SIF News Letter

seychelles islands foundation

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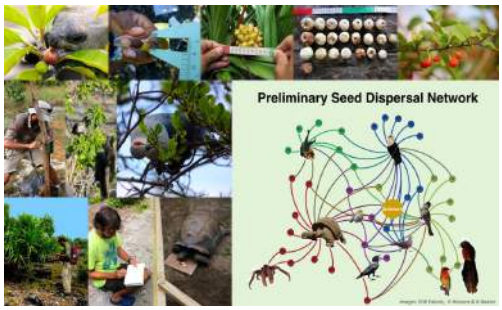
University of Zurich PhD student returns for second field season

Aldabra Giant Tortoise © S Balderson

Under the Zurich-Aldabra Research Platform (ZARP) collaboration, Wilfredo Falcón, a PhD student at the University of Zürich, is back on Aldabra for his second field season. Wilfredo is studying animal-mediated seed dispersal to understand: (a) how these plant–animal interactions are structured; (b) how different animals contribute to the dispersal of the endemic Aldabra Tomato Plant (*Solanum aldabrense*); and (c) develop a predictive model of seed deposition by Aldabra Giant Tortoises.

Based on the data collected by camera traps from Wilfredo's first field season last year and a literature review, the preliminary analysis of plant–animal interactions shows that Comoro Blue Pigeons and Aldabra Giant Tortoises interact with more plants than other animals. Moreover, fruits of the Aldabra Tomato Plant are preferred by seed-dispersing animals on Aldabra.



This season Wilfredo will carry out feeding experiments with Giant Tortoises and Aldabra Tomato Plant fruits to determine the effects of gut passage time on seed germination, continue collecting data on plant–animal interactions through camera traps, and conduct genetic analyses to assess the contribution of animals to plant dispersal within and between the islands of the atoll.

Few introduced Madagascar Fodies remain at Takamaka

The SIF EU-funded project on invasive species officially closed at the end of January 2015. The 4-year project has achieved many invasive species targets and firsts for the Seychelles' World Heritage Sites. There will be a special issue of the SIF newsletter dedicated to the project's many activities soon. Until then, we are delighted to close the project with the momentous news that the introduced Red-whiskered Bulbul has been confirmed eradicated from Assumption and therefore from Seychelles.

Red-whiskered Bulbul eradicated from Seychelles!

Red-whiskered Bulbul © D Hansen

We are delighted to announce the eradication of the introduced Red-whiskered Bulbul from the island of Assumption, and therefore from Seychelles. This marks the first successful large-scale introduced bird eradication in the world.

The Red-whiskered Bulbul (*Pycnonotus jocosus)*, native to Asia, is considered invasive in other parts of the world. The species was introduced to Assumption in 1977 from Mauritius. In only three decades, the population on Assumption grew from around six individuals to several thousand birds. The species' presence on Assumption was soon considered a serious threat to the biodiversity of nearby Aldabra Atoll, which lies only 27 km away at its closest point. At that time, Aldabra had the status of being the largest tropical island with no introduced bird species. To protect Aldabra's native species, conservationists called for the eradication of the bulbul from Assumption as early as the 1980s. Potential threats from the Red-whiskered Bulbul to Aldabra included competition for food with native bird species, potential hybridisation with the native bulbul, and transmission of novel diseases. The threats were nearly realised when a Red-whiskered Bulbul was discovered in a remote part of Aldabra in early 2012 but the bird was successfully targetted by the SIF team in July 2013.

In collaboration with Islands Development Company and Island Conservation Society SIF launched an eradication programme for the Red-whiskered Bulbul on Assumption in January 2012, after securing financial support from the European Union. A combination of mist-netting and shooting was used to target 5279 bulbuls over a 3-year period with a local and international team of three to ten staff. Only two bulbuls remained on the island after mid-May 2014. The penultimate bulbul was shot on 3rd November 2014 and the last bird targeted on December 18th. The team has since spent 6 weeks repeatedly combing the 11km^2 island of Assumption for signs of any remaining birds and this week confirmed that there are no other Red-whiskered Bulbuls on the island.

Five new Black Parrot nests this month

A chick found in a nest in an Albizia tree trunk © SIF

The discovery of five new Seychelles Black Parrot nests during January brings the total number of nests located so far this season to 18. Of these 18 nests only 10 are still active nests with chicks or eggs inside.

Since October the team, headed by ranger Terence Payet, has identified and monitored all potential nest sites in Fond Ferdinand, Praslin National Park and the Vallée de Mai. This month the black parrot team were kept busy visiting all the active nests every three days while also allowing time to search for new nests.

The team have also been monitoring nesting black parrots at other sites on Praslin where the birds are known to be active, such as Zimbabwe and Amitie. While most nests have been found in dead Coco de Mer (*Lodoicea maldivica*) trunks, three nests this season were in other species. One in an endemic Palmis tree (*Deckenia nobilis*), one in a Rubber tree (*Hevea brasiliensis*) and another in an Albizia (*Paraserianthes falcataria)*.

During nest monitoring the eggs are checked to make sure that they are still intact and being incubated by the female. If it is suspected that the hatching time has passed, the team checks whether the egg is infertile. Once the chicks hatch, they are weighed every few days to ensure that they are growing and they are ringed just before they fledge from the nest at around 35 days old.

A cat captured on camera at a Black Parrot nest site © SIF

Predation by invasive alien species has again proven to be a major problem for the black parrot during this breeding season. Through camera traps set up at a nest in Fond Peper, the team have observed cats climbing trunks and removing chicks from a nest. Eggs have also disappeared or been found broken in the nest which is probably due to rat predation. The team will keep monitoring the nests and the birds until the end of the season in March, and we look forward to reporting our first Black Parrot fledgling!

Mist nets ready at Takamaka © SIF

The invasive bird eradication team at Takamaka have been bolstered by the arrival of three new staff members in January that will help in efforts to eliminate the final few invasive Madagascar Fodies (MFs) in the area. Marcus Dubel, a former ranger on Cousin Island, and Katherine Raines and Jack West, who have both previously worked on the mynah bird eradication project on Denis Island and the SIF bird eradication on Assumption Island, bring additional knowledge and valuable experience to the team at Takamaka.

The new team have been working hard to complete a thorough and concise survey of the Takamaka area (for further details see article in November 2014 newsletter), with only the outskirts still to be surveyed. So far the team have identified very few Madagascar Fodies in the area, a promising result which is due to the previous two seasons of control efforts by the team.

Of the Madagascar Fodies that have been identified, one male has already been shot. The elusive and infamous 'Rasputin' is still at large; this male has been known by the Takamaka staff since the start of the project and has proved exceptionally difficult to target. Mist-netting has also started in some areas of Takamaka in addition to shooting, to increase the chances of catching the final few Madagascar Fodies in the area.

Over the upcoming weeks the team will be monitoring Rasputin to identify suitable shooting positions, as well as completing the survey. We hope to soon be in a position to report that Aldabra has re-gained its status of 'introduced bird-free'.

Conditions at Takamaka have been very dry recently with the area not receiving rain for a little over a month, despite it being the wet season. This means the team has had to ration water usage at the camp, fetching brackish water from a nearby pool for washing and cleaning purposes. This is not ideal when the camp is at full carrying capacity so the team hopes to get both rain and Rasputin in the near future.

My Aldabra experience by Dainise Quatre

Dainise on Aldabra © SIF

I first stepped foot on Aldabra Atoll on the 17th of February 2014. The first thing that I thought as I arrived was "What an amazing place to be!" Although I had been sad to leave my family at home I was very excited and proud of myself to finally be able to visit this place, which so many people had talked to me about and I had always dreamed to see myself. I was warmly welcomed by the Aldabra team and it didn't take long for me to feel like a member of this new 'family'. I joined the research team as a Ranger and started my journey of discovery.

I wanted to learn and experience as much as I could whilst I was on Aldabra, and during the 8 months that I spent there I learned something new every day. I was trained by the best team and the greatest supervisor Heather Richards, Aldabra Scientific Coordinator, and also Catherina Onezia, Senior Ranger and Training Officer. They both shared their excellent knowledge and skills that they had learned themselves while working on the atoll. Under their guidance I was able to expand and improve my field monitoring and data collection skills, and become more efficient in my time management. It was challenging at times but I persevered.

Dainise in action on Aldabra © SIF

An aerial view of Assumption Island © J van de Crommenacker

The current team of four, headed by Team Leader Jessica Moumou, with hunters from New Zealand, the UK and Canada, were unanimous in declaring success. The team cited their extensive coverage and knowledge of the island, the long period of time with very few remaining bulbuls, and the bulbuls' highly social and vocal behaviour as reasons for their certainty.

Within Seychelles, the Red-whiskered Bulbul occurred only on Assumption and briefly on Aldabra so its removal from both islands also marks its eradication from the entire country. As the first large-scale avian eradication in the world, the success is a milestone in international conservation and invasive species management and should open the way for introduced bird eradication operations on islands worldwide. We would like to thank all those that have been involved in or supported this project over the past three years, this incredible achievement would not have been possible without you.

SIF paper published on control methods of invasive Sisal

Former Sisal stand on Aldabra © SIF

The online journal *Conservation Evidence* has published an SIF-authored paper on the effectiveness of different herbicide concentrations and application methods for the control of invasive sisal on Aldabra. Following repeated failed attempts in the past using other methods to eradicate sisal, experimental trials were done over a 7-month period in 2013/2014 to determine the most effective and least disturbing control method for the planned full eradication of this invasive species.

The herbicide application methods trialled were highly localised (plant specific), so there was no general spraying of any plants other than sisal and care was taken to ensure that no herbicide came into contact with other plants or the soil. Individual sisal plants were allocated different 'treatment groups' and treated with varying concentrations of herbicide which was either sprayed on the plant or applied directly to the cut growing tip. There was also a 'control' group which received no treatment.

The trials found that only high herbicide concentration applied directly to the growing tip of the plant killed adult plants. Smaller plants could also be killed with lower herbicide concentrations but spraying was shown to be completely ineffective in controlling sisal. Fortunately even at the high concentration necessary to kill adult plants there were no negative effects on the surrounding native vegetation.

The Aldabra sisal eradication is now nearing completion; its success is largely due to this carefully conducted preliminary trial, the results from which were used to guide the full eradication. The findings should also be useful elsewhere for control or eradication of this invasive species.
The paper is open access and is available to download from the Conservation Evidence website: http://conservationevidence.com/individual-study/5497

The full citation for the paper is: van Dinther M, Bunbury N & Kaiser-Bunbury CN. (2015) Trial of herbicide control methods for sisal (*Agave sisalana*) in the arid island environment of Aldabra Atoll, Seychelles. *Conservation Evidence* 12: 14–18

Significant progress made in control of introduced plants in the Vallée de Mai

New paper shows that Coco de Mer 'engineers' its environment and displays 'parental care'

Photos left and right show the funnelling effect of the leaves of the Coco de Mer (centre) © SIF

A paper published in January in the journal *New Phytologist* based on years of research has shown a remarkable result that the Coco de Mer actually improves soil conditions for itself and its offspring by funnelling organic debris including pollen from the leaf surfaces to the base of the trunk.

The authors set out to solve the apparent contraction of how the Coco de Mer, which grows in extremely poor soils only on Praslin and Curieuse, is able to bear the largest seeds in the plant kingdom (female palms) and vast amounts of pollen (males). They asked how the trees obtain the nutrients they need to support such a large investment in reproduction. To answer this, they measured the amounts of nitrogen and phosphorus used for growth (in leaves) and for reproduction (in fruit and male flowers) by Coco de Mer trees in the Vallée de Mai. They also measured the amounts of these nutrients in the soil, and the quantities of water flowing down the trunk during rain.

The results show, as suspected, that the nutrient costs of reproduction are very high in both male and female plants. Indeed, the amounts of phosphorus used each year to make fruits and male flowers are six to seven times greater than those used to make new leaves and trunk. So where do these nutrients come from? Rainfall measurements show that the leaves of a coco de mer plant form a gigantic and highly efficient funnel, so that almost all the water falling on them is channelled to the base of the trunk. Any organic debris on the leaf surface, for example, pollen or the faeces of lizards, birds or invertebrates, gets flushed to the bottom of the tree in this rapid flow of water. In this way, a male Coco de Mer can improve its own nutrient and water supply, while a female tree also improve the supply for its seedlings, which usually grow very close to the mother plant because of the huge seed size.

The funnelling of water and nutrients to the base of the trees means that soil conditions in a coco de mer forest are highly variable, being much more favourable close to Coco de Mer trunks than further away. The paper discusses how this funnelling process, and its effect on soil conditions, has affected the ecology and life history of the Coco de Mer, as well as the remarkable community of animals that only occur in this forest.

The paper citation is: Edwards PJ, Fleischer-Dogley F & Kaiser-Bunbury CN. 2015. The nutrient economy of *Lodoicea maldivica*, a monodominant palm producing the world's largest seed, New Phytologist, doi: 10.1111/nph.13272.

The link to the paper is: http://onlinelibrary.wiley.com/doi/10.1111/nph.13272/full. It is not an open access publication but please contact Dr Chris Kaiser-Bunbury (ckaiser-bunbury "at" bio.tu-darmstadt.de) if you're interested in a copy.

Gifts presented to children with disabilities on Praslin

Presenting the gifts to one of the students © SIF

For the children on Praslin who have disabilities, the beginning of the new school year this month was more special than usual.

In December last year, Seychelles Islands Foundation organized a community Christmas Carol concert at the Vallée de Mai. Many local organisations and community groups participated in the concert and SIF used the donations collected at the concert to buy much needed items for these children. These gifts were then presented to the children by SIF's Education and Outreach

As a ranger I assisted in many different types of terrestrial and marine monitoring. I participated in regular monitoring activities such as turtle track surveys and tagging, landbird counts, Giant Tortoise monitoring, tropicbird nesting surveys, and phenology surveys. I also had the opportunity to participate in the marine surveys. I also really enjoyed the experiences at the field camps. My first camp was at Dune d'Messe and it was quite an experience! One of my favorite camps was Cinq Cases where I got the chance to see many extraordinary birds like flamingos, Madagascar Pond-heron, lots of Madagascar Sacred Ibises and the Great White Egrets - I took many wonderful photos there.

Aldabra has given me so many fantastic and unforgettable memories. I will always remember the first time I saw a dugong in the lagoon, humpback whales, dolphins, colorful vagrant birds such as the Broad-billed Roller, and the amazing coral reefs. Words are not enough to explain the many life-changing experiences that Aldabra gave me. I am very thankful to SIF for having given me the opportunity of making my dream come true, and to everyone who encouraged me to go further. Also I give a special thanks to the Aldabra team who welcomed me as part of their family and shared many wonderful experiences with me.

The Praslin IAS team with the last Cinnamon tree © SIF

January was a month of achievements for the invasive alien species team on Praslin, most significantly with the treatment of the last adult Cinnamon tree in the Vallée de Mai!

Cinnamon, or Kannel, is a prolific invasive species in Seychelles and, after four months of meticulously treating all 420 adult cinnamon trees in the Vallée de Mai, the team finally reached the last one. This tremendous achievement was combined with the simultaneous uprooting of the saplings of Cinnamon and the six previously managed tree species; Santol (*Sandoricum koetjape*), Lagati (*Adenanthera pavonina*), Jackfruit (*Artocarpus heterophyllus*), Bwa Zonn (*Alstonia macrophylla*), Albizia (*Falcataria moluccana*) and Kalis Dipap (*Tabebuia pallida*).

A third achievement this month was the progress made in the removal of Strawberry Guava (*Psidium cattleianum*) from the Vallée de Mai. Guava poses a threat to the Vallée de Mai's palm forest ecosystem and has caused devastating effects on the native forest of neighbouring Mauritius. All adult guava trees were first recorded in a comprehensive sweep of the Vallée, and the team has since treated around half of the trees. Alongside this they are also uprooting any guava saplings found.

Although the project has now officially ended, the remaining invasive trees of these species and others will continue to be treated and saplings uprooted. The hard work and positive results of Praslin's invasive species team will be gradually mainstreamed into Vallée de Mai operations and management to ensure that the results are not only sustained but improved in the long-term.

Mynah Bird range increasing in Praslin National Park

An Indian Mynah Bird

In December a survey of introduced Indian Mynah Birds (*Acridotheres tristis*) in the Vallée de Mai and the Praslin National Park was undertaken. Over 2 weeks 22 points were visited across this area in the morning and afternoon to identify and count any mynahs encountered.

The results indicate a significant increase in the range of this invasive species compared to the previous survey in 2011. In 2011 Mynah Birds were common around the coastal, cultivated and urban areas of the island and were rarely encountered in the native forest or upland areas. Since 2011, as expected from observations, the presence of mynahs at the surveyed points has substantially increased, from 0% in 2011, to 31% in 2014. The mynahs appear to be invading the National Park area from the North and East. It is also in these directions that the nearest human populated areas are located - Baie Ste Anne and Cote d'Or. This and the previous survey results underline the close relationship of the abundance of this invasive bird species with human presence. Fortunately no mynahs were detected within the Vallée de Mai boundaries in this survey, although they occurred in the surrounding areas. In some cases birds were detected only 170 m from the boundary which is a significant increase when compared with the approximate minimum distance of 1.2 km in 2011.

Programme Officer Maria Brioche, District Administrator Kenneth Pointe and a representative from the Ministry of Health, in a short ceremony held at Baie Ste Anne Primary School on Praslin. Also present at the ceremony were teachers and pupils from the centre for disabled children on Praslin, the management team of Baie Ste Anne Primary School and participants of the Christmas Carol concert.

The children showed their appreciation for the gifts through a song that they performed at the ceremony. The song was a beautiful tribute and they sung about how grateful they were to know that many people were thinking of them and that they are not alone.

SIF would like to thank once again all the organisations who participated in the Christmas Carol concert and we look forward to your participation again this year.

Lucia undertaking the survey in the Vallée de Mai © SIF

The survey results suggest that overall the distribution range of mynahs on Praslin is increasing. An increase in Mynah Bird abundance and distribution is concerning because the species poses threats to the Seychelles Black Parrot nesting success, and to the many endemic reptiles and invertebrates in the Vallée de Mai. Although Mynah Birds have been successfully controlled and even eradicated from other smaller islands in Seychelles Praslin's size and the high numbers of Mynah Birds on the island make control of this species extremely difficult. However, the birds will be closely monitored and SIF will continue to assess their impacts on native species in case control becomes necessary.

Sponsored walk for Head Office staff

Laurette Barreau, Joel Jacqueline and Annette Bonne on the walk © SIF

Several members of staff took the opportunity this month to raise funds for the Head Office social committee by walking from the SIF office in Victoria to Beau Vallon. The enthusiastic walkers started early on Sunday morning to escape the heat and completed the long walk in just over an hour. The team all enjoyed this activity and raised some welcome funds for social activities.

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