

Madagascar and the Indian Ocean Islands Hotspot

Ecosystem Profile Summary





Cover photos left to right: Antandroy woman carrying basket, Berenty, Madagascar. © Conservation International/ photo by Russell A. Mittermeier. Mangrove, Grande Comore Island, Comoros. © O. Langrand

^ Sakalava weaver (*Ploceus sakalava*) on *Delonix floribunda*, Arboretum d'Antsokay, Toliara, Madagascar. © Andry Petignat / Arboretum d'Antsokay

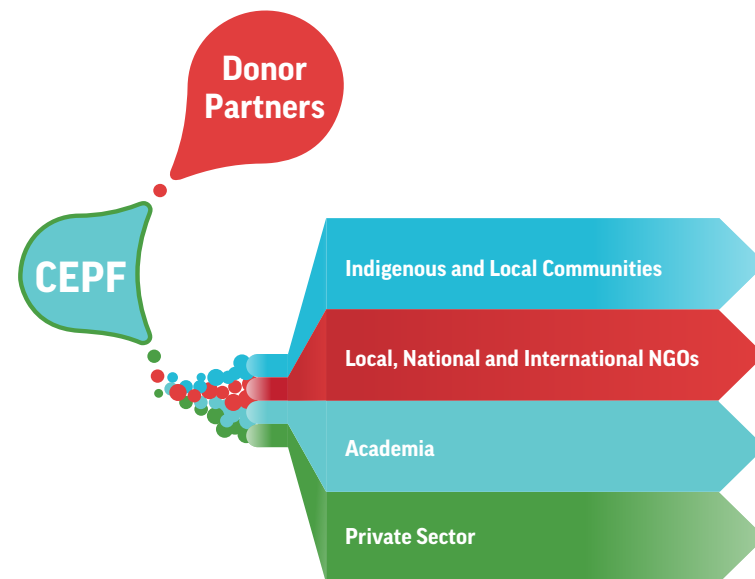
About CEPF

Biological diversity is fundamental to a healthy planet and thriving communities, but the world's species are currently under extreme threat.

The Critical Ecosystem Partnership Fund (CEPF) fills a unique, strategic role in addressing the extinction crisis by mobilizing and empowering civil society—nongovernmental organizations, communities, Indigenous peoples groups, academic entities and more—to protect the world's biodiversity hotspots. The hotspots are some of Earth's most biologically diverse yet threatened terrestrial areas. Since 2001, CEPF has catalyzed enduring, locally led biodiversity conservation through over US\$278 million in grants to more than 2,660 organizations in 109 developing and transitional countries. Results include more than 16 million hectares of formal protected areas established, 1,100 threatened species supported, and more than 4,300 communities benefiting.

CEPF is a joint initiative of l'Agence Française de Développement, Conservation International, the European Union, the Global Environment Facility, the Government of Japan and the World Bank. Funding from the Green Climate Fund (GCF) has been made available to CEPF for Madagascar and the Indian Ocean Islands through AFD as an accredited entity to the GCF.

How CEPF Works



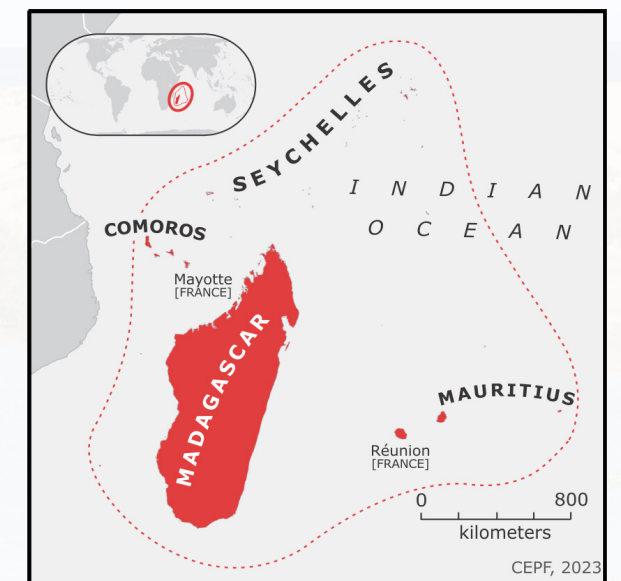
The Hotspot

The Madagascar and the Indian Ocean Islands Biodiversity Hotspot—which includes Madagascar, the Comoros, Mayotte (non-eligible), Mauritius, Réunion (non-eligible), and the Seychelles—is considered a priority for conservation not only because it is one of the planet's most biodiverse regions, but also due to the high numbers of endangered species it harbors. One of the most notable features of the hotspot is the extremely high floral and faunal endemism. Endemism is marked not only at species level, but also at higher taxonomic levels.

The global importance of the hotspot is particularly high for mammals, plants and reptiles. It, for example, supports about 15,000 plant species, of which more than 12,000 are found nowhere else on Earth. Large populations of aquatic mammals (cetacea) occur in several coastal regions of the hotspot, and the area holds important breeding areas for humpback whale. The hotspot also provides millions of people with fresh water, food, buffer from extreme weather and other ecosystem services that are essential to their survival.

A total of 329 Key Biodiversity Areas (KBAs) have been identified in Madagascar and the Indian Ocean islands, covering an area of 9.6 million hectares. This area comprises of terrestrial, freshwater ecosystems and marine ecosystems. The country with the most KBAs is Madagascar, which accounts for 95 percent of the total area.

CEPF has now completed two phases of investment in the hotspot, which have played an important role in supporting local civil society to participate effectively in conservation activities. During the first phase (2001-2012) US\$5.6 million was invested in 18 civil society organizations in Madagascar alone, while in the second phase (2015-2022) CEPF supported 92 organizations in the Comoros, Madagascar, Mauritius and the Seychelles with 128 grants worth US\$12.3 million. Results include contribution to the creation and/or extension of 1,608,020 hectares of protected areas.



Madagascar and the Indian Ocean Islands Hotspot

Ifaty, southwest Madagascar. © O. Langrand.

Biological Importance of the Hotspot



MADAGASCAR ALONE POSSESSES MORE THAN **11,866** ENDEMIC VASCULAR PLANT SPECIES¹.

Sobennikoffia poissoniana orchid, listed as Vulnerable on the IUCN Red List of Threatened Species, Madagascar. © David Rabehevitra



OF THIS HOTSPOT'S **365** AMPHIBIAN SPECIES found just in Madagascar, only one is not endemic¹.

Seychelles Tree Frog (*Tachycnemis seychellensis*) © O. Langrand

OF THE **174**

INDIGENOUS AND NON-VOLANT (INCAPABLE OF FLIGHT) MAMMAL SPECIES FOUND IN MADAGASCAR, **ALL ARE ENDEMIC¹**.



Milne-Edwards' sportive lemur (*Lepilemur edwardsi*), Tsingy de Bemaraha National Park, Madagascar. © Andry Petignat / Arboretum d'Antsokay



MADAGASCAR has **5** families of vascular plants, **4** families of birds and **5** families of primates found nowhere else in the world.

THE REGION IS HOME TO

496 SPECIES OF REPTILES



of which **94% are endemic**. Some groups have already experienced a high extinction rate, including the giant tortoise, of which only the Aldabra tortoise (*Aldabrachelys gigantea*) remains.

THE ISLANDS OF **THE SEYCHELLES**

are also characterized by a high degree of endemism. Among **vascular plants**, **24% of the 545 native species are endemic**. As for vertebrates, **83% of mammals**, **5% of birds** and **72% of reptiles are endemic**.



© URF, Getty Images

LIKE MOST TROPICAL ISLANDS, THE **COMOROS** ARCHIPELAGO

is well known for harboring remarkable biodiversity, characterized by numerous endemic species.

20 OUT OF THE 96 BIRD SPECIES found on the archipelago are endemic, as are **14% of the terrestrial mammal species** and **15% of the plant species**.



DUE TO THEIR VOLCANIC ORIGIN,

antiquity and isolation, there is a high diversity of flora and fauna on the islands of **MAURITIUS** and Rodrigues as well as a high degree of endemism.

ABOUT 35% OF THE VASCULAR PLANTS and **80% of the vertebrates** in the country are endemic.

1) : Goodman, 2022. The New Natural History of Madagascar. Princeton University Press

Threats MADAGASCAR

- The main cause of deforestation is clearance for subsistence agriculture; population pressure has led to shortened fallow cycles and expansion onto steep slopes with low yields and high potential for soil erosion.
- Overgrazing is also a major driver of deforestation, particularly in western and southern Madagascar; burning of grassland to stimulate growth causes forest fires.
- Extraction of fuel (firewood and charcoal) is another major threat, as fuelwood represents 92% of the energy used by the Malagasy population.

Threats MAURITIUS

- The main threats to terrestrial biodiversity are invasive alien species, pests and diseases, land-use change, habitat fragmentation, fire and climate change.
- Root causes include overcrowding, pressure on available land, low priority for public funding for conservation, lack of awareness of the values of native species and ecosystems, and lack of capacity and funding among conservation organizations.

Fony baobab (*Adansonia rubrostipa*), © O. Langrand

Threats COMOROS

- Terrestrial ecosystems are threatened by unsustainable logging, exploitation of minerals (basaltic slags), land clearance for agriculture, and bushfires set to clear land for pasture or shifting cultivation.
- Root causes include insecurity of tenure over cultivable land, high population growth, inadequate forestry legislation, and incomplete and unenforced environmental legislation.

Threats SEYCHELLES

- Invasive alien species are the most significant threat to terrestrial biodiversity. Their impact is compounded by other factors, including land-use change, increased international and inter-island trade and transportation, and climate change.
- Other threats include land-use change (clearing of forest for infrastructure or residential development), fire and climate change.
- Root causes include economic development and lack of capacity for implementation of environmental policies.

Anse Lazio beach, Praslin Island, Seychelles. © Conservation International/photo by Russell A. Mittermeier

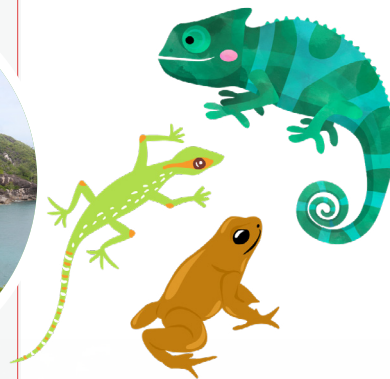
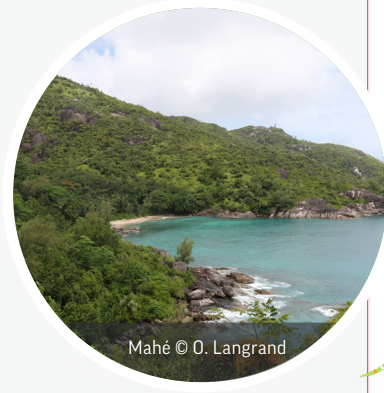
Previous CEPF Investment

Key Results

A SEVEN-YEAR INVESTMENT concluded in November 2022, having awarded 128 grants for a total of **US\$12.3 MILLION.**

Improved management of **2 million hectares** of **Key Biodiversity Areas** and **969,000 HECTARES** of production landscapes, which led to improved living conditions for **local communities.**

104,965 HECTARES of protected areas created and/or expanded.



First atlas of **REPTILES AND AMPHIBIANS** IN THE COMOROS



Ecological technician monitoring *Eulmeur mongoz* in the forests of Anjouan, Comoros © Dahari



Men in galawa dugout canoes, Grande Comore Island, Comoros © O. Langrand



158 **GLOBALLY** threatened species benefited from conservation action.



112 networks and partnerships were created and/or strengthened.

67% of grantee organizations strengthened their capacity in conservation.

17 LAWS, REGULATIONS AND POLICIES with **conservation provisions** were enacted or amended.

A total of **6,556 PEOPLE** received cash benefits.



5 CEPF Grantee Successes

1.

In the Seychelles, Island Biodiversity & Conservation worked with numerous tourism entities, in particular hotels, to adopt biosecurity protocols to prevent pest reinvasion during renovations and improve control of the invasive rats and mynas that reside on their properties. This work has been key to addressing the threat of invasive species, one of the most significant threats to biodiversity in the Seychelles.



Anse Lazio beach, Praslin Island, Seychelles. © Conservation International/ photo by Russell A. Mittermeier

2.

In Madagascar, Ny Tanintsika collaborated with the Natural Sciences Department of the University of Antananarivo to conduct research on repopulating wild silkworms in tapia tree (*Uapaca bojeri*) forests, and to work with local communities to improve livelihoods. Working with the Union Amafi, a group of grassroots communities managing the tapia forest in the district of Ambatofinandrahana, the project aimed to support the production of tapia seedlings and other tree species, patrol to monitor pressures in the forest, and provide assistance to researchers. At the end of the project, the density of silkworms had increased 60 times compared to the initial density in 2020, recorded as 50 to 80 individuals per hectare. The research was complemented by the establishment of a silk house for the transformation of cocoons into yarn, training in dyeing and weaving silk for 30 women, and creation of a village credit and savings system to improve and boost sources of income for local communities. At project end, 793 kilograms of raw cocoons and silk threads were stored in the silk house, with an additional 1.5 tonnes of cocoons available in neighboring villages. In total, 200 men and 150 women recorded increased income as a result of the project, with benefits expected in the years to come.



Wild silk production, Bombetoka Bay, Madagascar © Foundation Tany Meva

3.

The Mauritian Wildlife Foundation (MWF) has worked for decades to improve the outlook for two globally threatened endemic birds, the echo parakeet (*Psittacula eques*) and the pink pigeon (*Nesoenas mayeri*). Both species have suffered declines due to significant loss of forests on Mauritius; predation by introduced cats, rats and monkeys; and competition with introduced invasive birds. A combination of conservation actions have helped secure the future for these two species, including captive breeding, releases into the wild, nest improvement, artificial nest provision, supplementary feeding, egg and chick rescue and manipulations, predator and competitor control, and introduction of birds onto private estates. Thanks to this work, and that of other conservation groups, the prognosis for both species has improved, with the IUCN Red List of Threatened Species changing their status in 2019 from Endangered to Vulnerable.



Echo parakeets (*Psittacula eques*), Mauritius © O. Langrand

4.

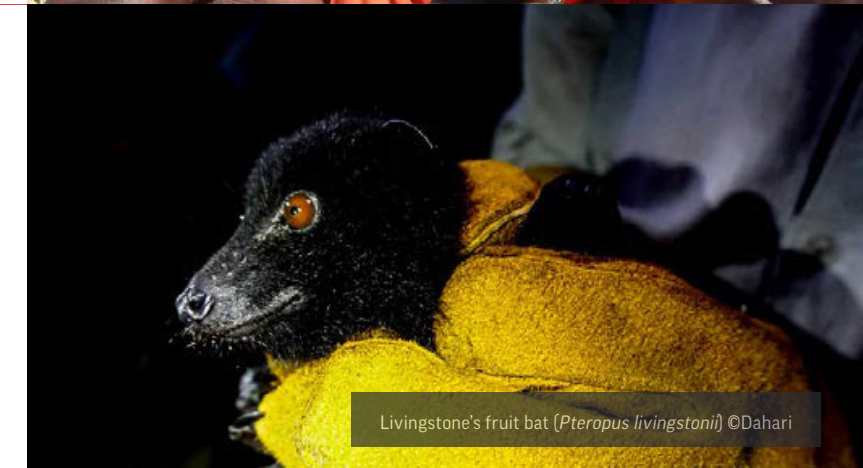
In Madagascar, The Peregrine Fund has joined forces with local communities to improve the management of the Complexe Tsimembo Manambolamaty, a diverse area comprised of marshes, lakes, savannas, mangroves and deciduous dry forests. Training was delivered to 13 local communities in land management and sustainable agriculture and fisheries, resulting in diversification and improvement in livelihoods and increased protection for the 62,745-hectare site.



Reforestation activity, Tsimembo Manambolamaty protected area, Madagascar © The Peregrine Fund/Lily-Arison Rene de Roland

5.

The organization Dahari has tackled the high rate of deforestation in Comoros by implementing a pilot project in Moya Forest that has shown how participatory restoration activities with local communities can achieve forest conservation and management while protecting a significant population of a Critically Endangered endemic species, the Livingstone's fruit bat (*Pteropus livingstonii*).



Livingstone's fruit bat (*Pteropus livingstonii*) ©Dahari

Developing the Ecosystem Profile

Before providing funding to a hotspot, CEPF develops an “ecosystem profile,” an assessment of the hotspot and strategy for CEPF’s investment. This work identifies threats, the current economic situation and conservation priorities. The ecosystem profile takes stock of the status of the region in a way that can serve as a guide for other entities interested in conserving the hotspot.

Although CEPF invested in Madagascar starting in 2001, its first ecosystem profile covering the whole of the Madagascar and the Indian Ocean Islands Hotspot was developed in 2014. It guided CEPF’s investment between 2015 and 2022. In 2022, ahead of the new investment phase (2022-2027) a team including Conservation International, Biotope, the Missouri Botanical Garden and ASITY

Madagascar prepared an update to the profile. The consideration of climate change, particularly adaptation to climate change, is central to this update, given the importance of this issue in the face of threats of ecosystem loss and species extinctions. Funding from the Green Climate Fund (GCF) has been made available to CEPF for Madagascar and the Indian Ocean Islands through l’Agence Française de Développement as an accredited entity to the GCF.

The development of the updated ecosystem profile was a participatory process, and collective consultations were organized with the participation of various ministries, national and international NGOs, associations, academic entities and research centers.

To read the complete ecosystem profile, please visit:

English: cepf.net/MADIOprofile2022EN

Français: cepf.net/MADIOprofile2022FR

Livingstone fruit bat count, Comoros. © Dahari

CEPF Strategic Directions and Investment Priorities

CEPF's investment for 2022–2027 will focus on 30 Key Biodiversity Areas in Madagascar, 10 in the Comoros, 10 in Mauritius and 20 in the Seychelles. These sites—wetlands and waterways, dry forests, and coastal and marine areas—all are home to ecosystems that have exceptional biodiversity and provide important ecosystem services to the population. CEPF grant-making will support ecosystem-based adaptation actions to restore and improve the management of Key Biodiversity Areas that make the greatest contribution to the delivery of ecosystem services important to local populations. These actions will improve the resilience to climate change of the most vulnerable species, ecosystems and people in the hotspot. CEPF will work through civil society organizations, and grant-making will be complemented by actions to help build their capacity and assist them in developing partnerships with the private and public sectors.

ECOSYSTEM-BASED ADAPTATION

Shifting weather patterns as a result of climate change, affecting rainfall and temperature, are likely to impact the ecosystem goods and services such as clean water and food on which people rely. Ecosystem-based Adaptation (EbA), involving the conservation, sustainable management and restoration of ecosystems can help people adapt to the impacts of climate change. EbA is a nature-based solution that harnesses biodiversity and ecosystem services to reduce vulnerability and build resilience to climate change.

1 **STRATEGIC DIRECTION**
Empower communities and civil society to implement actions to improve the resilience of species, ecosystems and human populations to climate change in priority Key Biodiversity Areas (KBAs).

INVESTMENT PRIORITIES

1.1 Implement EbA actions, including agroforestry, “climate smart agriculture,” eradication of invasive alien species, restoration of degraded watersheds and coastal ecosystems (including wetlands, mangroves, reefs and seagrass beds), and promotion of sustainable management of coastal and terrestrial ecosystems. Priority will be given to the following approaches:

- Promoting resilient agroforestry and developing “climate-smart agriculture.”
- Promoting the sustainable management of freshwater, wetlands, and marine and coastal ecosystems (mangroves, coral reefs, seagrass beds).
- Strengthening management of intact watershed forest ecosystems through the implementation of protected area management plans in collaboration with local communities.
- Enhancing resilience and adaptation of ecosystems.
- Restoring degraded coastal ecosystems (wetlands, mangroves, coral reefs, sea grass beds).
- Restoring degraded watershed forest ecosystems.
- Promoting control and eradication of invasive alien species.
- Strengthening the capacity of local communities in participatory ecological monitoring of KBA target species and their habitats.

1.2 Support the establishment and development of economic models that improve the resilience of local communities to climate change and support value chains for natural products while strengthening ecosystem services that contribute to EbA.

2 **STRATEGIC DIRECTION**
Support local communities and civil society to strengthen the integration of the EbA approach, ecosystem resilience and biodiversity conservation into political and economic decision-making processes and education.

INVESTMENT PRIORITIES

- 2.1. Develop engagement strategies with private sector actors for the integration of EbA into their activities, and also for the conservation and sustainable use of biodiversity and renewable natural resources.
- 2.2. Support civil society to disseminate information and influence political and economic decision-making processes in favor of biodiversity conservation priorities, ecosystem services and EbA.
- 2.3. Support civil society in the development and implementation of disaster risk reduction measures.

3 **STRATEGIC DIRECTION**
Strengthen the capacities of local communities and civil society at the regional and local levels to enhance adaptive capacity and reduce exposure to climate change risks.

INVESTMENT PRIORITIES

- 3.1. Strengthen the technical, administrative and financial capacities of local civil society organizations with missions related to the environment and the fight against climate change.
- 3.2. Promote exchanges and partnerships (at the national and regional levels) among CSOs working in priority KBAs, to strengthen technical, organizational, management and fundraising capacities.
- 3.3. Support the emergence of a new generation of conservation professionals and organizations specializing in biodiversity conservation, ecosystem services and climate change by supporting, with small grants, technical and practical training and exchange visits.

4 **STRATEGIC DIRECTION**
Support research and ensure the dissemination of results for the promotion and improvement of knowledge on EbA actions and related good practices.

INVESTMENT PRIORITIES

- 4.1. Support applied research activities that improve understanding of the role of specific ecosystems and test the effectiveness of promising EbA techniques.
- 4.2. Support research activities that measure and verify the impact of the grant portfolio on ecosystem services.
- 4.3. Support civil society to promote public awareness and education on biodiversity, conservation priorities, climate resilience, ecosystem services and EbA.

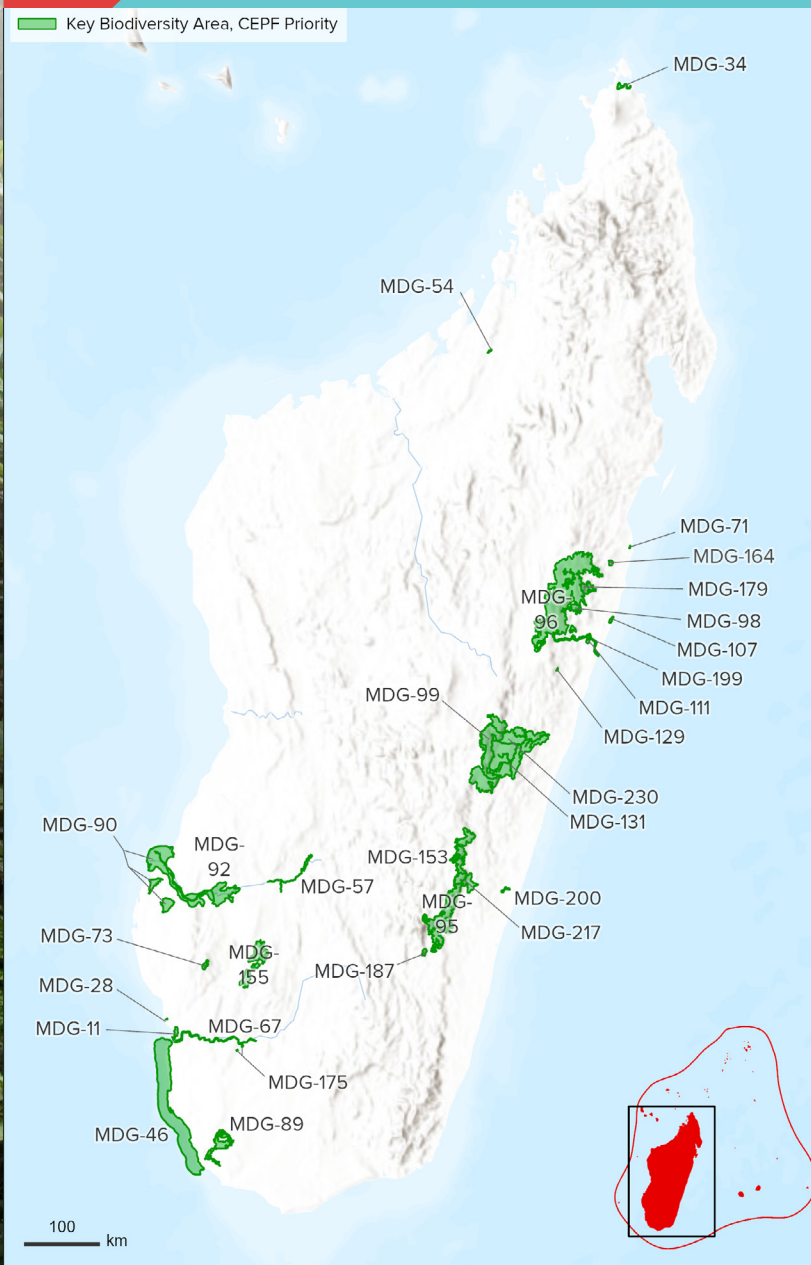
5 **STRATEGIC DIRECTION**
Provide strategic leadership and effective coordination of CEPF investment across the hotspot through a regional implementation team.

INVESTMENT PRIORITIES

- 5.1. Build a broad constituency of civil society groups that work across institutional and political boundaries to achieve the shared conservation goals outlined in the ecosystem profile.
- 5.2. Improve operational and monitoring processes and coordination of CEPF grant resource allocation to ensure effective implementation and strategic guidance in an accountable and transparent manner that is fit for purpose on a country-by-country basis.

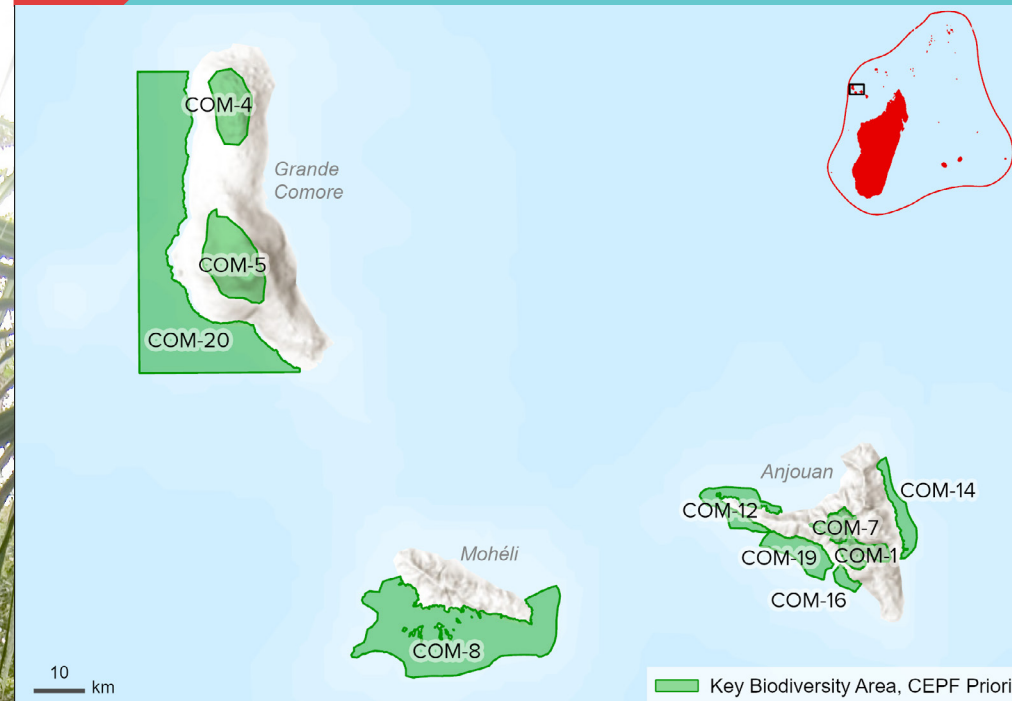
Priority Sites for CEPF Investment

MADAGASCAR



Code	CEPF Priority Site
MDG-011	Tsinjoriake-Andatabo
MDG-028	Belalanda
MDG-034	Three Bays Complex
MDG-046	Toliary Great Reef
MDG-054	Lake Tseny
MDG-057	Makay
MDG-067	Amoron'i Onilahy and Onilahy River
MDG-071	Analalava Special Reserve
MDG-073	Analavelona
MDG-089	Mahafaly Plateau Forest Complex
MDG-090	Lake Ihotry - Mangoky Delta Complex
MDG-092	Mangoky-Ankazoabo Complex
MDG-095	Ambositra-Vondrozo Corridor
MDG-096	Ankeniheny-Zahamena Corridor
MDG-098	Analamay-Mantadia Forest Corridor
MDG-099	Forest Corridor Fandriana - Marolambo National Park
MDG-107	Vohibola Classified Forest
MDG-111	Sahafina Forest (Anivorano-Brickaville)
MDG-129	Vohibe Ambalabe (Vatomandry)
MDG-131	Nosivolo Wetlands
MDG-153	Ranomafana National Park
MDG-155	Zombitse-Vohibasia National Park and extension
MDG-164	Betampona Strict Nature Reserve
MDG-175	Beza-Mahafaly Special Reserve
MDG-179	Mangerivola Special Reserve
MDG-187	Pic d'Ivohibe Special Reserve
MDG-199	Mangoro-Rianila Rivers
MDG-200	Namorona-Faraony River
MDG-217	Faraony Headwaters
MDG-230	Nosivolo River and Tributaries Ramsar Site

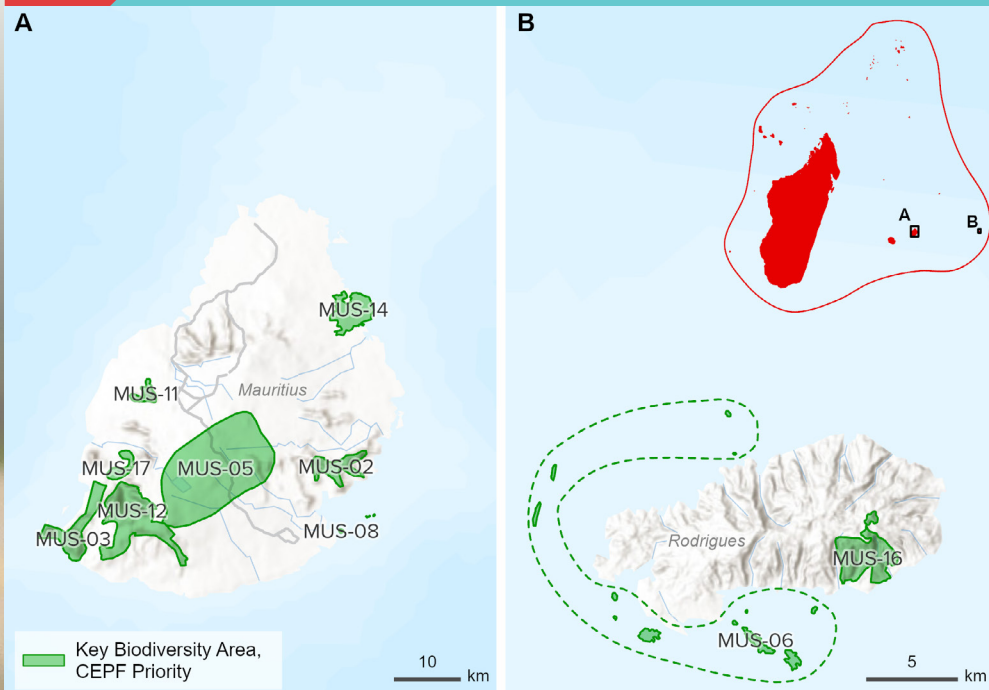
COMOROS



Code	CEPF Priority Site
COM-01	Moya forest
COM-04	La Grille mountains
COM-05	Karthala mountains
COM-07	Mount Ntringui (Ndzuan highlands)
COM-08	Mohéli Marine Park
COM-12	Bimbini area and La Selle islet
COM-14	Domoni area
COM-16	Moya area
COM-19	Pomoni area
COM-20	Coelacanth area

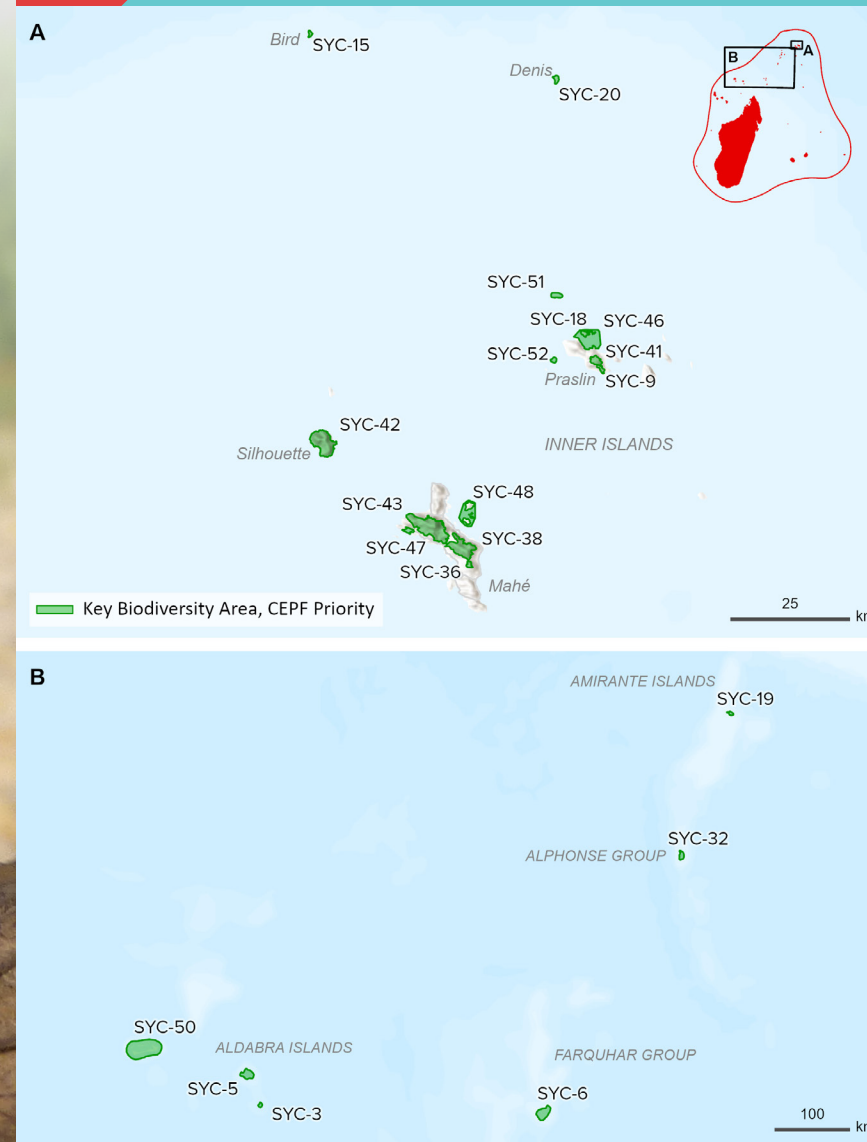
A stream runs through the forest in Mantadia National Park, Zahamena-Mantadia Corridor, Madagascar © Sterling Zumbrunn

MAURITIUS



Code	CEPF Priority Site
MUS-02	Bamboo Mountain Range
MUS-03	Chamarel - Le Morne
MUS-05	Relict Forests of the Central Plateau
MUS-06	Rodrigues' Islets
MUS-08	Mauritius Island's South-Eastern Islets
MUS-11	Corps de Garde Mountain
MUS-12	Black River Gorges National Park and surrounding areas
MUS-14	Plaine des Roches - Bras d'Eau
MUS-16	South Slopes of Grande Montagne
MUS-17	Yemen-Takamaka

SEYCHELLES



Code	CEPF Priority Site
SYC-03	Astove
SYC-05	Cosmoledo
SYC-06	Farquhar - South Island and islets
SYC-09	Fond Ferdinand
SYC-15	Bird Island (Ile aux Vaches)
SYC-18	Curieuse Island
SYC-19	D'Arros Island and Saint Joseph Atoll
SYC-20	Denis Island
SYC-32	Saint-François and Bijoutier Islands
SYC-36	Burnt Mountain-Piton de l'Eboulis
SYC-38	Planneau Mountain (Grand Bois-Varigault-Cascade)
SYC-41	Praslin National Park
SYC-42	Silhouette National Park
SYC-43	Morne Seychellois National Park
SYC-46	Curieuse Island Marine National Park
SYC-47	Port Launay Marine National Park and Coastal Wetlands
SYC-48	Sainte-Anne Marine National Park
SYC-50	Aldabra Special Reserve
SYC-51	Aride Island Special Reserve
SYC-52	Cousin Island Special Reserve

Critically Endangered Seychelles black mud terrapin (*Pelusios subniger parietalis*). © Inga Petelski



(Indri indri) © O. Langrand



CRITICAL ECOSYSTEM PARTNERSHIP FUND



Critical Ecosystem Partnership Fund

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CRITICAL ECOSYSTEM PARTNERSHIP FUND

CEPF is a joint initiative of l'Agence Française de Développement, Conservation International, the European Union, the Global Environment Facility, the Government of Japan and the World Bank.

IUCN NL, SAF/FJKM (Madagascar), ID-ONG (Comoros), FORENA (Mauritius) and SeyCCAT (Seychelles), as a regional implementation team, are working with CEPF to implement a five-year conservation strategy for the Madagascar and the Indian Ocean Islands Biodiversity Hotspot and build local civil society capacity.