Fine scale habitat mapping: an issue for biodiversity conservation

P. Dupont, D. Roos, E. Sucre & T. Claverie
Centre Universitaire de Formation et de Recherche (Mayotte), Mayotte, France
Ifremer La Reunion, Reunion
Centre Universitaire de Formation et de Recherche (Mayotte), Mayotte, France
Centre Universitaire de Formation et de Recherche (Mayotte), Mayotte, France
priscilla.dupont@univ-mayotte.fr

Fisheries resources and marine habitats within the Mozambique Channel face increasing human pressures and greater conservation challenges, yet, there is a gap in research which has led to insufficient knowledge in the region. With the goal to reduce this gap, we studied habitat and fish assemblages of three oceanic reef complex in the Mozambique Channel (Geyser, Zélée, Iris) covering an area of 686 km². Aerial imagery and high resolution LIDAR data were used to produce habitat maps, complete with seabed characterization on 836 sites. We discovered more than 41,000 patch reefs, a newly investigated habitat at a depth greater than 30 m. This habitat represent 35 km² and only 5% of total area surveyed. Ichthyologic assemblages of these oceanic reefs were also quantified with visual census methods (35 surveyed sites) and with fixed rotational video system (STAVIRO) until 40 m deep (284 surveyed sites). Analyses from diving visual senses and video analyses shows that, compared to other habitats, patch reefs have an important hard coral cover, one of the highest density of fish (sometime reaching more than 500 individual/100m²), a fish biomass that could reach up to 864g/m², and a difference in assemblage structure. Canonical Correspondance Analysis showed a significant relationship between fish assemblages and habitat structure (F1,22=2.05, p=0.009) and in depth analyses showed that this habitat have greater functional and species diversity. The first results from this investigation emphasize a great advantage in using high resolution remote sensing techniques to map out poorly known submares regions which can potentially highlight novel sea refuges. This project represents a sampling effort never attempted in this region before, it highlights the lack of knowledge we have on deep sea habitats. Therefore, we recommend that further research of deep reefs ecosystems is continued, to better understand reef ecosystem dynamics and for conservation purposes.