



New phase of ZARP project started



Two members of the ZARP team setting up the drone equipment © SIF

A new phase of the Zurich-Aldabra Research Platform (ZARP) collaboration with SIF was launched in December 2015. The new phase of this collaboration will have a stronger emphasis on establishing a functional and mechanistic understanding of the direct and indirect interactions between Aldabra Giant Tortoises, vegetation, and climate in an age of global change.



One of the drones in flight © SIF

ZARP project officer, Richard Baxter, and Aldabra research staff installed a camera known as a 'phenocam' in the east of Grande Terre Island. This solar-powered camera system was mounted above canopy level and takes a wide-angle photo of the vegetation at hourly intervals. These photos will then be analysed, providing calibrated phenological data (e.g. timing of plants flowering vs. fruiting) that can be used to monitor changes within the ecosystem, such as shifts in growing seasons, which could be linked with climatic change. This will increase the fine-scale understanding of ecosystem drivers as well as seasonal climate and vegetation dynamics in an area of the atoll that has the highest density of Aldabra Giant Tortoises.



An image taken by the phenocam on Grande Terre © SIF

The second new ZARP research activity also took place over the Christmas period on Mahé, when a team from the University of



Bounty payment offered for sightings of Ring-necked Parakeets



A Ring-necked Parakeet seen by the team © SIF

Over the last few months, the Ring-necked Parakeet (RNP) eradication team have faced the major challenge of tracking down the final few birds that remain on Mahé.

With so few birds left there has been a change in tempo in the RNP team's activities which have required a lot of patience. When there was still a large number of parakeets the team usually shot a good number of birds every month. But with so few birds remaining the team have spent weeks observing potential areas of parakeet activity and trying to pinpoint their exact locations. During October two birds were culled using this approach, in areas previously known or suspected by the team as being visited by the parakeets.

In November, a parakeet was seen entering a tree cavity in the secondary roost site which caused concern as it suggested that the bird may be nesting or have chicks. Within a few days however, this bird was culled and inspection of the cavity showed that it was completely empty. After this, no trace of any other parakeets has been found in these areas so the team have started exploring previously unvisited areas, resulting in a new feeding site being found in the south of the island.

December and January were also relatively successful months with an extra parakeet culled each month. However, a sighting of another bird since the last bird was culled has confirmed that there are still potentially a few more parakeets remaining on Mahé. Despite the frustration of many days with no sign of a Ring-necked Parakeet over the past few months, the team is optimistic about the completion of this eradication.

To help locate these final few birds and complete this vital eradication, a bounty payment has been introduced to encourage the public to report sightings.

If you see a Ring-Necked Parakeet (Kato Ver) on Mahé, then we ask you to call the RNP team on 2523623 to report the sighting as soon as possible and the team will come and investigate. If the team can locate the bird and are able to cull it, the person who reported the sighting will be rewarded with SCR 500. Please note that the bounty payment is only eligible if the RNP team culls the parakeet and no reward shall be given for any other bird culled in any other manner.

Paper published on long-term monitoring programme of Aldabra Giant Tortoise



Slow start for the Seychelles Black Parrot breeding season



A Seychelles Black Parrot at one of the potential nest sites © SIF

Since December the Seychelles Black Parrot research team has been very busy checking the core breeding areas on Praslin for nests. So far, the season has seen very little breeding activity, with only three eggs laid in two nests and no chicks hatched as yet. In most breeding seasons the breeding activity is much higher, and the reasons for occasional seasons of very low reproductive activity are not yet known but are thought to be related to climate and its effects on food availability for the parrots.

In January, the team expanded, with three more members joining: Shanice Toule and Elna Paule, two students from Praslin Secondary School and volunteer, Willow West, from the UK. The new larger team has concentrated efforts in the core breeding areas of the Vallée de Mai, Fond Ferdinand and the Praslin National Park. Only one egg was found in December 2015 in Fond Peper but the egg was unfortunately seen broken inside the nest in January, with no signs of predators at the nest site. The team found two more eggs later in the month in a nest cavity in Fond Ferdinand. The nest was in a palmist (*Deckenia nobilis*) trunk and is not known to have been used before.



The Black Parrot team checking the nest sites © SIF

There has been a good deal of black parrot activity close to some of the known nest sites. Furthermore, black parrot feathers have been seen inside some nests and parrots have started to move in and out of the cavities, suggesting that these nests may have eggs later in the season. Last but not least, the team has heard many black parrot breeding calls around all the core breeding areas. All of these signs are very promising and we still hope to see more eggs this season, even if it is later than usual. We will keep you updated!

Sixth Yellow Crazy Ant survey completed in the Vallée de Mai



Christmas period on Aldabra, when a team from the University of Zurich came for an intense 10 days of field work with the aim of completing a series of drone flights over selected regions across the atoll. Last year a high resolution terrestrial habitat map of Aldabra was completed by MSc student Rowana Walton, based on GeoEye satellite imagery. The use of these drones will enable higher resolution mapping and sensing of focal areas, as well as an increased fine-scale understanding of ecosystem drivers and seasonal climate and vegetation dynamics across the atoll. During their visit, the team made a total of 47 drone flights over the atoll covering land and water. The initial drone footage from these flights is spectacular and captures some of Aldabra's treasures. Two Dugongs were filmed, as well as images that show the sheer density of tortoises, marine turtles and seabirds around the atoll. This research will potentially lead to the further use of drones at Aldabra as a way of gathering high quality aerial data.



Aldabra Giant Tortoises at Aldabra © SIF

A paper published in the open access journal *Ecology and Evolution* has analysed 15 years (1998–2012) of data from the long-term monitoring programme of the Aldabra Giant Tortoise and found that the population on Aldabra has remained stable over this period.

This research built on studies from the 1960s by the Royal Society, allowing trends over the last 40 years to be reviewed. The early work on Aldabra's tortoises found that the island on which a tortoise lived affected not only its size but whether males and females looked different from each other ('sexual dimorphism'). No conclusions could be drawn at that time regarding the causes of these differences – was it a result of the earlier harvesting of tortoises for food, or a more natural occurrence?

In the published analysis of SIF's tortoise monitoring data, the researchers investigated whether there were any changes in tortoise population size, density, sex ratio, individual size, and sexual dimorphism between the islands. Positively, Aldabra's tortoise population has remained stable throughout the monitoring period with no sign of the steep declines that had been observed in previous research. Tortoise size differed over time with tortoises on Picard getting larger, while those on all the other islands getting smaller over time. The largest tortoises occur on Picard, and the smallest on East Grande Terre. Males were found to be typically larger than females across the atoll.

The results of this research show that many of the differences between tortoises on different islands of Aldabra are still apparent after 40 years, and that they are likely to be due to differing terrain, vegetation, predator communities, and access to fresh water among the islands. More specifically, differences in tortoise size between islands are speculated to be a consequence of limited availability of food or fresh water on some of the islands, which influence the growth and survival of juveniles.



A ranger on Aldabra collecting data for the long-term tortoise monitoring programme © SIF

In the current changing climate, and with Giant Tortoise reintroduction programmes underway in the region, further genetic studies of this native tortoise population are necessary to understand how adaptive tortoises are, should their environment change.

The paper is open access and can be downloaded through this link - <http://onlinelibrary.wiley.com/doi/10.1002/ece3.1764/full>

The full citation is: Turnbull, L. A., Ozgul, A., Accouche, W., Baxter, R., Chong Seng, L., Currie, J. C., Doak, N., Hansen, D., Pistorius, P., Richards, H., van de Crommenacker, J., von Brandis, R., Fleischer-Dogley, F & Bunbury, N. (2015) Persistence of distinctive morphotypes in the native range of the CITES-listed Aldabra giant tortoise. *Ecology and Evolution*, **23** (5): 5499-5508.

Coral bleaching seen at Aldabra



Bleached corals at Aldabra © SIF

In early January, staff at Aldabra were concerned to discover bleached corals in the western channels, but a response team was quickly put into action to monitor them.

Coral bleaching can occur for many reasons, but essentially it comes down to one thing – stress on the coral, or more specifically, stress on the algae that lives in the coral. If this stress occurs for long enough, the algae will leave the coral. Without the algae, the coral not only loses its primary food provider but also its colour, hence the term "bleaching". Once the coral appears bleached either the stress is removed and the algae returns to the coral, or the stress continues and the algae never return. The former means the coral stands a good chance of recovery although it will probably show diminished growth and reproductive potential, but is in essence still the beautiful coral we know and love. The latter results in the coral eventually starving to death and literally becoming a skeleton of its former glory.



One of the team conducting a manta tow survey to monitor the bleaching on the coral reef © SIF

The discovery of bleached corals is not surprising given the onset of the El Niño climate event which has brought warmer than average sea surface temperatures across the world. These warmer temperatures are a stressor for corals, but bleaching was not expected so early in the season. As a result of this discovery, the marine monitoring team are in the process of implementing a coral bleaching management protocol. The first stage of this process is to assess the extent of the bleaching around Aldabra. Secondly, the marine team will be tagging individual coral colonies from different genera to monitor their health through time. Coral recruitment tiles will be installed at survey sites to ascertain recovery potential. Lastly, the data from temperature loggers installed by the marine monitoring team in previous seasons at multiple dive sites and depths around the atoll should confirm higher sea temperatures for Aldabra and indicate for how long these above average temperatures have lasted around the atoll.



Laying out the ant traps © SIF

The Praslin invasive species team recently completed the annual survey of Yellow Crazy Ants (YCA) in the Vallée de Mai using the pitfall trap method. The aims of the survey are; to monitor the distribution of YCA within the Vallée de Mai over time, relate the distribution to abiotic (e.g. temperature, humidity patterns) and ecological (e.g. other ant species, relationships with scale insects) factors, and explore the hypothesis that the relationship between other ant species and scale insects is limiting the spread of YCA through the Vallée de Mai.

In the previous (2014) survey, YCA were present at 66 of the 119 surveyed points in the Vallée de Mai. Of the occupied points, 16 had low abundance (1-10 YCA present in traps after 24 hours) and 49 had high abundance (>10). YCA distribution covered six new points towards the north of the Vallée de Mai but YCA were absent from four previously occupied points. Only humidity was shown to negatively affect YCA presence. Eight other species of ants (including native and invasive species) were also identified in the samples, all of which were already known to occur in the Vallée de Mai.

For the last two surveys, at each point, a pitfall trap was set up, consisting of a plastic bottle partly buried in the ground with slots in the side, filled with a sugar, soap and ethanol solution. After 24 hours the team collected the traps and recorded the humidity and temperature of the site. The team also recorded the ant communities on trees with and without scale insects. Back at the office, the traps were examined and the number and identity of the different species caught recorded. In addition to YCA and other ant species, other insects (e.g. mosquitoes) and organisms (e.g. scorpions) have been recorded. The findings from this survey will now be collated and reported in a later newsletter.

Removal of introduced plants in the Vallée de Mai continues



The team continue to monitor the trees that have previously been controlled © SIF

Since our update last year, the Praslin invasive species team's efforts to eradicate several invasive plant species in the Vallée de Mai has tirelessly continued.

Seven species of tree were initially controlled by the team using a ring-barking method (lagati, santol, kalis dipap, kannel, bwa zonn, jackfruit, and bwa ber). Since then, many of the tree trunks have had holes drilled and a herbicide solution applied as ring-barking alone was ineffective. Across the range of species, many of the drilled trees have now died, and the team will continue with this method for the remaining trees that have only been ringbarked.

Vya Tang (*Dieffenbachia seguine*), a water-loving invasive species, is a much harder species to remove and regrowth is difficult to prevent. The team have continued to remove all plants found, particularly along the banks of streams where they grow more prolifically. Monthly checks are undertaken to monitor regrowth, which is removed immediately. The team also conducted a trial on a method to remove the Philodendron creeper. They cut the main stem of the creeper and allowed it to sit in a 15% solution of herbicide in a safely sealed container overnight. After a month of monitoring the health state of these plants, the team found that most of the creepers showed signs of illness and eventually died.

This was a positive outcome in the control of this highly invasive species and the method will be further explored for possible use in wider scale control.



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A fully bleached coral at Aldabra © SIF

The damage to Aldabra's reef as a result of this bleaching will not be known until the water temperature drops, but the extent is likely to expand beyond what has already been observed. If Aldabra's reef suffers severe bleaching, it will not only be the corals that are affected, but also the many other reef organisms that depend on corals (e.g. fishes, invertebrates). Aldabra's reefs are, however, subject to fewer local stressors (e.g. coastal pollution and development) than many other reefs which may mean that they can recover relatively quickly. This event serves to highlight the importance of the monitoring of Aldabra's reefs as it allows us to detect and assess any changes to the reef ecosystem.

Don't forget to like our Facebook page! The page has regular news and updates on research and events at both World Heritage Sites. We would invite all friends, supporters, partners, colleagues, and anyone else who has an interest in staying up to date with the management and protection of the UNESCO World Heritage Sites in the Seychelles, or in Seychelles' biodiversity and conservation in general to become a fan of our page. For those who have a Facebook account already please use this link https://www.facebook.com/pages/Seychelles-Islands-Foundation-SIF/1414466072110654?hc_location=stream and 'Like' our page. For those that are not on Facebook then perhaps you can receive updates through a friend or family members account, or maybe now is the time to join Facebook for yourself! We look forward to welcoming you onto this page!



One of the team drilling an introduced tree © SIF

The team continues to check the progress of the various trees that are being controlled, monitoring them for signs of defensive responses or death. This process takes time, but with every check, new information is gathered about the effectiveness of the treatments for each of the different species. The team will be working on controlling these introduced species for many more months to come, and becoming much more efficient as we learn more about these species and gradually eliminate them from the Vallée de Mai.

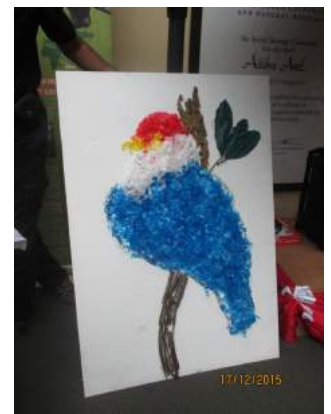
SIF Christmas Holiday Camp programme



The holiday camp students performing their song © SIF

The SIF Christmas Holiday Camp programme was once again held from 14th - 17th December. Fourteen pupils from the four primary and secondary schools on Praslin attended the programme and learned about different environmental subjects such as birds of Seychelles, the Vallée de Mai forest ecosystem and recycling.

During the four day programme the children used natural materials from the local environment to produce useful items such as pencil holders and jewellery. This helped the children learn about how plants can be useful even after they have died or fallen to the ground. Further understanding of the importance of the forest ecosystem was developed through the creation of a model forest ecosystem using leaf litter and other materials. The children really enjoyed this hands-on activity and created some excellent, realistic models.



Artwork of Seychelles Blue Pigeon created from old plastic bags © SIF

Learning about the birds of Seychelles was another subject that the children really enjoyed. A short presentation was given to them about the different species of endemic bird and then they played a game to help them describe the birds. This was a great way of getting them to remember each bird's name and appearance. Since the Seychelles Black Parrot was the most popular bird, the children had the chance to construct their own parrot out of old toilet paper rolls and card. Some of the children got really creative and drew their own imaginary parrot as well. Another favourite bird was the Seychelles Blue Pigeon, and the children used old plastic bags to create their own pigeon. This was a great educational activity as they learned not only about the physical

educational activity as they learned not only about the physical appearance of the pigeon but also the importance of recycling plastic bags. This session ended with a birdwatching session at Glacis Noire to observe some of these birds and their behaviour in the natural environment. Mr Wilton Constance, a registered SENPA artisan, facilitated an activity on Wednesday when the children made jewellery, Christmas cards, pencil holders and weaved coconut leaves. The children learned some new skills in making some of these craft items and thoroughly enjoyed using natural materials.

The holiday camp programme ended with a small ceremony to present each student with a certificate for their participation. As it was also the festive season the holiday camp students joined the staff of the Vallée de Mai's children for a small Christmas party, and were even treated to a visit from Father Christmas.

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