

Information Sheet on Ramsar Wetlands (RIS) – 2009-2012 version

Mare Aux Cochons High Altitude freshwater Wetlands Seychelles Islands.

Available for download from http://www.ramsar.org/ris/key_ris_index.htm.

Categories approved by Recommendation 4.7 (1990), as amended by Resolution VIII.13 of the 8th Conference of the Contracting Parties (2002) and Resolutions IX.1 Annex B, IX.6, IX.21 and IX. 22 of the 9th Conference of the Contracting Parties (2005).

Notes for compilers:

1. The RIS should be completed in accordance with the attached *Explanatory Notes and Guidelines for completing the Information Sheet on Ramsar Wetlands*. Compilers are strongly advised to read this guidance before filling in the RIS.
2. Further information and guidance in support of Ramsar site designations are provided in the *Strategic Framework and guidelines for the future development of the List of Wetlands of International Importance* (Ramsar Wise Use Handbook 14, 3rd edition). A 4th edition of the Handbook is in preparation and will be available in 2009.
3. Once completed, the RIS (and accompanying map(s)) should be submitted to the Ramsar Secretariat. Compilers should provide an electronic (MS Word) copy of the RIS and, where possible, digital copies of all maps.

1. Name and address of the compiler of this form:

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Designation date

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Site Reference Number

E-mail: All correspondence should be addressed to the Principal Secretary at ps@env.gov.sc
CC: w.agricole@pps.gov.sc; p.murugaiyan@pps.gov.sc; n.port_louis@env.gov.sc;

2. Date this sheet was completed:

October 2009

3. Country:

The Republic of Seychelles

4. Name of the Ramsar site:

The precise name of the designated site in one of the three official languages (English, French or Spanish) of the Convention. Alternative names, including in local language(s), should be given in parentheses after the precise name.

Mare Aux Cochons (High altitude freshwater wetlands – Seychelles Islands)

5. Designation of new Ramsar site or update of existing site:

This RIS is for (tick one box only):

a) Designation of a new Ramsar site

6. For RIS updates only, changes to the site since its designation or earlier update:

a) Site boundary and area

Not applicable

b) Describe briefly any major changes to the ecological character of the Ramsar site, including in the application of the Criteria, since the previous RIS for the site:

Not applicable

7. Map of site:

Refer to Annex III of the *Explanatory Note and Guidelines*, for detailed guidance on provision of suitable maps, including digital maps.

a) A map of the site, with clearly delineated boundaries, is included as:

i) a hard copy (required for inclusion of site in the Ramsar List): ;

ii) an electronic format (e.g. a JPEG or ArcView image) ; *attached*.

iii) a GIS file providing geo-referenced site boundary vectors and attribute tables .

The map has been amended and sent to the secretariat with the required scale and information

b) Describe briefly the type of boundary delineation applied:

e.g. the boundary is the same as an existing protected area (nature reserve, national park, etc.), or follows a catchment boundary, or follows a geopolitical boundary such as a local government jurisdiction, follows physical boundaries such as roads, follows the shoreline of a waterbody, etc.

The proposed wetland areas boundary is within the National Parks Boundary, the whole wetlands area and the surroundings are all protected, there is no geopolitical jurisdiction or boundaries within this site, as the whole country is a small island in nature.

8. Geographical coordinates (latitude/longitude, in degrees and minutes):

Provide the coordinates of the approximate centre of the site and/or the limits of the site. If the site is composed of more than one separate area, provide coordinates for each of these areas.

4° 38' 24" S, 55°25' 00" E.

9. General location:

Include in which part of the country and which large administrative region(s) the site lies and the location of the nearest large town.

The wetlands site is on Mahé Island, 4 km by trail from Le Niol, and a further 4 km by road to Victoria, the capital. The open water marshes and part of the Cascade River system are in Port Glaud District, and the lower stretches of the river are in Bel Ombre District.

10. Elevation: (in metres: average and/or maximum & minimum)

Open water marshes at 435MSL.

River system from 410 – 440 m.

X-Coordinates – 324310.46956;

Y-Coordinates - 9486935.32550

11. Area: (in hectares) 0.315 ha (3,149 m²)

12. General overview of the site:

Provide a short paragraph giving a summary description of the principal ecological characteristics and importance of the wetland.

This site is one of three upland wetland areas in the granitic Seychelles and the only one on the highest and largest island, Mahé. The site lies within the Morne Seychellois National Park, an area of outstanding endemism and rare ecological communities. The park's most critical ecological community is the mist forest at higher altitudes. However, critical communities include a number of other important habitats including intermediate altitude forest, riverine forest, open water pools, marshes and rivers, and all of these are priorities for conservation. The Ramsar site has one critically endangered species and at least seven that are vulnerable. There are at least an additional seven species that are classed as lower risk – near threatened. All are endemic. The main threat to the wetland site is invasive plant species, but introduced animal taxa are also likely to have a negative effect. The original ecological communities of this wetland are not recorded. Wetlands tended to be considered as areas of little interest or use historically, but they are now considered to be important components of the Seychelles unique biodiversity. For this reason, the Ministry of Environment and Natural Resources & Transport considers wetlands conservation and restoration to be a high priority. To this end, the Wetlands Unit is collaborating with the related sections and national parks authority in the management and conservation efforts on this site. This would form part of a wider effort in the Seychelles to restore forest and wetlands habitats to a more natural composition and structure.

13. Ramsar Criteria:

Tick the box under each Criterion applied to the designation of the Ramsar site. See Annex II of the *Explanatory Notes and Guidelines* for the Criteria and guidelines for their application (adopted by Resolution VII.11). All Criteria which apply should be ticked.

1 • 2 • 3 • 4 • 5 • 6 • 7 8 • 9

14. Justification for the application of each Criterion listed in 13 above:

Provide justification for each Criterion in turn, clearly identifying to which Criterion the justification applies (see Annex II for guidance on acceptable forms of justification).

Criterion 2

The site harbours several vulnerable species and two that are critically endangered. These are: *Vateriopsis sechellarum* (CR), *Mimusops sechellarum* (VU), Seychelles Pandanus, *Pandanus sechellarum* (VU), Horne's pandanus, *Pandanus hornei* (VU), and for plants, and Seychelles Scops Owl, *Otus insularis* (EN), and Seychelles kestrel, *Falco araea* (VU) for animals (see Sections 21 and 22 for more details on each species). The upland wetlands of the Seychelles are inherently rare and are critically threatened by invasive species. The latter are listed in Sections 21 and 22.

Criterion 3

The species listed for Criterion 2 have limited abundance and/or ranges. Whether one considers the larger Western Indian Ocean Ecoregion or the specific granitic Seychelles Subregion, the protection and restoration of these species is critical in terms of maintaining the biodiversity of either. In site specific terms, Seychelles pandanus, *Pandanus sechellarum* (VU), Horne's pandanus, *Pandanus hornei* (VU), Seychelles scops owl, *Otus insularis* (EN) and Seychelles tree frog, *Tachycnemis seychellensis* (LC) are critically important species in terms of wetlands in the granitic Seychelles.

Criterion 4

The two Pandanus species listed for Criterion 3 are frequently found in wetlands where they may be dominant canopy trees, especially in inundated or marshy areas. The tree frog requires rivers, ponds or marshes for breeding. This could be an interesting area of future studies from this

wetlands area. This is one of the key attraction in this eco trail route, where visitors very curious to see them in its natural habitats all along the streams and in the wetland areas.

Kindly note additional information shall be provided as an update to the RIS in the coming months.

15. Biogeography (required when Criteria 1 and/or 3 and /or certain applications of Criterion 2 are applied to the designation):

Name the relevant biogeographic region that includes the Ramsar site, and identify the biogeographic regionalisation system that has been applied.

a) biogeographic region:

Afro tropical Realm, Seychelles and Mascarenes Moist Forests Ecoregion.

It should be noted that the terrestrial Seychelles has a clear sub-ecoregional distinction from other islands and African coastline areas in the larger Afrotropical and Western Indian Ocean categories. For this reason, WWF produced a tentative classification termed “Granitic Seychelles forests.” This designation is listed for peer review on the WWF internet site. Floristic endemism is high, with more than 250 unique species recorded. Endemic plant affinities are with Asia, Madagascar and Africa. The proportion of the fauna that is endemic is also elevated. Although very small, the Seychelles boasts two endemic families, the Sooglossidae (frogs) and the Medusagynaceae (Jellyfish tree), indicating a long period of separation and divergence from other landmasses. There are also nine endemic plant genera in the Seychelles, and three of them occur at the site.

b) biogeographic regionalisation scheme (include reference citation):

WWF Global 200 Eco regions (Olson & Dinerstein, 2002).

16. Physical features of the site:

Describe, as appropriate, the geology, geomorphology; origins - natural or artificial; hydrology; soil type; water quality; water depth, water permanence; fluctuations in water level; tidal variations; downstream area; general climate, etc.

The geological origin of the catchment area is identical to that of the site. Exposed rounded granite inselberg-like outcrops are a common and characteristic feature of the Seychelles, and are locally known as *glacis*. They are deeply weathered and typically have vertical flute-like gullies. The dominant soil is a deep red laterite that is vulnerable to erosion when exposed. Small depressions in the slopes differ in accumulating kaolinitic clay. The hill slopes and river valleys have numerous large boulders. These may accumulate into piles within which shallow caves are formed within the spaces.

The upper slopes of the catchment area are largely under forest cover. The entire catchment area is within the Morne Seychellois National Park and no settlements exist. High-rising *glacis* are a prominent feature of this area. The upper catchment area extends to the mist forests on the higher reaches of Mahé. Rainfall is therefore higher and more frequent, and temperatures slightly lower than at the Ramsar site.

At lower levels, the river joins the Mare aux Cochons River and is currently uninhabited up to the lower limits of the national park. Below the park boundary, the Mare aux Cochons River traverses mixed invasive/native species forest and residential areas until it reaches the ocean at Port Glaud, forming a mangrove areas that is within the Port Glaud Ramsar site.

However, a cinnamon distillery existed until the 20th century and was connected to the main Victoria – Beau Vallon road by a vehicle track fitted with stone narrow bridges. The area around the plantation residence is terraced and a few foundation structures remain. This area is generally more open than the surrounding forest.

The edges of the depression rise steeply. Geologically, this area is typical of most of Mahé and is composed of grey alkali granites with microperthite, oligoclase and quartz (Braithwaite, 1984). The age of the granites is estimated at 650 million years, placing them in the Precambrian. The site has a moist tropical oceanic climate. The granitic Seychelles are north of the cyclone belt and rarely exposed to severe storms. There are two main seasons: the drier southeast monsoon or tradewinds monsoon occurs from April – October, while the wetter and warmer northwest monsoon prevails for the rest of the year. There is usually a calm transition between the two seasons, especially between the southeast and northwest monsoons. Annual rainfall is 2,408 mm, with highest rainfall occurring in December.

Temperatures taken at Victoria on the eastern side of the island have an average minimum of 24.8°C and an average maximum of 28.4°C, with the respective extremes records being 19.9°C and 32.8°C. Relative humidity varies from a low of 74% in April to a high of 80% in January. Rain-free periods seldom exceed a few weeks in length.

17. Physical features of the catchment area:

Describe the surface area, general geology and geomorphological features, general soil types, and climate (including climate type).

The geological origin of the catchment area is identical to that of the site. Exposed rounded granite inselberg-like outcrops are a common and characteristic feature of the Seychelles, and are locally known as glacis. They are deeply weathered and typically have vertical flute-like gullies. The dominant soil is a deep red laterite that is vulnerable to erosion when exposed. Small depressions in the slopes differ in accumulating kaolinitic clay. The hill slopes and river valleys have numerous large boulders. These may accumulate into piles within which shallow caves are formed within the spaces.

The upper slopes of the catchment area are largely under forest cover. The entire catchment area is within the Morne Seychellois National Park and no settlements exist. High-rising glacis are a prominent feature of this area. The upper catchment area extends to the mist forests on the higher reaches of Mahé. Rainfall is therefore higher and more frequent, and temperatures slightly lower than at the Ramsar site.

At lower levels, the river joins the Mare aux Cochons River and is currently uninhabited up to the lower limits of the national park. Below the park boundary, the Mare aux Cochons River traverses mixed invasive/native species forest and residential areas until it reaches the ocean at Port Glaud, forming a mangrove area that is within the Port Launay Ramsar site.

However, a cinnamon distillery existed until the 20th century and was connected to the main Victoria – Beau Vallon road by a vehicle track fitted with stone narrow bridges. The area around the plantation residence is terraced and a few foundation structures remain. This area is generally more open than the surrounding forest.

18. Hydrological values:

Describe the functions and values of the wetland in groundwater recharge, flood control, sediment trapping, shoreline stabilization, etc.

The marshes appear to trap floodwaters before their continuation downriver. They may, though, be more important as a rare habitat type – upland marshes – for some of the island's endemic species. High organic deposits due to fallen leaves and dead plant parts have significant impacts on the hydrological values.

The high organic load discolours the water and the Public Utilities Corporation (the water distributors) spend more on treatments, also the runoff to the sea increases the organic load which has both positive and negative impacts on the coastal environment. The organic load

provides links to the different food chain of different life forms like coastal fish population, vertebrates and invertebrates thrive in the lagoon and mangrove environment. The negative impacts would be attributed to the deposits on coral reefs and the poor quality of sea water during the heavy outflow seasons.

19. Wetland Types

a) presence:

Circle or underline the applicable codes for the wetland types of the Ramsar “Classification System for Wetland Type” present in the Ramsar site. Descriptions of each wetland type code are provided in Annex I of the *Explanatory Notes & Guidelines*.

Marine/coastal: A • B • C • D • E • F • G • H • I • J • K • Zk(a)

Inland: L • M • N • O • P • Q • R • Sp • Ss • Tp • Ts • U • Va •
Vt • W • Xf • Xp • Y • Zg • Zk(b)

Human-made: 1 • 2 • 3 • 4 • 5 • 6 • 7 • 8 • 9 • Zk(c)

b) dominance:

List the wetland types identified in a) above in order of their dominance (by area) in the Ramsar site, starting with the wetland type with the largest area.

Approximately equal extent of M and Tp.

20. General ecological features:

Provide further description, as appropriate, of the main habitats, vegetation types, plant and animal communities present in the Ramsar site, and the ecosystem services of the site and the benefits derived from them.

The freshwater wetlands are unfortunately significantly altered ecologically, even the three uplands systems that occur on Mahé, Silhouette and Praslin Islands. Their historical composition and structure is all but unrecorded. However, some of their ecological traits in terms of species composition can be reasonably deduced. Certain endemic plants such as *Pandanus* spp. are still present in good numbers and are likely to have been a feature of this site. Similarly, the river and its open pond still support significant numbers of endemic amphibians, with at least one ranked as Vulnerable (see Section 19), and possibly an endemic turtle subspecies. At least one, and possibly three, endemic freshwater fish are found there, as are several indigenous Crustacea.

The surrounding forests are dominated by introduced exotic plant species. However, several endemic species persist in good numbers and the Ministry of Environment and Natural Resources and Transport is making efforts to create a more endemic-dominated forest community through planting programmes. The Forestry section has already transplanted many endemic and vulnerable species in and around this wetlands area as restoration measures.

21. Noteworthy flora:

Provide additional information on particular species and why they are noteworthy (expanding as necessary on information provided in 14, Justification for the application of the Criteria) indicating, e.g., which species/communities are unique, rare, endangered or biogeographically important, etc. *Do not include here taxonomic lists of species present – these may be supplied as supplementary information to the RIS.*

This site is the only upland marsh area on Mahé and only one of three in all of the granitic islands. It is presumed that the site would have once been dominated by indigenous and endemic species, with many of the latter now considered threatened. Those that persist ‘naturally’ are listed, together with additional plants that are being planted deliberately in the area to restore a more favourable endemic species balance. It is difficult, if not impossible, to be sure that the new

balance will resemble the original forest and marshland flora, but at least it will hopefully lead to a more natural climax forest than the invasive-dominated cover of today.

Endemic threatened plants known to be ‘naturally’ present:

Allophylus sechellensis (VU). Usually at lower altitudes. Scarce when present in small clusters. Germinates poorly.

Campnosperma sechellarum (VU). Once common but native populations very rare.

Canthium sechellense (VU). Understory shrub, scarce where present in undisturbed sites and occurring as scattered individuals.

Mimusops sechellarum (VU). Populations are scattered and have been declining. Introduced rats eat the seeds.

Pandanus hornei (VU). Favours river valleys and marshy areas. Roots may be used as an aphrodisiac.

Brexia madagascariensis subspecies *microcarpa* (VU). Relict forest.

Nepthrosperma vanhoutteanum (Lower Risk – Near Threatened, NT). Endemic monospecific genus of palm. Grows on rocky, exposed hillsides and near streams.

Phoenixophorium borsigianum (NT). Endemic monospecific genus of palm. Understory species that readily establishes on degraded open areas. The commonest endemic palm in the Seychelles, but adult individuals are relatively uncommon. Leaves are harvested for traditional house thatching, and commonly used for roofing in hotels.

Verschaffeltia splendida (NT). Endemic monospecific genus of palm. Grows as an understory or canopy tree on steep slopes and in river valleys.

Roscheria melanochaetes (NT). Endemic monospecific genus of palm. Grows as an understory or canopy tree in moist shady forest at latitudes. Of concern because of the limited range.

Pandanus sechellarum (NT). Grows on almost sheer cliffs, rocky slopes and marshy areas. Roots may be used for palisading houses or as an aphrodisiac.

Curculigo sechellensis (NT). Locally abundant in a range of habitats.

Lophoschoenus hornei (NT). Endemic tufted perennial sedge occurring on soil pockets in rocky areas. Readily establishes in degraded areas, and potentially useful for erosion control.

Vanilla phalaenopsis (NT). Climbing vine over rocks and trees at lower altitudes. The endemic status is perhaps doubtful. Threatened by housing development at lower altitudes.

Aphloia theiformis subspecies *madagascariensis* var. *sechellensis* (Lower Risk – Least Concern, LC). Locally common in a range of habitats.

Dillenia ferruginea. (LC). Grows in forest, on exposed rocky slopes and exposed soils with intermittent scrubby vegetation. Readily establishes on degraded land. Valued timber tree for house construction that is frequently cut. Declined drastically from 1880 to 1935, and a progressive decline continues because of development and competition with exotic species.

Erythroxyton sechellarum (LC). Understory tree which persists in many degraded areas.

Paragenipa wrightii (LC). Understory tree.

Pittosporum senecia subspecies *wrightii* (NT). Understory tree in rocky areas.

Endemic threatened plants being reintroduced to the area

Vateriopsis sechellarum (CR). Endemic monospecific genus and the only member of the Dipterocarpaceae outside of Asia and Australasia. Believed to have been a co-dominant canopy species at low and intermediate altitudes but heavily exploited for its valuable timber. Remains naturally in a few places only, but replanted in a few areas.

Millionaire’s salad palm, *Deckenia nobilis* (EN). Endemic monospecific genus. Favours river valleys and rocky slopes. The growing tip is highly regarded as a salad ingredient. Becoming scarce.

Campnosperma sechellarum (VU). Once common but native populations very rare.

Protarum sechellarum (NT). Endemic monospecific genus. Deep humus in shady forests. Scattered groups in favourable areas.

Several additional species are also being reintroduced but these are already listed above as they continue to occur naturally.

Introduced and invasive species

Introduced invasive species include Cinnamon (*Cinnamomum verum*) which was introduced in 1772. Cinnamon is an aggressive invader, especially at lower and middle altitudes, and now the most widespread and probably numerous plant species in the Seychelles. Coco-plum (*Chrysobalanus icaco*) was introduced from South America in the 1920s to stabilize badly eroded slopes. The Wild guava, *Psidium cattleianum*, is a native of Brazil that was introduced in the mid-1800s and is now well established at the Ramsar site. It is difficult to eliminate but appears to grow primarily where native forest no longer exists. It is present at the site and frequently common in the catchment area. Several additional introduced tree and shrub species are now common at the Ramsar site or close by. These are 'Albizia' (*Paraserianthes falcataria*), *Astonia macrophylla*, *Tabebuia pallida*, *Hevea brasiliensis*, *Clidemia birta* and *Syzygium jambos*. Some of these are difficult to remove from the forest canopy. It is doubtful whether Bracken fern is indigenous, but it now occupies moderately large areas within the site. This species prevents any natural regeneration and must be removed to allow native trees to regenerate.

22. Noteworthy fauna:

Provide additional information on particular species and why they are noteworthy (expanding as necessary on information provided in 14. Justification for the application of the Criteria) indicating, e.g., which species/communities are unique, rare, endangered or biogeographically important, etc., including count data. *Do not include here taxonomic lists of species present – these may be supplied as supplementary information to the RIS.*

The fauna of the site is poorly known. However, annotated notes on known species are provided below, together with a brief list of potential taxa. Introduced invasive species are also listed. Data on amphibians are based on Nussbaum (1984a), and information reptiles is drawn from Cheke (1984) and Nussbaum (1984b).

Known endemic threatened species

Seychelles scops owl, *Otus insularis*. (CR): This is the only native owl in the granitic Seychelles and is endemic. It is confined to the forests of Mahé and Silhouette. Its ecology is poorly known.

Gardiner's Seychelles frog, *Sooglossus gardineri* (VU): Endemic family, the Sooglossidae, with two genera. Confined to upper and intermediate forests on Mahé and Silhouette. Relations with other frog families are poorly understood, indicating a long history of separate evolution in the Seychelles.

Seychelles frog, *Sooglossus sechellensis* (VU) : As above.

Seychelles tree frog, *Tachycnemis sechellensis* (VU): This species is fairly widespread on the larger granitic islands, but its distribution is uneven. The Ramsar site has one of the largest single populations and densities are particularly high. The site may therefore be one of the most important specific sites for its conservation, and possibly the most important. The frog breeds in boggy vegetation, marshes and in rivers.

Seychelles kestrel, *Falco araea* (VU): The kestrel was once widespread on the larger granitic islands but underwent a decline and was found only on Mahé and Silhouette for a number of years. It was reintroduced to Praslin Island in the 1970s and flourished for a number of years. That population has subsequently declined abruptly.

Seychelles swiftlet, *Collocalia elaphra* (VU): The swiftlet nests in caves formed by piles of large boulders. It may be declining because of habitat modification.

Other known endemic species

Pachypanchax playfairii: This endemic freshwater fish occurs in the river.

Grandisonia alternans: This caecilian is relatively abundant.

Grandisonia brevis: This species is considered to be rare and it is surprising that it is not in the IUCN Red List of threatened species.

Grandisonia sechellensis: Found in a variety of habitats.

Hypogeophis rostratus: A common species of caecilian.

Seychelles skink, *Mabuya sechellensis*: This species is a common, largely terrestrial inhabitant of a wide range of habitats.

Seychelles chameleon, *Calumma tigris*: This species is not commonly encountered but occurs widely in forests within the granitic Seychelles.

Boaedon geometricus: This snake species occurs in a wide range of habitats on several granitic islands.

Seychelles wolf snake, *Scopelophis sechellensis*: This species occurs in a wide range of habitats on several granitic islands.

Seychelles blue pigeon, *Alectroenas pulcherrima*: Common endemic species on the granitic islands. Probably an important seed disperser (Carlström, 1996).

Seychelles sunbird, *Nectarinia dussumieri*: Common endemic species on the granitic islands. Believed to be an important pollinator for some native trees (Carlström, 1996).

Seychelles swiftlet, *Aerodramus elaphrus*: Commonly seen feeding over the marshes and neighbouring forests.

Seychelles bulbul, *Hypsipetes crassirostris*: Common in the area. Probably an important seed disperser.

Tropic birds, *Phaeton* species: The White-tailed and Red-tailed tropic birds have been recorded flying in the region. The White-tailed is commonly in the vicinity and probably breeds in the area.

Seychelles flying fox, *Pteropus sechellensis sechellensis*: Widespread and common on the larger granitic islands. This species was widely hunted for food historically, and some hunting continues for traditional meals. This species regularly visits the site to feed on fruits and flowers. It is believed to be important in dispersing seeds of native tree species (Racey & Nicoll, 1984).

Likely endemic species

The freshwater Crustacea of the granitic Seychelles are represented in the Ramsar site, and inventories are awaited to identify the species that are present.

Two additional freshwater fish may occur in the river but have not been recorded to date.

Introduced and invasive species

Rats (*Rattus rattus*), mice (*Mus musculus*) and the Malagasy tenrec (*Tenrec ecaudatus*) are common in the area. Rats and mice are likely to consume seeds and fruits of endemic species, and the tenrec feeds on a wide variety of native invertebrates and small vertebrates.

The Indian mynah (*Acridotheres tristis*), the Indian barred ground dove (*Geopelia striata*) and the Madagascar fody (*Foudia madagascariensis*) are common. Barn owls (*Tyto alba*) are also present. The African snail *Achatina* sp. is widespread and common.

23. Social and cultural values:

a) Describe if the site has any general social and/or cultural values e.g., fisheries production, forestry, religious importance, archaeological sites, social relations with the wetland, etc. Distinguish between historical/archaeological/religious significance and current socio-economic values:

As an upland wetlands area, the site is a curiosity that attracts relatively small numbers of tourists and Seychellois. Considering the short history of Seychelles this wetland site and its surrounding areas have strong socio cultural links. During the colonial periods lots of labourers had been put to work in the extraction of Cinnamon Barks (*Cinnamomum zeylanicum*, *C.verum*) and Oil from the vast areas of cinnamon plantations and in the planting of Vanilla pods . Even Ylang oil (*Cananga odorata*) extraction plants were built in those days to meet the export demands. With the change in lifestyle and socio economic changes those structures were left rudiments and in dilapidated conditions

b) Is the site considered of international importance for holding, in addition to relevant ecological values, examples of significant cultural values, whether material or non-material, linked to its origin, conservation and/or ecological functioning?

Cultural significance given under 23.a.

No additional information available currently.

If Yes, tick the box and describe this importance under one or more of the following categories:

- i) sites which provide a model of wetland wise use, demonstrating the application of traditional knowledge and methods of management and use that maintain the ecological character of the wetland:
- ii) sites which have exceptional cultural traditions or records of former civilizations that have influenced the ecological character of the wetland:
- iii) sites where the ecological character of the wetland depends on the interaction with local communities or indigenous peoples:
- iv) sites where relevant non-material values such as sacred sites are present and their existence is strongly linked with the maintenance of the ecological character of the wetland:

24. Land tenure/ownership:

a) within the Ramsar site:

The site is within Morne Seychellois National Park and is State Land.

b) in the surrounding area:

State land within Morne Seychellois National Park.

25. Current land (including water) use:

a) The proposed site is within the National Parks areas under the Sey National Parks Authority.

The site is reserved for conservation, restoration and ecotourism.

b) in the surroundings/catchment:

The surrounding area is reserved for conservation, restoration and ecotourism. The Cascade River joins the Mare aux Cochons River at lower altitudes, and the latter has a water off-take/pumping station serving West Mahé.

The Public Utilities Corporation has developed a water off-take/pumping station on the lower reaches of the combined river system that supplies West Mahé.

The Mare aux Cochons/Cascade River system arises at more than 500 m altitude and flows through the Mare aux Cochons upland marshes, one of only three habitats of this type in the entire granitic Seychelles. Flow rates for this river:

	Mare Cochons	Aux
Catchment area km ²	5.416	
Mean Annual runoff-mm ³	9.011	
Daily flow (l/s) equalled or exceeded of 50%of time.	100	
Dry Season flow (l/s)	11.9	
Peak flows (l/s)	27325	

Average abstraction from river 675 kilolitres/day, river mare aux Cochons is 2500 kilolitres/day when operational. Islette river catchment area is 2.71 km² and the mare aux Cochons is 5.416 km², there are 400 consumers in this area and approximate revenue generated is SR-120,000 = 10,000 USD/year.

26. Factors (past, present or potential) adversely affecting the site's ecological character, including changes in land (including water) use and development projects:

a) within the Ramsar site:

Invasive plants (listed in Section 21) are probably the most serious historical and continuing factors affecting the site's ecological character. Invasive animals may also have negative impacts on some native invertebrate and smaller vertebrate species as well as on the native plants propagation in these areas.

b) in the surrounding area:

The same factors affecting the site are present in the surrounding area.

27. Conservation measures taken:

a) List national and/or international category and legal status of protected areas, including boundary relationships with the Ramsar site:

In particular, if the site is partly or wholly a World Heritage Site and/or a UNESCO Biosphere Reserve, please give the names of the site under these designations.

The site enjoys strict protection as it is within the Morne Seychellois National Park.

b) If appropriate, list the IUCN (1994) protected areas category/ies which apply to the site (tick the box or boxes as appropriate):

Ia ; Ib ; II ; III ; IV ; V ; VI

c) Does an officially approved management plan exist; and is it being implemented?:

No

d) Describe any other current management practices:

All wetlands in the Seychelles are excluded from potentially damaging development (Government of Seychelles, 1996). As one of only three upland wetlands in the granitic

Seychelles, and the only one on Mahé, Mare aux Cochons is deemed to be a high conservation priority.

As part of a larger restoration program, endemic species believed to have been present historically are currently being planted in open areas and at the fringes of the forest. Invasive species are being gradually controlled or removed mechanically.

A boardwalk has been put in place to protect the marshes from trampling.

28. Conservation measures proposed but not yet implemented:

e.g. management plan in preparation; official proposal as a legally protected area, etc.

The development of a new plan for Morne Seychellois National Park is currently being prepared. It will include the Ramsar site as an integrated component. The likely focus of the plan will be the continued progressive removal of invasive plant species, the continued out-planting of endemic forest plant species, and planting of likely wetlands endemic and native species. A biological inventory of the site is planned.

29. Current scientific research and facilities:

e.g., details of current research projects, including biodiversity monitoring; existence of a field research station, etc.

There are no facilities at present, but researchers will be encouraged to work at the site.

30. Current communications, education and public awareness (CEPA) activities related to or benefiting the site:

e.g. visitors' centre, observation hides and nature trails, information booklets, facilities for school visits, etc.

The Ministry of Environment and Natural Resources & Transport (MENRT) Wetlands Unit works with the Public Relations and Information Management section within the same ministry, and with the Ministry of Education, the Ministry of Community Development, Culture and Sports, and also with the District Administrations to educate communities and schools regarding wetlands. Many NGOs like the Seychelles Scouts Association, Young Citizens, Wild Life Clubs of Seychelles, Sustainability for Seychelles and even Mangrove for Future are working together in the wetland related activities, especially towards the next year's proposed World Wetlands Week in February 2010.

31. Current recreation and tourism:

State if the wetland is used for recreation/tourism; indicate type(s) and their frequency/intensity.

The site is fairly popular for tourists and Seychellois. It is within a network of well-managed trails with entry/exit points at Port Glaud (west coast), Danzil (northwest coast) and Le Niol (near the Victoria – Beau Vallon road). The Port Glaud entry is within the Port Glaud – Port Launay coastal wetlands Ramsar site. The trail system also joins others that lead to additional parts of the national park.

The trail system uses an old road that is still partly accessible by vehicles. Boardwalks have been set up to traverse part of the marshes, the trail is signposted and there are regular shelters. The national park has produced an attractive trail guide brochure.

Access to the Morne Seychellois National Park is free and unregulated. Precise visitor numbers are not known.

32. Jurisdiction:

Include territorial, e.g. state/region, and functional/sectoral, e.g. Dept of Agriculture/Dept. of Environment, etc.

All state lands are under the jurisdiction of the Ministry of Land Use and Development but, as a Ramsar site, the Ministry of Environment and Natural Resources & Transport (MENRT) will

have jurisdiction. MENRT will allocate daily management responsibilities to its Seychelles National Parks Authority which manages the marine and terrestrial national parks, and the ministry's Wetland Unit will provides support.

33. Management authority:

Provide the name and address of the local office(s) of the agency(ies) or organisation(s) directly responsible for managing the wetland. Wherever possible provide also the title and/or name of the person or persons in this office with responsibility for the wetland.

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34. Bibliographical references:

Scientific/technical references only. If biogeographic regionalisation scheme applied (see 15 above), list full reference citation for the scheme.

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