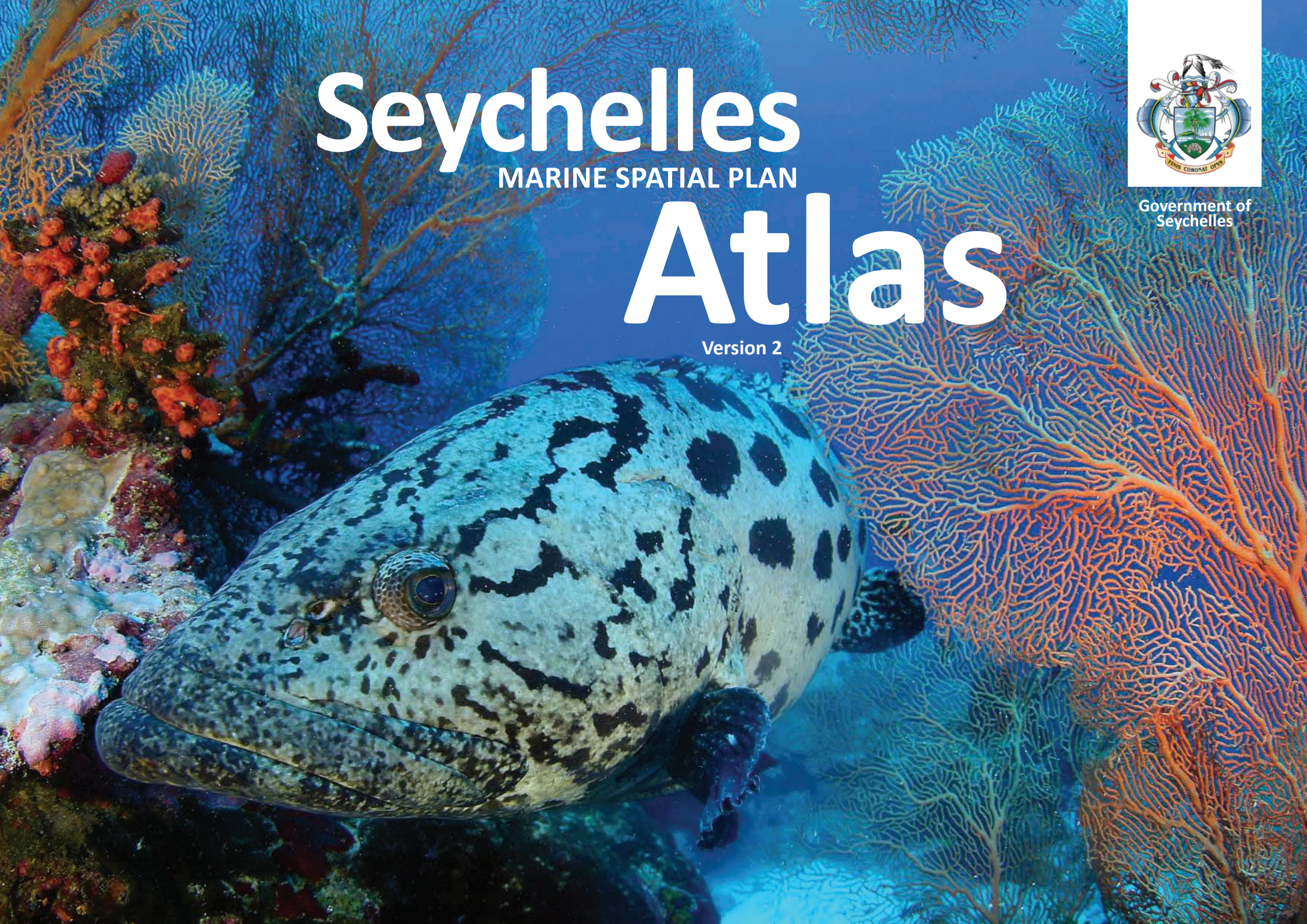

Seychelles
MARINE SPATIAL PLAN
Atlas
Version 2

Government of Seychelles



Publication Information

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For more information or a copy of the Atlas, contact:

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Ministry of Environment, Climate, Energy and Natural Resources
Seychelles MSP Agency
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Seychelles

MARINE SPATIAL PLAN

Atlas

Foreword from the Ministers

The majority of the Protected Areas (PA) in Seychelles were established in the 1970s to protect Seychelles' unique biodiversity where it was most vulnerable and/or abundant. Today, conservation in Seychelles and around the world remains the cornerstone of many national policies. Seychelles has been at the forefront of worldwide conservation initiatives for a long time—Ste. Anne Marine National Park was the first marine protected area to be designated in the Southwest Indian Ocean in 1973. By 2014 there were 25 protected or conserved areas in Seychelles covering more than 550 square kilometres of land and ocean.

In the year 2010, the Seychelles President made a commitment to declare over 50% of Seychelles' terrestrial area and 30% of the ocean under biodiversity conservation. Efforts started in 2011 for the Seychelles marine goal—more than 410,000 square kilometres—and by 2020 Seychelles had reached 32.6% through the Seychelles Marine Spatial Plan (SMSP) Initiative, a process facilitated by The Nature Conservancy (TNC) and supported by Seychelles Conservation and Climate Adaptation Trust (SeyCCAT). Seychelles has met and exceeded the national goal and international 30% target that was set by the Kunming-Montreal Global Biodiversity Framework in 2022.

The SMSP Initiative (2014–2025) was an integrated, multi-sector approach to marine conservation and sustainable management, to address climate change adaptation, and support the Blue Economy and other national strategies. Participation in the SMSP came from all major sectors of Seychelles including commercial fishing, tourism and marine charters, biodiversity conservation, renewable energy, port authority, maritime safety, non-renewable resources, and civil society to develop a comprehensive marine plan with stakeholder inputs.

As co-Chairs of the SMSP Executive Committee, we have actively championed the advancement and completion of the SMSP across the Exclusive Economic Zone and Territorial Sea. This work reflects not only Seychelles' enduring commitment to biodiversity conservation and the sustainable use of our ocean resources, but also our belief in the long-term benefits this process will yield for our country. We are proud to have bridged efforts from the previous administration and maintained momentum on this critical national initiative. The SMSP stands as the most comprehensive and inclusive marine planning process in our history—one that positions Seychelles as a global leader in ocean governance and sets the foundation for a sustainable blue future.

The ocean space in Seychelles has a wide range of priorities and is managed by government with support from many different partners. With limited resources and Seychelles' geographical isolation from global centres of excellence, it is imperative that such diverse government and non-government partners in Seychelles work in collaboration to augment their individual capacities, knowledge and skills in the planning, conservation, and management of the ocean.

The past approaches to biodiversity management and conservation in the Seychelles have been fragmented. The SMSP provides an integrated process, designed to be inclusive and transparent. This is the first legally enforceable MSP in the Western Indian Ocean, and it is significant for improving ocean management for Seychelles and the region. The Seychelles Marine Spatial Plan area is the second largest in the world and is a significant achievement for any country including a Large Ocean State.

Ministry of Agriculture, Climate Change and Environment • Ministry of Fisheries and Blue Economy

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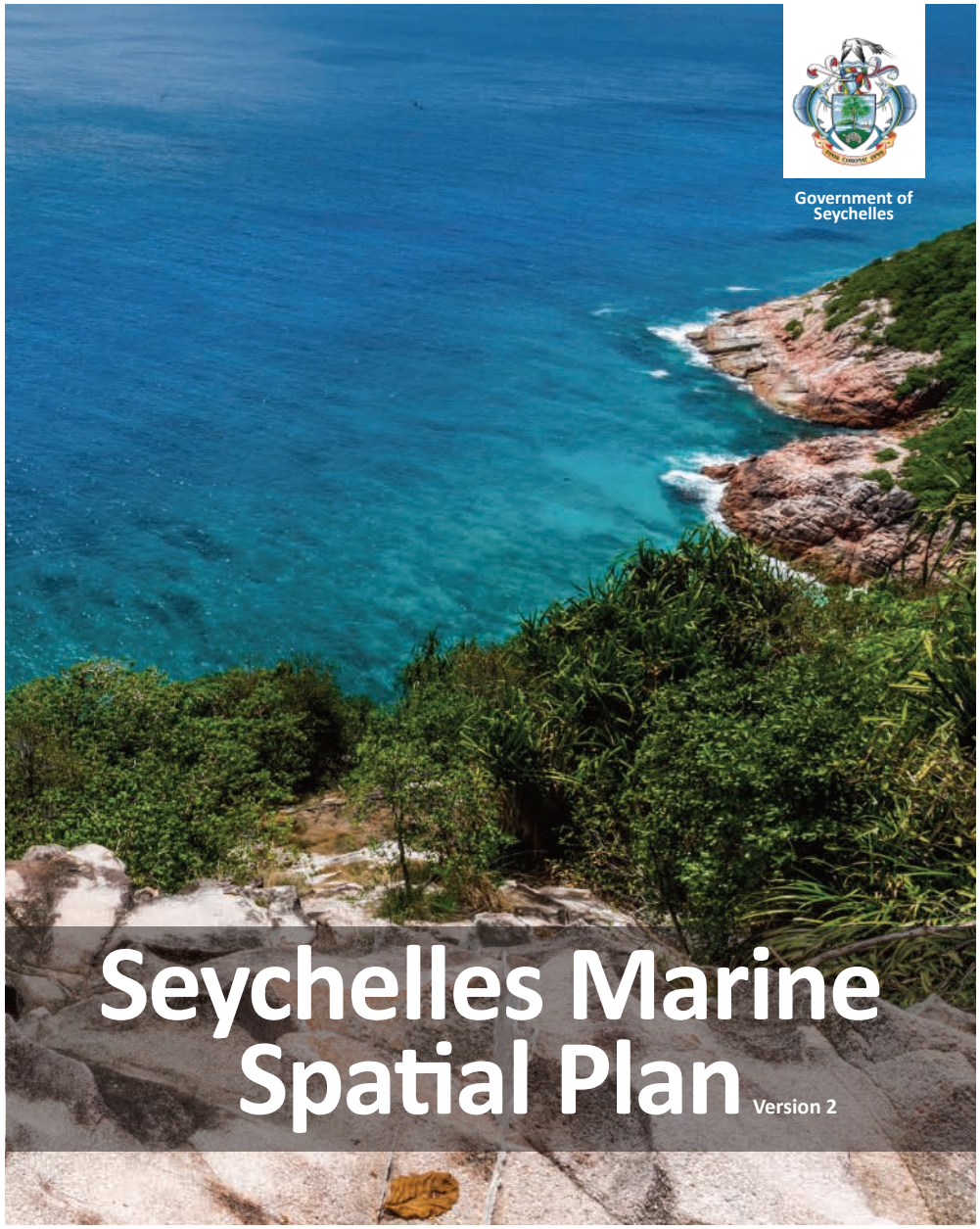
Seychelles Marine Spatial Plan Atlas

Marine spatial planning (MSP) is a public process of analysing and allocating the spatial and temporal distribution of human activities in marine areas to achieve ecological, economic, and social objectives that usually have been specified through a political process (UNESCO 2009).

At over 1,350,000 km², Seychelles' ocean is among the top 25 largest in the world! Seychelles is a Small Island Developing State, or SIDS, and from the perspective of the importance of the ocean, a Large Ocean State. Seychelles is a global biodiversity hotspot with more than 2,000 marine species and a UNESCO World Heritage Site—biodiversity is one of the most important assets that supports the two biggest economies in the country: tourism and fisheries.

The Seychelles Marine Spatial Planning Initiative (SMSP) began in early 2014 and was a government-led process aimed at supporting the sustainable and long-term use and health of the waters throughout the Seychelles Exclusive Economic Zone. The Government-led planning process was facilitated and supported by The Nature Conservancy (TNC), with support from the Seychelles Conservation & Climate Adaptation Trust (SeyCCAT), and in partnership with Government of Seychelles United Nations Development Programme Global Environmental Facility (GoS-UNDP-GEF).

Stakeholders were central to the planning effort – this plan was developed by and for the Seychellois to have a healthy ocean and thriving economy, now and for the future. The SMSP process addressed climate change impacts through increasing marine and coastal protections, supported fisheries sustainability for food security, commerce and trade, advanced sustainable tourism, the Blue Economy, and other priority national strategies. The SMSP included all marine and coastal sectors with a highly participatory and inclusive process: fisheries, tourism, environment, energy, infrastructure, maritime safety, and civil society. Science, data, economic information, and local knowledge were essential for the SMSP.



The Seychelles Marine Spatial Plan Atlas is one of the key outputs from the SMSP process. The Atlas was designed to provide information during the development of the zoning designs and to inform implementation of the SMSP Plan.

The **Seychelles Marine Spatial Plan Atlas** was created in 2014 to support the MSP process and zoning designs. It grew to 50 maps over five years, representing the ocean-dependent community of Seychelles. The purpose of the SMSP Atlas was to create an opportunity for stakeholders to share information and then collectively view this information spatially for a transparent and evidence-based MSP process.

The maps and information help to learn about and visualize Seychelles' vast ocean and will support future decisions during implementation of the SMSP. The maps are organised according to the planning themes for the SMSP, with map descriptions and other pertinent information on each facing page. Key facts assist with interpreting the maps and the data sources and technical notes are provided at the end of the SMSP Atlas for more information. A digital SMSP Atlas and individual maps are on the SMSP website.

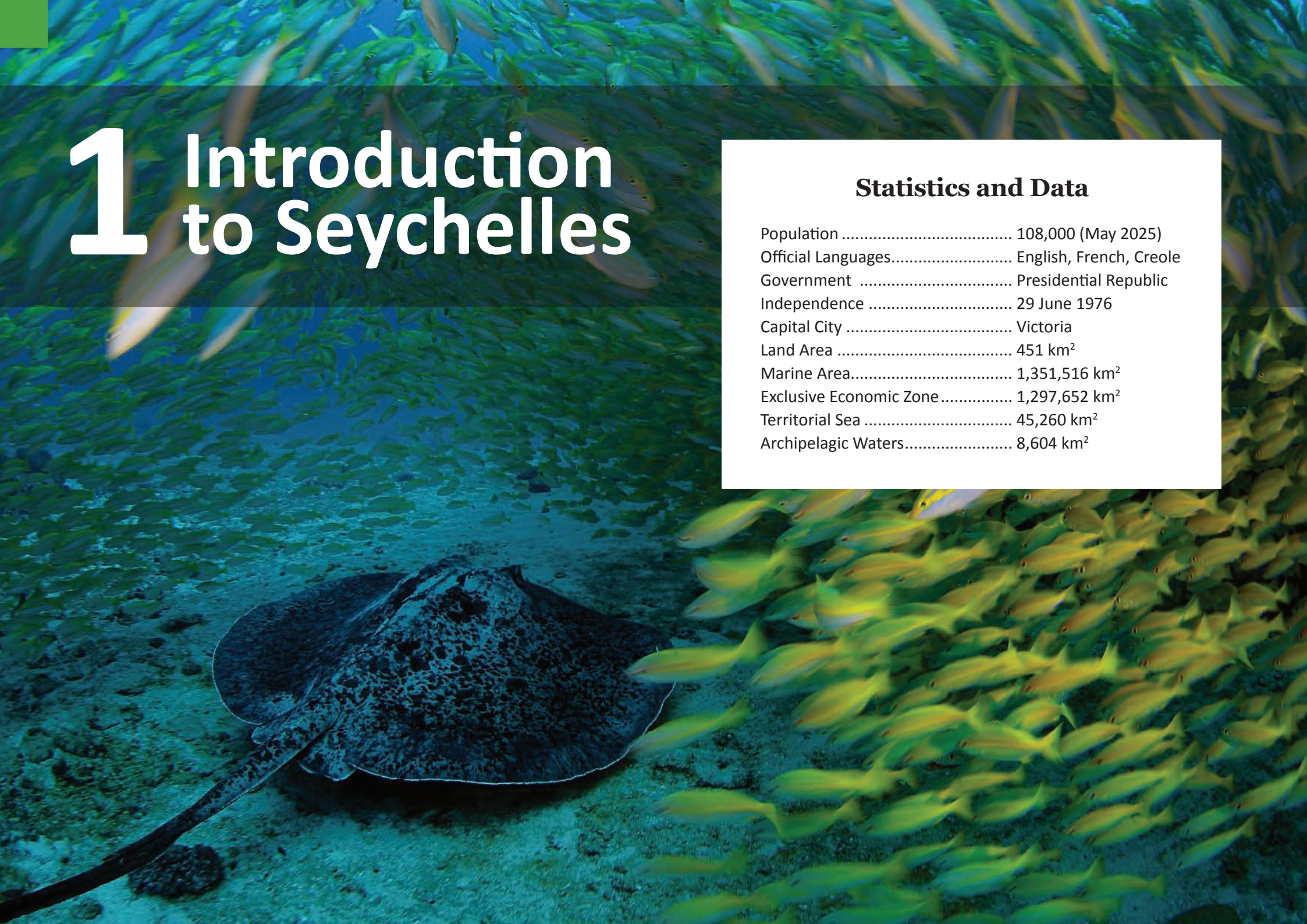
GUIDELINES FOR USE

- The Atlas should be used with the understanding that the maps were assembled for the purposes of informing and supporting the SMSP zoning design process and improving understanding and knowledge of Seychelles' ocean environment, marine economic sectors and activities, and history of marine planning in the country.
- The Atlas maps are intended to be used in conjunction with the facing page text.
- The SMSP spatial products are shared with the public in accordance with the restrictions and conditions outlined by data providers in data sharing agreements. These restrictions have been incorporated into the maps and available in the metadata in the digital version. Where applicable, the data authority may specify a date beyond the data are not recommended for use.
- The Ministry of Agriculture, Climate Change and Environment (MACCE) is the custodian for the SMSP digital products.
- Data resolution varies and is noted on the map and on the facing page text. The selection of the data resolution varied depending on the source of the data and the purpose of the map. Where few data were available, or only at coarse scales, maps were created using categorical or count data to show spatial trends or occurrences and these are noted in the corresponding facing pages.
- The SMSP Atlas is intended to be a living document and to be updated over time.
- The print and digital version of the SMSP Atlas will provide a great opportunity for sharing information to benefit all Seychellois, of all generations, for years to come.

GENERAL CAVEATS

- Maps are not for navigation purposes.
- Information assembled for the SMSP Atlas was the best available during the planning process for the zoning designs (2014–2020). The information may or may not represent the current state.
- Data and information for the SMSP Atlas came from a variety of spatial scales and temporal periods. The presence, absence, abundance, and importance of a feature, use, or activity will vary across time and this variability is not represented in most instances.
- Some information was provided to the SMSP with restrictions on the spatial resolution that it could be reproduced on a map, notably fisheries catch effort and fishing locations. The SMSP abided by good practices to not reveal specific fishing locations and a minimum 3-boat rule was used to map these data.
- Absence of a feature, use, or activity on a map could indicate a data gap and should not be interpreted as a true absence. Where known, the text will indicate the spatial extent of data collection efforts. More information is available with the metadata online.

1 Introduction to Seychelles



Statistics and Data

Population	108,000 (May 2025)
Official Languages	English, French, Creole
Government	Presidential Republic
Independence	29 June 1976
Capital City	Victoria
Land Area	451 km^2
Marine Area	1,351,516 km^2
Exclusive Economic Zone	1,297,652 km^2
Territorial Sea	45,260 km^2
Archipelagic Waters	8,604 km^2

Island Ecosytems

Across 115 islands, Seychelles has approximately 1,700 taxa of flora including 376 native species and 136 endemics. The islands contain diverse ecosystem types and endangered or rare species. The islands of Mahé, Silhouette, Praslin, Félicité, and Curieuse are the most diverse, with the diversity of flora of the Outer Islands half that of the Inner Islands. The vegetation of the Inner Islands contains mostly coastal species, with different species at sea level and higher elevations. Forest cover is estimated at nearly 41,000 ha or 90% of the total land area. The dry areas of Curieuse and Praslin islands have developed distinctive palm forests dominated by the endemic coco de mer palm (*Lodoicea maldivica*), which is found naturally only on these two islands. The Praslin palm forest has been designated as a UNESCO World Heritage Area. The Seychelles black parrot (*Coracopsis barklyi*), the country's national bird, is an International Union for the Conservation of Nature (IUCN) red-listed species found in the Inner Islands in these unique palm forests.

There are more than 20 lizard species, with 14 endemic species or sub-species. There is a high diversity of arthropods in Seychelles and 62 species of birds breeding in Seychelles, with 15 endemic to Seychelles and 18 seabirds. Non-native and introduced species are common on Mahé, where most of the human settlement has occurred.

In the Outer Islands, the climate is perhaps surprisingly dry or xeric and the vegetation dominated by low-moisture plants. There are dense thickets of salt-tolerant shrubs, dwarf trees plus herbs, and grasses; approximately 20% of the flowering plants of the Aldabra Group are endemic. In the Outer Islands, Aldabra Atoll hosts the largest population of giant tortoises (*Aldabrachelys gigantea*) worldwide with over 150,000 tortoises. The giant tortoise is also found on Praslin, La Digue, and Bird islands, and in enclosures on Mahé.

Rocky shores make up the longest and narrowest intertidal marine habitat in the Inner Islands, owing to the granitic island substrate. Rocky shores of carbonate origin are found in raised atolls of the Outer Islands such as Aldabra, Cosmoledo, and St Pierre islands.

Climate

Seychelles' climate is characterised by two seasonal monsoons, each with associated wind, temperature, and rainfall patterns. The Northwest monsoon season occurs December to March and is characterized by heavy rainfall, high temperatures and humidity, and prevailing winds from the northwest. The highest rainfall and flooding have been recorded in the month of January. The Southeast monsoon season occurs May to October and is a relatively dry season with cooler air and sea temperatures and lower humidity. Some severe flooding events have been recorded in the Southeast monsoon period but are less common than in the Northwest monsoon. Seychelles is also characterized by the 2–4-year cycles linked to the El Niño Southern Oscillation (ENSO) and biennial cyclone variability. The monsoons and seasonal wind patterns play an important role in the seasonality of fishing and other activities at sea owing to changes in species distributions and abundance as well as favourability of oceanographic conditions for vessel travel.

On land, severe rainfall events can lead to extraordinary landslides and mudflows that affect the nearshore environment. Four notable periods with torrential rainfall on Mahé have caused widespread flooding in the past: 1997–1998 (El Niño), January 2004, December 2004, and 2012–2013. Historically, the most severe mudflow on Mahé occurred in 1862 after the passing of a cyclone storm and locally is referred to as the 'Avalasse'. On the east side of Mahé, the mudflow was 610 m wide and flowed into the lagoon for tens of meters in what is now Victoria and the Port area. Damage was extensive, including the loss of 11 bridges in Victoria, 734 huts or houses, and 22 boats; at least 70 people were killed.

Cyclones and Tsunamis

Seychelles is rarely affected by tropical cyclones because it is north of the cyclone belt in the Indian Ocean. Being of granitic and carbonate nature, and relatively tall, the Inner Islands are at lower risk from impacts of cyclones than neighbouring islands in the Western Indian Ocean such as the volcanic islands of Mauritius and Réunion. Nonetheless, cyclones, as well as tropical depressions and storms, have hit Seychelles, particularly the Outer Islands. Eighty-nine significant disasters occurred between 1862 and 2008, including two major tsunami events, 19 cyclone storm events, and 14 floods.

Seychelles is indirectly affected by cyclones in the region through the intensification of the Intertropical Convergence Zone (ITCZ) and by rain associated with passing cyclones. Records of tropical cyclones include the tropical depression 'Ikonjo' in 1990 that affected Desroches, Mahé, and other islands; the tropical depression 'O1S' of 2002 that affected Mahé, Praslin, and La Digue; and the tropical cyclone 'Bondo' that hit Providence and Farquhar islands in 2006. Most recently, the tropical depression 'Fantala' hit Farquhar Island in April 2016 and destroyed all of the local infrastructure.

Tsunamis are also not very common but can occur. For example, a tsunami from Asia hit the islands on 26 December 2004, damaging the granitic Inner Islands. Maximum water levels reached 4.4 m above mean sea level on Praslin. Previously, the carbonate reefs around Praslin Island have been severely and sometimes completely damaged by tsunamis while other sites on Mahé showed little damage. The pattern of maximum wave height on the leeward shores suggested that the tsunami wave refracted across the Seychelles Bank and converged on the western side of the islands. The only other tsunami event recorded in Seychelles occurred in 1883 and was caused by the Krakatoa eruption in Java. The tide receded quickly and recorded wave height was less than 1 m higher than usual high spring tide heights.

Despite their infrequent occurrence, Seychelles has a national Tsunami, Cyclone and Flood emergency response plan to owing to the severity of tsunamis and storm surges. The government plan was designed in November 2007 as an early warning system following the December 2004 tsunami and flooding events. The plan includes The Seychelles Tsunami Emergency Response Plan, The Seychelles Tropical Cyclone Emergency Response Plan, and the Seychelles Flood Response Plan.

Climate Change

The climate of Seychelles has been analysed using both short- and long-term datasets (e.g., 1972–2006) and the overall temperature is warming between 0.33 to 0.82 degrees Celsius, with stronger air and sea surface temperature interaction at the 3–4-year El Niño cycles (ENSO). Coral isotopes and sea surface temperature (SST) measured from Beau Vallon Bay on Mahé also show consistent trends toward a warmer and possibly wetter climate.

ENSO impacts on tropical cyclone activities in the southwest Indian Ocean are notable because the 1997–1998 El Niño event altered tuna stock migrations and decreased Seychelles fisheries revenue, indicating that changes in SST and oceanic circulation patterns can have drastic effects on the local fisheries sector. The cyclone frequency between 1960 and 2005 decreased in the Western Indian Ocean, however, the number of tropical depressions increased.

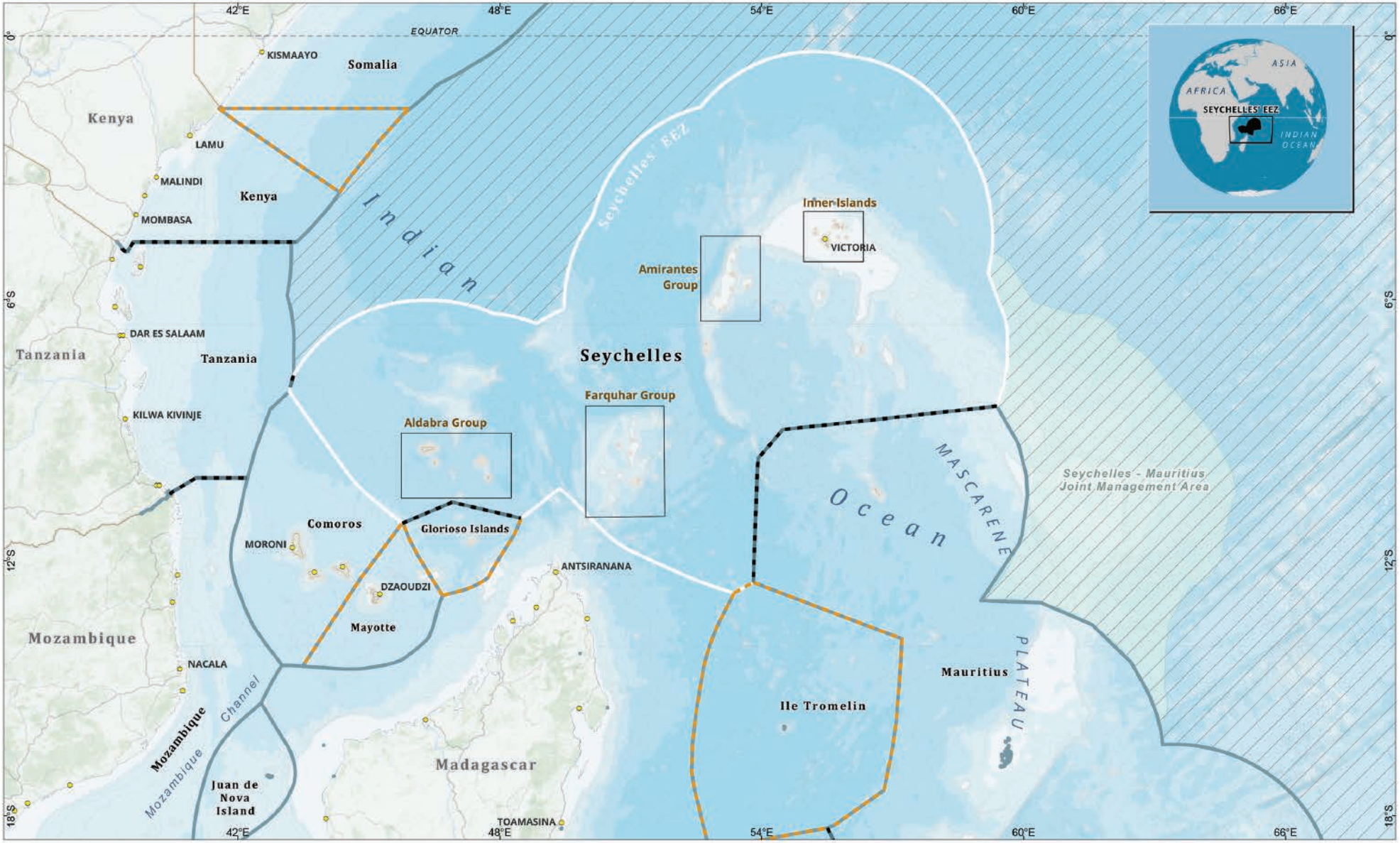
With continued climate change, it is predicted that Seychelles will experience longer drought periods in the dry season and increased rainfall in the rainy season. Changes in long-term drought patterns can have drastic effects on the local ecology, particularly on coralline islands such as Aldabra where endemic species are adapted to dry conditions. For example, it was suggested that rainfall declines on Aldabra were a strong factor in the extinction of an endemic land snail (*Rhachistia aldabrae*) but after no sightings since 1997, it was found again in 2014.

Measurements of annual sea level change indicate an increase of about 1.4 mm per year, with high variability. For coastal areas, any sea level rise, as estimated in the Intergovernmental Panel on Climate Change (IPCC) reports, will have drastic effects on Seychelles since 85% of human settlement and infrastructure is located on the coast; many of the low-lying Outer Islands and sand cays could be completely inundated.

Freshwater

Freshwater is most abundant on the granitic Inner Islands and found in numerous rivers and streams in steep watersheds as well as coastal marshes and ponds. Freshwater sources are often temporary owing to the low-retention soils and low recharge of the groundwater aquifer. Water capture during the rainy season and water management are priorities for Seychelles' populated islands.

Most of the atolls in the Outer Islands lack any reliable freshwater systems. Freshwater habitats include ponds, ephemeral pools, and crevices in the Aldabra Group, and subterranean caverns may also hold small reservoirs of water. These surface freshwater habitats are more common during the rainy seasons. Brackish lagoon systems are present on Cosmoledo and Astove atolls; though smaller than Aldabra, they are of regional significance for marine fauna and birds. Some brackish water pools are present on some islands (e.g., Assomption) because of past mining activities.



NORTH 0 125 250 Km

FOR DISCUSSION PURPOSES ONLY
Prepared for: Seychelles MSP
Prepared on: 26 February 2024
Prepared by: Spatial Support Systems, LLC
Scale: 1:12,500,000
Map projection: Cylindrical Equal Area
Datum: WGS84
Data Sources: Seychelles MACCE, MarineRegions.org
ESRI, The Nature Conservancy

- Key Ports
- Seychelles' Exclusive Economic Zone
- Other Exclusive Economic Zone, Settled
- Other Exclusive Economic Zone, Unsettled
- Other Exclusive Economic Zone, Treaty
- Areas Beyond National Jurisdiction (ABNJ)
- Seychelles-Mauritius Joint Management Area

Western Indian Ocean



2 History of Marine Planning in Seychelles

Maritime Boundaries

Knowledge of existing maritime boundaries is essential for a marine spatial planning process. The existing boundaries inform discussions for new marine zones and improved ocean management.

The SMSP planning boundary is the entire maritime area of 1,351,516 km^2 of the archipelagic waters, Territorial Sea, and Exclusive Economic Zone (EEZ). Most of the Seychelles ocean is the EEZ (95.9%), while only 3.3% is the Territorial Sea and less than 1% are the Archipelagic Waters. Most of the planning boundary (96.2%) are waters deeper than 200m, with less than 4% in shallow waters from 0–200 m.

KEY FACTS

- In 2022, the EEZ boundary was re-mapped based on the new archipelagic baselines resulting in a slight increase of 200 km² or 0.01%. The Maritime Zones (Territorial Sea) Order 2022 (S.I. 80 of 2022), Maritime Zones (Baselines) Order 2022 (S.I. 81 of 2022), Maritime Zones (Contiguous Zone) Order 2022 (S.I. 82 of 2022), and Maritime Zones (Exclusive Economic Zone) Order 2022 (S.I. 83 of 2022) comprise the legal coordinates for the SMSP planning boundaries.
- The SMSP planning boundary extends from the "mean high water" (MHW) mark on the coastline to the boundary of the Seychelles EEZ, as defined in relevant Seychelles legislation; the SMSP includes all marine waters and areas within this boundary.
- The SMSP planning boundary does not include brackish water or inlets on Mahé Island.

The planning boundary contains existing maritime zones, notably Seychelles Industrial Fisheries Exclusion Zones, Marine Protected Areas, and Port of Victoria. Additional marine zones that were demarcated on International Hydrographic Organisation nautical charts included the Areas to be Avoided on Mahé Plateau and surrounding the Aldabra Atoll. In summary, all existing legally designated marine and maritime zones were identified and incorporated into the zoning design process and SMSP Atlas maps.

The planning boundary does not include the Joint Management Area (JMA) with Mauritius, any of the Extended Continental Shelf areas (ECS), or Areas Beyond National Jurisdiction (ABNJ).

Protected Areas 1970–2018

The Inner Islands have eight marine protected areas (MPAs) and 15 terrestrial protected areas covering 56.5 km^2 and 56.4 km^2, respectively. The designations include National Parks, Special Reserves, and Areas of Outstanding Natural Beauty. The first marine protected area in the Inner Islands was designated in 1973 (St. Anne Marine National Park) and prior to 2014, all of the MPAs covered less than 0.1% of the Exclusive Economic Zone and Territorial Sea.

In the Amirantes Group, two MPAs have the purpose of protecting nesting seabirds: Etoile Island Nature Reserve and Boudeuse Island Nature Reserve.

At Aldabra Atoll, more than 1,000 km from Mahé, the lagoon and surrounding waters were designated as a Marine National Park in 1971. The Aldabra Atoll was recognised globally for the unique terrestrial features and was designated a UNESCO World Heritage Site in 1982. In 2014, a project to examine the expansion of the protection of waters surrounding Aldabra began, and in 2018 the new boundary for the Aldabra (Marine) Special Reserve was designated. The new boundary is 2,429 km^2.

KEY FACTS

- Seychelles' history of designating protected areas began in 1966 and the first marine protected area was established in 1973.
- From 1979–1997, marine protected areas covered less than 0.1% of Seychelles' ocean.
- The African Banks Protected Area was designated 6 April 1987 under the Protected Areas Act for maritime safety.

Maritime Boundaries

This map shows the maritime boundaries published in the National Gazette and other relevant documents and include Exclusive Economic Zones (EEZ), Marine Protected Areas, Fishing by Foreign Vessels Prohibited Areas, Areas Beyond National Jurisdiction, Areas To Be Avoided, Port of Victoria, Voluntary Petroleum Exclusion Zone, and Seychelles-Mauritius Joint Management Area.

Areas To Be Avoided (ATBA) are defined by the International Maritime Organisation (IMO) as "an area within defined limits in which either navigation is particularly hazardous or it is exceptionally important to avoid casualties and which should be avoided by all ships, or by certain classes of ships". There are two ATBA in Seychelles that pose navigational hazards to shipping due to shallow or uncharted waters: in the region of Mahé Island and in the region of Aldabra Islands. The IMO confirmed these areas on 5 April 1989 and were implemented 5 October 1989. Near Mahé, they create a corridor for ship traffic entering, leaving, or passing through Port of Victoria and across the Mahé Plateau. Near Aldabra, it creates a 30-nm radius around Aldabra and Assomption.

Exclusive Economic Zone (EEZ) is defined by the United Nations Convention for the Law of the Sea (UNCLOS) as an area beyond and adjacent to the territorial sea, with the rights and jurisdiction of the State, governed by the relevant provision of UNCLOS. The EEZ is to a maximum of 200 nautical miles from the baseline. Four archipelagos contribute to Seychelles' baseline and EEZ boundary determination. The dashed EEZ lines indicate an unsettled boundary or a Treaty.

Foreign Fishing Prohibited Areas shows nine gazetted fisheries zones where foreign-registered vessels are prohibited from fishing on or inside the 200-meter depth.

Areas Beyond National Jurisdiction (ABNJ) are defined by UNCLOS as waters outside of national jurisdiction, including the high seas and seabed.

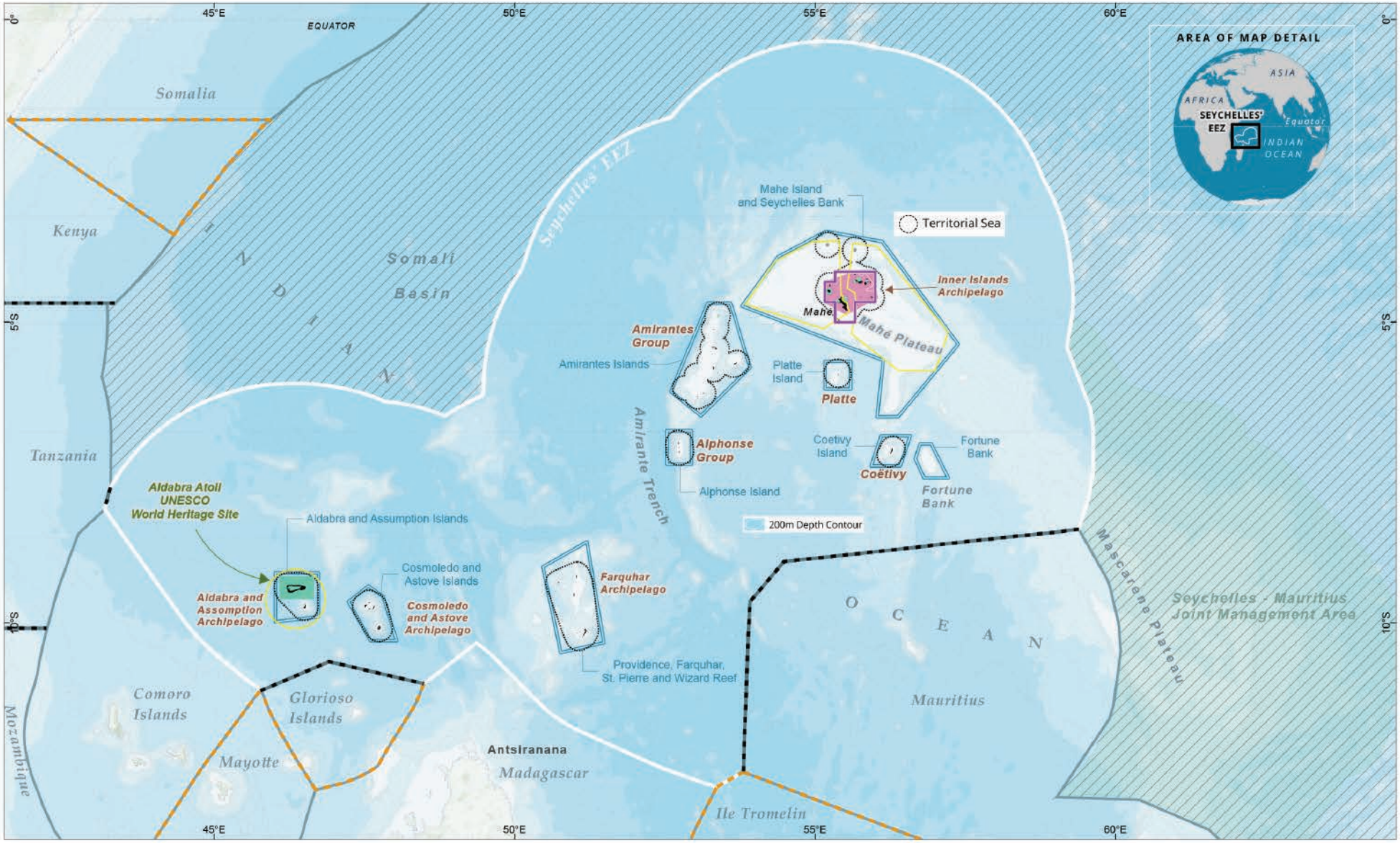
Port of Victoria identifies the commercial port area on Mahé, where the Seychelles Port Authority may assess use-based fees to vessels using the Port or surrounding waters. There are smaller ports on Praslin and La Digue.

Seychelles-Mauritius Joint Management Area (JMA) is a 396,000 km^2 area between Seychelles and Mauritius on the Mascarene Plateau, the first jointly managed area of the Extended Continental Shelf (ECS) to be recommended by the UN Commission under Art 76, Para. 8 of UNCLOS. The JMA was approved on 30 March 2022 and both countries share sovereign rights for the purpose of exploring, managing, and exploiting seabed resources. The water column is in the ABNJ and outside the scope of the JMA.

KEY FACTS

- Seychelles signed UNCLOS on 10 December 1982 and was ratified on 16 September 1991. The UNCLOS maritime boundaries are legislated in the Maritime Zones Act (1999).
- The Areas To Be Avoided in the region of Mahé Island were created so that vessel traffic could be monitored from Mahé Island using radar.
- The Seychelles Maritime Boundaries Committee completed the exercise to formalize the Territorial Sea, Baseline, Contiguous Zone, and Exclusive Economic Zone in May 2022 with the UK Hydrographic Office and these were gazetted by Presidential Order on 29 July 2022.

MAP SCALE: *Data are presented at a scale of 1:9,100,000 (1 cm = 91 km)*



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- Seychelles' Exclusive Economic Zone
- Other Exclusive Economic Zone, Settled
- Other Exclusive Economic Zone, Unsettled
- Other Exclusive Economic Zone, Treaty
- Marine Protected Areas
- Fishing by Foreign Vessels Prohibited
- Areas Beyond National Jurisdiction (ABNJ)
- Area To Be Avoided (IMO ATBA)
- Port of Victoria Boundary
- Voluntary Petroleum Exclusion Zone
- Seychelles - Mauritius Joint Management Area

Maritime Boundaries

Population Distribution

This map shows the population for the Inner Islands by District from the National Bureau of Statistics (NBS) census in 2010. Each unique 2-letter code corresponds to a District Name. The population distribution is mapped using categories of seven equal intervals across all Districts.

The islands of Mahé, Praslin, and La Digue are the primary population centers of the country. The 26 Districts ranged from 1,390 to 4,849 people per District in 2010. Most of Seychellois live on Mahé and satellite islands (90%). The Other/Outer Islands (OTHER) and Port Glaud (PG) Districts had the lowest number of people. The Outer Islands District contains year-round residents on public and privately owned islands.

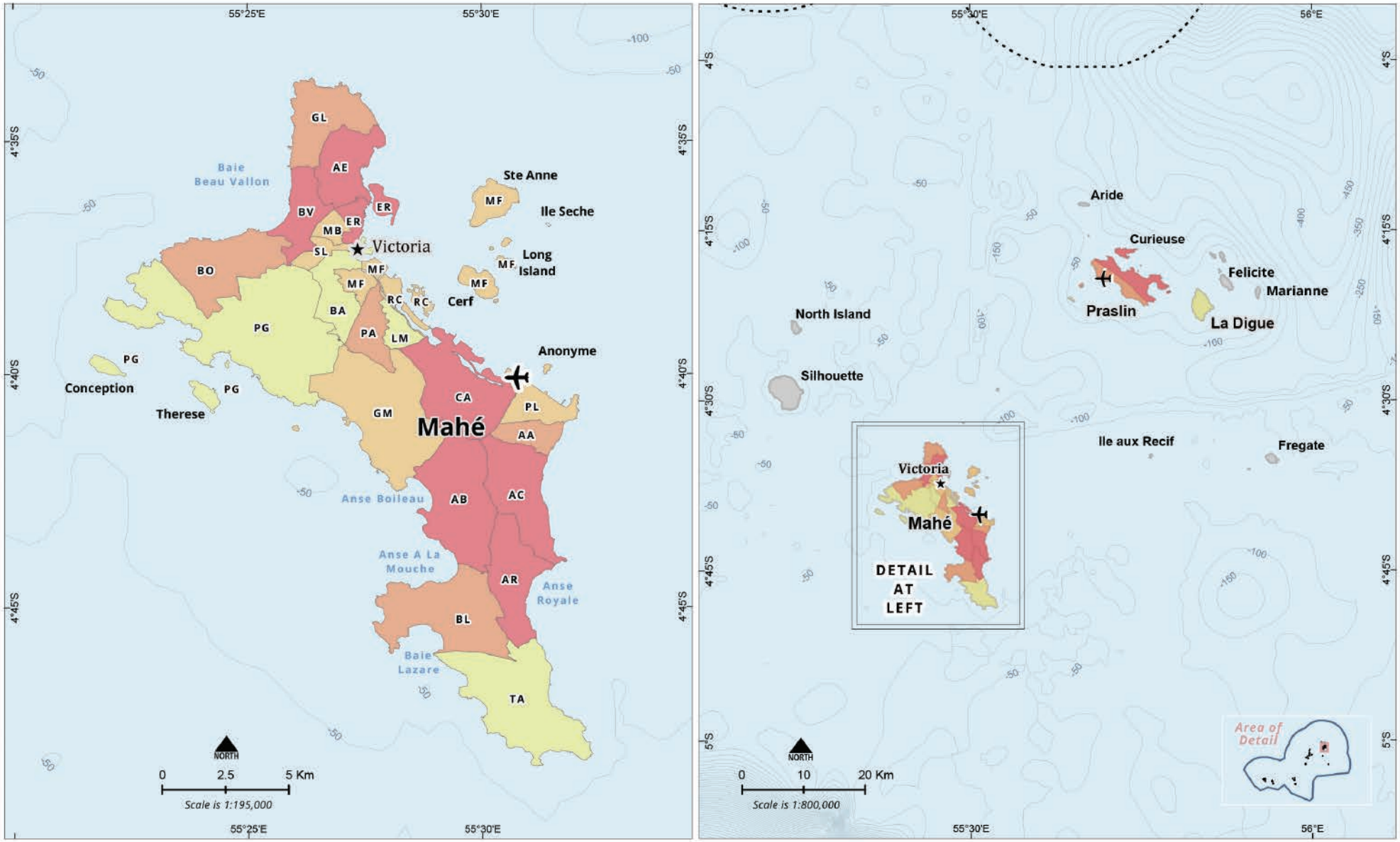
KEY FACTS

- The Seychelles population was 89,000 at the launch of the Seychelles Marine Spatial Plan in 2014 and increased to more than 109,000 by the end of the SMSP in 2025. The NBS projects the population of Seychelles to exceed 202,000 people by 2064.
- Visitors typically outnumber the local population by 3:1. There have been more than 300,000 visitors each year to Seychelles since 2022.
- Aldabra Atoll in the Other/Outer Islands includes up to 20 research staff and interns for at least three months at a time for the Aldabra UNESCO World Heritage site.



District Code	Name	Population (2010 census)	District Code	Name	Population (2010 census)
AA	Anse aux Pins	3,850	GM	Grand'Anse Mahé	3,106
AB	Anse Boileau	4,011	GP	Grand'Anse Praslin	3,717
AE	Anse Etoile	4,717	LD	La Digue	2,649
AR	Anse Royale	4,168	LM	Les Mamelles	2,667
AC	Au Cap	4,233	MB	Mont Buxton	3,089
BL	Baie Lazare	3,608	MF	Mont Fleuri	3,419
BS	Baie Sainte Anne	4,849	OTHER	Other/Outer Islands	1,390
BV	Beau Vallon	4,120	PA	Plaisance	3,781
BA	Bel Air	2,857	PL	Pointe La Rue	3,071
BO	Bel Ombre	3,708	PG	Port Glaud	2,572
CA	Cascade	4,267	RC	Roche Caïman	3,232
ER	English River	4,196	SL	Saint Louis	3,209
GL	Glacis	3,833	TA	Takamaka	2,825

MAP SCALE: *Data are presented at a scale of 1:435,000 (1 cm = 4.35 km)*



FOR DISCUSSION PURPOSES ONLY
Prepared for: Seychelles MSP
Prepared on: 26 February 2024
Prepared by: Spatial Support Systems, LLC
Scale: Varies
Map projection: UTM Zone 40 South
Datum: WGS84
Data Sources: Seychelles MACCE, Seychelles National Bureau of Statistics, The Nature Conservancy, ESRI, SRTM

★ Capital City
International Airport
Depth Contours (meters)
Territorial Sea (12nm)

Population by District
(National Bureau of Statistics Census 2010)

- 0 - 1,500
- 1,501 - 2,000
- 2,001 - 2,500
- 2,501 - 3,000
- 3,001 - 3,500
- 3,501 - 4,000
- > 4,000

Population Distribution

Maritime Infrastructure

This map shows the maritime infrastructure on Mahé, Praslin, La Digue, and surrounding Inner Islands: Port of Victoria, wind farms, reclamation areas, sand dredging areas, and ferry routes. See the Tourism maps for infrastructure details for the Outer Islands.

Air access via the Seychelles International airport is 9 km from Victoria on the east side of Mahé. The international airport opened on 20 March 1972. Praslin, La Digue, and other islands have air access for inter-island transportation.

Fiber-optic cables come from East Africa. The Tanzania undersea cable is 1,917 km long and enters Seychelles at Beau Vallon, Mahé. This cable connects to the Seychelles East Africa System (SEAS) and was operational in 2011. A second undersea cable with more advanced technology became operational in March 2022 and connects Seychelles to the Pakistan and East Africa Connecting Europe (PEACE) system. A dredge exclusion zone surrounds the cable to avoid damage.

Ports are located on Mahé, Praslin, and La Digue to service the islands and exports/imports. The Seychelles Port Authority (SPA) was established in 2004 by the Seychelles Port Act.

Passenger ferries provide transportation of people, goods, and services between the three Inner Islands—Mahé, Praslin, and La Digue.

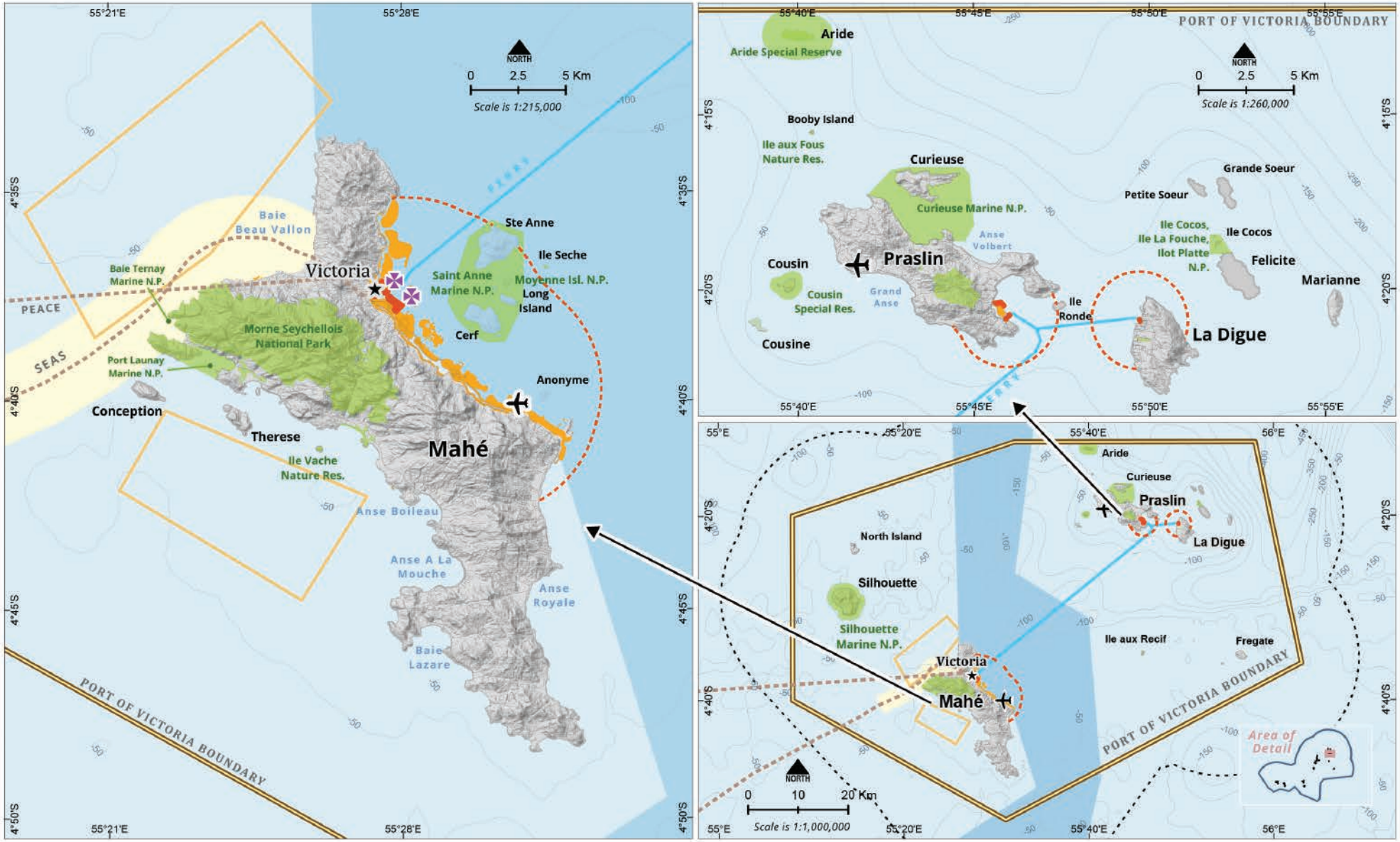
The Port Victoria Wind Power project is a wind farm located on Romainville Island and Ile du Port, two small, reclaimed islands on the east side of Mahé. Seychelles' first wind farm was built by Masdar in 2013, financed by Abu Dhabi Fund for Development (ADFD), and is owned and operated by Government of Seychelles. The goal was to supply 15% of Seychelles' power by 2030 and it currently supplies about 8% (2024). The six-megawatt wind farm has eight 750-kW wind turbines that produce nearly 7 GWh per year, displacing about 5,500 tonnes of carbon dioxide and powering 2,100 homes. Renewable energy is important for Seychelles to reduce dependency on imported fossil fuels.



KEY FACTS

- A 4-lane highway from the international airport to Providence ensures that emergency personnel can respond to incidents at the airport.
- Airspace is out of scope for the SMSP but is regulated in Seychelles including use of drones.
- The Port of Victoria exports canned tuna, salted fish and other products and receives good from international markets.
- Vessel traffic within the EEZ is monitored by advanced radar and vessel monitoring systems on the Inner Islands, Farquhar, and Aldabra Group.
- The National Information Sharing and Coordination Centre (NISCC) coordinates and integrates monitoring and enforcement activities for eight authorities.
- The Regional Coordination Operations Centre (RCOC) provides maritime coordination for ten countries in the Western Indian Ocean.

***MAP SCALE:** Data are presented at a scale of 1:9,100,000 (1 cm = 91 km)*



FOR DISCUSSION PURPOSES ONLY
Prepared for: Seychelles MSP
Prepared on: 26 February 2024
Prepared by: Spatial Support Systems, LLC
Scale: Varies
Map projection: UTM Zone 40 South
Datum: WGS84
Data Sources: Seychelles MACCE, Seychelles Port Authority, The Nature Conservancy, ESRI, SEAS, SRTM

- Capital City
- Major Airports
- Territorial Sea (12nm)
- Protected Areas
- Port of Victoria Boundary
- Wind Farm
- Fibre Optic Cable (SEAS)
- Dredging Exclusion Boundary
- Reclamation Areas
- Sand Dredging Areas
- Roads
- Ferry Routes
- Depth Contours (meters)
- Shipping Approaches
- Ports
- Port Zones of Influence

Maritime Infrastructure

Protected Areas: Inner Islands

This map shows the designated marine and terrestrial protected areas for the Inner and Outer Islands of Seychelles, including detailed maps for Mahé, Praslin, and La Digue areas.

Prior to 2014, before the Seychelles MSP, the Inner Islands archipelago and Aldabra were the focal points for Seychelles' protected areas. This Inner Islands have 23 protected areas, each contributing uniquely to the conservation of terrestrial and/or marine ecosystems. There are eight marine protected areas (56.5 km^2) and 15 terrestrial protected areas (56.4 km^2) within the Inner Islands and the designations include National Parks, Special Reserves, and Areas of Outstanding Natural Beauty.

Terrestrial Protected Areas

Aride Island Special Nature Reserve (0.71 km^2; 1975)
Beacon Island Nature Reserve (0.02 km^2; 1979)
Booby Island Nature Reserve (0.02 km^2; 1979)
Cousin Special Nature Reserve (0.29 km^2; 1975)
Grand Anse Area of Outstanding Natural Beauty (0.29 km^2; 2000)
Ile aux Récifs Special Reserve (0.13 km^2; 2010)
La Digue Veuve Special Reserve (0.08 km^2; 1991)
La Plaine Hollandaise (0.04 km^2; 2010)
Les Mamelles Nature Reserve (0.06 km^2; 1966)
Morne Seychellois National Park (31.3 km^2; 1979)
Moyenne National Park (0.09 km^2; 2009)
Praslin National Park (3.25 km^2; 1979)
Silhouette National Park (19.88 km^2; 2010)
Vache Marin Nature Reserve (0.05 km^2; 1966)
Vallée de Mai Nature Reserve (0.19 km^2; 1966)

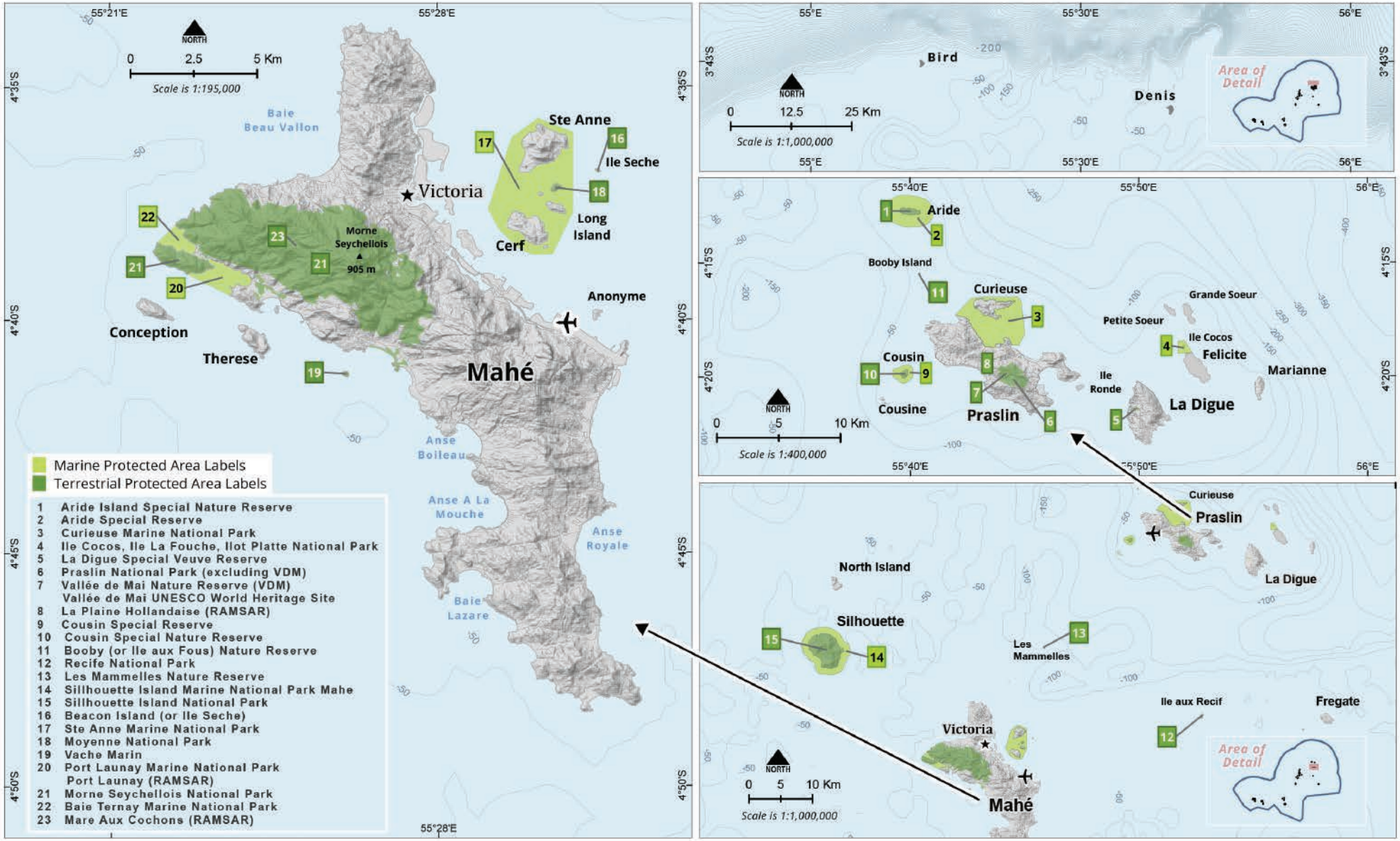
Marine Protected Areas

Aride (Marine) Special Reserve (7.2 km^2; 2018)
Baie Ternay (Marine) National Park (0.87 km^2; 1979)
Cousin (Marine) Special Reserve (1.58 km^2; 1980)
Curieuse (Marine) National Park (13.41 km^2; 1979)
Ile aux Cocos / Ile La Fouche / Ilot Platte (Marine) Protected Area (0.86 km^2; 1987)
Port Launay (Marine) National Park (1.63 km^2; 1979)
Silhouette (Marine) National Park (21.32 km^2; 1987)
Ste. Anne (Marine) National Park (9.65 km^2; 1973, 1997)

KEY FACTS

- 23 protected areas are found within the Inner Islands Group and include nine Marine National Parks, six Nature Reserves, five Special Reserves, one Area of Outstanding Natural Beauty, one Protected Area, and one Ramsar site (Wetland of International Importance).
- The largest MPA in the Inner Islands is Silhouette Marine National Park (21.3 km^2)
- The largest terrestrial PA in the Inner Islands is Morne Seychellois National Park (31.3 km^2).

MAP SCALE: *Data are presented at varying scales on this map page*



FOR DISCUSSION PURPOSES ONLY
Prepared for: Seychelles MSP
Prepared on: 26 February 2024
Prepared by: Spatial Support Systems, LLC
Scale: Varies
Map projection: UTM Zone 40 South
Datum: WGS84
Data Sources: Seychelles MACCE, The Nature Conservancy, ESRI, GEBCO

★ Capital City
✈ International Airport
Marine Protected Areas
Terrestrial Protected Areas
Roads
Depth Contours (meters)

Protected Areas Inner Islands

Protected Areas: Praslin, La Digue, and Surrounds

This map shows the marine and terrestrial protected areas on and around the islands of Praslin and La Digue. The map provides detail and a good overview of protections as well as a visual of the coverage in protected areas.

Praslin and La Digue islands are the second and third largest of the Inner Islands, respectively, and are home to roughly 11% of Seychelles' population. The Inner Islands have 23 protected areas, four marine and seven terrestrial:

Terrestrial Protected Areas

Aride Island Special Nature Reserve (0.71 km²; 1975)

Booby Island Nature Reserve (0.02 km²; 1979)

Cousin Special Nature Reserve (0.29 km²; 1975)

La Digue Veuve Special Reserve (0.08 km²; 1991)

La Plaine Hollandaise (0.04 km²; 2010)

Praslin National Park (3.25 km²; 1979)

Vallée de Mai Nature Reserve (0.19 km²; 1966); Vallée de Mai UNESCO World Heritage Site

Marine Protected Areas

Aride (Marine) Special Reserve (7.2 km²; 2018)

Cousin (Marine) Special Reserve (1.58 km²; 1980)

Curieuse (Marine) National Park (13.41 km²; 1979)

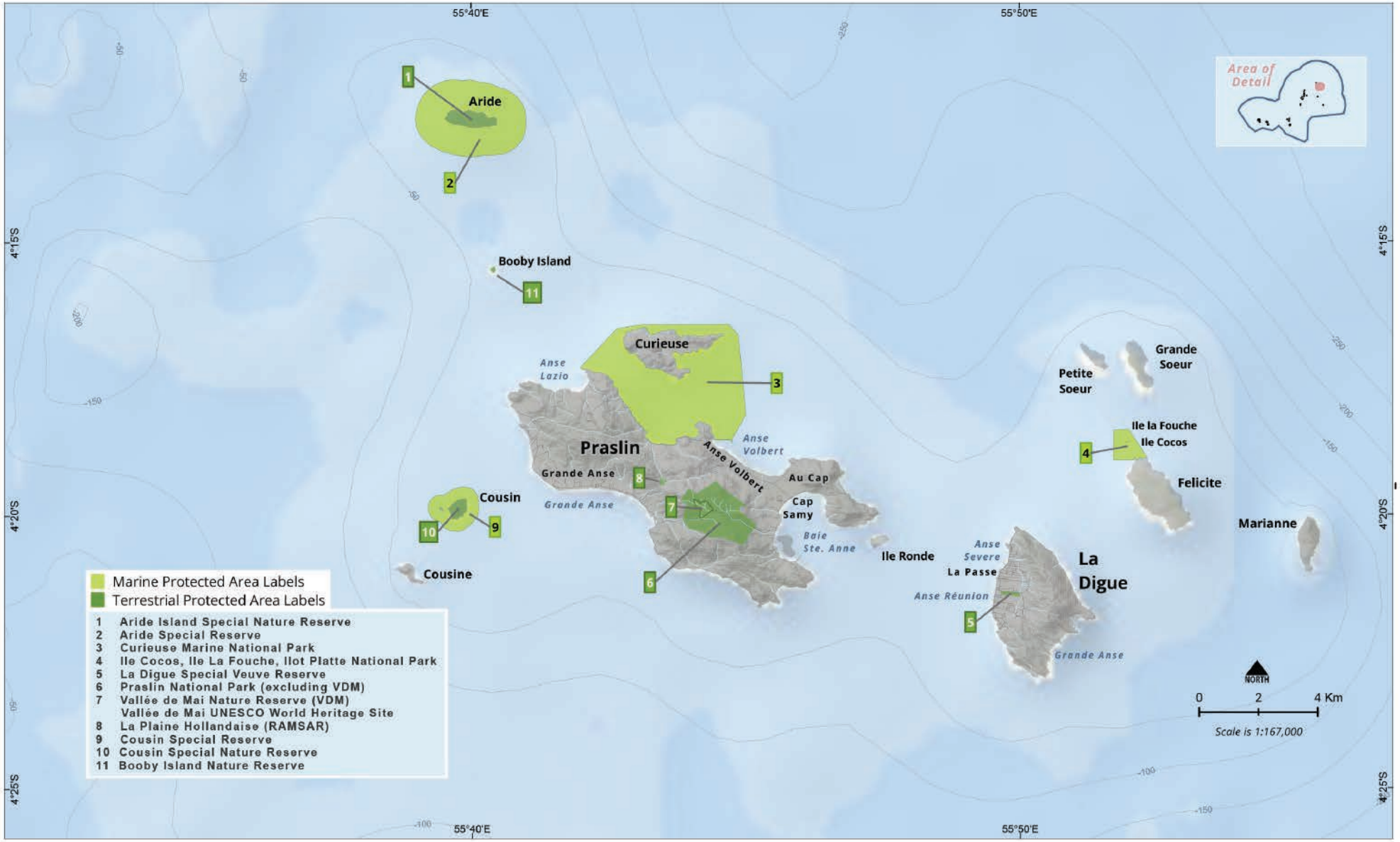
Ile aux Cocos / Ile La Fouche / Ilot Platte (Marine) Protected Area (0.86 km²; 1987)



KEY FACTS

- Protected area designations here include two National Parks, three Nature Reserves, four Special Reserves, one Protected Area, and one Ramsar site (Wetland of International Importance).
- There are 11 protected areas on and around Praslin and La Digue.
- The largest marine protected area in this area is Curieuse Marine National Park (13.4 km²).
- The largest terrestrial protected area in this area is Praslin National Park (3.25 km²).

MAP SCALE: *This map is presented at a scale of 1:167,000 (1 cm = 1.67 km)*



FOR DISCUSSION PURPOSES ONLY
Prepared for: Seychelles MSP
Prepared on: 26 February 2024
Prepared by: Spatial Support Systems, LLC
Scale: 1:167,000
Map projection: UTM Zone 40 South
Datum: WGS84
Data Sources: Seychelles MACCE, The Nature Conservancy, ESRI, GEBCO

Marine Protected Areas
Terrestrial Protected Areas
Roads
Depth Contours (meters)

Protected Areas Praslin, La Digue and Surrounds

Protected Areas: Outer Islands

This map shows marine and terrestrial protected areas within the Outer Islands archipelagos and groups designated up to 2018 and before gazetting Milestone 1 of the Seychelles MSP. The maps do not show new marine protection areas that were outcomes of the Seychelles MSP.

Due to their remoteness and size, the expansive seascapes surrounding the Outer Islands are host to marine ecosystems that are less impacted by human activities as compared to the Inner Islands. The Outer Islands are far from Mahé, have limited access, and offer exclusive destinations for international visitors, making them cost-prohibitive for many travelers, especially local Seychellois. In the Outer Islands, five protected areas were designated within the Aldabra and Amirantes Groups of islands and atolls:

Marine Protected Areas

Aldabra (Marine) Special Reserve (2,669 km²; 2018)

Other Protected Areas

African Banks (8.2 km²; 1987)

Aldabra UNESCO World Heritage Site (1981)

Boudeuse Island Nature Reserve (0.02 km²; 1966)

Etoile Nature Reserve (0.001 km²; 1966)

Aldabra Special Reserve protects one of the largest raised coral atolls in the world and is home to globally rare species including dugong and Aldabra giant tortoise. Aldabra Atoll is a UNESCO World Heritage Site, recognized for its remarkable environment and biodiversity.

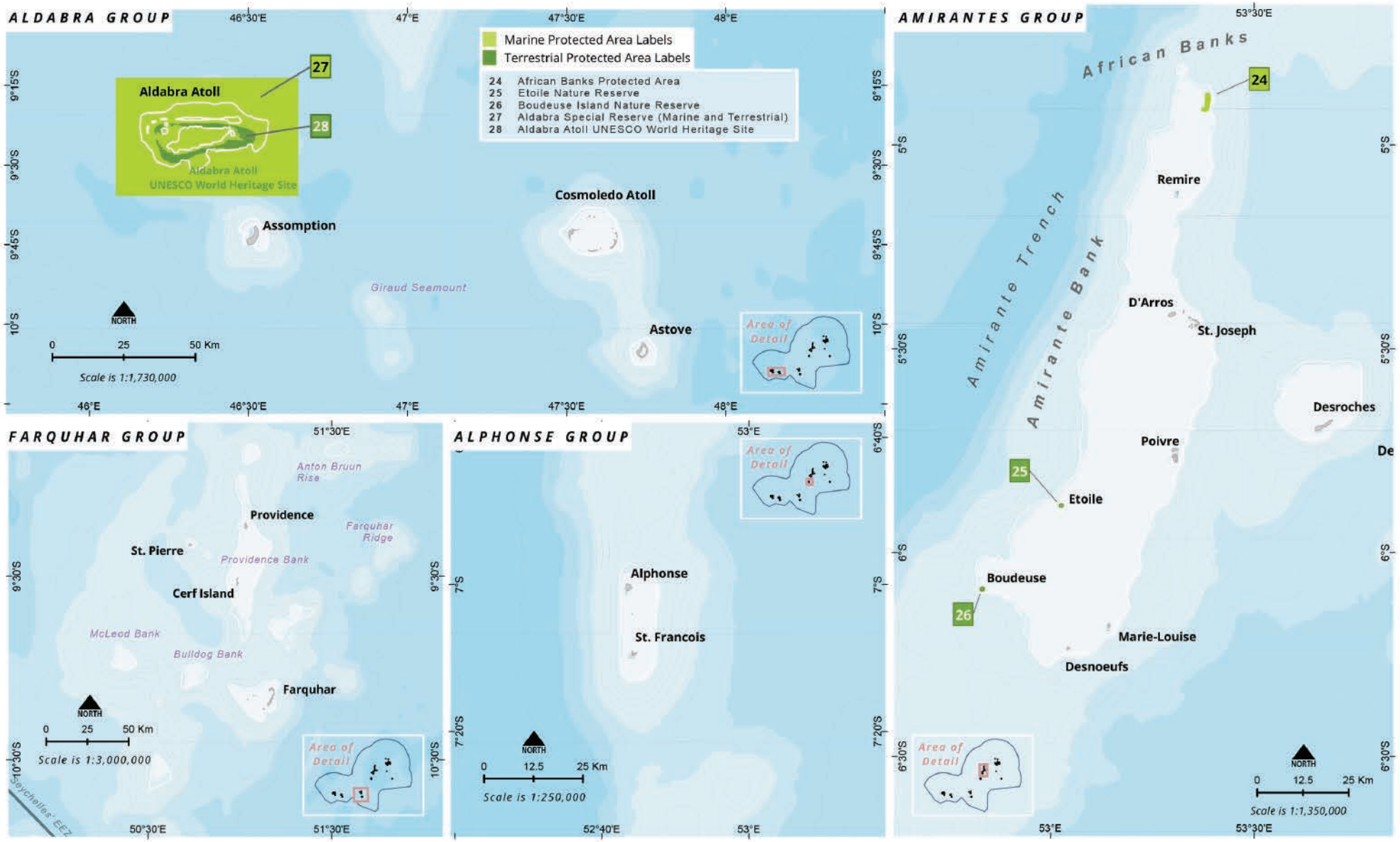
Boudeuse Island Nature Reserve and Etoile Nature Reserve (Amirantes Group) focus on safeguarding seabird colonies and contributing to the overall biodiversity of the Outer Islands.



KEY FACTS

- There were two marine and four terrestrial protected areas in the Outer Islands before 2018.
- African Banks Protected Area is protected for purposes of maritime security, not biodiversity protection.
- The Seychelles' Marine Spatial Plan led to new and improved protections across vast areas of the Outer Islands.

MAP SCALE: *Data are presented at varying scales on this map page*



FOR DISCUSSION PURPOSES ONLY
Prepared for: Seychelles MSP
Prepared on: 26 February 2024
Prepared by: Spatial Support Systems, LLC
Scale: Varies
Map projection: UTM Zones 38-40 South
Datum: WGS84
Data Sources: Seychelles MACCE, The Nature Conservancy, ESRI, GEBCO

Marine Protected Areas
Terrestrial Protected Areas
200m Depth Contour
Depth Contours (500 meters)

Protected Areas Outer Islands

WIOMER Marine Ecoregions Priority Areas

This map shows the Western Indian Ocean Marine Ecoregion (WIOMER) priority areas. The WIOMER priority areas were defined for the open ocean and coastal ecosystems surrounding the Comoros Islands, Madagascar, Mauritius, Réunion Island (France), and Seychelles Islands. The map shows globally and regionally outstanding areas, sub-regionally important, deep water intensive management zone, and a proposed transnational conservation seascape.

The aim of the WIOMER project was to identify priority areas to preserve the marine ecosystems and fisheries in the Western Indian Ocean region. WIOMER sites assisted the Indian Ocean Commission (IOC) with finalising the strategy and action plan under the IOC Biodiversity Programme, including a Marine Protected Area Network. *WIOMER identified 51 marine priority seascapes and sites of specific importance for regional action*. The project began in 2001 and was completed in 2010. More than 100 regional experts contributed to the WIOMER regional conservation strategy, led by World Wildlife Fund (WWF).

The strategy developed regional initiatives for seven critical issues:

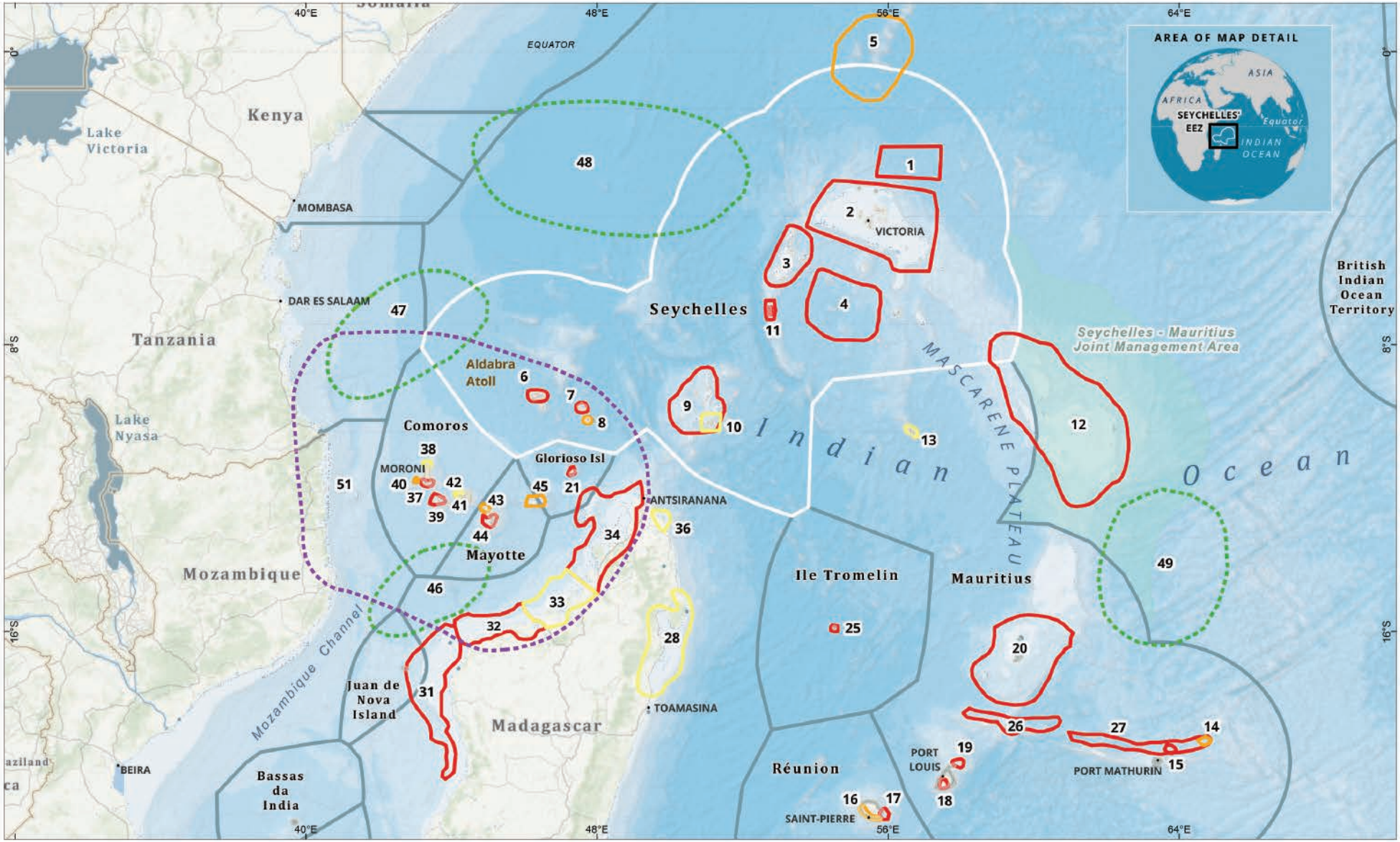
1. rapid expansion of fisheries management programs along coastlines and shoals,
2. achieving sustainable offshore fishing and healthy pelagic ecosystems,
3. building and supporting a world-class network of marine protected areas,
4. regional actions to protect wide-ranging species and species of special concern,
5. balanced oil and gas development,
6. adapting marine protected areas and fisheries to climate change, and
7. critical gaps in knowledge for effective management.



KEY FACTS

- There are 15 WIOMER sites partially or wholly within the Seychelles EEZ.
- The smallest WIOMER is 483 km² and the largest is 853,669 km².
- WIOMERs are a class of ecologically or biologically sensitive areas (EBSA) designated by the Convention on Biological Diversity (CBD).

MAP SCALE: *Data are presented at a scale of 1:16,000,000 (1 cm = 160 km)*



NORTH 0 250 500 Km

FOR DISCUSSION PURPOSES ONLY
Prepared for: Seychelles MSP
Prepared on: 26 February 2024
Prepared by: Spatial Support Systems, LLC
Scale: 1:15,000,000
Map projection: Cylindrical Equal Area
Datum: WGS84
Data Sources: Seychelles MACCE, The Nature Conservancy, WWF, ESRI, MarineRegions.org, GEBCO

- Seychelles' Exclusive Economic Zone
- 200m Depth Contour
- Other Exclusive Economic Zone
- Seychelles-Mauritius Joint Management Area

WIOMER Marine Ecoregions Priority Areas
WWF 2010
- Globally Outstanding
- Regionally Outstanding
- Sub-regionally Important
- Deepwater Intensive Management Zone
- Proposed Transnational Conservation Seascape

WIOMER Marine Ecoregions Priority Areas

BirdLife International Important Bird Areas

This map shows BirdLife International's marine, terrestrial, and pelagic Important Bird and Biodiversity Areas (IBAs). Two pelagic IBAs encompass marine habitats more than 2,000 m depth as well as seamounts or guyots. The six marine IBAs cover Seychelles' four archipelagos plus Coëtivy and Platte.

Birds can be effective indicators of broad biodiversity and ecosystem functions and protecting sites important to birds may help ensure the survival of a correspondingly large number of other animal and plant species that utilize the same habitats. The BirdLife International Important Bird and Biodiversity Area Programme identifies, protects, and manages a network of sites that are considered significant for the long-term viability of bird populations across the geographical range of those species. These IBA sites are identified using internationally agreed-upon criteria applied locally by BirdLife International partners and experts.

Around the world, more than 12,000 IBAs have been identified, representing the largest global network of important sites for biodiversity. According to BirdLife International, achieving adequate protection for these sites is among the most urgent of global conservation priorities. Currently, one third of IBAs lack any formal protection and 45% are only partially protected.

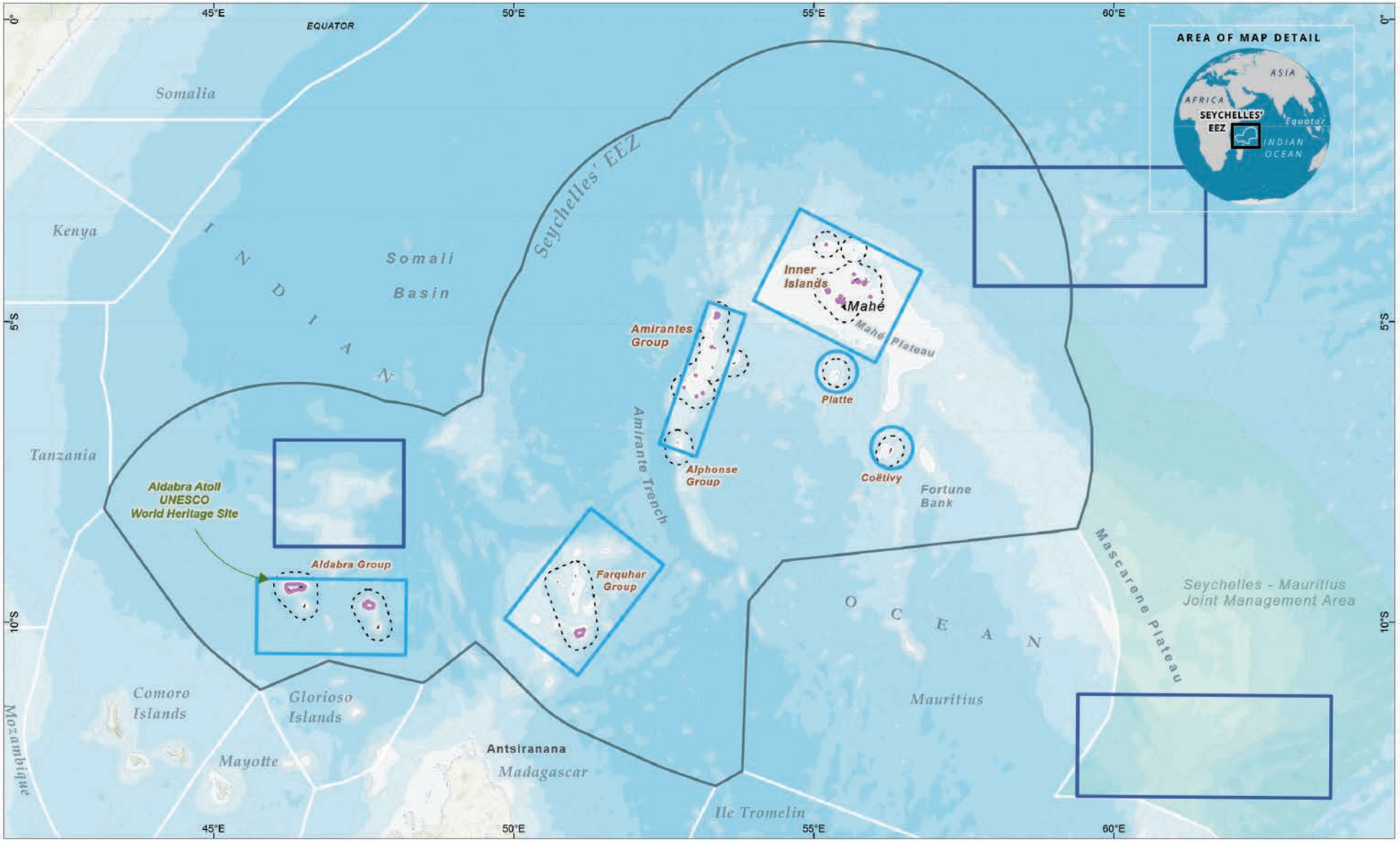
Marine IBAs identify seabird foraging locations and other aspects of their at-sea life history. Terrestrial IBAs are specifically focused on significant colonies and aggregations of terrestrial and marine birds. The Seychelles IBA effort was led by Lascelles in 2014.



KEY FACTS

- Nature Seychelles partnered with BirdLife International to map IBAs in Seychelles' territory.
- There are 21 IBAs recognised in Seychelles, eight are marine and two are pelagic.
- The Seychelles IBAs range from less than 1 km² at Boudeuse Island to 93,343 km² at Madingley Rise.

MAP SCALE: *Data are presented at a scale of 1:9,100,000 (1 cm = 91 km)*


AREA OF MAP DETAIL
ASIA
AFRICA
SEYCHELLES' EEZ
Equator
INDIAN OCEAN
EQUATOR
45°E
50°E
55°E
60°E
0°
5°S
10°S
Somalia
Kenya
Tanzania
Mozambique
Somali Basin
INDIAN OCEAN
Seychelles' EEZ
Inner Islands
Mahé
Mahé Plateau
Amirantes Group
Amirante Trench
Platte
Alphonse Group
Coëtivy
Fortune Bank
Aldabra Atoll UNESCO World Heritage Site
Aldabra Group
Farquhar Group
Mascarene Plateau
Seychelles - Mauritius Joint Management Area
Comoro Islands
Glorioso Islands
Mayotte
Antsiranana
Madagascar
Ile Tromelin
Mauritius
NORTH
0
125
250 Km
FOR DISCUSSION PURPOSES ONLY
Prepared for: Seychelles MSP
Prepared on: 26 February 2024
Prepared by: Spatial Support Systems, LLC
Scale: 1:9,100,000
Map projection: Cylindrical Equal Area
Datum: WGS84C
Data Sources: Seychelles MACCE, BirdLife International, The Nature Conservancy, MarineRegions.org, ESRI, GEBCO
Seychelles' Exclusive Economic Zone
200m Depth Contour
Other Exclusive Economic Zone
Territorial Sea (12nm)
BirdLife Important Bird Areas
Lascelles 2014
Terrestrial
Marine
Pelagic
BirdLife Important Bird Areas

Ecologically or Biologically Significant Areas

This map shows the Convention on Biological Diversity (CBD) ecologically or biologically significant marine areas (EBSAs) in the Southern Indian Ocean Region that overlap with Seychelles.

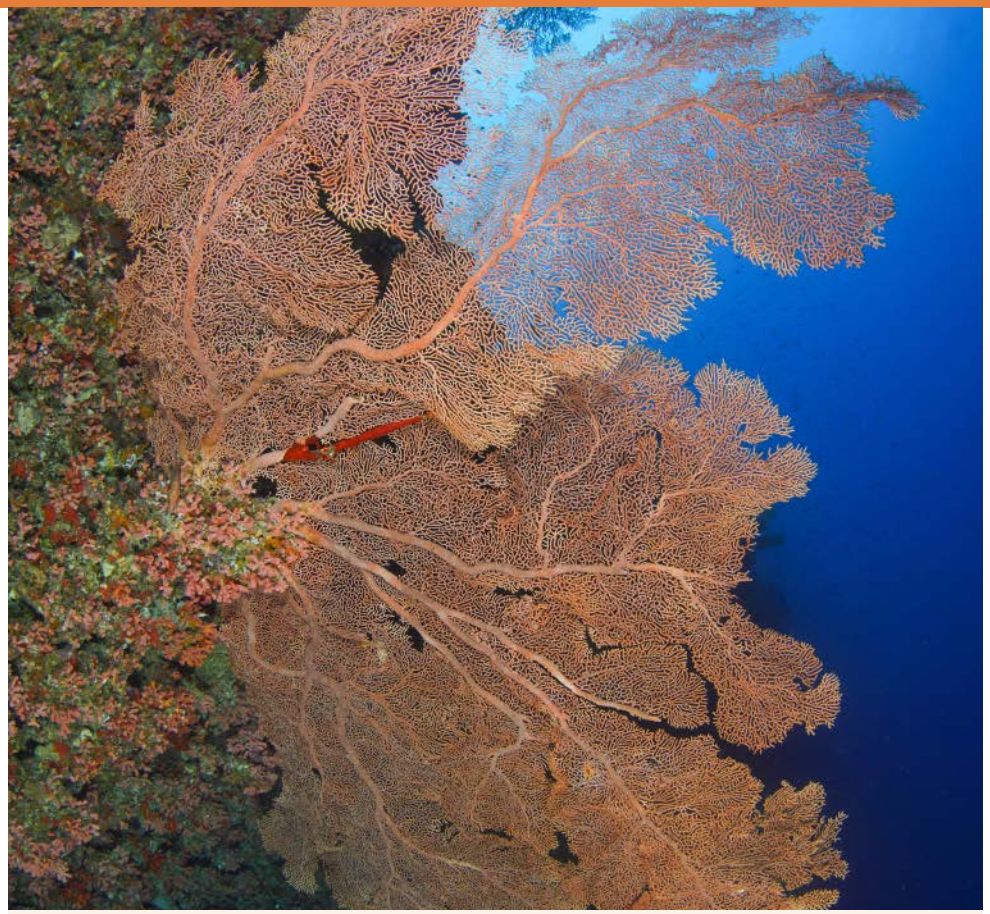
The CBD EBSAs build important awareness about ocean areas. They capture multiple values, are typically coarse scale, and describe an area generally. There are some limitations for using EBSAs in marine spatial planning because of the generalised nature of the polygon and how it is more spatially accurate to map individual species and habitats and use those layers to meet area and representation goals.

Seychelles was included in EBSA submissions for the Southern Indian Ocean to the CBD in May–July 2012. Three EBSA boundaries were included in the Seychelles Marine Spatial Plan spatial database for the zoning design process.

The Aldabra Group is included in the Northern Mozambique Channel EBSA, which is characterised by a large variety of marine habitats and diverse fish species, sharks, rays, marine turtles, dugongs and cetaceans. This EBSA polygon also includes the Farquhar Group.

The Mahé, Alphonse, and Amirantes Plateau EBSA surrounds the Mahé Plateau, Amirantes, Alphonse, Platte, and Coëtivy. This EBSA contains the granitic Inner Islands, Amirante Basin, and Bird and Denis islands.

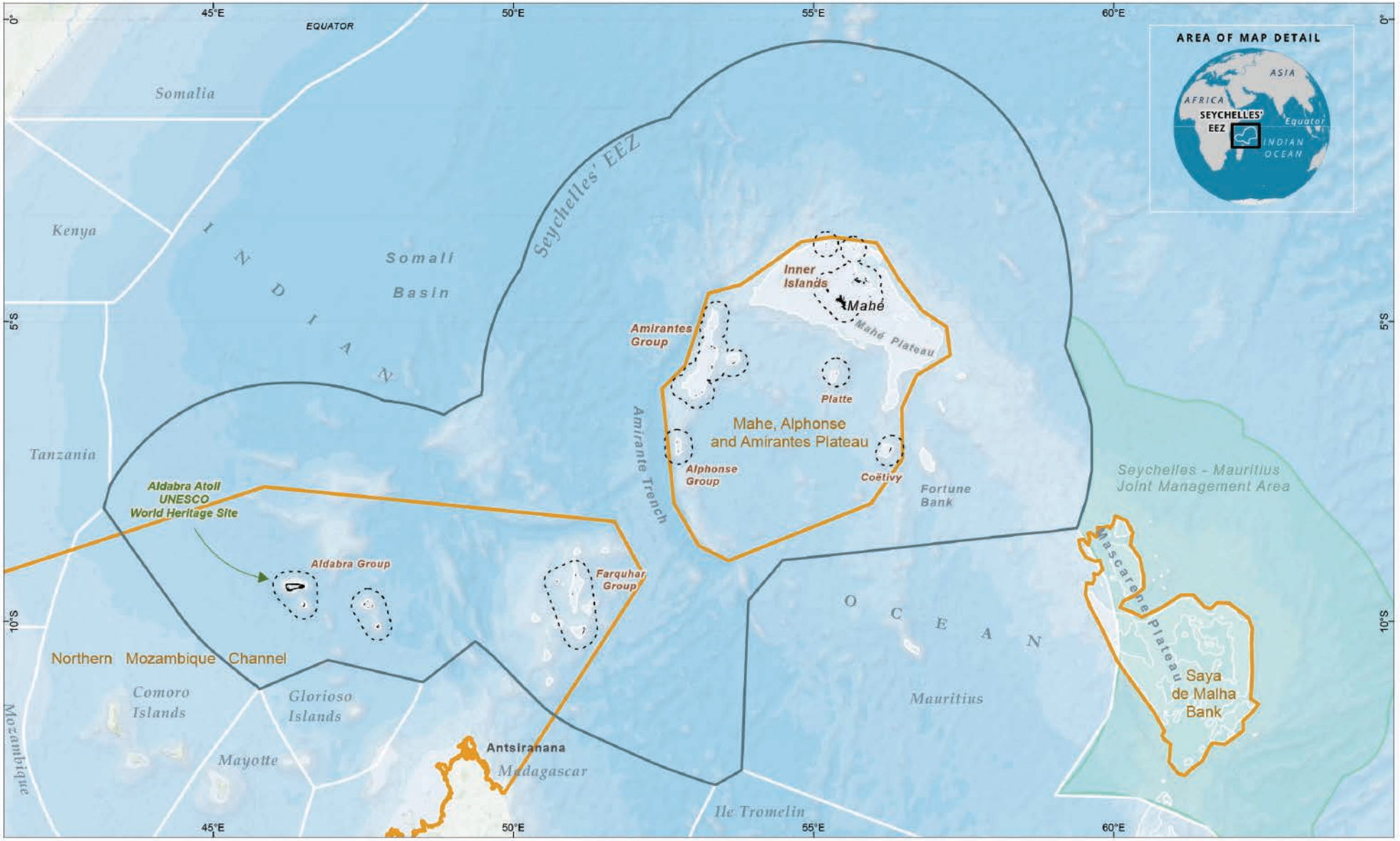
The Saya de Malha Bank EBSA is outside the Exclusive Economic Zone (EEZ) and features the underwater Mascarene Plateau that spans Seychelles and Mauritius. The bank supports one of, if not the, largest seagrass bed in the world. There are strong indications of unique oceanographic and geomorphic features in this area, species endemism, and significant aggregations of marine mammals and seabirds. In 2012, this EBSA included a portion inside the Seychelles EEZ.



KEY FACTS

- The Southern Indian Ocean EBSA submissions came from government, non-governmental organisations, and other organisations, including Seychelles National Park Authority, Cordio, and the Marine Conservation Institute.
- There are two EBSAs that overlap with the Seychelles EEZ.
- There are 328 EBSAs around the world.

MAP SCALE: *Data are presented at a scale of 1:9,100,000 (1 cm = 91 km)*


45°E
50°E
55°E
60°E
0°
EQUATOR
5°S
10°S
AREA OF MAP DETAIL
ASIA
AFRICA
SEYCHELLES' EEZ
Equator
INDIAN OCEAN
Somalia
Kenya
Tanzania
Mozambique
Somali Basin
INDIAN OCEAN
Seychelles' EEZ
Inner Islands
Mahé
Mahé Plateau
Amirantes Group
Platte
Mahe, Alphonse and Amirantes Plateau
Amirante Trench
Alphonse Group
Coëtivy
Fortune Bank
Seychelles - Mauritius Joint Management Area
Aldabra Atoll UNESCO World Heritage Site
Aldabra Group
Farquhar Group
Northern Mozambique Channel
Comoro Islands
Glorioso Islands
Mayotte
Antsiranana
Madagascar
Ile Tromelin
Mascarene Plateau
Saya de Malha Bank
Mauritius
NORTH
0
125
250 Km
FOR DISCUSSION PURPOSES ONLY
Prepared for: Seychelles MSP
Prepared on: 18 October 2024
Prepared by: Spatial Support Systems, LLC
Scale: 1:9,100,000
Map projection: Cylindrical Equal Area
Datum: WGS84
Data Sources: Seychelles MACCE, ESRI, GEBCO, Convention on Biological Diversity, The Nature Conservancy, MarineRegions.org
Seychelles' Exclusive Economic Zone
200m Depth Contour
Other Exclusive Economic Zone
Territorial Sea (12nm)
Seychelles - Mauritius Joint Management Area
Ecologically or Biologically Significant Marine Areas
Ecologically or Biologically Significant Marine Areas (EBSA)

High Biodiversity Areas

This map shows the results of a project using Marxan software and stakeholder consultations to identify high biodiversity areas. This and other information were used to support stakeholder discussions and develop zoning design proposals to reach a 30% marine protection goal.

A prioritisation project was led by Dr. Rebecca Klaus from 2011–2015 to identify priority areas for expanding the marine protected area system in Seychelles. The project was titled "Strengthening Seychelles' protected area system through non-governmental organisation management modalities", and funded by the Government of Seychelles, United National Development Programme, Global Environment Facility (GoS-UNDP-GEF).

Using Marxan, a spatial optimization software, important areas for biodiversity conservation were identified while also taking into account the patterns of human use within Seychelles' waters. Multiple expert and stakeholder workshops were held to develop the conservation target list, identify percent goals, and review outputs. Multiple scenarios were developed with different assumptions for anthropogenic- and climate-based threats to biodiversity. The "preferred" scenario shown on this map captured the desired biodiversity values and indicate the priority areas for expansion of Seychelles' protected areas network, on a relative scale, as per assumptions in the model.

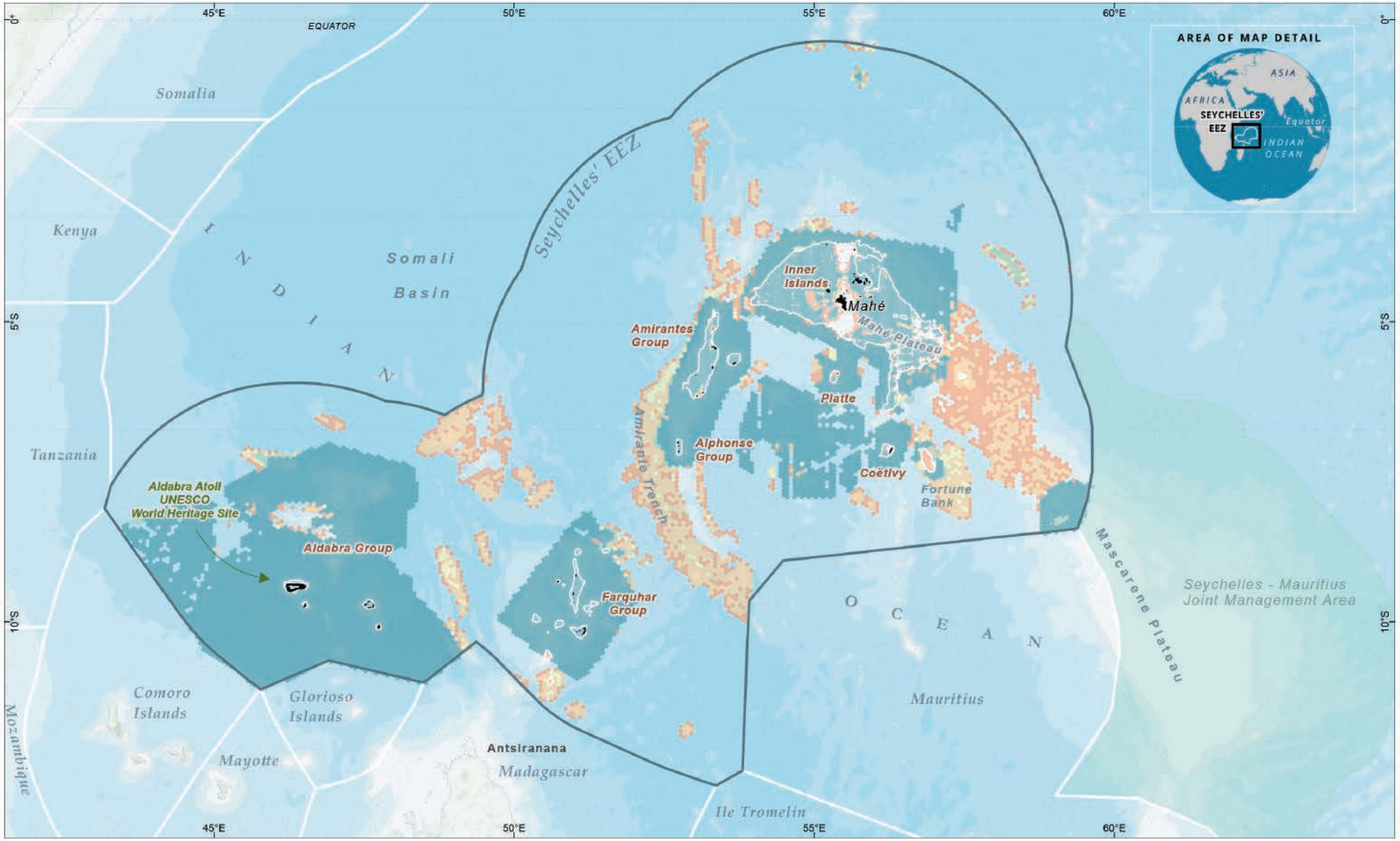
The map shows the Marxan "selection frequency" among all planning units selected to meet the 30% goal from least often (oranges) to most often (green, blue) selected, based on criteria developed during consultations and workshops. The blue areas on the map can loosely be interpreted as the most important to consider for meeting a 30% marine protection target.



KEY FACTS

- More than 190 conservation features were compiled for the Marxan analysis.
- The priority areas represent 30% of the Seychelles EEZ by area and the representation targets that were set on 178 of the conservation features, both terrestrial and marine.

MAP SCALE: *Data are presented at a scale of 1:9,100,000 (1 cm = 91 km)*



NORTH 0 125 250 Km

FOR DISCUSSION PURPOSES ONLY
Prepared for: Seychelles MSP
Prepared on: 26 February 2024
Prepared by: Spatial Support Systems, LLC
Scale: 1:9,100,000
Map projection: Cylindrical Equal Area
Datum: WGS84
Data Sources: Seychelles MACCE, The Nature Conservancy, ESRI, MarineRegions.org, GEBCO

Seychelles' Exclusive Economic Zone
200m Depth Contour
Other Exclusive Economic Zone

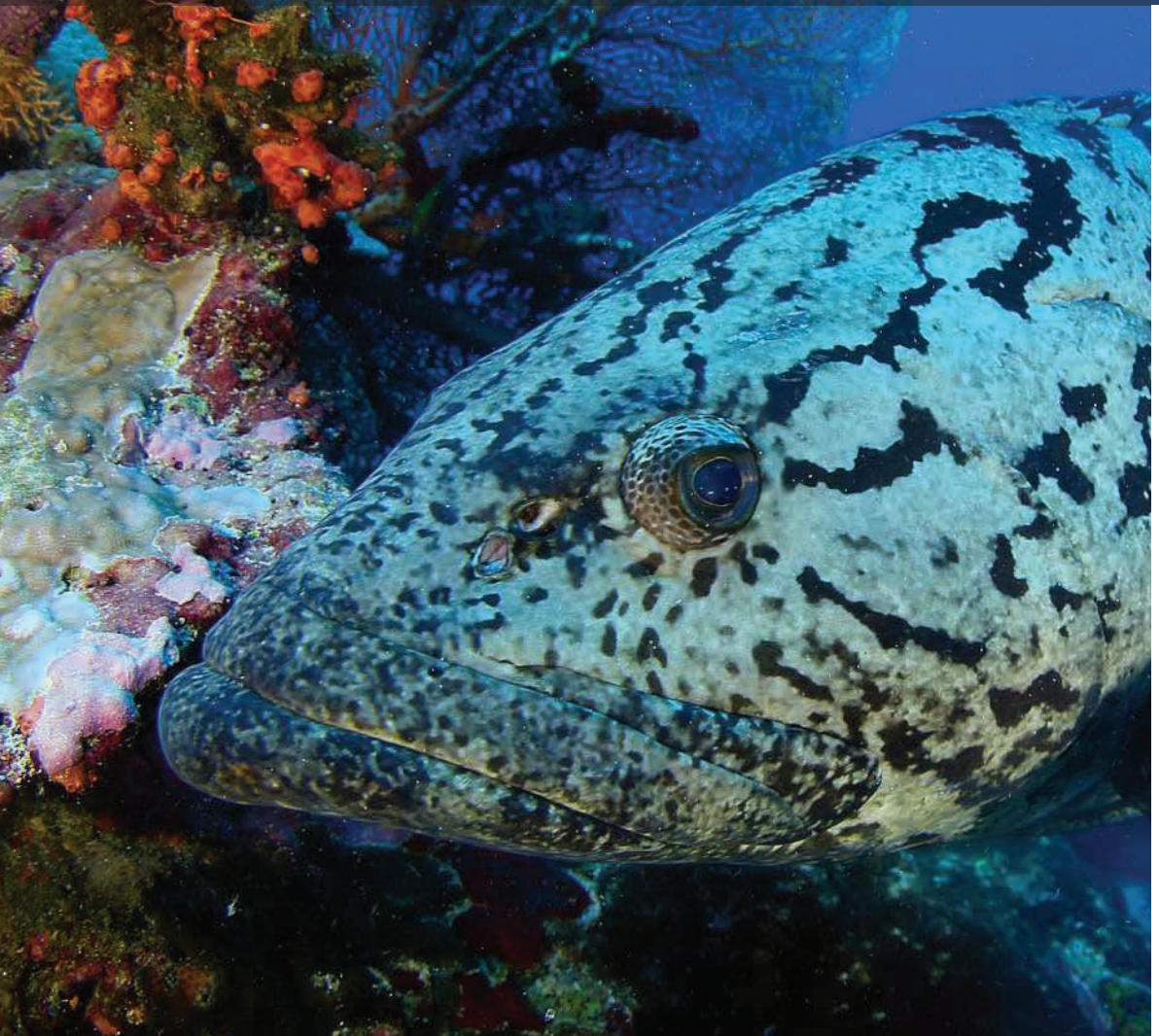
GoS-UNDP-GEF Preferred Biodiversity Protection Areas
Klaus 2015
Marxan Selection Frequency
Area selected least often
Area selected most often

Priority High Biodiversity Areas for 30% Goal

3 The Ocean

The new seafloor features map provides a foundation on which to build an understanding of the living and non-living resources of the ocean and to improve decision-making on a range of global issues like food security, resource use, and conservation.

Dr. Peter Harris, University of Tasmania, author of Geomorphology of the Oceans (2014)



The waters surrounding Seychelles have the highest diversity of marine fish and reef-associated species in the Western Indian Ocean. A total of 1,196 marine fish species belonging to 140 families have been recorded in Seychelles, 749 of which are reef-associated. There are 55 species of sea anemones, and the Seychelles clownfish (*Amphiprion fuscocaudatus*) is endemic to Seychelles. There are more than 79 species of sharks and rays (Chondrichthyes, or cartilaginous fish) in Seychelles waters, including 60 species of sharks, 16 rays, and three guitarfish; 30 of these species are listed by the IUCN as Threatened, Vulnerable, or Endangered.

Seychelles is an aggregation site in the Western Indian Ocean for the whale shark (*Rhincodon typus*) and tagging programmes for these animals have been ongoing since 1996. The number of whale sharks in Seychelles' waters is highly variable and when they are abundant, whale shark watching can be economically valuable for eco-tourism.

Nearly 30 species of marine mammals in the orders Cetacea and Sirenia have been recorded in Seychelles. Over 26 species of Cetacea have been observed including seven dolphin and 19 whale species such as the sperm whale (*Physeter macrocephalus*), humpback whale (*Megaptera novaeangliae*), and right whale (*Eubalaena glacialis*). The dugong (*Dugong dugon*; order Sirenia) resides in waters of the Aldabra Atoll.

The most extensive benthic habitat types in Seychelles' coastal waters are soft sediments, making up more than half of the Mahé Plateau and

seabed of the lagoons of the Outer Islands. Shallow waters with soft sediments are important feeding grounds for shorebirds and migrant seabirds. Seychelles contains shelf habitats up to 200 m depth and deep waters more than 2,000 m depth in the abyssal sea. The banks within Seychelles, such as Amirantes Bank and Fortune Bank, contain soft bottom and rubble habitats, and are important for demersal fish, which are of economic value in local small-scale fisheries.

The sandy beaches of the Inner islands are important nesting grounds for hawksbill turtles (*Eretmochelys imbricata*) while sandy beaches of the Outer Islands are important for green turtles (*Chelonia mydas*). Seychelles has one of the five most significant populations of nesting hawksbill turtles in the world and one of the largest congregations of nesting green turtles is found on Aldabra Atoll. Two other sea turtles also forage in Seychelles: the leatherback turtle (*Dermochelys coriacea*) and loggerhead turtle (*Caretta caretta*).

Seychelles has numerous species of extensively studied marine invertebrates. Thirty-five species of sea cucumbers (Holothuroidea) inhabit reef flats, seagrass beds, and shallow sand flats. There are over 350 species of sponges in Seychelles—approximately 18% of species are endemic and 10% are found only in the Western Indian Ocean. Species diversity for sponges is highest in the Inner Islands perhaps due to the Inner Islands having both granitic and carbonate reefs whilst the Outer Islands have only carbonate reefs. Urchins (*Diadema* and *Echinothrix* spp.) are found on reefs of the Inner Islands and 33 species have been recorded, including one endemic (*Echinocyamus grandis*). There are 32 sea star species in Seychelles, though their distribution is spotty. Population explosions of the crown starfish (*Acanthaster planci*) are a concern and are being monitored since this species is a voracious predator. Crustaceans are well studied and 165 species have been recorded. There are 22 recorded species of sea spiders (Pycnogonida) and two lobster species, spiny and slipper lobster. Less well studied species include marine worms and molluscs; information on their biodiversity, status, and distribution is limited. To date, 50 species of tubeworms (family Serpulidae) and 21 flatworm species (phylum Platyhelminthes) have been recorded, and 55 bivalve species were sampled from Le Constant Bank, including a new species (*Limopsis* sp.).

Ecosystem Services

In 2021–2022, an ecosystem services study was undertaken to quantify the ecosystem goods and services provided by Seychelles Marine Protected Area system. The project results can be viewed on The Nature Conservancy's ArcGIS HUB called Mapping Ocean Wealth in Seychelles.

The ecosystem service data outputs can strengthen existing knowledge and create new understanding, filling knowledge and data gaps on human uses that had been less widely considered or mapped. The results of this study suggest that in general, Seychelles' protected areas make a very strong contribution toward protecting the values that underpin the nation's Blue Economy. We highlight outstanding ecosystem service values within marine protected areas that can help guide development of future management plans, as well as potential gaps where important services may not be adequately represented within protection for the long-term sustainability of these values.

KEY FACTS

- 90% of the 1,149 kilometers of total shoreline benefit from coastal protection by fringing coral reefs.
- 77% (889 km) of the total shoreline is located in, or adjacent to, a legally designated marine protected area, meaning that 889 km of the total shoreline has legal protection and contains important regulatory ecosystem services for coastal protection.
- Most of the marine protections are far from human settlement thus of the 44,280 people who live in low-lying coastal areas (categorised as 30 m or less above sea level), about 18% benefit from the risk reductions and storm protection provided by reefs in, or beside, protected areas.
- Every protected area in Seychelles contains blue carbon from either seagrass, mangroves, or both, with the total sum of blue carbon found in protected areas estimated to be 156.7 million metric tons (Mt). The numbers are dominated by the contribution of seagrasses, most notably from the Mahé Plateau.
- Coral reefs generate US$ 51.5 million annually from on-reef activities such as snorkeling and diving, the equivalent of 30,156 visitors to the Seychelles.
- Natural values of the beaches in Seychelles are estimated to be generating a combined total of USD$ 160 million of tourism expenditure annually with 94,000 visitors who are attracted specifically to the natural aspects of Seychelles' beaches.

Bathymetry

This map shows the ocean depths and seafloor topography of the Seychelles Exclusive Economic Zone (EEZ) from the General Bathymetric Chart of the Oceans (GEBCO) 2022 global database. The bathymetry map is shows depth to more than 6,000 m and the colour shading ranges from light (shallow) to dark (deep) green. The seamounts and guyots inside Seychelles' EEZ are indicated with triangle symbols. The Mascarene Plateau and Saya de Malha Bank are visible to the southeast of Seychelles' EEZ and the Coco de Mer Ridge to the north.

Bathymetry of the ocean is calculated from hydrographic surveys using seismic, side-scan sonar, and other technologies to measure depths. The bathymetry in Seychelles is highly variable, with many shallow banks and reefs, as well as areas deeper than 5,000 m. Seychelles' waters contain vast abyssal topographies at depths greater than 3,000 m including plains, seamounts, guyots, hills, ridges, slopes, and canyons. Undersea plateaus rise from the abyss to form shallow water regions less than 200 m deep, the most prominent of which is the Mahé Plateau (also known as the Seychelles Bank).

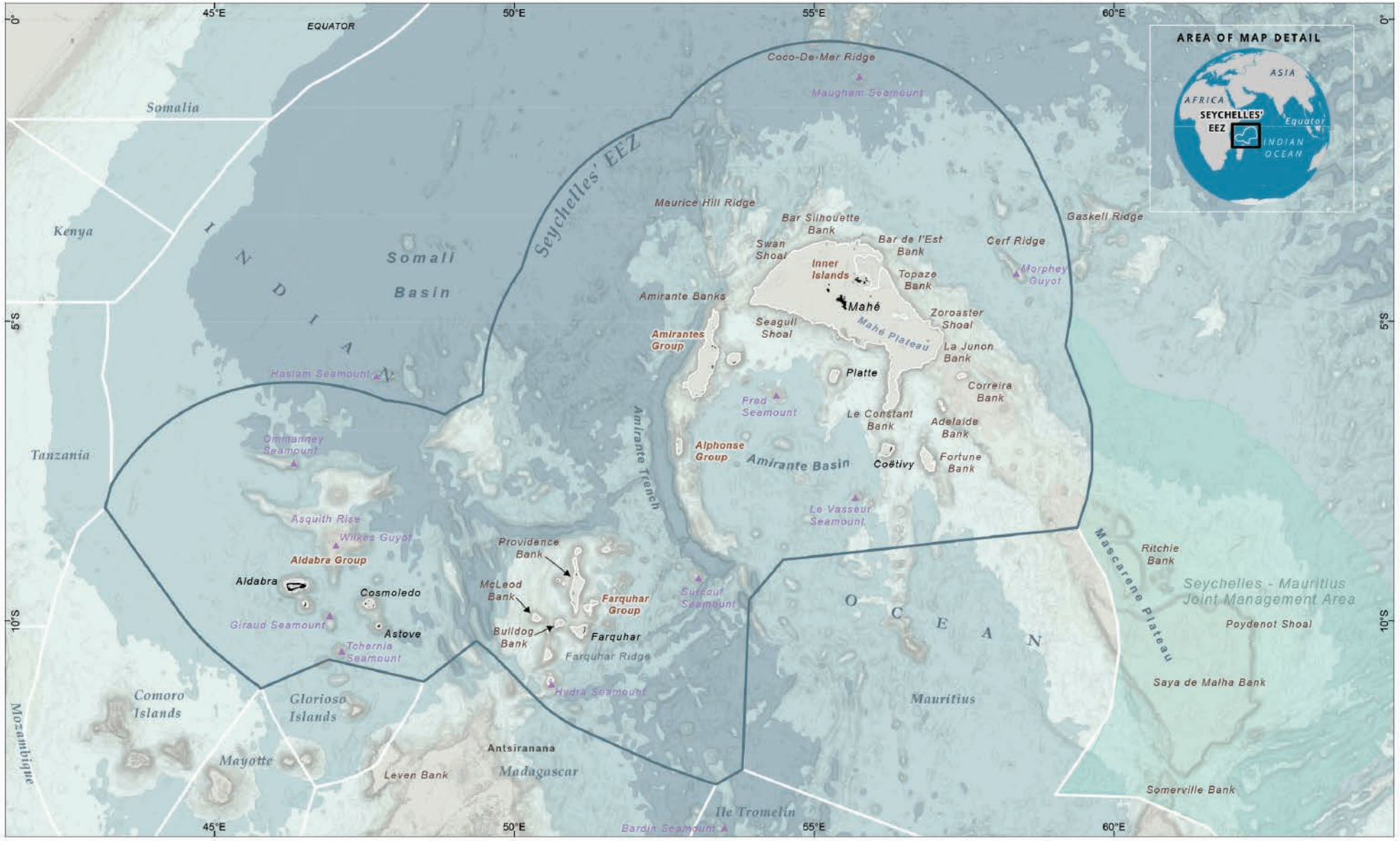
Depths greater than 5,000 m are found at the Amirante Trench and in the northwest portion of the EEZ, as well as in areas surrounding Providence Bank in the Farquhar Group.

KEY FACTS

- The Mahé Plateau is the northernmost extension of the Mascarene Plateau.
- The Mascarene Plateau runs from Seychelles south to Réunion Island, a distance of nearly 2,000 km.
- Some of the Outer Islands have very steep drop-offs against the coastline.
- A notable feature in Seychelles is the Amirante Trench, east of the Amirante Basin. The trench is very poorly studied, extending along a 600 km arc structure whose origins are not well understood.

MAP SCALE: *Data are presented at a scale of 1:9,100,000 (1 cm = 91 km)*





NORTH 0 130 260 Km

FOR DISCUSSION PURPOSES ONLY
Prepared for: Seychelles MSP
Prepared on: 26 February 2024
Prepared by: Spatial Support Systems, LLC
Scale: 1:9,100,000
Map projection: Cylindrical Equal Area
Datum: WGS84
Data Sources: Seychelles MACCE, The Nature Conservancy, ESRI, MarineRegions.org, GEBCO

- Seychelles' Exclusive Economic Zone
- 200m Depth Contour
- Other Exclusive Economic Zone

Depth in Meters
GEBCO 2022

- -6,472 - -4,500
- -4,499 - -3,500
- -3,499 - -2,500
- -2,499 - -1,500
- -1,499 - -1

- Seamounts and Guyots

Bathymetry

Deep Seafloor Geomorphology

This map shows the deep seafloor geomorphology for Seychelles and the Western Indian Ocean, processed from a global data set that describes deep-water habitats in all ocean basins published in "Geomorphology of the Oceans" by Harris et al. (2014). The map shows 11 major deep seafloor features from a classification system based on definitions from the International Hydrographic Organization.

The deep seafloor geomorphology map was used extensively during the Seychelles MSP process to view and learn about the location and distribution of deep-sea habitats. The 11 deep-sea features are:

Ridge: Long, narrow features with steep sides and more than 1,000 m of elevation.

Seamounts: Underwater peaks more than 1,000 m above the seafloor, usually conical.

Mountains: Underwater features with greater than 1,000 m of elevation within 25 km.

Guyots: Seamounts with a relatively smooth, flat top, also known as table mounts.

Hills: Features that have 300–1,000 m of elevation within 25 km.

Plains: Features that have less than 300 m of relief (elevation) within 25 km.

Rise: Areas with sediment thickness greater than 300 m and a smooth sloping seabed.

Terrace: A flat or gently inclined surface, wide or narrow, with a steep ascending slope on one side and steep descending slope on the other.

Slope: Where the seafloor from the shelf slopes downward to meet the top of the continental rise.

Canyon: Valleys with steep walls and a V-shaped cross section.

Trench: Long, narrow, very deep asymmetrical depressions of the seafloor, with relatively steep sides.



KEY FACTS

- There are more than 57 seamounts in Seychelles covering at least 53,300 km², or about 4% of Seychelles' ocean.
- Canyons contain a high diversity of species and can be comparable in length and depth to river-cut canyons on land.
- When animals die, "marine snow" accumulates in canyons and on the seafloor, an extremely important source of organic carbon for animals living in the deep sea.
- The Amirante Trench stretches more than 600 km south past the Alphonse Group, nearly reaching the EEZ boundary. It is poorly studied but may different geology from north to south.

MAP SCALE: *Data are presented at a scale of 1:9,100,000 (1 cm = 91 km)*



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Datum: WGS84
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- Seychelles' Exclusive Economic Zone
- 200m Depth Contour
- Other Exclusive Economic Zone

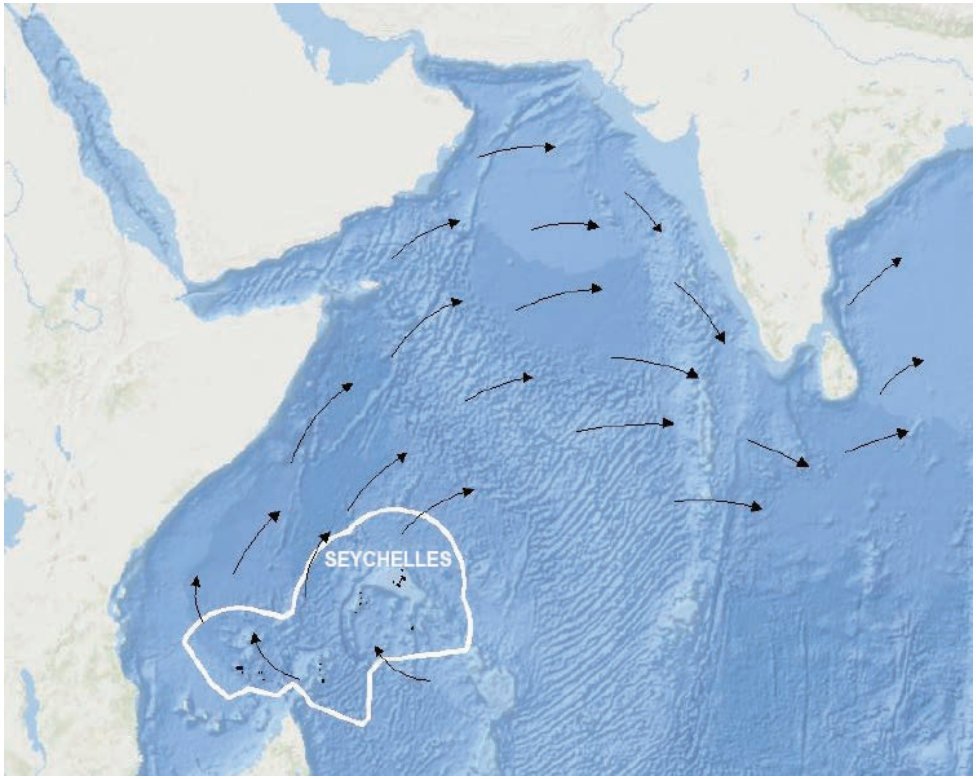
Seafloor Geomorphology
Harris et al., 2014

- Ridge
- Seamount
- Mountains
- Guyot
- Hills
- Plains
- Rise
- Terrace
- Slope
- Canyon
- Trench

Deep Seafloor Geomorphology

Ocean Currents: Southeast Monsoon

This map shows surface currents in the Western Indian Ocean during the Southeast Monsoon season when prevailing winds blow from a southeasterly direction towards the Inner Islands, Farquhar Group, and Aldabra Group. To represent the average Southeast Monsoon conditions for this map we selected July 18 as the mid-point of this monsoon season.



A snapshot of the Indian Ocean and the direction of coarse-scale sea surface currents on 18 July 2016. These currents flow clockwise from June through August, during the Southeast Monsoon (winter). Adapted from Esri and National Geographic.

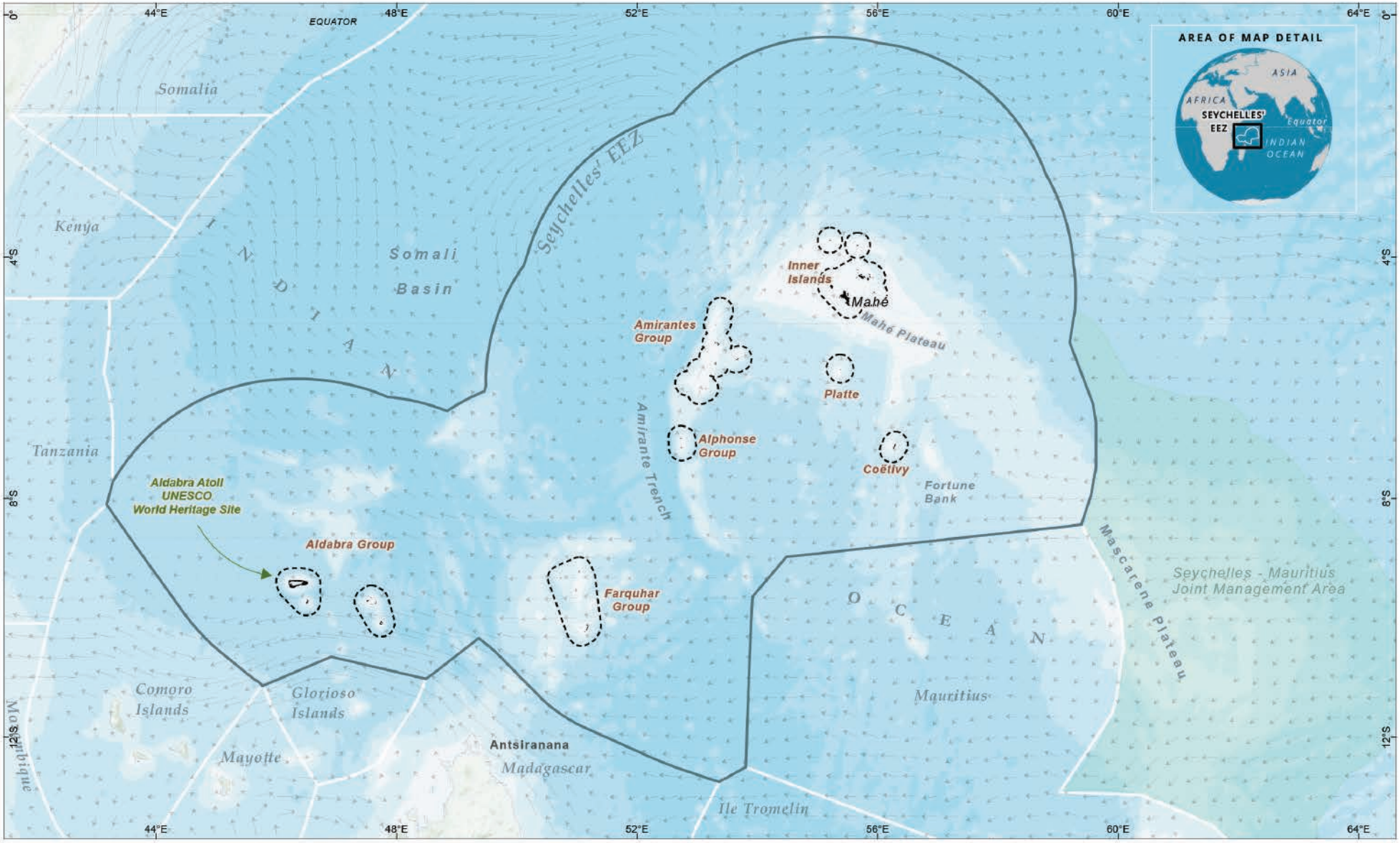
The ocean current regime in the Northern Indian Ocean varies seasonally as a result of changes in the prevailing wind directions associated with the Indian Monsoon Current. From June through August, prevailing winds in the Northwestern Indian Ocean generally come from the southwest, veering to northwest in proximity to the Indian subcontinent. Farther south, around Seychelles, these winter winds come from the southeast, hence the local reference to this season as the "Southeast Monsoon".

Depending on the time of year, specific locations in Seychelles' waters may experience very different conditions on the surface and at depth because the currents interact with islands, atolls, and associated seafloor topography during circulation.

KEY FACTS

- Temperatures are cooler during the Southeast Monsoon and rainfall is lower than in other times of the year.
- During the Southeast Monsoon, winds are very strong and the sea is rough. The poor sea conditions limit marine-based activities such as fishing and tourism.
- Several gyres or circulatory patterns are set up during the Southeast Monsoon including in the Amirante Basin (clockwise) and north of the Amirantes Group (counter-clockwise).
- The hottest month in Seychelles is April, in the shoulder season between the northwest and southeast monsoons.

MAP SCALE: *Data are presented at a scale of 1:9,100,000 (1 cm = 91 km)*



NORTH 0 125 250 Km

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Prepared for: Seychelles MSP
Prepared on: 26 February 2024
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Scale: 1:9,100,000
Map projection: Cylindrical Equal Area
Datum: WGS84
Data Sources: Seychelles MACCE, The Nature Conservancy, GEBCO MarineRegions.org, NOAA, ESRI

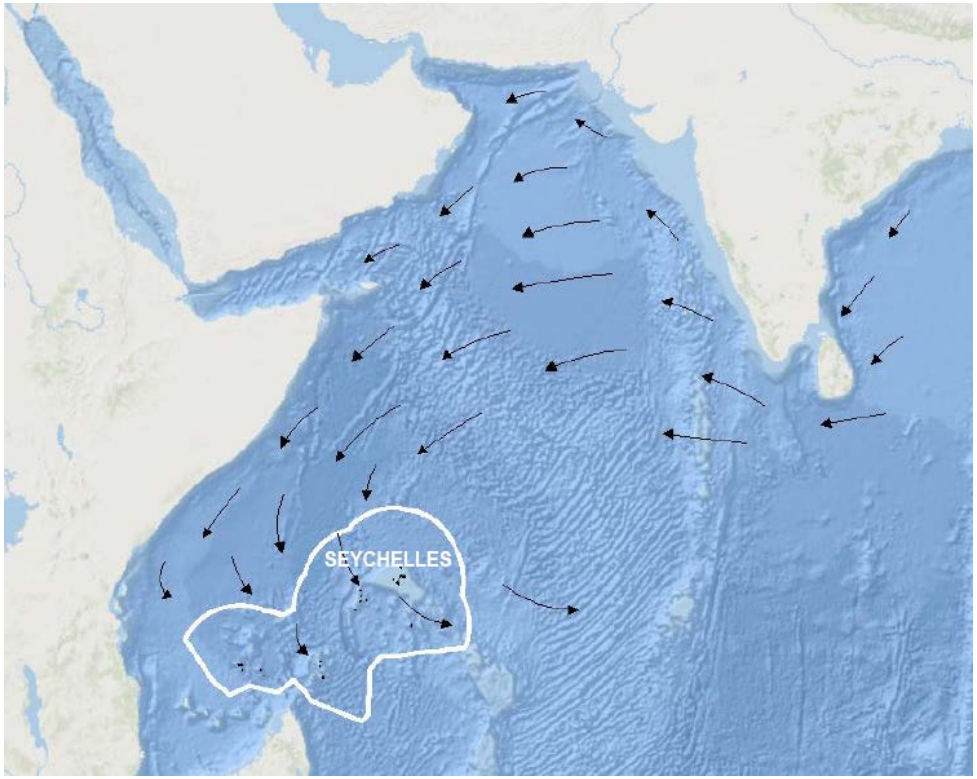
- Seychelles' Exclusive Economic Zone
- 200m Depth Contour
- Other Exclusive Economic Zone
- Territorial Sea (12nm)

Ocean Surface Currents
ESR. 2009
Current Direction
Current magnitude
Fastest: 3.8 m/s
Slowest: 0.0002 m/s

Ocean Currents Southeast Monsoon

Ocean Currents: Northwest Monsoon

This map shows surface currents in the Indian Ocean during the Northwest Monsoon season when the prevailing winds are blowing from a northwesterly direction towards the Inner Islands and Amirantes Group.



A snapshot of the Indian Ocean and the direction of surface currents on 16 January 2016. The currents flow counterclockwise from November to February during the Northwest monsoon. Adapted from Esri and National Geographic.

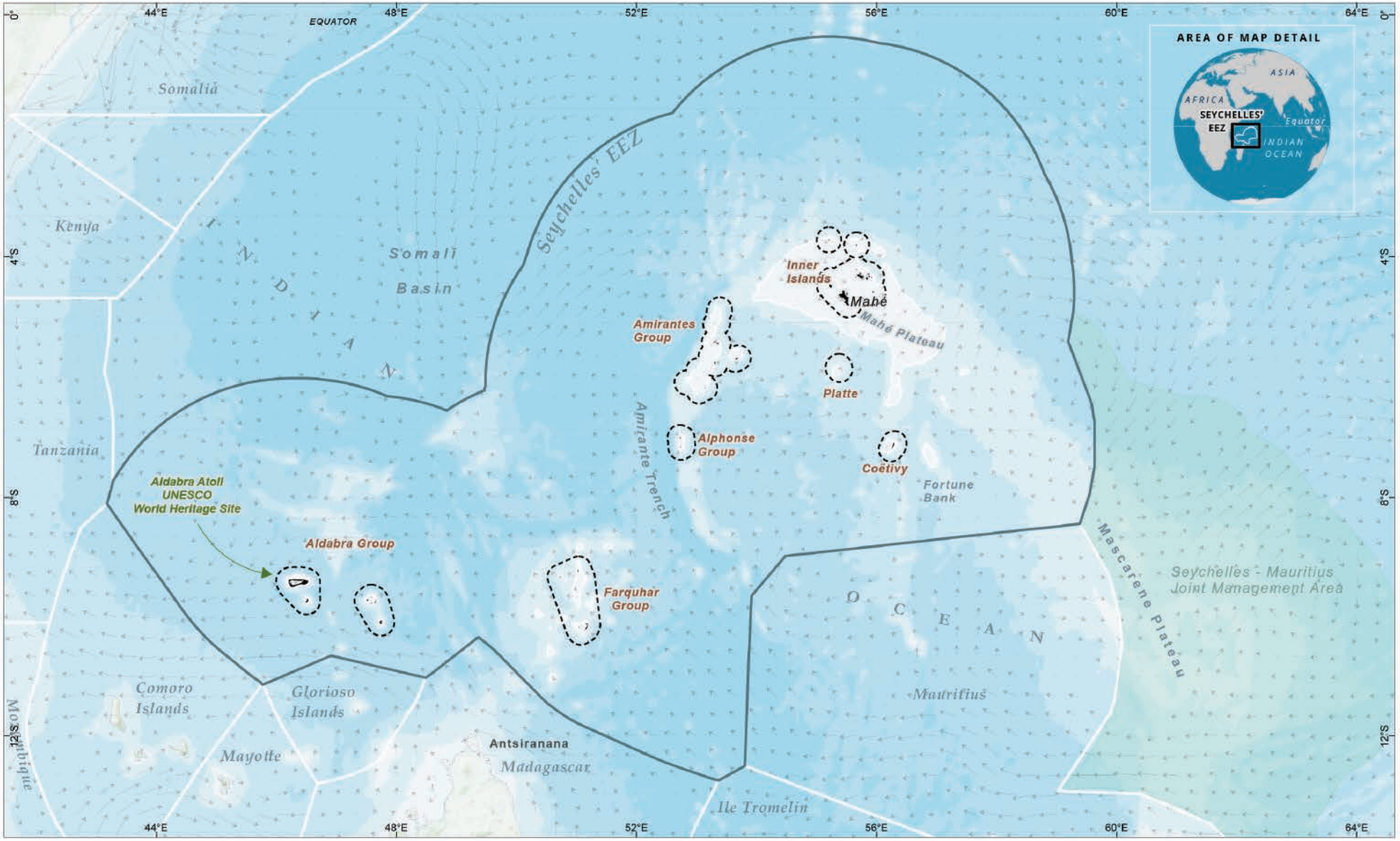
In tropical latitudes, seasons are tied to changes in prevailing winds and sea surface currents and are known as "monsoon seasons". From October to February, the sea surface currents move in a counter-clockwise direction such that on the eastern side of the Indian Ocean, near India, the currents are northeasterly. Moving to the western side of Indian Ocean, along the coasts of Somalia and Tanzania, the currents gradually start flowing southward and then at the equator move eastward to join the equatorial currents that flow west to east. The associated winds blow northwesterly along the coast of India, back to northerly, and then to northwesterly such that at the Seychelles Exclusive Economic Zone (EEZ), the winds are blowing from the northwest and the season is locally referred to as the "Northwest Monsoon".

The exact timing of the Northwest Monsoon varies from year to year and can start in early October or as late as mid-November.

KEY FACTS

- During the Northwest Monsoon, the sea is generally described as calmer than during the Southeast Monsoon and it is associated with warmer temperatures for swimming in the Inner Islands.
- Rain and warmer temperatures are associated with the Northwest Monsoon.
- Light winds persist throughout most of the EEZ with the exception of waters between Madagascar and Aldabra Group.
- The favourable sea conditions at this time of year encourage marine-based activities including yacht charters, diving, deep sea fishing, and commercial fishing.

MAP SCALE: *Data are presented at a scale of 1:9,100,000 (1 cm = 91 km)*



NORTH 0 125 250 Km

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Scale: 1:9,100,000
Map projection: Cylindrical Equal Area
Datum: WGS84
Data Sources: Seychelles MACCE, The Nature Conservancy, GEBCO MarineRegions.org, NOAA, ESRI

- Seychelles' Exclusive Economic Zone
- 200m Depth Contour
- Other Exclusive Economic Zone
- Territorial Sea (12nm)

Ocean Surface Currents
ESR. 2009
- Current Direction

Current magnitude
- Fastest: 3.5 m/s
- Slowest: 0.0002 m/s

Ocean Currents Northwest Monsoon

Marine Mammal Diversity

This map shows the number of marine mammal species at any given location in Seychelles' waters. The diversity calculation was the total number of species that overlap at each location. The overlapping distributions ranged from 1–8 of the 12 marine mammals with spatial data in Seychelles' waters.

To show spatial patterns and the diversity of marine mammal species, available data for 12 species were adapted from AquaMaps, a joint project of FishBase and SealifeBase that provides access to standardized distribution maps for over 22,800 species of fishes, marine mammals, and invertebrates; fine-scale data for marine mammals throughout Seychelles were not available. At each location in Seychelles, the number of overlapping modeled distributions were counted. The maximum number of overlapping marine mammal distributions was eight, surrounding the Aldabra and Farquhar Island groups. The distribution data show that fewer marine mammal species occur in the deepest waters of the Exclusive Economic Zone (EEZ) and more occur near complex bathymetric gradients.

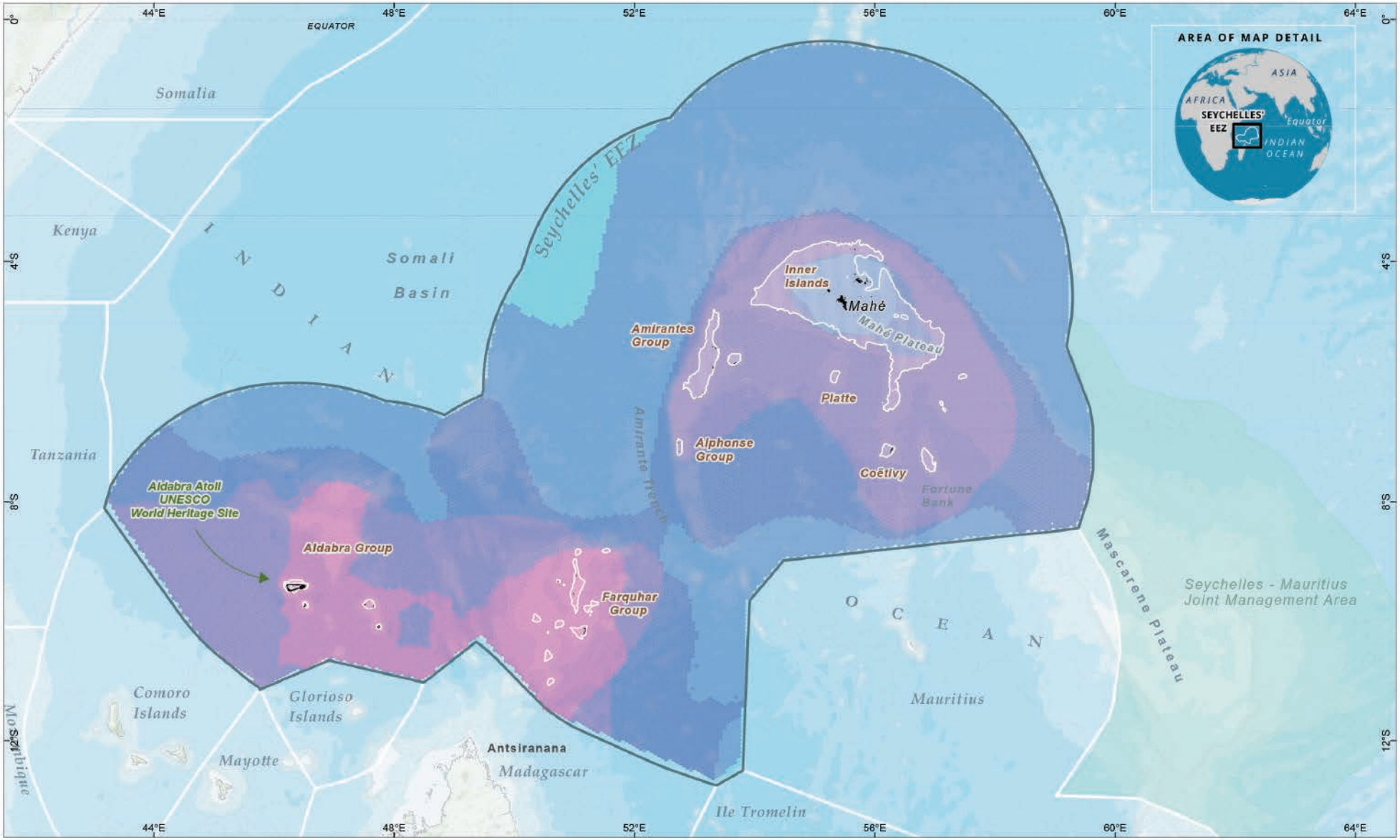
The following marine mammal species were identified as the highest conservation priority during the 2nd Seychelles Systematic Conservation Planning workshop: Dugong (*Dugong dugong*), sei whale (*Balaenoptera borealis*), Bryde's whale (*B. brydei*), blue whale (*B. musculus*), fin whale (*B. physalus*), short-finned pilot whale (*Globicephala macrorhynchus*), Risso's dolphin (*Grampus griseus*), pygmy sperm whale (Kogia breviceps), dwarf sperm whale (*K. sima*), humpback whale (*Megaptera novaeangliae*), killer whale (*Orcinus orca*), sperm whale (*Physeter macrocephalus*), and false killer whale (*Pseudorca crassidens*).



KEY FACTS

- In Seychelles, dugong are known to occur only within the lagoon at Aldabra.
- Seychelles does not have a significant whale watching industry unlike other places in the Indian Ocean, such as Réunion Island and Maldives.
- In 2024, a year-long study confirmed the presence of blue whales in Seychelles, which had not been observed in these waters for a decade.

MAP SCALE: *Data are presented at a scale of 1:9,100,000 (1 cm = 91 km)*


AREA OF MAP DETAIL
ASIA
AFRICA
SEYCHELLES' EEZ
Equator
INDIAN OCEAN
EQUATOR
Somalia
Kenya
Tanzania
Somali Basin
INDIAN OCEAN
Seychelles' EEZ
Inner Islands
Mahé
Mahé Plateau
Amirantes Group
Platte
Alphonse Group
Coëtivy
Fortune Bank
Amirante Trench
Aldabra Atoll UNESCO World Heritage Site
Aldabra Group
Farquhar Group
Seychelles - Mauritius Joint Management Area
Mascarene Plateau
OCEAN
Mauritius
Comoro Islands
Glorioso Islands
Mayotte
Mozambique
Antsiranana
Madagascar
Ile Tromelin
44°E
48°E
52°E
56°E
60°E
64°E
0°
4°S
8°S
12°S
NORTH
0
130
260 Km
FOR DISCUSSION PURPOSES ONLY
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Scale: 1:9,100,000
Map projection: Cylindrical Equal Area
Datum: WGS84
Data Sources: Seychelles MACCE, The Nature Conservancy, Aquamaps, ESRI, MarineRegions.org, GEBCO
Seychelles' Exclusive Economic Zone
200m Depth Contour
Other Exclusive Economic Zone
Modeled Marine Mammal Distribution
1 - 2
3 - 4
5
6
7 - 8
Number of Overlapping Species
Marine Mammal Diversity

Seabird Diversity

This map shows the diversity of seabird species at any given location throughout Seychelles' waters. The diversity calculation is the number of species with distributions that overlap at each location and range from 1–10 of the 18 species known to breed in Seychelles.

To create this map we combined the modeled distributions for nine seabird and one shorebird species in the GoS-UNDP-GEF Protected Area Project database and counted the number of overlapping distributions at each location. The maximum number of overlapping seabird distributions based on these model data is ten, occurring around the islands of Praslin, Aride, and D'Arros.

Seychelles has 60 species of seabirds and hosts some of the largest colonies in the world for 18 species. In the Outer Islands, large colonies of nesting seabirds occur on Aldabra, including Red-footed Booby (*Sula sula*) and the world's second largest breeding populations of Lesser and Greater Frigatebirds (*Fregata ariel* and *F. minor*). Much has been written about the seabirds of Seychelles and extensive studies and records have been maintained since the 1970s such as with the Seychelles Bird Records Committee (SBRC). There are important seabird foraging areas within Seychelles' waters, which has led to 16 BirdLife International Important Bird Areas (IBA), and informed three ecologically or biologically significant areas (EBSAs) and 51 WIOMER priority areas.

Seychelles is globally important geography for several species of seabirds including frigatebirds, boobies, and terns. In total, at least 60 marine and shoreline birds have been recorded in Seychelles including observations from shipping and fishing vessels (Seychelles Bird Records Committee). There are 18 species of seabirds that breed or nest in Seychelles archipelagos and an additional 28 marine, coastal, and shoreline birds. Seabird distributions referenced in this map include: Brown Noddy (*Anous stolidus*), Lesser Noddy (*A. tenuirostris*), White Tern (*Gygis alba*), Roseate Tern (*Sterna dougallii*), Black-Naped Tern (*S. sumatrana*), Masked Booby (*Sula dactylatra*), Brown Booby (*S. leucogaster*), Red-footed Booby (*S. sula*), Abbott's Booby (*Papasula abbotti*; extirpated), and Eurasian Curlew.

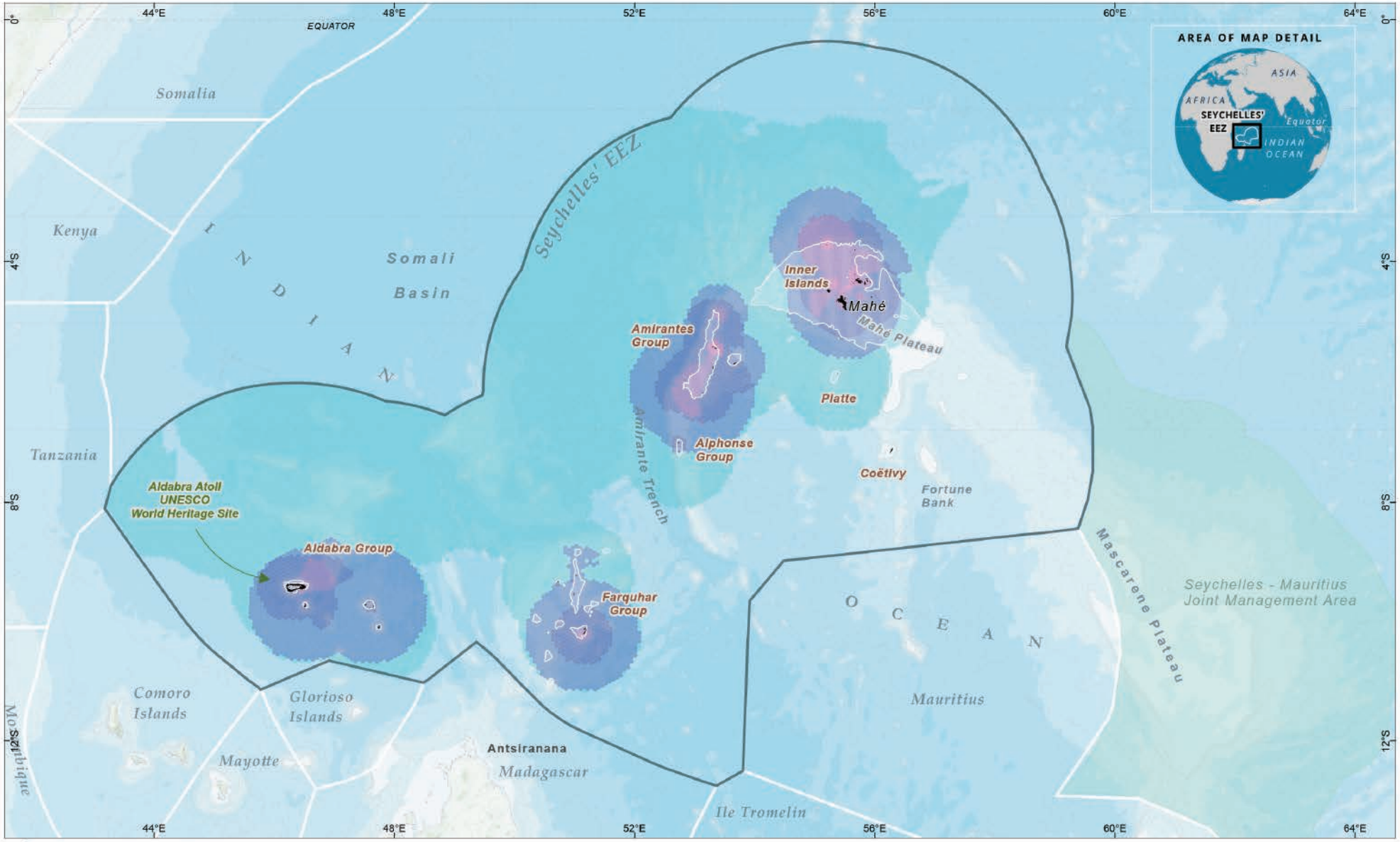


KEY FACTS

- Cosmoledo Atoll is the largest seabird colony in Seychelles.
- The Abbott's Booby once occurred in Seychelles and is now extirpated. The first specimen was collected by William Louis Abbott in 1892 and may have been from Assomption Island. Currently it's only known to breed within the Australian territory of Christmas Island.
- Frigatebirds cannot land on the water so they sleep while flying, enabling continuous flights of up to two months.
- Sooty Terns are locally abundant, and eggs have been part of a traditional Seychelles diet. Declines in Sooty Terns have been noted on some islands and egg harvest management was adapted.

Studies using telemetry technology are improving the understanding of the at-sea distribution of seabirds in Seychelles including the Sooty Tern (*Onychoprion fuscatus*).

MAP SCALE: *Data are presented at a scale of 1:9,100,000 (1 cm = 91 km)*


AREA OF MAP DETAIL
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Aldabra Atoll UNESCO World Heritage Site
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Farquhar Group
Mascarene Plateau
Seychelles - Mauritius Joint Management Area
Comoro Islands
Glorioso Islands
Mayotte
Antsiranana
Madagascar
Mauritius
Ile Tromelin
Mozambique
44°E
48°E
52°E
56°E
60°E
64°E
0°
4°S
8°S
12°S
NORTH
0
125
250 Km
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Seychelles' Exclusive Economic Zone
200m Depth Contour
Other Exclusive Economic Zone
Modeled Seabird Distributions
1 - 2
3 - 4
5 - 6
7
8 - 10
Number of Overlapping Species
Seabird Diversity

Shallow Seafloor Geomorphology

This map is adapted from the Millennial Coral Reef Habitat Assessment and additional mapping by Government of Seychelles United Nations Development Programme Global Environmental Facility (GoS-UNDP-GEF) project. It shows the distribution of coral reefs and geomorphological features in shallow water (≤ 200 m depth) across Seychelles archipelagos and island groups.

Between 1999 and 2002, a National Aeronautics and Space Administration (NASA) program used high-resolution satellite imagery to provide an exhaustive worldwide inventory of coral reefs. The Institute for Marine Remote Sensing (IMaRS) at the University of South Florida, funded by NASA's Oceanography Program, characterized, mapped and estimated the extent of shallow coral reef ecosystems in the main coral reef provinces of the world (e.g., Caribbean-Atlantic, Pacific, Indo-Pacific, Red Sea). The mapping highlighted similarities and differences between coral reef structures at a scale never before considered by traditional field-based studies. It provides a reliable data set for research studies and critical information for coral reef managers in terms of reef location, distribution, and extent, since this basic information is still of high priority for scientists and managers.

Seychelles has an estimated 300 species of coral, though no endemics have been described to date. Seychelles' coral reef cover is greater than the total land cover at 1,690 km^2, with only 40 km^2 of reefs within the Inner Islands. The majority of these coral reefs are located in the Outer Islands and lack exploration and description owing to their remote locations. The coral reefs of the Outer Islands are known to be highly varied and include true atolls, raised atolls, submerged or partially submerged atolls, and platform and bank structures. The Providence-Cerf Bank, covering 300 km^2 and stretching 40 km between the islands of Providence and Cerf, is probably the single largest reef system in Seychelles. The reefs around the Inner Islands are either granitic reefs consisting of granite-based boulders with coral growth, or carbonate reefs, which can further be classified as fringing, platforms, or atolls.

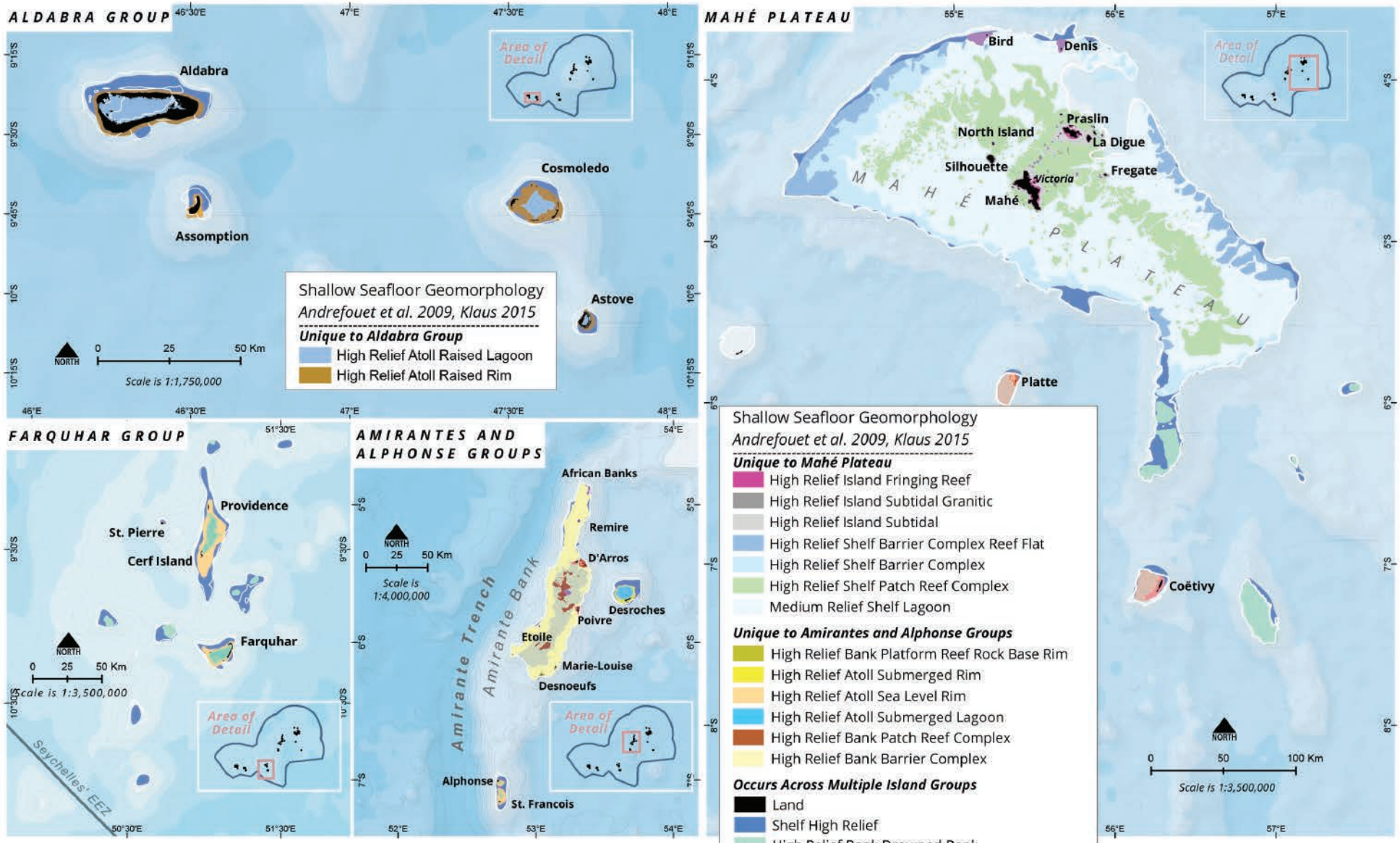


KEY FACTS

- 26 shallow-water habitat types have been mapped on the Seychelles 200-m depth shelf areas.
- Coral reefs are one of the most endangered habitat types on the planet—they cover less than 0.1% of the Earth's seabed yet support more than 25% of all other marine species.

These data sets were used as a proxy for shallow water habitat diversity and were a biodiversity target in the GoS-UNDP-GEF project's analyses (2015). These data were also used in subsequent Seychelles Marine Spatial Plan biodiversity representation analyses to support the development of alternative zoning scenarios.

***MAP SCALE:** Data are presented at varying scales. Mahé Plateau: 1:3,000,000 (1 cm = 30 km); Amirantes and Alphonse Groups: 1:4,000,000 (1 cm = 40 km); Farquhar Group: 1:3,580,000 (1 cm = 35.8 km); Aldabra Group: 1:1,730,000 (1 cm = 17.3 km)*



Shallow Seafloor Geomorphology

Seagrass Density

This map shows seagrass distribution across the Seychelles Exclusive Economic Zone (EEZ) and is classified as low-, medium-, or high-density occurrence.

Globally, seagrass meadows are disappearing at a rapid rate with physical disturbances being one of the major drivers of this habitat loss. Disturbance can fragment the seagrass bed, reduce shoot density, canopy height, and coverage, and potentially cause permanent habitat loss. Despite being such a widespread issue, knowledge of how such small-scale change affects the spatial distribution and abundances of species that depend on seagrasses remains limited.

Eight seagrass species are found in Seychelles. Around the granitic Inner Islands, the seagrass beds extend up to 300 m from the coast and reach a depth of 20 m. Most of the Outer Islands have extensive seagrass beds, particularly Aldabra, Astove, Cosmoledo and Farquhar. Limited studies on seagrass were carried out in Seychelles until 2015, with increasing studies in the last five years. The seagrass species found in Seychelles are: *Cymodocea rotundata, C. serrulata, Enhalus acoroides, Halodule uninervis, Halophila ovalis, Syringodium isoetifolium, Thalassia hemprichii, and Thalassodendron ciliatum*.

Seagrass beds provide ideal habitats for many species including sea turtles and invertebrates.

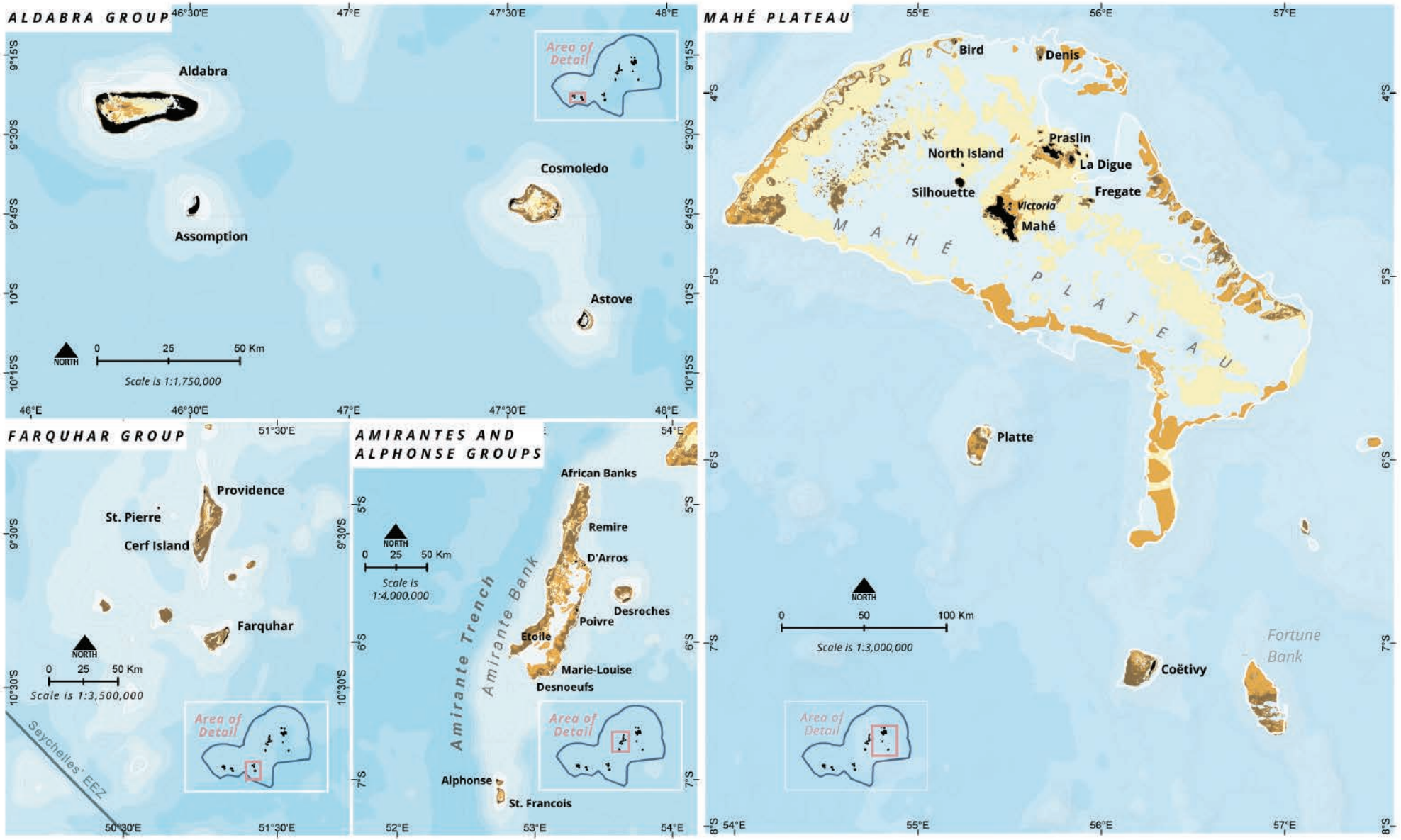
Data for seagrasses were obtained from Government of Seychelles Ministry of Land Use and Housing (MLUH) and augmented by the GoS-UNDP-GEF 2015 project through a process of satellite image interpretation and classification. The results were not extensively ground-truthed and are unverified. For the Seychelles MSP, these were the best data available for seagrass at that time. Since 2020, new mapping is informing a target of protecting 100% of all seagrasses in Seychelles.



KEY FACTS

- Seagrass meadows are among the most productive habitat types on Earth. In the last 40 years, approximately one-third of seagrass meadows have been lost globally.
- Seagrasses offer food, shelter, and essential nursery areas to commercial and recreational fish species.
- Seagrasses provide key ecosystem services to Seychelles including coastal protection, carbon sequestration, and foraging and nursery habitat for numerous species.
- One of the world's largest contiguous seagrass meadows is located at Saya de Malha Bank in the Joint Management Area of the Extended Continental Shelf, adjacent to the Seychelles EEZ.

MAP SCALE: *Data are presented at varying scales. Mahé Plateau: 1:3,000,000 (1 cm = 30 km), Amirantes and Alphonse Groups: 1:4,000,000 (1 cm = 40 km), Farquhar Group: 1:3,580,000 (1 cm = 35.8 km), Aldabra Group: 1:1,730,000 (1 cm = 17.3 km)*



FOR DISCUSSION PURPOSES ONLY
Prepared for: Seychelles MSP
Prepared on: 26 February 2024
Prepared by: Spatial Support Systems, LLC
Scale: Varies
Map projection: UTM Zones 38-40 South
Datum: WGS84
Data Sources: Seychelles MACCE, Spencer et al. 2008, The Nature Conservancy, ESRI, GEBCO

Seychelles' Exclusive Economic Zone
200m Depth Contour

Seagrass Density
(Spencer et al. 2009)
Low
Medium
High

Seagrass Density

Wetland and Mangrove Distribution

This map shows the minimum distribution of wetland and mangrove habitats across the Seychelles Exclusive Economic Zone (EEZ). Wetlands and mangroves are combined into a single map layer to show overall distribution, and data are presented as presence/absence through 2015.

Mangroves were once very common on Mahé and are now much reduced since before the 1970s. They are not harvested in Seychelles, however, are sometimes cleared to unclog main river mouths. Small- and large-scale reclamation is currently the main threat to mangrove areas in Seychelles. Changes in sediment quality can also adversely affect mangrove forests. Mangroves are important ecosystems for vertebrates and invertebrates.

Existing data for seagrasses, wetlands, and mangroves were obtained from Government of Seychelles-MLUH. These data covered a limited extent and were augmented by GoS-UNDP-GEF 2015 through a process of satellite image interpretation and classification. These classification results are currently unverified.

Mangrove forests and coastal wetlands occupy on 29 km2. There are eight species of mangroves in Seychelles, all fairly common on the granitic islands; all can be found in the Port Launay Ramsar site on Mahé (*Rhizophora mucronata, Bruguiera gymnorhiza, Ceriops tagal, Sonneratia alba, Lumnitzera racemosa, Avicennia marina, Xylocarpus granatum, and X. moluccensis*). In the Outer Islands, extensive mangrove forests are found in the lagoons of Aldabra and Cosmoledo, with some on St François, Farquhar, Poivre, St Joseph, Cosmoledo, and Cerf.

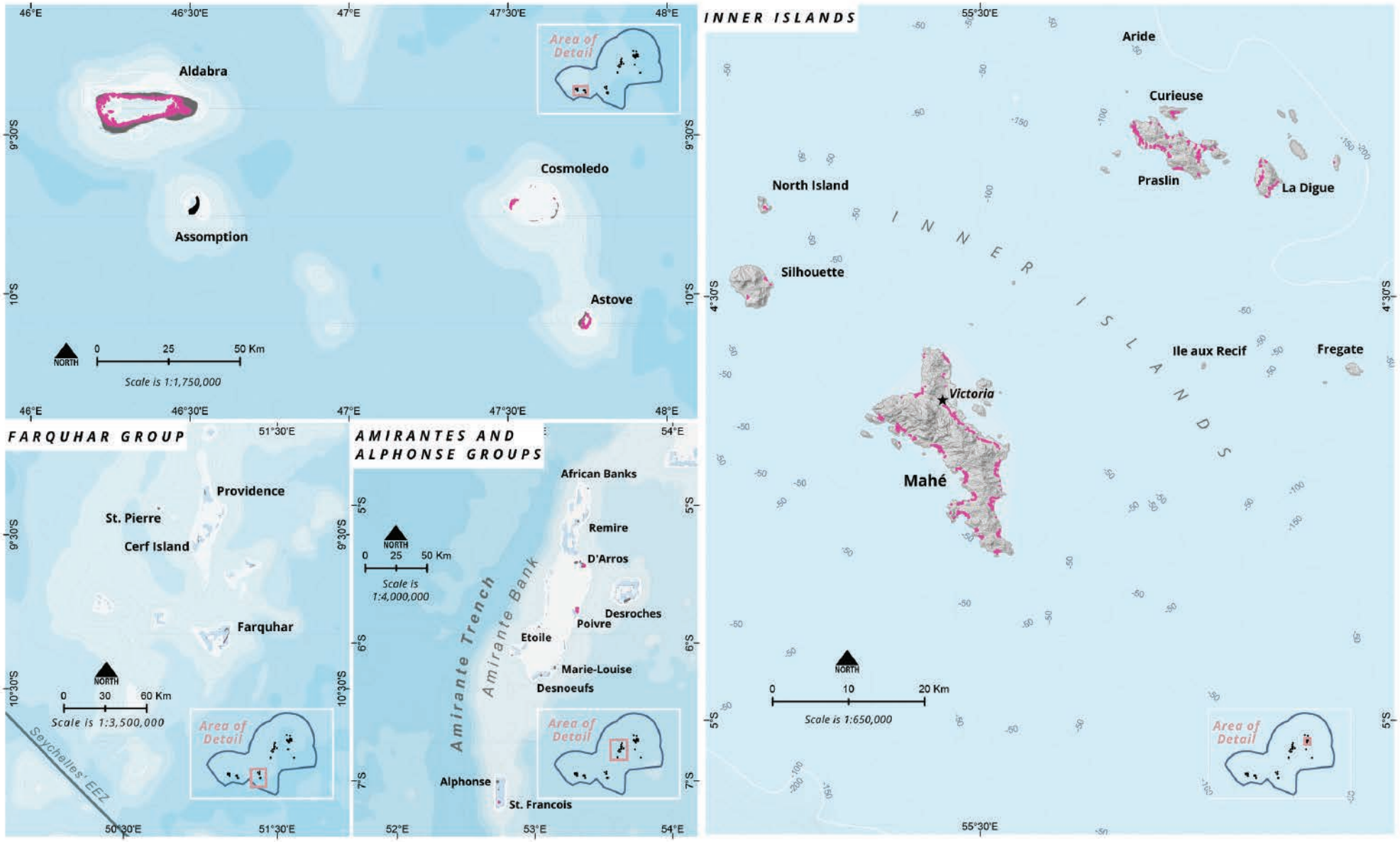
Wetlands cover about 1% of the land area of the granitic islands, or approximately 206 ha, with most of this on Mahé.



KEY FACTS

- Mangroves and wetlands are critical for climate change adaptation and mitigation because they provide coastal protection functions, soil stabilisation, sediment containment, and reduce the severity of impacts from storms and rising sea levels.
- Mangroves provide habitat for a wide array of species including as nursery and feeding habitat to fishes.
- Mangroves have high potential for carbon sequestration and storage.
- Wetlands can be classified into two main types based on their height above sea level. High-altitude wetlands are freshwater and occur in depressions above 200 m elevation. Coastal wetlands are brackish water and can be completely or temporarily isolated from the sea.

MAP SCALE: *Data are presented at varying scales. Mahé Plateau: 1:3,500,000 (1 cm = 35 km), Amirantes and Alphonse Groups: 1:4,000,000 (1 cm = 40 km), Farquhar Group: 1:3,500,000 (1 cm = 35 km), Aldabra Group: 1:1,750,000 (1 cm = 17.5 km)*



FOR DISCUSSION PURPOSES ONLY
Prepared for: Seychelles MSP
Prepared on: 26 February 2024
Prepared by: Spatial Support Systems, LLC
Scale: Varies
Map projection: UTM Zones 38-40 South
Datum: WGS84
Data Sources: Seychelles MACCE, Gos-MLUH, Klaus 2015, The Nature Conservancy, ESRI, MarineRegions.org, GEBCO

Seychelles' Exclusive Economic Zone
200m Depth Contour
Wetlands and Mangroves

Wetland and Mangrove Distribution



4 Marine Uses and Activities

Tourism and Recreation

Seychelles relies heavily on a sustainable Blue Economy, especially for tourism and fisheries. Tourism is one of the two main pillars of the Seychelles economy. Much of the tourism is coastal or marine oriented and attracts more than 300,000 visitors per year. Seychelles' beaches, coral reefs, abundant marine life, and sport fisheries are primary draws for tourists year-round.

Seychelles is a world-renowned destination for sport fishing, diving, snorkeling, and beaches. Tourism activities on coral reefs alone are responsible for generating approximately USD $51.5 million in tourism expenditures annually. Accessible marine transportation infrastructure such as ferries, marinas, and boat charters facilitate these and other tourism activities.

The tourism industry grew rapidly in the 1970s with the opening of the Seychelles International Airport and by 2005 this sector accounted for approximately 20 percent of GDP. In 2015, tourism accounted for 36 percent of GDP and continued to grow. Seychelles' tourism sector is primarily developed for nature-based tourism (eco-tourism), and mass tourism is not a significant feature. The UNESCO World Heritage Site on Praslin and numerous beaches make Seychelles a destination tourism location.

Seychelles visitors are particularly interested to see sea turtles and coral reefs. Whale sharks aggregate seasonally in Seychelles' waters from August to October. To minimise tourism impacts to marine species, national guidelines have been and are being developed. Tourism activities have impacted the environment in ways such as boat anchors damaging reefs, divers and snorkelers breaking or damaging corals, and disturbance/stress factors caused by human presence in sensitive environments.

Fishing

The fisheries sector is one of the two main pillars of the Seychelles economy (the other is tourism; see Tourism) and there are three main sub-sectors: artisanal, semi-industrial, and industrial fisheries. In 2005, approximately 30% of the Seychelles GDP was generated by fisheries and accounted for 97% of Seychelles visible exports. Fisheries stocks in the coastal areas around the granitic islands are believed to be fully and/or locally over-exploited. Concerns have been raised particularly regarding the decreased abundance of sharks, lobsters, sea cucumbers, and marine molluscs. Bycatch from the artisanal fishery is reported to be minimal, however, bycatch from the industrial long-line and purse seine fisheries is a concern and is measured in thousands of tonnes. Several fishing methods are illegal in Seychelles including the use of explosives and dynamites, bottom trawling, spear guns, and pelagic drift nets.

Approximately two dozen sea cucumber species are exploited in the Seychelles artisanal and subsistence fisheries. Surveys on sea cucumber densities in the Amirantes and on the Mahé Plateau in 2004 showed that shallow-water, high-value species are overexploited.

Fishing alone accounts for more than 8 percent of the GDP and about one-sixth of total employment in the country. Fish is an important staple source of food and national food security is central to management of fisheries and ecosystems. Fish consumption in Seychelles is among the highest per capita in the world.

Most of the fish that is consumed locally comes from the small-scale fisheries on the Mahé Plateau, with fisheries expanding to the Amirantes Group for sea cucumbers and demersals. The demersal fisheries harvest a diversity of species using hook and line or traps. There are inshore fisheries using small vessels with outboards and they typically use hook and line or traps. The other small-scale fishing vessels in Seychelles include whalers and schooners. The target catch includes Bourgeois (Emperor red snapper), Job fish, Maconde or Brownspotted Grouper, Plat or yellow-spotted trevally, and Kapten or blue-lined large eye bream. Secondary species that are targeted include the Vara or two-spot red snapper, Balo or Bludger, Laskar or yellowtail emperor and Bordmar or humphead snapper.

All commercial fishing vessels are licensed by the Seychelles Fisheries Authority (SFA) and the national trend is towards full vessel monitoring systems or electronic monitoring. The management of fisheries is of high importance in all waters of Seychelles and especially on the Mahé Plateau where declines in productivity, catch, and fishing incomes have been a concern for decades.

Offshore, local semi-industrial longline vessels fish away from the Mahé Plateau and have a fishing range from the Coco de Mer Ridge in the north, to Fortune Bank in the southeast, and in some years to the waters surrounding the Outer Island groups. Operating only in deep waters greater than 200 m, the industrial fisheries targeting tuna and other pelagic species operate under partnership or license agreements with the Government of Seychelles.

Petroleum Exploration

Exploration for hydrocarbons in Seychelles began in 1969 and is ongoing. By 1994 there were 23,150 km of seismic profiles and 27,911 km of aeromagnetic lines calculated. Petroleum exploration, development, and production are governed by legislation and petroleum agreements. Areas of Interest polygons have been identified in Seychelles waters and the geological surveys for petroleum also support Seychelles' understanding for the limits of the continental shelf.

Reclamation and Mining

Reclamation, mining, and sedimentation are three interconnected uses and threats in the Inner Islands. The east coast of Mahé has undergone extensive reclamation since the early 1970s to meet development needs for new land at coastal elevations, including an international airport.

In Seychelles, mining supports construction and development and includes extracting granite rock from the Inner Islands, coral aggregates from the sea floor, and in the past, gravel from river beds. Sand and rubble extracted from the coastal plateau between Mahé, Praslin, and La Digue islands was used in construction but this demand is now being met using coral materials from reclamation projects on Mahé and Praslin.

KEY FACTS

- Tourism revenue contributes one-third of the national workforce and 26% to GDP.
- Seychelles boasts pristine beaches renowned for their powdery white sands and crystal-clear turquoise waters, creating an idyllic setting for sun-seekers, and attracting tourists for snorkeling, swimming, and simply enjoying the stunning coastal landscapes.
- SCUBA diving and snorkeling are major tourism draws to Seychelles, predominantly near coral reef habitats, drawing attention to the crucial need for preserving these environments in optimal condition.
- Seychelles is a world-renowned sport fishing destination for anglers and targets groupers, snappers, barracuda, sailfish, wahoo, rainbow runner, yellowfin tuna, job fish, dorado, and marlin.
- Sport fishing occurs across Seychelles' archipelagos on and off shelf waters, with opportunities for exclusive, boutique fishing experiences in the Outer Islands—Cosmoledo, Farquhar, Alphonse, and the Amirantes Group are world-class fly-fishing destinations in Seychelles.
- Sport fishing competitions are hosted every year by the Seychelles Sport Fishing Club (SSFC) and include record-setting catches validated by the International Game Fishing Association. The Sport Fishing Club supports a billfish tagging program to increase understanding on the distances that billfish travel and their distribution in the Western Indian Ocean.

Artisanal and Semi-industrial Fishing Effort

This map shows the results of spatial analyses that examined known fishing vessel locations from Seychelles' Vessel Monitoring System (VMS) database, 2009–2013. The analysis highlighted areas that were likely the most important artisanal and semi-industrial fishing grounds during the four years analysed. Semi-industrial and artisanal fishing vessel locations were summarized using a planning units approach at a resolution of 1 km² and Marxan software was utilized to identify priority areas that consistently saw relatively highest use.



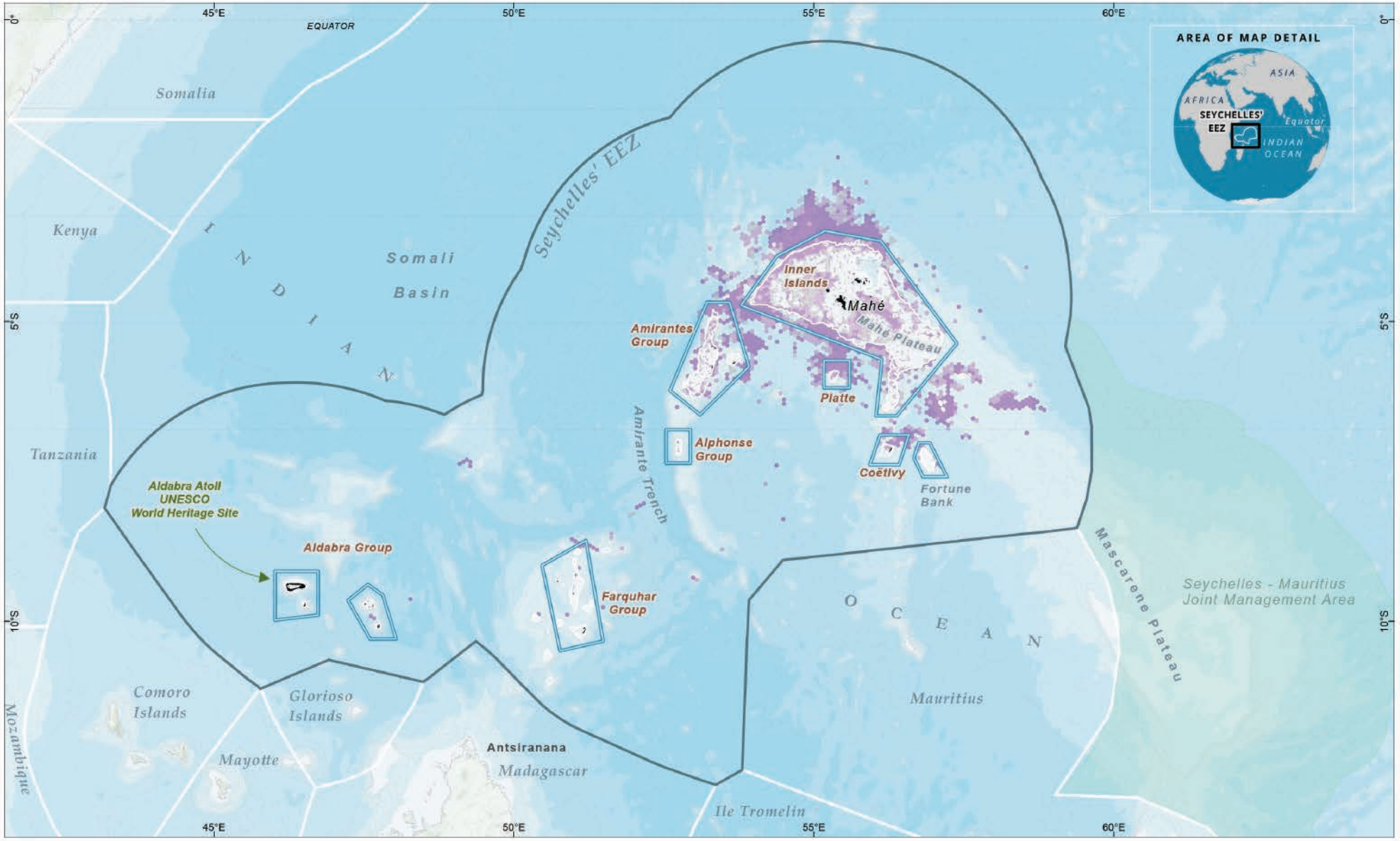
On recommendation from Seychelles Fishing Authority and Fishing Boat Owners Association, VMS data from 2010 were removed from the artisanal fishing database because fishing locations were significantly different than usual when all boats were restricted to the waters on the Mahé Plateau, south of the Inner Islands. As a result, semi-industrial vessel locations used in these analyses were collected in 2009–2013, whereas artisanal fishing vessel locations used in these analyses were collected in 2009 and 2011–2013.

Vessel locations recorded when the vessels were traveling at "fishing speeds" were used as a proxy for fishing effort. Speed is collected once per hour from the VMS and speeds of 3 and 4 m/s were used to represent artisanal and semi-industrial fishing activity, respectively. Marxan software was used to identify the selection frequency across all years.

KEY FACTS

- Fishing activity in Seychelles has been affected by piracy across the Exclusive Economic Zone (EEZ), and piracy activity was particularly high throughout the Western Indian Ocean in 2008–2009.
- Fishing effort was analysed separately within each of five sub-regions of the EEZ.
- Analyses were further stratified to deep vs. shallow (≤ 200 m) water to ensure that key areas in both of these realms were highlighted.
- There are more than ten different fishing gear types used in the artisanal fishery.
- Semi-industrial fishing is primarily done off the Mahé Plateau.
- The fishers are organised in associations on Mahé, Praslin, and La Digue islands. In 2018, a project started on Praslin, funded by Seychelles Conservation & Climate Adaptation Trust (SeyCCAT), to examine a new co-management area to assist with concerns of overfishing during the Southeast Monsoon season.

MAP SCALE: *Data are presented at a scale of 1:9,100,000 (1 cm = 91 km)*



NORTH 0 125 250 Km

FOR DISCUSSION PURPOSES ONLY
Prepared for: Seychelles MSP
Prepared on: 26 February 2024
Prepared by: Spatial Support Systems, LLC
Scale: 1:9,100,000
Map projection: Cylindrical Equal Area
Datum: WGS84
Data Sources: Seychelles MACCE, SFA, SPA, The Nature Conservancy, ESRI, MarineRegions.org, GEBCO

- Seychelles' Exclusive Economic Zone
- 200m Depth Contour
- Other Exclusive Economic Zone
- Fishing by Foreign Vessels Prohibited

Marxan Selection Frequency Across All Years
Seychelles Fishing Authority 2009-2013
- *Lowest*
- *Highest*

Artisanal and Semi-Industrial Fishing Effort

Semi-industrial Fishing Effort: Pelagic Longline

This map illustrates patterns of tuna catch by the domestic semi-industrial longline fishery from 2012–2016. The average total catch was analysed alongside the variability of the annual catch over time (standard deviation) and these two calculations were combined to generate a spatial and temporal map of total catch throughout the Exclusive Economic Zone (EEZ).

Fishing vessel speed was collected once per hour from the Vessel Monitoring System (VMS) and speeds of 4 m/s were used to threshold the VMS data points in the analysis to indicate fishing locations. The locations when the vessels were traveling at "fishing speeds" were used as a proxy for fishing effort. Locations of fishing effort were further analyzed and weighted by the amount of catch (measured in kg of fish per unit area), creating spatial densities.

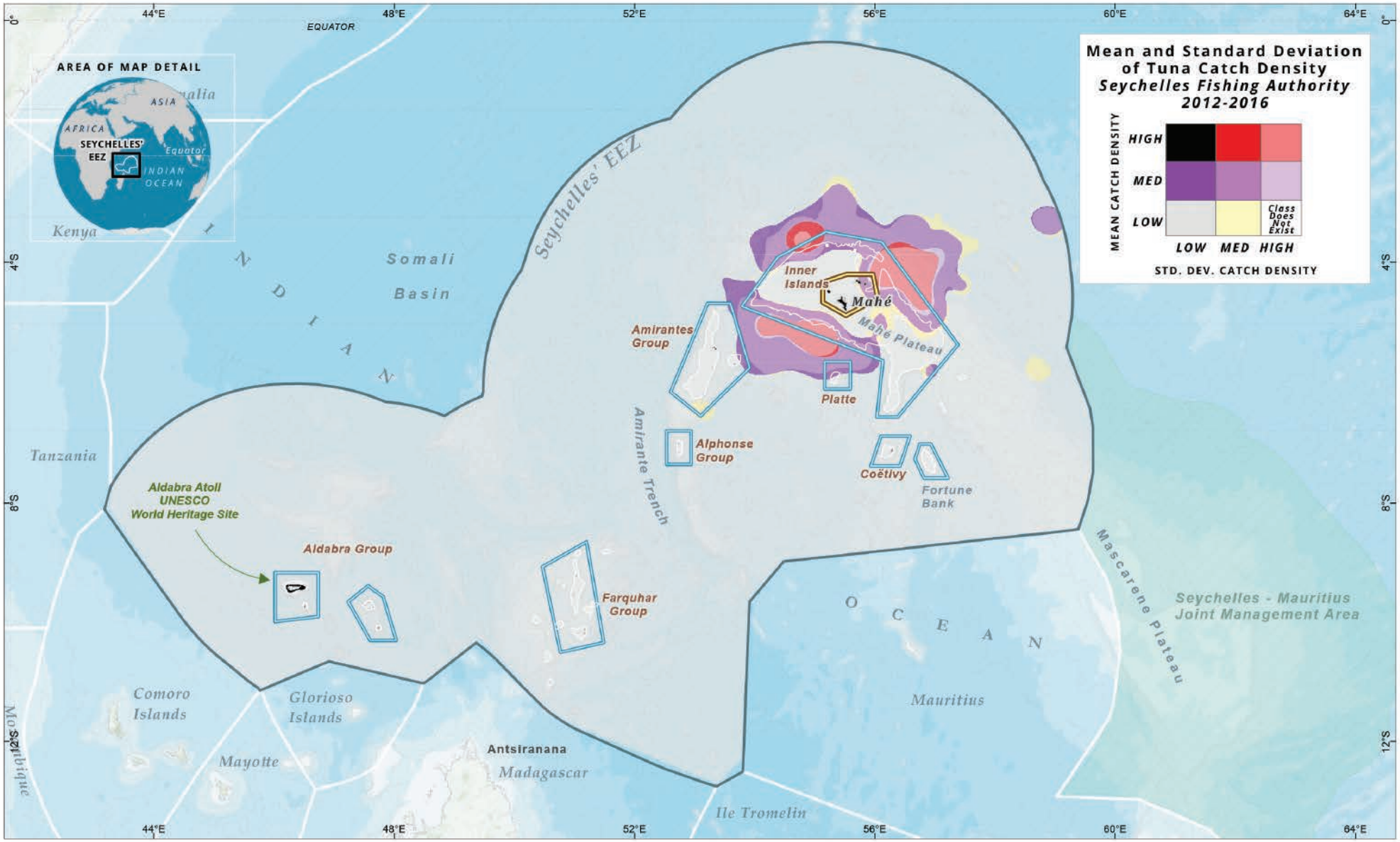
The spatial densities identified fishing areas with high densities of catch (many kilograms of fish per unit area). Annual catch density maps were combined for 2012–2016 to calculate the average value and standard deviation (i.e., variability) for each location for a five-year period. These two measures identify areas that consistently have a low, medium, or high catch, as well as areas that yielded medium or high catch, but not as consistently from year to year.



KEY FACTS

- Seychelles' semi-industrial pelagic longline vessels typically operate along the edge of the Mahé Plateau, where relatively shallow waters drop off to abyssal depths.
- Areas of steep topographic gradients facilitate the upwelling of nutrient-dense, cold waters, and therefore these areas are highly productive for marine life.

MAP SCALE: *Data are presented at a scale of 1:9,100,000 (1 cm = 91 km)*



NORTH 0 125 250 Km

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Prepared for: Seychelles MSP
Prepared on: 26 February 2024
Prepared by: Spatial Support Systems, LLC
Scale: 1:9,100,000
Map projection: Cylindrical Equal Area
Datum: WGS84
Data Sources: Seychelles MACCE, SFA, SPA, The Nature Conservancy, ESRI, MarineRegions.org, GEBCO

- Seychelles' Exclusive Economic Zone
- 200m Depth Contour
- Other Exclusive Economic Zone
- Fishing by Foreign Vessels Prohibited
- High Seas
- Port of Victoria Boundary

Semi-Industrial Fishing Effort: Pelagic Longline

Industrial Tuna Fishing Catch: Purse Seine

The next three maps illustrate patterns of tuna catch by the industrial purse seine fishery in Seychelles waters, 2012–2016. Logbook data recorded fishing locations on for "free school" (fish swimming freely) or schools of fish attracted to floating objects. The fisheries data were provided such that vessel identifiers were confidential, and data were mapped in aggregate so that individual fishing locations were not shown.

The industrial purse seine maps represent a synthesis of analyses that quantified the spatial patterns of catch by Seychelles' industrial fisheries. Catch locations were analysed in terms of their spatial densities and further weighted by the catch data to identify areas with high densities of catch, meaning many kilograms of fish per unit area. Six annual catch density maps were then combined to calculate the average value for each location and the variability (standard deviation) across all years. This analysis was used to visualize and identify areas that consistently have a low, medium, or high catch (i.e., low, medium, or high catch density with little variability through time) and areas that yielded medium or high catch but not consistently from year to year.

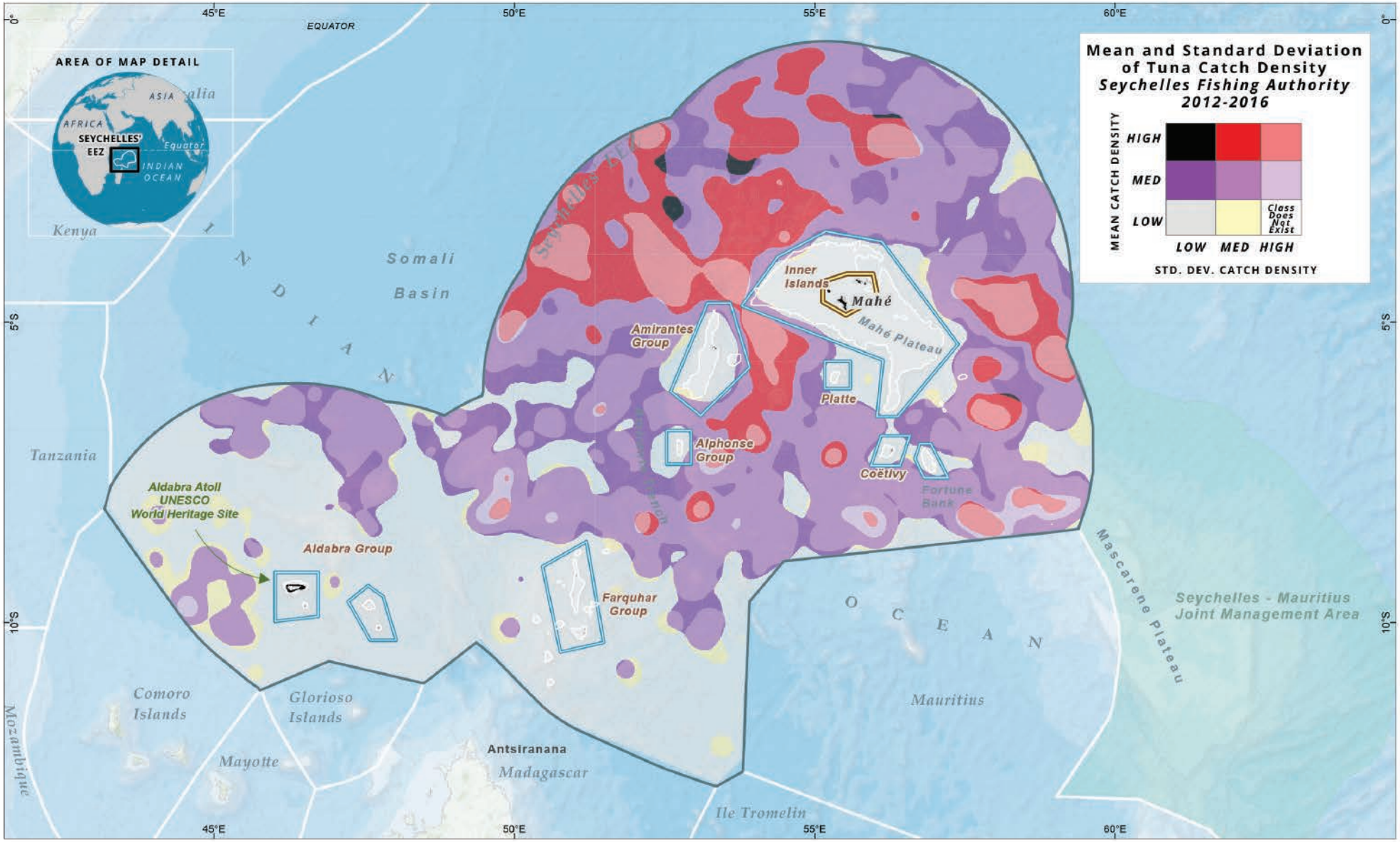
Industrial fishing vessels are prohibited from fishing in eight areas surrounding each of Seychelles' archipelagos, Fortune Bank, Amirantes Group, and the entire Mahé Plateau. These areas contain shallow waters less than 200 m deep.

Purse seine fishing sets on floating objects include drifting fish aggregating devices (dFADs) and other objects small or large, low- or high-tech. Some dFADs are wooden pallets tied with rope and netting. Others contain solar panels and geolocators. A supply vessel accompanies a purse seine vessel to retrieve dFADs that move with the prevailing currents. FADs might drift into shallow waters, potentially damaging sensitive corals and other species. If not retrieved, dFADs can run aground or wash ashore. Purse seine sets that are "free school" do not use floating objects and target high-grade and high-value adult fish, especially yellowfin tuna.



KEY FACTS

- The average annual catch of tuna by purse seine vessels is an order of magnitude greater than pelagic longline vessels, 10,000 versus 100,000 tonnes.
- Tuna intended for canning are the target catch of the industrial purse seine fishery.
- As of 2018, more than 10,000 dFADs were estimated to be circulating in the Western Indian Ocean, north of the equator. Individual dFADs can range in value from USD $100 to $10,000.
- Tuna and dolphin regularly associate due to feeding on the same or similar prey and depths.
- Free school fishing techniques result in less bycatch than fishing using floating objects but have higher concerns for overfishing.

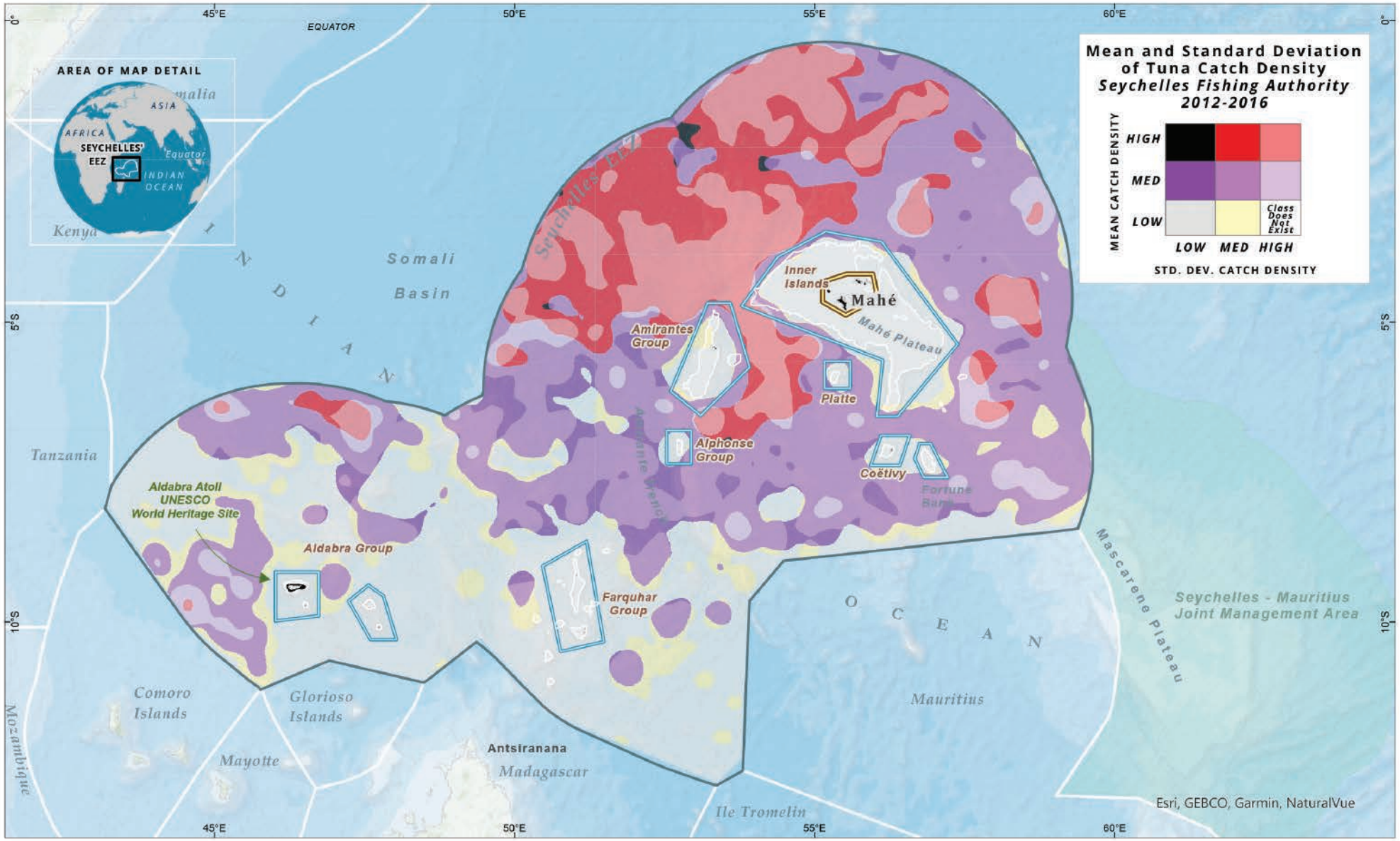


NORTH 0 125 250 Km

FOR DISCUSSION PURPOSES ONLY
Prepared for: Seychelles MSP
Prepared on: 26 February 2024
Prepared by: Spatial Support Systems, LLC
Scale: 1:9,100,000
Map projection: Cylindrical Equal Area
Datum: WGS84
Data Sources: Seychelles MACCE, SFA, SPA, The Nature Conservancy, ESRI, MarineRegions.org, GEBCO

- Seychelles' Exclusive Economic Zone
- 200m Depth Contour
- Other Exclusive Economic Zone
- Fishing by Foreign Vessels Prohibited
- Areas Beyond National Jurisdiction (ABNJ)
- Port of Victoria Boundary

Industrial Tuna Fishing Catch: Purse Seine All Sets



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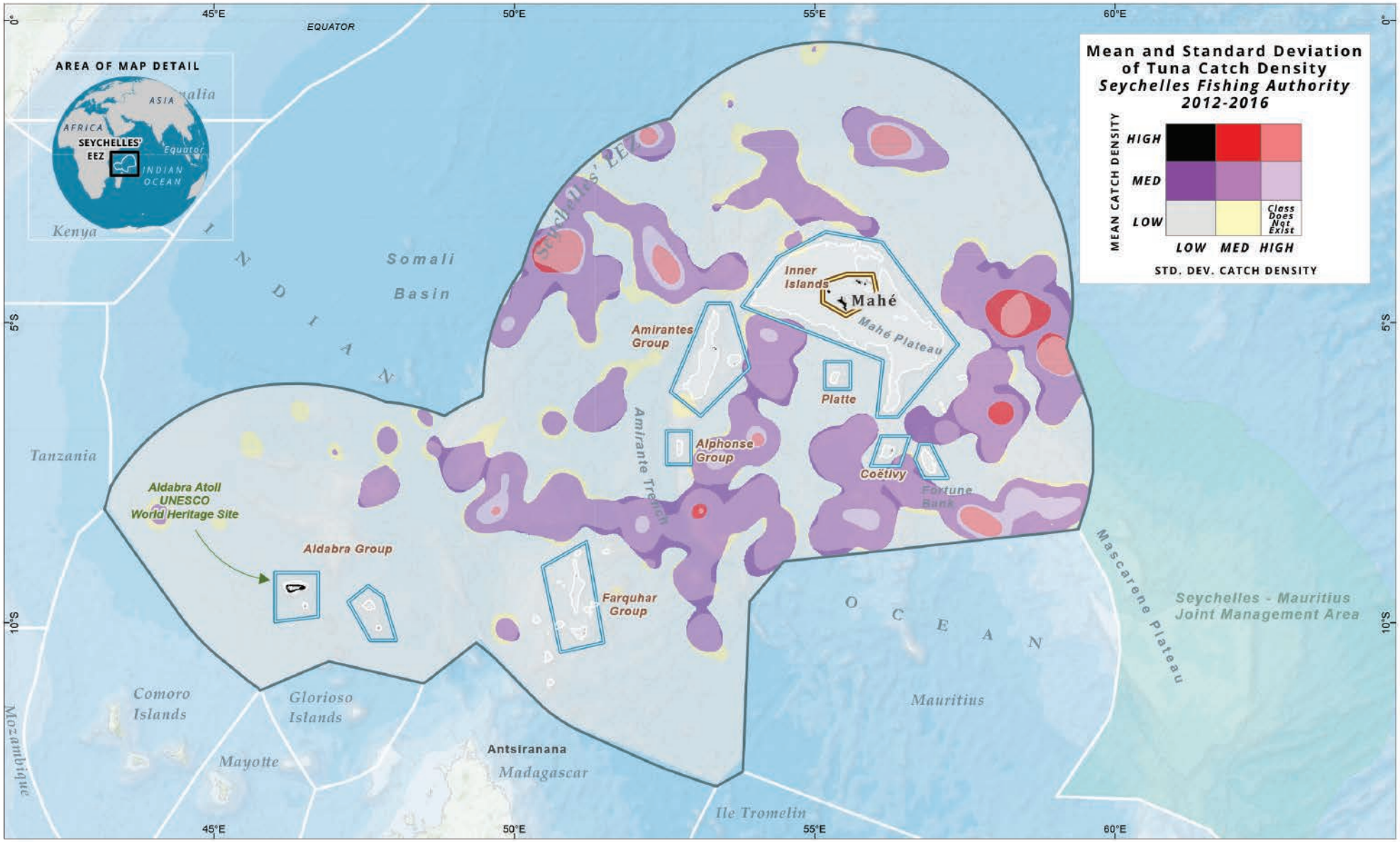
- Seychelles' Exclusive Economic Zone
- 200m Depth Contour
- Other Exclusive Economic Zone
- Fishing by Foreign Vessels Prohibited
- Areas Beyond National Jurisdiction (ABNJ)
- Port of Victoria Boundary

Industrial Tuna Fishing Catch: Purse Seine Floating Objects



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Prepared for: Seychelles MSP
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Prepared by: Spatial Support Systems, LLC
Scale: 1:9,100,000
Map projection: Cylindrical Equal Area
Datum: WGS84
Data Sources: Seychelles MACCE, SFA, SPA, The Nature Conservancy, ESRI, MarineRegions.org, GEBCO

Industrial Tuna Fishing Catch: Purse Seine Free School

Industrial Tuna Fishing Catch: Pelagic Longline

This map shows the average total catch by the industrial longline fleet operating in the Exclusive Economic Zone (EEZ) between 2012–2016. The average total catch was analysed with the variability of the annual catch over time (standard deviation) and these two calculations were combined to generate a spatial and temporal map of total catch over time throughout the Exclusive Economic Zone (EEZ).

The industrial purse seine maps represent a synthesis of analyses that quantified the spatial patterns of catch by Seychelles' industrial fisheries. Catch locations were analysed in terms of their spatial densities and further weighted by the amount of the catch to identify areas with high densities of catch, meaning many kilograms of fish per unit area. Six annual catch density maps were then combined to calculate the average value for each location and the variability (standard deviation) across all years. Combining average catch density and standard deviation of catch density allowed the SMSP stakeholders to visualize and identify areas that consistently have a low, medium, or high catch (i.e., low, medium, or high catch density with little variability through time), as well as areas that yielded medium or high catch, but not as consistently from year to year.

Pelagic longline fishing is primarily done to target high-value tuna for Asian sashimi and sushi markets. The target species is yellowfin tuna (*Thunnus albacares*) and more than 15 other species are also reported caught, including: albacore (*T. alalunga*), southern bluefin (*T. maccoyii*), and bigeye (*T. obesus*) tunas, marlins, sharks, sailfish (*Istiophorus platypterus*), and swordfish (*Xiphias gladius*).

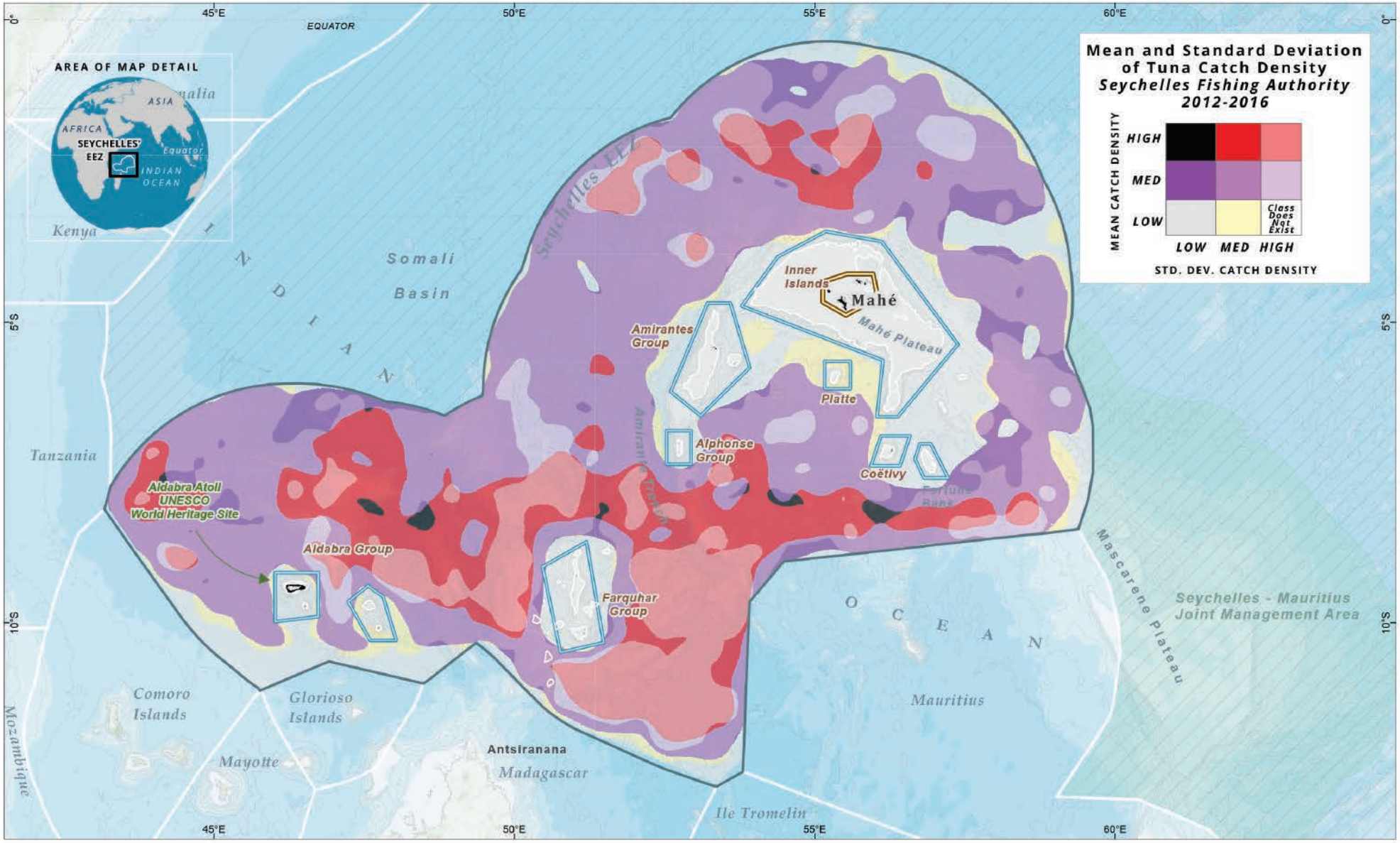
Industrial fishing vessels are not permitted to fish within eight designated zones under the Seychelles Fisheries Act. These prohibited areas surround each of Seychelles' archipelagos, Fortune Bank, Amirantes Group, and the entire Mahé Plateau. These areas contain shallow waters less than 200 m deep.



KEY FACTS

- The industrial longline fishery catches approximately 10,000 tonnes of tuna per year in the EEZ.
- Foreign-owned industrial pelagic longline vessels have individual license agreements with Seychelles government to access Seychelles waters to fish for tuna.
- There are 40 Taiwanese longline vessels that fish in Seychelles waters, and 15 of them are Seychelles-flagged.

MAP SCALE: *Data are presented at a scale of 1:9,100,000 (1 cm = 91 km)*



NORTH 0 125 250 Km

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Prepared for: Seychelles MSP
Prepared on: 26 February 2024
Prepared by: Spatial Support Systems, LLC
Scale: 1:9,100,000
Map projection: Cylindrical Equal Area
Datum: WGS84
Data Sources: Seychelles MACCE, SFA, SPA, The Nature Conservancy, ESRI, MarineRegions.org, GEBCO

- Seychelles' Exclusive Economic Zone
- 200m Depth Contour
- Other Exclusive Economic Zone
- Fishing by Foreign Vessels Prohibited
- Areas Beyond National Jurisdiction (ABNJ)
- Port of Victoria Boundary

Industrial Tuna Fishing Catch: Pelagic Longline

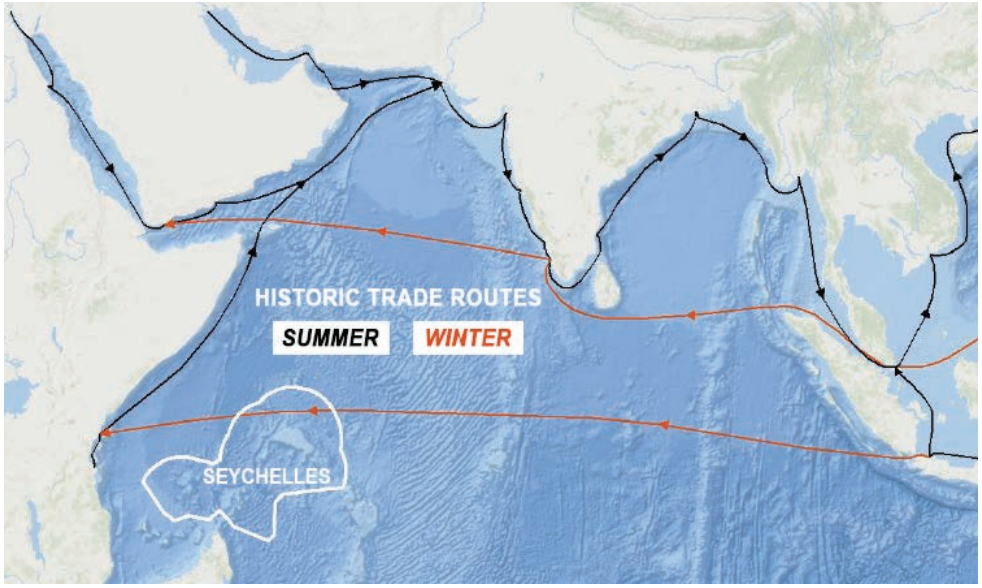
International Shipping Traffic

The map shows areas with the highest intensity shipping traffic passing within or through Seychelles waters. The western, southern, and central portions of the Exclusive Economic Zone (EEZ) all represent important shipping corridors in the Indian Ocean for traffic coming to or from the African mainland, Asian, Indian, and Atlantic markets. Ship location data shown on this map were extracted from a global scale shipping activity data set created by the National Center for Ecological Analysis and Synthesis (NCEAS).

The Western Indian Ocean has been a key region for East–West trade through history. Commercial shipping activity can have multiple impacts to marine ecosystems including ship strikes of large marine animals, pollution, and a risk of ship groundings or sinkings.

The map summarises data collected during a 13-month period (October 2004 – October 2005) as part of the World Meteorological Organization Voluntary Observing Ships (VOS) Scheme. This time period had the most ships with vetted protocols and thus provides the most representative estimate of global ship locations.

The VOS program is voluntary and thus much commercial shipping traffic is not captured by these data. Therefore, our estimates of the impact of shipping are limited to locations and types of ships engaged in the program. In particular, high-traffic locations may be strongly underestimated, although the relative impact on these areas versus low-traffic areas appears to be well captured by the available data, and areas identified as without shipping may actually have low levels of ship traffic.

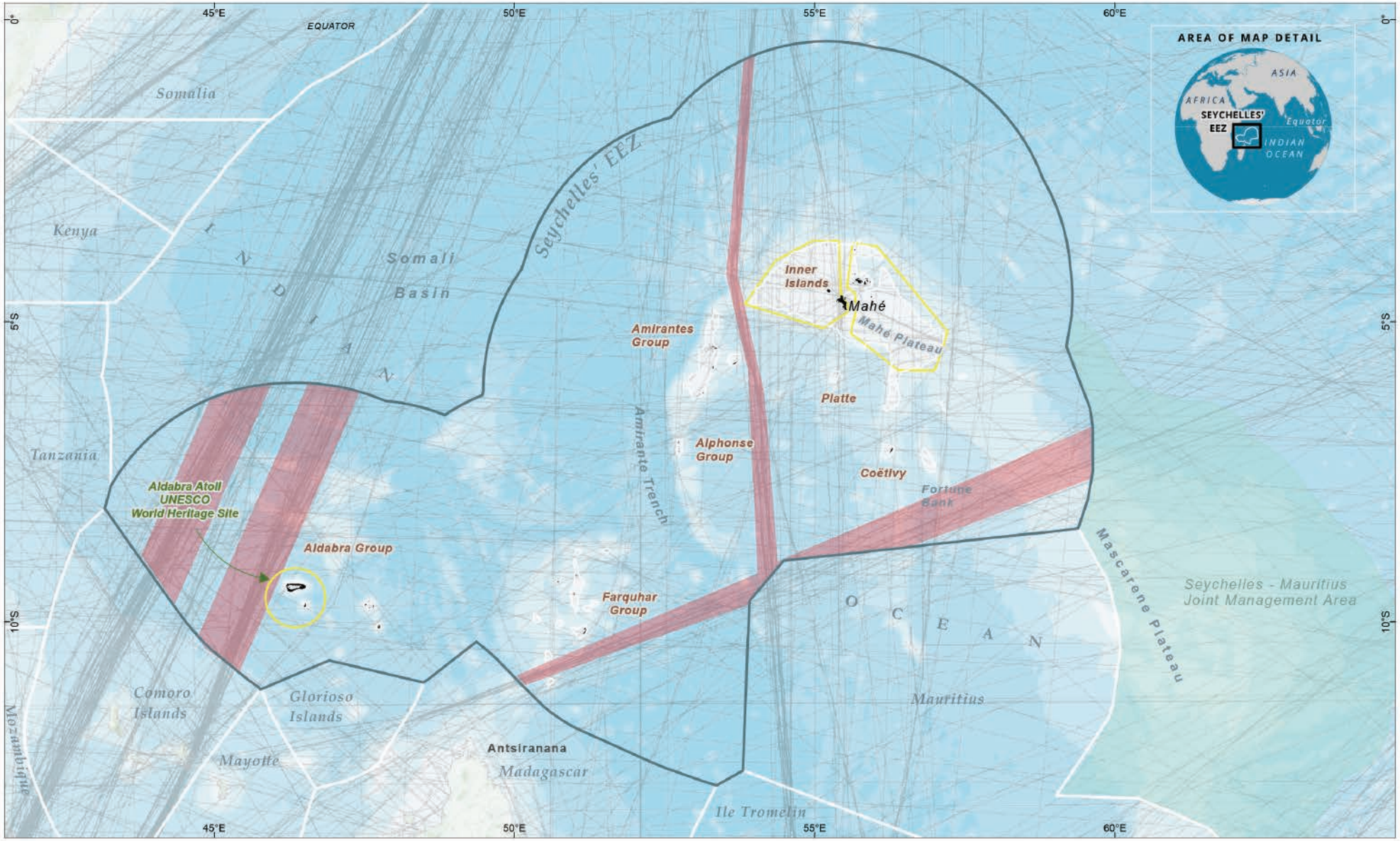


Pre-1400 historic trade routes in summer (black lines: November–February) and winter (orange lines: May–August) months (Source: Seychelles Centre for GIS).

KEY FACTS

- The data set underlaying this map come from 1,189,127 mobile ship data points in this region from a total of 3,374 commercial and research vessels, representing roughly 11% of the 30,851 merchant ships of >1000 gross tonnage at sea in 2005.
- Extensive shipping traffic inside Seychelles' EEZ led to two Areas To Be Avoided confirmed by the IMO—Mahé Plateau and Aldabra Group.
- The concern for a shipping accident, collision, or oil spill near the Aldabra UNESCO World Heritage Site led the government of Seychelles to examine the option of designating a Particularly Sensitive Sea Area (PSSA) in this area. This option was paused but may be taken up in the future.

MAP SCALE: *Data are presented at a scale of 1:9,100,000 (1 cm = 91 km)*
Raw shipping data were developed at a raster resolution of 1 km²



NORTH 0 130 260 Km

FOR DISCUSSION PURPOSES ONLY
Prepared for: Seychelles MSP
Prepared on: 26 February 2024
Prepared by: Spatial Support Systems, LLC
Scale: 1:9,100,000
Map projection: Cylindrical Equal Area
Datum: WGS84
Data Sources: Seychelles MACCE, Halpern et al. 2008, MarineRegions.org, IMO, The Nature Conservancy, ESRI, GEBCO

- Seychelles' Exclusive Economic Zone
- 200m Depth Contour
- Other Exclusive Economic Zone
- Area to be Avoided (International Maritime Organisation)
- Highest Intensity Shipping Areas in Seychelles' EEZ

International Shipping Traffic
Halpern et al. 2008

Most Traffic — *Least Traffic*

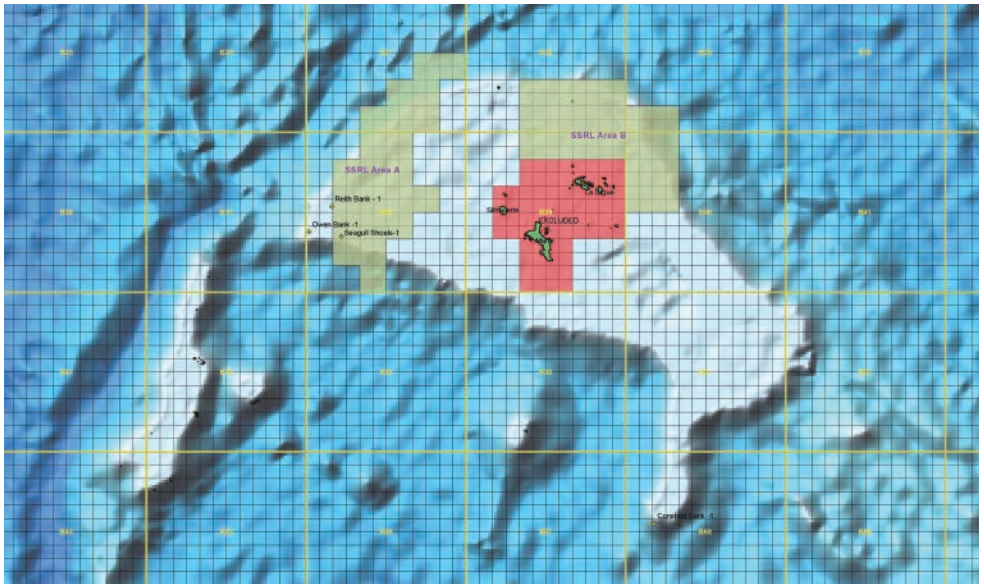
International Shipping Traffic

Petroleum Exploration and Interest

This map shows a snapshot of petroleum interest and exploration in Seychelles including active licensed blocks and new applications through 2023, 'Areas of Interest' for petroleum exploration, voluntary petroleum exclusion zone, and historic seismic survey transects.

The unique geology of Seychelles has attracted petroleum exploration interest since the 1960s and 1970s. Four geophysical surveys were completed in Seychelles in the last 40 years. In 1977–1979, an Oxoco, Siebens, and Burma Oil consortium acquired 6,400 km of surveys. In 1987, Enterprise acquired 4,870 km in seismic surveys and in 1991, Texaco, Ultramar, and Enterprise acquired another 3,675 km of seismic surveys. Survey data indicate that hydrocarbon potential in the region is considerable.

PetroSeychelles is a government-owned, parastatal entity created in 2012 to promote and supervise effective and safe oil exploration and development programs. PetroSeychelles is the arm of the government that oversees the upstream petroleum sector. Downstream activities are handled by Seychelles Petroleum Company (SeyPEC), another government-owned entity.



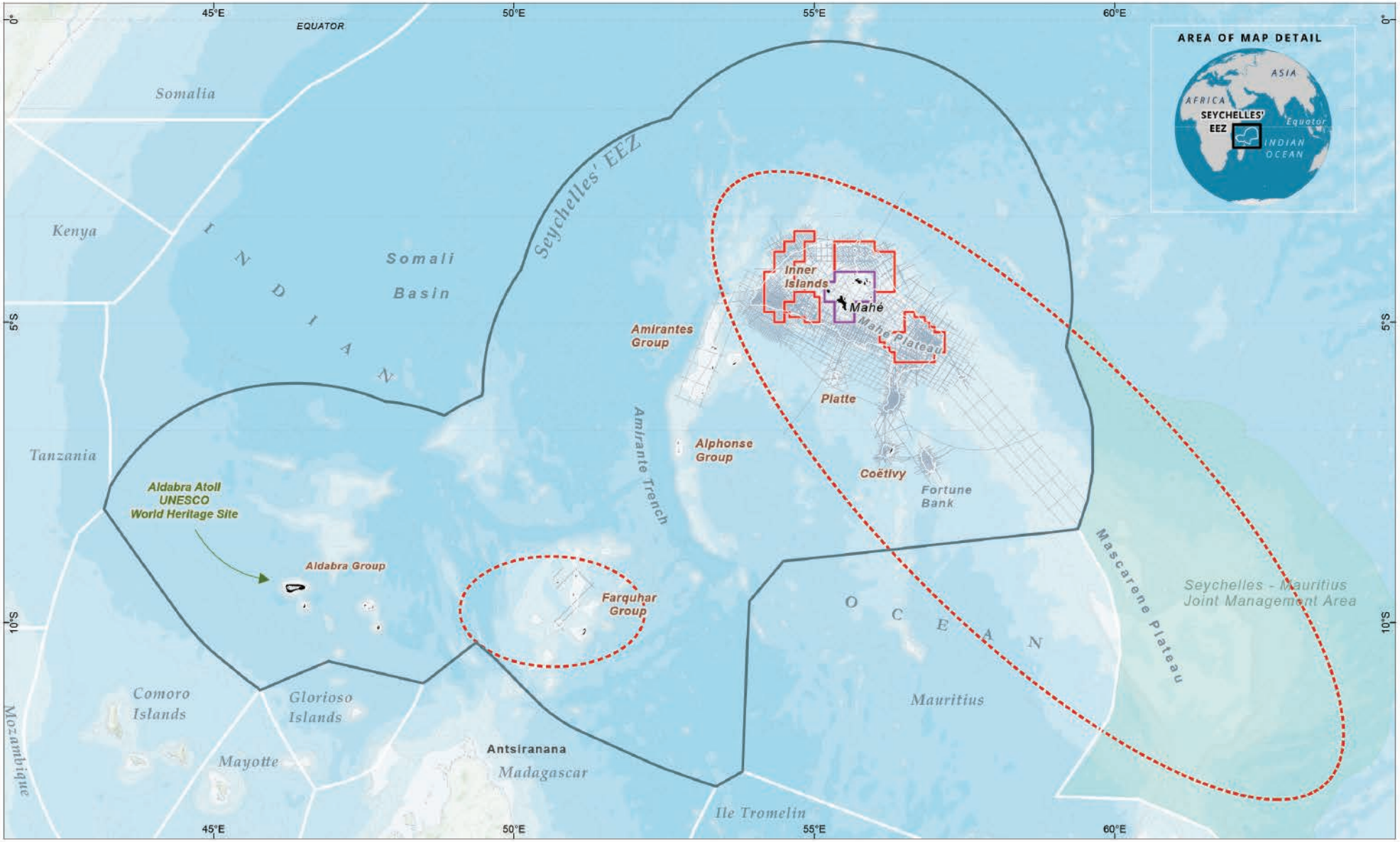
The Petroleum Mining Act vests the ownership of petroleum accumulations within Seychelles and permits negotiation for areas no larger than 10,000 km^2. A petroleum agreement is for 34 years. The exploration phase is nine years, in three-year increments. The development and production phase commences on the date of commercial viability and continues for 25 years.

Geophysical surveys have occurred on Mahé Plateau, Mascarene Plateau, Platte, Coëtivy and Fortune Bank, African Banks and Amirantes Group, and Farquhar. Three exploratory wells were drilled by Amoco in 1980–1981 on the western shelf. A fourth well was drilled on Constance Bank in 1995.

KEY FACTS

- Petroleum exploration would not occur within 5 km of islands and atolls, a voluntary exclusion zone.
- Seychelles depends on imported petroleum products for energy. The total domestic consumption for petroleum in 2011 was 133,070 tonnes, with over 50% of this used to generate electricity. There is currently no production of oil and gas in Seychelles, and no refinery.
- There are five petroleum agreements in Seychelles, depicted by licensed blocks, and two new licensed block applications as of 2023.
- Areas of Interest are spatial areas broadly defined by PetroSeychelles for future exploration, and they may or may not contain geophysical survey data. There are three Areas of Interest for the marine spatial plan: the seabed surrounding and containing Mahé Plateau to Mascarene Ridge, Farquhar Group, and Will's Guyot, north of Aldabra.
- PetroSeychelles' geologists contribute to the science of marine geology in Seychelles, increasing understanding and mapping of the limits of Seychelles' continental shelf and other geological questions.

MAP SCALE: *Data are presented at a scale of 1:9,100,000 (1 cm = 91 km)*



NORTH 0 130 260 Km

FOR DISCUSSION PURPOSES ONLY
Prepared for: Seychelles MSP
Prepared on: 26 February 2024
Prepared by: Spatial Support Systems, LLC
Scale: 1:9,100,000
Map projection: Cylindrical Equal Area
Datum: WGS84
Data Sources: Seychelles MACCE, PetroSeychelles, The Nature Conservancy, ESRI, MarineRegions.org, GEBCO

- Seychelles' Exclusive Economic Zone
- 200m Depth Contour
- Other Exclusive Economic Zone
- Seismic Surveys
- Areas of Interest for Petroleum Exploration
- Voluntary Petroleum Exclusion Zone
- Petroleum Exploration License Areas (2023)

Petroleum Exploration and Interest

Tourism and Recreation: Inner Islands

This map shows tourism and recreation opportunities in Seychelles' Inner Islands region, including the infrastructure to support tourism such as air access, accommodation, ferries, marinas, and roads.

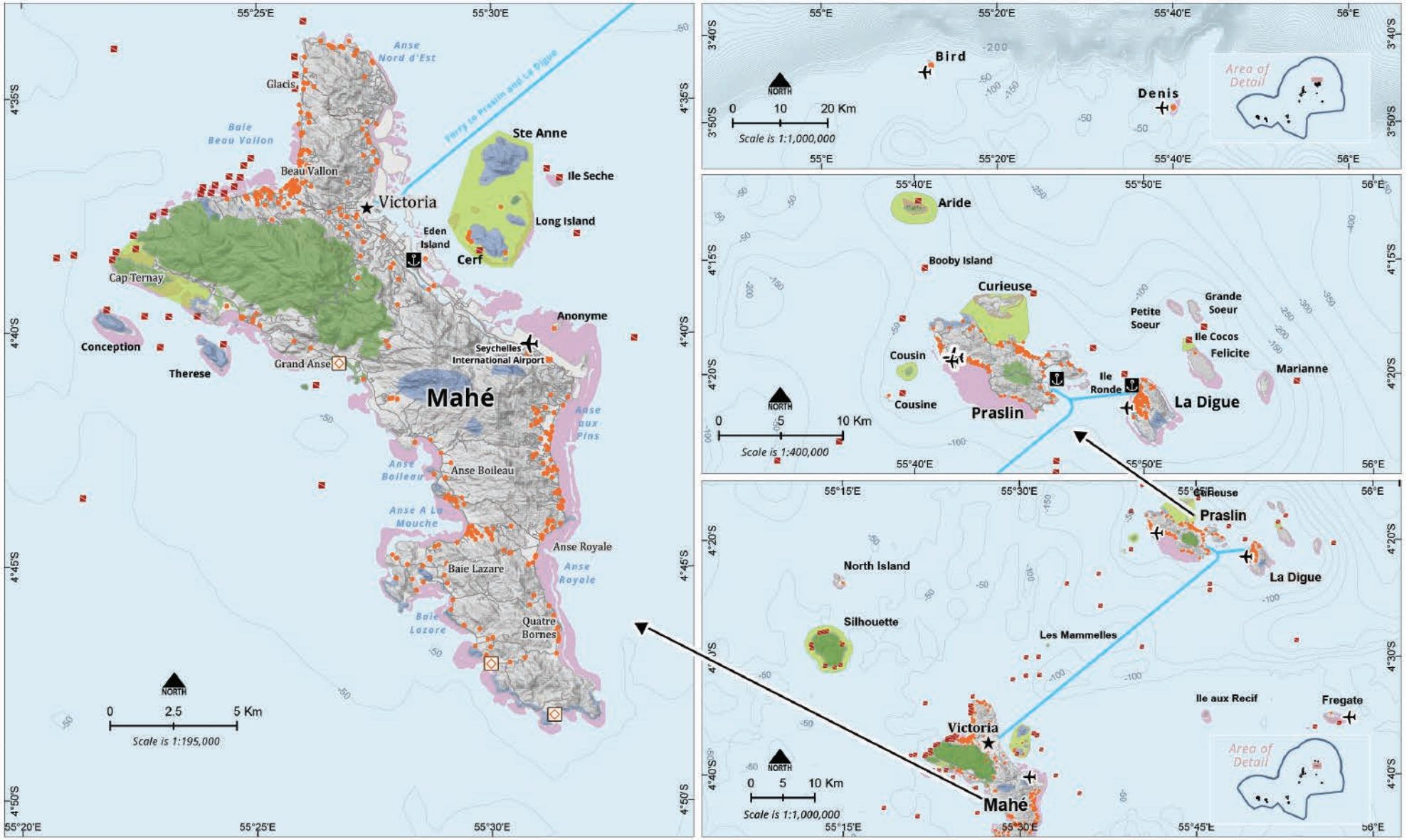
Much of the tourism activity in Seychelles occurs in the Inner Islands. The Inner Islands region is where the majority of Seychelles' population resides, and as such this is also where the most abundant access to tourism-related services and infrastructure exists. Robust air and marine transportation networks, featuring plane and ferry service and boat charters, efficiently support various tourism activities. The Inner Islands also provide an extensive range of accommodations, from self-catering apartments to 5-star all-inclusive resorts, contributing to the accessibility and comfort of tourists exploring the archipelago.



KEY FACTS

- The Inner Islands' pristine beaches, with their powdery sands and crystal-clear waters, stand as irresistible attractions for tourists seeking tranquil and picturesque coastal experiences.
- The beaches of the Inner Islands are frequently cited among the world's most stunning coastal destinations.
- Beaches in Seychelles, notably in the Inner Islands, generate a combined total of approximately $160 million in tourism expenditure annually with approximately 94,000 visitors attracted specifically to the natural aspects of the beaches.
- The Mahé Plateau is the most heavily used area for tourism within Seychelles, though many important tourism areas aren't fully protected.
- Iconic beaches like Anse Lazio and Anse Source d'Argent contribute to the renowned beauty of the Inner Islands' coastal landscapes.
- The archipelago's beaches offer not only breathtaking beauty but also diverse recreational opportunities, attracting tourists for activities such as snorkeling, swimming, and simply enjoying the stunning coastal landscapes.
- Due to their close proximity to the Victoria International Airport, the Inner Islands host the majority of tourist visits and associated tourism expenditures in Seychelles.
- SCUBA diving in the Inner Islands predominantly occurs near coral reef habitats.
- Sport fishing charters in the Inner Islands frequently access destinations that are in close proximity to the edge of the Mahé Plateau (i.e., the 200-m shelf drop-off).
- Due to the diverse marine habitats in the Inner Islands, anglers in this region can target both groundfish and pelagic species, making this region a highly desirable destination for sport fishing tourism.
- Remote areas of shallow water shelf southeast of the Mahé Plateau receive very little sport fishing pressure.
- Sport fishing occurs throughout the archipelago on shelf waters and up to 16 km from the drop-off.

MAP SCALE: *Data are presented at varying scales on this map page*



FOR DISCUSSION PURPOSES ONLY
Prepared for: Seychelles MSP
Prepared on: 26 February 2024
Prepared by: Spatial Support Systems, LLC
Scale: Varies
Map projection: UTM Zone 40 South
Datum: WGS84
Data Sources: Seychelles MACCE, MLUH, The Nature Conservancy, ESRI, GEBCO

- Capital City
- Access by Air
- Accommodations
- Marinas
- SCUBA Dive Sites
- Dangerous Swimming Areas (Surfing)
- Coral Reef
- Areas of Outstanding Natural Beauty
- Marine Protected Areas
- Terrestrial Protected Areas
- Roads
- Trails
- Ferry Routes

Tourism and Recreation Inner Islands

Tourism and Recreation: Praslin, La Digue, and Surrounds

This map details the tourism and recreation opportunities on and around Praslin and La Digue Islands, including general tourism activity types and the specific infrastructure supporting tourism, including airports and accommodations that provide access to these destinations. This map includes marine and terrestrial protected areas.

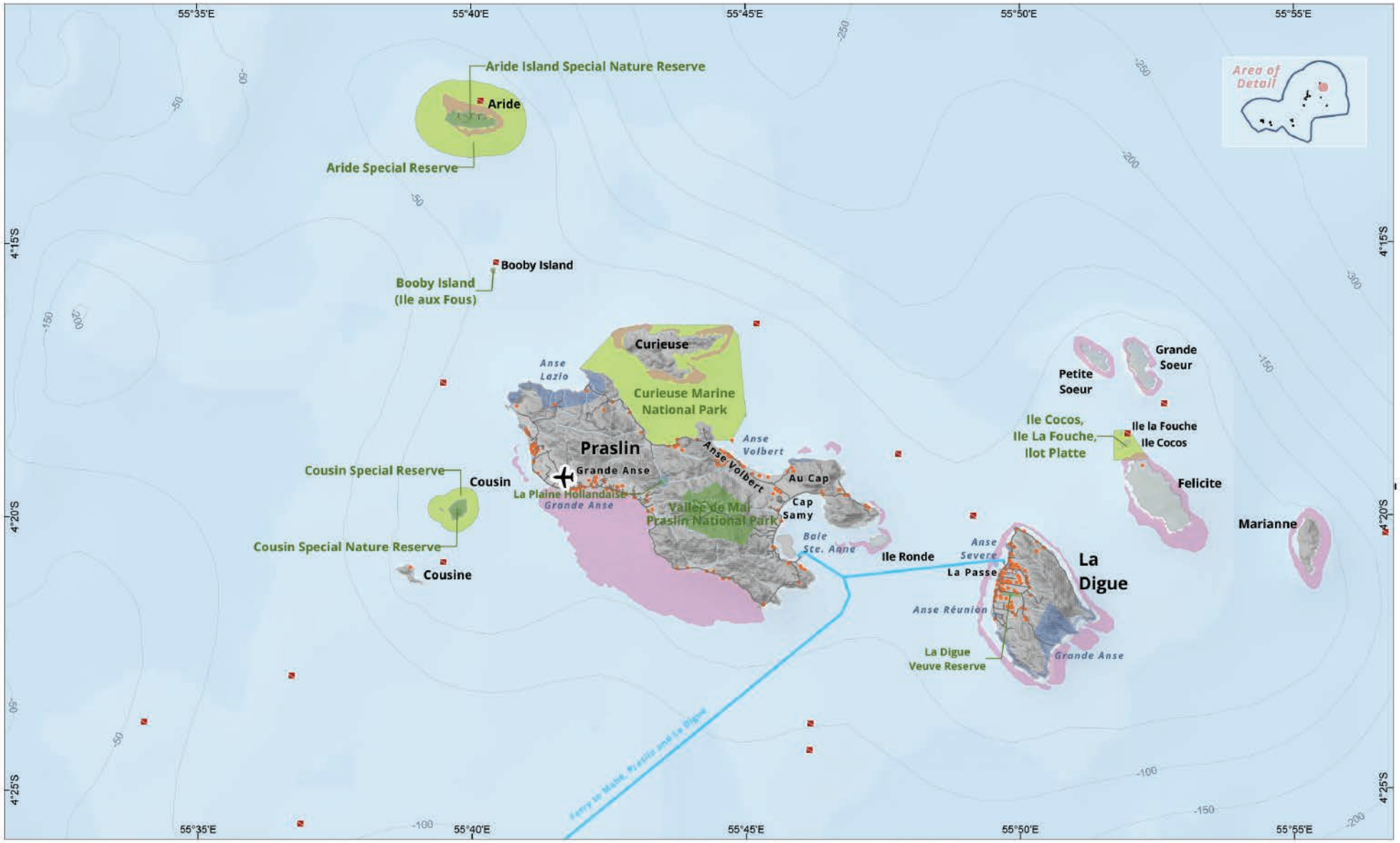
Praslin and La Digue, the second and third largest of the Inner Islands, respectively, are focal points for tourism activities in Seychelles. Tourism infrastructure here is well developed, including reliable air and marine transportation networks, facilitating exploration of the 11 parks and protected areas on and around these islands, as well as the many world-renowned beaches that are found here.



KEY FACTS

- The area surrounding Praslin and La Digue islands hosts two National Parks, three Nature Reserves, four Special Reserves, one Protected Area, and one Ramsar site (Wetland of International Importance).
- Due to their proximity to Victoria International Airport, Praslin and La Digue serve as convenient gateways, hosting a significant share of tourist visits and associated expenditures in Seychelles.
- Iconic beaches such as Anse Lazio, Anse Volbert, and Anse Source d'Argent make Praslin and La Digue sought-after destinations.
- Praslin and La Digue attract tourists for activities such as snorkeling, swimming, fishing, and simply enjoying the breathtaking coastal landscapes.
- Curieuse Marine National Park, encompassing beaches both on Curieuse Island and part of northern Praslin, generates a substantial amount of tourism revenue. It's known for its beautiful remote beaches, contributing to an annual spending of approximately USD $9.5 million.
- Praslin is home to the Vallée de Mai Nature Reserve, a UNESCO World Heritage Site, and the largest stand of endemic coco de mer palm trees.
- SCUBA diving around Praslin and La Digue predominantly occurs near coral reef habitats, showcasing the rich marine biodiversity of these Inner Islands.
- The diverse marine habitats surrounding Praslin and La Digue make these islands highly desirable for sport fishing tourism, offering a unique blend of angling experiences.
- This map was specifically created from a request to the SMSP during stakeholder consultations on Praslin during Milestone 2, to have a detailed map of this area.

MAP SCALE: *This map is presented at a scale of 1:167,000 (1 cm = 1.67 km)*


55°35'E
55°40'E
55°45'E
55°50'E
55°55'E
4°15'S
4°20'S
4°25'S
Area of Detail
Aride Island Special Nature Reserve
Aride
Aride Special Reserve
Booby Island
Booby Island (Ile aux Fous)
Curieuse
Anse Lazio
Curieuse Marine National Park
Praslin
Anse Volbert
Grande Anse
Au Cap
Cap Samy
La Plaine Hollandaise
Grande Anse
Vallée de Mai Praslin National Park
Baie Ste. Anne
Cousin Special Reserve
Cousin
Cousin Special Nature Reserve
Cousine
Ile Ronde
Anse Severe
La Passe
La Digue
Anse Réunion
La Digue Veuve Reserve
Grande Anse
Petite Soeur
Grande Soeur
Ile Cocos, Ile La Fouche, Ilot Platte
Ile la Fouche
Ile Cocos
Felicite
Marianne
Ferry to Mahe, Praslin and La Digue
NORTH
0
2
4 Km
FOR DISCUSSION PURPOSES ONLY
Prepared for: Seychelles MSP
Prepared on: 26 February 2024
Prepared by: Spatial Support Systems, LLC
Scale: 1:167,000
Map projection: UTM Zone 40 South
Datum: WGS84
Data Sources: Seychelles MACCE, MLUH, The Nature Conservancy, ESRI, GEBCO
Capital City
Access by Air
Accommodations
Marinas
SCUBA Dive Sites
Dangerous Swimming Areas (Surfing)
Coral Reef
Areas of Outstanding Natural Beauty
Marine Protected Areas
Terrestrial Protected Areas
Roads
Trails
Ferry Routes
Tourism and Recreation
Praslin, La Digue
and Surrounds

Tourism and Recreation: Outer Islands

This map details the recreation and tourism opportunities found in Seychelles' Outer Islands region, including general tourism activity types and the specific infrastructure supporting tourism, including airports and accommodations that provide access to these unique and secluded destinations.

In contrast to the bustling activities in the Inner Islands, the Outer Islands are havens for those seeking exclusivity and untouched beauty. Spread across vast archipelagos, the Outer Islands provide rare opportunities to explore remote seascapes, islands, and atolls away from Seychelles' more developed tourist hubs. Tourism operators in the Outer Islands focus on eco-friendly activities with limited infrastructure to preserve the natural environment. Transportation options, including air services and boat charters, are tailored to connect travelers with all-inclusive tourism companies operating in the Outer Islands. Tourist accommodations in these areas are less abundant, and as such the Outer Islands offer an exclusive and uncrowded experience for travelers. Other tourism opportunities include SCUBA diving, beaches, and nature tourism.

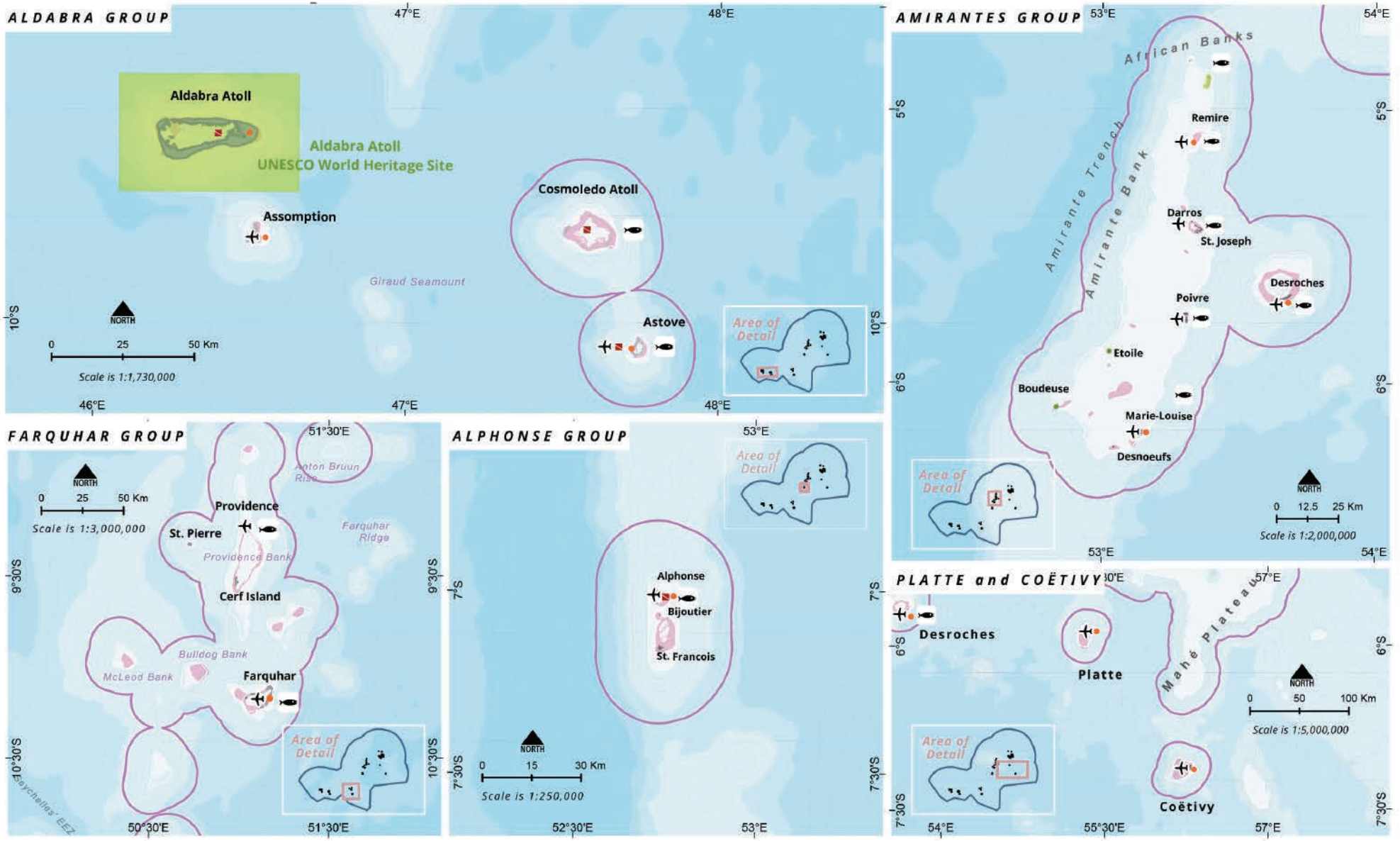


Marine charter and sport fishing tourism opportunities are generally based on a 16-km distance from the 200-m depth contour, the distance offshore that most vessels will travel to on daily excursions.

KEY FACTS

- Many locations in the Outer Islands are accessible by air travel:
  - Platte and Coëtivy
  - Desroches, Rémire, D'Arros, Poivre, Marie-Louise
  - Alphonse
  - Cosmoledo and Astove
  - Farquhar and Providence
- Due to the remote nature of the Outer Islands, local operators provide all-inclusive tour packages, including accommodations, boat charters, equipment, and meals.
- The marine and coastal areas of the Outer Islands provide diverse recreational opportunities such as sport fishing, diving, beach-going, and wildlife viewing.
- The Outer Islands tourism accommodations cater specifically to those seeking a quieter and more secluded environment, offering an escape from the crowded scenes of more populated areas.
- The lagoons of the Outer Islands' atolls provide opportunities to view unique marine life only found in these less-explored waters.
- Sport fishing charters in the Outer Islands focus on accessing the shallow-water flats, as well as areas in deeper water beyond the fringing reefs.
- This map shows Protected Areas to 2018 and before Milestone 1.

MAP SCALE: *Data are presented at varying scales on this map page*



FOR DISCUSSION PURPOSES ONLY
Prepared for: Seychelles MSP
Prepared on: 26 February 2024
Prepared by: Spatial Support Systems, LLC
Scale: Varies
Map projection: UTM Zones 38- 40 South
Datum: WGS84
Data Sources: Seychelles MACCE, MLUH, The Nature Conservancy, ESRI, GEBCO

- Access by Air
- Accommodations
- SCUBA Dive Sites
- Sport Fishing Area

- Coral Reef
- Other Tourism Opportunities
- 200m Depth Contour

- Marine Protected Areas
- Terrestrial Protected Areas

Tourism and Recreation
Outer Islands

5 Area Maps



Seychelles is an archipelagic state of 115 islands located just south of the equator in the Western Indian Ocean. Spanning from 4 to 11 degrees South and 45 to 56 degrees East, the archipelagic waters contain both granitic and coralline islands. The geological history of Seychelles dates to the Cretaceous period, 145 to 66 million years ago, when the Gondwanaland break-up led to the northeastern movement of the Malagasy-India continental block from Africa and the creation of the Mozambique Channel. The geography of the islands is separated into two distinct groups, the Inner Islands and Outer Islands.

Within Seychelles, there are four official Archipelagos (Inner Islands, Farquhar, Cosmoledo and Astove, and Aldabra and Assomption), various island groups, banks, and plateaus (e.g., Mahé Plateau, Amirantes Group, Alphonse Group, Fortune Bank, Seychelles Bank). The 43 granitic islands that today make up the Inner Islands of Seychelles were formed approximately 130 million years ago. The largest granitic islands—Mahé, Praslin, and La Digue—have steep coastlines and Mahé has a rugged, mountainous interior and peaks reaching 914 m. Granite also comprises the seabed, providing suitable substrate for coral and other organisms. The Inner Islands consist mostly of pre-Cambrian rock that is approximately 650 million years old and rises from the Seychelles Bank, an area to the south that is 31,000 km^2 and 44 to 65 m deep. Seychelles Bank forms the northern arc of the Mascarene Ridge and is encrusted with coralline algae, rather than coral. Sediments are typically very fine to coarse bioclastic sands less than 0.10 mm; coarse sediments can be found in the shallow waters. The Mascarene Ridge connects to the Mascarene Plateau, which arcs south to Mauritius.

The remaining islands of Seychelles consist of 73 coralline islands that include many shallow features such as calcareous sand cays, coral islands, and raised coral atolls. There are two coralline islands on the Mahé Plateau (Bird and Denis islands) and the rest form the Outer Islands of Seychelles. Coralline islands are comprised of sand and corals and were formed approximately 125 million years ago during the last reef formation period. The majority of these coralline islands are formed from patchy reefs whilst others, such as Aldabra Atoll and Assomption Island, are made from partly fossilized reefs that have emerged from the sea floor. The reef platforms on these islands are calcarenite and phosphatic sandstones.

The Outer Islands contain the Amirantes Group, Farquhar Group, and Aldabra Group. The Amirantes Group is the closest to the Inner Islands and extends from African Banks to Alphonse Group. The Farquhar Group is southwest of the Amirantes and contains Farquhar Atoll, Providence Atoll, and smaller islands. The Aldabra Group contains Aldabra, Assomption, Cosmoledo, and Astove and is more than 1,000 kilometers from Mahé Island. Aldabra Atoll is a distinct geographical feature in Seychelles because it is the second largest raised atoll in the world with an area of about 130 km^2. Aldabra Atoll is located in the extreme southwest of the country and has a higher elevation than most of the other coralline islands with an average elevation of 4 to 8 m above mean low tide level, though some dunes are 10–30 m high. Aldabra consists of four main islands that enclose a large, shallow lagoon of 300 km^2 and the land mass accounts for one-third of all land in Seychelles.



Seychelles' Archipelagos

This map highlights the four official archipelagos, island groups, and individual islands of Seychelles.

115 islands rise from abyssal depths of the Western Indian Ocean, bounded to the west by the Somali Basin and to the east by the Mascarene Plateau, an extent roughly 1,100 km west to east and 750 km north to south. The islands are clustered in four officially defined archipelagos and five other primary island groups. The majority of the Seychelles population resides in the Inner Islands, a group of roughly 43 islands and rock outcroppings located on the Mahé Plateau, all of which are clustered within a 40-km radius.

There are four official archipelagos in Seychelles: Mahé Inner Islands, Farquhar, Cosmoledo and Astove, and Aldabra and Assomption. In addition to these four archipelagos, highlighted on this map are the areas surrounding Bird, Denis, Platte, and Coëtivy islands, as well as the Amirantes and Alphonse Island groups.

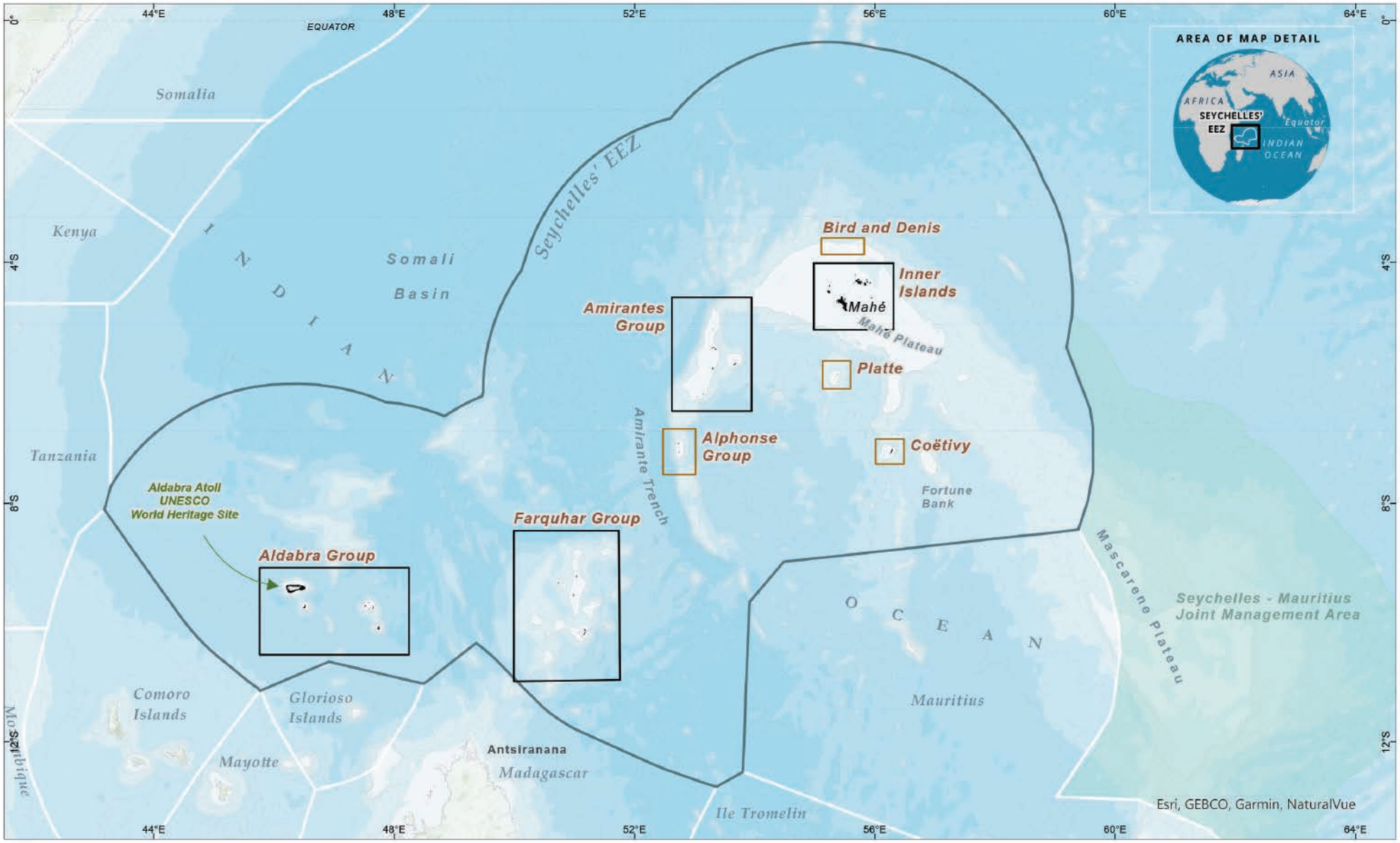
Platte and Coëtivy islands, also called the Southern Coral Group, are relatively isolated islands, located 130 and 275 km south of Mahé, respectively. The Amirantes island group is situated between 200 and 300 km west and southwest of Mahé, spanning a distance of roughly 125 km north to south, and 75 km west to east. Eleven distinct islands and atolls comprise the Amirantes Group. The Alphonse Group lies 80 km to the south of the Amirantes and includes Alphonse, St François, and Bijoutier. These three islands are situated in a north-south orientation spanning 20 km. The Farquhar Archipelago lies 300 km to the south and southwest of the Alphonse Group and 700 km southwest of Mahé. The archipelago includes the Providence Bank and Atoll in the north, and the Farquhar Atoll in the south.



KEY FACTS

- On the Mahé Plateau, the Mahé Inner Islands archipelago consists of 43 islands unique in Seychelles in that they are the only islands of granitic origin. Outside of the granitic Mahé Inner Islands, the remaining Outer Islands of Seychelles all exhibit coralline foundations.
- Bird and Denis islands are the only coralline islands on the Mahé Plateau, and are located at the northern edge of the Plateau's relatively shallow waters, adjacent to the steep drop-off into abyssal depths, roughly 100 km north of Mahé Island.
- The Aldabra and Assomption archipelago is perhaps the most famous of the Seychelles archipelagos and is home to the Aldabra Atoll UNESCO World Heritage Site.

MAP SCALE: *Data are presented at a scale of 1:9,100,000 (1 cm = 91 km)*



NORTH 0 130 260 Km

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Prepared for: Seychelles MSP
Prepared on: 26 February 2024
Prepared by: Spatial Support Systems, LLC
Scale: 1:9,100,000
Map projection: Cylindrical Equal Area
Datum: WGS84
Data Sources: Seychelles MACCE, MarineRegions.org
The Nature Conservancy, ESRI, GEBCO

- Seychelles' Exclusive Economic Zone
- 200m Depth Contour
- Other Exclusive Economic Zone
- Archipelagos
- Other Groups and Islands

Seychelles' Archipelagos

Inner Islands of the Mahé Plateau

This map shows the place names, bathymetry, and shallow and deep seafloor geomorphology of the Mahé Inner Islands archipelago and surrounding waters.

This Inner Islands group is located on the central Mahé Plateau, consisting of roughly 43 islands and rock outcroppings within a 40-km radius of Mahé Island (depending on which small rock outcroppings are included in the count). These islands are the geographic center of the Seychelles population and the cultural center of the country. Mahé Island is the most populous island and is the location of the country's capital city, Victoria, home to roughly 26,000 people, or about 29% of the country's population of 90,945 (as of the 2010 census). Praslin and La Digue islands are the second- and third-most populated islands in Seychelles, with about 8,500 and 2,700 inhabitants, respectively, as of 2010.

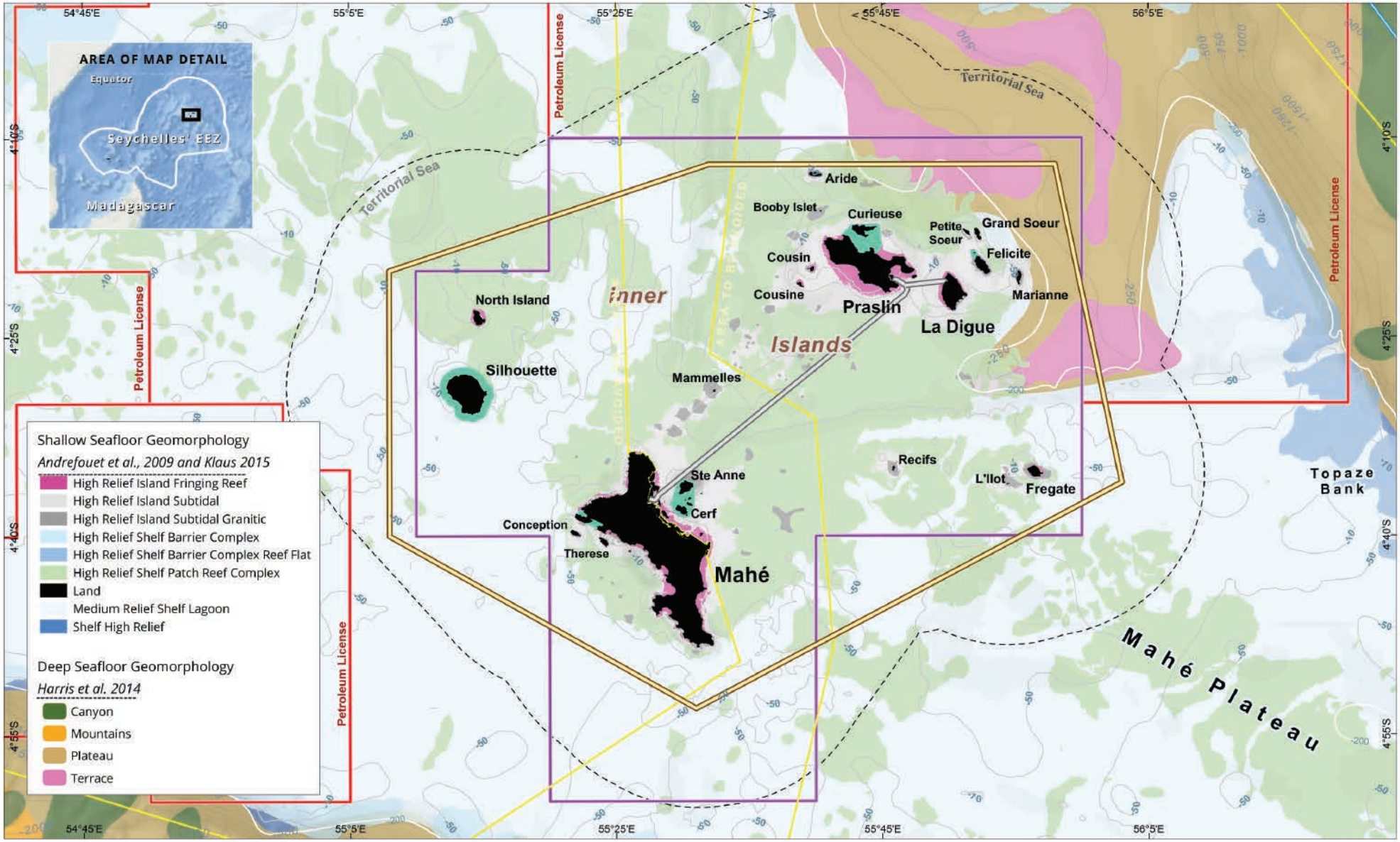


The Inner Islands area contains the most developed transportation, energy, and tourism infrastructure in Seychelles, and as such, more comprehensive geospatial data are available for this area than any other sub-region. The waters surrounding the Inner Islands are relatively shallow, averaging about 40 m deep, and are characterized by patchy reef complexes interrupted by distinct and high-relief subtidal granite outcroppings.

KEY FACTS

- The Inner Islands are the only granitic Islands found in Seychelles.
- All of the Inner Islands are situated within an area officially designated as the Port of Victoria.
- Mahé is the largest of the granitic islands and covers 154 km². It is approximately 27 km long by 10 km wide at the widest point. The island contains steep granitic cliffs and rises to an elevation of 903 m at its highest point, Morne Seychellois.
- The islands of Mahé, Praslin, and La Digue contain Seychelles' main population centers. The capital city of Victoria on Mahé, plus surrounding area, is home to more than 25% of the country's total population.
- Mahé is the location of the Seychelles International Airport and is the main transportation hub for Seychelles inter-island air and sea travel.
- Water depth around the Inner Islands is mostly shallow but the deepest locations are 287 m.
- Inter-island commercial ferries operate from Mahé to Praslin and La Digue. Passenger-only ferries operate year-round along established routes.
- Bird and Denis are not part of the Inner Islands group.

MAP SCALE: *Data are presented at a scale of 1:687,500 (1 cm = 6.88 km)*



NORTH 0 10 20 Km

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Prepared for: Seychelles MSP
Prepared on: 26 February 2024
Prepared by: Spatial Support Systems, LLC
Scale: 1:687,500
Map projection: UTM Zone 40s, WGS 84
Data Sources: Seychelles MACCE, SPA, SFA, PetroSeychelles, Gos-UNDP-GEF, The Nature Conservancy, GRID-Arendal, ESRI, GEBCO, IMO

- 200m Depth Contour
- Territorial Sea (12nm)
- Fishing by Foreign Vessels Prohibited
- Area To Be Avoided (Mahé Plateau)
- Ferry Routes
- Marine Protected Areas
- Port of Victoria Boundary
- Voluntary Petroleum Exclusion Zone
- Petroleum Exploration License Areas (2023)

Inner Islands of the Mahé Plateau

Bird and Denis Islands

This map shows the place names, bathymetry, and geomorphology of Bird and Denis islands and surrounding waters.

Bird and Denis islands lie at the northern edge of the Mahé Plateau, roughly 80 km to the north of Mahé Island. These are the two northernmost islands in Seychelles and the only coralline islands of the Mahé Plateau. Both islands sit in close proximity to the "northern drop-off", where the high-relief shelf edge of the Mahé Plateau drops from 200 m depth to over 3,000 m within a distance of 25 km. A system of undersea canyons dominates the seafloor off the northern drop-off, transitioning from the seafloor geomorphology of the Mahé Plateau to the abyssal depths of the northern Exclusive Economic Zone.

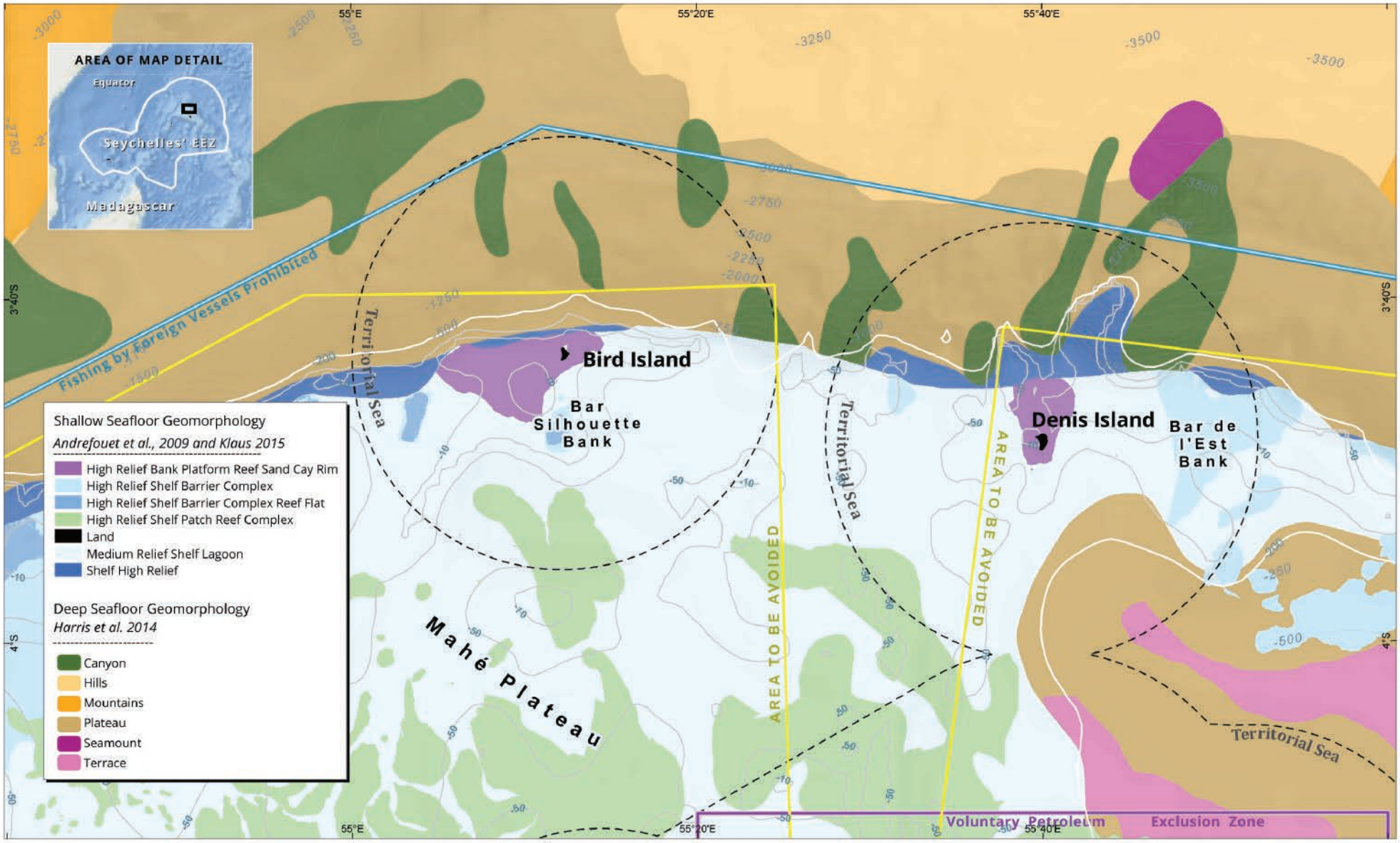


Bird and Denis are the only coralline islands on the Mahé Plateau and are both classified as sand cays on platform reef. Immediately south of Bird Island, Bar Silhouette and surrounding areas are important destinations for artisanal fisheries, especially during times of rough seas during the Southeast Monsoon when shelter can be found to the lee of the island. Similarly, areas around Denis Island and the Bar de l'Est (to the east) are important seasonal fishing grounds for the artisanal fleet.

KEY FACTS

- Denis Island is located roughly 50 km to the east of Bird Island. Bird Island is 75 ha in size and Denis Island is approximately 150 ha.
- Bird Island is the site of a private resort that provides bungalows, and has an airstrip connecting the island to Mahé. Denis is also a private island with a resort.
- Bird Island is known for its bird wildlife, which includes Sooty Terns (*Onychoprion fuscatus*), Fairy Terns (*Sternula nereis*), and Common Noddies (*Anous stolidus*). Tens of thousands of marine birds nest here each year.
- Both hawksbill and green turtles (*Eretmochelys imbricata* and *Chelonia mydas*) utilize foraging and nesting habitats around these islands.
- In 2004, as part of a Nature Seychelles bird restoration project, noddies from Frégate Island and Seychelles Warblers (*Acrocephalus sechellensis*) from Cousin Island were relocated to Denis Island.
- The waters surrounding Bird and Denis Islands are off-limits to international industrial fishing fleets and there is a 5-km voluntary exclusion zone for petroleum exploration and development.

MAP SCALE: *Data are presented at a scale of 1:530,000 (1 cm = 5.3 km)*



NORTH 0 5 10 Km

FOR DISCUSSION PURPOSES ONLY
Prepared for: Seychelles MSP
Prepared on: 26 February 2024
Prepared by: Spatial Support Systems, LLC
Scale: 1:530,000
Map projection: UTM Zone 40s, WGS 84
Data Sources: Seychelles MACCE, SFA, PetroSeychelles, Gos-UNDP-GEF, The Nature Conservancy, Halpern et al. 2008, GRID-Arendal, ESRI, GEBCO, IMO, MarineRegions.org

200m Depth Contour
Territorial Sea (12nm)
Fishing by Foreign Vessels Prohibited
Area to be Avoided (Mahé Plateau)
Voluntary Petroleum Exclusion Zone

Bird and Denis Islands

Amirantes Group

This map shows the place names, bathymetry, and shallow and deep geomorphology of the Amirantes Group and surrounding waters.

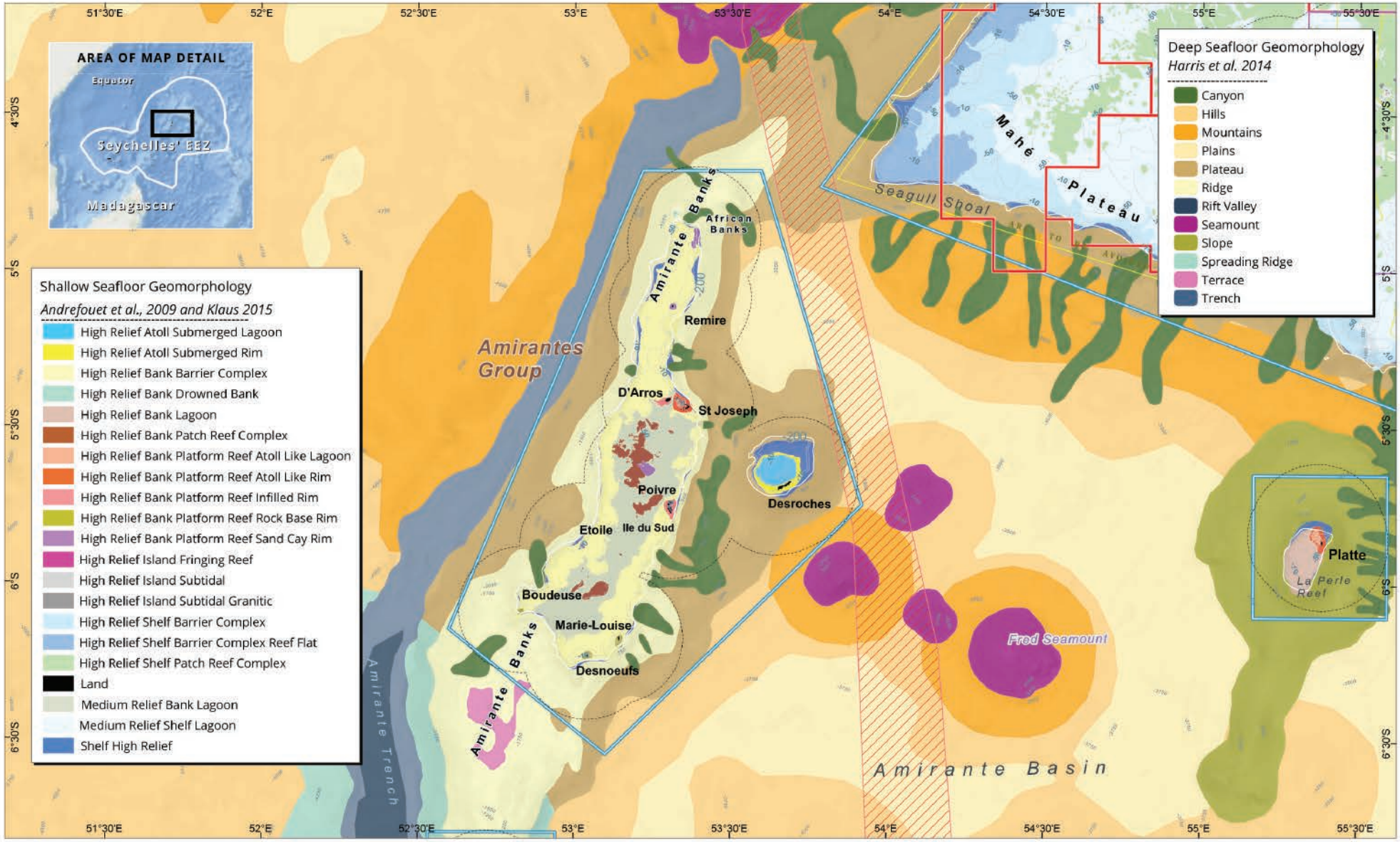
The Amirantes are a group of islands and atolls that rise from Amirante Bank, about 250 km west of Mahé Island, and span roughly 155 km from the African Banks in the north to Desnoeufs Island in the south. The Amirante Bank itself is situated on a 600-km long north-south undersea ridge and trench system that forms the western boundary of the deep Amirante Basin. Exhibiting a high level of structural diversity, the seafloor of the Amirante Bank consists of high-relief bank-barrier complexes that shelter the large expanse of relatively shallow lagoon-like waters in the central portion of the Bank. East of the Amirante Bank, undersea plateau topography includes a system of undersea canyons that transition to the abyssal hills, mountains, plains, and seamounts of the Amirante Basin. Just 40 km to the west of the Amirante Bank edge, the seafloor quickly drops into the Amirante Trench, which reaches depths over 5,000 m.



KEY FACTS

- The Amirantes consist of 11 primary islands and atolls (in decreasing order by size): Desroches Atoll, D'Arros, Ile du Sud, Poivre Atoll, St Joseph Atoll, Marie-Louise, Desnoeufs, Rémire, Etoile, African Banks, and Boudeuse.
- In the far north, the waters surrounding African Banks are frequented by artisanal and sport fishers alike.
- Desroches is the easternmost of the Amirantes islands and the closest to Mahé (approximately 230 km to the southwest). Desroches is the only island in the group offering tourism accommodation infrastructure.
- D'Arros Island, located approximately 250 km southwest of Mahé, is a private island that was officially designated as a nature reserve in 2014 and is currently managed by the Save Our Seas Foundation.
- Marie-Louise is the site of a recently established (2012) prison. This island is now managed by the Island Development Corporation.
- Poivre Atoll sits on the eastern edge of the Amirante Bank and its waters and beaches are known to be important for hawksbill and green turtles.
- Desnoeufs Island is the southernmost of the Amirantes, and was once a base for the commercial exploitation of seabirds.

MAP SCALE: *Data are presented at a scale of 1:750,000 (1 cm = 7.5 km)*



NORTH 0 25 50 Km

FOR DISCUSSION PURPOSES ONLY
Prepared for: Seychelles MSP
Prepared on: 26 February 2024
Prepared by: Spatial Support Systems, LLC
Scale: 1:1,750,000
Map projection: UTM Zone 39s, WGS 84
Data Sources: Seychelles MACCE, SFA, PetroSeychelles, Gos-UNDP-GEF, The Nature Conservancy, Halpern et al. 2008, GRID-Arendal, ESRI, GEBCO, IMO, MarineRegions.org

- 200m Depth Contour
- Territorial Sea (12nm)
- Fishing by Foreign Vessels Prohibited
- Area to be Avoided (Mahé Plateau)
- Marine Protected Areas (Pre-MSP)
- Voluntary Petroleum Exclusion Zone
- Petroleum Exploration License Area (2023)
- High Intensity International Shipping Areas (adapted from *Halpern et al., 2008*)

Amirantes Group

Platte and Coëtivy Islands

This map shows the place names, bathymetry, and geomorphology of Platte and Coëtivy islands and surrounding waters including Fortune, Adelaide, Le Constant, and Correira Banks.

Coëtivy and Platte are coralline Islands that lie south of the Mahé Plateau, roughly 270 km and 125 km south of Mahé, respectively. They are commonly known as the Southern Coral Group of the Outer Islands.

Platte's La Perle Reef barrier reef system extends to the north, east, and south of the island, sheltering an atoll-like lagoon. Beyond the barrier reefs, the steeply sloping seafloor drops from the shelf edge to abyssal depths of the Amirante Basin, to the west. To the east of Platte is a complex system of undersea canyons that is contiguous with canyons descending from the Mahé Plateau.

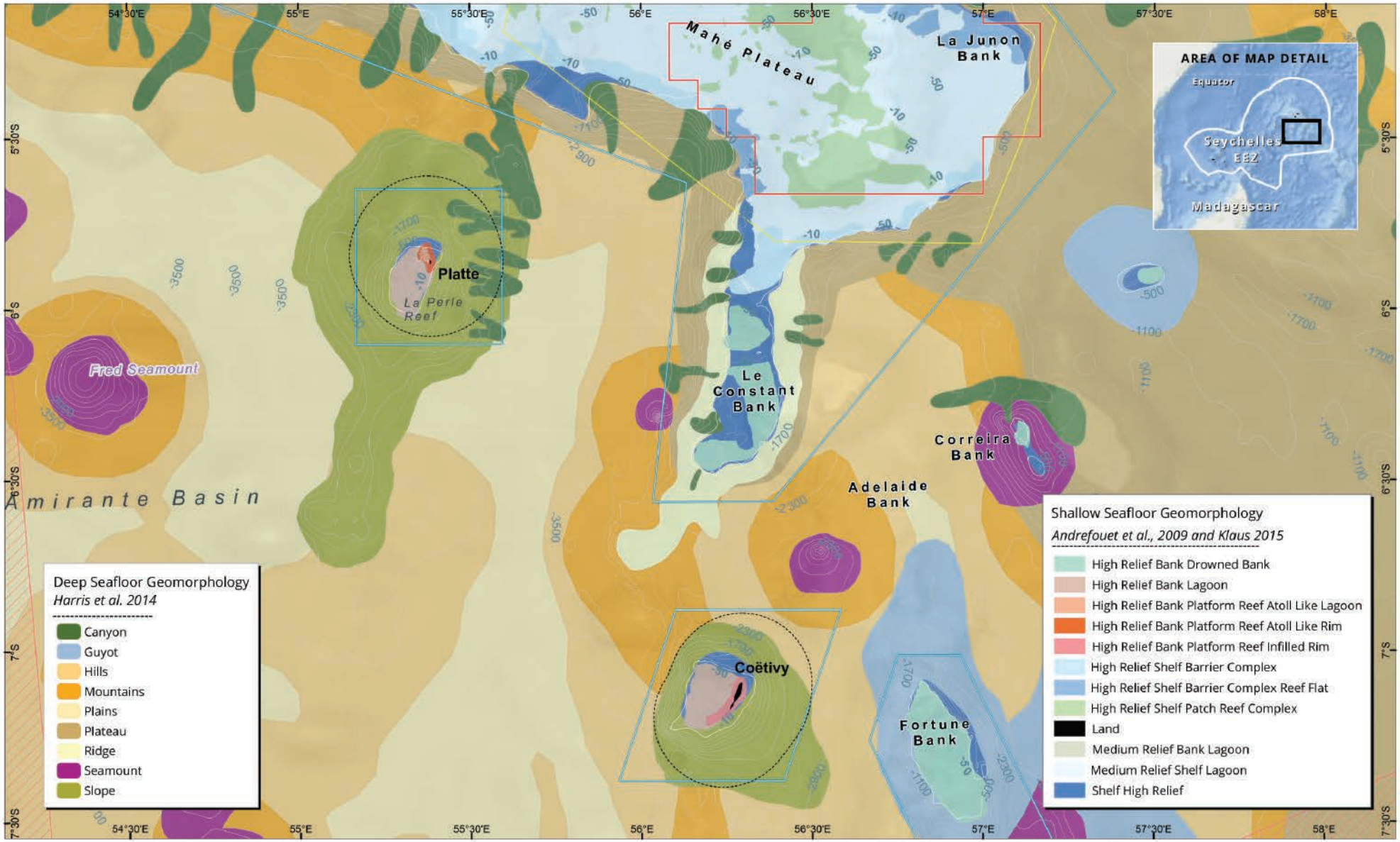
Coëtivy sits approximately 170 km south-southeast of Platte, 70 km south of the southern extent of the Mahé Plateau (Le Constant Bank), 60 km west of Fortune Bank, and 80 km southwest of Adelaide Bank. The area around Coëtivy is important for Seychelles' artisanal and semi-industrial longline fleets. Coëtivy Island was also host to shrimp farms and a shrimp processing plant that operated between 1992 and 2008. In 2009, a prison was opened on Coëtivy to house low-security prisoners.



KEY FACTS

- Platte, a small island roughly 0.5 km^2 in size, is approximately 120 km south of the southern tip of Mahé Island. Coëtivy is approximately 9 km^2.
- Coëtivy and Platte islands are both classified as sand-cay islands perched on a foundation of phosphatic sandstone.
- Platte Island was a site of significant guano harvesting activity from the mid 19th century and into the 20th century.
- A plan for Platte proposed by Island Development Corporation includes activities related to tourism, fisheries, agriculture, and conservation.
- Small-scale farming and fishing occurs on and around Coëtivy, primarily for local consumption.

MAP SCALE: *Data are presented at a scale of 1:1,725,000 (1 cm = 17.25 km)*



NORTH 0 25 50 Km

FOR DISCUSSION PURPOSES ONLY
Prepared for: Seychelles MSP
Prepared on: 26 February 2024
Prepared by: Spatial Support Systems, LLC
Scale: 1:1,600,000
Map projection: UTM Zone 40s, WGS 84
Data Sources: Seychelles MACCE, SFA, PetroSeychelles, Gos-UNDP-GEF, The Nature Conservancy, Halpern et al. 2008, GRID-Arendal, ESRI, GEBCO, IMO, MarineRegions.org

- 200m Depth Contour
- Other Exclusive Economic Zone
- Territorial Sea (12nm)
- Fishing by Foreign Vessels Prohibited
- Area to be Avoided (Mahé Plateau)
- Petroleum Exploration License Area (2023)
- High Intensity International Shipping Areas (adapted from *Halpern et al. 2008*)

Platte and Coëtivy Islands

Alphonse Group

This map shows the place names, bathymetry, and geomorphology of the islands in the Alphonse Group and surrounding waters.

The Alphonse Group consists of two sand-cay atolls, Alphonse Atoll in the north and St François Atoll in the south, which includes the islands St François and Bijoutier. The atolls are situated on a 600-km long north-south undersea ridge and trench system contiguous with the Amirante Ridge and Bank to the north, and the Amirante Trench to the west. Due to their proximity to the Amirante Bank and associated island group immediately to the north, the islands of the Alphonse Group are occasionally described as being part of the Amirantes Group.

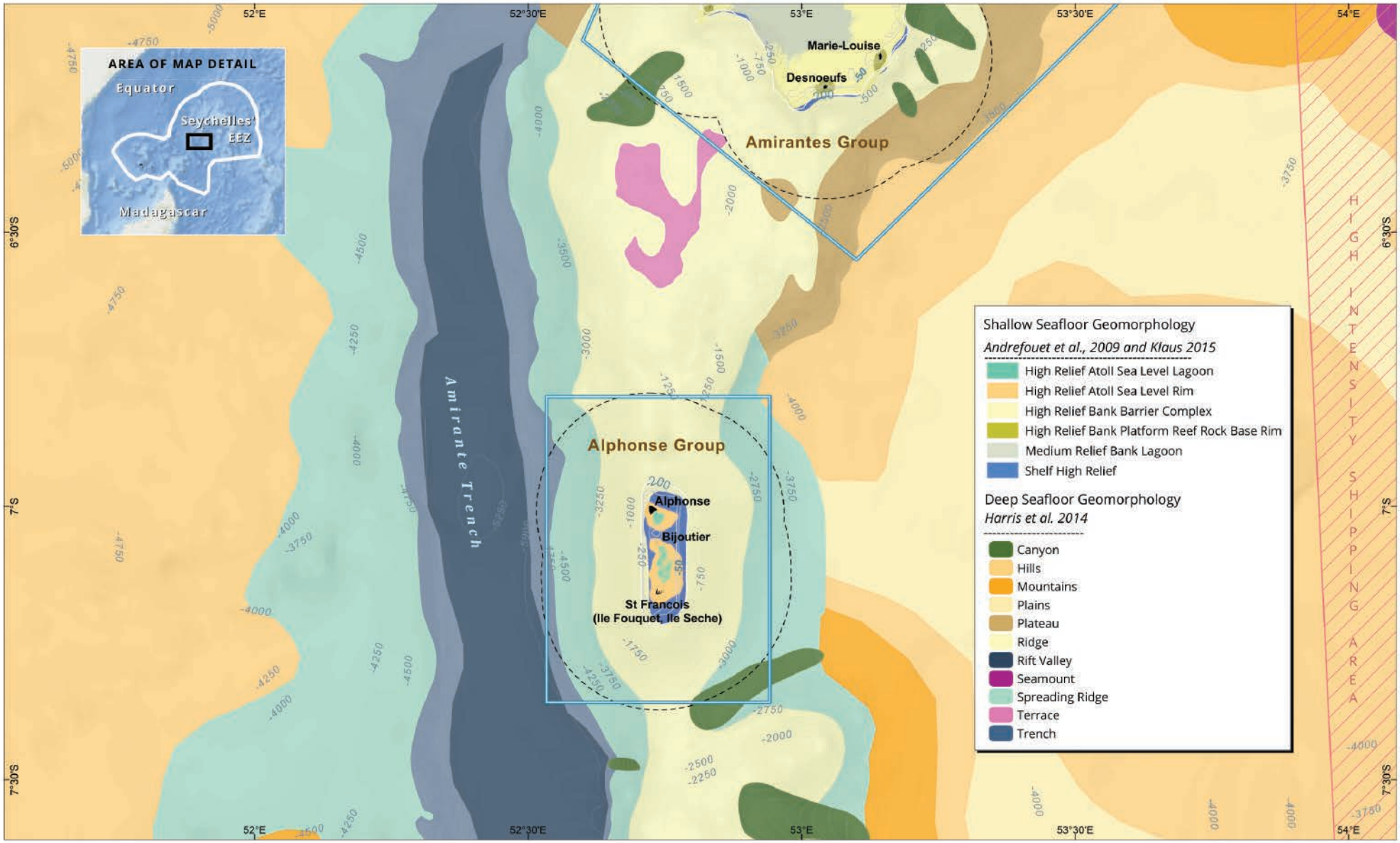


The shallow waters of the Alphonse Group are characterized by high-relief atoll rim structures protecting shallow sea-level lagoons. To the east of the atolls, steeply sloping undersea topography includes abyssal hills, mountains, and plains bisected by several canyon systems. To the west, the Amirante Ridge drops off abruptly to depths up to 5,300 m, merely 30 km from shore.

KEY FACTS

- Alphonse Atoll, at 1.6 km^2, is the largest of the Alphonse Group, and is situated approximately 90 km south-southwest of Desnoeufs Island (Amirantes Group) and 400 km southwest of Mahé.
- Alphonse and St François atolls are separated by a deep channel that is just 2 km wide.
- Historically, Alphonse Island participated in the coconut industry and, like other Seychelles islands, was extensively mined for guano.
- Alphonse provides important habitats for turtles and hosts colonies of seabirds.
- Alphonse is currently the site of a commercial sport fishing enterprise that hosts a limited number of clients each year. Fishing in this area targets both shallow and deep water species and occurs around each of the atolls.

MAP SCALE: *Data are presented at a scale of 1:1,000,000 (1 cm = 10 km)*



NORTH 0 12.5 25 Km

FOR DISCUSSION PURPOSES ONLY
Prepared for: Seychelles MSP
Prepared on: 26 February 2024
Prepared by: Spatial Support Systems, LLC
Scale: 1:1,000,000
Map projection: UTM Zone 39s, WGS 84
Data Sources: Seychelles MACCE, SFA, PetroSeychelles, Gos-UNDP-GEF, The Nature Conservancy, Halpern et al. 2008, GRID-Arendal, ESRI, GEBCO, IMO, MarineRegions.org

200m Depth Contour
Territorial Sea (12nm)
Fishing by Foreign Vessels Prohibited

High Intensity International Shipping Areas (adapted from *Halpern et al., 2008*)

Alphonse Group

Farquhar Group

This map shows the place names, bathymetry, and geomorphology of the Farquhar Archipelago of the Seychelles Outer Islands and surrounding waters.

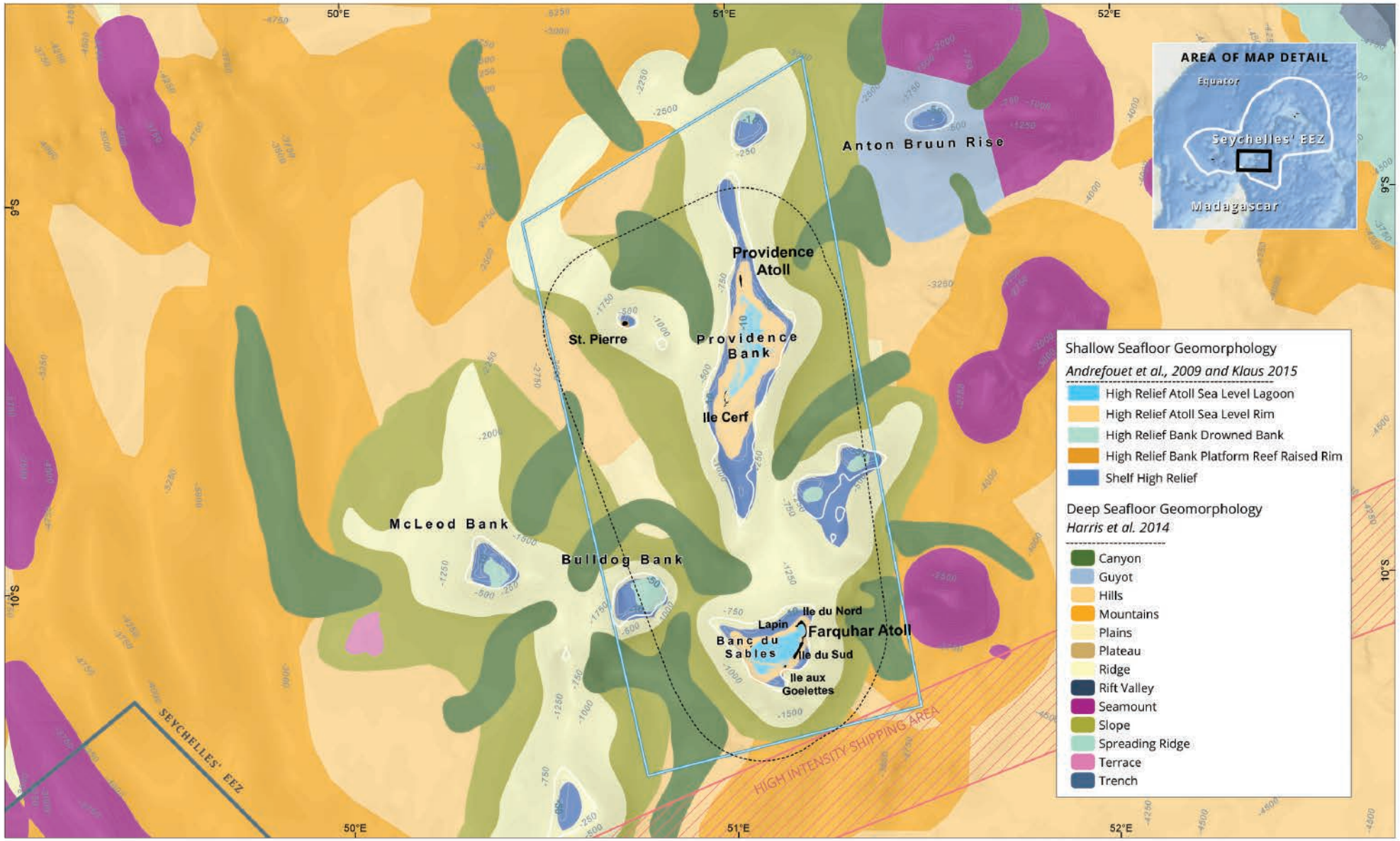
The Farquhar Group is an archipelago of the Outer Islands located roughly 750 km southwest of Mahé, in the south-central part of the EEZ. Encompassing both the Farquhar and Providence atolls, there are 12 primary land masses found here: nine are associated with the Farquhar Atoll and three are associated with the Providence Atoll. Spanning approximately 125 km north to south and 65 km west to east, this is an exceptionally rich and diverse area in terms of both seafloor topography and geomorphology, and its associated biodiversity. The ocean around the Farquhar Group is characterized by submerged banks less than 200 m deep, surrounded by sloping topography dissected by undersea canyons and at least ten distinct seamount massifs.



KEY FACTS

- The Farquhar Atoll includes the following land masses (in decreasing order of size): Ile du Sud, Ile du Nord, Ile aux Goelettes, Manahas Milieu, Bancs du Sables, Manahas Sud, Manahas Nord, Déposés, Lapins, and Ile du Milieu.
- The Providence Atoll includes Providence, Cerf, and St Pierre islands, in decreasing order of size.
- The Farquhar Group hosts large colonies of both Sooty and Black-naped Terns (*Onychoprion fuscatus* and *Sterna sumatrana*), as well as important breeding habitat for sea turtles.
- There is one human settlement at Ile du Nord within the Farquhar Atoll.
- No fishing by foreign vessels is allowed in the Farquhar Group, however, the wider region is an area that sees significant use by international industrial longline fleets.
- An international shipping lane traverses the region, to the south of Farquhar Atoll.
- A cyclone hit Farquhar Atoll in 2017 and destroyed all infrastructure. Vegetation was flattened and the island devastated by wind and waves. There is currently no tourism infrastructure on the islands of the Farquhar Group.
- Island Conservation Society opened a Conservation Centre on Ile du Nord in 2014.

MAP SCALE: *Data are presented at a scale of 1:2,000,000 (1 cm = 20 km)*



NORTH 0 25 50 Km

FOR DISCUSSION PURPOSES ONLY
Prepared for: Seychelles MSP
Prepared on: 26 February 2024
Prepared by: Spatial Support Systems, LLC
Scale: 1:1,420,000
Map projection: UTM Zone 39s, WGS 84
Data Sources: Seychelles MACCE, SFA, PetroSeychelles, Gos-UNDP-GEF, The Nature Conservancy, Halpern et al. 2008, GRID-Arendal, ESRI, GEBCO, IMO, MarineRegions.org

Seychelles' Exclusive Economic Zone
200m Depth Contour
Territorial Sea (12nm)
Fishing by Foreign Vessels Prohibited
High Intensity International Shipping Areas (adapted from Halpern, 2008)

Farquhar Group

Aldabra Group

This map shows the place names, bathymetry, and geomorphology of the Aldabra and Assomption, and Cosmoledo and Astove archipelagos of the Outer Islands and surrounding waters.

The Aldabra and Assomption archipelago lies roughly 1,100 km southwest of Mahé Island, 430 km northwest of Madagascar, and 750 km east of the African mainland. The Cosmoledo and Astove archipelago sits 100 km to the east of Aldabra and Assomption. Consisting of Aldabra Atoll, Assomption Island, Cosmoledo Atoll, and Astove Island, this region hosts globally significant biodiversity and opportunities for scientific research. As such, the Aldabra Atoll was designated as a UNESCO World Heritage Site in 1982 and the waters surrounding the atoll were designated as the Aldabra Special Reserve in 2019.

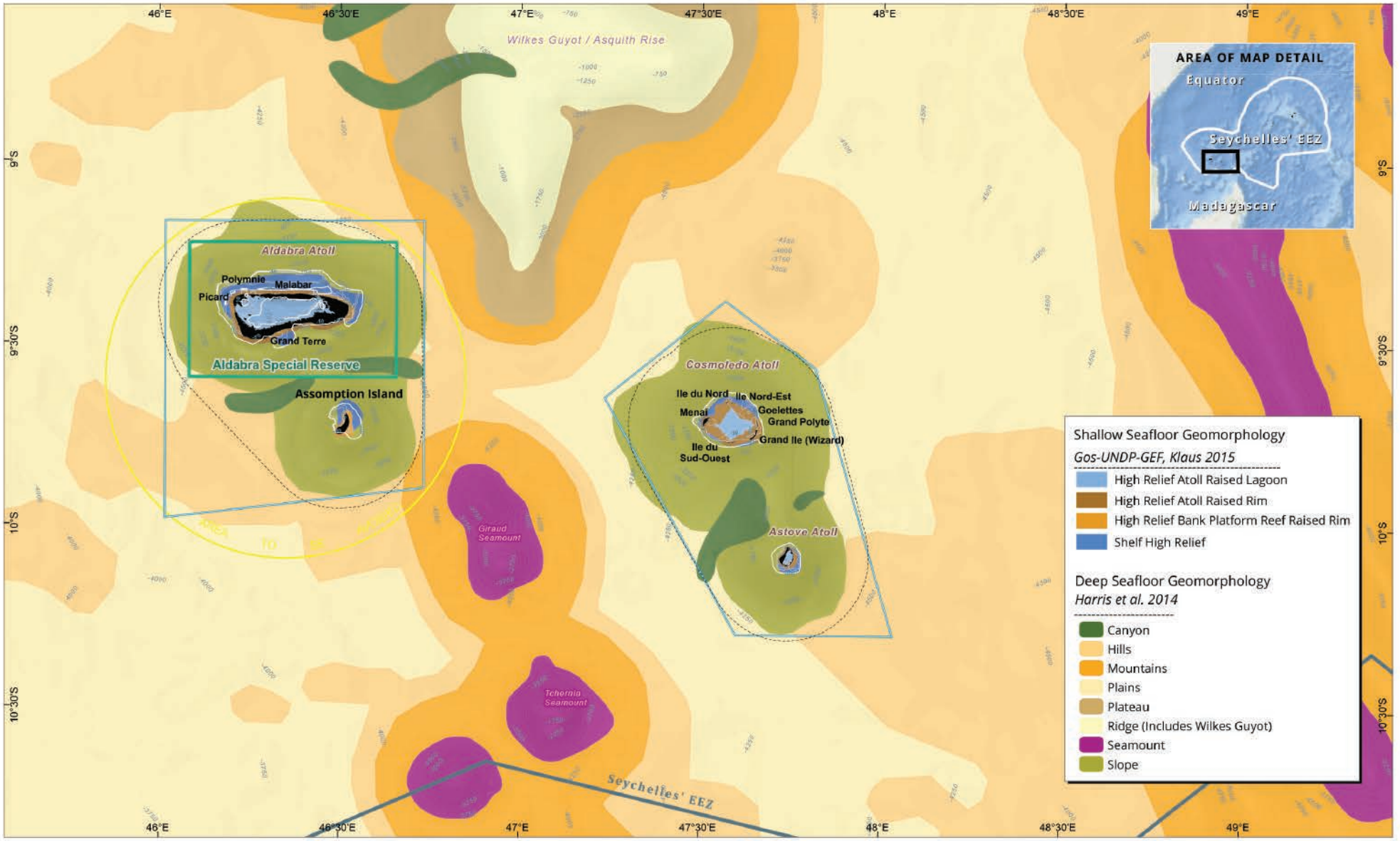
There is no fishing by foreign vessels allowed in the waters surrounding the atolls of the Aldabra Group inside the 200 m depth contour. The adjacent region to the north, however, has seen significant historic use by international industrial longline fleets.



KEY FACTS

- Aldabra Atoll is one of the largest atolls in the world and is also one of the most pristine due to its remote location.
- The Aldabra Research Station is the only permanent human settlement on Aldabra Atoll.
- Nearby on Assomption, there is an airstrip and small settlement to support Aldabra Research Station guests and researchers in transit.
- Small tourism lodges primarily engaged in sport fishing activities are located on Astove and Wizard islands, within the Cosmoledo Atoll.
- The islands and atolls of the Aldabra Group are the closest of any Seychelles land masses to neighboring countries and as such these are important areas for the establishment of maritime security infrastructure.
- A north-south international shipping lane traverses the region in close proximity to Aldabra Atoll (within roughly 40 km), to the west.
- The Seychelles Island Foundation assumed management and protection of Aldabra Atoll in 1979.

MAP SCALE: *Data are presented at a scale of 1:500,000 (1 cm = 5 km)*



NORTH 0 25 50 Km

FOR DISCUSSION PURPOSES ONLY
Prepared for: Seychelles MSP
Prepared on: 26 February 2024
Prepared by: Spatial Support Systems, LLC
Scale: 1:1,500,000
Map projection: UTM Zone 38s, WGS 84
Data Sources: Seychelles MACCE, SFA, PetroSeychelles, Gos-UNDP-GEF, The Nature Conservancy, Halpern et al. 2008, GRID-Arendal, ESRI, GEBCO, IMO, MarineRegions.org

200m Depth Contour
Territorial Sea (12nm)
Fishing by Foreign Vessels Prohibited
Marine Protected Areas (Pre-MSP)
Area To Be Avoided (Albabra Atoll)

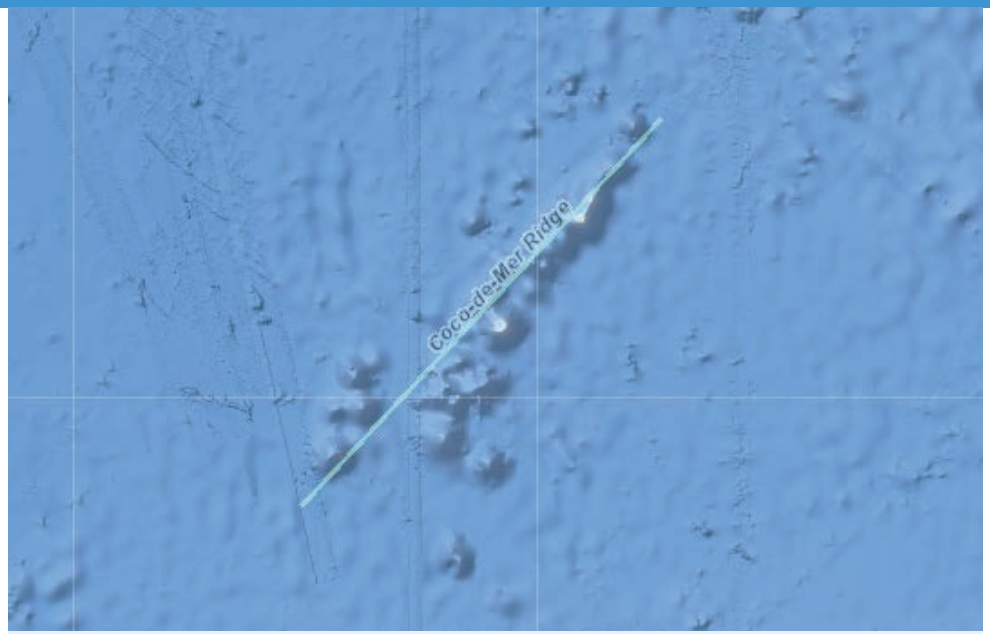
Aldabra Group

Coco de Mer Ridge

This map shows the place names, bathymetry, and geomorphology of the northernmost extent of the Seychelles Exclusive Economic Zone (EEZ), including the Coco de Mer Ridge and seamounts, and surrounding waters.

At the northernmost extent of the EEZ sits the Coco de Mer Ridge and seamount system, which spans roughly 275 km north to south. Exhibiting a vertical rise from the seafloor of over 4,700 m, in association with at least 14 distinct seamounts that nearly reach the ocean surface (within 20 m at the Equator Seamount), the topography of this area promotes significant deep ocean upwelling that provides important habitat for fishes, marine mammals, and seabirds alike.

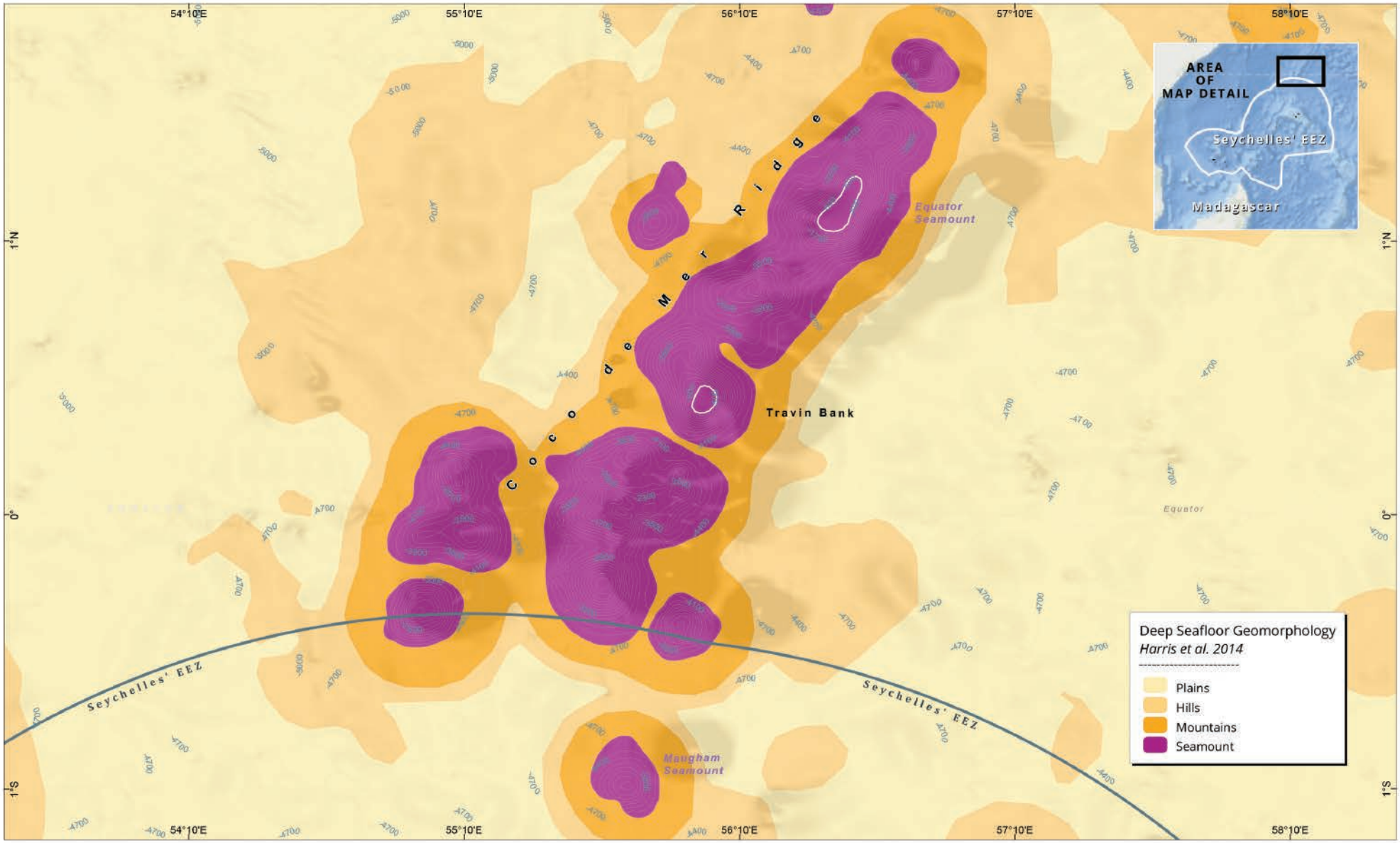
Inside and outside of the EEZ, the Coco de Mer Ridge system is important foraging habitat for seabirds; Sooty Terns travel from at least as far away as Bird Island, a major colony 350–700 km to the south. A SeyCCAT-funded telemetry study by Chris Feare and Rachel Bristol contributed new information on the foraging distances of Sooty Terns in Seychelles and informed the Seychelles Marine Spatial Plan zoning designs.



KEY FACTS

- The Coco de Mer Ridge and seamount system straddles the equator, spanning from approximately 1° south to 2° north latitude.
- This is an area of high-relief seafloor topography that is bordered to the west and east by a vast expanse of abyssal plains.
- The Coco de Mer Ridge extends inside and outside the Seychelles EEZ with most of the ridge in the Areas Beyond National Jurisdiction (ABNJ). The Coco de Mer Ridge may be an area of concern for illegal, unreported, and unregulated (IUU) fishing and fisheries transhipment.
- The Coco de Mer Ridge is an active fishing area for the semi-industrial longline vessels.

MAP SCALE: *Data are presented at a scale of 1:2,000,000 (1 cm = 20 km)*



NORTH 0 25 50 Km

FOR DISCUSSION PURPOSES ONLY
Prepared for: Seychelles MSP
Prepared on: 26 February 2024
Prepared by: Spatial Support Systems, LLC
Scale: 1:2,000,000
Map projection: UTM Zone 40s, WGS 84
Data Sources: Seychelles MACCE, Gos-UNDP-GEF, The Nature Conservancy, GRID-Arendal, MarineRegions.org, ESRI, GEBCO

Seychelles' Exclusive Economic Zone
500m Depth Contour

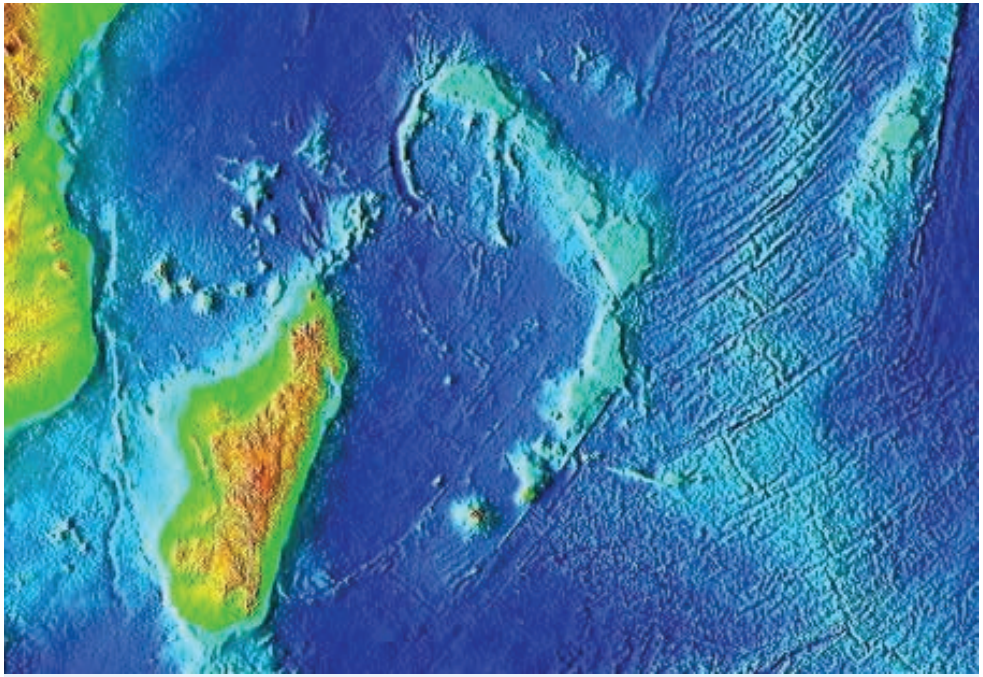
Coco de Mer Ridge

Mascarene Plateau

This map shows the place names, bathymetry, and geomorphology of the southeastern extent of the Seychelles Exclusive Economic Zone (EEZ), including the northern Mascarene Plateau, the Seychelles-Mauritius Joint Management Area (JMA) of the Extended Continental Shelf (ECS), and surrounding waters.

The southeastern extent of the EEZ is contiguous with the northernmost extent of the Mascarene Plateau, a submarine plateau that stretches approximately 2,000 km from the Mahé Plateau in the north, through an area of the High Seas, into Mauritius' EEZ and south to Réunion Island. Defining the eastern margin of the Mascarene Basin, the Mascarene Plateau is characterised by a series of shallow submerged banks situated on a submarine plateau, surrounded by abyssal depths. The margins of the plateau are deeply cut or dissected by undersea canyons and escarpments that descend to expansive ranges of abyssal hills and mountains. The shallow banks of the Mascarene Plateau provide productive habitat for marine species as well as areas with unknown potential for non-renewable resource development. As such, the northern areas contiguous with both Seychelles' and Mauritius' waters, surrounding Ritchie Bank and Saya de Malha Bank, have been the focus of efforts to better manage these resources in a collaborative manner between the governments of Seychelles and Mauritius.

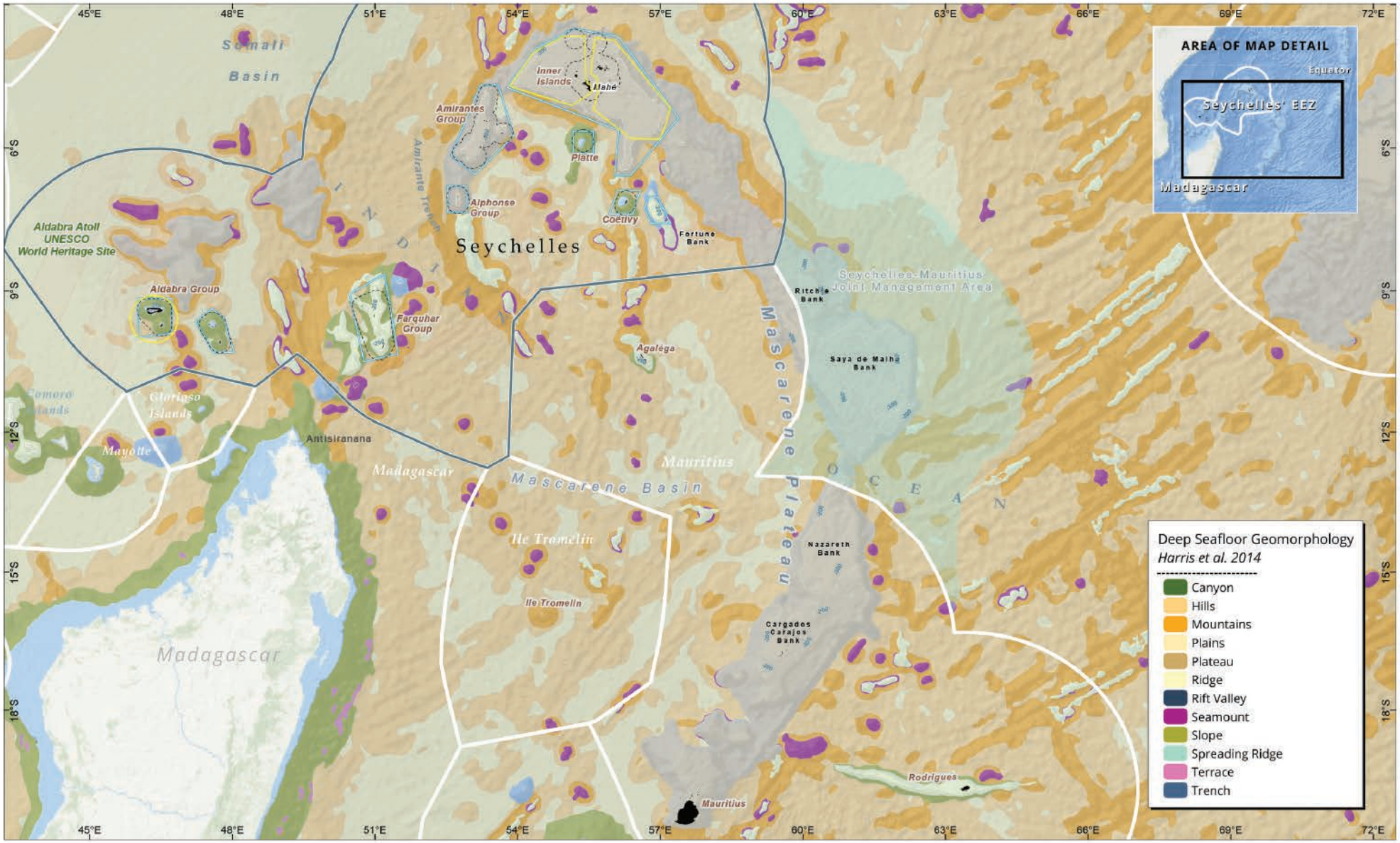
In March 2011, the United Nations Commission on the Limits of the Continental Shelf agreed to the establishment of a new JMA management area focused on the ECS area beyond Seychelles' and Mauritius' EEZs. Seychelles and Mauritius currently have joint jurisdiction over an area of approximately 385,000 km^2 in the Mascarene Plateau region for the purpose of exploring and developing seabed and subsurface resources.



KEY FACTS

- The Seychelles Bank and Mahé Plateau are within the Seychelles EEZ. Ritchie Bank and Saya de Malha Bank are within the JMA.
- The Saya de Malha Bank is the largest bank on the Mascarene Plateau and may host the largest contiguous seagrass beds in the world.
- The central Saya de Malha and Nazareth banks obstruct and concentrate the South Equatorial Current, exerting a major influence on the oceanography of the Western Indian Ocean region as a whole.
- Areas to the lee of the banks may exhibit enhanced mixing and upwelling, and thus increased productivity as compared to surrounding areas.

MAP SCALE: *Data are presented at a scale of 1:9,265,500 (1 cm = 92.6 km)*



NORTH 0 160 320 Km

FOR DISCUSSION PURPOSES ONLY
Prepared for: Seychelles MSP
Prepared on: 26 February 2024
Prepared by: Spatial Support Systems, LLC
Scale: 1:9,265,500
Map projection: UTM Zone 40s, WGS 84
Data Sources: Seychelles MACCE, SFA, PetroSeychelles, Gos-UNDP-GEF, The Nature Conservancy, Halpern et al. 2008, GRID-Arendal, ESRI, GEBCO, IMO, MarineRegions.org

- Seychelles' Exclusive Economic Zone
- 200m Depth Contour
- Other Exclusive Economic Zone
- Territorial Sea (Seychelles; 12nm)
- Fishing by Foreign Vessels Prohibited
- Area To Be Avoided (Mahé Plateau)
- Seychelles-Mauritius Joint Management Area
- High Seas
- High Intensity International Shipping Areas (Seychelles, adapted from *Halpern et al., 2008*)

Mascarene Plateau



6 Planning Outputs

The SMSP planning process developed many spatial and non-spatial outputs to support the zoning design discussions and the development of Allowable Activities Tables for all categories in the SMSP zoning framework. The SMSP planning team developed spatial products using Esri ArcGIS and Marxan with Zones software with local and remote sensing data. The SMSP Atlas features the analysis to identify high-priority sites for biodiversity conservation and climate change risk mapping. Additional spatial analyses can be found throughout the SMSP Atlas as featured on maps that used modeled data from global data sets as well as creating maps to indicate known species distributions.

Marxan with Zones

These maps show the results of a pilot project to highlight important areas for biodiversity and economic activities in Seychelles. The purpose was to support the development of alternative zoning designs to achieve biodiversity conservation targets and priorities for marine economic sectors such as fishing, utilities, non-renewable resources, and tourism. These maps were some of many that informed proposals for Seychelles marine spatial planning (SMSP) zones.

BACKGROUND

An integrated database was used to identify patterns of "coarse filter" marine habitats and priority areas for marine economic uses. Scenarios to meet the 30% protection goal by area and biodiversity representation were designed that also considered stakeholder inputs regarding economic development and future opportunities. The scenarios contrasted biodiversity and economic priorities, showing stakeholders those areas consistently selected as important for both scenarios as well as areas that were different.

The scenarios were used to inform zoning designs but not create the zoning design itself. This is an important distinction because a mathematical approach alone cannot account for all the important information needed for these discussions such as socio-cultural values, enforcement, or financial costs of implementation.

METHODOLOGY

Marxan with Zones, a software that allows planners to set goals for multiple zones at once and highlight potentially important areas to meet biodiversity representation and other objectives, was used for a strategic-scale spatial analysis. Scenarios were informed by spatial data and stakeholder feedback, which is necessary to discuss what values to include in each designated zone and ground-truth results.

Other Decision Support Tools (DST) were built in ArcGIS to quantify tradeoffs associated with each of the scenarios. These DST identified where 30% biodiversity representation goals were met or had shortfalls and generated summaries to compare how well priority areas for each economic sector were captured between the two scenarios. The steps taken to develop scenarios included:

Compile data. The project used 80 marine biodiversity features, economic and human use data, and participatory mapping that identified priority marine use areas from stakeholders in 2014–2015.

Identify Zone Categories. The SMSP Zoning Framework and draft Allowable Activities Tables.

Build scenarios. Two scenarios contrasted biodiversity and economic uses: Biodiversity Bias and Economic Bias. The scenarios highlighted differences in the areas most frequently selected by Marxan with Zones for meeting various objectives for avoidance (or coincidence) of biodiversity conservation areas with different economic uses of the marine environment. An intermediate Blue Economy Scenario was not sufficiently different from the Economy scenario to include in the Atlas.

Capture replication. The Seychelles EEZ was divided into five sub-regions, based on proximity to the major archipelago areas, to ensure similar habitat features were represented throughout the EEZ rather than all in one location. Principles for biodiversity conservation and climate change both suggest replication or redundancy to avoid an "all your eggs in one basket" approach to biodiversity protection, to incre se resilience of ecosystems.

Summarise the scenarios. The DST were used to summarise and look at differences between the scenarios for representation of biodiversity features and human use values.

Stakeholder consultations. Stakeholders reviewed the spatial data layers, developed participatory mapping layers, provided input on scenarios, and reviewed results.

Descriptions and assumptions for the two scenarios in the Marxan with Zones analysis.

Scenario Description	Assumptions
The **Biodiversity Bias** scenario prioritizes the representation of marine habitats over human uses in the selection of Zone 1 and Zone 2 boundaries. The selected areas would likely overlap high-use areas for economic sectors.	No explicit representation goals for economic uses. No explicit avoidance of high-intensity extractive use areas.
The **Economic Bias** scenario seeks to minimise the overlap between high-value economic use areas and areas selected for habitat representation. To contrast with the Biodiversity Bias scenario, zone areas strongly favour the representation of marine habitats in areas away from the priority economic use areas identified by stakeholders.	Explicit representation goals for certain economic uses were specified. Strongly weighted avoidance of the highest-intensity extractive use areas was specified.

MODEL PARAMETERS

Sub-region area goal. This parameter was set at 15% for Zones 1 and 2 to find solutions that were made up of 15% of the area of each of the five sub-regions and combined made up the 30% area goal for the EEZ. For Zone 3, a goal of 70% helped further constrain Marxan in terms of how much area was finally selected across all zones.

Sub-region habitat representation goal. This parameter was set at 15% to find solutions in Zones 1 and 2 that represent 15% of each coarse-filter habitat in each of the five sub-regions for shallow and deep water habitats. No goal was set for Zone 3.

Contribution rate. This parameter captured uncertainty in the degradation of habitats because of human activities, meaning that more area may need to be conserved in order to sustain extractive or destructive pressures and maintain or retain the expected values to users. This rate specified how much a single unit of habitat counted towards meeting representation goals. For example, a "100% contribution rate" meant that one unit of habitat contributed one unit towards meeting the area goal. Similarly, a "75% contribution rate" meant that one unit contributed 0.75 units towards the goals.

Summary of model parameters to set up the area and biodiversity goals for two scenarios.

Scenario	Zone	Sub-region area goal	Sub-region habitat representation goal	Contribution rate
Biodiversity Bias	1	15	15	100
	2	15	15	75
	3	70	-	-
Economic Bias	1	15	15	100
	2	15	15	75
	3	70	-	-

Priority tourism. Priority tourism areas were based on stakeholder input in 2014–2015 and included all areas on the 200-m shelf and up to 16 km from the edge of the shelf. To avoid spatial bias towards all shelf areas in the model, we specified a 75% goal for these areas, stratified by sub-region, and split the goal for representation of tourism areas evenly at 25% across the three zone categories.

Fishing 'effort'. Vessel Monitoring System (VMS) locations were filtered to locations for artisanal (2008, 2010–2012) and semi-industrial (2008–2012) vessels with characteristics related to fishing activity, based on vessel speed. Fishing effort or catch data were not available for these fisheries.

Industrial fishing 'Average Total Catch' value. Catch data were included from all industrial tuna fisheries in Seychelles waters (2003–2012).

Cost layer. In Marxan with Zones, the inclusion of any given planning unit in a model result may or may not incur "cost" to the model, which Marxan attempts to minimise. In this project, the lowest costs were equivalent to the area of each planning unit (minimising these costs thereby minimises the area of the resulting zone areas), while the highest costs were associated with planning units that overlap priority areas for commercial fishing, public utilities and infrastructure (e.g., shipping lanes), and non-renewable resources (oil and gas) in the stakeholder preferences database. Noting that tourism goals were set for these activities across the three zones and not included in the Cost layer. Cost was zero for Biodiversity Bias and very high for Economic Bias; for the Economic Bias scenario, no avoidance of priority tourism areas was specified because these areas are defined, for the most part, by a buffer around the 200-m shelf.

Description of Cost by Scenario.

Scenario	Cost	Cost description
Biodiversity Bias	Zero	No human use cost was applied to Zones 1 and 2; cost was equal to the area of each planning unit. The scenario did not look for habitat representation solutions away from priority human use areas. The purpose was to have a baseline for priority areas for biodiversity and a spatially efficient solution for representing habitats, regardless of where existing human uses may occur. This baseline serves to assess how the solution might need to change to accommodate different human uses.
Economic Bias	Very High	For Zones 1 and 2, the model was weighted with very high cost to provide habitat representation solutions away from the highest intensity human use areas. Strongly weighted avoidance of the highest intensity extractive use areas was specified in the model. This allows for very little overlap with extractive use areas.

ANALYSIS

Maps were produced for both scenarios to show "selection frequency" for Zones 1 and 2. The maps identified the solution areas selected most frequently from 100 independent model runs, each run testing 100,000,000 different spatial configurations. Additional maps were made to illustrate other Marxan model outputs, including the so-called 'Best Run' that identified areas that met the goals and constraints of each scenario in the most efficient manner. It was the Best Run areas that were used in the generation of measures comparing these two alternative scenarios.

RESULTS

Both scenarios met a 30% goal for biodiversity protection and 15% area goals by sub-region for Zones 1 and 2, while selecting different areas across the EEZ. Representation goals for coarse-scale habitat features were met in each scenario and all but nine (Biodiversity Bias scenario) and 13 (Economic Bias scenario) of the fine-scale biodiversity feature targets were achieved.

Areas that consistently emerged in both scenarios as important for biodiversity representation were:

- from Praslin and La Digue north to the north-central drop-off on the Mahé Plateau
- the south-central drop-off and areas surrounding Platte Island
- from the Alphonse group north through the central Amirantes Group and connecting east towards Platte and the southern drop-off on the Mahé Plateau
- waters around and to the north and east of Coëtivy, connecting to Platte and the Mahé southern drop-off
- Farquhar Group
- surrounding and to the south and east of Aldabra, Cosmoledo, and Astove

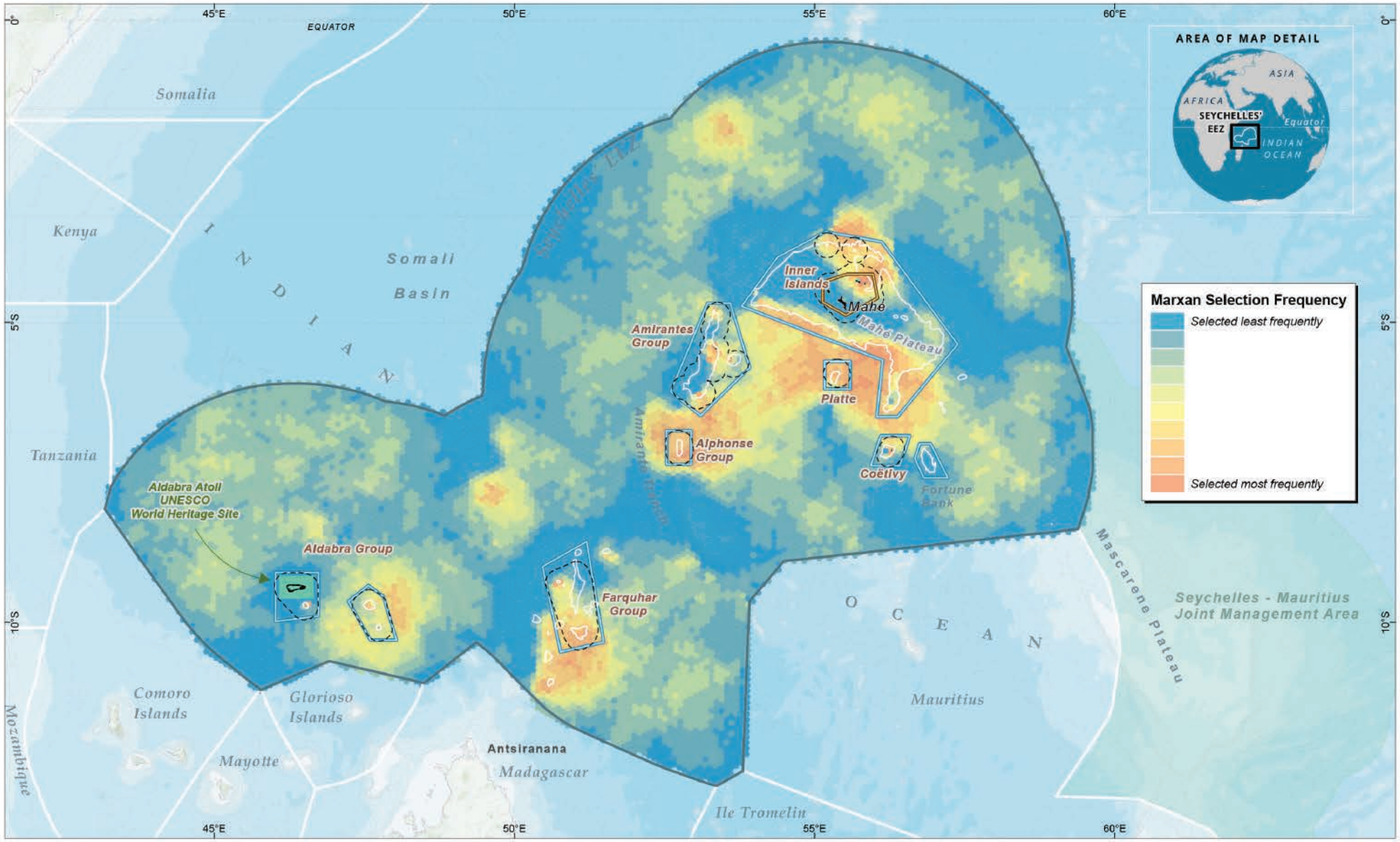
The Economic Bias scenario results avoided the high shipping areas and most of the industrial fishing high catch effort areas in the north and south of the EEZ to achieve the 30% goal.

DISCUSSION

As was noted during stakeholder consultations and previous analyses by the SMSP Initiative and partners (e.g., UNDP 2015), there was a large degree of overlap between high-priority human use areas and high marine diversity areas. As such, it was not always possible to represent every habitat type at the desired level in a zone configuration while simultaneously avoiding high-use areas for all of the marine sectors.

Of note, in the Marxan with Zones outputs, as compared to UNDP (2015), Aldabra did not consistently appear in the high selection frequency category, possibly because there is a higher diversity of total number of deep and shallow features surrounding Cosmoledo and Astove than Aldabra. To minimise the model costs associated with adding more overall area, Marxan favored selecting areas around Cosmoledo and Astove. This does not mean that the biodiversity around Aldabra is less important than the other atolls in the Aldabra Group.

MAP SCALE: *Data are presented at a scale of 1:9,100,000 (1 cm = 91 km)*



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FOR DISCUSSION PURPOSES ONLY
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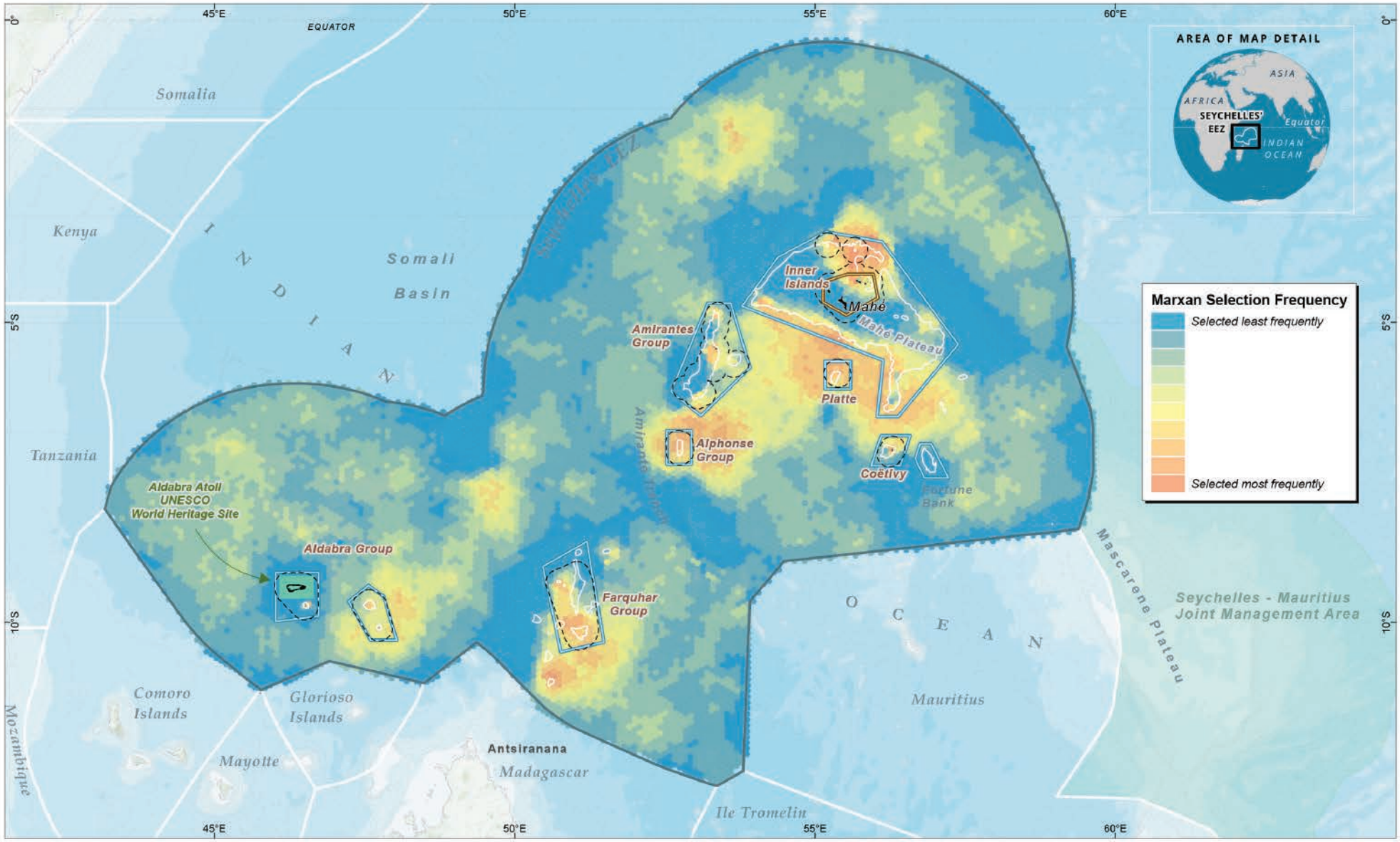
Prepared on: 26 February 2024
Prepared by: Spatial Support Systems, LLC
Scale: 1:9,100,000
Map projection: Cylindrical Equal Area
Datum: WGS84
Data Sources: Seychelles MACCE, SFA, SPA, The Nature Conservancy, ESRI, MarineRegions.org, GEBCO

- Seychelles' Exclusive Economic Zone
- 200m Depth Contour
- Other Exclusive Economic Zone
- Territorial Sea (12nm)
- Fishing by Foreign Vessels Prohibited
- Marine Protected Areas
- Port of Victoria Boundary

Biodiversity Scenario Zone 1



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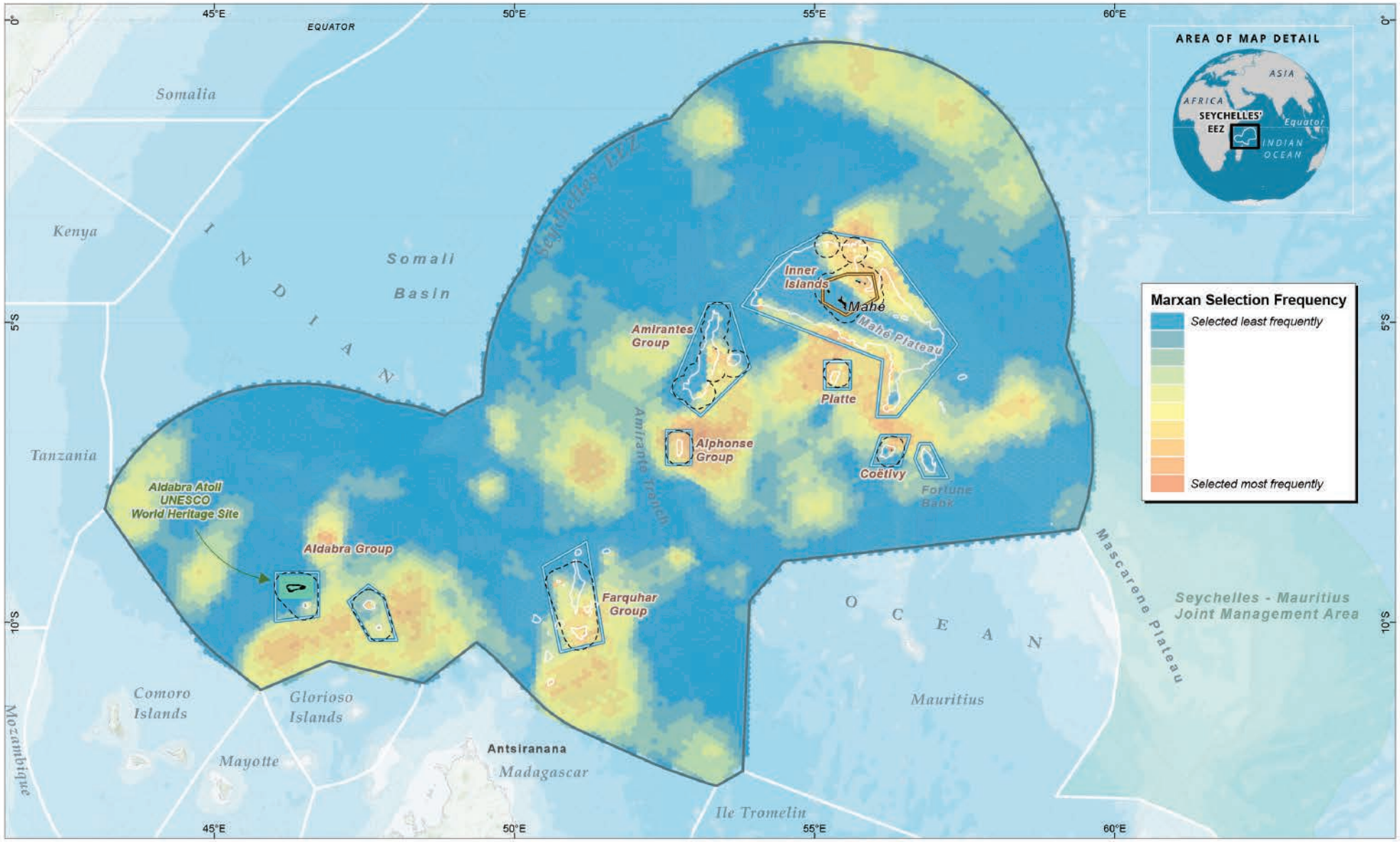
Biodiversity Scenario Zone 2



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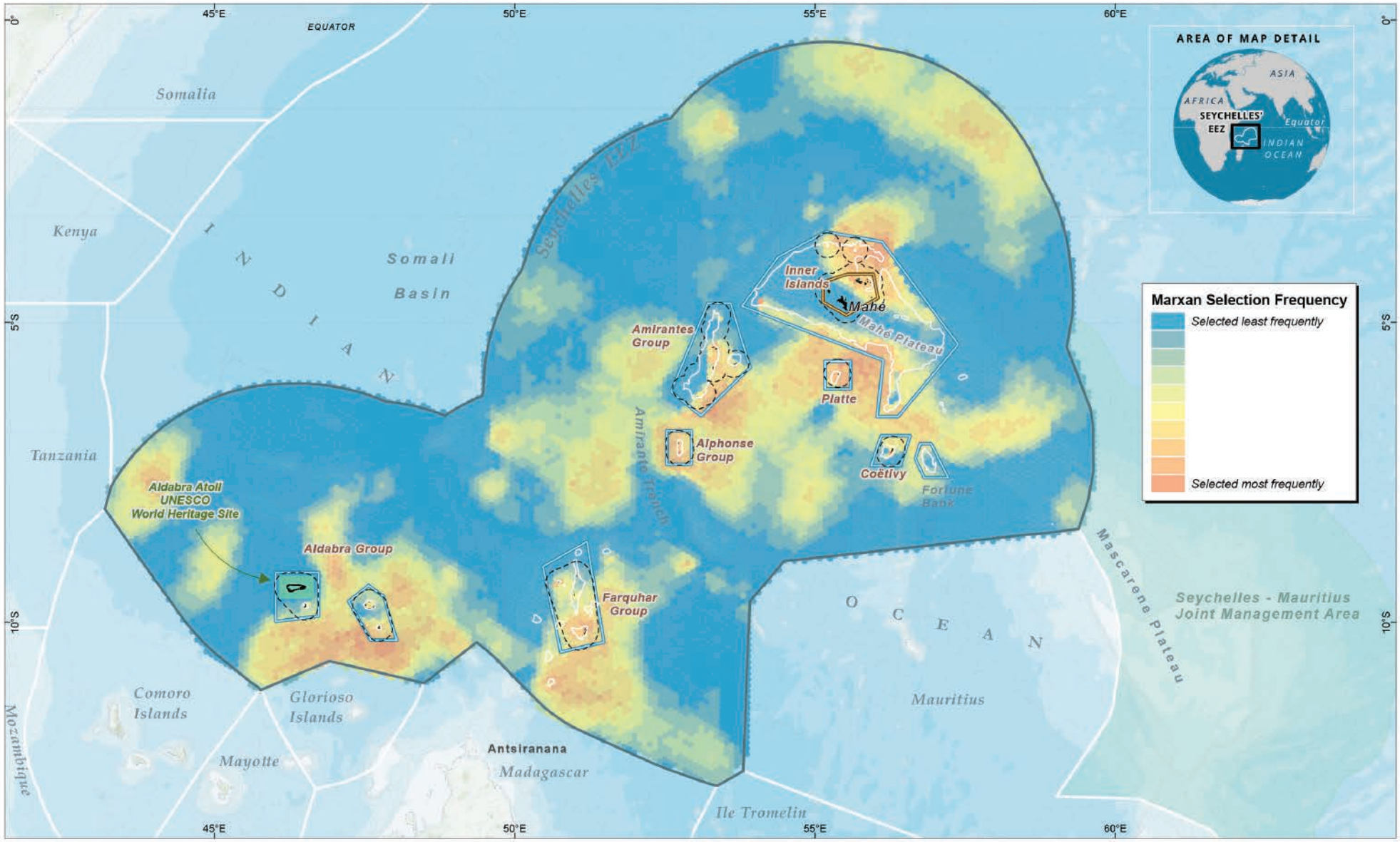
Economic Scenario Zone 1



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Economic Scenario Zone 2

Climate Change Risk Mapping

This map shows the cumulative coral reef 'hot spot' days for the entire Exclusive Economic Zone (EEZ) using sea surface temperature data from June 2002 to July 2022.

Coral bleaching has been identified as the most significant threat to coral reefs in Seychelles. Due to its geographical location, Seychelles is extremely vulnerable to local extinction of coral species and any reef-associated organisms that have low larval dispersal or limited sources of larvae from other areas. The reduction of coral cover from bleaching events coupled with increased sedimentation and decreased water quality in lagoons can lead to loss of reef structure. In the Inner islands, decreased water quality and increased sedimentation in the lagoons are factors limiting the recovery of coral reefs. Loss of corals leads to reduced wave damping and increased coastal erosion. The trends in coral bleaching and climate change effects vary across Seychelles archipelagoes because of differences in depth, upwelling, and mixing. For example, the Inner Islands are on a shallow plateau that can accumulate and retain warm water during warmer months and periods of low input of cool river water. In contrast, the Outer Islands have better mixing of cooler waters from localized upwelling and hence the coral reefs may be at a lower risk.

Climate change risk mapping was carried out in 2019 using 20-year sea surface temperature (SST) and chlorophyll signatures to look for trends in climate change impacts in shallow and deep waters. This was a pilot to test the integration of climate-smart methodology with existing marine spatial planning databases at a time (circa 2014–2018) when climate adaptation was still a relatively new objective for global MSP efforts. Could we identify areas with different patterns of thermal stress over time and at a scale relevant to the Seychelles Marine Spatial Plan (SMSP) zoning designs? Using remote sensing data, areas were identified with many anomalous or very warm SST months that could indicate thermally impacted areas and areas with few anomalous or very cool SST months that might represent thermal refugia.

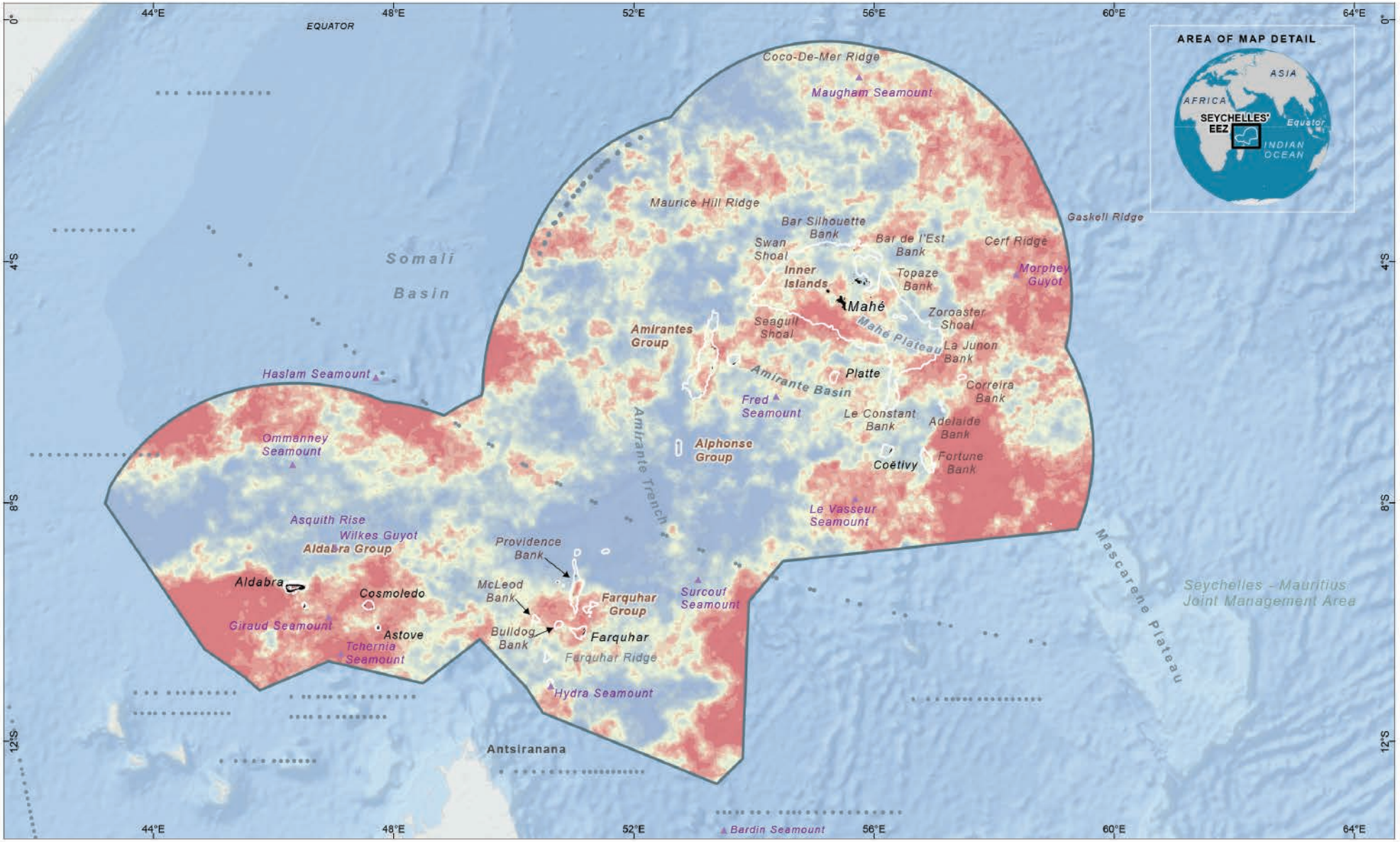
The primary analysis used high-resolution SST data to measure trends across the EEZ through time and examine patterns across space. This analysis used the number of heat stress months, defined as +1°C above the long-term average. A global data set from the Multi-scale Ultra-High Resolution (MUR) SST analysis anomaly at ~1-km spatial resolution from 2002–2022 was used for the 'heat stress months' monthly composites.

The mass coral bleaching resulting from the 1997–1998 El Niño event led to a 95% reduction in coral cover on many Seychelles reefs; less than 5% cover remained in most locations after this El Niño event. The reefs in the Inner Islands were severely affected, with many undergoing a phase shift from coral- to algal-dominated reefs. The hard coral cover of the Inner Islands took 17 years to return to pre-bleaching levels (42% hard coral cover). Initially, the granitic reefs recovered faster than the coralline reefs but by the year 2000 both types had reached the same levels of coral cover. Marine protected areas appear to provide a benefit to coral recovery, for example, by 2013 hard corals in protected areas had approximately 10% higher cover than unprotected areas.

KEY FACTS

- Persistent 'hot spots' appeared on the south drop-off of the Coco de Mer seamount ridge, Mahé Plateau, and Fortune Bank, near the Farquhar Group, Cosmoledo and Astove, and Aldabra and Assomption, and in the northwest section of the EEZ.
- Climate refugia with persistently cool waters are indicated on the north and southeast drop-off of Mahé Plateau, near the Amirantes Group, Alphonse Group, and Coëtivy, and in portions of Fortune Bank.
- The potential cold water refugia on the southern Amirantes Plateau was an input for proposals on the Amirantes during Milestone 3 for high biodiversity protection zones.

MAP SCALE: *Data are presented at a scale of 1:9,100,000 (1 cm = 91 km)*



NORTH 0 125 250 Km

FOR INFORMATION PURPOSES ONLY
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Prepared on: 25 May 2025
Prepared by: Spatial Support Systems, LLC
Scale: 1:9,100,000
Map projection: UTM Zone 40s
Datum: WGS84
Data Sources: JPL MUR MEaSUREs Project, Seychelles Government, MACCE Geodatabase, The Nature Conservancy, ESRI

Seychelles' Exclusive Economic Zone
200m Depth Contour
Seamounts and Guyots

Number of Coral Reef Hot Spot Events

50 - 132	202 - 218
133 - 154	219 - 237
155 - 171	238 - 262
172 - 186	263 - 300
187 - 201	301 - 513

Number of days sea surface exceeded the local maximum monthly mean temperature
June 2002 - July 2022
Quantile Bins (Each = 10% of Area)

Cumulative Coral Reef Hot Spot Days

2002/06/01 - 2022/07/01



7 Milestones

The Seychelles Marine Spatial Plan (SMSP) Initiative developed zoning designs for the three goals of the SMSP from 2014–2019. The scope of the zoning was identified in Phase 1 including the following considerations:

- The Territorial Sea includes some of the most well-used waters within Seychelles and has the most complexity with respect to identifying new marine protected areas and allowable uses. In August 2015, it was agreed that except for waters surrounding Aldabra and Assomption Atolls, the Territorial Sea waters would not be discussed in Phase 1 and would be called "Interim Zone 2".
- Stakeholder feedback strongly indicated very low support for any more marine protected areas in the Inner Islands.
- The management conditions and allowable uses would be phased in for activities and uses in consideration of existing agreements and activities in place through 2020 so as to gradually introduce increased marine protections and sustainable uses.

Milestone 1

Milestone 1 began in 2015 and a preliminary zoning design was proposed in April 2015. Zoning design version 1.1 was revised later that year to produce version 2.0, with 17 areas that reflected physical features (e.g., seamounts, canyons) and oceanographic processes (e.g., upwelling), as well as marine activities and uses (e.g., fishing, tourism, shipping). The "preferred" scenario from the UNDP Protected Area Expansion Project final report (Scenario 06; UNDP, 2015) and zoning design were evaluated for capturing the goals for representation established through the protected area process (see UNDP, 2015). Climate change threats were included as well as fisheries.

From June–December 2015, zoning design version 2.0 was discussed with stakeholders, revised, and version 2.2 was reviewed in early 2016. An SMSP Atlas was started to support the zoning discussions and view all key data layers relevant to planning.

Zoning design 2.0 met a target for 30% by area and representation including 15% in high biodiversity protection (Zone 1) and 15% in medium biodiversity protection (Zone 2). The design was refined to minimise impacts to other existing uses or activities and maximise the primary objective or emphasis of the zoned area. Discussions also included how to proceed in Phase 2 and refine the areas within the Territorial Sea. Each zone area included recommendations for allowable activities and uses and management considerations for allowable activities. During Milestone 1, the Allowable Activities Tables were drafted for each zone category; they were discussed through Milestone 3 until final approvals were made in 2024.

In October 2016, a revised design was developed from new analyses of biodiversity priority areas using Marxan with Zones. Zoning design version 3.0 was discussed and refined March–October 2017, with improvements made to the design on the Mahé Plateau to make sure that navigation within and outside the zone was easiest for mariners and the marine sectors.

The Milestone 1 nomination file was prepared for the Ministry of Environment, Energy and Climate Change (MEECC) in October–November 2017, submitted to Cabinet for approval, and underwent a mandatory 28-day public review period. Milestone 1 zoning design version 4.0 comprised Aldabra Group (Marine) National Park (71,601 km^2; 5.3%) and Amirantes to Fortune Bank (Marine) Area of Outstanding Natural Beauty (136,753 km^2; 10.1%). Total protection for Milestone 1 was 208,354 km^2 or 15.4% of the ocean. The National Parks and Nature Conservancy Act (NPNCA) Area of Outstanding Natural Beauty (AONB) was a temporary category until the NPNCA was amended and Sustainable Use Area created. The two new marine protection areas and were gazetted on 21 February 2018 by the Honourable Minister Didier Dogley of the MEECC.

Milestone 2

Phase 2, Milestone 2 expanded marine protections from 15% to more than 30% and included the shallow waters inside the Territorial Sea. The government finalised the official basepoints and gazetted the Territorial Sea and other maritime boundaries.

Phase 2 was launched in early 2017 for Milestone 2 to meet a 22.5% marine protection goal. More than 15 areas were under consideration and Geographic Information System (GIS) decision support tools were improved so that biodiversity representation statistics could be summarised with any changes to zoning designs and areas. There was high support to expand the Aldabra Group (Zone 1) and the Amirantes to Fortune Bank (Zone 2). The

consultations included the Seychelles Coast Guard, the National Information Sharing and Coordination Centre (NISCC), and the Regional Coordination Operations Centre (RCOC) so that monitoring and enforcement would be successful during implementation. The design principle for straight lines was employed and areas configured with consideration of the EEZ boundary shape.

Discussions in 2017–2018 included Zone 3 Multiple Use areas, the 70% of ocean outside of marine protection areas. Milestone 2 did not include any of the industrial fishing exclusion areas except for most of the Mahé Plateau and the Aldabra Group (which included Assomption). Assomption was gazetted as a Zone 1 area in Milestone 1, an exception to the general guidance from stakeholders to not gazette any of the waters inside the estimated Territorial Sea 12-nm boundary.

The Milestone 2 nomination file was prepared for the MEECC in January–February 2019, submitted to Cabinet for approval, and underwent a mandatory 28-day public review period. The marine protection areas were nominated for protected area status under the NPNCA. Two marine protection areas were expanded from Milestone 1 and now totalled 350,903 km^2 and covered 25.95%, without land (26.2% of the EEZ with land). The areas were gazetted on 15 April 2019 by the Honourable Minister Wallace Cosgrow of the MEECC. This same process was followed for Milestone 3.

Milestone 3

Milestone 3 discussions took place in 2019 and focused on expanding protections to 30%, developing the Allowable Activity Table for Zone 3, and finalizing all Allowable Activity Tables. All proposed areas for biodiversity protection were discussed, including Assomption Island which had been gazetted in Milestone 1 with Aldabra Group (Marine) National Park.

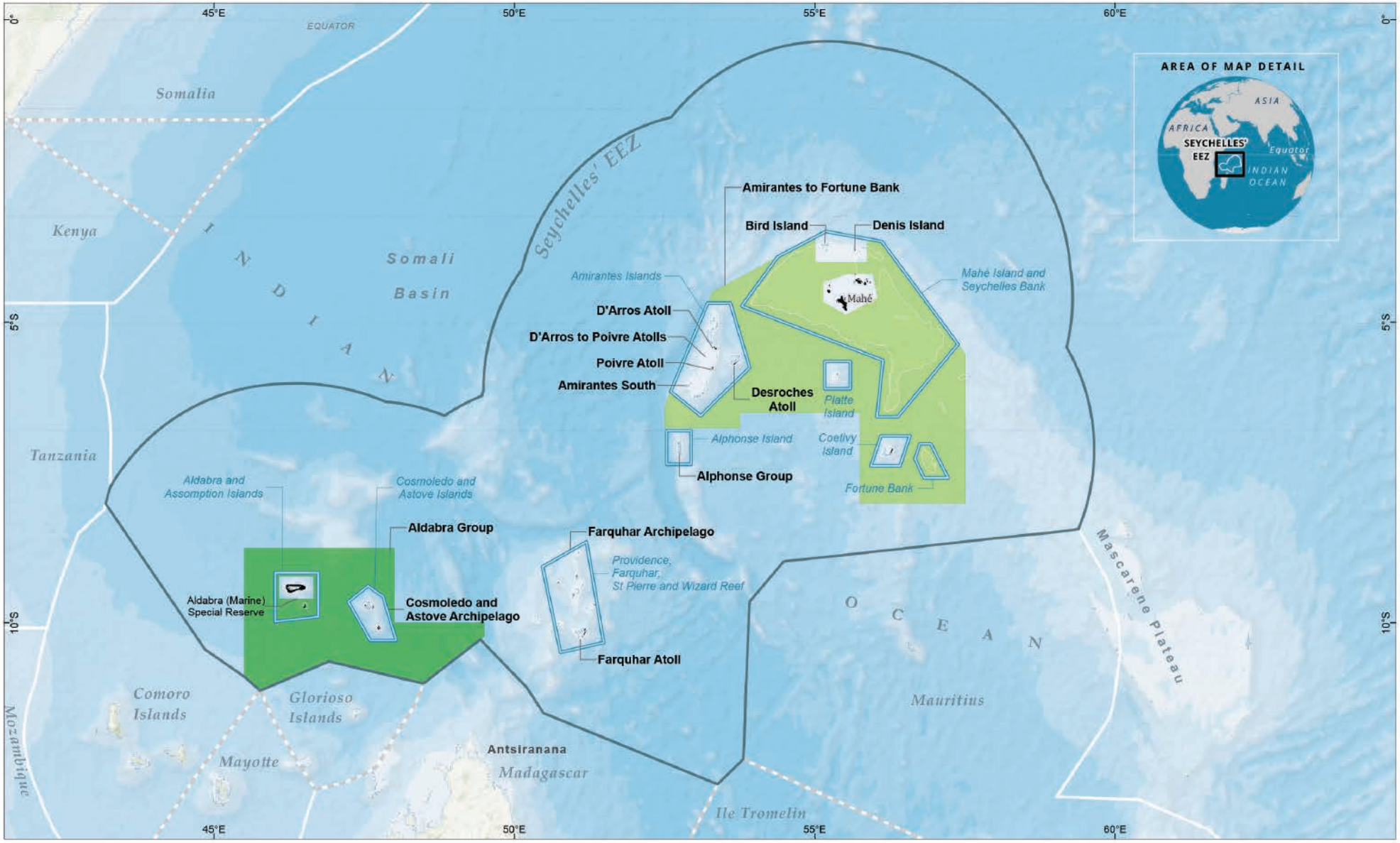
Discussions centred on the shallow waters of the major archipelagos and island groups including Amirantes Group. There was very high support to not add more marine protection areas to the Inner Islands, consistently heard since 2014. Discussions with the local semi-industrial and artisanal fisheries sectors highlighted the need for a zoning design that would allow for sustainable fishing in shallow waters near Mahé and in the Outer Islands. Stakeholder consultations once again included the Seychelles Coast Guard and Seychelles Maritime Safety Authority (SMSA), who favoured a design with fewer, larger areas to achieve the more than 410,000 km^2 protection goal rather than numerous small areas.

The Milestone 3 nomination was prepared for the MEECC in October–November 2019, submitted to Cabinet for approval, and underwent a mandatory 28-day public review period. Two marine protection areas were expanded from Milestone 2 and 11 more areas were added to the nomination file. Thirteen areas covering 441,455 km^2 and 32.66% of the EEZ were approved and gazetted on 26 March 2020 by the Honourable Minister Wallace Cosgrow of the MEECC.

Full Zoning Design

The full zoning design was completed on 26 March 2020 and included 15 zones—13 marine protection areas and two multiple use areas. The Inner Islands include the marine protected areas that were designated before the SMSP Initiative began in 2014. The final, approved SMSP zones include all marine waters of Seychelles from the mean high water mark to the EEZ boundary.





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FOR DISCUSSION PURPOSES ONLY
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Prepared on: 2 May 2025
Prepared by: Spatial Support Systems, LLC
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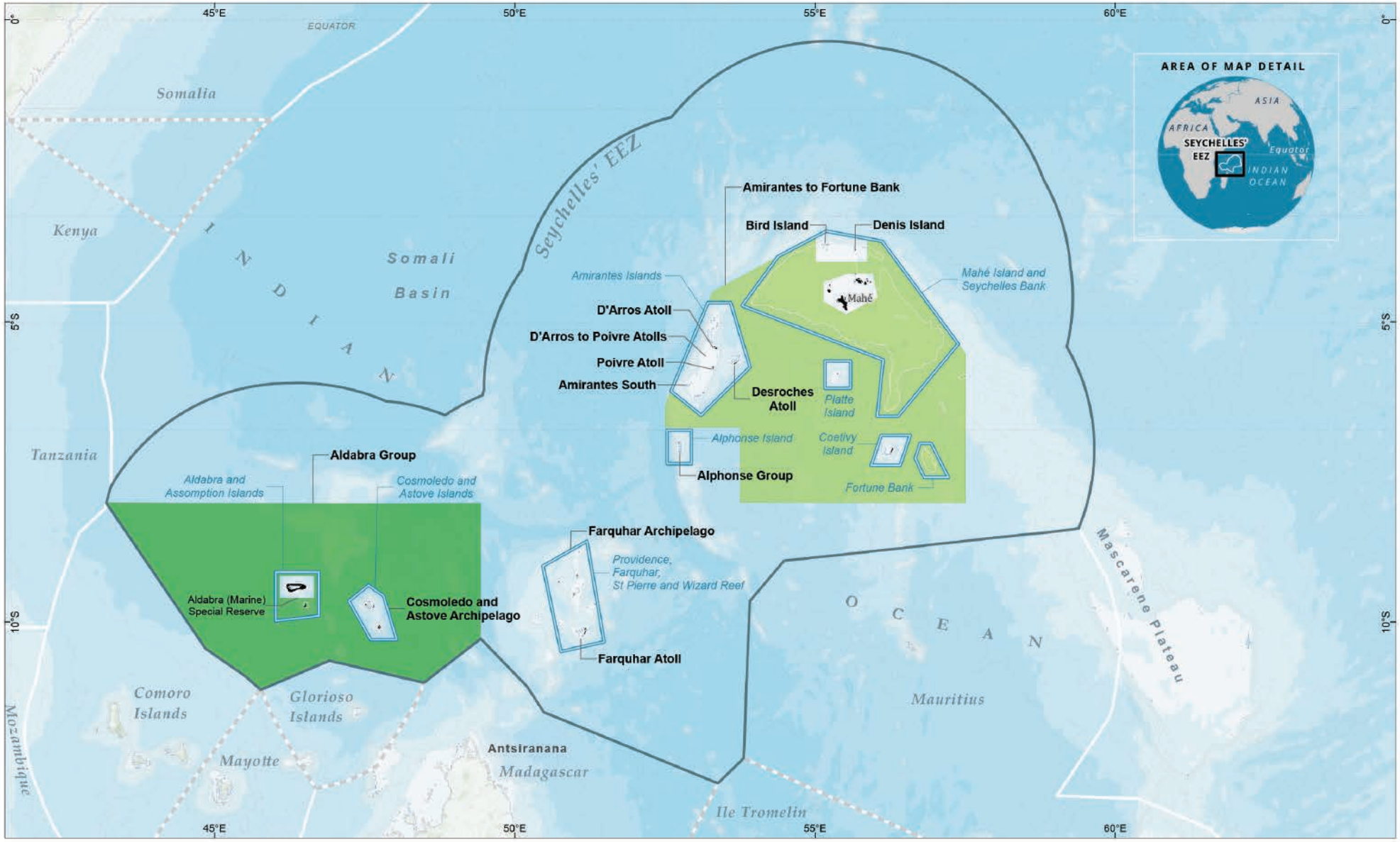
Map projection: Cylindrical Equal Area
Datum: WGS84
Data Sources: Seychelles Government, MEECC Geodatabase, The Nature Conservancy, ESRI

- Seychelles' Exclusive Economic Zone
- Fishing by Foreign Vessels Prohibited
  - *E.g. Mahé Island and Seychelles Bank*
- Other Exclusive Economic Zone
- Other Exclusive Economic Zone, Unsettled
- MSP Zone 1 — High Biodiversity Protection Area
- MSP Zone 2 — Medium Biodiversity Protection & Sustainable Use Area

Seychelles Marine Spatial Plan Milestone 1



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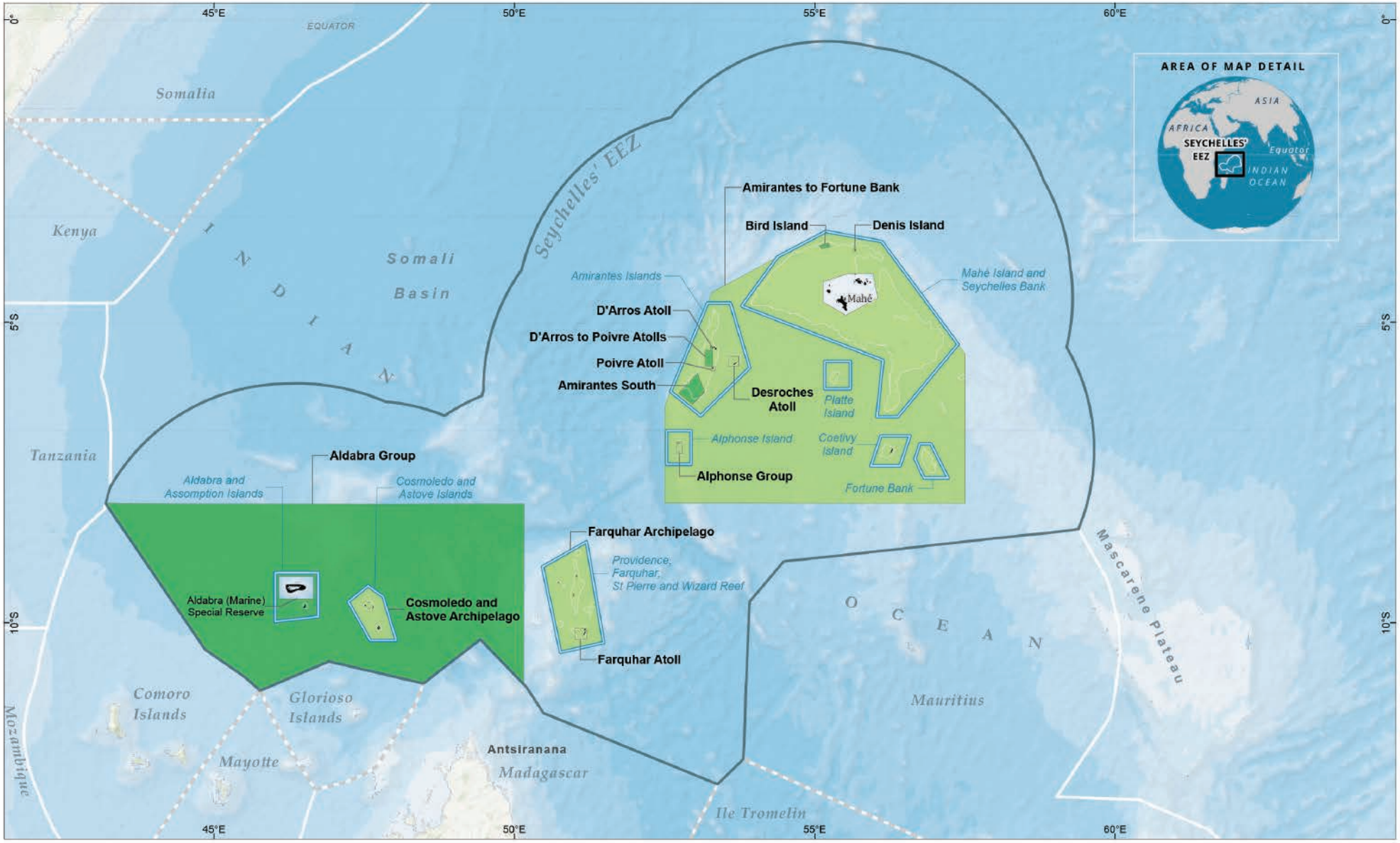
- MSP Zone 2 — Medium Biodiversity Protection & Sustainable Use Area

Seychelles Marine Spatial Plan Milestone 2



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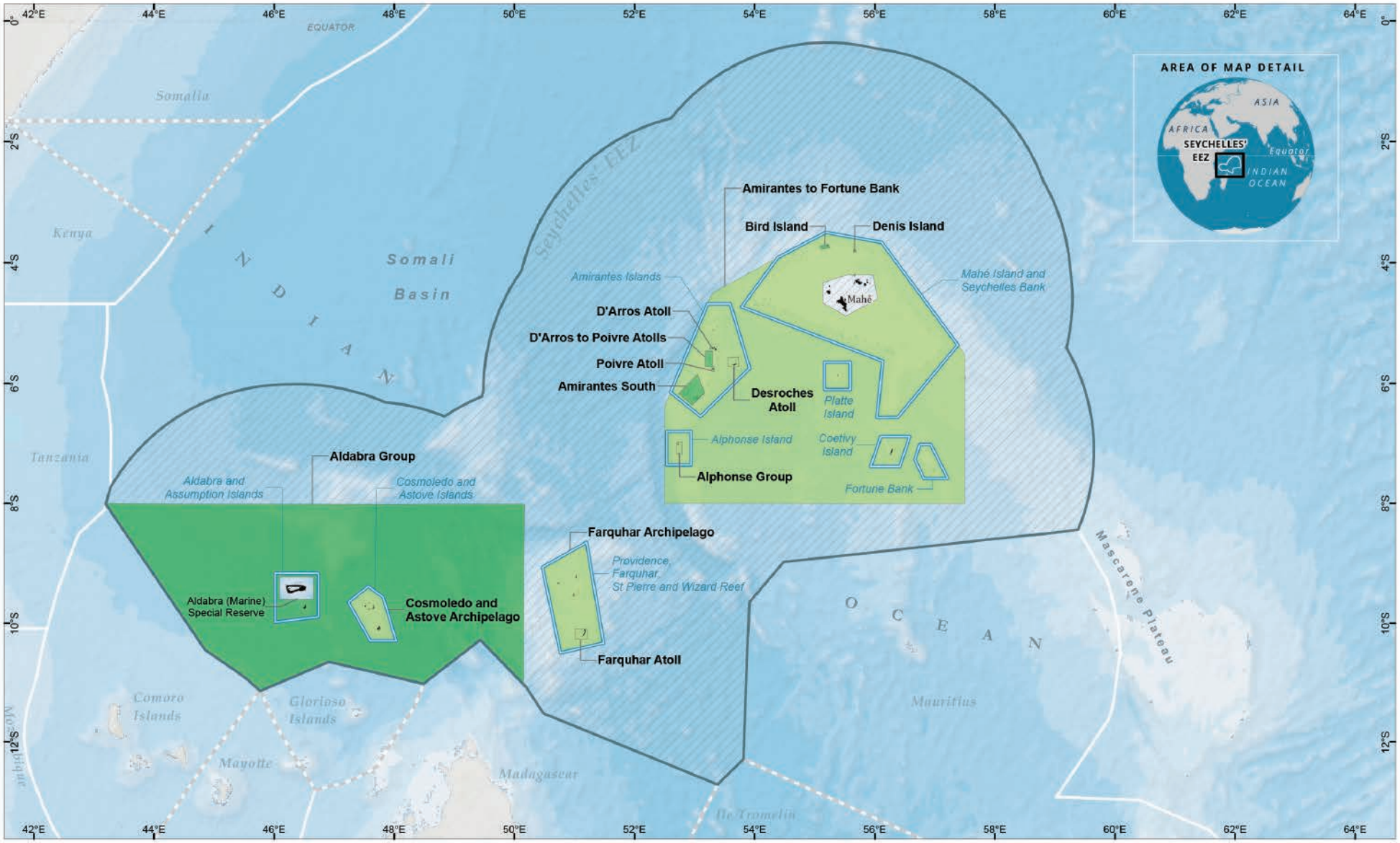
- MSP Zone 2
  Medium Biodiversity Protection & Sustainable Use Area

Seychelles Marine Spatial Plan Milestone 3



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Seychelles' Exclusive Economic Zone
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E.g. Mahé Island and Seychelles Bank
Other Exclusive Economic Zone
Other Exclusive Economic Zone, Unsettled

MSP Zone 1
High Biodiversity Protection Area
MSP Zone 2
Medium Biodiversity Protection and Sustainable Use Area
MSP Zone 3
Multiple Use Area

Seychelles Marine Spatial Plan Full Zoning Design 26 March 2020

Abbreviations

ABNJ – Areas Beyond National Jurisdiction
ADFD – Abu Dhabi Fund for Development
AONB – Area of Outstanding Natural Beauty
ATBA – Areas to be Avoided
CBD – Convention on Biological Diversity
DST – Decision Support Tools
EBSA – Ecologically or Biologically Significant Area
ECS – Extended Continental Shelf
EEZ – Exclusive Economic Zone
ENSO – El Niño Southern Oscillation
ESRI – Environmental Systems Research Institute
FAD – Fish Aggregating Device
GDP – Gross Domestic Product
GEBCO – General Bathymetric Chart of the Oceans
GEF – Global Environmental Facility
GIS – Geographic Information System
GoS – Government of Seychelles
HERE – HERE Technologies, Esri partner
IBA – Important Bird and Biodiversity Area
IMaRS – Institute for Marine Remote Sensing
IMO – International Maritime Organization
IPCC – Intergovernmental Panel on Climate Change
ITCZ – Intertropical Convergence Zone
IUCN – International Union for the Conservation of Nature
IUU – Illegal, Unreported, Unregulated
JMA – Joint Management Area
MACCE – Ministry of Agriculture, Climate Change and Environment
MEECC – Ministry of Environment, Energy and Climate Change
MLUH – Ministry Land Use and Housing
MPA – Marine Protected Area (general usage), Marine Protection Area (for the SMSP)
MSP – Marine Spatial Plan(ning)
MUR – Multi-scale Ultra-High Resolution
NASA – National Aeronautics and Space Administration
NBS – National Bureau of Statistics
NCEAS – National Center for Ecological Analysis and Synthesis
NISCC – National Information Sharing and Coordination Centre
NOAA – National Oceanic and Atmospheric Administration
NPNCA – National Parks and Nature Conservancy Act
PA – Protected Area
PCU – Programme Coordinating Unit
PEACE – Pakistan and East Africa Connecting Europe
PSSA – Particularly Sensitive Sea Area
RCOC – Regional Coordination Operations Centre
SEAS – Seychelles East Africa System
SeyCCAT – Seychelles Conservation & Climate Adaptation Trust
SFA – Seychelles Fisheries Authority (previously Seychelles Fishing Authority)
SeyPEC – Seychelles Petroleum Company
SIDS – Small Island Developing States
SBRC – Seychelles Bird Records Committee
SMSA – Seychelles Maritime Safety Authority
SMSP – Seychelles Marine Spatial Plan
SPA – Seychelles Port Authority
SSFC – Seychelles Sport Fishing Club
SST – Sea surface temperature
TNC – The Nature Conservancy
UN – United Nations
UNCLOS – United Nations Convention of the Law of the Sea
UNDP – United Nations Development Programme
UNEP-WCMC – United Nations Environmental programme World Conservation Monitoring Centre
UNESCO – United Nations Educational, Scientific and Cultural Organization
VMS – Vessel Monitoring System
VOS – Voluntary Observing Ships
WIOMER – Western Indian Ocean Marine Ecoregion
WWF – World Wildlife Fund

Sources and Technical Notes

BASE MAP DATA SOURCES

Base data sources: Seychelles Government, MACCE Geodatabase, The Nature Conservancy, Esri, General Bathymetric Chart of the Oceans (GEBCO), National Oceanic and Atmospheric Administration (NOAA), National Geographic, DeLorme, HERE Technologies (Esri partner data provider), Geonames.org, Marine Regions.org

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Additional Data Sources: Population Distribution: Flanders Marine Institute, Seychelles National Bureau of Statistics, SRTM

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All errors in the book are those of the authors. Information was correct at the time of printing, or as noted in the text or on a map. Spatial information on species, habitats and human uses and activities will change over time.

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