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FAD Watch: a collaborative initiative to minimize the impact of FADs in coastal ecosystems

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CONTEXT

- FAD and its technological development of associated monitoring equipment has led to the PS fishery to improve fishing efficiency.
- FAD-sets contribution to the total tropical tuna catch is around 25-28% in Indian Ocean.
- There are concerns about the contribution of FADs, among them:
  - Increase of **bycatch** (entanglement of sensitive species)
  - Potential negative effects on the **marine habitats** (ghost fishing, FAD loss)
    - ✓ Significant FAD beaching rates
    - ✓ Potential negative effect in sensitive areas (e.g. coral reef)

FAD-WATCH PROJECT

- The OPAGAC FIP Action Plan → Implementation FAD-Watch Project
- **Agreement**: Since 2016 OPAGAC supports Island Conservation Society (ICS), the Seychelles Fishing Authority (SFA) and the Island Development Company (IDC)

Objective: to prevent and mitigate the impacts of FADs in sensitive marine areas in the Seychelles → To eliminate FAD beaching events:

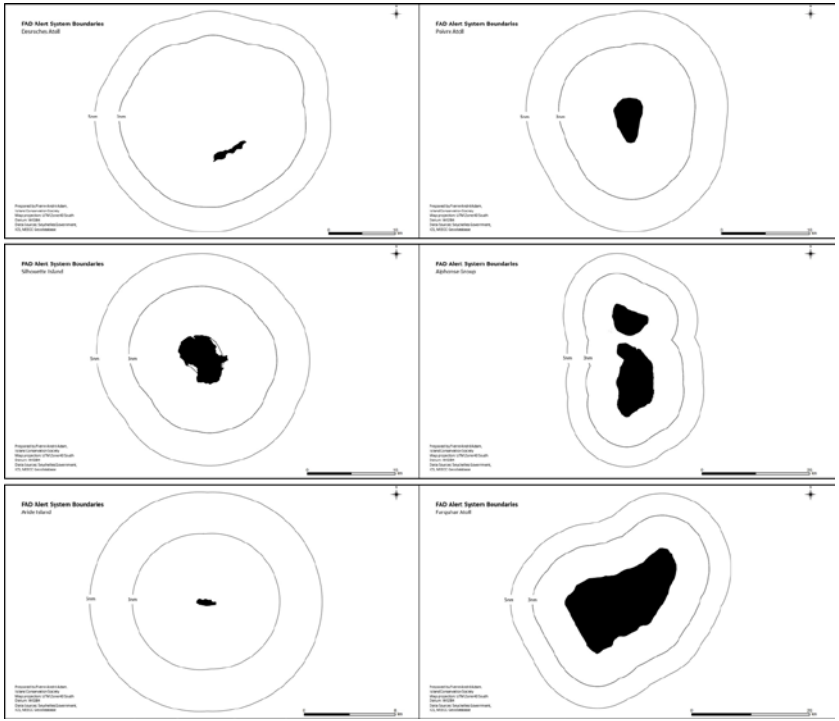
- Prompt retrieval of FADs
- Reutilization of FADs (likely to beach in the Seychelles sensitive marine areas defined)

Main objective to create a **FAD-Watch blueprint** → implementation in other sensitive marine areas.

Agreement: OPAGAC-AZTI for **buoy track analysis** for target fleet

MATERIAL AND METHODS – Buffer areas and FAD detection (ICS)

- **6 buffer areas**: Alphonse, Farquhar, Desroches, Poivre, Aride and Silhouette islands.
- **Alert System** for FAD detection → Limits of 5 and 3nm around buffer areas
- **ICS** → receives data on buoys (FADs):
  - GPS coordinates
  - Trajectory
  - Estimated projected time of beaching
    - (Marine Instruments and Satlink)
- **ICS** → responsible for FAD:
  - Interception
  - Removal
  - Data collection



MATERIAL AND METHODS - Buoy tracking and Good Practice (AZTI)

AZTI has compiled all buoy data available from the OPAGAC fleet for the year 2016-2017.

- Estimate for the **EEZ of Seychelles and buffer areas**:
  - **Total number of buoys recorded**
  - **Entries and exits in terms of number of records**
  - **Entries and exists in terms of number of buoys**
  - **Number of beaching episodes**.

- **Code of Good Practice (GP) was used to asses:**
  - FAD characteristics used by the target fleet (2015-2017)
  - Compare entangling characteristics of FADs: GP vs ICS observations (encountered FADs).

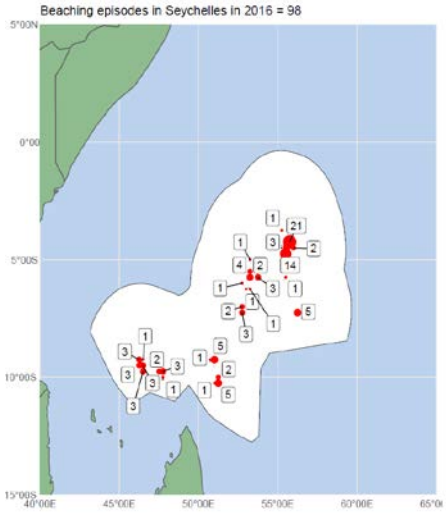
RESULTS – Buoy tracking in Seychelles EEZ

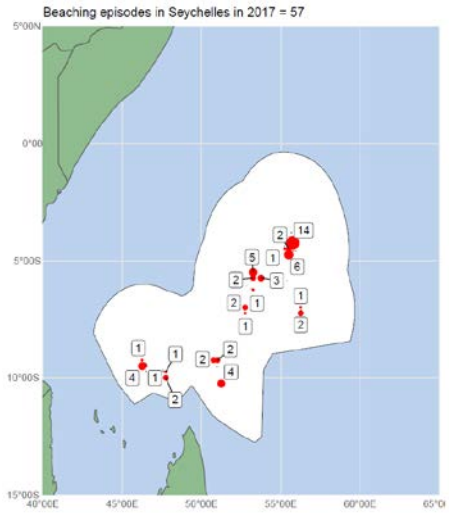
Based on buoy tracks in Seychelles EEZ:

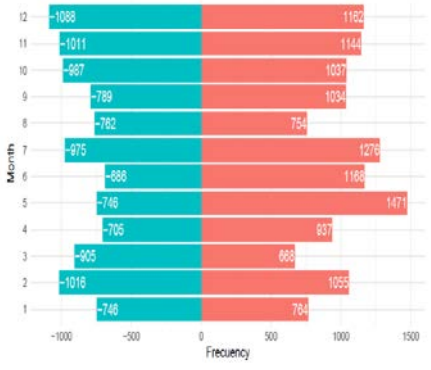
- **0.8%** and **0.5%** of FAD impacted the coast in 2016 and 2017.

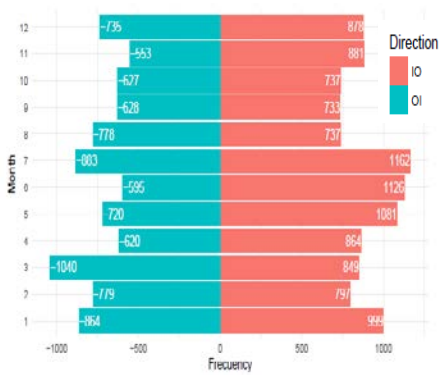
- **98** and **57** buoys ended up beaching during 2016 and 2017 (decrease of 41% 2016 →2017)
- Most of the beaching events occurred in the **Mahé Plateau** (~40% of the total events)
- **20% decrease** in the total number of buoys in Seychelles EEZ from 2016 to 2017

Years	2016	2017
Total number of buoys recorded in the EEZ	12,051	9,638
Entries in the EEZ - # records	11,321	9,720
Exits from the EEZ - # records	13,412	11,727
Entries in the EEZ - # buoys (blue)	7,456	6,141
Exits from the EEZ - # buoys (red)	8,849	7,493
Difference of entry/exits of # buoys	-1,393	-1,352
Number of beaching episodes	98 (0.8%)	57 (0.6%)









RESULTS – FAD Beaching and affected habitat (ICS)

Based on ICS collected data:

- **335** FADs were intercepted by ICS from 2011 to 2017 (**75** FADs from target fleet)
- In 2016-2017 → 19 FAD beaching (target fleet):
  → 78% (n=15) removed from the ocean/beach
- FAD stranding mainly occurred at **beach** (36.8%), **coral reefs** (26.3%) and at **Sand/Seagrass flats** (31.6%)
- From 335 FADs encountered → 74% no entanglement
- **Entanglements**: Coral colonies main affected fauna
  - 5 turtles entangled (2 alive and released and 3 dead)
    →1 corresponded to target fleet FADs
- All FAD causing entanglements had sausage or synthetic nets




CONCLUSIONS

- The **coastal FAD recovery**, in combination with other mitigation measures is **one of the best options** to be implemented to reduce the potential beaching events and the associated impacts
  - 78% of the target fleet FADs detected could be recovered and handled on land in 2016-2017
    - ✓ Prevent marine litter accumulation
    - ✓ Reduce physical damage
    - ✓ Enhance early release
- Observed beaching episodes in Seychelles EEZ → **0.8%** and **0.5%** in 2016-2017
- FAD-Watch programme reflected an **entanglement ratio of vulnerable fauna** of **1.49%**
- **High crossing rate** of FAD was observed in buffer areas but overall a **decreasing pattern** was found from 2016 to 2017 → This may be an consequence of FAD limitation measurements.
- Buoy track data showed that buoy **entries and exists may depend on season** and **beaching events can differ depending on location**.

RECOMMENDATIONS

- Extend the agreement to other fleets to collaborate in the project → Cover all FAD crossing Seychelles EEZ and increase the rate of FAD interception.
- Develop a framework including the stakeholders involved → Detection of other sensitive areas in Seychelles and the region.
- Seek the engagement of the buoy suppliers → Provide buoy track data for those FADs currently deactivated after being lost or abandoned.
- Gradual modification of FAD design at a short-medium term → Biodegradable NEFAD implementation.
- Cost benefit analysis of removing an individual FAD in terms of marine pollution, tourism/eco-tourism, boat navigation and marine wildlife protection/conservation.

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