

Blue lines indicate the area meeting the ISRA Criteria; dashed lines indicate the suggested buffer for use in the development of appropriate place-based conservation measures

**SAINT FRANÇOIS ATOLL ISRA**  
**Western Indian Ocean Region**

**SUMMARY**

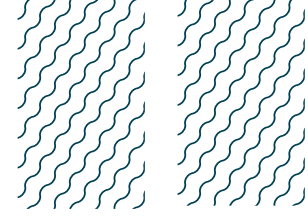
Saint François Atoll is a remote and isolated atoll in the Seychelles. The atoll has a unique semi-enclosed chambered lagoon. It is characterised by extensive mangrove, seagrass, and coral reef systems. This area overlaps with Saint François and Bijoutier Islands Key Biodiversity Area and sits within Mahé, Alphonse and Amirantes Plateau Ecologically or Biologically Significant Marine Area. Within this area there are: **threatened species** (e.g., Mangrove Whipray *Urogymnus granulatus*); **reproductive areas** (e.g., Sharptooth Lemon Shark *Negaprion acutidens*); **feeding areas** (Reef Manta Ray *Mobula Alfredi*); and **undefined aggregations** (Tawny Nurse Shark *Nebrius ferrugineus*).

SEYCHELLES  
 0-711 metres  
 56.31 km<sup>2</sup>

**CRITERIA**

**Criterion A - Vulnerability; Sub-criterion C1 - Reproductive Areas; Sub-criterion C2 - Feeding Areas; Sub-criterion C5 - Undefined Aggregations**





## DESCRIPTION OF HABITAT

Saint François Atoll is located within the Alphonse Island group of the Seychelles. It lies at the southern extremity (~80 km) of the Amirantes archipelago (Hamylton et al. 2012), and ~400 km south of Mahé, the main island of Seychelles. The oceanography of Saint François Atoll is governed by the monsoon seasons (Novozhilov et al. 1992). From May to September (the austral winter), the winds blow from the southeast, but from December to March (austral summer), they blow from the northwest. Rainfall is highest during the summer period. The transitional periods in April and October/November feature calm sea conditions (Novozhilov et al. 1992).

Saint François Atoll has a land area of ~0.18 km<sup>2</sup>, and a lagoon area of ~57 km<sup>2</sup>. There are extensive reef flats, two islands, and three-chambered lagoons (2-7 m depth). The lagoon at Saint François has green water which affects surrounding reefs and promotes algae growth, possibly as the result of recycling of nutrients from seagrass decomposition (Goreau 1998; Adam et al. 2009; ICS 2015). The area has extensive seagrass habitat and shallow bays which open to the lagoon and have many scattered True Mangrove *Rhizophora mucronata* stands. The seabed composition of the shallow bays and lagoon is fine white sand and silt (ICS 2015). The western aspect of Saint François Atoll has extensive steep sloping coral reef dominated by *Porites* species which becomes a sandy plateau with scattered low-profile corals towards the south of the atoll. The eastern and southern outer reefs of Saint François Atoll are gentle slopes with well-defined spur and groove structures. The seabed is covered by seagrass, calcareous algae covered rock and rubble, and few patches of low-profile coral. There is surge and strong currents along this aspect of the atoll throughout the year (ICS 2015).

This area overlaps with Saint-François and Bijoutier Islands Key Biodiversity Area (KBA 2023) and sits within Mahé, Alphonse and Amirantes Plateau Ecologically or Biologically Significant Marine Area (CBD 2023).

This important Shark and Ray Area is benthopelagic and is delineated from inshore and surface waters (0 m) to 711 m based on the global depth range of the Qualifying Species and the bathymetry of the area.

## ISRA CRITERIA

### CRITERION A - VULNERABILITY

Four Qualifying Species considered threatened with extinction according to the IUCN Red List of Threatened Species™ regularly occur in the area. These are the Endangered Sharptooth Lemon Shark (Simpfendorfer et al. 2021a) and Mangrove Whipray (Sherman et al. submitted), and the Vulnerable Tawny Nurse Shark (Simpfendorfer et al. 2021b) and Reef Manta Ray (Marshall et al. 2022).

## SUB-CRITERION C1 – REPRODUCTIVE AREAS

Saint François Atoll is an important reproductive area for one shark and two ray species.

Large numbers (10–60 individuals) of Sharptooth Lemon Shark neonates and young-of-the-year (~60–90 cm total length [TL]; size-at-birth, 60 cm TL; Ebert et al. 2021) are recorded weekly, during 30-minute walks throughout the central bay of Saint François Atoll, year-round (E Brighton unpubl. data 2012–2022). The central bay of this area has a length of ~1.5 km and an area of ~0.2 km<sup>2</sup>. It is fringed by mangroves with dotted mangroves throughout, and the substrate is fine, light-coloured sand, and silt. This area is waded once a week from the south to the north and opportunistic sightings of sharks and rays are recorded. There is a peak in neonate abundance around October–January each year, which corresponds to the pupping season of Sharptooth Lemon Sharks in the Western Indian Ocean (Filmlalter 2012; E Brighton unpubl. data 2023). This phenomenon is most likely to be seen during optimal tidal height (+1.7 m) (E Brighton unpubl. data 2012–2022).

Ten pregnant Reef Manta Rays have been observed in the area (L Peel unpubl. data 2016–2023). Pregnancy is determined by visual observation of distended abdomens and photo/video-identification. Survey effort has been highly irregular and only increased in 2022, which led to the identification of six pregnant females in the area. In 2021, a pregnant female was identified and then seen again, four months later, not pregnant anymore (L Peel pers. comm. 2023). The remaining three pregnant females were identified between 2016–2021. Juvenile Reef Manta Rays (<200 cm disc width [DW]) have been observed infrequently throughout the Seychelles. Since 2016, there have been 56 sightings of juvenile Reef Manta Rays around Saint François and half of these (n = 23) have been within the Saint François lagoon. Further, a sighting made in waters of Saint François Atoll represents the smallest individual on record (Peel et al. submitted). Although this is only a single sighting, lagoon habitats are thought to provide refuge and food source for Reef Manta Rays (McCauley et al. 2014; Andrzejczek et al. 2020), so this region may function as a pupping area for the species in the Alphonse Group.

Mangrove Whiprays are observed daily singularly or in aggregations of 6–10 individuals in shallow waters within the lagoon or outer reef flats, crests, or seagrass beds across the entire atoll. Neonate and/or young-of-the-year Mangrove Whipray (~20 cm DW) are regularly and predictably sighted in the Central Bay of Saint François Atoll, year-round, with approximately 2–3 neonates per 50 m<sup>2</sup> (ICS unpubl. data 2010–2023). The estimated size-at-birth for this species is 14–28 cm DW (Manjaji 2004; White et al. 2006). This habitat is consistent with described nursery habitat of the species in similar locations both within the Seychelles and in other locations globally (Cerutti-Pereyra et al. 2014).

## SUB-CRITERION C2 – FEEDING AREAS

Saint François Atoll is an important feeding area for one ray species.

The lagoon system at Saint François Atoll represents a unique site for Reef Manta Rays in Seychelles because shallow fringing reefs around the atoll restricts Reef Manta Rays from

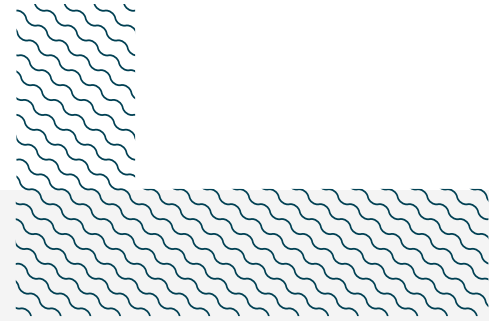
accessing lagoonal waters elsewhere (Peel et al. 2020). Sightings of Reef Manta Ray feeding along the edges of the reef flats, outer reefs, and within the lagoon at Saint François Atoll are common at this location, particularly during the northwest monsoon season (November-March; L Peel unpubl. data 2012-2022). Records of Reef Manta Rays (n = 428 sightings) have been available since 2015. During the majority of these sightings, animals are seen foraging, mostly surface feeding in aggregations. Up to fifteen large (>250 cm DW) Reef Manta Rays were observed surface-feeding within the narrow (<100 m wide) main channel of this area on multiple occasions in 2017 (Peel et al. submitted). On both rising and falling tides, individuals were noted to orient themselves against the prevailing current direction of the channel, and to maintain their position in the fast-flowing water.

Photo-identification records of Reef Manta Rays have been collected since 2016 across the Seychelles to monitor movement patterns and site fidelity, with the aggregation area at Saint François Atoll representing one of the main aggregation sites for the species (Peel et al. 2020; L Peel et al. unpubl. data 2016-2023). To-date, 129 individual Reef Manta Rays have been identified at Saint François Atoll, consisting of juveniles, sub-adults, and adults, including pregnant females (Peel et al. submitted; L Peel et al. unpubl. data 2016-2023). The residency and site fidelity shown by individual Reef Manta Rays with one individual, for example, recorded nine times between its first sighting in May 2018 and a sighting in October 2022 (Peel et al. 2020; L Peel et al. unpubl. data, 2016-2023).

## SUB-CRITERION C5 - UNDEFINED AGGREGATIONS

Saint François Atoll is an important area for undefined aggregations of one shark species.

Aggregations of Tawny Nurse Sharks of up to 20 individuals are regularly and predictably sighted in the southern and eastern reef platforms of Saint François Atoll (E Brighton unpubl. data 2023). This can consist of an aggregation of Tawny Nurse Sharks only, or an assemblage consisting of multiple predatory species such as carangids, Smooth Grouper *Dermatolepis striolata*, and Lyretail Grouper *Variola louti*. Most aggregations/assemblages are thought to be of active foraging/hunting behaviour; however, this has not been confirmed. Further information is required to define the nature and function of these aggregations.



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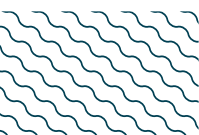
## QUALIFYING SPECIES

Scientific Name	Common Name	IUCN Red List Category	Global Depth Range (m)	ISRA Criteria/Sub-criteria Met								
				A	B	C1	C2	C3	C4	C5	D1	D2
<b>SHARKS</b>												
<i>Nebrius ferrugineus</i>	Tawny Nurse Shark	VU	0-70	X						X		
<i>Negaprion acutidens</i>	Sharptooth Lemon Shark	EN	0-90	X		X						
<b>RAYS</b>												
<i>Mobula alfredi</i>	Reef Manta Ray	VU	0-711	X		X	X					
<i>Urogymnus granulatus</i>	Mangrove Whipray	EN	0-120	X		X						

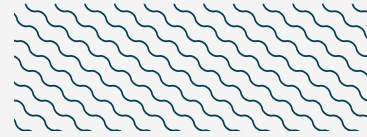
## SUPPORTING SPECIES

Scientific Name	Common Name	IUCN Red List Category
<b>SHARKS</b>		
<i>Carcharhinus albimarginatus</i>	Silvertip Shark	VU
<i>Carcharhinus falciformis</i>	Silky Shark	VU
<i>Carcharhinus leucas</i>	Bull Shark	VU
<i>Carcharhinus longimanus</i>	Oceanic Whitetip Shark	CR
<i>Galeocerdo cuvier</i>	Tiger Shark	NT
<i>Sphyrna lewini</i>	Scalloped Hammerhead	CR
<i>Traienodon obesus</i>	Whitetip Reef Shark	VU
<b>RAYS</b>		
<i>Aetobatus ocellatus</i>	Spotted Eagle Ray	EN
<i>Mobula birostris</i>	Oceanic Manta Ray	EN
<i>Pastinachus ater</i>	Broad Cowtail Ray	VU
<i>Pateobatis fai</i>	Pink Whipray	VU
<i>Rhynchobatus australiae</i>	Whitespotted Wedgefish	CR
<i>Torpedo fuscomaculata</i>	Blackspotted Torpedo	DD
<i>Urogymnus asperrimus</i>	Porcupine Ray	EN

IUCN Red List of Threatened Species Categories are available by searching species names at [www.iucnredlist.org](http://www.iucnredlist.org). Abbreviations refer to: CR, Critically Endangered; EN, Endangered; VU, Vulnerable; NT, Near Threatened; LC, Least Concern; DD, Data Deficient.







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