**Abstract for the 12th Scientific Symposium of WIOMSA 2022**

**Title:** The potential nursery areas and recruitment seasons of *Siganus sutor* in Madagascar

**Submission theme:** Marine Biodiversity

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Background

Seagrass beds support the productivity of coastal fisheries by ensuring the survival of juvenile fishes and securing their recruitment in adult populations. This habitat is a preferred fishing area targeted by small-scale fishermen in developing countries, using Mosquito seine nets as observed in SW Madagascar. Previous studies revealed that seines nets caught large proportions of juveniles, especially dominated by *Siganus sutor* up to 42% of catches. In a conservation perspective, recruitment monitoring of this highly affected species is needed to provide key information related to their spatial and temporal distribution along the coastal habitats. This research aims at understanding recruitment patterns of *S. sutor* in critical habitats of SW Madagascar. The specific objectives are (a) to detect the recruitment seasons of *S. sutor*; (b) to identify their potential nursery areas; and (c) to understand why *S. sutor* select specific zones as a nursery area.

Methods

Catches from small scale fishers from mangroves, seagrass meadows, intermediate areas (i.e. sandy bottoms between seagrass patches and coral reefs) and seagrass associated to coral reefs were sampled with three stations per habitat and three days per month from July 2021 to June 2022. In meantime, ecological data related to surface temperature and salinity were recorded

In the laboratory, all individuals were identified, photographed in order to automatically measure their size with ImageJ software. Another survey was carried out to address biological data (food availability) and habitat characteristics (depth, seagrass cover and diversity) in order to understand their influence on nursery areas selection for *S. sutor*.

Results

The catch of 5714 individuals shows that the abundance and size of rabbitfish exhibited a spatial and seasonal variability pattern. Rabbitfish size increased from habitats located near the coast compared to those near the reef. The smallest *S. sutor* size only occurred in the mangroves and seagrass meadows with 2.2 ±1.46 cm, against 4.2±1.48 for the intermediate areas and 5.1±1.47 seagrass associated with coral reefs. Considering abundance, juveniles of *S. sutor* is significantly more abundant in seagrass meadows (with 59.4%) while this species appeared to be rare in mangroves (<1%). This is indicated that this species did not colonize mangroves at an early stage. The small sized *S. sutor* were most abundant in seagrass meadow, suggesting this habitat could be the main nursery area for this species. Two recruitment seasons corresponding to the smallest mean size and the most abundant occurred in August 2021 and in January 2022 so far. This highlights the seasonality of *S. sutor* recruitment in SW Madagascar during warm and cool seasons.

Conclusion

To conclude, seagrass meadows constitutes the main nursery areas for *S. sutor*. Their massive settlement occurred in January (warm season) and August (cool season). Madagascar is characterized by two main recruitment season so far. As sampling will be completed in June 2022, results explaining why *S. sutor* choose seagrass meadows as a potential nursery will be available by August 2022 and will be presented. Such information will be useful for the decision making to develop management measures for the sustainable use of *S. sutor* resources and coastal habitats.

**Keywords:** Nursery areas, recruitment season, *Siganus sutor*, Seagrass, Madagascar