitled: “Accessing fish biodiversity information through traditional Malagasy fisheries in seagrass beds”. We had fruitful exchanges with scientists from different countries of the Western Indian Ocean region. Our work stressed out the important needs of increasing our knowledge about seagrass habitats and their role for fish juveniles. Ultimately, it will lead to the identification of the most important nursery areas in the Toliara lagoon. The symposium also allowed us to exchange with the WIO scientist working on seagrass fishes and to discuss about possible future collaboration by conducting a joint research project.



Poster presented during the 10th Symposium

As the sampling campaigns are about to be completed, we are going to focus on the analyses of DNA barcoding in order to obtained precise identifications. The Master student's work will indicate at what size each species can be considered as mature. As all specimens have been measured, this will allow us to gain a unique knowledge in the number of species and individuals caught at the juvenile stage by fishermen in different seagrass beds. A scientific manuscript is planned to be completed by the end of 2018. Jaonalison's PhD defence will take place in mid-2019.

Supporters