IUCN Conservation Outlook Assessment 2014 **(archived)**
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Please note: this is an archived Conservation Outlook Assessment for Vallée de Mai Nature Reserve. To access the most up-to-date Conservation Outlook Assessment for this site, please visit https://www.worldheritageoutlook.iucn.org.

Vallée de Mai Nature Reserve

SITE INFORMATION

Country:
Seychelles
Inscribed in: 1983
Criteria:
(vii) (viii) (ix) (x)

Site description:
In the heart of the small island of Praslin, the reserve has the vestiges of a natural palm forest preserved in almost its original state. The famouscoco de mer, from a palm-tree once believed to grow in the depths of the sea, is the largest seed in the plant kingdom. © UNESCO

SUMMARY

2014 Conservation Outlook

Good with some concerns

The protection and management of Vallée de Mai Nature Reserve is generally effective and is supported by a national legal framework, although there is a lack of a national protected area system. The management authority is very competent and is effectively implementing science-based programmes. However, the future of the site's key value, the Coco de Mer plant, is currently under significant threat from illegal collection and overexploitation for its nuts and kernel. The National Government and the managing agency are implementing targeted conservation measures and aim to tighten law and legislation to protect the species.
Current priorities for the Nature Reserve include increasing the capacity for technical and scientific management; promoting an increase in the size and connectivity of Vallée de Mai within the Praslin Island landscape, with a legally designated buffer zone; increasing anti-poaching; and controlling the commercial exploitation of the coco de mer seeds while expand a programme of replanting seedlings.

Current state and trend of VALUES

Low Concern
Trend: Data Deficient

The overall values of Vallee de Mai are currently stable. Scientific understanding of its values has improved considerably in the last five years. However, the key iconic species of the site, the coco de mer, is under threat due to over exploitation, illegal collection of nuts and its inability to regenerate naturally The site remains a stable haven for many endemic and native species of fauna.

Overall THREATS

High Threat

Unsustainable harvesting, plus the increasing illegal collection of coco de mer nuts is the major pressure on the Vallée de Mai. The site management currently removes all nuts from the site to deter poachers, but consequently no natural regeneration can occur. Invasive alien species are a potential threat to the site's threatened fauna such as the Seychelles Black Parrot. Forest fire is a high threat which can lead to loss of habitats and potential loss of the largest coco de mer population.

Overall PROTECTION and MANAGEMENT

Mostly Effective

Vallée de Mai's protection and management to preserve the site's key values is sufficient to maintain a stable conservation trend. There have been significant improvements in scientific research and site management capacity in the last five years. The management authority has made important changes in their strategies and use of science-based decision-making as a principle. There is a positive level of outreach to local communities, tourists and local tourism enterprises. A series of research studies conducted in the last five years form a strong base for the site's managers to make informed, adaptive decisions. However, the current levels of coco de mer commercial harvesting are unsustainable and management's responses to address illegal collection of nuts have not been effective so far.

FULL ASSESSMENT

Description of values

Values

World Heritage values

- **Scenic palm forest**
  Criterion:(vii)

  The site contains a scenic mature palm forest. The natural formations of the palm forests are of aesthetic appeal with dappled sunlight and a spectrum of green, red and brown palm fronds. The natural beauty and near-natural state of the Vallée de Mai are of great interest, even to those visitors who are not fully aware of the ecological significance of the forest (SoOUV, 2010).

- **An outstanding example of an earlier and major stage in the evolutionary history of the world’s flora**
  Criterion:(viii)

  Shaped by geological and biological processes that took place millions of years ago, the site is an outstanding example of an earlier and major stage in the evolutionary history of the world’s flora. Its ecology is dominated by endemic palms, and especially by the coco de mer, famous for its distinctively large double nut containing the largest seed in the plant kingdom. The Vallée de Mai illustrates what other tropical areas would have been before the advent of more advanced plant families (SoOUV, 2010).

- **An outstanding example of biological evolution dominated by endemic palms**
  Criterion:(ix)

  The site represents an outstanding example of biological evolution

dominated by endemic palms. The site's low and intermediate-altitude palm forest is characteristic of the Seychelles and is preserved as something resembling its primeval state. The forest is dominated by the coco de mer Lodoicea maldivica but there are also five other endemic species of palms. Located in the granitic island of Praslin, the Vallée de Mai is the only area in the Seychelles where all six species occur together and no other island in the Indian Ocean possesses the combination of features displayed in the property. The ancient palms form a dense forest, along with Pandanus screw palms and broadleaf trees, which together constitute an ecosystem where unique ecological processes and interactions of nutrient cycling, seed dispersal, and pollination occur (SoOUV, 2010).

► Endemic palm species

Criterion:(x)

The Vallée de Mai is the world’s stronghold for the endemic coco de mer Lodoicea maldivica, and the endemic palm species millionaire’s salad Deckenia nobilis, thief palm Phoenicophorium borsigianum, Seychelles stilt palm Verschaffeltia splendida, latanier millepattes palm Nephrosperma vanhoutteanum and latanier palm Roscheria melanochaetes, are also found within the property (SoOUV, 2010).).

► Endemic animal species supported by the palm habitat

Criterion:(x)

The palm forest is relatively pristine and it provides a refuge for viable populations of many endemic species, including the black parrot Coracopsis nigra barklyi, restricted to Praslin Island and totally dependent on the Vallée de Mai and surrounding palm forest. Other species supported by the palm habitat include three endemic species of bronze gecko, endemic blue pigeons, bulbuls, sunbirds, swiftlets, Seychelles skinks, burrowing skinks, tiger chameleons, day geckos, caecilians, tree frogs, freshwater fish and many invertebrates (SoOUV, 2010).

Other important biodiversity values

► Other important biodiversity values

Vallee de Mai lies within a Conservation International-designated Conservation Hotspot, a WWF Global 200 Eco-region, a WWF/IUCN Centre of Plant Diversity and is one of the world's Important Bird Areas (UNEP-WCMC, 2011).

Assessment information

Threats

Current Threats

High Threat

Unsustainable harvesting, plus the increasing illegal collection of coco de mer nuts is the major pressure on the Vallée de Mai. The site management currently removes all nuts from the site to deter poachers, but consequently no natural regeneration can occur. The illegal collection of coco de mer nuts is increasing annually. Invasive alien species are a potential threat to the site's threatened fauna such as the Seychelles Black Parrot.

► Other Biological Resource Use

High Threat
Inside site

Illegal collection of coco de mer nuts in Vallée de Mai has begun in recent years due to the high value of its nuts and kernels. Up to 50 nuts a year are poached from the site. Poachers often climb the palms and cut off all infructescences with mature and immature nuts, an impact which appears to affect female trees for up to 3–5 years before producing new inflorescences (Rist et al. 2010). The illegal collection of coco de mer nuts is increasing annually and the management authority (SIF) has increased patrolling but the nuts are still being collected on a regular basis. There is a lack of funding

for more patrolling staff to guard the site.

▶ Logging/ Wood Harvesting

Low Threat
Inside site

Coco der mer nuts are currently heavily exploited in Vallée de Mai, and it is clear that harvesting at current levels cannot be maintained indefinitely (Rist et al 2010). The legal harvesting of the Coco de mer nuts has been assessed by a recent study by Rist et al. (2010). The study has recommended tthat a set of sustainable harvesting and replanting strategies is applied

▶ Invasive Non-Native/ Alien Species

High Threat

The threat of invasive alien species is high in the site since they can lead to changes in species composition and habitats (Lea Ketterer 2010). A research project on invasive species distribution and impact of invasive species is being carried out in the site to address the issue.

Potential Threats

High Threat

Forest fire is a high threat which can lead to loss of habitats and potential loss of the largest coco de mer population. The current firefighting capacity is inadequate. A fire prevention and action plan needs to be implemented and improved for the site to respond to any break-out of fire.

▶ Fire/ Fire Suppression

High Threat
Inside site

There is a high volume of fallen dry leaves from the palms in the site, thus the fire hazard is high. The risk is exacerbated by the public road crossing through the middle of the Praslin National Park which is adjacent to the site. Forest fire is a high threat which can lead to loss of habitats and potential loss of the largest coco de mer population. The current firefighting capacity is inadequate. A fire prevention and action plan needs to be implemented and

improved for the site to respond to any break-out of fire.

Protection and management

Assessing Protection and Management

► Sustainable finance

Mostly Effective

The available budget is sufficient but further funding would enable more effective management to international best practice standard. The existing sources of funding are secure in the medium-term and planning is underway to secure funding in the long-term. Tourism provides the major sources of revenue (Periodic Reporting, 2001).

► Management system

Mostly Effective

The Vallée de Mai (45 ha) was declared a nature reserve in 1966 to protect the coco-de-mer. It was declared a World Heritage site in 1983 and the Seychelles Island Foundation has been responsible for its management since 1989 (Birdlife, 2013). A management plan was adopted in 2002 with the time frame until 2008 (SIF, 2008). There is coordination between the range of administrative bodies / levels involved in the management of the property but it could be improved. The management system is only partially being implemented. Local communities have some input into discussions relating to management but no direct role in management.

► Management effectiveness

Mostly Effective

It was identified that management decisions to preserve the site values are definitely going in the right direction. However, several gaps were identified which need to be addressed, including the continued implementation of education and outreach programmes, improved visitor management, expanding the science programme as well as a data management system. Most important is, however, the compilation of a new Management Plan to steer management, measure progress and to build the basic structure of the

follow-up actions identified (Ketterer 2010).

▶ Implementation of Committee decisions and recommendations

Data Deficient

The proposed extension to the property (Fond Peper area) has been partially implemented.

▶ Relationships with local people

Mostly Effective

There are no residents inside or adjacent to the site due to the fact that the site is within the bigger Praslin National Park (Periodic reporting, 2001). The site has good relationships with local people living on Praslin Island through educational and outreach programmes as well as using the visitor centre as an educational interaction with local people. The site is also working effectively with the local tourism enterprises.

▶ Legal framework and enforcement

Mostly Effective

The property is embedded within the Praslin National Park (300 ha). The property is legally protected under national legislation and is managed by a public trust, the Seychelles Islands Foundation (SoOUV, 2010). An adequate legal framework for the maintenance of the Outstanding Universal Value including conditions of Integrity of the World Heritage property exists but there are some deficiencies in implementation.

▶ Integration into regional and national planning systems

Some Concern

There is some lack of clarity over the legal integration of the site within the context of Praslin island, which includes other protected sites (Praslin National Park, Fond Ferdinand forest). Additionally, there is a lack of a national Protected Area systems plan that could benefit the site.

▶ Boundaries

Mostly Effective

The current delimitation of the property is thought to be adequate.

Nevertheless, an extension of the reserve area to help curb Coco de Mer poaching in the immediate vicinity of the Reserve was recommended (Periodic Reporting, 2001). The proposed extension to the property (Fond Peper area) has been partially implemented.

► Staff training and development

Some Concern

A range of human resources exist, but these are below optimum to manage the World Heritage Property. Training is required at management level, rangers, and any staff involved in scientific monitoring (Periodic Reporting, 2001). A capacity development plan is in place and partially implemented; some technical skills are being transferred to those managing the property locally but most of the technical work is carried out by external staff. There is a lack of local capacity as well as a lack of human resources due to the small size of the local community living around the site, and in Seychelles generally. In addition, the site is in competition with the tourism industry for skilled staff, and tourism generally provides better employment conditions. Employment conditions could be adapted so that there is not a full dependency on the local community only. A first draft of a training plan exists which is yet to be validated by the management.

► Sustainable use

Some Concern

Coco de mer nuts are harvested in the site for sale due to its high value. It is currently overharvested with 99% of nuts taken out of the site, with only a handful of nuts left to germinate (Rist et all 2010). A recent study on sustainable harvesting of the coco de mer suggested that the current levels of harvesting in the site cannot be maintained indefinitely. The study suggested a series of management measures and implementation actions to be taken immediately to move towards sustainable management of the most iconic and flagship species, the national symbol of Seychelles (Rist et all 2010). The current levels of utilisation are unsustainable and new pressures such as from illegal harvesting to fill demand for coco de mer kernel represent significant additional threats (Rist et al 2010).

► Education and interpretation programs

Mostly Effective

There is an education and awareness programme, but implementation is limited to opportunity and ad-hoc events. World Heritage status has influenced education, information and awareness building activities, but it could be improved. The Outstanding Universal Value of the property is adequately presented and interpreted but improvements could be made. An outreach programme was initiated in 2009 (Friends of Vallée de Mai) which aims to bring all local schoolchildren to the Vallée de Mai to experience the site and learn about its values. The visitor centre has been newly built to ensure that education and awareness is a substantial part of the activities there. However, display material still need to be updated.

► Tourism and interpretation

Mostly Effective

There is an average understanding and promotion of the site values in local and national tourism policies. There is limited co-operation between those responsible for the World Heritage property and the tourism industry to present the Outstanding Universal Value and increase appreciation. A visitor fee is collected and makes a substantial contribution to the management of the World Heritage property. Visitor management is not yet sufficient and results of a recent survey are partially integrated in the daily management of the site, but in future a visitor management strategy should be developed especially since the site is highly dependent on the fees collected.

► Monitoring

Mostly Effective

There is a monitoring effort, but it is not consistent. Information on the values of the World Heritage property is sufficient to define key indicators, but this has not been done adequately. A management effectiveness assessment has been conducted and there is sufficient institutional capacity to develop a comprehensive monitoring programme which includes key indicators, and this has been started.

► Research

Mostly Effective

Knowledge about the values of the World Heritage property is sufficient for most key areas but there are gaps. There are several research programmes related to the site (SIF, 2008). Research results are widely shared locally, nationally and internationally. It is planned to develop a comprehensive applied research agenda for the property. More research is needed to have adequate knowledge about the site to support planning, management and decision-making to ensure that values is maintained over the long-term.

Overall assessment of protection and management

Mostly Effective

Vallée de Mai’s protection and management to preserve the site’s key values is sufficient to maintain a stable conservation trend. There have been significant improvements in scientific research and site management capacity in the last five years. The management authority has made important changes in their strategies and use of science-based decision-making as a principle. There is a positive level of outreach to local communities, tourists and local tourism enterprises. A series of research studies conducted in the last five years form a strong base for the site’s managers to make informed, adaptive decisions. However, the current levels of coco de mer commercial harvesting are unsustainable and management’s responses to address illegal collection of nuts have not been effective so far.

► Assessment of the effectiveness of protection and management in addressing threats outside the site

Data Deficient

data deficient

► Best practice examples

The site offers one excellent example of best practice in conservation financing. The revenues from tourism fully fund the core management and

protection of the site, as well as benefit local business and community.

State and trend of values

Assessing the current state and trend of values

World Heritage values

▶ **Scenic palm forest**

Low Concern
Trend:Stable

The small yet pristine site is intact and remains a stable haven for many endemic and native species of fauna and flora and has maintained its aesthetic, beautiful character as a remarkable and accessible example of a palm forest ecosystem (Ketterer, 2010).

▶ **An outstanding example of an earlier and major stage in the evolutionary history of the world’s flora**

Low Concern
Trend:Stable

The site continues to remain intact and illustrate what other tropical areas would have been like before the advent of more advanced plant families (Ketterer, 2010).

▶ **An outstanding example of biological evolution dominated by endemic palms**

High Concern
Trend:Stable

The palm species found in the area together constitute an ecosystem where unique ecological processes and interations continue to occur. However, the key iconic species of the site, the coco de mer, is under threat due to over exploitation, illegal collection of nuts and its inability to regenerate naturally. e (Rist, 2010).

► Endemic palm species

Low Concern
Trend:Stable

The endemic Coco de Mer and other rare palms, including 5 other endemic species, continue to be preserved as an outstanding and relatively pristine example of ancient Palm Forest (Ketterer, 2010). This is the only site where these species co-exist and is one of the best preserved example of palm forest globally. (Rist et al 2010).

► Endemic animal species supported by the palm habitat

Low Concern
Trend:Stable

The small yet pristine site remains a stable haven for many endemic and native species of fauna. Black parrots are probably the most important avian flagship species of the Vallée de Mai and the Vallée is thought to form the population's stronghold. The parrot population in 2008 was estimated to be around 600 individuals (SIF, 2008).

Other important biodiversity values

► Other important biodiversity values

Vallee de Mai lies within a Conservation International-designated Conservation Hotspot, a WWF Global 200 Eco-region, a WWF/IUCN Centre of Plant Diversity and is one of the world's Important Bird Areas (UNEP-WCMC, 2011).

Summary of the Values

► Assessment of the current state and trend of World Heritage values

Low Concern

Trend: Data Deficient

The overall values of Vallee de Mai are currently stable. Scientific understanding of its values has improved considerably in the last five years. However, the key iconic species of the site, the coco de mer, is under threat

due to over exploitation, illegal collection of nuts and its inability to regenerate naturally The site remains a stable haven for many endemic and native species of fauna.

Additional information

Key conservation issues

▶ Mmanagement of the coco de mer harvesting

Local

It is important for the site to better manage the commercial harvesting of coco de mer nuts and actively maintain the regeneration rate of the coco de mer species..

▶ Illegal collection of coco de mer nuts

Local

Illegal collection of nuts is an increasing pressure on the natural coco de mer plant population. Poaching in the site has begun only in recent years (Rist et al 2010) due to the high value of coco de mer nuts as tourist souvenirs and the international demand for the kernel. The resources required to patrol the site are an additional drain on the management’s resources. Collected nuts are either sold to tourists with counterfeit permits or they are processed and the kernels exported. The permit system allows for collection by private landowners but currently this system is open to manipulation and offers a channel into the market for illegal nuts collected from natural populations (Rist et al, 2010).

▶ Fire hazard prevention

Local

There is risk of fire due to large amount of dry palm leaves in the site which is highly vulnerable to fire. There is concern over fire response capacity in Praslin island.

▶ **Alien invasive species control**
Local

The Vallée de Mai is embedded within the Praslin National Park and management of the park should be improved with regard to habitat restoration.

▶ **Extending the area of Vallée de Mai**
Local

The enlargement of the site could ease certain management pressures and would also be conform to the original intention of the UNESCO to apply the World Heritage designation to a larger area than the current site (Ketterer, 2010).

Benefits

Understanding Benefits

▶ **Does management of the site provide jobs (e.g. for managers or rangers)?**

The site provides jobs to local islanders, and to Seychellois from other islands, from field staff through to upper management.

▶ **Is the protected area valued for its nature conservation?**

Vallée de Mai, despite of its small size, is the most important area for conservation of the coco de mer. It contains the ecosystem components needed for the endangered and endemic coco de mer as well as other Seychelles endemic palm species.

▶ **Outdoor recreation and tourism**

Vallée de Mai is a major tourist destination in Seychelles. It provides economic benefits for many local tour operators, hotels, local businesses, and is a national attraction and icon for Seychelles.

► Importance for research

The protection and conservation of Vallée de Mai is of high importance for science for studying and understanding ecological and evolutionary processes of this ancient palm forest. Many local and international university students carry out their research in Vallée de Mai annually.

► Contribution to education

Vallée de Mai is an important place for local people, especially school children to learn about endemic palms and the importance of Vallée de Mai in conservation of those endemic palm species, especially the unique coco de mer. The management of the site has carried out special education and outreach programmes to promote school children to learn, explore, visit and understand about this Seychelles special ancient palm forest.

► Soil stabilisation

Vallée de Mai’s forest provides the stability for the soil on Praslin Island as it is situated on the hillside of the island.

► Water provision (importance for water quantity and quality)

Vallée de Mai provides important watershed protection services for water retention and holding capacity which bring benefits directly to the local population. The stream ecosystem within the site is also an important habitat for endemic freshwater species such as the Seychelles crayfish.

Summary of benefits

Vallée de Mai is the most visited destination in Seychelles. The revenue from tourism has brought direct financial benefits for the conservation and management of the area. Income from entrance fees and sale of coco de mer nuts has enabled Seychelles Island Foundation, the management authority of Vallée de Mai to carry out conservation and protection work on the site (SIF Annual Report 2008). The site delivers direct key benefits associated with higher tourist numbers to the Praslinois (the local population on Praslin). A recent internal report by SIF identified large economic benefits to the Praslinois

population as a direct result of the presence of the site on Praslin. The Vallée de Mai is the only remaining sample of a once dominating habitat on Praslin, providing a cultural and scientific base-line for a close-to-natural state of a once dominating habitat type and its associated fauna. One important side effect of the intactness of the Vallée de Mai ecosystem is the delivery of ecosystem services (e.g., little soil erosion within the site, intact watershed dynamics of water retention and holding capacity) which directly benefits the Praslinois people.

From a more regional and global perspective, the protection and preservation of the Vallée de Mai is of scientific and cultural importance. Much scientific insight has been generated by understanding ecological and evolutionary processes of this ancient palm forest. From a cultural point of view, the Vallée de Mai forest has been depicted on thousands of paintings and provided inspiration of much craftwork, for both of which exists a high demand globally

Projects

Compilation of active conservation projects

№	Organization/ individuals	Project duration	Brief description of Active Projects
1	Seychelles Island Foundation (SIF)		Mainstreaming the management of invasive alien species as fundamental to preserving the ecological integrity and enhancing the resilience of Seychelles' World Heritage Sites: focuses on research, management and control of plant and animal Invasive Alien Species (IAS) affecting or threatening Aldabra Atoll and the Vallée de Mai. Activities include attempting eradications of two introduced bird species, researching the possibility of rat and cat eradications on Aldabra, plant IAS control on Praslin, education, supporting national biosecurity and IAS activities
2	SIF		Implementing an Environmental Management System for Seychelles Islands Foundation: an ambitious long-term project divided into phases including: Energy audit and identification of energy saving measures and appliances; purchase and installation/implementation of above measures; research into sustainable energy systems for Aldabra; sourcing and installation of a PV system which now covers Aldabra's energy requirements by ~98%; work ongoing into improving water and waste management

№	Organization/ individuals	Project duration	Brief description of Active Projects
3	SIF		Ecology, genetics and conservation of the Seychelles black parrot: Long-term research programme into the endemic Seychelles black parrot including population monitoring, breeding monitoring, blood sample collection for genetics, disease research and sexing, feeding ecology, habitat suitablility surveys on other islands. Project has included 4 MSc theses to date.
4	SIF		Life history and reproductive ecology of coco de mer: Project aims to unravel the elusive reproductive system and life history of the coco de mer including identification of the main pollinator, determining reproductive success and variation & investigating age and longevity
5	SIF and ETH Zurich		Demographic and genetic processes underlying regeneration in Lodoicea maldivica, the largest-seeded plant in the World: PhD research based at ETH Zurich investigating genetic processes, genetic variation, paternity and genetic sex determination of coco de mer palms
6	DICE/ NHM/ local partners		A cutting-EDGE approach to saving Seychelles' globally unique biodiversity: a multi-partner project focusing on research and conservation of the Seychelles EDGE species (Sooglossid frogs, caecilians, sheath-tailed bats, black parrots, corals).
7	SIF/Durrell Institute of Conservation and Ecology (DICE)		Amphibians on the EDGE: Evolutionary relationships and conservation ecology of sooglossid frogs: PhD research carried out by student Jim Labisko based at DICE, University of Kent, UK, looking at ecology, genetics, vocalisations, pathogens and IAS impacts on this endemic frog family (continuation of Mres research)

Compilation of potential site needs

№	Site need title	Brief description of potential site needs	Support needed for following years
1	SIF and university partner	Species status of the Seychelles black parrot: The Seychelles black parrot is considered a subspecies despite genetic, morpholopgical, behavioural and ecological evidence that it is a distinct species. This project will aim to continue and build on the genetic research done to date and confirm species status of this tiny endemic population	

№	Site need title	Brief description of potential site needs	Support needed for following years
2	SIF and university partner	Strengthening community & site custodian capacity for disaster preparedness and response including forest fires to enhance the protection of the Vallée de Mai: Project aims to build publc sense of responsibility for the VdM via community-led emergency response and fire management training & capacity building	

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№	References
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