



First results in from Aldabra Giant Tortoise exclusion plots



The exclusion plots are designed to keep the giant tortoises out © R Baxter

Highlights of National Day Expo on Mahé



Some of the team members at the SIF stand © SIF

Successful National Day Expo on Praslin



Our Patron the President of the Republic of Seychelles meets Rio the black parrot for the first time © SIF

After more than a year, the tortoise exclusion plots built on Grande Terre as part of the Zürich-Aldabra Research Platform (ZARP) and SIF collaboration are starting to show some results.

Turf plant communities on Aldabra are unique, and are dominated by grass, sedge, and herb species. Aldabra Giant Tortoises are believed to be 'ecosystem engineers', as they are thought to influence the terrestrial ecosystem by modifying plant communities. They do this by browsing, trampling, disturbing soil in their resting areas, and dispersing plant seeds.

The densities of giant tortoises on eastern Grande Terre are thought to be higher than those of mammalian herbivores found in other grass-dominated ecosystems around the world. In similar studies that have focussed on mammalian herbivores, grazing pressure has been shown to help maintain a high diversity of plants and shape their structure, which in turn affects the animal community. Five exclusion and five control (no exclusion of tortoises) plots were established in 2014 in eastern Grande Terre, to study whether giant tortoises are indeed shaping the 'tortoise turf' plant communities on Aldabra. The 25 m² exclusion plots were constructed to keep giant tortoises out of the plots.

If giant tortoises do influence the turf plant community on Aldabra, we would expect to find lower species diversity and a change in plant structure (e.g. differences in plant height and coverage) in the exclusion plots in relation to the control plots. If giant tortoises do not influence the turf community, we would not expect to find any differences between the control and exclusion plots.



Progress of the exclusion plots since 2014 © W Falcon

On a recent visit to the study site, the difference between the turf plant community in the exclusion and control plots was evident. Compared to the control plots, in which tortoises are free to graze and move around, the exclusion areas had greener and taller plants, with particular species starting to show dominance.

This experiment will need to continue for several years before any conclusions can be drawn, but in combination with other ZARP projects, it will shed more light on the role of giant tortoises as ecosystem engineers on Aldabra.

As well as the expo on Praslin a three-day National Day expo was also held on Mahé this month and SIF were there to promote Seychelles' two World Heritage Sites.

The National Day expo was part of celebrations to exhibit the commerce and activities of Seychelles as a nation and this year the expo was held on Mahé and Praslin. The three-day expo on Mahé attracted a variety of businesses and organisations from around Seychelles. SIF once again participated with a stand in the 'Eco-village' area which was organised by the Ministry of Environment, Energy and Climate Change. The Eco-village was dedicated to all the organisations in Seychelles who are involved in the environment, be it through research, management, conservation or education.

The SIF stand attracted a large audience over the three days of the show with an estimated total of 500 people visiting. A range of items from the Vallée de Mai and Aldabra were on display, including a Coco de Mer nut and catkin, prickly purse of the Palmis, and Aldabra Giant Tortoise bones and scales. There was also a display of specimens collected by the Vallée de Mai research team, including a Seychelles Wolf Snake, Seychelles House Snake, Giant Black Scorpion and a Sooglossid Frog. All of these specimens were found dead and preserved for educational purposes.



Visitors to the stand getting involved in the activities © SIF

Several interactive games were also on offer on the SIF stand, and by far the favourite was the 'Coco de Mer challenge'. Members of the public were challenged to hold an entire Coco de Mer nut, the largest seed in the world, for as long as possible. The nut used was around 10 kg so this was no mean feat! Congratulations to Anwar Ali who held the record time of 36 mins 12 secs over the weekend. The expo was also an opportunity for people to voice their opinions on issues surrounding the survival of the Coco de Mer. People were invited to make a Coco de Mer 'pledge' on how they thought they could help protect this endemic palm, particularly in relation to Coco de Mer poaching.

The second Praslin National Day Expo was held on the 20th and 21st June. Many organisations on Praslin participated in the two-day expo, including the Vallée de Mai team who represented SIF.

The Vallée de Mai staff had spent many weeks preparing for the show and their hard work paid off with the stand well received by all those that visited. To bring the Vallée de Mai to the public the forest was recreated in the stand. Endemic palms and leaves lined the stand to create the forest canopy whilst playing in the background was the sounds of the streams and birds in the forest. The Duke of Edinburgh Award students had also contributed to the stand by creating some of the animals of the forest out of old flip flops, and male and female parts of the Coco de Mer from papier maché.



Visitors at the Vallée de Mai stand © SIF

A great way to show people the many species that depend on the Vallée de Mai palm forest is to have a display of specimens for people to examine. Some of the specimen jars from the education room were on display at the stand and many people were surprised that there were animals such as scorpions in the Vallée de Mai. The children in particular enjoyed looking at these animals, especially the wolf and house snakes. Other displays on the stand were a photo exhibition to show the public the evolution of the Vallée de Mai over the past 30 years, and a video and presentation of pictures of the Vallée de Mai projected at the stand.

The Friends of Vallée de Mai members of Praslin secondary school also showed their support by helping out with the games on the stand. They were great in getting the visitors to participate in games such as 'Guess the age of the black parrot chicks', 'Guess the weight of the Coco de Mer nut', and even 'Guess the sex of the giant tortoise'. Exciting prizes were awarded for the winners of each of the games on each day.



ZARP presentation at 6th international symposium of Frugivores and Seed Dispersal



The Comoros Blue Pigeon has been indicated as a main driver of the seed dispersal network on Aldabra © W Falcon

From 21st – 26th of June, international researchers joined together in Drakensberg, South Africa, to share findings on their Frugivores and Seed Dispersal (FSD) projects from around the world. Dr Dennis Hansen presented the preliminary results of PhD student Wilfredo Falcon's work on the seed dispersal interactions on Aldabra.

In recent years it has become evident that a large proportion of reptile species act as seed dispersers – both on islands and continents. Wilfredo has been working with the University of Zurich and SIF on Aldabra investigating the role of the Aldabra Giant Tortoise in Aldabra's seed dispersal network. A video presentation on the preliminary findings of this work was presented by Wilfredo's supervisor Dr Hansen at the symposium. Wilfredo's early results show that the Aldabra Giant Tortoise and Comoros Blue Pigeon are the main drivers of the seed dispersal network on Aldabra, but there are several other interesting observations as well such as the role of the Aldabra Tomato (*Solanum aldabrense*) in the network.



The Aldabra Giant Tortoise is another key driver of the seed dispersal network © Fotonatura

Wilfredo is using *S. aldabrense* as a model to study the effects of animal-mediated seed dispersal on plant population genetics. *S. aldabrense* was selected based on his initial network findings, as it is one of the most well-connected plants, with Aldabra Giant Tortoises, Madagascar Turtle doves, Comoros Blue Pigeons, and Madagascar Bulbuls all eating its fruits and potentially dispersing the seeds. A poster of this work was also presented at the symposium. For more information on this fascinating research you can watch Wilfredo's excellent video presentation through this link <https://youtu.be/A5AJI4Wb9vU>

Record breaking month for Green Turtle nesting on Aldabra



A Green Turtle on Aldabra retruning back to sea after nesting © A Burt

May was a record breaking month for Green Turtle nesting emergencies on Aldabra with a total of 1210 emergencies recorded on settlement beach alone, more than any other month on record!

Aldabra provides ideal nesting and feeding habitat for the endangered Green Turtle. The 52 nesting beaches on the outer rim of the atoll have been monitored for turtle tracks since 1980. Analysis of these data from the 1960s to 2008 showed a 500–800% increase in the Green Turtle nesting population over this period, with an estimated 3100



Volunteer Chris Tagg as the RNP team's half-parrot/half-parakeet mascot © SIF

We also took the opportunity to raise awareness on the threat of invasive alien species. The game 'Guess the invasive species' was hard for some but a great way to educate people on what an invasive species is and that even some of the commonest species in Seychelles (e.g. the Indian Mynah Bird) are not native. A special mention also to one of the Ecoschool students who visited Aldabra this year, Pearl Faure, who won the game on Saturday. The Ring-necked Parakeet eradication team chose a different method of reaching out to the public and created their own half-black parrot/half-parakeet mascot. This eye-catching costume certainly attracted attention but also was a great icebreaker when talking to members of the public. The team took the chance to try and gather more information on the whereabouts of the remaining birds, whilst also sensitising the public on why the parakeet poses a threat to the Seychelles Black Parrot.

All of the games and activities generated a great deal of interest amongst the visitors to the stand, and the expo provided a great opportunity to engage the public with the work that SIF undertakes. We look forward to the next expo!

Green parakeets are not always green



The yellow variation of the Ring-necked Parakeet © SIF

The Ring-necked Parakeet (RNP) is commonly known as the Kato ver or green parrot in Seychelles due to its bright green plumage. However, as a result of a genetic mutation some RNPs can have feathers of other colours. During the ongoing RNP eradication project in Seychelles, the team identified several bright yellow parakeets among the more common green birds. The yellow birds are the same species and are therefore identical in body shape to the green birds, with very long tail feathers but, instead of the characteristic green feathers, their entire body is covered with bright yellow plumage.

Throughout the course of the project several yellow birds have been culled by the RNP team, and until recently the team thought that all the yellow birds had been eliminated. However, a solitary yellow parakeet has recently been seen at Beoliere and a few other places. This particular bird has been difficult for the team to follow as it is not joining up with the rest of the remaining parakeets at any of the known feeding or roosting sites. It could be that the bird has separated from the larger group because it is nesting or it may be roosting in an unknown location.

The team needs to locate this bird and has narrowed down potential areas where it is likely to be seen to: Beoliere, Grand Anse, Port Glaud, Port Launay, Sans Soucis, Mare aux Cochons, Morne Blanc and La Batie. We are therefore appealing to the public for any information on recent sightings of this yellow parakeet. Please call or text the RNP team on 2523623 with any information you have on this yellow bird or any other parakeets, or email SIF on info@sif.sc, and the team will call you straight back or contact you as soon as they can. Please do not approach or try to catch any of these birds, as the few remaining ones are quite evasive, and such actions could make it harder for us to target them at a later stage. The team is making fantastic progress with this ambitious eradication project and we hope that with the public's help once again we can eliminate this threat to Seychelles' national bird, the Seychelles black parrot.



The Vallée de Mai team at the stand © SIF

The stand's prime position at the entrance to the expo meant that over 5000 people, including the President of the Republic of Seychelles, James Michel, passed through our stand. Rio the black parrot was also in attendance to make the VIP visit special. The President was happy to have his first up-close and personal encounter with a real Seychelles Black Parrot and was impressed with the SIF stand.

2nd World Environment Day Fun Run for Coco de Mer



The Vallée de Mai race team © SIF

To commemorate World Environment Day on 5th June SIF organised an 8 km race from Amitie to the Vallée de Mai with the aim of raising awareness amongst the Praslin community on the issue of Coco de Mer poaching. This was the second year running that SIF organised such an event for World Environment Day, after the fun run last year was so popular.

This year participants could either run or walk the 8 km from the airport to the Vallée de Mai on Praslin. The number of participants at the race was beyond our expectations with over 150 people from 19 organisations. Many of them were keen to compete for the shields that could be won for 1st, 2nd and 3rd place (by organisation) in each category.



Participants in the race © SIF

After completing the race and arriving at the Vallée de Mai the participants gathered on the deck for a short ceremony. The highlight of this ceremony was the communal reading of a pledge which read "Nou promet pour nou adopte en lapros prekosyon e entegre bann pratik prevansyon pour evit danze disparisyon sa pli gro lagrenn dan lemonn pour zenerasyon prezan e fitir." (We promise to adopt and integrate practical preventative measures to stop the disappearance of the largest nut in the world for present and future generations). To show our appreciation for their support, SIF presented each participant with a Coco de Mer keyring and also a certificate for each organisation.



Participants at the finish line at the Vallée de Mai visitor centre © SIF

The feedback from the participants was that they were really proud to have made their contribution towards the protection of the Coco de Mer and they gave their commitment to participating in this event again next year.

...turtling population over this period, with an estimated 3100–5225 females nesting annually (Mortimer *et al.* 2011). Subsequently Aldabra was declared to have the second largest population of nesting Green Turtles in the Western Indian Ocean, after Europa Island which has 2000-11000 females nesting annually. Now in 2015 it is apparent that the population of turtles at Aldabra is continuing to increase. In May alone 1210 total emergences were recorded just on settlement beach, and 590 of these resulted in a probable egg clutch. Conservative estimates suggest that this was from at least 249 individual females nesting.



Aldabra provides a safe haven for turtles © A Burt

If the population growth continues at the same rate it is possible that future population estimates will make Aldabra the most prolific nesting site in the Western Indian Ocean for Green Turtles. The increase so far is already a great achievement and is due to the 50 years of protection that has been afforded to Aldabra. Aldabra provides a much needed feeding and breeding refuge for these turtles which are classified as globally endangered due to the intense exploitation elsewhere of their eggs and meat, and entanglement in fishing equipment.

MSc thesis submitted on habitat use of Aldabra Giant Tortoises



Giant tortoises grazing on tortoise turf © D Hansen

Rowana Walton, SIF Communications Officer and University of Edinburgh MSc student, has recently submitted her thesis on the habitat use and preference of the Aldabra Giant Tortoise on Aldabra in collaboration with the University of Zurich under the Zurich-Aldabra Research Platform (ZARP).

With habitat loss and fragmentation widely recognised as the greatest threat to wildlife, a better understanding of the habitat use of a species is critical for conservation management actions. The Aldabra Giant Tortoise is dependent on Aldabra's vegetation for food, shade and water, making it vulnerable to factors that could cause habitat loss and fragmentation, such as climate change or invasive alien species. Rowana used a combination of remote sensing techniques, two years of GPS movement data from 31 giant tortoises that are being tracked under a parallel ZARP activity, and a 14-year data set from 12 giant tortoise monitoring transects on Picard, Malabar and Grande Terre, to study the habitat use and preference of the Aldabra Giant Tortoise.

As part of the study she created a classified terrestrial habitat map of Aldabra with GIS software using satellite images and *in-situ* habitat reference points. This terrestrial habitat map is the first of its kind for Aldabra using these techniques, and will be used in many terrestrial research programmes on the atoll. The map has eight habitat categories and shows that standard mixed scrub is the dominant habitat type on the atoll.

The GPS tracked tortoises showed a preference for grassland, or 'tortoise turf' (see first article), despite this habitat only accounting for a tiny proportion of the total land area of Aldabra. Conversely, pemphic scrub habitat was largely avoided by these tortoises. There was not any habitat preferences shown in either the dry or wet season by either the GPS-tagged tortoises or in the analysis of the tortoise transect data. Further analysis is needed to yield more conclusive results of the tortoise's seasonal habitat use.

The results of the thesis suggest that the grassland habitat of the atoll is of high importance to the giant tortoises despite its small proportion of the total habitat composition on the atoll. Further finer-scale research under ZARP is ongoing to improve understanding of the tortoises' relationship with their habitat, but Rowana's findings indicate that conservation management actions for the tortoises should focus on habitat protection and maintenance where possible.

Earthwatch coral training for Vallée de Mai ranger



Terence working on the survey with Earthwatch © SIF

Vallée de Mai ranger Terence Payet participated in an Earthwatch expedition on coral communities on Curieuse Island. Terence was one of four Seychellois who joined the expedition to learn more about the socio-economic impacts on coral communities.

The expedition was coordinated by Dr David Smith and Philippa Mansell from the University of Essex. The aim of the expedition was to design and implement a social survey on food security in relation to coral reefs on the islands of Mahé, Praslin, La Digue. Over four days the team took the survey around to members of the public and fishermen on the islands. The results gathered from the survey will help Earthwatch to investigate the impact of fishing on coral communities in Seychelles.

The expedition was beneficial for Terence as he learned how to design and implement a survey, as well of the experience with working with an international team. This experience will also be valuable in Terence's work as a ranger in the Vallée de Mai.

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Coco de Mer PhD student completes fieldwork



Emma (right) with Catherina Onezia working in the forest © C Kaiser-Bunbury

Emma Morgan, PhD student from ETH Zurich, has finished her third and final field season on the Coco de Mer.

Emma returned to Seychelles in May for one last time to complete the fieldwork for her PhD research on the population structure and reproduction of the Coco de Mer. In this final season she took the last measurements and collected the remaining leaf samples needed from seedling and adult Coco de Mers in the Vallée de Mai and from Curieuse. Emma will then extract DNA from these samples in Zurich, and the genetic information will be added to the data collected during the previous two years.



Some climbing of the Coco de Mer was necessary to obtain the samples © C Kaiser-Bunbury

Once back at the ETH, Emma will conduct her final lab work and all the data will be analysed and written up as scientific papers for her thesis. The first part of the research will focus on the genetic structure of the remaining Coco de Mer populations, including seed dispersal distances, inbreeding and genetic differentiation between the Praslin and Curieuse populations. This new information on reproduction, and an improved understanding of the natural population structure of the Coco de Mer, will aid SIF in advising on the management of this species in the future. A big thank you from Emma to the Vallée de Mai staff who have been invaluable in the collection of this data and provided much-needed support in the field.

Articles contributed by: *Rowana Walton, Nancy Bunbury, April Burt, Maria Brioché, Terence Payet, Annabelle Constance, Emma Morgan, Wilfredo Falcon.*