



Mauritius Kestrel – proposed and accepted as our National Bird

(Photo courtesy: Jacques de Spéville)

Annual Report

On the activities of the Mauritian Wildlife Foundation

Year 2021



Alliance for
Zero Extinction



**Conservation
Evidence**

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The Mauritian Wildlife Foundation

The Mauritian Wildlife Foundation (MWF) is a Registered Charity established in 1984. MWF works in close cooperation with the Government of Mauritius and the Rodrigues Regional Assembly, formalized in separate memorandums of understanding. The headquarters is located in Vacoas, Mauritius and the Rodrigues branch is based in Solitude. MWF is the largest Mauritian NGO to be exclusively concerned with the conservation of terrestrial endemic species and their habitats, and in Rodrigues has a specialization in habitat restoration. The principal objective of the organization is to save threatened native and endemic species from extinction.

Achievements

MWF's best known achievement is the saving of the Mauritius Kestrel. The MWF, has in recent years, brought the Pink Pigeon, the Echo Parakeet and the Mauritius Fody back from the brink of extinction. MWF's work in the area of captive-breeding and hands-on wild management of endemic animals is of internationally high repute. Our expertise is also being used in Rodrigues to address problems caused by degradation of habitat. Here we are propagating native plants in nurseries and planting them out to restore vegetation communities. The Foundation also works actively to restore offshore islands, by removing exotic vertebrates and plants and by restoring vegetation and vertebrate communities. The MWF is currently working on several islands including Ile aux Aigrettes, Round Island, Ile Cocos and Ile aux Sables. All of these are high profile projects of national and global biological significance. The MWF believes that the work it is doing benefits the Mauritian nation both for the present and future generations. Most of MWF's projects are of international importance in the conservation of biological diversity and are therefore placing Mauritius at the forefront of the Conservation world giving a high profile to any projects, which need funding. The MWF is raising the profile of conservation among tourists through the Eco-tourism activities conducted on Ile aux Aigrettes, Mauritius and Grande Montagne, Rodrigues. The MWF promotes local capacity building and provides employment through its activities. The Mauritian Wildlife Foundation wishes to remain a strong, vibrant and innovative organisation.

MWF's Missions

To save threatened Mauritian species through the restoration of entire ecosystems.

- To seek new information through field research, data management, captive studies and scientific collaboration for direct application to restoration methods and management.
- To share knowledge gained through restoration programmes with fellow Mauritian and international conservationists.
- To share the joys and benefits of native wilderness and wildlife with the Mauritian people.
- To secure the future of Mauritian species through income generation and sound management of human, fiscal and capital resources.

Organisational Structure

MWF is governed by a Council of 12 members, made up of prominent Mauritians interested in conservation, representatives from the Mauritian Government's National Parks & Conservation Service, the Durrell Wildlife Conservation Trust, North of England Zoological Society (Chester Zoo) and other international partners. MWF employs around 90 Mauritian staff at all levels of responsibility, and up to 5 expatriate staff. Their work is supported by up to 25 Mauritian and expatriate self-funded volunteers. MWF and its Council are also advised by a number of scientific associates from organisations that fund or support it, namely The Durrell Wildlife Conservation Trust, The Botanical Gardens Conservation International, Conservatoire Botanique National de Brest (France), Wildlife International Vets, North of England Zoological Society, the Institute of Zoology (UK) and various universities.

Significant Events of 2021

The worldwide COVID-19 pandemic had numerous significant impacts on MWF's operations in 2020 and continued into 2021. Some significant events and achievements are recognized here.

Mauritius locked down for a second time as from 10th March 2021, MWF obtained work access permits for conservation staff and most other staff worked from home and held remote meetings.

Entry to Mauritius was possible via a 14-day quarantine until 1st October 2021 when fully vaccinated persons could enter holding negative PCR tests. It was then possible for overseas conservation staff to join projects and visitors to arrive.

Rodrigues remained Covid safe in 2021. Flights were stopped when Mauritius locked down and have been restricted for the rest of the year with a quarantine of 14 days on entry introduced but only Rodriguans accepted.

Ecotourism activity in Mauritius was greatly reduced in 2021 and only recovered back to near 'normal' levels in the last three months of the year, linked to the quarantine restriction being lifted and tourists arriving. There has been a continuing low level of visits from students for 'Learning with Nature'.

The Tourism Alternative Livelihood Workers' scheme in Rodrigues where workers in the Tourism sector were allocated to work on projects relevant to tourism continued in 2021. MWF benefited enormously with 10,403 man-days contributing to the removal of invasive species and planting in the Nature Reserves.

The handrearing and releases of the Mauritius Kestrel resumed for 2021/2022 after missing one season.

Pink Pigeons have had a bumper year with 99 birds rung.

MWF was honoured in June 2021 by the Commonwealth Points of Light award for Mauritius being given to Dr Vikash Tatayah. This award recognises that the work done by individuals makes a huge difference in their communities and help inspire others.

The IUCN Mascarene Islands Plant Specialist Group, which is co-chaired by the Mauritian Wildlife Foundation, has received the IUCN 2020 *SSC Chair's Citation of Excellence* for the second year in a row.

The Management plan for Mondrain Reserve, prepared in house, was completed as was the Education Strategy 2021-2026, supported by Chester Zoo. The Flora Strategic Plan was prepared using the Open Standards Approach to Conservation Planning, supported by Durrell.

The Flora team was strengthened in 2021 with the employment of a Coordinator and two interns.

Dedicated seedbanking rooms in Mauritius (at Head Office) and in Rodrigues (Solitude nursery) were set aside to be able to process seeds then correctly store them.

Fifteen Rodrigues endemic trees were red-listed in 2021. (See 'Publications'). This follows the red listing workshop held in 2019.

Bois Pasner (*Zanthoxylum paniculatum*) was, for the first recorded time ever, successfully propagated by graft in Rodrigues.

The Rodrigues 5-year EU 'Climate Change' project has had an excellent first year with an upgrade of the Solitude nursery underway and the problem of invasive 'coqueluche' being addressed systematically in Anse Quitor as well as a great increase in restoration work and planting. (See Rodrigues section).

We have seen the beginnings of the Pointe Jerome Edu Centre with architects plans. This exciting expansion of the current Ecotour reservations office will enable us to implement more education initiatives as well as improve facilities for staff and visitors alike.

Twelve IUCN Red-list accounts have been published for Reptiles. (See 'Publications'). With the other seven species accounts published over the past couple of years, it now means that all the endemic lizard and snake species for Mauritius and Rodrigues have been fully assessed against the threat categories of extinction.

With communication increasingly an extremely important element for funder support it is great to see the MWF Facebook increasing posts and widening the exposure of our projects along with a monthly newsletter beautifully presented with lots of photos on SWAY. In Rodrigues the team has an impressive record of their regular interactions with the radio and TV.

MWF's Data Management has moved forward with the adoption of Microsoft 365, access to the cloud and the employment of dedicated Scientific Officers in Mauritius and Rodrigues.

There was no cull of the Mauritius Fruit bat in 2021. This significant move forward was celebrated by MWF when the science was taken into account by the Government of Mauritius: that culls as a method of protecting fruit from fruit bats does not work. This follows MWF's constant research, lobbying as well as setting up a Human Wildlife Conflict Project to address the issue. (See 'Education in Mauritius')

Friends of Mauritian Wildlife was revived in 2021. We found funding and employed a Coordinator and could finally work on more detailed plans for action in 2022, this being delayed due to Covid restrictions on gatherings.

And last but not least: The Government of Mauritius announced that the Mauritius Kestrel would be made the National Bird on 12th March 2022 on the occasion of the 30th anniversary of the creation of the Republic of Mauritius. Suggested more than ten years ago by Carl Jones, the time presented itself and Vikash Tatayah seized the moment to put forward the idea. We are so pleased that the proposal was taken up by the Cabinet of Ministers. Thank you to Carl for the idea and Vikash for the realisation of this 'dream'.

BIRDS

Mauritius Kestrel



Background

The Mauritius Kestrel (*Falco punctatus*) is unique to Mauritius and is one of the nine endemic bird species still left on the island. The species was saved in-extremis with an increase from just four birds in 1974, including a single breeding female, to a peak of about 600 individuals. It has become a world conservation icon as it is recognised as the most successful recovery programme in the world of an animal species and the programme remains MWF's proudest achievement.

However, because of the degradation of the Mauritian native forests the kestrels are now found only on the eastern and western part of the island where they continue to face the effects of habitat degradation and predators. The eastern population has been monitored constantly since the re-introduction of birds from 1988 to 1993 and has been healthy and stable for the past decade. However, the western sub-population suffered a decline and MWF had to resume monitoring there in 2008 after an island wide survey found a drastic reduction in kestrel numbers from the estimated 600 to around 300 birds. The findings sadly confirmed the disappearance of introduced kestrels from the Moka Mountain Range. The current monitoring has allowed the identification of the management actions required to reverse the downward trend in numbers and secure the population. Measures include placing more nest boxes in suitable habitats to increase the number of breeding pairs, studying the genetics of the populations to identify if certain bird's genes need to be introduced into the other subpopulation and hand-rear birds to boost population numbers and to reintroduce birds into new nesting areas. The field team will harvest eggs and/or chicks to be hand-reared at the Gerald Durrell Endemic Wildlife Sanctuary (GDEWS) in Black River. They are then moved to nest boxes in the identified release sites for a period of adaptation, during which they are fed daily before leaving the box to go into the forest.

Releases have been done in Bel Ombre in the south west of the Black River Gorges National Park from 2016 to 2018; eggs were harvested from the East Coast and were incubated and hand reared at GDEWS, and then the chicks were released in nest boxes in Bel Ombre, and they were fed every day until they reached independence. In 2016 five birds were released, in 2017 21 birds were released and in 2018 a further 21 birds were released.

In the 2019/20 breeding season, 14 kestrels were released in to the 'Gorges' subpopulation in the North of the National Park.

No releases were done in 2020/21 due to the COVID-19 pandemic, initially borders were closed and so specialist hand rearing staff could not be brought in to the country, and later the conditions of entry meant that it was not feasible to bring people from abroad. The other reason why releases were not done in 2020/21 was to give the East coast population a break after four continuous years of harvesting. We had been harvesting early clutches in the hope that they would be replaced by second clutches. Unfortunately, even though second clutches were being produced, most of them were not successful.

This breeding season (2021/22) the hand-rearing and release of Kestrels continued for the 'Gorges' subpopulation in the North of the National Park, 16 birds were released.

The latest scientific findings illustrate that there is no room for complacency and we still need to look after the Mauritius Kestrels.

Main Actions

- Population monitoring in the west, south and east was carried out as usual. The borders opened as from October 2021, and so it was possible to recruit full teams this breeding season (2021/22), though two staff members arrived late in the breeding season, and so the teams had to work hard to catch up with the monitoring.
- The second year of releases was done in the 'Gorges' subpopulation this breeding season (2021/22). 16 eggs were harvested from 10 first clutches in the Bambou Mountain range, and three chicks were harvested from a cliff cavity (breeding attempts at this site usually fail) in the west coast, in the Gorges. A different approach was taken for the harvest of eggs this season (2021/22): breeding sites that usually had productive breeding pairs were targeted. All eggs in the clutch were candled, if there were viable fertile eggs in the clutch, then one or two eggs were collected, and one or two were left in the nest. This was done so that the breeding pair could produce fledglings that would contribute to the Bambou Mountains subpopulation, while the eggs collected contributed to the release to the Black River Gorges National Park. The eggs that were removed from the nest were replaced with "dummy eggs" (fake eggs) so that the breeding female was not disturbed. In total, two chicks that hatched from harvested eggs died during the hand-rearing phase, and one of the harvested chicks died. For the chicks that hatched from eggs harvested from the Bambou Range, neither developed normally in the egg, and both needed support to hatch; it seems likely that neither chick would have survived in the wild. For the chick that was harvested from the cliff cavity in the 'Gorges', it was very weak and malnourished at the time of harvest, and it seems likely that it too would not have survived in the field. In total 16 birds were released in the 'Gorges' subpopulation this season (2021/22).
- This season (2021/22) one of the 2019/20 release nest boxes was used. The male at the nest box was identified as 'Fry', a bird released in the 2019/20 breeding season, who had paired with an un-ringed female (i.e. a bird from the 'Gorges' subpopulation). Even though this first breeding attempt was not successful, this was still a particularly encouraging development.

- The 2019/20 release had been done for several reasons; to provide a boost to the declining northern subpopulation in the Black River Gorges National Park, to bring missing genetic diversity back to the subpopulation from the Bambou Mountains, and to establish an artificial nest box network in this part of the park. The majority of Mauritius Kestrel in this area breed in cliff cavities. These cavities are of varying quality (e.g., some flood, some are shallow, some are at high risk from predators such as rats), and as a result Mauritius Kestrels tend to produce more chicks from nest boxes. This first breeding attempt found in a nest box in the region will hopefully be the first of many.
- The Mauritius Kestrel will be declared 'the National Bird of Mauritius' on the occasion of the 30th anniversary of the accession of Mauritius to the status of Republic in March 2022.

Pink Pigeon



Background

The Pink Pigeon (*Nesoenas mayeri*) is one of the world's rarest pigeons. Only nine wild birds were known at its lowest point in 1990. In the last 25-30 years, an integrated management approach of captive breeding, releases, habitat restoration and predator control has seen the population recover to approximately 500 wild birds. Whilst the conservation work to date has saved the species from imminent extinction, MWF cannot relax in its efforts and reduce the level of support. The original causes of the species' rarity, mainly restricted and degrading native habitat and introduced predators, still prevail and unless we continue to manage the effects of these limiting factors, the Pink Pigeon may face the prospect of extinction once again. There is one subpopulation of Pink Pigeons established on the offshore island of Ile aux Aigrettes and six more in the Black River Gorges National Park. Two of these sites, Pétrin and the Lower Black River Gorges, are open to the public and the birds can easily be seen. In 2017, 30 Pink Pigeons were released in Ferney Valley. In 2018, 50 Pink Pigeons were released in Ebony Forest. These releases have increased the area occupied by Pink Pigeons and should help increase the population size to over 600 birds, a figure believed to be the minimum viable population size for an avian species.

To provide birds for the additional subpopulations and to provide genetic diversity to the current populations, a captive population of Pink Pigeons has been set up at the Gerald Durrell Wildlife Endemic Sanctuary. The offspring of these birds will be released into the wild.

A study supported by our University partners has identified that birds from European & USA zoos have genes that are missing or underrepresented in the wild birds in Mauritius. These genes, reintroduced to the birds in Mauritius, should strengthen resilience, e.g. in fighting disease. Birds will be imported and be bred to provide fledglings to be released into all the subpopulations to increase the genetic diversity of the current population. In September 2019, three male Pink Pigeons were successfully repatriated to Mauritius from Jersey Zoo (Durrell).

The genetic management of the Pink Pigeon is an indication of success and maturity of the project, and very few conservation initiatives worldwide are at this stage of management.

The conservation work done to date has been very successful, leading to the Pink Pigeon being downlisted from Endangered to Vulnerable in November 2018.

Main Actions

- Populations were managed by the Mauritian Wildlife Foundation at eight sites with an estimated possible population of some 538 birds at the end of December 2021.
- 99 Pink Pigeons were ringed in 2021.
- The captive Pink Pigeons were not paired for captive breeding this season (2021/22) as work being undertaken at GDEWS to construct aviaries by the National Parks and Conservation Service was delayed. Other factors caused by the COVID-19 pandemic have also affected our ability to implement this action; overseas staff support and supply of hand-rearing food. We plan to begin hand-rearing Pink Pigeons again from April to September 2022. Hand-rearing work will thus be spread out across the year, with September to December being an important hand-rearing period for other species such as the Mauritius Kestrel.

Echo Parakeet



Background

The Echo Parakeet (*Psittacula eques*) is the last endemic parrot of the Mascarenes and was close to extinction as the wild population numbers were estimated at around 20 birds in the mid-1970s. The Echo Parakeet is closely associated with good quality native forest, and the decline of the bird has been due to habitat decline and degradation, which cause shortage of food and tree cavities for nesting. Predators and competitor species and disease severely impact on the survival of Echo Parakeets.

The population today is over 800 birds thanks to a conservation programme that has included rescue of eggs and chicks in the wild, captive breeding and rearing, releases into the wild, pest and disease control, supplementary feeding nest site provision and habitat restoration. The Echo Parakeet is arguably the most successful parrot restoration programme and is a model for the rescue of other parrots worldwide. The immediate challenge is overcoming Psittacene Beak and Feather Disease (PBFD), a deadly viral disease, whilst long term, it is large scale habitat restoration that will provide for natural food and nest sites. Despite the disease, the population is still growing which would indicate that the current minimum management is adequate.

However, the total population was found in the Black River Gorges National Park, and in order to further secure the Echo Parakeet from a localised event which could severely impact on the population, a suitable area with good quality native forest was identified in the Bambou Mountains. Translocations took place from 2015 to 2017 with 73 birds released. In 2018 and 2019 translocations to a new area of suitable forest in the south west, Ebony Forest in Chamarel, were carried out with 50 birds released.

Monitoring of the Echo Parakeet population is carried out to understand population dynamics and the provision of supplementary food will support general bird fitness and breeding success. Our university partners are undertaking several studies which look at PBFD, supplementary feeding, genetics and population dynamics all of which will inform conservation actions in the future.

The current PhD studies are being carried out by two students from DICE (University of Kent), Rebecca Louch and Rangasinee Sankhom (aka Pam). Rebecca's PhD project (funded by the UK's NERC Research Council) and begun in 2020 will examine the 'Effects of supplementary feeding on reproductive success of echo parakeets'; Pam's PhD project (funded by a PhD scholarship from the Royal Thai Government) will examine 'Conservation genomics and disease of echo parakeets'.

Main Actions

- Estimated population: over 800 birds.
- Monitoring and supporting the population in the Black River Gorges National Park was ongoing. The borders opened as from October 2021, and so it was possible to recruit a full team this breeding season (2021/22), though two staff members and the two PhD students arrived late in the breeding season, and so the teams had to work hard to catch up with the monitoring.
- The two PhD students worked on the Echo Parakeet project part time for the season so that they could learn more about the species, the conservation work, and the way the data is collected; they will also be collecting biological samples for their projects.
- The Bambou Mountains population is not monitored but observations of birds are noted to indicate presence. Echo Parakeets are seen regularly at the 'Ferney gardens' near the visitors' centre and also in Domaine de l'Etoile and in Vallée de l'Est.
- There were discussions related to the feasibility of reintroduction of the Echo Parakeet to La Réunion.

Mauritius Olive White Eye



Background

The Mauritius Olive White-eye (*Zosterops chloronothos*) is thought to be the rarest and most threatened of the endemic Mauritian birds. The number of Olive White-eyes has fallen drastically since the early 1970s, coinciding with the last large-scale forest clearance on Mauritius. In 2005 conservation action was considered essential to decrease the risk of extinction of this attractive small bird whose habitat had dwindled to a small known area in the Black River Gorges National Park. The aim is to save the Olive White-eye through protecting the area they live in and maintaining a population of birds on the predator free island of Ile aux Aigrettes. In Combo (Black River Gorges National Park) we identify nests and monitor nesting success to increase our knowledge of threats to the species. From 2005 to 2009 eggs and chicks were rescued from failing wild nests, and brought to the GDEWS to incubate the eggs, hand raise chicks and then release the fledglings onto Ile aux Aigrettes. The population on the island is now over 70 birds and may be approaching carrying capacity. A team of biologists monitor the progress of the birds on the island to understand the species biology and habitat requirements. It is now possible for the public to have a glimpse of the Olive White-eye, one of the most threatened birds in the world, on a visit to Ile aux Aigrettes.

Research has identified that rats are a major limiting factor for the Olive White-eye populations on the mainland. Small-scale rat management has proven to be effective at reducing this threat, but there is a need for large-scale rat management in the form of a mainland island to ensure Olive White-eye population long-term persistence. The 5.6 ha mainland island in Brise Fer was established in November 2018 and expanded to 9.75 ha in February 2021. If rat abundance is successfully controlled in this area of high-quality native forest this will provide a future reintroduction release site that will allow us to create more Olive White-eye subpopulations, and so further protect this Olive White-eye from the risk of extinction. In the future, we foresee that more mainland islands will be created in areas of suitable forest within their former range. This will include areas on the mainland such as Combo and Bel Ombre, but also potentially Flat Island in the future.

Main Actions

- The population on Ile aux Aigrettes is supported by supplemental feeding which is very labour intensive. This breeding season (2021/22) food provision was reduced to once every other day for all 22 feeding stations. We will examine breeding productivity at the end of the breeding season to determine whether reduced food provision has had a negative impact. So far, the number of fledglings produced this breeding season (2021/22) seems to be about average at seven individuals.
- On Ile aux Aigrettes, at the end of the 2020/21 breeding season, there was a concerted effort to capture un-ringed / un-identifiable Olive White-eyes so that we could calculate more reliable population estimates. 14 un-ringed Olive White-eyes were caught and ringed, five adults with faded rings had their rings replaced, and one adult with missing rings had those rings replaced.
- In May and June 2021, mist netting was carried out in the Combo tea fields. In total, nine un-ringed Olive White-eyes were caught and ringed, the identity of one adult was confirmed, and one adult with faded rings had its rings replaced. These ringing efforts will make surveying this subpopulation more effective.
- The 9.75 ha mainland island in Brise Fer continued to show lower rat abundance than a control area of the same size and the average rat index over 10 months was 21% in the mainland island compared to 61% in a control area (no trapping or poisoning of rodents).

Mauritius Fody



Background

The Mauritius Fody (*Foudia rubra*) is a small charismatic weaverbird endemic to Mauritius. The number of fodies has fallen drastically since the early 1970s, coinciding with the last large-scale forest clearance on Mauritius. In 2002 conservation action was considered essential to decrease the risk of extinction of this attractive small bird whose habitat had dwindled to a small known area in the Black River Gorges National Park.

We aim to save the Mauritius Fody through protecting the area they live in and maintaining a population of birds on the predator free island of Ile aux Aigrettes. Our biologists were based in Pigeon Wood (Black River Gorges National Park) to identify nests and protect them from predators, as well as monitor nesting success to increase our knowledge of threats to the species. Having, identified predators as the main threat to the species, concrete action was undertaken from 2002.

From 2002 to 2006 MWF rescued eggs and chicks from failing wild nests to incubate eggs, hand raise chicks and release fledglings onto Ile aux Aigrettes. The population reached a high of 400 around 2018, at which time it was thought carrying capacity had been met, however, the population is now around 300. This could be due to a number of factors which are being examined.

A team of biologists monitor the progress of the birds on the island to understand the species biology and habitat requirements. It is now possible for the public to have a glimpse of the Mauritius Fody on a visit to Ile aux Aigrettes.

Main Actions

- The population on Ile aux Aigrettes is monitored and supported by supplemental feeding.
- Another outbreak of avian pox was recorded on Ile aux Aigrettes this season (2021/22). This is thought to be one of the factors causing the decline in the population.
- The number of Asian House Crows seen on the island has been increasing over the last few years. The crows are believed to be having a negative impact on the Mauritius Fody population. Several predated nests were found this season (2021/22). These nests are believed to have been destroyed by House Crows as they have been pulled apart.
- The 9.75 ha mainland island in Brise Fer continued to show lower rat abundance than a control area of the same size and is an option in the future for a translocation of the Mauritius Fody.

Mauritius Cuckoo-Shrike



Background

The three-year island wide survey of Passerines carried out from September 2011 to March 2014 indicated the decline of the Mauritius Cuckoo-shrike (*Coracina typica*) both in distribution and total population size. Preliminary observations indicate the decline is caused by predation of eggs and chicks. Urgent action is required to address this decline. A study has identified that there is habitat in the Ferney Valley for the Mauritius Cuckoo-shrike, which is currently absent there. The Mauritius Cuckoo-shrike is a declining endemic passerine on Mauritius that was once found in the valley, but it was probably extirpated in the 1950's by organochloride pesticides no longer in use.

To re-introduce the cuckoo-shrikes, hand-reared birds were identified as the best method as it increases the probability of birds fledging. From 2014 a field team was based in the Black River Gorges National Park to locate nests and clutches of eggs and chicks then harvest eggs and/or chicks from nests in very tall trees. The eggs and chicks were hand reared at the Gerald Durrell Endemic Wildlife Sanctuary (GDEWS) in Black River under the supervision of Chester Zoo (UK) staff, and then moved to the Ferney Valley for a period of adaptation in an aviary before being released into the forest. In the 2015/16 season, two birds were released in Ferney Valley and nine birds in the 2016/17 season. In the 2017/18 season, five birds were released in the Ferney Valley.

This was the first time a cuckoo-shrike had been hand-reared and released and we found a number of difficulties in doing so successfully. The project was put on hold and methodologies reviewed and researched. The resumption of the project will depend on resources being available both within MWF and from our international partners.

Main Actions

- There were no field staff assigned to this project in the 2020/21 breeding season.
- This season (2021/22), one staff was recruited to the project. The main aim of the fieldwork was to find nests and to ring the maximum number of chicks, with a focus being on the mainland island and the control area so that it would be possible to determine whether intensive rat control had any beneficial effect on breeding productivity.
- Two nests were located, only one of which successfully reached chick stage. Two chicks hatched successfully in this nest, but when the nest was first accessed it was discovered that the chicks were already too old for ringing (i.e., there would be a possibility of force fledging the chicks). The second nest found is believed to have failed at egg stage.
- Overall, in the Brise Fer area, approximately seven fledglings are believed to have fledged.

Mainland Island at Brise Fer



Background

Research has identified that rats are a major limiting factor for the critically endangered Mauritius Olive White-eye (*Zosterops chloronothos*). Small-scale rat management has proven to be effective at reducing this threat, but there is a need for large-scale rat management in the form of a mainland island to ensure Olive White-eye population long-term persistence.

A 'Mainland Island' is an area on the mainland where predators are excluded in such a way that it benefits local native species. Brise Fer, located in the North of the Black River Gorges National Park, was chosen as the location for the first mainland island as it is an Important Bird Area, is closed to the public, is easily accessible and contains suitable habitat to support a reintroduction release of Olive White-eyes. The benefits of a mainland island for other species would also be quite significant as rats impact negatively on endangered birds, reptiles, plants and invertebrates.

The first step in the process of developing a mainland island was determining the most effective and efficient rat control method. Field experiments carried out in Brise Fer between August 2016 and August 2017 determined that Goodnature® A24 self-resetting traps (referred to as goodnature traps), arranged in a 25 x 25 m grid formation over 0.56 ha, was the best method for controlling rats when compared to poisoning and snap traps.

A second experiment was initiated in August 2017 to determine whether the goodnature traps could work as well over a larger area with bigger intervals between the traps (50 x 50 m grid over 2.25 ha). The second experiment ended in June 2018, and the results showed that the trap arrangement was not sufficient to keep rat abundance significantly lower than in a control grid where no rat reduction measures were taken.

The third experiment was established in November 2018. Goodnature traps were arranged in a 25 x 25 m grid formation (due to the findings of the second experiment) over an area of 5.6 ha in Brise Fer. Additional predator trapping measures were included in the form of 31 box traps (arranged in a 50 x 50 m grid formation) and five large metal box traps in order to control other invasive predator species (namely feral cats, *Felis catus*, and mongooses, *Herpestes auropunctatus*).

The box traps, when used, are checked every morning after being set and recorded for any activity. The use of predator box traps was discontinued in October 2020, this was done in order to determine whether the Goodnature traps functioning alone were sufficient to control rat abundance. Predator box traps are labour intensive, so if the Goodnature traps are effective when functioning alone as the only rat control measure, the removal of predator box traps will significantly reduce labour, and also will reduce the operational cost of a large-scale mainland island.

To obtain a predator index and show its variation over time, 30 sand pits and 30 wax and chocolate chew cubes were placed randomly on the grid points in the mainland island grid every week for 24 hrs on fixed days.

A control area of the same size was also identified, 100 m away from the mainland island grid, consisting of 30 points of sandpits and 30 of chew cubes, as the predator index. In the control there was no trapping or Goodnature traps. The sand pits and chew blocks had a spacing of 25 m between them. Every week, the sand pits are set and chew cubes are placed on the grid points and checked after 24 hrs on fixed days. The use of sand pits was discontinued in July 2019 as predator tracks were often too difficult to discern and would be washed away by rain.

By December 2020 the mainland island had been in operation for 26 months; average rat index over that time was 13% in the mainland island compared to 63% in a control grid of the same size. Rat abundance in the mainland island fluctuated over time; this is thought to be linked to two factors, one is natural annual fluctuations in the Black Rat (*Rattus rattus*) population and the second is periods of time when gas canisters (that power the Goodnature traps) could not be changed for various reasons.

The operation of the 5.6 ha mainland island came to an end in January 2021. In February 2021, all Goodnature traps in the 5.6 ha mainland island were re-positioned as it was found that the spacing did not always respect the 25 x 25 m grid formation. In early March 2021, 70 additional newly purchased Goodnature traps were added to the mainland island to expand the grid. The 5.6 ha grid was expanded to the North and West, and now has a coverage of 9.75 ha. The 9.75 ha mainland island differs to the 5.6 ha mainland island in that it is truly orientated North to South and East to West.

The Goodnature traps are checked every two weeks to see if the gas canister powering the trap needs to be changed and once a month to check that the trap is functioning correctly.

Main Actions

- Maintain the mainland island grid with a low index of predators.
- In February 2021 the existing Goodnature traps were realigned and an additional 85 goodnature traps were used to almost double the coverage of the mainland island from 5.6 ha to 9.75 ha, and to replace faulty traps.
- There are now 183 Goodnature traps forming a mainland island that covers an area of 9.75 ha within the Brise Fer CMA.
- By December 2021, the 9.75 ha mainland island has been in operation for 10 months, and the average rat index over that time was 21% in the mainland island compared to 60% in a control grid of the same size.
- There were some issues faced within the newly expanded 9.75 ha mainland island in 2021. In September wild pigs (*Sus scrofa*) began removing Goodnature traps from their holders. This behaviour became more common, and by November 2021, many traps were being removed. The consequence was that many Goodnature traps were non-functional within these months, which in turn caused an increase in rat index values in the mainland island.

- The behaviour decreased when the Goodnature traps were secured with guava pegs. Another problem began in December, where it appeared that the pigs were taking the wax chew cubes that were being placed for the rat index. Both of these issues led to inflated rat index values in these months, making the mainland island seem less effective than it is. Regardless of these problems, the results still look promising and suggest that the intensive trapping efforts in the area are effective.
- We have been in discussion with the National Parks and Conservation Service for the expansion of the grid by deploying funding obtained for goodnature traps by NPCS from EU and UNDP sources.

AudioMoths



Background

A grant from the African Bird Club funded the purchase of 15 Audiomoth devices in 2021. The devices will be deployed in Ferney Valley with the aim of confirming presence / absence of bird species that we have released in the area; Echo Parakeet, Pink Pigeon, Mauritius Cuckoo-shrike and Mauritius Paradise Flycatchers.

Main Actions

- The Audiomoth devices arrived in April, and we needed to learn how to use the devices and research the software used to analyse the audio recordings and the eventual automatic recognition of bird calls to species level. Kaleidoscope Pro was found to be the most effective software.
- We have been working on building a calls database by recording birds in the field, confirming which calls are for which birds and then inputting this information into the software. Olive White-eye and Mauritius Fody calls were collected from Ile aux Aigrettes, and Pink Pigeon and Echo Parakeet from Brise Fer.
- Recording samples of endemic birds were sent to Wildlife Acoustics to help narrow down settings of the Kaleidoscope software for better species detection.

Gerald Durrell Endemic Wildlife Sanctuary



Background

The Gerald Durrell Endemic Wildlife Sanctuary (GDEWS), also known as the Black River Aviaries, is a captive breeding centre set up for saving endangered endemic birds and bats. GDEWS is a small facility but yet has been critical for saving near extinct animals. The centre supports the fauna conservation programmes by providing facilities to captive breed, incubate and hand-rear animals to reintroduce to the wild to boost populations, providing training facilities for aspects of animal husbandry and to take care of sick animals. It also keeps captive populations of animals for research purposes to better understand their behaviour, diets and habits which in turn support efforts to maintain the wild populations and guide conservation actions. Additionally, GDEWS houses a collection of Critically Endangered endemic plants in a secure environment (e.g. palmiste blanc de l'île Ronde *Dictyosperma album* var *conjugatum*, bois puant *Foetidia mauritiana*, bois tambour *Tambourissa quadrifida*) where seeds can be collected for propagation for the MWF Rare Plants project and subsequent reintroduction to the forest.

In 2015 we started an intensive breeding programme for the Pink Pigeon where pairs of birds are kept in captivity and their offspring released into the wild to create new sub populations of birds as well as reinforcing current populations, for example, on Ile aux Aigrettes and in the Black River Gorges National Park. Three Pink Pigeons were repatriated from Jersey Zoo, Channel Islands, UK (<https://www.mauritian-wildlife.org/news/2019-10-07/rapatriement-du-pigeon-des-mares--un-nouveau-tournant-pour-la-conservation>), and after quarantine at Bras D'Eau National Park, the birds were sent to GDEWS.

In 2016 the handrearing of the Mauritius Kestrel was resumed and continued for four seasons. Due to the Covid Pandemic and the impossibility of obtaining an experienced handrearer from abroad the handrearing was then put on hold for the season 2020/21 then resumed in October 2021.

In 2019 hand-rearing of cuckoo-shrikes was put on hold having begun in 2014.

In 2020, works at GDEWS were affected by the COVID-19 pandemic, the Wakashio oil spill and staff changes. In 2021, the work was once again affected by the pandemic.

The Gerald Durrell Endemic Wildlife Sanctuary is managed collaboratively by the Mauritian Wildlife Foundation (MWF) and the National Parks and Conservation Service with specialist assistance from abroad (e.g. Chester Zoo, Durrell, Zoological Society of London, Wildlife Vets International, and contracted hand-rearers).

Main Actions

- New aviaries were still being built to be able to hold more Pink Pigeons pairs and other birds.
- Mauritius entered into a state of lockdown on 10th March 2021 due to COVID-19s. Despite the lockdowns and the sanitary conditions, the GDEWS staff continued working normally to care for the animals.
- A number of new staff were recruited and had to be trained in animal keeping.
- There was a growing number of rescued waterbirds (White-tailed Tropicbirds, Red-tailed Tropicbirds, Wedge-tailed Shearwaters, Common Noddies, Green Herons) and a few Mauritius Fruit Bats to take care of.
- Captive breeding and rearing of Pink Pigeons were not conducted, but the team honed their management skills using the introduced Barbary Doves.
- 16 Mauritius Kestrels chicks, sourced from the Bambou Mountains (east Mauritius) and Black River Gorges National Park, were successfully handreared for release into the Black River Gorges National Park. In December 2021 there was a VIP visit by Hon Maneesh Gobin, Attorney General and Minister of Agro-Industry and Food Security, Hon Alan Ganoo, Minister of Land Transport and Light Rail, Minister of Foreign Affairs, Regional Integration and International Trade, Hon Sandra Mayotte, Member of Parliament) and several other personalities to see the kestrel handrearing. During this visit, MWF proposed to declare the Mauritius Kestrel as the national bird, which was favourably received.

REPTILES

Monitoring and translocations

Background

The small islets around Mauritius support numerous unique species that were once abundant on the main island, but are now found nowhere else in the world. Several species, particularly reptiles, are now restricted to single island populations where they are at great risk of extinction from the threats that caused their loss elsewhere. Many other threatened Mauritian animals and plants are dependent upon the unique geckos and skinks for their survival, such that their preservation is crucial for sustaining island communities and local biodiversity.

Since 2006, MWF, NPCS and Durrell have been reintroducing threatened reptile species back to other islets with 2,489 reptiles from seven species released to one or more of seven different islets within their former range through translocation and captive headstarting. Furthermore, 128 individuals of five reptile species have been moved from six islets to establish captive assurance populations at Jersey Zoo or for research at Jersey Zoo and London Zoo. These actions are enhancing the conservation status and knowledge of the threatened reptile species.

To date the distribution and abundance of five threatened Mauritian reptile species have been increased by an average of 6836% and 122%, respectively. A sixth species, the orange-tailed skink *Gongylomorphus cf fontenayi*, was translocated from its only known location on Flat Island to Gunner's Quoin and Gabriel Island, prior to its extinction caused by invasive species on Flat Island.

These actions have led to the down-listing of the Günther's gecko *Phelsuma guentheri* and keel-scaled boa *Casarea dussumieri* through the IUCN red-list of threatened species. Major threats (e.g. introduced predators, habitat loss / degradation) continue to be addressed to lessen the risks of extinction to the reptile species and reintroductions have contributed to the rebuilding of lost Mauritian ecosystems.

However, invasive species remain a serious threat. Since 2006, we have detected 35 animal invasion events on nine islets by 13 non-native species, of which early detection and removal/eradication has been possible in 23 cases. The removal of these invasive species has prevented irreversible damage to islet biodiversity.

To maintain this success MWF needs to continue the high level of research and monitoring on the islands to direct appropriate conservation management decisions; detect and adapt to emergent threats and to continue to build upon what has been started for the conservation of endangered island communities.



- The 2020/21 breeding season was not as successful as previous years for the re-introduced population on Ile aux Aigrettes. The number of eggs found (58 eggs at 20 nest sites) was lower than in previous seasons. The hatching success was 69.0%, compared to 71.1% and 87.6% in the previous two years. This reduction may be a consequence of a lower monitoring effort, due to staff shortages triggered by the COVID-19 pandemic.
- On Round Island, the 2020/21 breeding season yielded 231 eggs from 22 nest sites. The hatching success was 79.0%. If the hatching success on Round Island falls beneath 79.0% and persists, the population of geckos will decline
- The genetic samples from Günther's geckos on Ile aux Aigrettes have not been sent to the UK to Cardiff University. The aim is to determine whether the translocated population on Ile aux Aigrettes has retained the genetic variation from the source population on Round Island and whether we need to translocate more individuals to Ile aux Aigrettes to augment the population.

Telfair's skink



- Ile aux Aigrettes: There are currently too few Telfair's skinks *Leiolopisma telfairii* on the island to estimate their abundance and no surveys were conducted due to the COVID-19 pandemic resulting in redeployment to key areas. Restoration of the population will not be possible until invasive predator issues are resolved (see Invasive Alien Species section).
- No wild hatchling Telfair's skinks were collected on Ile aux Aigrettes during 2020 and so none were headstarted.

- In November 2021, we undertook an expedition to Gunner's Quoin, which was the first since December 2019. We caught 61 Telfair's skinks to assess their body condition in comparison to data obtained from the population in previous years and no change was detected, indicating that the translocated skink population is healthy. The adult skink population size was estimated at 23,853 (95%CI 17,727-32,094) individuals using the distance sampling technique along 70 line transects across the island. This estimate is not significantly different to the 2018 and 2019 estimates of adult population size, indicating that the population has reached carrying capacity and can now be considered as fully established. The population size of each of the other reptile species on Gunner's Quoin was also estimated to show that the populations are robust, although changes in habitat due to the encroachment of a native creeper has likely led to the observed decline in abundance of the lesser night gecko and ornate day gecko.
- The health and body condition of Telfair's skinks on Round Island was not assessed in 2021, due to staff being focused upon monitoring the southeast islets following the Wakashio oil spill.

Keel-scaled boa



- As part of the ongoing process of rebuilding the threatened reptile communities, keel-scaled boas were reintroduced to Gunner's Quoin between 2012 and 2014. In November 2021, we carried out capture-mark-recapture surveys and caught ten boas. We also caught 17 boas incidentally across the island, of which six were new captures, which were microchipped for individual recognition in subsequent recaptures. All of the snakes caught were in good body condition. To date there are too few re-captures to obtain a sensible estimate of abundance and survival, but with healthy male, female and juvenile snakes being found across the island the reintroduced population appears to be doing well.
- The keel-scaled boa population on Round Island was surveyed almost monthly and the findings are reported within the Round Island section.

Southeast islet reptiles



The southeast islets support three endemic species, the Bojer's skinks *Gongylomorphus bojerii*, Bouton's skinks *Cryptoblepharus boutonii* and lesser night geckos *Nactus coindemirensis*.

Bojer's skinks were once widespread throughout Mauritius and the islets, but became restricted to a few islets in the north and the tiny islet, Ilot Vacoas in the southeast. Maintaining unique genetic variation on Ilot Vacoas, this southeastern form was translocated to Ile aux Fouquets and Ile de la Passe.

Bouton's skinks in Mauritius were previously considered as a pan-tropical native, but at the end of 2019, the IUCN's Skink Specialist Group reassigned the Mascarene populations as unique and endemic. With the small population in the South of Reunion not being detected for the past 20 years (and was restricted and small even then), the skinks are now only endemic to Mauritius and found on several islets and four small populations on the mainland coast, but once had a wider distribution.

The lesser night gecko also once had a wide distribution, but is now restricted to Gunner's Quoin and Pigeon House Rock in the north and Ilot Vacoas in the southeast. Given that the southeast population is likely to retain unique genetic variation (genetic research set to start in 2021), individuals from Ilot Vacoas were translocated to Ile Marianne in 2011.

In 2021, two reptile monitoring trips were carried out to each of the southeast islets to monitor the invertebrates, birds, reptiles and to detect and where possible remove new invasive species incursions. From the trips it was found that there has been an overall decline in the abundance of invertebrates compared to pre-Wakashio oil spill levels. The decline in invertebrate numbers has been most pronounced on Ile de la Passe and within the key dietary items for the lesser night geckos that inhabit the coastal rocks of Ilot Vacoas and Ile Marianne. Gecko body condition has declined compared to pre-oil conditions and the population size of geckos has also declined on each islet.

Bojer's skinks, which are omnivorous, are not as sensitive to declines in invertebrate abundance, and as such their body condition has not changed, although the population sizes on Ile aux Fouquets and Ilot Vacoas have declined compared to pre-oil spill levels.

There has been no detectable change in the population sizes of the Bouton's skinks on the islets, but these lizards are harder to monitor, and the data obtained may not be sensitive enough to determine change.

DNA samples have been obtained from each reptile species on each islet and once it is possible to get the samples to our partners at Cardiff University in the UK, it should reveal the impact of the oil-spill and the need to bring animals in captivity back to Mauritius. The bird population sizes, particularly the seabird populations on the islets remain similar to pre-oil spill levels.

Orange-tailed skinks



The orange-tailed skink was translocated from Flat Island, the only location it was known to have occurred, to Gunner's Quoin between 2008 and 2010. The translocation was in response to the predicted invasion of non-native predators due to the enhancement of tourist activities on Flat Island. Unfortunately, the prediction became a reality in 2010, with the detection of musk shrews on Flat Island. Within a year the shrews caused the loss of the orange-tailed skink population. Whilst some orange-tailed skinks were also translocated to Gabriel Island, the Gunner's Quoin population has been the one that has thrived.

In November 2021, the orange-tailed skink population was surveyed on Gunner's Quoin. Skinks were found island wide and in new locations where they had not previously been detected. The skink's body condition was found to be good, indicating that the population is healthy. Eighteen encounter rate surveys were conducted in six locations across the island with 1.438 (95%CI 0.822-2.055) skinks being detected per person hour. This encounter rate is similar to the 2019 estimate of 1.403 (95%CI 1.134-1.672) skinks per person hour from 26 surveys in the same locations.

Other

Katherine Bickerton, a PhD candidate from the University of Kent in the UK, arrived in Mauritius to conduct fieldwork towards her PhD. Katherine arrived in Mauritius on 26th October. This field trip was considerably delayed due to the COVID-19 pandemic. Katherine's work focusses on population modelling, and in particular the upcoming translocation of lesser night geckos from Gunner's Quoin to Round Island. Katherine has been working on data obtained from the lesser night gecko translocation from Ilot Vacoas to Ile Marianne in 2011 and then subsequent surveys on Ile Marianne to develop bespoke methods for modelling population change that will be used to survey the geckos once they are translocated from Gunner's Quoin to Round Island. In November 2021, Katherine joined the team on Gunner's Quoin to help survey the reptile populations and to specifically survey the lesser night gecko population, which were found to be in good health and the adult abundance was estimated at 10,262 (95%CI 7,464-14,108) individuals. Katherine also visited Round Island for two weeks from the end of December to assist the wardens and to conduct preliminary surveys of proposed release sites of the lesser night gecko.

In 2021, 12 new accounts were published on the IUCN's Red-List of Threatened Species for the reptiles *Bolyeria multocarinata*, *Cathetorhinus melanocephalus*, *Cryptoblepharus boutonii*, *Gongylomorphus fontenayi*, *Leiopisma mauritiana*, *Madatyphlops cariei*, *Nactus coindemirensis*, *Phelsuma edwardnewtonii*, *Phelsuma gigas*, *Phelsuma guimbeaui*, *Phelsuma ornata* and *Phelsuma rosagularis*. This now means that all the endemic lizards and snakes for the Republic of Mauritius have been assessed against the IUCN's criteria for extinction risk.

Tortoises



Background

Mauritian tortoises *Cylindraspis* spp., had an important role in the native ecosystem as browsers, grazers and seed dispersers.

Many native and endemic plants have evolved with, and adapted to, the presence of tortoises. Since the extinction of the Mauritian tortoises, many of the functional links were lost within the ecosystem. To remediate this, we are using a close relative of the Mauritian giant tortoises, the Aldabra tortoise *Aldabrachelys gigantea* from the Seychelles as a replacement to re-activate the lost plant-tortoise interactions on Ile aux Aigrettes and Round Island.

The aim of this project is to manage adult free-roaming tortoises on Ile aux Aigrettes and on Round Island. The tortoises on both islands are closely monitored and studies have been set up to assess their impact on the ecosystem.

The work on Ile aux Aigrettes and Round Island was largely disrupted this year due to staff shortages triggered by the COVID-19 pandemic.

Round Island

- Daily sightings and monthly quadrat searches were carried out in the seven habitat types to obtain abundance, movement and distribution data. In 2021, 498 individual Aldabra giant tortoises were detected.
- Through the year much attention was taken to clean the tortoise dataset to correct tortoise identities and include new juvenile tortoises being microchipped, this has therefore changed the previous estimates of population size. Reworking the analyses to include the 2021 encounters the population size was estimated at 780 (95%CI: 762-797) individuals on Round Island compared to the corrected estimate of 726 (709-745) in 2020. With each years' encounters the population size estimates will improve, but will naturally correct earlier estimates of population size. In 2021, there were 16 encounters of tortoises that had hatched on the island, of these seven were newly microchipped in 2020.
- The morphometric measurements of 280 individual Aldabra tortoises were recorded during 2021, of which 91 of these were also weighed. Of those that were weighed, only three individuals (3.3% of the sample) were found to be underweight. In 2021, it was not possible to weigh many large tortoises due to staff shortages, where at least three or four people are required to safely measure larger, heavier tortoises.
- GPS locations were obtained for 991 tortoise observations during searches throughout the year. The range of the tortoises was calculated using the area of occupancy approach based upon a one hectare grid. In 2021 this was 46 ha, thus 21% of the island, compared to 58 ha in 2020 and 50 ha in 2019. This metric is sensitive to sampling effort. Thus, the decline in the area of occupancy is likely to reflect a reduced sampling effort due to COVID-19 staff shortages rather than a decline in the area of the island occupied by tortoises.
- 61 tortoise feeding observations were recorded in 2021. For the items consumed, 52% were native species and 48% were non-native species. Leaf tissue was the primary plant part consumed (95%), and the remainder was leaf litter.
- 9 faecal samples were collected, which contained mostly grasses (78%), and the remainder was of a native creeper.
- Whilst staff were absent from the island during the COVID-19 lockdown in 2020, the fences of the vegetation exclosures fell down giving access to the tortoises. The exclosures and control plots are used to determine the impact of the tortoises on the vegetation in relation to the findings of the feeding and faecal observations. This experiment has not been resumed in 2021.

Ile aux Aigrettes

- The island had 27 adult free-roaming Aldabra tortoises by the end of December 2021. These are monitored regularly and morphometric measurements taken.
- Juvenile tortoises, kept for education purposes and head started for release, were fed and provided water on daily basis. Morphometric measurements were carried out monthly for each tortoise to assess and track their growth and health. Underweight tortoises were given supplementary feeding and were soaked in an electrolyte solution to assist their recovery.

ISLANDS

Round Island



Background

Round Island, 219 ha, is undeniably Mauritius' most important island for conservation with unique or significantly large remnant populations of endemic plants, reptiles and native seabirds. The island was spared from predators, such as cats and rats that have caused irreversible damage elsewhere, but goats and rabbits were introduced in the early 19th century, which caused severe loss of soil and vegetation. Poaching of seabirds was a common activity on the island.

By 1986, the herbivores were eradicated, and closer management put an end to seabird poaching by 1997. A field station was built in 2002, which has allowed MWF and its partners to achieve a greater impact to protect and restore the island, control or eradicate invasive plants and replant many areas on the island.

A permanent staffing of the island has supported reptile recovery, through reintroduction to other islands from 2006 (see reptile section), a greater understanding of seabirds including resolving the identity of the Round Island Petrel *Pterodroma arminjoniana*, and a host of field studies.

The restoration of Round Island has been initiated, but we need to continue to restore the island, conserving its unique plants and animals, which will take decades. This will include saving from extinction two endemic plants that are in precipitous decline (*Aerva congesta* and *Phyllanthus revaughanii*), tracking of seabirds to understand where they travel to (thus identifying Marine Important Bird Areas and assessing the impact of global climate change), monitoring the response of threatened reptiles to restoration activities, curbing soil erosion and planting to restore functional communities that benefit the resident endemic animals.

Round Island has been an important training and research ground for local and international restoration practitioners and scientists. Being one of very few islands in the world to have never been invaded by rats or non-native reptiles, combined with ongoing extensive restoration work and pioneering research on highly threatened and unique animals and plants, the global significance of Round Island is increasing as a leading site for conservation and scientific excellence.

The work on Round Island was disrupted in 2021, due to the COVID-19 lockdown in Mauritius and overseas staff not able to travel. No staff were present on Round Island through March and April (lockdown), the critical period for planting and invasive weed control. Nevertheless, work has continued.

Round Island Management Plan

- 2019 saw the launch of a six-year adaptive management plan for Round Island. This plan was developed through the Open Standards Approach to Conservation Planning and is being tracked through the software Miradi.
- There are seven Conservation Targets: Palm Savannah Mosaic, Native Mauritian Reptiles, Giant Tortoises, Invertebrate Community, Seabird Community, Marine Ecosystem and Land Birds in the plan.
- A conceptual model was developed around the conservation targets, identifying direct threats and contributory factors that influence these threats from which six Restoration Strategies, six Threat Reduction Strategies and five Enabling Strategies were created. There are 258 activities towards meeting these strategies, all of which is being tracked through Miradi with indicators of progress.

Red-tailed Tropicbird

- Monthly surveys of the Red-tailed Tropicbird colony in the south of the island are normally conducted, but only ten of the twelve surveys were achieved in 2021, due to the lockdown.
- Through the surveys, 1,179 birds (777 adults and 402 juveniles) were encountered, which consisted of 517 individual adults of which 107 were newly ringed. These data will be used in the ongoing survey to estimate population growth, survival and recruitment.

Round Island Petrel

- Through the surveys that were completed, 161 individual adults were detected of which 14 were newly ringed and 32 chicks were ringed and fledged.
- 253 nest sites were active.

- One geolocator was recovered and 7 deployed as part of the tracking research conducted with the Zoological Society of London (ZSL).
- The annual apparent survival estimate for adults had not changed from the previous year's estimate at 96.5% (95%CL 96.2-96.7).
- The abundance of adult petrels using the island in 2021 was estimated at 2,080 (95%CL 1,913-2,261) individuals, compared to the model adjusted 2020 estimate of 2,058 (95%CL 1,929-2,260) individuals.
- Research on existing data collected as part of the long-term monitoring programme continues to be carried out to explore the factors influencing individual variation in non-breeding season migration movements of Round Island petrels and the implications for the viability of the petrel population. In December, University of East Anglia PhD student, Kirsty Franklin, submitted a manuscript for publication that investigates the variation in Round Island Petrel migration strategies.

Keel-scaled Boa

- A total of 106 boas (81 adults and 25 juveniles) were found during the quadrat surveys as part of the long-term study to monitor the health, survival and relative abundance of the snake. The lower number of snakes encountered compared to usual was due to the lockdown and less staff. Usually 84 quadrat surveys are completed, but in 2021, only 51 were completed. This follows for the other reptiles encountered in the surveys detailed below. Additionally, due to safety concerns surveys within the Crater quadrat were not conducted in 2021.
- There were 0.470 (95%CL 0.363-0.577) adult boa encounters per person hour in 2021, compared to 0.681 (95%CL 0.504-0.858) encounters in the previous year. The lower encounter rate is likely due to the lower effort, less staff and new staff, which can lead to a lower probability of detection. Further investigation will be undertaken in 2022 to determine if there is another reason for the decline in encounter rate.
- 27 newly detected boas were microchipped in 2021.

Günther's Gecko

- A total of 74 geckos (58 adults and 16 juveniles) were found during the monthly quadrat surveys as part of the long-term study to monitor their relative abundance.
- There were 0.361 (95%CL 0.260-0.462) adult gecko encounters per person hour in 2021, compared to a corrected 0.596 (95%CL 0.309-0.883) encounters in the previous year. The lower encounter rate is likely due to the lower effort, less staff and new staff, which can lead to a lower probability of detection. Further investigation will be undertaken in 2022 to determine if there is another reason for the decline in encounter rate.
- On Round Island, the 2020/21 breeding season yielded 231 eggs from 22 nest sites. The hatching success was 79.0%. If the hatching success on Round Island falls beneath 79.0% and persists, the population of geckos will decline.

Durrell's night gecko

- A total of 268 Durrell's night geckos *Nactus durrellorum* (247 adults and 21 juveniles) were found during the monthly quadrat surveys, as part of the long-term study to monitor their relative abundance.
- There were 1.351 (95%CL 0.987-1.714) adult gecko encounters per person hour in 2020, compared to a corrected 1.876 (95%CL 1.455-2.297) encounters in the previous year. The lower encounter rate is likely due to the lower effort, less staff and new staff, which can lead to a lower probability of detection. Further investigation will be undertaken in 2022 to determine if there is another reason for the decline in encounter rate.

Invertebrates

- A PhD study is being conducted to determine the impact of the invasive big-headed ant *Pheidole megacephala* upon Round Island's invertebrate community continued in 2021. This ambitious project will investigate the diet of the ants through genetic techniques. During 2021, Cardiff University PhD student, Max Tercel, has been carrying out laboratory genetics work in the UK. Max is due to finalise his PhD thesis during 2022.

Plant restoration work

- As with the previous year, the COVID-19 lockdown caused major disruption to the plant restoration work in 2021. Staff were not able to be present on Round Island to care for nursery plants at a critical period. To mitigate the potential loss of critical plants in the nursery two trays containing a mix of *Aerva congesta*, *Phyllanthus mauritianus* and *Phyllanthus revaughanii*, one pot of *Dichondra repens*, one pot of *Brachiaria serpens*, a tray of *Chloris filiformis* and a tray of the unique form of *Stenotaphrum micranthum* were taken to Ile aux Aigrettes to create an assurance population in case they perished on Round Island during the lockdown.
- Approximately 34,573 seeds of 15 species were collected from Round Island in 2021.
- Approximately 11,749 seeds from 13 species were sown in 2021.
- 450 seedlings, which germinated in the nursery, were potted in 2021.
- 195 plants were planted this year, a lower number than usual due to knock on effects of the lockdowns decimating the nursery stock. These were planted in the mixed weed, palm rich and summit habitats. The focus of planting is to enhance species communities, such as planting of Aloes *Aloe tormentorii* close to the existing adult plants on the summit, planting of the hurricane palm *Dictyosperma album* var. *conjugatum* and bottle palm *Hyophorbe lagenicaulis* close to the last existing hurricane palm in the palm rich habitat. In the mixed weed habitat, the focus was upon understorey planting of hardwoods (*Diospyros egrettarum* and *Eugenia lucida*) and trial planting within one of the gullies to attain soil stability to reduce erosion.
- Additionally, trials have been started to plant small herbaceous species in suitable, but currently the higher areas of the barren coastline zone that lack pioneer species. If this works then these sites could be targeted for other coastal herbs and then shrubs. Unfortunately, they did not survive the lockdown, but attempts will continue in 2022.
- The last wild existing hurricane palm *Dictyosperma album* var. *conjugatum* is one of the World's rarest trees and has not produced viable fruit for the past two decades. A few hurricane palms have been identified in cultivation, but without genetic tests (which are planned from 2021) it is unknown if they are hybrids with the relatively more common, albeit Critically Endangered *Dictyosperma album* var. *album*. Four, likely pure-bred trees in cultivation were selected and pollen was collected and transferred between the individuals to maximize existing genetic diversity. Pollen was also collected from the wild palm and used to pollinate its female flowers when they developed, requiring a 9 m ladder suspended by ropes to gain access. Whilst no viable fruits were obtained from the wild tree in 2021, possibly due to drought, 367 viable fruits were obtained from the hand pollinated cultivated trees from Ile aux Aigrettes and Gerald Durrell Endemic Wildlife Sanctuary. These seeds will be propagated so that surviving saplings can be reintroduced to the wild to form a population that can cross-pollinate naturally on Round Island. However, genetic work is still required to confirm that the saplings are pure-bred individuals, although we suspect that they are.
- A number of other rare plants survive on Round Island. *Aerva congesta* no longer survives in the wild on Round Island, with the last wild population now restricted to a small area of cliff face at Gris Gris on the mainland. However, the Round Island nursery maintains the majority of the remaining plants, where much work to enhance their propagation over the past few years, has allowed us to support over 300 individuals, although the entire population was nearly lost during the first lockdown in 2020, with only 44 individuals surviving. The nursery population suffered through a second lockdown during 2021 resulting in 31 individuals at the end of 2021. *Phyllanthus revaughanii* is

limited to one rock crevice and a small patch in the Wasteland on Round Island, whilst another rare species *Phyllanthus mauritianus*, whilst very localised, has recolonised areas of the summit by itself. *Phyllanthus revaughanii* also suffered with a lack of care during the two lockdowns, declining from over 130 to individuals within the nursery, with only four present at the end of 2021. *Phyllanthus mauritianus* also declined in the nursery during lockdowns, but fared somewhat better than the other two species, with 132 individuals in the nursery by the end of 2021. With the onset of the rainy season in 2022 these numbers are expected to increase again.

- Other rare herbaceous and grass species such as *Brachiaria serpens*, *Chloris filiformis*, *Dichondra repens* and what appears to be a Round Island specific variant of *Stenotaphrum micranthum* were collected at the start of 2021, but were brought to Ile aux Aigrettes during the second lockdown to safeguard the population. New specimens were collected on Round Island for the in-situ nursery after the 2021 lockdown.
- Plans are in place to enhance the nursery stock of these species and other small rare herbaceous plants for experimental planting in tortoise grazed areas.
- In December 2020, sections of rhizome of the native fern *Phymatosorus scolopendria* were collected from numerous coastal sites in Mauritius, carefully prepared and taken to the nursery on Round Island. Following quarantine and establishment in the nursery and the creation of a fenced area of 1,300 m² of restored forest, three of these ferns were planted in June 2021. The fence was erected to prevent tortoises gaining access that would trample the ferns before they could get established. The planting of the ferns is to reintroduce a missing understory species that was last recorded about 50 years ago and to help create microclimates to enhance tree sapling survival and reduce soil erosion. The three individuals have survived so far, but only one individual has been able to grow a new frond after planting in the understory.
- *Erythroxylum sideroxyloides* seeds were collected at Le Morne in May as only two previously planted individuals currently survive on Round Island.
- By the end of the year the Wardens had managed to start rebuilding the nursery stock with 353 seedlings of 29 species.

Weed management

- The COVID-19 2020 and 2021 lockdowns occurred at crucial periods for the ongoing management of weed species, particularly *Chromolaena odorata* and *Heteropogon contortus*, which were left unchecked to flower and disperse seed during their peak reproductive period. Whilst we are unlikely to know the impact of having missed this core season of control, it may set us back considerably after two decades of intensive management to control the threat these species pose.
- Using data collected over the previous years on the location and phenology of *C. odorata*, it has been possible to determine the high-risk areas and how searches could be organised in a cost-effective way. This new approach began in 2021.
- In 2021, 109 adult and sapling *C. odorata* plants were removed (in addition to 15 seedlings) of which 14 had either produced flower or had fruited. In 2020, 1,781 adult and sapling plants were removed (in addition to 4,235 seedlings) of which 314 had either produced flower or had fruited. The lower number detected and removed in 2021, may have been caused by missing the core reproductive season, but even then, the plants would have still been present when the staff returned in May. It is thought that the particularly dry period from 2020 to 2021 led to a low survival of the seedlings combined with the ongoing intensive effort to control and remove this troublesome weed.
- It is clear that almost two decades of *H. contortus* management is unlikely to lead to its eradication, as it still vigorously persists in two locations on the island. Plans for the use of pre-emergent herbicides to target this exotic grass and remove it for good have been submitted to the National Parks and Conservation Service, but a decision on its use has not yet been obtained. In 2021, 23 plants were found and removed of which 19 had set seed during the lockdown period, compared to 1,083 plants being detected in 2020, of which 217 had set seed.

Infrastructure and Transport

- By the end of 2020, the construction team had made good progress on the build of the Office and Quarantine Room. From January 2021, the construction team had started on the base foundation and adding beams to the Office and Quarantine Room. However, work was halted due to the COVID-19 lockdown and could not resume until May.
- In May, the first transfer of 2.5 tons of were taken from Lux Grande-Gaube to Round Island, following extensive biosecurity checks. While the load was much lower than previous transfers, the transfer required a lot of technical discussions of how to safely transport, water tanks, metal sheets and timber. With the materials transported, the construction team was able to continue working on the build, as a lot of the timber that had been transported in 2020 had been damaged due to exposure to the environment during lockdowns.
- For the second transfer of material, which was originally scheduled for August, numerous breakdowns of the Dhruv Helicopter caused delays with the transfer taking place in November, again from the helipad at Lux Grand-Gaube. During that transfer, the construction team was able to send 4.5 tons of materials, which consisted of the solar panels that will be placed on the roof of the Office and Quarantine Room.
- By the end of 2021, major works had been competed with roofing, flooring, separation between Office and Quarantine room, installation of doors and windows, and installation of electrical and light fixtures. In 2022, we will need to install the solar panels and add fixtures so that it can act as a temporary field station while the current one is renovated.
- In 2021, we continued to update the plant nursery. The ant traps which had been previously designed had been manufactured and would be sent to Round Island in 2022. Following the second lockdown, which led to the evacuation of Round Island staff right before planting season, many plants in the nursery died due to the lack of water. After the second lockdown, the team started researching various irrigation systems that could be installed in the Round Island nursery. By the end of 2021, the team had settled on a spider irrigation system that would deliver water into planting pots directly while minimizing the loss of water during irrigation.
- Work was also started on a seed bank facility at the head office in Vacoas, funded by the Durrell Wildlife Conservation Trust and Conservatoire Botanique National de Brest. All of the infrastructure is now in place, with some consumables and specific equipment which will be sourced in 2022. The seed bank facility will aid both the plant restoration work for Round Island, Ile aux Aigrettes and mainland restoration sites.
- In 2021, Wildlife Protection Solutions (WPS), supplied the Durrell Wildlife Conservation Trust, with a security camera that activates when it detects humans and sends the image and alert to a WPS server and to the Islands Restoration Manager in real time. The camera, which runs from a small solar panel and operates through the mobile network, was positioned overlooking the landing rock on Round Island in May. Following the easing of COVID-19 restrictions, the camera detected three incursions by trespassers between October and December. Each time the Wardens were notified to investigate, and the images were sent to the National Parks and Conservation Service.

Ile aux Aigrettes



Background

Ile aux Aigrettes is a 26-hectare low coralline island, and has been declared a Nature Reserve since 1965 due to its remnant Mauritian dry coastal forest. Ecological restoration started in 1985 with the aim of restoring the coastal vegetation community and to replace the missing components of the flora and fauna. Through weeding of introduced species and planting of native species, including rare and critically endangered plants that have been propagated and reintroduced on the island, we are restoring the ecosystem. Around 30,000-40,000 plants per season/year were planted from 1998 to 2003, although the forest is now regenerating well naturally, specialised planting still continues to enhance the species diversity, to provide food for the native species reintroduced on the island and to provide habitat for seabirds and reptiles. The island is also used to conserve suitable lowland species that are critically endangered in the wild. Maintenance weeding continues through employment of a team of labourers living in the vicinity. As a part of a sustainable conservation programme, the island is open to visitors through our ecotourism and environmental education programmes. Students, tourists and the general public learn about the habitat restoration project, in order to raise their awareness of the conservation of the threatened Mauritian flora and fauna.

Projects on the island

- Pink Pigeon
- Mauritius Fody
- Mauritius Olive White-eye
- Günther's Gecko
- Telfair's skink
- Aldabra Tortoise
- Rare Plants
- Habitat Restoration
- Education: Learning with Nature
- Ecotourism
- Attracting Seabirds

Details of the above project actions are included in the specific project sections in this report.

Ile Cocos & Ile aux Sables, Rodrigues



Ile aux Cocos and Ile aux Sables, two sandbar islets to the West of Rodrigues, of 15 and 8 Ha respectively, are renowned for their breeding seabirds - water birds as well as migratory birds and occasional prospecting seabirds. Further background to this project and details of actions carried out are included in the Rodrigues section of this report.

St Brandon



Background

Rich in native coastal flora and fauna, St Brandon's beaches are a favourite place for sea turtles (Hawksbill Turtle *Eretmochelys imbricata* and Green Turtle *Chelonia mydas*) to lay their eggs. Coconut trees can be found on a few of the St Brandon islands as well as native trees, shrubs and grasses. The coral and outer reefs are still in good condition. This archipelago has a huge range of marine biodiversity with important global populations of seabird on the islets, and the shores are visited by migratory birds.

Unfortunately, invasive alien plants and animals have reached the islets and are affecting the vegetation and breeding of seabirds. The islets are also affected by ongoing human activities.

MWF's project is the first step towards encouraging all stakeholders involved in St Brandon to strive for the conservation of the archipelago. It is recognised that any actions carried out would not be effective unless Raphael Fishing Ltd, the Outer Islands Development Corporation (OIDC), and other relevant departments and Ministries of the Government of Mauritius support the actions.

A St Brandon Institutional Mapping and Action Plan was developed in 2019 through discussions with the various stakeholders, and finalised in 2020.

- Due to the COVID-19 situation, we were unable to conduct visits to St Brandon.
- The St Brandon Institutional Mapping and Action Plan was available on the MWF website and we circulated the document whenever requested and we ensured that St Brandon was considered in policy dialogues (eg National Oil Spill Contingency Plan under review) and reporting (Africa Eurasia Waterbird Agreement).
- Data from St Brandon seabirds (amongst others) contributed to a worldwide risk assessment of seabird ingestion of plastics. Publication submitted to Nature with 100 authors on 21st February 2022: 'Global assessment of plastic encounter risk for marine birds'.
- There was a scientific publication based on St Brandon (see publications list).

Invasive Alien Species control and bio-security on Islands

Background

Invasive alien species represent the greatest threat to island biodiversity. Whilst some invasive species, such as mice, rats and cats can be eradicated, although often at huge expense, effective methods for the control or eradication of many species, such as insectivorous mammals, birds, reptiles, invertebrates and plants have yet to be developed or the capacity within Mauritius to deal with these species is low or absent. The long-term survival of plants and animals native to Mauritian islands depends on the implementation of strict quarantine and biosecurity measures and where possible rapid responses to remove invasive species once they are detected.

Ile aux Aigrettes

Bio-security checks: Monthly checks were conducted using sooted tiles to detect footprints and cocoa wax chew cubes to detect chew marks of rodents or other potential problematic species that may have arrived on the island. Additionally, pit-fall traps and cage traps are utilized in the detection of new species incursions to the island. No new

Tenrec trapping: In February we trialed the use of a local tenrec hunter and his dogs. The hunter advised that the most suitable time for detecting tenrecs would be in April, but due to the Covid-19 lockdown this was not possible and the eradication attempt has again been delayed. Plans are in place to use the hunter and dogs in April 2022.

Crows: Crows *Corvus splendens* continue to populate Ile aux Aigrettes, with more nests being detected and destroyed and more activity on the island. Materials for the construction of a ladder trap were sourced at the end of 2021, with additional decoy crows being caught and reared.

Southeast and northern islets

Bio-security checks: Trapping using Sherman live traps was conducted during two weeklong trips to each islet through 2021. Additionally, diurnal and nocturnal searches for invasive species were undertaken whilst surveying the invertebrate, bird and reptile surveys. The only new invasive species detected was a small non-native herbaceous plant, *Alternanthera pungens*, on Ile Marianne, the seed of which had been spread from the main access point along the pathways and camping areas used by people trespassing on the Closed Island Nature Reserve. The finding of the new plant was reported to the National Parks and Conservation Service.

Gunner's Quoin

Bio-security checks: Trapping using Sherman live traps was conducted nightly during an eight-day trip to reopen survey lines and pathways in October and again during the nine-day monitoring trip in November. Additionally, diurnal and nocturnal searches were undertaken each day to detect any new invasive species incursions. Despite there being evidence of people trespassing on the Closed Island Nature Reserve, no new invasive species were detected.

Round Island

Biosecurity: For each trip to Round Island, all items that will be sent are subject to biosecurity checks, prior to leaving the mainland and then again, once the items arrive on Round Island. All infrastructural materials for the renovation work were subject to biosecurity procedures, being fumigated within a sealed container for a week, prior to being sent to Round Island and again on arrival with thorough checks, the use of insecticide spray where needed and the vacuuming of all items. Through these checks, 186 organic items (plant seeds/material, invertebrates, dirt and other organic material) were detected and removed on Round Island.

Plant nursery pests: Pests (herbivorous invertebrates, sap suckers and ants, bacteria and fungus) infected an average of 38% (range: 0 to 100 % of different plant species) of nursery plants throughout 2021. The aim is to reduce the prevalence of pests over the coming years with improved nursery infrastructure and pest proof benches. See the Round Island section above for invasive plants already on Round Island.

Invertebrates: At the end of July, during nursery checks the Wardens discovered rusty plum aphid *Hysteroneura setariae* on several plants. The species had not previously been detected in Mauritius or neighbouring islands, but was on a quarantine black list for the country, as it poses a significant threat to the sugarcane industry. Following the discovery of the aphid in the nursery it was then found to be widespread across Round Island and mostly in the grasses. The Government conducted surveys on the mainland and detected its presence. Although worrying that this aphid is on Round Island, it demonstrates the effectiveness of invasive species checks on the island.

Red-whiskered Bulbul: The invasive bulbul *Pycnonotus jocosus* has been detected on Round Island in the past, but has never fully established, possibly due to predation by the keel-scaled boa. However, the bulbuls have been present on Round Island since August 2019, with a few birds being detected through 2021, although without any obvious increase from 2020. The increase in vegetation on the island may now give the birds greater protection from boa predation. The birds represent a risk to the small diurnal reptiles that they predate upon, but will also be consuming invertebrates and may act as seed dispersers for exotic plants. The removal of the bulbuls will require shooting, but as of yet it has not been possible to complete.

VALLEE DE FERNEY



Background

Following the Strategic Grant obtained by the Mauritian Wildlife Foundation (MWF) from the UNDP GEF Small Grants Programme for the project «Optimising the Ferney Valley into a Mauritian biodiversity conservation and awareness hotspot», which has now been completed, MWF continues to work closely with the Vallée de Ferney Conservation Trust to monitor and manage the biodiversity and to advise on Flora restoration and ecotourism.

Under the UNDP Strategic Grant four endemic bird species were re-introduced to the Ferney Valley. Two of the species, the Echo Parakeet and the Pink Pigeon, need a certain level of management which is provided from the Ferney Field Station. Supplementary feeding is provided to the Pink Pigeon and the area around the field station protected with predator control. Nest boxes are provided for the Echo Parakeet. All species of birds are monitored.

Forest restoration of the Conservation Zone has made great advances in recent years and this needs to be maintained along with the plant nursery which supports the work. Advice, training & support for the Flora work is available when required and includes the plant nursery, forest restoration (weeding and planting) and rare plant monitoring.

The objective of the Eco-tours is that the guides are well informed and deliver a professional standard of tours to visitors. The Mauritian Wildlife Foundation supports this objective in two ways, by reviewing the delivery of tours including coaching and via capacity building.

La Valley de Ferney is the only site in Mauritius to offer Kestrel feeding daily which is supported by MWF having trained the birds and the staff to both feed and deliver commentary. This is a unique opportunity for the public to see a Mauritius Kestrel up close.

Fauna

Pink Pigeons

- Translocation and release of 30 Pink Pigeons to Ferney in 2017.
- Pink Pigeons are breeding well at Ferney, 35 birds were ringed since releases with 10 in 2021
- The population of birds has increased to 52 by the end of 2021.

Echo Parakeet

- Echo Parakeets were released at Ferney for three consecutive years from 2015 to 2017, with 73 birds released in total. 16 birds returned to their site of origin; 3 birds are presumed dead: 1 fledgling ringed.
- There could be up to 55 birds living independently on the Bambou Mountains.
- Echo Parakeets are seen regularly at the 'Ferney gardens' near the visitors' centre and also in Domaine de l'Etoile and in Vallée de l'Est.
- The birds are not closely monitored but observations are recorded. In 2021 we have begun to use 'audiomoths' to help identify areas where the birds are present.

Mauritius Cuckoo-shrike

- 19 birds were translocated up to March 2018.
- The species is cryptic so observations are rare, the use of audiomoths may help us identify where these birds are present.
- One adult male has been seen in 2020 and 2021 within the Conservation Management Area.

Mauritius Paradise Flycatcher

- A total of 48 birds were hand released in the valley.
- Trials were carried out with different ages and combinations of birds: Juveniles worked best.
- A pair of birds were seen in 2021, they were unringed which means they may be the result of a successful breeding attempt of the released birds.
- Observations have been very rare so the use of audiomoths may help us identify where these birds are present in the Bambou Mountains.

Flora

Weeding, Planting, Propagation of Plants

- Advice is given where required covering plant identification, plant nursery practices, propagation, weeding and planting.
- Training is given to Ferney staff when required.
- In 2021, we monitored the phenology of *Eugenia bojeri* tree in the valley.

Other

Ecotourism

- The Ecotourism activity was affected by the COVID-19 pandemic and the lack of tourists to the island until 1st October 2021
- Refresher training sessions are delivered on request.

Threats

- There were reports that the South Eastern Highway project was under reconsideration, following the abandonment of this plan in 2005. MWF will remain vigilant with regards to this project.

FLORA IN MAURITIUS



Background

Mauritius is home to c.700 native species of flowering plants. 311 (46%) are endemic to the island, and 61 (c. 9%) have disappeared already. Since humans settled on Mauritius, big expanses of native forest were cleared for wood exploitation, agriculture and infrastructure. Now less than 1.3% of the land mass is under relatively good native forest cover (i.e with more than 50% native and endemic plant species). The remaining forest is highly threatened by invasive alien species, especially plant species such as Chinese guava and ravenale. Restoring the remaining forest is crucial to safeguard the endemic plants but also endemic animals such as bats, reptiles and birds, that have evolved together to form this unique ecosystem. Since the 1980's MWF is restoring the native forest in three reserves: two nature reserves, Ile aux Aigrettes and Round Island and one private reserve Mondrain. Restoration of forest is a long-term process which requires dedication and long-term resources. It involves the removal of invasive alien plant species and planting of native plants. On Ile aux Aigrettes, the forest restoration is supporting the whole ecosystem restoration work whereby exotic mammalian predators were eradicated and endemic animals and ecological analogues were re-introduced, reviving lost ecosystem functions. On Round Island removing goats and rabbits and replanting has increased the native forest cover and ultimately increased the population of the endemic reptile species, some of which were on the brink of extinction.

Over 90% of the 311 endemic plant species are threatened with extinction with around 100 species with less than 100 individuals remaining in the wild. Whilst restoring forest is beneficial for threatened species, those on the brink of extinction requires specific intervention to increase their wild as well as their *ex-situ* population.

These actions involve plant search and monitoring; collection of seeds and cuttings, propagation; re-introduction in the wild and in the field gene banks; *in-situ* micro-management and storing seeds in local and international seed banks for long term storage. The latter safeguards the remaining genetic diversity of the species and will provide propagation material in later years. MWF runs plant nurseries at Pigeon Wood (Black River Gorges National Park), Ile aux Aigrettes and Round Island. Through the rare plant work, MWF has rediscovered plant species that were thought extinct and found new populations of rare plants.

In 2021, a number of reports highlighted the critical and worsening situation of ecosystems on Mauritius. For example, the State of the World's Trees report (<https://www.bgci.org/news-events/bgci-launches-the-state-of-the-worlds-trees-report/>) showed that Mauritius was the third country in the world with the most threatened trees (57%), closely trailing behind Madagascar (59%), though MWF shares the view that we could supercede Madagascar in this unenviable statistic.

The National Land Development Strategy (NLDS) draft report (p 140/141 of the circulated draft), see extract below, showed that about 1000 Ha of forest was being lost annually in Mauritius.

Around 47,000 ha of land are under forest cover of which 25,000 ha are privately owned forest lands and 22,100 are state-owned; however only 6,550 ha of these private lands are protected by law as Mountain or River Reserves. Including Black River Gorges National Park (*Our note: C, 6700/6800 Ha*) and Pas Geometriques just over 8,000ha of state forest lands are protected as Nature or Islet Reserves.

In 2003 there were 56,600ha of forests (state and private), prior to which time (*Our note: period not stated*), some 10,000 hectares of forest lands had been cleared mostly for infrastructural developments, including built-up areas, roads, agriculture, reservoirs and dams. By 2014 the total extent of forest cover in Mauritius had fallen again, by another 10,000ha to 47,103 ha, representing about 25% of the total..

The [Sustainable Development Report 2021 \(sdgindex.org\)](https://sdgindex.org) showed that Mauritius was performing satisfactorily on all SDGs (improving, slight improvements, or no change), except for SDG 15 (Life on Land) which showed a decreasing trend.

MWF co-chairs the IUCN (International Union for the Conservation of Nature) Mascarene Islands Plant Specialist Group, with overview on Mauritius and Rodrigues from 2017-2020. The group brings specialists together and is working on completing the red-list of Mauritian plants.

Rare Plants Project



Ile aux Aigrettes

The Ile aux Aigrettes flora team focused on several rare highly threatened plants species in 2021 namely: *Aerva congesta*, *Phyllanthus revaughnii*, *Ochrosia borbonica*, *Dictyosperma album* var. *conjugatum*, *Barleria observatrix*, *Pandanus vandermeeschii*, *Ruizia boutoniana*, *Sideroxylon boutonianum* and *Zanthoxylum heterophyllum*. The first three species are under the Zero extinction CEPF project in partnership with Conservatoire Botanique National de Brest (France) and the last one under the Botanical Garden Conservation International (BGCI) project funded by Franklinia Foundation.

Plant surveys and monitoring: All the focal species mentioned above are found on Ile aux Aigrettes as original or re-introduced population and are monitored on a monthly basis, propagated and taken care of in the Ile aux Aigrettes nursery. A monthly phenology survey is also undertaken whereby we also check the health and status of the plants. The team also undertook micromanagement activity around some of the plants when required. Rare plants planted this year and last year were also regularly monitored and aftercare, such as watering, mulching and weeding was provided when needed.

Several trips were undertaken to external sites throughout the year to monitor *Zanthoxylum heterophyllum* at Trou d'eau Douce, *Ruizia boutoniana* on Le Morne and *Barleria observatrix* in Mondrain. During each trip a phenology survey was conducted; GPS coordinates were recorded for new individuals found; the threats were assessed, and propagation materials were collected occasionally. To note, *Phyllanthus revaughnii*, *Aerva congesta* and *Dictyosperma album* var. *conjugatum* have wild population on Round Island and are monitored monthly by the Round Island team.

Plant surveys were also conducted at La Vallee de Ferney to monitor rare plant species such as *Eugenia bojeri* and *Pandanus iceryi*.

Collection of plant materials and propagation: The following seeds were collected for propagation, and some were stored in the Ile aux Aigrettes nursery: 1980 *Aerva congesta*, 68 *Phyllanthus revaughnii*, 1583 *Zanthoxylum heterophyllum*, 88 *Ochrosia borbonica*, 10 *Dictyosperma album* var. *conjugatum*, 200 *Ruizia boutoniana* and 90 *Pandanus vandersmeeschii*. 51 cuttings of *Zanthoxylum heterophyllum*, 187 cuttings of *Barleria observatrix* and 1 cutting of *Sideroxylon boutonianum* were struck. 500 seeds of *Aerva congesta*, 10 seeds of *Dictyosperma album* var. *conjugatum*, 74 seeds of *Ruizia boutoniana* and 75 seeds of *Zanthoxylum heterophyllum* were sown. 27 seedlings of *Zanthoxylum heterophyllum*, 129 seedlings of *Pandanus vandermeeschii*, 3 seedlings of *Sideroxylon boutonianum* and one seedling of *Ochrosia borbonica* was first potted.

In-situ living collection: 58 *Aerva congesta* and 11 *Phyllanthus revaughnii* were present as a living collection in the nursery by December 2021. We are aiming to increase the number of individuals for these two species to a minimum of 50 each to keep in the nursery as living collection and the surplus obtained will be planted in coming years.

Planting: 11 *Zanthoxylum heterophyllum* were planted on Ile aux Aigrettes in 2021, 6 of them were planted in plant guards, which were made to protect the plants from trampling by Aldabra tortoises on Ile aux Aigrettes. Additionally, 16 *Barleria observatrix*, 6 *Ruizia boutoniana* and 20 *Pandanus vandermeeschii* were planted during the rainy season in different areas of Ile aux Aigrettes in 2021.

Artificial pollination: 18 individuals of *Dictyosperma album* var. *conjugatum* are present on Ile aux Aigrettes, which were monitored monthly by the Flora team. Four of them were found to be flowering. The Flora team and Round Island team undertook several attempts between July and December to hand pollinate these four mature plants with pollen collected from the one remaining wild individual found on Round Island. Out of the four trees, two produced fruits. Additionally, an attempt was made to hand-pollinate one *Dictyosperma album* var. *conjugatum* present at the Gerald Durrell Endemic Wildlife Sanctuary in Black River, which was not successful.

Pigeon Wood Nursery and Field Gene Bank

With the additional staff recruited to the project in 2021, the nursery has undergone some repairs and is now functional. The Field Gene Bank is surveyed regularly and a survivorship monitoring was conducted. Rare plants such as *Gouania tiliifolia*, *Psiadia cataractae*, *Tectiphiala ferox*, *Polyscias gracilis*, *Tetrataxis salicifolia* amongst others have been observed flowering and fruiting during the year. Circular weeding around the individual plants and general weeding in the Field Gene Bank was conducted regularly.

Propagation of plants in the Pigeon Wood nursery has started since August 2021. 158 cuttings of 11 species, 1400+ seeds of 20 species and 1 seedling of 1 species were propagated in the Pigeon wood Nursery in 2021 and include some critically endangered species: 12 cuttings of *Polyscias gracilis*; 50 cuttings and 21 seeds of *Albizia vauhanii*; 5 cuttings of *Syzygium pyneei*; 500 seeds of *Tetrataxis salicifolia*; 16 seeds of *Gaertnera longifolia*; 28 cuttings of *Senecio lamarkianus*; 200 seeds and 36 cuttings of *Distephanus populifolius*, 12 cuttings of *Barleria observatrix*, 436 seeds of *Ruizia boutoniana* and 100+ seeds of *Psiadia lithospermifolia*. The first five species are part of the Zero Extinction project with the Conservatoire Botanique National de Brest and Critical Ecosystems Partnership Fund.

The team did several trips to different sites to survey and monitor threatened plants, collect phenology data, and collect propagation materials when available. The sites include Mondrain Reserve, Le Morne Nature Reserve, Tamarind Falls, Le Pouce Nature Reserve, Perrier Nature Reserve, Gouly Pere and Les Mares Nature Reserve, several of which with the Forestry Service.

Habitat Restoration



Ile aux Aigrettes

The Western Indian Ocean Strategic Action Programme (WIOSAP) project on Ile aux Aigrettes began in December 2019 for a period of 17 months to April 2021. The project was extended twice, first till December 2021 and then till June 2022 due to the Covid19 pandemic which has affected WIOSAP projects in Mauritius and worldwide. The project aims to restore the native terrestrial habitat and seabird community of Ile aux Aigrettes. The main project activities include weeding of 14ha of the island; planting; creation of a seabird area; deployment of seabird attractants which include seabird decoys and playbacks of seabird calls; review and improve biosecurity on Ile aux Aigrettes and provide training to staff.

Weeding: A team of 13 labourers conducted weeding on Ile aux Aigrettes this year for 4.5 hours per day during weekdays when the island was open. The labourers were supervised and trained by a Supervisor. The technique used for weeding included manual weeding and mechanical weeding using a tree popper to remove bigger trees and their roots. Around 10 ha of the 14 ha earmarked through the WIOSAP project has been weeded so far, in addition to 4 ha that has been re-weeded since the start of the project to remove small seedlings of two highly invasive weeds. Due to the two COVID-19 lockdown, the islets closure in 2020, restrictions due to the Wakashio oil spill, weeding could not be conducted for a total cumulative period of 8 months from December 2019 to December 2021. With the extension of the project till June 2022, we are aiming to finish the weeding of the 14 ha by June 2022.

Plant propagation: Plants were propagated and grown in the Ile aux Aigrettes nursery following the Ile aux Aigrettes propagation plan. 7966 seeds from 27 species were sown and 427 vegetative propagations from 17 species were carried out. A total of 1861 plants from 31 species were first potted in 2021. The plant propagation was conducted by MWF horticulturist with the support of other members of the Flora team.

Planting: 545 plants from 19 species were planted in 2021 in various areas across the island, to enhance the abundance of specific plant species and speed up restoration in some of the freshly weeded barren areas. Planting started in March, was interrupted for about a month due to the COVID-19 lockdown, resumed in April and was completed in May. Planting was led by the IAA Horticulturalist and conducted with the assistance of Ile aux Aigrettes' labourers, Flora team and staff from Islands restoration and Eco-tours team. Some of the sites had to be re-weeded prior to planting as a profusion of small acacia (*Leucaena leucocephala*, which is highly invasive) germinated after the big rains. The GPS coordinate of the location of each plant was recorded to map the distribution and help with aftercare and plant survivorship monitoring surveys. The plants were mulched using dried leaves. Watering and circular weeding was conducted when required throughout the year.

Seabird restoration: The seabird translocation project ran over a period of 6 years from 2009 with 620 seabird chicks of 6 species translocated from the northern islets to Ile aux Aigrettes, where they were reared until they fledged. The last translocation was done in 2017 and since then we have been waiting to see if these birds returned to the island. Although birds are seen flying over, none have adopted the island as a breeding ground. We have now moved towards establishing a seabird attractant system on Ile aux Aigrettes to increase the probability of seabirds returning. Re-establishing colonies of ground-nesting seabirds is considered an important contributor to ecological restoration efforts on Ile aux Aigrettes. Breeding seabird colonies enrich soil with marine-derived nutrients (via guano, regurgitations, ailed eggs and corpses), provide habitat (burrows) for reptiles and invertebrates, further benefit reptiles and birds through indirectly enhancing plant productivity and facilitating high densities of invertebrate prey.

Seabird area creation: The 1 ha suitable open habitat for seabird was weeded from mid-June to mid-August. The area was quite invaded and the terrain challenging in some areas. The previous plan was to weed the 1 ha area before the end of March so we can start planting there in April, but this could not go ahead due to the second COVID-19 lockdown and restrictions in Mauritius. Thus, planting of native grass *Chrysopogon argutus* (which forms tussocks used by some seabirds; keeps the seabird area open and decrease re-invasion of weeds) was delayed and only 50 plants were planted this year before the start of the dry season.

Seabird attractants: By August a total of 82 decoys have been fully painted (20 Red-tailed Tropicbird, 30 White-tailed Tropicbird and 32 Sooty Tern decoys). 20 Red-tailed Tropicbirds decoys and 32 Sooty Tern decoys were deployed at two locations in the 1 ha seabird area on Ile aux Aigrettes on 20th August and 21st September respectively. The seabird call playback system was also activated the same day the decoys were deployed. The decoys and playback will help to attract seabirds to come and nest on the island. The playback system (waterproof speaker) is usually on 7 hours a day five days a week. A camera trap was also placed at one location to monitor if seabirds are prospecting the area. One sooty tern and a heron were recorded flying low over the camera trap in December. The Ecosystem Restoration intern, monitored the seabird area daily to look for signs of seabird feathers, droppings and nesting. He also collected and compiled observation data for all seabird sightings on or around the island. Various bird sightings were observed from August to December 2021, 26 White-tailed Tropicbirds; 4 Red-tailed Tropicbirds and one Sooty Tern was found flying near and around the Island. Although there were signs of prospecting seabirds, none were seen to land or found to be nesting so far.

The decoys of Red-tailed Tropicbirds had to be removed as the free-roaming giant tortoises *Aldabrachelys gigantea* on the island, came to the area and trampled and damaged a few decoys. The area will be fenced early next year, and the decoys will be placed back. We have an additional 30 White-tailed Tropicbird decoys which will be deployed next year.

Seabird training: On the 20th August and on the 1st September 2021, the Flora/Education manager, Martine Goder, did a presentation and training session on seabirds and their importance on islets thus making it possible to staff to identify different seabirds and their calls and what information to record if they encounter seabirds on the island. The staff who took part in this activity were mostly staff working on Ile aux Aigrettes from the following department: 5 Eco-tour guides, 4 Education staff, 3 Bird staff, 2 Island restoration staff, 4 Flora staff, 5 restoration labourers, 1 labourer supervisor and the MWF communication officer. The staff helped in placing seabird decoys.

Seabird MSc project: Our WIOSAP project was selected by WIOSAP head office for a collaborative MSc student consultancy project with Macquarie University in Australia. The project aimed to assess the effectiveness of different type of seabird attractants through a desk-based study. The students, who were supervised by Martine Goder and Vikash Tatayah, submitted their final report and did a presentation on 12th November about their findings and provided recommendations.

Ile aux Aigrettes Bio-security plan: A working session on bio-security planning for Ile aux Aigrettes conducted on 19th February, was facilitated by the Islands Restoration Manager.

Mondrain Reserve



Funding was secured from BIOPAMA in December 2020 for 'Developing a management plan for Mondrain Reserve (Mauritius) and improving accessibility for greater PA management effectiveness and visibility'. Through the project we were able to purchase a new 4x4 vehicle which facilitated access to Mondrain to conduct rare plant species recovery work, plant surveys and localized weeding. A management plan was prepared using a participatory approach.

Flora surveys: The monitoring and exploration of the Mondrain forest was the uttermost priority of the Flora team to survey of rare plants in the reserve and get an update on their status. In total 31 rare plant survey trips were organised in 2021. Highly threatened species such as *Syzygium pyneei*, *Chassalia boryana*, *Polycias gracillis* and *Senecio lamarckianus* were monitored on a weekly basis. Monthly phenology surveys were also conducted to collect information about the flowering and fruiting season of the threatened species, which informs us when fruits are ready to be collected for propagation.

The team also discovered a new individual of the Critically Endangered *Chassalia boryana* flowering in the reserve.

Micromanagement of threatened plant species and weeding: The team did micromanagement work (weeding and trimming of other trees which were hindering growth) around some of the threatened plants found in Mondrain. Weeding was also conducted along the main track to remove invasive alien plants.

Propagation of highly threatened plant species: Plant materials from 12 species were collected from Mondrain reserve. 800+ seeds of 8 species, (including seeds of 6 critically endangered species) and 249 cuttings of 7 critically endangered species were collected from Mondrain for propagation in MWF nurseries. This included highly threatened species such as *Polyscias gracilis*, *Distephanus populifolius*, *Barleria observatrix*, *Ruizia boutoniana* and *Syzygium pyneei*. Two species have already germinated namely, *Ruizia (Trochetia) boutoniana* and *Dombeya acutangula*. Numerous cuttings have rooted such as *Barleria observatrix*, *Distephanus populifolius* and *Senecio lamarkianus*. Some of the seeds collected were also kept in storage for future use and as a conservation measure.

Development of a Mondrain educational tour: A factsheet about Mondrain's history and native biodiversity was compiled and together with field surveys conducted along the tracks allowed us to establish the tour content and structure. Three trials were done internally with staff from education team, Eco-tour team and Flora team. Feedback gathered from the participants was used to update the tour document. A first trial tour with local community was conducted on 9th August with a landowner who lives in the area, his family and two of his labourers. The second education tour with the local community was conducted with four students from Henrietta village on 9th September. On both occasions we collected feedback that helped us to further fine-tune the tour. A third tour was conducted with another private landowner looking to restore his land, in August 2021.

Maintenance and repair: The old gate was replaced on 23rd February. A survey to assess the integrity of the fence around Mondrain was conducted by the Flora team.

Management plan: Following the stakeholder site visits and consultation workshop in December 2020, the management plan was written, and a draft was circulated internally for reviews. Once an internal draft was finalised the management plan together with a new Management Effectiveness Tracking Tool (METT) analysis for Mondrain was sent to the stakeholders for review. The management plan was subsequently updated following the stakeholders' inputs and comments and a final draft was produced by December 2021, which was further reviewed internally. The Mondrain management plan includes a long-term vision and strategic plan to achieve that vision, which are crucial in the long-term protection of this unique type of forest and ensuring the reserve is accessible to people for conservation education. The management plan also contains a comprehensive five-year action plan, which will help to systematically plan and monitor the deliverables and ensure the achievement of the set objectives.

Extension of the reserve: One recommendation that came from the consultations on the management plan was to secure a longer-term lease from the landowner, Medine Group, and to extend the area under conservation. Discussions began in December 2021.

Other

MWF Flora Strategy: A Flora Strategic Plan for MWF was developed in 2021 using the Open Standards facilitated and guided by Ms Catherine Payne, Durrell Wildlife Conservation Trust. 14 online sessions were held from April 2021 to August 2021 with many key staff including the Scientific Director, the Executive Director, the Conservation Director, Flora Manager, Islands Restoration Manager, the IAA Horticulturist, Flora Coordinator and Support Officer. Other staff from Durrell and MWF were present as observers.

A scope and vision were put together, conservation targets identified, a target viability assessment and a threat assessment were conducted and completed, a conceptual model produced, the strategies were formulated and a result chain for each strategy was developed with the objectives and indicators. The Flora strategy still needs to be completed, which we aim to do in 2022.

Recruitment: A Flora coordinator (Ms Teesha Baboorun), one Flora intern (Mr. Giani Abajee) and an Ecosystem restoration intern (Mr. Sahil Ramnauth) were recruited in June 2021 as we expand our capacity on the Flora Programme and re-build the team.

Capacity building: Two staff followed and completed an online botany course with the Royal Botanical Garden of Edinburgh. The staff and interns were trained throughout the year by the Flora manager, Martine Goder on plant identification; collection of plant material; propagation techniques/protocols; nursery management; GIS, control of invertebrate pest, and data collection/management.

IUCN Red Listing: We continued to work on editing the information of 28 plant species that were entered on the IUCN SIS database in 2020.

IEMP monitoring: During 2021 a new vegetation monitoring protocol was put together and tested to assess the impact of the oil spill on the coastal vegetation on Ile aux Aigrettes. The vegetation monitoring was conducted by Teesha Baboorun and Pascal Sk. Mucktoom during 4 days in September. 24 sites were monitored, which includes 12 areas where plants were directly affected by the oil and 12 control points. Data on plant location, vigor, growth, and phenology were collected as part of this monitoring survey. Quarterly reports were written and submitted.

Plant and seed donations: A total of 721 plants of 84 species and 150 seeds of two species were donated in 2021: 10 plants to La Vallée de Ferney; 7 plants to the Labourdonnais College; 2 plants to Loreto College Rose- Hill; 10 plants to the Middlesex University; 4 plants and 50 seeds to Mr Jean Pierre Carosin for a Tiny Forest project; 19 plants to Mr Pascal Laroulette; 2 plants to the Orchard kids School of Hermitage; 8 plants to the Rotaract Club of Middlesex University; 6 plants to the Mauritius Broadcasting Corporation; 590 plants to Accenture; 60 plants to Total Mauritius. All donations are related to either endemic gardens or for a flora project.

RODRIGUES

Forest clearance, introduction of invasive plant and animal species, predators (e.g., rats, cats and dogs), over exploitation of the island's nature resources, unsustainable agricultural and farming practices and soil erosion have led to the demise of much of Rodrigues rich biodiversity. Well over 20 bird species and a host of plants are, as a result, extinct.

Grande Montagne Nature Reserve



Background

The Mauritian Wildlife Foundation (MWF) has been working in the Grande Montagne Nature Reserve (GMNR) for approximately twenty-five years and the visitor is now able to enjoy areas of maturing forest while witnessing other more recently restored areas or view restoration underway. Around 89% of the 25.5 ha fenced area at Grande Montagne has been restored to date and the aim of MWF is to complete the initial restoration of this reserve within the next 4 years with the current 5-year EU financed project. Over 193,435 plants have been planted in the reserve by MWF so far and 41 plant species endemic and native to Rodrigues are successfully conserved on Grande Montagne. In-kind manpower has been made available from the RRA via the Seasonal Octopus Fishery Closure Alternative Livelihood Scheme and the Tourism Alternative Livelihood Scheme in 2021.

The forest is a core habitat to the surviving endemic animals and insects of Rodrigues. From about only 30 birds, the population of the Rodrigues Fody has reached an estimated 20,000 individuals in 2016, whilst that of the Rodrigues Warbler increased to an estimated 25,000 individuals over the same period, in part due to the habitat restoration on Grande Montagne, where both species can regularly be seen thriving. The GMNR project involves the local community, providing employment to restoration labourers from the nearby villages and organising 'restoration working days' with grassroots associations to sensitise and empower the local people in habitat restoration. The reserve is a key education site in the Rodrigues Environmental Education Programme where students visit and are taught about the reserve and its importance and more generally about conservation of biodiversity in Rodrigues. The reserve is also open to the public for paid guided visits.

In 2018, 5 subadult Aldabra Giant Tortoises were introduced into the Reserve, and in 2020 another 5 smaller individuals. Up to the 31st December 2021, all 10 were doing well.

Two small temporary in-situ plant nurseries have been setup in the GMNR with a capacity of ~7,000 seedlings of 14 native species. These are managed by the Nature Reserve Officer, with regular monitoring visits by the Nursery Officer. This initiative is proving to be successful, with many seedlings already showing excellent signs of rapid growth. When the planting season resumes in early 2022, the presence of these seedlings within the reserve means resources such as transportation, staff time and energy will be saved.

Main Actions

- 18,439 endemic and native plants of 32 species were planted in the MCBFF plot in the Grande Montagne Nature Reserve.
- 9 and 6 octopus fishers worked in the reserve during the 1-month summer and 2-month winter closures respectively, doing general maintenance, cleaning, planting, weeding and assisting with all MWF activities.
- A total of 87 persons from the RRA's Tourism Alternative Livelihood Scheme participated in restoration work in the reserve between May and December 2021.

Anse Quitar Nature Reserve



Background

The Anse Quitar Nature Reserve (AQNR) contains critically endangered plants within some of these last remnants of lowland calcarenitic forest on Rodrigues, although even these are highly degraded. Small-scale restoration began in Anse Quitar in the mid-1980s, and the Mauritian Wildlife Foundation began a larger scale restoration project in 2010 with a focus on employing conservation labourers from the local community.

So far, 32.3 of the 35-ha fenced reserve have been restored, with MWF planting approximately 118,160 native Rodriguan plants. By restoring this area, extremely rare plants such as bois pasner (*Zanthoxylum paniculatum*) are safeguarded and endemic and native habitat is recreated for the endangered Rodrigues Fruit Bat (*Pteropus rodricensis*), Rodrigues Warbler and Rodrigues Fody.

The main challenge posed is that the Anse Quitar River and banks are heavily invaded by the highly invasive alien plant *Millettia (Pongamia) pinnatta*.

The restoration work is being carried out by a team of labourers residing in the surrounding villages with a focus on supporting poverty alleviation through training and employment so they may acquire a marketable skill. In-kind manpower has been made available from the Rodrigues Regional Assembly (RRA) via the Seasonal Octopus Fishery Closure Alternative Livelihood Scheme and the Tourism Alternative Livelihood Scheme in 2021. Restoration working days are organised with grassroots associations to sensitise and empower local people in habitat restoration and conservation.

The reserve is included in the Rodrigues Environmental Education Programme, where students visit and are taught about the reserve and its importance.

Main Actions

- 5,155 endemic and native plants of 27 species were planted in 2 plots in the Anse Quitar Nature Reserve.
- 9 and 7 Octopus fishers worked in the reserve during the 1-month summer and 2-month winter closures respectively, doing general maintenance, cleaning, planting, weeding and assisting with all ongoing MWF activities, mainly concentrating on the control of Invasive Alien Species.
- In-kind manpower has been made available from the Rodrigues Regional Assembly (RRA) via the Tourism Alternative Livelihood Scheme in 2021.
- Within the Rare Plant project supported by Botanical Gardens Conservation International, focussing on micro-management of critically endangered flora, both bois pasner (*Zanthoxylum paniculatum*) trees in the reserve benefitted from retaining walls built around them and filled with soil and compost, and the planting of native nitrogen-fixing plants (*Sophora tomentosa*) in their vicinity to boost their chances of producing flowers, fruit and viable seeds. The more exposed tree will also benefit from a metal support in 2022.
- 2021 saw the beginning of a 5-year EU and 2-year UNDP-GEF-SGP conservation project partly aimed at eradicating *Millettia (Pongamia) pinnatta*. To this end, significant efforts have been made to 1) uproot rather than chop regrowths, 2) Cut down and treat with short-lived systemic herbicides all fruit-producing trees (including upstream of the AQNR), 3) collect and destroy all floating seeds to halt new growth.
- In 2021, both the Rodrigues Warbler and Rodrigues Fody, both red-listed-species according to the IUCN (Near-Threatened), were observed for the first time in the AQNR.

Ile Cocos & Ile aux Sables, Rodrigues

Background

Ile Cocos and Ile aux Sables, two sandbar islets to the West of Rodrigues, of 15 and 8 Ha respectively, are renowned for their breeding seabirds, water birds as well as migratory birds and occasional prospecting seabirds. The islets are also the last place on Rodrigues where there is natural vegetation succession (from coastal strand to shrub to tree), and despite their small size hold several ecotypes (strand, grasses, marshes, forest). Ile aux Sables also supports the only known breeding population of the Roseate Tern (*Sterna dougalli*) and population of bois mapou (*Pisonia grandis*) in the Mascarenes.

By virtue of the biodiversity hosted by these islets, they are classified as an 'Important Bird Area for Africa' by Birdlife International. The Mauritian Wildlife Foundation has had a long history of involvement with these islets and has continuously advised the RRA in formal and informal capacities for 25 years on their management, giving advice on planting, weed control and on the management of the bird populations. Despite their native biodiversity, the islets have been severely modified by man and the vegetation communities have been replaced to a great extent by casuarinas and coconut plantations, damaged by invasive exotic plants and animals, coastal erosion, and by inadequately managed human visitation.

Five information boards, replacing previous ones, were deployed by MWF on the visitor's centre veranda walls in 2019 covering the nesting and non-nesting seabirds as well as the restoration work done there, these information boards remained in excellent condition through 2021.

Coronavirus related travel restrictions resulted in a drop in tourism to Rodrigues in 2021 and for this site, the RRA implemented a Tourism Alternative Livelihood Scheme for those involved in the tourism sector, such that between May and December 2021, some 23 persons contributed daily towards conservation actions on the ICNR, under the guidance of MWF staff, allowing excellent progress to be made in controlling Invasive Alien Species such as palma christi and acacia.

Main Actions

- Clean ups of both islets by MWF staff, mainly the Ecotour Officer reassigned to this site, supervising the Tourism Alternative Livelihood Scheme workers.
- In collaboration with Discovery Rodrigues and the RRA; the badly damaged fence delimiting the restricted area from where the public have access was completely redone with the help of tourism workers.
- Reopening and maintenance of all visitor paths was done in conjunction with the RRA Tourism Alternative Livelihood Scheme.
- Seabird censuses were carried out four times in 2021 by the MWF team. Bird populations appear stable.

Grenade Community Forest



Background

In 2013, a strategic project was developed by Shoals Rodrigues in collaboration with the Mauritian Wildlife Foundation, with the guidance of the Rodrigues Regional Assembly and funded by the GEF Small Grants Program. The aim of the project was to develop a sustainable alternative livelihood for 12 fishers in the Grenade area to reduce pressure on dwindling marine resources. One component of the project allocated to MWF Rodrigues to implement was the setting up of a 1 ha community forest. The flora planted at this site are all species with known medicinal or artisanal uses that can be harvested and sold for revenue, reducing the need to fish. Since these plants would need a considerable amount of time to reach maturity for exploitation, two small vegetable and fruit gardens were also setup to produce revenue in the short term. A tool shed, water reservoir and rainwater harvesting system were also built as part of the project.

Unfortunately, since rainfall is extremely low in this area, the vegetable garden did not prove to be successful. Therefore, to obtain a steady source of water, MWF tried to set up a cooperative for the fishers so they could apply for a water connection, however this failed. MWF also tried to obtain an agricultural land lease, but this also did not prove successful.

MWF is currently applying for an agricultural permit for the land to assure a water connection. To date, each year, 6 octopus fishers of the original 12 return during the seasonal octopus fishery closures to maintain the site, cutting pikan loulou (*Acacia nilotica*) regrowths and replanting in the wet season to replace mortalities in the native plant population.

Main Actions

- 5 and 2 octopus fishers worked on this project during the 1-month summer and 2-month winter closures, respectively, doing general maintenance, cleaning, weeding and assisting with all ongoing MWF activities, but mainly concentrating on the control of the highly invasive pikan loulou (*Acacia nilotica*) growing inside the plot and along the access path.
- 150 native species seedlings were planted in 2021 at the site, replacing mortalities.
- The rainwater harvesting system sustained some damage and theft and was repaired by the Forest Restoration Assistant.
- Several poles supporting the perimeter fence were also stolen and repaired in 2021.
- To date, the land is still vested with the Commission for Forestry and without a freshwater connection, despite all attempts so far to obtain one with various Commissions of the RRA.

Solitude's nursery



Background

The Solitude Endemic Plant Nursery was set up some 20 years ago with World Bank funding and over the years have managed to propagate 57 native and endemic species of plants by seed, seedlings, cuttings and aerial layering. Rodrigues staff, under the supervision of the Nursery Officer propagate and grow plants for all Mauritian Wildlife Foundation's restoration projects. The nursery also propagates plants for other purposes such as donations towards endemic gardens in schools, villages and other organisations. In-kind manpower has been made available from the RRA via the Seasonal Octopus Fishery Closure Alternative Livelihood Scheme and the Tourism Alternative Livelihood Scheme in 2021.

Main Actions

- 45,709 endemic and native propagated plants of 48 species were in stock in the nursery as at 31st December 2021.
- 29,444 endemic and native plants were transferred from the nursery for conservation purposes in 2021.

- 14 and 13 octopus fishers worked in the Solitude Endemic Nursery during the 1-month summer and 2-month winter closures, helping in all aspects of plant propagation.
- 12 persons from the RRA's Tourism Alternative Livelihood Scheme participated in nursery-related work between May and December 2021.
- A Nursery Labourer was recruited in March 2021 to assist the Nursery Officer in reaching the annual planting target of 33,950.
- Significant upgrading work began in the nursery with the financial support of the EU, aiming to resurface the entire nursery and construct a water drainage system.
- *Zanthoxylum paniculatum* was successfully grafted onto a *Zanthoxylum heterophyllum* by the MWF Project Support Officer in June 2021, bringing the total known individuals from 3 to 4.

Rare Plants



Background

The Indian Ocean Islands is a hotspot area for threatened endemic plant species. The Conservatoire Botanique National de Brest, France (CBNB) and Botanical Gardens Conservation International (BGCI) have been working for several years with MWF to save and propagate rare plants, build ex-situ collections as well build capacity in Mauritius and in Rodrigues to protect these species.

CBNB and BGCI will continue work with the Mauritian Wildlife Foundation over the coming years and other partners to secure living collections and/or the reintroduction to the wild of some 15 plant species from Rodrigues assessed as Critically Endangered.

Project activities will include working with the existing network of international botanic garden experts to establish propagation programmes for species where efforts have previously been unsuccessful, developing a seed bank and protecting threatened founder plants in the wild.

In addition, reintroduction programmes have been initiated for species such as *Zanthoxylum paniculatum* at Anse Quitor that would be more secure if established at additional sites.

CBNB and BGCI and other partners in the network will accompany in-country project teams to build capacity during survey and collecting trips, and experts from the Ecological Restoration Alliance of Botanic Gardens will be identified to support propagation and reintroduction efforts.

In addition, planning will be advanced for a native species botanic garden on Rodrigues. These activities will help build capacity for species conservation and recovery programmes in Mauritius and Rodrigues, ensuring actions can be scaled up in future.

Main Actions

- Plant recovery plans were completed for the following nine focal species under the ongoing Botanical Garden Conservation International Project: *Antirhea bifurcata*, *Badula balfouriana*, *Dombeya rodriguesiana*, *Eugenia rodriguesensis*, *Foetidia rodriguesiana*, *Hibiscus liliiflorus*, *Polyscias rodriguesiana*, *Pyrostria revoluta* and *Zanthoxylum paniculatum*.
- Phenological visits were carried out on the nine focal species affording a better understanding on their flowering, fruiting and budding habits to better protect them.
- Propagation trials were also done on as many of the above species as possible, depending on the availability of propagation material.
- All founder plants of the above 9 species were visited, marked with aluminum tags, had ecological information pertaining to them collected, main threats noted, and GPS locations recorded.
- The last two adult bois pasner (*Zanthoxylum paniculatum*) plants had retaining walls built around them and filled with a soil compost mix to boost their chances of producing viable fruit.
- A founder protection action aimed at 22 individuals of the 9 focal species and *Carissa spinarum* have been identified to have protective fences or retaining walls built around them under the BGCI project in 2021 and 2022.
- Following the Red Listing Workshop in 2019, 15 tree species had their IUCN Red List status updated in 2021, mainly drafted by the MWF Conservation Director, see references further below.

Rodrigues Environmental Education Programme

Background

The Rodrigues Environmental Education Project (REEP) has been operational since 1998 and after 2 successful decades won the Philadelphia Zoo Global Conservation award in 2018. From its inception REEP has been involved with the community, aiming to change people's attitudes towards the environment. This is achieved through awareness-raising and informal environmental education initiatives involving talks in schools and to the media, visits to restoration areas and environmental education campaigns including outreach to community groups for them to experience 'hands-on' the habitat restoration process. Volunteer's day is celebrated with activities and hand-outs of educational materials for those who have volunteered for MWF during the year. REEP also focuses on sensitising school children about environmental issues that affect Rodrigues and encourages them to take pride in their natural heritage. Work began in collaboration with Chester Zoo on developing an effective and unbiased way of evaluating the education visit to Grande Montagne via a questionnaire aimed at school children of various ages with the assistance of Government and Roman Catholic Aided (RCA) schools.

Main Actions

- 5,529 plants were donated to primary schools, colleges, villages and other organisations
- 1,393 students and 153 teachers participated in educational visits of the Grande Montagne Nature Reserve, Anse Quitar Nature Reserve and the Solitude Nursery
- 186 school children and 9 adults were present during educational talks in schools.
- 629 villagers were present during educational talks in the village community.
- 207 volunteers helped towards terrestrial conservation in Rodrigues contributing some 430 workdays.
- 33 interviews were broadcast on TV and 25 interviews on local radio providing media coverage for conservation actions carried out by MWF
- 15 monthly blogs were published online for MWF's (and Philadelphia Zoo's) social media
- 7 articles were published on Newspapers.
- MWF continued to work with Reef Conservation Mauritius in parallel with Shoals Rodrigues on the Indian Ocean Eco Schools programme and meetings were organised with Ecoschool committee members from 17 schools to monitor their project status.
- 8 special events: World Wildlife Day, World Forest Day, Earth Day, World Tourism Day, International Bat Weekend, World Biodiversity Day, World Environment Day, International Human Rights Day, and World Clean-up Day were organised, liaising with various RRA Commissions and Departments as well as other partner organisation namely: Shoals Rodrigues, Rodrigues Council of Social Services, Francois Leguat and DIS MOI.
- Exceptionally in 2021, International Volunteer Day could not be celebrated in one large group because of the COVID-19 pandemic; however, certificates of participation and gifts were distributed to each volunteer.

Eco-Tours Grande Montagne



Background

The Grande Montagne Nature Reserve is open to the public for paid guided visits. In 2013 the Rodrigues Regional Assembly approved plans for the MWF to conduct ecotourism activities in this nature reserve, which began in February 2016 with a dedicated Ecotour Ranger recruited to deliver tours.

Main Actions

- Since the COVID-19 pandemic broke out and resulted in a closure of international borders and travel restrictions between Mauritius and Rodrigues in 2020, there has been a net decrease in the number of visitors to Rodrigues
- In 2021, only 266 paying customers visited the reserve, representing a drop of 942 in the number of visitors from the last normal year in 2019; these visitors were almost exclusively Mauritians, visiting when the borders reopened in early 2021.
- Flyers and posters usually distributed around Rodrigues and the campaign of promotion carried out by the Ecotour Officer were mostly put on hold in 2021 because of the COVID-19 pandemic and resulting closed borders.
- 1,554 complementary tours were given in 2021 to students, teachers, tour operators, members of the press, RRA officers and funders, of which, 1,438 were given to Rodriguan students and teachers free of charge via REEP.
- Through 2021, the Grande Montagne Ecotour was featured in several TV, Radio and social media reports.
- In 2021 all renovations to the Dominique Farla Information Centre building were completed i.e., signage, lighting, plumbing, painting and parking marking.
- The RRA re-acquired a small section of the carpark for use as a bus stop.
- The GMNR Ecotour was awarded the 'EXPERTS' CHOICE AWARD' by trip expert and re-awarded Trip Advisor's Travellers' choice award in 2021, with the MWF Ecotour ranking 4th on the list of "*Things to do*" when visiting Rodrigues.
- Discussion to create a virtual tour of the GMNR began in 2021 and 1 local service provider was contacted.

Rodrigues Fruit Bat



Background

The Rodrigues Fruit Bat has been studied since 1974 when it was considered one of the rarest of all vertebrates, with a population of less than 100 animals, and the rarest bat in the world. Since then, the population has steadily increased due to active reforestation by the RRA forestry Service and MWF, native habitat protection, a decline in hunting pressure and the lack of strong cyclones directly hitting the island.

The population reached ~5,000 individuals in 2002, then cyclone Kalunde hit the island in March 2003 causing a reduction in the population possibly as high as 50%. This was caused by post-cyclone food shortages that resulted in elevated juvenile mortality. Simultaneous counts of bats leaving from different roosts, from 2007 to 2016, show that the population has recovered, and continued to grow to an estimated ~20,000 individuals. In 2016, explorations were made in search of new roosts where bat presence had been reported. This record high resulted in its downgrading on the IUCN Red List of endangered species to Endangered in 2017. The identification and monitoring of new temporary or permanent roost sites found and the search for new bat roosts continued as this helps us understand the dispersal response to population increase. In 2018 the RFB population hit another all-time high of ~24,000 individuals. At the same time it was noted that there was some discontent amongst the population for the damage caused to backyard fruiting trees.

Following two strong cyclones Gelena and Joaninha in early 2019, mortality and strange feeding behaviour (bats feeding on the ground and eating fruit they usually didn't) was reported across the island, likely a result of the shortage of food. Abnormally low counts (5,423 bats) were recorded in November 2019.

A tropical depression and the COVID-19 lock-down in early 2020 affected the island-wide bat counts and following various consultations between MWF directors and Chester Zoo, it was agreed only one island-wide bat count would be carried out each year, in November, when the counts have produced the best figures.

In November 2020, the number counted was back up to 18,430 (Total Pop Est: ~20,000) suggesting the population decline was not as bad as previously thought and that they had likely scattered to unmonitored roosts following the two 2019 cyclones.

A Management Support Officer, recruited in April 2020 began the task of inputting the massive backlog of bat count data and to date most paper data have been entered. Discussion continued with Chester Zoo through 2021 to begin the analysis of this dataset in collaboration with Chester University. A Scientific Officer was recruited in October 2021 with the aim that she will in time participate in and manage all scientific research including the bat data analysis.

This population clearly needs to be monitored to assess the impact of cyclones and future population trends. Since the fruitbat breeds once a year and usually produce a single baby (occasionally twins), population counts repeated annually are effective in plotting long term population trends. Regular surveying can also allow a better understanding of the factors affecting bat movement on the island.

In addition, fortnightly counts are maintained at the Cascade Pigeon roost, with surveyors based at the Malabar crossroad. MWF staff are joined by a wide range of volunteers for the simultaneous island wide counts. These counts are useful since volunteers often become involved with other aspects of conservation projects in Rodrigues. The bat work has helped to inspire respect for MWF's work in Rodrigues. MWF aims to exploit the awareness and educational potential of bat counts to the fullest.

Main Actions

- One single simultaneous evening dispersal island-wide count was carried out in November 2021 over 3 days at 15 roost sites and in situ estimations done at 9 sites.
- Based on bat activity in 2020, it is believed there were 20 permanent roosts and at least 6 temporary roosts.
- The November 2021 resulted in 14,113 bats being counted and an estimated 20,000 to be present in Rodrigues.
- The decrease in number counted between 2020 and 2021, despite the absence of cyclones or serious droughts, may be due to movement between and settling in new temporary roost closer to sources of food.
- It has been planned to do a wider set of surveys in 2022 to establish where the other roosts are located.
- Additionally, 23 fortnightly counts of the Cascade Pigeon Roost were done in 2021

Rodrigues other Activities

- **IAS Green Iguana in Rodrigues:** Following the first sighting of a green Iguana (*Iguana iguana*) on 3rd December 2019 and reports that 8 individuals had been released in the wild at Terre Rouge, MWF Rodrigues staff have continued to respond to sightings across the island and to date have collected a total of 6 individuals, which have been handed over to the RRA for euthanasia. TV and radio coverage has been done on the subject to encourage Rodriguans to report in all sightings for collection.
- **Aldabra Giant Tortoises in the GMNR:** The introduction of 5 Aldabra Giant Tortoises in the GMNR in 2018 was to rebalance the ecosystem, replacing the lost endemic tortoises as an analogue species based on the MWF experience of introduction in Mauritius on Ile aux Aigrettes and Round Island. They are monitored each monthly by MWF staff as regards to their size, weight, location, habits and impacts of the vegetation present around them. Since their introduction, staff have observed them eating *Foetidia rodriguesiana* and *Pandanus* spp fruit amongst others and noted the sprouting of *Ixora trilocularis* seedlings in their dung, proving without a doubt that they are helping rebalance the ecosystem in this reserve. On the 21st May 2021 5 new juvenile Aldabra Giant Tortoises were translocated from the François Leguat Reserve to the GMNR, bringing the total up to 10 individuals
- **Mourouk Botanical Gardens:** After Dr Ethan Freid's visit to Rodrigues in October 2019 and resulting recommendation and action plan submitted to the RRA to kick-starting concrete activities at the Mourouk Botanical Garden, only routine work was carried out through 2020 and 2021, as there was no budget to implement the work listed in the phased plan as a result of the COVID-19 pandemic and RRA funds being used to finance the Tourism Alternative Livelihood Scheme (TALS). However, the Commission responsible for Public Infrastructure was apparently in the process of completing the design of the entrance gate and there was a visit with the Commissioner Payendee to look at the debris and exposed water pipes. The decision was taken by the Commissioner to cover and or remove the pipes and clean up the debris, but nothing has been done yet. To note, under TALS scheme, 47 people worked in the Garden area between May and December 2021 cleaning the river.

- **Mourouk Ebony Reserve:** The 5-year GEF6 UNDP Mainstreaming Invasive Alien Species Project begun in 2021, with several consultation and planning sessions. For Rodrigues, there are plans to conserve the entire 200-hectare Mourouk Valley as a Protected Area, Mourouk Botanical Garden and gene bank included. MWF had initially proposed the gazettelement of a 18 ha Nature Reserve within this valley to protect some 250 Rodrigues Ebony (*Diospyros diversifolia*) and other endangered trees present in the area.
- **Rodrigues Airport Development:** In December 2019, the Agence Française de Développement officially agreed to co-finance the expansion of the Rodrigues Airport on the mainland and as a result, an Environmental and Social Impact Assessment was carried out. The report identified that 1) the entire village of Ste Marie would need to be relocated, 2) 1x Rodrigues Ebony (*Diospyros diversifolia*), 2x bois puant (*Foetidia rodriguesiana*), 1x bois benzoin (*Terminalia bentzoe* ssp. *rodriguesensis*) and 2x bois blanc (*Polyscias rodriguesiana*) founder trees together with some 100 other endangered native trees in the direct path of the project would need to be conserved, 3) the Anse Quitor Nature Reserve would possibly be encroached upon, or at the least affected by dust during the construction phase, also requiring protection. An MoU was signed with the RRA in July 2021, to draft an action and strategy plan, as well as lead the protection and preservation of all these plants via a 3-tiered approach: 1) Propagating the focal species from seeds and seedlings, 2) Cloning the same species via cuttings and aerial layerings, and 3) transplanting these trees to the reserve with the expertise of the Naples Botanical Gardens, Florida. It was established in December 2021 that the reserve would not be encroached upon by the proposed airport development project. Actions under Tiers 1 and 2 began in 2021 under the supervision of the Project Support Officer.
- **MWF Solitude Office Renovation:** Twenty-five years ago, MWF set up a branch in Rodrigues using the Forestry Quarters Building in Solitude as its Office and base of operations thanks to the Government then the RRA. Over the years, the building suffered from the elements; it was last renovated back in 2010. After 11 years, the office building was again in dire need of uplifting, so in 2021, after some masonry work followed by a full paint job, together with the participation of the entire MWF Rodrigues staff team the Solitude offices have been fully renovated and look new again.

EDUCATION IN MAURITIUS

The Mauritian Wildlife Foundation (MWF) recognises that the long-term survival of Mauritius' endangered biodiversity depends on the continuous education of Mauritian and Rodriguan children and raising the level of awareness among the public at large to overcome human indifference towards conservation. MWF believes that this depends on providing opportunities for everyone to appreciate strategic areas, local species, and foster education to highlight the ecological, aesthetic, cultural, spiritual, recreational and economic importance of protecting our endemic animal and plant species. MWF is conscious of the challenges involved in changing attitudes to the environment. One of the MWF's missions is: 'To share the joys and benefits of native wilderness and wildlife with the Mauritian people'. To achieve this mission, various educational initiatives are undertaken by MWF.

The Education Programme is composed of various projects under the umbrella of the MWF Education Strategy. The current projects encompass four out of the five identified goals: Islets Education, Connecting with Nature, Invasive Species and the Human-Wildlife Conflict with the Mauritius Fruit Bat.

Islets Education Project



'Anou protez nu bann zil'

Background

The project began in the southeast in May 2017, funded by the European Union (EU) via the Indian Ocean Commission (IOC), until October 2018 and aimed to educate leisure boat skippers and staff, fishermen, private boat owners and coastguards in the region on the protection of the native wildlife on the southeast islets. The objective is to have a reduction in human-mediated threats such as littering, open fires, trampling and new exotic species introduction hence helping to conserve the endemic/native animals and their habitat. The islets involved are Ile aux Aigrettes, Ile aux Fouquets, Ile de la Passe, Ile Marianne, and Ilot Vacoas which are home to endemic species of reptiles, birds and plants as well as seabirds.

New funding was secured from July 2019 from the Mauritius Commercial Bank to continue the project in the southeast and start a similar project in the north where we have six islands of conservation importance namely Round Island, Gunner's Quoin, Serpent Island, Flat Island, Ilot Gabriel and Pigeon House Rock. The project in the north is now well established.

The main project activities include questionnaire surveys to assess change in knowledge and attitude; stakeholder meetings; participative training workshops; educational visits to islets, monitoring of the project impact on the islets and production and distribution of educational and promotional materials. The leisure boat skippers/assistant skippers who follow the training programme to completion receive an 'Eco-Aware Skipper' certificate and an 'Eco-Aware' sticker for their boat, which add more value to their work and a waterproof factsheet about the islets which include a list of do's and don'ts to protect this unique natural heritage.

Main actions

- Training in the Southeast:
 - Two training workshops were conducted with the National Coast Guard (NCG) officers based in the southeast region on 26th October and 13th November with 39 participants in total.
 - One skippers' workshop was conducted on 24th September with staff from Croisières Australes and Veranda hotel with a total of 11 participants.
 - One fishermen workshop was conducted with 16 fishermen from Bois des Amourettes village at the Bois des Amourettes Social Welfare Centre.

- A refresher course islets visit was conducted on 29th September with 18 skippers, assistant skippers and staff from Aqua Soleil.
- A total of 10 islets educational tours was conducted on the southeast islets with the different target groups throughout the year. 16 new fishermen from Bois des Amourettes and 15 new fishermen from Mahebourg visited Ile aux Aigrettes, Ile de la Passe and Ile aux Fouquets. 23 fishermen, who attended workshop and did their visit Ile aux Aigrettes in 2020, did the last islets education tour on Ile aux Fouquets and Ile de la Passe. 5 NCG officers visited Ile aux Aigrettes on 25th November and 12 skippers (who attended workshop and visited Ile aux Aigrettes in 2020) visited Ile de la Passe and Ile aux in September.
- A certificate ceremony was conducted on 20th October for 12 skippers from the southeast who have completed their *Anu protez nu bann zil* training. 10 skippers attended and each received their Eco-Aware Skipper certificate along with cap, T-shirt, factsheet, southeast islets booklet and a boat sticker.
- Training in the North:
 - No new training workshop was conducted with skippers and NCG in the north in 2021 due to COVID-19 restrictions and the impact on their work.
 - One educational tour to Ilot Gabriel with 6 catamaran skippers was conducted on 21st December. Those are skippers who did not do their islet visit in 2020. Some additional islets tours with skipper were planned and postponed because of islets closure due to COVID-19 restrictions or bad weather which makes it hard to access those offshore islets. Islet's education tour with NCG did not go forward either due to their unavailability resulting from additional work related to the COVID-19 pandemic.
 - One stakeholder meeting was conducted in the north on 29th October with 11 participants from various ministries, catamaran skippers, other NGOs and fishermen attended these meetings. The purpose was to share the recommendations gathered from islets users during workshops; give an update about the project and discuss how all stakeholders can work collaboratively to reduce human-mediated threats on the islets.
 - Posters and flyers about northern islets were given to the four NCG stations in the north; CAB office in Grand Baie; Yacht Club in Grand Baie; Centre Sociale de Grand Baie; Coral Belle, Croisières Australes and Top Cat catamaran companies; Grand Gaube Village Hall and Tourism authority. One poster and 50 flyers were also given to schools in the north where we had previously conducted presentations about islets.
- Training of skippers at national level took place. The team conducted 3 presentations about islets with 99 trainee skippers on three occasions (19th February, 23rd July and 18th November) for the annual training of skippers at Tourism Authority.
- 20 pre-questionnaire surveys were completed with 39 National Coast Guard officers in the southeast; 16 pre- and post-questionnaire surveys with fishermen from Bambous virieux, 8 pre-questionnaire surveys with fishermen from Mahebourg and 6 post-questionnaire surveys with skippers in the north. These surveys allow us to assess the change in knowledge and attitude as a result of the training.
- The maintenance of the 18 signboards found in the southeast (on mainland and islets) was done in May 2021.
- Promotional materials of 250 caps and 200 T-shirts were produced in 2021 to distribute to islet users who participate in our islets training.
- Monitoring trip to Southeast islets was conducted to collect information about human-mediated impacts such as fire, litter trampling, introduction of new exotic species on the islets. A total of four monitoring trip were conducted in 2021 (in January, February, September, and December). No trips were conducted for other months due to islets closure and rough seas.
- Islets Educational materials were produced:
 - 200 fishermen reference sheets were designed, produced to be distributed to fishermen of the north. The document features information about the importance of northern islets, a description of the native and endemic species found there and do's and don'ts to help protect these islets.

- 149 waterproof skipper's factsheets about the northern islets and the southeast islets were designed and produced. The booklet contains detailed information about the islets' native flora and fauna and the do's and don'ts to help protect the islets. The factsheet is distributed to skippers and NCG officers who have completed their islets training.
- Signboard designs were circulated to various ministry department and was subsequently updated. Permission from various authorities for the placement of signage was a very lengthy process. Finally, two signboards were placed at embarkation point on the mainland in Grand-Baie, two signboards were placed on Ilot Gabriel and two on Flat Island. These have been put in place following a common recommendation received from all target groups that signboards would be an effective way to both educate people about the unique biodiversity found on islets and to help tackle the human-mediated threats to the islets.
- Media communication was primarily carried out through Facebook posts via the *Anu protez nu bann zil* Facebook group (34 posts) as well as the MWF Facebook page.
- An online presentation about northern islets was conducted with the Rotary club of Grand Baie on 16th November.
- The impact of COVID-19 on delivering islets education activities was significant. With a second wave of COVID-19 in Mauritius in 2021, a lockdown in March and April, followed by restrictions for public gatherings, our project activities were significantly affected. Workshops organised with NCG were postponed numerous times throughout the year due to their unavailability as they were posted in quarantine centres or were either on mobilisation order to patrol beaches, however we found a window of opportunity in the last quarter of the year and managed to conduct some training with them. Workshops and missed islets' educational visits (those missed in 2020 due to the COVID-19 issue) with skippers could not go ahead because most skippers had to do other jobs as most leisure boat companies were not operational due to the closure of the Mauritian borders and limited tourism activity. Consequently, most of the skippers were not available for the islets training activities. Furthermore, the islets were closed to the public and only re-opened in July 2021 as such we could not conduct the remaining islets visits planned for this period for some of our target groups, especially in the north. With the opening of the Mauritian borders in October 2021, the leisure boat companies slowly re-started and we managed to organise some islets visit for some skippers so they could complete their training.
- There was a continuing impact on the southeast islets education activities of the Wakashio oil spill which occurred last year and affected the livelihood of many of the islets users. A lot of the skippers were working on the cleanup of the lagoon in 2021 and were not available for educational activities. The NCG in the southeast were also taken up with activities regarding clean up and dismantling of the boat in 2021.

Connecting with nature project



Background

Following the Education Strategy workshop facilitated by Chester Zoo and held in September 2019 a number of goals for the education project were established. One of these goals was 'Increase the connection between Mauritian people and nature'. This goal was integrated into the Education actions since July 2020 and different identified actions have been implemented since then.

Main actions

Learning with Nature on Ile aux Aigrettes

As from 2009, the MWF developed 'Learning with Nature' (LWN), a structured educational programme on Ile aux Aigrettes which supports the national school curriculum and is supported by the Ministry Education and Human Resources, Tertiary Education and Scientific Research. MWF's 'Learning with Nature' programme strives to promote greater environmental awareness and support for conservation nationwide by helping to create the next environmentally conscious citizens. Students have the opportunity to visit the islet, discover a nature reserve, and appreciate its biodiversity, witness actions undertaken to save species from decline in their restored natural habitat, obtain support towards their school curriculum, and return armed with knowledge and educational materials.

- The programme was severely hit by the Covid19 pandemic. Students lost months of teaching in 2020 and again in 2021 with a lockdown from the 10th March 2021 to 30th April 2021. For most schools outings were cancelled while teachers focused on delivering the curriculum.
- 241 students, teachers and youths (2020: 366) followed the LWN trail in 2021 on 10 visits (2020: 10) from institutions (2019: 2,882 students, teachers and youth groups on 76 visits from institutions).
- A special education tour with students and educators with 10 students and three educators from La Confiance College was conducted by the Education assistant, followed by a nursery activity after a special request from a teacher who attended one of our presentations.
- A Mauritian PhD student used the Learning with Nature programme to collect data for her study 'Investigating Situational Interest and Learning about Biodiversity: A case study of how Students experience a field trip to a Nature Reserve in Mauritius'. The thesis was completed in 2021.

Connecting with Nature presentations and activities with schools

The Connecting with Nature programme with schools include a PowerPoint presentation, followed by a planting activity to create an endemic garden (plant and plant labels are offered) and distribution of books (*Native plants and animals of Mauritius* for secondary school students and *Discovering Dodos* for primary school students).

- 6 presentations were delivered with 5 schools and with a total audience of 567 pupils excluding teachers. Four presentations were in-person and two were online.
- 347 booklets were donated after the school presentation. One school had a high participation number; hence the donations were limited to members of their environment club and the school library
- 17 plants were planted in 3 schools and plants labels donated (Orchard Kids Hermitage, Clavis School of Moka and Labourdonnais college in Port-Louis). Two other schools with which we had online presentations will also receive endemic plants and books when schools resume in 2022.
- Distribution of education materials (booklets, plant labels) continued in 2021 with schools which took part in our Connecting with Nature project last year.
- A 'Connecting with Nature' presentation was conducted during an Awareness session organised by the NGO Action for Environment Protection (AEP) on the 7th and the 9th June. The event was held at Le Thabor with rectors and Green champions (Eco-school programme) of several Loretto colleges (Port-Louis, Rose-Hill, St Pierre and Quatre-Bornes).
- Activities with schools was heavily impacted by COVID-19 and related restrictions.
- Unavailability of the target audience: The academic year of public schools in Mauritius was modified in 2020. As a result, the third term started in January 2021 and schools did not accept requests for activities during this time. Despite having this "COVID-free" window, we were unable to meet with our original target audience. To overcome this, we contacted private paying schools as these institutions were able to maintain their academic year.
- 2021 lockdown: This approach to work with private schools started well, however the second lockdown came into effect in March and all plans to reach more schools were halted.
- Lack of access to premises: Schools reopened in July but access to all institutions by outsiders was restricted. Hence, our work with this group was further delayed. However, later in the year, some schools expressed their desire to have extra-curricular activities while, respecting the sanitary protocols. Discussions and arrangements were initiated as a result.
- School closure: However, this new approach was barely implemented when a general school closure was announced at the beginning of November as part of the stricter restrictions brought into force for the population as a whole. We managed to conduct two presentations online despite strict restrictions, one was done during an exam event and the other outside school hours.

Teachers and Heads of schools workshops and networking

In order to explore the most effective, but also practical way of working with students the Education programme contained a series of consultative workshops.

- A half day online workshop was carried out in December. It involved twelve managers, rectors and deputy rectors from six secondary schools, and the aim of the workshop was to explore the ways to reconnect students with nature using a participatory approach.
- On 15th December, an online meeting (shorter version of a normal workshop) with five teachers from four different schools was organised. The session was an alternative event format to an in-person workshop as the Education team had been facing multiple challenges during the year in gathering teachers for a workshop. The disruptions caused to schools by the pandemic, did not make possible to work with these groups earlier in the year.

- Obstacles became apparent when courses were provided online. These further contributed to the delay in reaching this audience:
- PSEA mandate: Schools were no longer able to allocate us time within school hours to organise extra-curricular activities as the Private Secondary Education Authority (PSEA) had mandated a strict adherence to the school timetable.
- No obligations after school hours: An option of organising talks after 2.30 pm was proposed but neither students nor the staff are required to attend anything related to the schoolwork after school hours.
- Exhaustion and domestic responsibilities: Teachers reported being over stretched with the online regime and that their job had become extremely challenging. Hence, they would not be able to cope with another online work-related activity.
- Teachers and private tuitions: Many teachers give private tuition and are not keen to forgo a tutoring session.

Presentations and activities with the Community

Other sections of the Mauritian public were identified to support and promote the objective of 'Increase the connection between Mauritian people and nature'.

- Faith-based organisations & religious leaders: Our relationship with faith-based organisations and religious leaders developed further this year.
- Two presentations gathered a total of 101 children, teens and young adults combined, excluding their tutors, from Roman Catholic parishes (La Visitation Church in Vacoas on 5th March) and the Scout Group based at l'Ecole Notre Dame de Lourdes in Rose-Hill on 20th February.
 - A religious leaders' workshop was carried out in collaboration with the Council of Religions and took place in October, with eleven leaders attending physically, representing the Hindu, Tamil, Islam, Anglican, Buddhist, Baha'i and Assembly of God communities. This workshop was key to present MWF education programme and explore how we can collaborate with various faith-based organisation to reach out to more people. The *Native plants and animals of Mauritius* booklets were given to the participants.
- Community groups:
 - A face-to-face presentation was conducted with 35 school children and attended by 5 tutors from the NGO *Ti Rayons Soleil* on 19th October. The booklets *Discovering Dodos* were given to each participant.
 - An online presentation about native wildlife and conservation was conducted with 19 members of the Rotary Club of Mahebourg and Rose Belle on 7th December.
- Journalists: We would have preferred face to face sessions but settled for online presentations in the form of Webinars attended by a total of 44 participants made up of journalists, photographers and undergraduate Journalism students. They were organised in collaboration with the Media Trust and were on the following subjects:
 - Reptiles and Northern Islets delivered by Ms. Martine Goder, Education Manager
 - Endemic birds delivered by Mr. Sion Henshaw, Fauna Manager
 - Mauritian Fruit Bats and the Human Wildlife Conflict delivered by Dr. Vikash Tatayah, Conservation Director
 - Fauna and Flora conservation in Rodrigues delivered by Mr. Reshad Jhangeer-Khan, Rodrigues Manager
- Public exhibition: Where Covid restrictions allowed, MWF participated in public exhibitions.
 - A photo exhibition to celebrate World Animal Day on 4th October 2021 was organised from 04th to 10th October at Bo'Vallon Mall.

- This public exhibition helped MWF draw attention on several endemic and native animal species of Mauritius and Rodrigues. By-standers were also able to learn about MWF's conservation work to safeguard those species during that week.
- A general presentation about MWF's work, including islets was delivered during an awareness and marketing event organised by MWF Eco-tour on the 27th October 2021 at the Bo'Vallon mall.

Education materials

Educational materials were designed and produced to support the conservation message and to share about MWF's conservation work:

- Native plants & animals of Mauritius: The book was updated, and a 5th edition of this book was printed during the year. They are distributed to secondary school students and offered during workshops with teachers, heads of schools and religious leaders.
- Discovering Dodos: The book was updated, and a new edition printed. These are distributed to primary school students.
- Teacher's guide to the Black River Gorges National Park: This guide was worked on during the year and is intended for teachers to use during site visits with their students to the park.
- Plant labels: Labels for school's endemic garden were designed and manufactured.
- Stickers for schools: Stickers for school children attending our presentations were designed and are intended to be a reminder of the conservation message we shared with them.
- Customised mugs and tote bags: with the 'Connecting with Nature' theme were designed this year and are intended for participants of our workshops with teachers and head of schools

Media Exposure

- A tour of Ile aux Aigrettes and video shooting with BBC was organised on 1st November
- One post about the public exhibition at Bo'Vallon mall was shared on the MWF Facebook page. The Conseil des religions shared a Facebook post about the religious leaders' workshop on their Facebook page.

Invasive species education project

Background

Following the Education Strategy workshop facilitated by Chester Zoo and held in September 2019, a number of goals for the education programme were established. One of these goals was to 'Reduce the release of invasive species and reduce introduction of new exotic species in the country'. This goal was integrated into the Education Programme actions since July 2020 and some of the actions identified were implemented. Invasive alien plant and animal species is one of the greatest threats to our native flora and fauna and educating the public about this threat, its impact and actions that can be done to address this issue is crucial in the on-going battle with invasive species.

Main actions

- Pet Shops:
 - In 2020 we started our networking with pet shop owners/traders. A list of all pet shops was put together and the team visited 29 pet shops and discussed about impact of invasive species and responsible pet ownership. The list was reviewed and updated in 2021.

- A Workshop planned for 2021 with this target group as well as with animal welfare and veterinary practices could not be conducted due to the COVID-19 situation in Mauritius and restrictions on gatherings.
- Presentations: Awareness about invasive species continued to be covered in all our presentations with various stakeholders such as islets users and school children.
- Posters on invasive species: 100 posters and 2195 flyers were designed and produced. They are meant for distribution to clients and visitors of pet shops, animal welfare organisations and veterinary clinics. The purpose is to educate the public about the difference between exotic and endemic species, the importance of biodiversity and ecosystem and the impact of releases of exotic species in nature.
- Talking about invasive species in the media:
 - On the 14th July, MWF participated on a radio programme on Top FM, HardTalk hosted by Ananda Rajoo, to discuss invasive species.
 - A short interview about the Madagascar Giant Day-gecko with the Mauritius Broadcasting Corporation (MBC) was given.

Human-Wildlife Conflict: Mauritius Fruit Bat



Background

Bats are the only mammals native to the Mascarene Islands. Three species of fruit bat were once widespread over Mauritius, but two went extinct and the population of the surviving species (*Pteropus niger*) decreased considerably due to habitat loss, cyclones and illegal hunting. This bat went extinct on Reunion Island, where it was last recorded in 1790. However it is known that Reunion Island has been recolonized by a handful of individuals over the last decade (now numbering several dozen to a hundred bats) whilst a second species (*Pteropus rodricensis*) has survived on Rodrigues Island. Due to lack of major cyclones, the population of the *Pteropus niger* (also known as the Mauritius fruit bat) has increased over a 20-year period, shifting its IUCN status from Endangered to Vulnerable in 2014. The most recent bat surveys done by the National Parks and Conservation Service in 2021 suggested that the population size of the Mauritius Fruit Bat was over 100,000 individuals.

As the population of the Mauritius Fruit Bat increased, the impact on the commercial fruit orchards and backyard fruit trees, with bats eating the lichis, grew, and the pressure from the public to cull the bats gained momentum. In 2009, a positive step was taken when the Government carried out a sensitization campaign for the protection of farmed fruit and promoted the use of nets to protect fruit from bats and birds, along with a grant scheme to purchase the nets, which was extended into 2021. However, the species faced a serious threat to its existence with a major cull in 2015. The Mauritian Government announced it had culled 30,938 bats in 2015 and 7,380 in 2016 in order to protect the interests of fruit farmers. Further culls have been carried out in 2018, 2019 and 2020 but the official number of bats culled for these years has not been released. The Mauritian Wildlife Foundation, along with the International Union for the Conservation of Nature (IUCN) and Bat Conservation International (BCI) provided scientific and management advice to the Government to show them that the culling could have catastrophic effects on the bat population in Mauritius especially if there was a severe cyclone. Additionally, the evidence from other parts of the world, indicated that culling did not resolve the problem of bats eating commercial or backyard fruit.

The Mauritius Fruit Bat was uplisted to Endangered in 2018, the direct result of the official culling conducted in 2015 and 2016, and the parallel illegal killing of fruitbats.

In order to address the Human Wildlife Conflict, MWF obtained advice from an expert in the subject and undertook various actions including a series of workshops. Following on from the 'Netting Workshop' in August 2017 and 'Research Workshop' in May 2018, two workshops were conducted, the 'Backyard Workshop' and 'Media Workshop' on 23 and 24 October 2019. MWF regularly refers to the workshop reports and discussions in official meetings, in the media, on the MWF Facebook page, and in conversations with pro and anti-cull proponents.

MWF continues to work on fostering dialogue and collaboration with all stakeholders in view of a resolution of the Human Wildlife Conflict.

Main Actions

- Discussions and exchanges with IUCN Bat Specialist Group, Bat Conservation International, and several other international organisations, as well as the Government of Mauritius, local groups and people to share information and lobby against a cull.
- MWF was invited to a 'Special Technical Committee' in 2021. The committee was set up under the Native Terrestrial Biodiversity and National Parks Act 2016, which discusses culling of species. MWF has always been against bat culling, most often finding itself in a solitary position. MWF is fiercely opposed to culls and has provided its views to the Minister of Agro-Industry, press and on its Facebook page. However, in 2021, we were most pleased that the committee did not recommend a cull. The Minister of Agro-Industry and Food Security agreed to follow the recommendation of the committee.
- Mr Noel Bergin, Researcher, Aarhus University, Denmark, carried out research on the Human Wildlife Conflict on the Mauritius Fruit Bat (specifically on hindrances to use of nets) as part of his MSc studies, interviewing the public via questionnaires. He arrived in Mauritius on the 2nd October 2021 and returned in late January 2022.
- Initial discussions were held to identify a Chair and set up a multi stakeholder Human-Bat Conflict Working Group in 2022.
- General ongoing actions are carried out under a bat education programme:
 - Communication in the media & social media
 - Promoting of tree netting:
 - produce and distribute a Brochure, put it on MWF's website,

- produce a QR Code poster to share on social media and distribute posters to retailers of nets
- Produce promotional items including a T shirt, tote bag and Bat plush toy
- The 10-minute film “Mauritius Fruit Bats under threat” is used in presentations and accessible from the MWF website
- Presentations given to schools & community groups, universities, public talks etc
- Creation of a bat ecotour, which is run upon request

FRIENDS OF MAURITIAN WILDLIFE



Background

To increase the public involvement in MWFs work and create a supporter base in Mauritius, we have had a project ‘on the drawing board’ for a number of years: to create a Club of Friends. We first aimed to enrol volunteers to run the Club reporting to one MWF staff but this proved impractical. We recently looked for a sponsor. Emtel have adopted the project for a period of 2 years and will cover a salary of a Club Coordinator and some MWF input costs and enable us to launch this project without incurring any significant cost. The Club Coordinator was recruited in June and started with MWF on 19th July 2021. She will run the project and ensure good communication which itself will support improved communication generally for MWF.

Main Actions

- Recruitment of an Events & Communications Coordinator
- Design of an illustration as main communication element
- Finalisation of general rules and events rules
- Design of e-card, brochure, polo shirt and promotional materials
- Launch was postponed twice because of Covid restrictions and took place only on 03 March 2022

OTHER

Governing Body

There is often a confusion on terminology for the governing body of the Mauritian Wildlife Foundation. It is most often called '**The Council**', but in law named the '**Managing Committee**'. The members are equivalent to '**Trustees**' or a '**Board of Directors**'.

PRESIDENT

Mr Tim TAYLOR

VICE PRESIDENT

Mrs Deborah DE CHAZAL

TREASURER

Mr Gerard PASCAL

ASST. TREASURER

Dr Vikash TATAYAH

SECRETARY

Ms Feerdaus BUNDHUN

ASST SECRETARY

Mr Philippe LA HAUSSE DE LA LOUVIERE

MEMBER

Prof Carl JONES

MEMBER

Dr Ehsan DULLOO

MEMBER

Mr Jamie COPSEY

NPCS

Director or Representative

DWCT

Dr Chris RANSOM

CHESTER ZOO

Dr Claire RAISIN

Staffing

Management Team

Executive Director: Mrs Deborah de Chazal

Conservation Director: Dr Vikash Tatayah

Scientific Director: Prof. Carl Jones

Managers:

- Dr Nik Cole, Island Restoration
- Mr Jean Hugues Gardenne, Fundraising and Communications
- Mrs Martine Gebert, Accounts
- Ms Martine Goder, Flora & Education
- Mr Sion Henshaw, Fauna
- Mr Reshad Jhangeer-Khan, Rodrigues
- Mr Danny Thisbe, Ecotours

Movements of Staff

We had the following significant staff movements in 2021:

- **Mr Adrien Gelle** was appointed on 4th January 2021 as Scientific Data Officer for the Fauna projects reporting to Mr Sion Henshaw, Fauna Manager. This is a new post which will develop protocols relating to data collection, entry, manipulation, management, storage and analysis.
- **Ms Teesha Baboorun** was recruited and joined MWF on 1st June 2021 as Flora Coordinator reporting to Ms Martine Goder, Flora Manager.
- **Ms Estelle Bastien** joined MWF on 19th July 2021 as Coordinator for the new project 'Friends of Mauritian Wildlife' reporting to Mr Jean Hugues Gardenne, Fundraising and Communications Manager.
- **Mrs Aurelie Henshaw**, now employed by Durrell Conservation Training (Mauritius), previously a MWF Echo Parakeet Coordinator, worked from August to December 2021 as part time Echo Parakeet Coordinator.
- **Ms Issabelle Desire** was promoted from Project Officer to Fauna Coordinator on 1st September 2021 and now reports to Mr Sion Henshaw, Fauna Manager.
- **Ms Anne-Sweety Edouard** joined MWF Rodrigues on the 1st October 2021 as Scientific Officer. She will provide support to the Rodrigues Manager focusing on the development of a Monitoring and Science programme including the management of data.

Training

- Durrell Conservation Training (DCT) assisted the Fauna projects with training. Key skills associated with Echo Parakeet, Passerine and Pink Pigeon project were identified and assessments devised and carried out.

- The Scientific Data officer attended two webinars run by Wildlife Acoustics, the creator of the Kaleidoscope software: one on bat call analysis on the 12th of May and the other on Kaleidoscope Pro Cluster Analysis for Birds and Land Animals (Intermediate), on the 25th of May. The objective was to learn how to use the Kaleidoscope Pro software to analyse and identify bird calls.
- A Wilderness First Aid course, organised by Durrell Conservation Training (DCT) and run by Vertical World was held at Ferney from the 27th of September to the 2nd of October 2021. The course was an intensive introduction to the application of First Aid in a Wilderness setting, with a special focus on the challenges faced on Round Island and with a maximum of 6 participants. Priority was given to staff who work on Round Island and islets but included some Fauna staff working in the Black River Gorges National Park.
- Fire Safety Training sessions were planned and one was delivered to the staff based on Ile aux Aigrettes which they found extremely interesting and helpful.
- An online course on Botany with the Royal Botanical Garden of Edinburgh was followed by four staff, two in Mauritius and two in Rodrigues. All found the course very interesting and helpful for their work.
- The Education staff attended on line training sessions run by Chester Zoo:
 - Lesson Planning on the 19th May
 - International Educators networking event on Wednesday 23rd June.
 - 'Train the trainer' on the 4th and 11th August
 - International Educators Networking online meeting on 6th December. Attendees were given the opportunity to share about the progress and success of their respective teams during 2021.
- The Scientific Data officer attended a Wildlife Acoustic online course for analysing AudioMoth data on the 1st December 2021.
- A webinar organised by UNDP Bureau for Policy and Program support and GEF SGP UNDP Mauritius on Driving Conservation Through the Community in SIDS.

Visitors

MWF in 'normal' years receives visits from our overseas partners and collaborators regularly during the year but with the Covid19 pandemic these were severely curtailed and remote meetings were held to discuss project matters and maintain contact. It was only from 1st October 2021, when Mauritius lifted the 14-day quarantine requirement for double vaccinated persons that we began to receive visitors once more.

- **Mr Noel Bergin**, Researcher, Aarhus University, was the first to arrive. He carried out research on the Human Wildlife Conflict on the Mauritius Fruit Bat (specifically on hindrances to use of nets) as part of his MSc studies, interviewing the public via questionnaires. He arrived in Mauritius on the 2nd October 2021 and returned in late January 2022.
- **Prof. Carl Jones**, MWF's Scientific Director, arrived in Mauritius on 11th October and left on the 21st November 2021. While in Mauritius he assessed the current conservation actions and advised where necessary.
- **Ms Rebecca Louch and Ms Rangsinee (Pam) Sankhom**, PhD Students with the University of Kent, arrived on the 14th October 2021 for around 6 months to carry out field work related to their PhDs. This is mainly the Echo Parakeet project but with some research on the Pink Pigeon and plants.

- **Dr Chris Ransom**, Director of Field Programmes and Ms Eleanor Harvie, Field Programmes Manager, Durrell, visited Mauritius from 19th to 29th October 2021. They both joined Durrell recently and were getting to know the Durrell projects in Mauritius.
- **Ms Katherine Bickerton**, a PhD candidate from the University of Kent in the UK, arrived in Mauritius on 26th October 2021 to conduct fieldwork towards her PhD. The work focusses on population modelling, and in particular the upcoming translocation of lesser night geckos from Gunner's Quoin to Round Island.
- **Dr Claire Raisin**, Field Programmes Coordinator - Madagascar & Mascarenes, Chester Zoo arrived in Mauritius on 6th November and left on the 18th November 2021. She is a regular visitor, visits the projects and discusses the support that Chester Zoo gives MWF. She would normally visit Rodrigues but was unable to do so due to the 7-day quarantine regulation in force.
- **Dr Stephane Buord**, Directeur scientifique des actions internationale and **Mrs Delphine Cabanis**, Technicienne de conservation from Conservatoire Botanique National de Brest (France) were in Mauritius from 22nd November to 5th December 2021. Their objective was to visit all the stakeholders under the CEPF funded project 'Zero extinction', assess progress and discuss actions going forward as well as support needed from CBN. The project covers both Mauritius and Rodrigues but they were unable to travel to Rodrigues due to the 7-day quarantine regulation in force.

Communication

Social Media

MWF is present on Facebook (17,832 followers) and LinkedIn (741 subscribers):

<https://www.facebook.com/MauritianWildlife>

<https://www.linkedin.com/company/the-mauritian-wildlife-foundation/>

Media

Regular requests are made from the local media for MWF to comment on current affairs regarding conservation and for visits to projects. Media reports related to Mauritian Wildlife Foundation actions are filed in our library and made available on request. The tables below list most of the coverage MWF obtained in 2021.

TV and Radio

Mauritius

Date	Media	Persons interviewed	Topic
16 Jan 21	MBC Tipa Tipa	Pascal Sk. Mucktoom	
26-Jul-21	Defimedia		<p>au-coeur-de-linfo-mv-wakashio-un-apres-lheure-du-constat-dans-le-sud-est</p> <p>https://defimedia.info/au-coeur-de-linfo-mv-wakashio-un-apres-lheure-du-constat-dans-le-sud-est</p>

04-Aug-21	France 24		Reportage -Le journal de l'Afrique-France24-IAA Grande manifestation au Ghana contre la vie chère • FRANCE 24 - YouTube
16-Sep-21	Radio1-facebook		Autour de Mahebourg https://fb.watch/81MO_U5FVw/
04-Jan-21	JT MBC	Jean Hugues Gardenne	BioOil (features Jean Hugues and Anse Quito)
21-Dec-21	MBC Online	Saving our Rarest Reptiles - YouTube	Saving our Rarest Reptiles

Rodrigues

Date	Media	Persons interviewed	Topic
27/01/21	TV and Radio news-MBC	Rodrigues Manager-Reshad Jhangeer-Khan	MWF's main Projects for 2021
03/02/21	TV and Radio news-MBC	Ecotour Officer-Stephen Kirsakye	The Impact of Covid 19 on Ecotourism in Rodrigues.
04/02/21	TV programme-MBC	Field Officer-John Cliff Jean	13-Minit Natir Rodrig: Bois de ronde (Carissa spinarum)
10/02/21	TV programme-MBC	AQNR Resoration Labourer-André Noel Philippe	13-Minit Natir Rodrig: Highly invasive species - La coqueluche (Pongamia pinnata)
10/02/21	TV and Radio news-MBC	Ecotour Officer-Stephen Kirsakye	MWF new project
19/03/21	TV and Radio news-MBC	Environment Educator-Liliana Meunier	Plant donation activity at the Batatran Government School
21/03/21	TV and Radio news-MBC	Environment Educator-Liliana Meunier	Presentation and plant donation activity at Allée Tamarin
25/03/21	TV programme-MBC	Environment Educator-Liliana Meunier	13-Minit Natir Rodrig: Bois Blanc
31/03/21	TV and Radio news-MBC	Rodrigues Manager and Environment Educator	Rodrigues Fruit Bat
01/04/21	TV and Radio news-MBC	Environment Educator-Liliana Meunier	Human Impact on 'Bois puant'
08/04/21	TV programme-MBC	Anse Quito Senior Nature Reserve Assistant-Jenifer Cesar	13-Minit Natir Rodrig: Bois Cabris
15/04/21	TV and Radio news-MBC	Environment Educator-Liliana Meunier	Activity with school gardener
19/04/21	Radio news-MBC	Rodrigues Manager-Reshad Jhangeer-Khan	Earth Day
10/05/21	Radio news-MBC	Environment Educator-Liliana Meunier	Red listed animals and plants of Rodrigues for the Endangered World Species Day event

Date	Media	Persons interviewed	Topic
11/05/21	TV and Radio news-MBC	Environment Educator-Liliana Meunier	Red listed animals and plants of Rodrigues for the Endangered World Species Day event
11/05/21	Radio news-MBC	Rodrigues Manager-Reshad Jhangeer-Khan	Red listed animals and plants of Rodrigues
21/05/21	TV and Radio news-MBC	Rodrigues Manager and Forest Restoration Assistant	Tortoise translocation activity in the Grande Montagne Nature Reserve
28/05/21	TV and Radio news-MBC	Grande Montagne Senior Nature Reserve Assistant	World Environment Day: Ecosystem Restoration
31/05/21	TV and Radio news-MBC	Nursery Officer-Martine Brasse Genave	Cafe marron (Ramosmania rodriguesii)
01/06/21	TV programme-MBC	Ecotour Officer-Stephen Kirsakye	13-Minit Natir Rodrig: Bois bouteille
02/06/21	Radio news-MBC	Rodrigues Manager-Reshad Jhangeer-Khan	World Environment Day 2021 and the work MWF do in Rodrigues
05/06/21	TV and Radio news-MBC	Rodrigues Manager-Reshad Jhangeer-Khan	World Environment Day 2021 activities in the Anse Quitor Nature Reserve
07/07/21	Radio news-MBC	-	RRA-MWF agreement signing ceremony was announced on the local radio news
07/07/21	TV and Radio news-MBC	Rodrigues Manager-Reshad Jhangeer-Khan	RRA and MWF Agreement signing ceremony
15/07/21	TV news-MBC	Conservation Director-Vikash Tatayah	UNDP GEF SGP MWF Rodrigues' AQNR co-funded restoration project agreement signature
03/08/21	TV programme-MBC	Ecotour Officer-Stephen Kirsakye	13-Minit Natir Rodrig: Bois chauve-souris
03/08/21	Radio-Radio 1	Rodrigues Manager-Reshad Jhangeer-Khan	Conservation work in the AQNR, past and future
10/08/21	TV programme-MBC	Nature Reserve Officer-Anieta Shan Yu	13-Minit Natir Rodrig: Bois chandelle
20/08/21	TV news-MBC	Rodrigues Manager-Reshad Jhangeer-Khan	Tree cutting near GMNR
13/09/21	TV news-MBC	Rodrigues Manager-Reshad Jhangeer-Khan	Conservation work in the AQNR
30/09/21	TV programme-MBC	Ecotour Ranger-Jenetta Abdool	13-Minit Natir Rodrig: Bois cerf
06/10/21	Radio news-MBC	Environment Educator-Liliana Meunier	The launching of the UNDP project in AQNR.
13/10/21	TV news-MBC	Rodrigues Manager and Senior Nature Reserve Assistant	Anse Quitor project
14/10/21	TV programme-MBC	Nature Reserve Officer-Anieta Shan Yu	13-Minit Natir Rodrig: Bois loubine
20/10/21	TV news-MBC	Ecotour Officer-Stephen Kirsakye	Ile Cocos activities with Alternative livelihood workers.

Date	Media	Persons interviewed	Topic
27/10/21	TV news-MBC	Rodrigues Manager-Reshad Jhangeer-Khan	Tourism Sustainable Livelihood Programme in Rodrigues
10/11/21	Radio news-MBC	Ecotour Officer-Stephen Kirsakye	Rodrigues programme: 'Nu amene zot' at GMNR
19/11/21	Radio news-MBC	Ecotour Ranger-Jenetta Abdool and 1 restoration labourer	Rodrigues programme: 'Nu amene zot' at AQNR
20/11/21	Radio news-MBC	Rodrigues Manager-Reshad Jhangeer-Khan and Environment Educator-Liliana Meunier	Participation of volunteers in the Island Wide Bat Count
22/11/21	TV news-MBC	Senior Nature Reserve Assistant-Jenifer Cesar	Restoration activities in the AQNR
23/11/21	Radio-MBC Le Mag	Environment Educator-Liliana Meunier	Rodrigues Fruit Bat
24/11/21	TV news-MBC	Project Support Officer-Alfred Begue and Environment Educator-Liliana Meunier	Bat count at roost site
06/12/21	TV news-MBC	Senior Nature Reserve Assistant-Jenifer Cesar	Restoration activities in the AQNR
08/12/21	TV news-MBC	Environment Educator-Liliana Meunier	Conservation of the Fauna and Flora of Rodrigues

Newspapers

Mauritius

Date	Media	Topic	Page
21-Feb-21	Weekend	Maurice en situation de catastrophe concernant la production de fruits	Pg 48-49
13-Jun-21	Weekend	Mono Bunwaree-Naufrage du-MV Wakashio	Pg 28
26-Jun-21	Defiplus	A St Brandon-Dangereuse la station meteo doit etre demolie	Pg30
09-Jul-21	Le Mauricien	Un protocole d'accord signe pour la conservation de la biodiversité -Le Mauricien-9jul21	Pg 5
02-Aug-21	Lexpress	les écologistes tirent la sonnette d'alarme	
04-Nov-21	Lexpress	Changement Climatique-ces dernieres annees la deforestation n'a jamais cesse	Page 5
30-Nov-21	lexpress	Crecerelles de maurice-des oisillons prendront bientot leur envol	Page 6
	Lexpress	La Kestrel devient L'emblem de L'ile Maurice	
	Lexpress	Faire de la crecerelle l'emblem de la Republique de L'ile Maurice	
26-Dec-21	Weekend	La Crecerelle-Un message d'espoir	Page 20

26-Dec-21	Weekend	La chauve-souris - la rousette qui continue de devorer nos fruits-Hardy	Page 51
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Rodrigues

Date	Media	Topic	Page
08/01/21	Newspaper-La vie Catholique	Découverte-MWF Rodrigues Ecotourism at the GMNR Ecotour Officer-Stephen Kirsakye	
23/09/21	Newspaper-L'express	Actions carried out by MWF Rodrigues - Rodrigues Manager-Reshad Jhangeer-Khan	
08/10/21	Newspaper-La Vie Catholique	Rodrigues Autonomy celebration regarding conservation in Rodrigues Rodrigues Manager-Reshad Jhangeer-Khan	
05/11/21	Newspaper - Global Trees Campaign	Threatened trees in the Republic of Mauritius: The final stand of many species	

Online source

Mauritius

Date	Media	Topic	Link
24-Feb-21	Babel Voyage	La Mauritian Wildlife-la biodiversité mauricienne comme mission	https://babel-voyages.com/fr/la-mauritian-wildlife-foundation-la-biodiversite-mauricienne-comme-mission
19-Feb-21	LaGazette	La vie reprend son cours sur l'île aux Aigrettes	https://www.lagazette-mag.io/la-vie-reprend-son-cours-sur-lile-aux-aigrettes/
03-Mar-21	aufait	Vikash Tatayah, Directeur de la conservation à la MWF : « Nous avons perdu plus de trente espèces d'animaux	https://aufait.media/2021/03/03/vikash-tatayah-directeur-de-la-conservation-a-la-mwf-nous-avons-perdu-plus-de-trente-especes-danimaux/
03-Mar-21	Global Trees	Championing the women working with Global Trees Campaign, Interview of Martine Goder	https://globaltrees.org/news-blog/championing-the-women-working-with-gtc/
13-Apr-21	Wee Blue Dot	A Conservation Podcast by Katie Macfarlane	
15-Jun-21	UNDP	UNDP - GEF Small Grants Programme supports 10 sustainable development projects in Mauritius and Rodrigues	
25-Jul-21	Mainichi Newspapers	Heavy oil spill off Mauritius, impact fears One year stranding, hull removal not proceeding _ Mainichi Shimbun	https://mainichi.jp/articles/20210725/ddm/007/030/060000c
29-Jul-21	The National News	Disaster in paradise: how Mauritius cleaned up a catastrophic oil spill	Disaster in paradise: how Mauritius cleaned up a catastrophic oil spill (thenationalnews.com)
28-Jul-21	The Guardian	New IUCN green status launched to help species 'thrive, not just survive'	https://www.theguardian.com/environment/2021/jul/28/new-iucn-green-status-launched-to-help-species-thrive-not-just-survive-aoe?CMP=Share_iOSApp_Other
10-Aug-21	Scope	Projet de translocation unique dans son genre	https://www.lemauricien.com/scope/scope-1695-mardi-10-aout-2021/440029/
11-Oct-21	UNDP-GEF	UNDP-GEF Small Grants Programme supports a community-led restoration action in the Anse Quitor Nature Reserve, Rodrigues.	https://www.mu.undp.org/content/mauritius_and_seychelles/en/home/news-centre/announcements/undp---gef-small-grants-programme-supports-a-community-led-terre.html
13-Oct-21	Mongabay	Wildlife releases have a mixed record, and climate change complicates things	(mongabay.com)

Date	Media	Topic	Link
02-Nov-21	Global Child Mauritius	The Force of Nature	https://m.facebook.com/watch/?v=219911066906725&_rd
06-Nov-21	Mauritius Broadcasting Corporation	Environnement _ Dr Vikash Tatayah récompensé pour le bon travail effectué au sein de la MWF	https://mbradio.tv/article/environnement-dr-vikash-tatayah-r%C3%A9compens%C3%A9-pour-le-bon-travail-effectu%C3%A9-au-sein-de-la-mwf
18-Dec-21	GIS webiste	UNESCO: The PM unveils announcement certificate of BRGBO Biosphere Reserve	https://gis.govmu.org/SitePages/ReadMore.aspx?IDR=871
19-Dec-21	Defimedia	Kestrel déclaré oiseau national de Maurice : « Un symbole d'espoir pour la flore et la faune », dit le Dr Vikash Tatayah	Kestrel déclaré oiseau national de Maurice : « Un symbole d'espoir pour la flore et la faune », dit le Dr Vikash Tatayah Defimedia
18-Dec-21	Defimedia	Kestrel represente l'espoir pour la fauna et la flore de Maurice-Vikash Tatayah	https://defimedia.info/categorie/tel-eplus/live-news
	voya-g.com	Demande pour que la Crécerelle devienne un des emblèmes de Maurice	https://voya-g.com/demande-pour-que-la-crecerelle-devienne-un-des-emblemes-de-maurice/

Rodrigues

Date	Media	Persons interviewed	Topic
02/02/21	Short film-Online	Rodrigues Manager-Reshad Jhangeer-Khan	British High Commission: Voices and Ambitions of MWF Rodrigues
25/02/21	Newspaper online	British High Commissioner	COP26: Climate Voices and Ambitions of Rodrigues
15/09/21	Webinar-Online	Rodrigues Manager-Reshad Jhangeer-Khan	MWF Rodrigues Conservation actions

Others

April 2021	Botanica Festival organised by Unverscience (Paris).	video on <i>Erythroxylum sideroxyloides</i> (Bois de ronde)
Received July 2021	Durrell Wildlife Magazine	Durrell
Received July 2021	Chester Zoo Newsletter	The Roost-Bat Newsletter-2nd edition

Local Committees, Consultations and Workshops

National Committees

MWF continued to actively participate in various national committees: National Ramsar Committee, National Invasive Alien Species Committee, Marine Spatial Planning and Wakashio-related eg Integrated Environment Monitoring Plan meetings, National Oil Spill Contingency Plan Coordination Committee, National Crisis Committee and in policy dialogues.

MWF is represented on the National Eco-School committee.

Consultations

MWF was closely involved in nearly all meetings, dialogues, plans etc. related to the Wakashio oil spill. The COVID-19 pandemic stalled several national consultations since physical gatherings were banned or severely restricted. Nevertheless, MWF participated in several key national meetings around the National Oil Spill Contingency Plan review, Projet de dialogue publique sue la biodiversité, Implementation status for previous National Invasive Alien Species Strategy and Action Plan 2010-2019, Nationally Determined Contribution, 10 year Master Plan for the Environment, Common Country Assessment led by UNITAR and UNDESA on a UN/Government of Mauritius joint initiatives towards green recovery and long-term SDG planning.

We also contributed to regional and international policies such as the Birdlife Africa Marine Strategy.

Conferences and Workshops

These can be overseas or local. MWF receives a lot of invitations but will select to attend on various criteria which include whether it is fully funded (overseas), the relevance to MWF's work or to influence national policy.

Some attended were:

- Update of the National Oil Spill Contingency Plan
- IUCN World Congress in Marseilles, France (remotely)
- Half Day Workshop to present the Outcomes of the project 'Enhancing Resilience to Climate Change in the Republic of Mauritius' under the Adapt'Action Programme
- Validation workshop for the Revised National Climate Change Adaptation Policy Framework
- European Association of Zoos and Aquaria (EAZA) Pigeon and Dove workshop
- Observatoire de l'Environnement
- Africa's Deep Seabed Resources Project Workshop
- Carrying Capacity of the Lagoon around Mauritius and Rodrigues.
- Marine Spatial Planning
- The Environmental Education Association of Southern Africa (EEASA) 39th International conference organised by the Mauritius Institute of Education (MIE). The online conference was held for four days between 21 -24 June 2021 and its theme was "Rethinking Education for Sustainability in an Era of Uncertainty: Opportunities and Challenges".
- WIO Symphony sensitivity workshop, 2nd of September 2021
- Site casework: Saving Africa's most iconic sites from damaging development. Webinar on: Empowering BirdLife Africa Partners to take action, 8th and 9th September 2021
- A round table organized by the British High Commission and UNDP on 22nd September
- A workshop on the propagation methods for rare plants at Ebony Forest on 8th October 2021

- Two full day workshop on 25th and 26th October for the review of the NIASSAP (National Invasive Species Strategic and Action Plan). Information about MWF work on invasive species over the past 10 years was shared with the team
- The ‘National Validation Workshop on the Review of the National Oil Spill Contingency Plan (NOSCP)’ in October 2021, organized by the Ministry of Environment and UNDP.
- WIO Symphony Progress Workshop on 27th October
- The Third workshop of the Africa’s Deep-Sea Resources Project jointly organized by ISA, the Africa Union, the Norwegian Agency for Development Cooperation and the Government of Mauritius.

Presentations

- COP26 -Climate Voices and Ambitions of Rodrigues, Cotton Bay Hotel, Rodrigues. Presentation by the MWF Rodrigues Manager on: Panel 2 ‘Working together towards SDG 13 – Nature Based Solutions’, 25th of February 2021
- ‘Conservation in the land of the dodo’ for Central European University MSc students
- ‘Status on Ecosystem restoration on St Brandon’ for UNDP Invasive Alien Species project
- ‘Mauritius Fruit Bat’ presentation to University Leibniz, Germany
- ‘Mauritius fruit bat presentation’ to Media Trust (Mauritius)
- ‘To cull, or not to cull, bat is the question!!’ for the International Berlin Bat Meeting
- ‘Mauritius and Rodrigues bird red-list’ for BirdLife Africa coffee meeting
- ‘Wildlife Conservation in Mauritius and the Law’ for ENS Africa LLM students
- MWF Staff Induction presentations of MWF’s work
- ‘Wakashio oil spill’ for Greenpeace Africa
- ‘Wakashio the dark side of marine shipping’ for University of Manitoba
- Junior Chamber International, Mon Plaisir Amphitheatre, Rodrigues. Presentation by the MWF Rodrigues Manager on the Environment Forum Panel, 3rd of June 2021
- Presentation on Endemic birds to journalists, June 2021, Sion Henshaw and Vanessa Coralie.
- Presentation on Mauritius Fody project, Webinar to Accenture staff, June 2021, Sion Henshaw.
- Signature of the RRA-MWF MoU, Rodrigues Regional Assembly Central Administration, Port Mathurin, Rodrigues – Presentation by the MWF Rodrigues Manager on: Preservation and Conservation of Biodiversity in connection with the Airport Development Project, 7th of July 2021
- MWF Media Webinar Series. Presentation by the MWF Rodrigues Manager on: Fauna and Flora Conservation in Rodrigues, 15th of September 2021
- Scientific Data Officer presented the AudioMoth project during Ebony Forest’s annual conservation conference themed on research this year, on Thursday 11th November 2021
- DIS-MOI (Droits Humains-Océan Indien), Mon Plaisir Amphitheatre, Rodrigues - Presentation by MWF Rodrigues Ecotour Officer on: Environmental Conservation Actions by MWF in Rodrigues, 10th of December 2021.

Research and Publications

Research

There are a number of research initiatives being conducted by MWF, many in collaboration with overseas partners and other initiatives are under development. They are listed below.

- Tortoise movement behaviour
- Optimal survey design and modelling to track species abundance trends
- Weather and soil erosion on Round Island
- The movement behaviour of Red-tailed Tropicbirds
- The movement behaviour of Round Island Petrels
- Impact of invasive ants on Round Island
- Modelling optimal strategies for the translocation of lesser night geckos into the predator packed system of Round Island
- Genetic management of threatened plants and reptiles on the islands
- Determine the success of invasive species eradications and species reintroductions
- Coastal invertebrate communities of the southeast islets in response to the Wakashio oil spill
- Tracking of Pink Pigeons
- Supplementary feeding of Mauritius Olive White-eyes
- PhD study 'Examining the mating strategies of the Mauritius Fody on Ile aux Aigrettes and the consequences for breeding success and population dynamics'
- Efficacy of Goodnature A24 re-setting instant kill traps for maintaining low rat abundance within the Brise Fer mainland island
- PhD study 'The spatio-temporal dynamics of supplementary feeding and its effect on demography and reproductive fitness in sympatrically occurring endangered bird species, namely the Echo Parakeet'
- PhD study 'Conservation genomics and disease of echo parakeets'.
- Genomic research for the Mauritius Kestrel, Pink Pigeon, Echo Parakeet and Olive White-eyes
- A multi-species approach to confirm distribution of Threatened Mauritian birds in the Bambou Mountains (Mauritius) through audiomoths
- Ancient DNA research of cores from Mauritius to describe historical habitats and guide restoration
- Rodrigues Fruit Bat (*Pteropus rodricensis*) long-term data analysis with Chester Zoo (Dr Claire Rasin) and University of Chester Department of Biological Sciences Senior Lecturer in Conservation Biology (Dr Achaz von Hardenberg).
- Observation of 2 Rodrigues endemic snails (*Tropidophora articulata* and *Dancea rodriguezensis*) in enclosures in the Grande Montagne Nature Reserve with Bioculture Joint Managing Director, Owen Griffiths.
- Ongoing long-term research of crickets and grasshoppers by Dr Sylvain Hugel in the GMNR and across Rodrigues.
- Ongoing research on the connectivity and phylogeny of the Hibiscus genus in the Indian Ocean with Missouri Botanical Garden (Dr Christine E. Edwards & Brock Mashburn)

Publications

The following publications were issued in 2021 which had a connection with MWF's work or a MWF author. All publications on Mauritian species are filed in our library and made available to staff and researchers.

- Fogell, D.J., Tollington, S., Tatayah, V., Henshaw, S., Naujeer, H., Jones, C., Raisin, C., Greenwood, A. and Groombridge, J.J., 2021. Evolution of Beak and Feather Disease Virus across Three Decades of Conservation Intervention for Population Recovery of the Mauritius Parakeet. *Diversity*, 13(11), p.584.
- Gunner, R.M., Holton, M.D., Scantlebury, D.M., Hopkins, P., Shepard, E.L.C., Fell, A.J., Garde, B., Quintana, F., Gómez-Laich, A., Yoda, K., Yamamoto, T., English, H., Ferreira, S., Govender, D., Viljoen, P., Bruns, A., van Schalkwyk, O.L., Cole, N.C., Tatayah, V., Börger, L., Redcliffe, J., Bell, S.H., Marks, N.J., Bennett, N.C., Tonini, M.H., Williams, H.J., Duarte, C.M., van Rooyen, M.C., Bertelsen, M.F., Tambling, C.J., & Wilson, R.P. (2021) How often should dead-reckoned animal movement paths be corrected for drift?. *Animal Biotelemetry*. 9, 43. <https://doi.org/10.1186/s40317-021-00265-9>.
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- Roesch, M.A., Hansen, D.M., & Cole, N.C. (2021) Understanding demographic limiting factors to species recovery: Nest-site suitability and breeding ecology of *Phelsuma guentheri* on Round Island, Mauritius. *Global Ecology and Conservation*, 30, e01761. <https://doi.org/10.1016/j.gecco.2021.e01761>.
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- van der Schyff, V., Yive, K.N.S.C., Polder, A., Cole, N.C., Tatayah, V., Kylin, H., & Bouwman, H. (2021) Persistent organic pollutants in sea bird eggs from the Indian Ocean's Mascarene Basin. *Science of the Total Environment*. 771, (2021) 145348. <https://doi.org/10.1016/j.scitotenv.2021.145348>.
- Vogel, G., Probst, J-M., Deso, G., Hawlitschek, O., Cole, N., Florens, F.B.V., & Dubos, N. (2021) Checking back two centuries: a key criterion to identify the wolfsnake, *Lycodon aulicus* (Linnaeus, 1758), in the Mascarene Islands. *Herpetology Notes*. 14, 309-315.
- Baptiste G, Wilson R, Fell A, Cole N, Tatayah V, Holton M, Rose K, Metcalfe R, Robotka H, Wikelski M, Tremblay F, Whelan S, Elliott K, Shepard E (2021 published on-line) Ecological inference using data from accelerometers needs careful protocols. *Methods in Ecology and Evolution*.
- Tatayah, V. 2021. *Nesoenas mayeri* (Green Status assessment). *The IUCN Red List of Threatened Species* 2021: e.T22690392A2269039220213.
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- Nicoll M, Jones C G, Groombridge J, Henshaw S, Ruhomaun K, Tatayah V., Zuel N & Norris K (published online 2021). Contrasting recovery trajectories of four reintroduced populations of the Endangered Mauritius Kestrel (*Falco punctatus*). *Ibis*. <http://doi.org/10.1111/ibi.12987>
- Grace M et al, incl. Tatayah V (2021) Testing a global standard for quantifying species recovery and assessing conservation impact. *Conservation Biology*.
- Ferrière C, Zuël N, Ewen J G, Jones C G, Tatayah V., & Canessa S. 2021. Taking control of risky decisions in endangered species conservation (Response to Converse & Sipe (2021) and Stojanovic & Crates (2021)). *Animal Conservation*. 24 (2021) 165–166

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The following are IUCN Red List assessments:

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- Tatayah V, Jhangeer-Khan R & Bégué J A (2021). *Pandanus heterocarpus*. The IUCN Red List of Threatened Species 2021: e.T98994866A98995074.
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- Tatayah V, Jhangeer-Khan R & Bégué J A (2021). *Hyophorbe verschaffeltii*. The IUCN Red List of Threatened Species 2021: e.T38582A67537366.
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- Tatayah V, Jhangeer-Khan R & Bégué J A (2021). *Foetidia rodriguesiana*. The IUCN Red List of Threatened Species 2021: e.T164111373A164117307.
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- Tatayah V, Jhangeer-Khan R & Bégué J A (2021). *Hibiscus liliiflorus*. The IUCN Red List of Threatened Species 2021: e.T149620146A149822151.
- Tatayah V, Schmidt H, Jhangeer-Khan R & Bégué J A (2021). *Diospyros diversifolia*. The IUCN Red List of Threatened Species 2021: e.T173545A1389441.
- Tatayah V, Baider C L, Jhangeer-Khan R & Bégué J A (2021). *Polyscias rodriguesiana*. The IUCN Red List of Threatened Species 2021: e.T32503A164117145.
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- Tatayah V, Jhangeer-Khan R & Bégué J A (2021). *Dombeya rodriguesiana*. The IUCN Red List of Threatened Species 2021: e.T164111324A164117292.
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- Tatayah V, Baider C L & Florens V (2021). *Badula ovalifolia*. The IUCN Red List of Threatened Species 2021: e.T68122953A68122956.
- Cole, N. (2021) *Bolyeria multocarinata*. The IUCN Red List of Threatened Species 2021: e.T2864A13483086.
- Cole, N. (2021) *Cathetorhinus melanocephalus*. The IUCN Red List of Threatened Species 2021: e.T165001830A165001853.
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- Cole, N. (2021) *Phelsuma edwardnewtonii*. The IUCN Red List of Threatened Species 2021: e.T17432631A17432636.
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COVID-19 Pandemic

Mauritius had been 'COVID-19 safe' at the end of 2020 with no cases of Coronavirus reported in the population until January 2021 where there was one reported incident. Vaccinations for key workers were given priority then opened up for persons over 60 in the first week of March 2021.

On Friday 5th March 2021 three cases of persons testing positive for COVID-19 in the population at large, were announced. The number of infected persons then climbed into the hundreds. MWF asked most office staff to work from home as from Monday 8th March and everyone to put into practice strict hygiene precautions, physical distancing and mask wearing. Test and trace was actioned by the Government and a lockdown implemented on 10th March 2021. Round Island was evacuated that same day and arrangements made to staff Ile aux Aigrettes. MWF obtained Work Access Permits for key staff on Monday 15th March 2021 and GDEWS and the field station sites in the Black River Gorges National Park were covered by staff visiting during the day. All staff who were able to, worked from home. Borders were closed and flights to Rodrigues not available for passengers. Rodrigues continued to work normally although the population were advised to take precautions such as mask wearing and group gatherings such as church services were banned.

New to this lockdown were red zones where special permits were required to enter and leave. These were areas of high infection and complicated movement for those who were working, often necessitating a long detour to get round the zone. Applications were made for special red zones Work Access Permits, for those staff that had to move in and out of red zones.

The COVID-19 nationwide lockdown was relaxed on the 1st of May, Work Access Permits were no longer necessary, and alphabetical ordering for accessing supermarkets and shops was discontinued. Restaurants, group sports, the beach and the National Park remained closed to the public. Meeting in groups of more than ten people was not permitted. Over the course of the month, COVID-19 cases continued to occur, and "red zone" classifications continued to be enforced in areas where many cases were present.

The COVID-19 restrictions continued during June and July 2021. Over the course of the month, COVID-19 cases continued to occur, and "red zone" classifications continued to be enforced in areas where many cases were present. A track and trace system was in place to remove infected and potentially infected persons from interacting with the public.

The number of daily positive COVID-19 cases record peaked in Mauritius in August 2021 and in September 2021 there was confirmation of the delta variant on Mauritius.

Mauritius borders opened without quarantine for fully vaccinated travellers on 1st October 2021. This meant that it was now viable to begin bringing overseas staff to Mauritius to work on the projects. We also started to receive visitors and the Ecotour activity picked up with more tourists in Mauritius. Schools also opened more days, and many economic activities resumed to pre-COVID 19 levels.

COVID-19 infection rates remained high in October, and several staff were affected during the month either having been in close contact with a COVID-19 positive individual and needing to self isolate or just showing flu like symptoms.

Rodrigues flights opened from the 1st October but were restricted to returning Rodriguans and with a 14 day quarantine period. Rodrigues remained free of COVID-19 up to October when the cases were 'imported' and continued life as normal except that the tourism industry has not functioned and the 'Tourism Alternative Livelihood Scheme' was brought back.

On the 12th November 2021 the Government brought in restrictions to limit the spread of the disease. These were due to end on the 15th January 2022 but have been extended to 31st March 2022. COVID-19 infection rates remained high in December and we saw the impact growing within MWF with staff falling ill and staying at home.

The vaccination programme continued throughout the year and has been successful in providing two doses to most adults in Mauritius who wish to be vaccinated. Booster doses are also available.

Wakashio Shipwreck and Oil Spill

The shipwreck, oil spill and emergency actions: 2020

On the 25th July 2020, MV *Wakashio*, a Panama flagged tanker carrying over 4000 tons of heavy oil, lubricants and diesel ran aground only 2 km away from Ile aux Aigrettes. Oil started leaking out of the tanker on Thursday 6th August. Around 1000 T of various petroleum products spilled into the ocean, affecting Ile aux Aigrettes, the fragile marine ecosystem and the turquoise blue lagoon. Within days the oil patch moved further north and reached the four islets fringing the Mahebourg bay, Ile de la Passe, Ilot Vacoas, Ile au Phare (aux Fouquets) and Ile Marianne, key habitats for endemic reptiles such as the Bojer's Skink and the Lesser Night-gecko which have gone extinct from mainland Mauritius, or barely present (Bouton's Skink on extreme rock outcrops).

The full consequences to the Mauritian Wildlife Foundation and actions taken are reported in detail in the MWF Annual Report 2020.

One year on: 2021

The wreck remained on the reef in 2021 although the ship broke in half and the half which was freed was towed away and sunk out to sea. It took the authorities until February 2022 to completely remove all visible signs of the wreck. MWF prepared a contingency plan in the event there was an oil spill as there was oil remaining in the wreck although it was not known exactly how much. Buoys were positioned around the wreck in strategic places to catch the oil if it did leak and Polyeco, and National Coast Guard, as well as the Ministry of Environment, were prepared to act in the event of an oil spill (eg containment and clean-up). Polyeco were set up on the Pointe Jerome jetty.

The National Integrated Environmental Monitoring Plan is being implemented, with MWF heavily involved in terrestrial biodiversity monitoring. We have reported quarterly on the status of animals and plants on Ile aux Aigrettes and the South East Islets since January 2021. No immediate effects of the oil spill have been confirmed to date except on the Ile aux Aigrettes cricket, now been described as *Makalapobius aigrettensis*, after the island. The cricket has been seen irregularly, but we await the visit of the expert on the species, Dr Sylvain Hugel, to conduct density estimates

MWF is also contributing to the revision of the National Oil Spill Contingency Plan.