

AZAFADY

people community environment

Azafady Conservation Programme
Annual Biodiversity Report (December. 2015)

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Since 2010 when we established our permanent research camp in Sainte Luce the Azafady Conservation Programme (ACP) has worked tirelessly within the highly fragmented and threatened littoral forests to collect the vital ecological data required to understand, document and conserve the vast biodiversity found there. It is our hope that by working alongside the community of Ste Luce, our research will be a voice for the endangered wildlife living in this area of outstanding natural beauty and our work will promote a prosperous and environmentally sustainable ecosystem.

As we go forward into 2016, a large proportion of our long-term research is approaching completion and we are working hard to complete the write up and publication of our results. Looking ahead, new research objectives have already been identified including a range of practical conservation interventions in line with our long-term findings and results.

This report will summarise our work over the past year, outline the progress of our individual research projects and give a flavour of what to expect from some of our upcoming announcements, work and publications.



A group of 2015 ACP volunteers taking part in a butterfly survey



A collared brown lemur found in the forests of Sainte Luce

Lemur Research:

The study of lemurs has always been an integral part of the Azafady Conservation Programme. With their conspicuous and attractive nature as well as their global conservation appeal, they represent a group of animals that demands conservationists' attention. A recent IUCN review of conservation status and threats recognised lemurs as the world's most endangered vertebrate group which regularly dominates the world's top 25 most endangered primates list.

In 2010 Azafady began a five year research project to determine the number of remaining lemurs occupying the fragmented forests of Sainte Luce in southeastern Madagascar. In November, this was completed and we now have sufficient data to make reliable inferences about the population size, viability and recent demographic trends for each lemur species present in Sainte Luce. Presently there are four species of lemur that occupy the littoral forests of Sainte Luce:

- Collared brown lemur – *Eulemur collaris*

- Lesser fat-tailed dwarf lemur – *Cheirogaleus medius*
- Southern woolly lemur – *Avahi meridionalis*
- A species of mouse lemur – *Microcebus spp.*

Furthermore our dataset permits us to accurately determine the phenology, local conservation status and distribution of each species amid the various forest fragments, and allows us to formulate appropriate future conservation strategies. Presently lemurs face an uncertain future in the forests of Sainte Luce due to continuing forest loss, hunting for bush meat, and ongoing uncertainty regarding the future of mining activity in the area.



Volunteers carrying out a lemur feeding ecology survey

In addition to our population research we have continued work on our research project in developing a seasonal image of the dietary requirements of the collared brown lemur (*Eulemur collaris*) alongside a three-year behavioural study. With this additional learning and dataset, we are now in position to propose effective conservation strategies and ensure that the remaining populations of wild collared lemurs in the area continue to persist and flourish. With Sainte Luce's loss of a fifth species of lemur in 2001 (lesser bamboo lemur, *Haplemur griseus*), fragmentation and

deforestation makes our work critical to maintaining the remaining four lemur species.

Establishing the number of lemurs in each forest fragment is an important first step in their conservation, and understanding the viability of each sub-population can help us formulate a strategy to conserve this species more effectively. By understanding recent population trends alongside a suite of ecological constraints (fecundity, age of sexual maturity and life span) we are able to model the timeframe each lemur population can expect to survive if current forest losses and levels of mortality continue. This can be used to propose conservation interventions and strategies that protect these populations. Our dataset is built on distance sampling methodology, where observations are made and recorded along established transects through the forest.

During 2015, we increased the resolution of our dataset by detailing other ecologically important forest traits. This included mapping canopy heights, recording canopy cover and calculating forest density along each transect, allowing us to pinpoint any particularly important sites for lemurs. Similarly, due to previous publications using discrepant estimates for each of the five forest fragments used by the Sainte Luce community (S6, S7, S8 (north and south), S9 and S17), we have mapped them to allow for a modern and reliable estimate of remaining forest size.



Visiting a local forest fragment to carry out a mapping exercise



A pair of collared brown lemurs found on a survey

Our lemur research has been the flagship project within the ACP since its inception, however, with the proposed mining threat looming over the majority of the Sainte Luce forests, nothing is certain. We hope that our upcoming analysis and results influence the debate over where and when mining can be conducted and informs discussions between the community and mining company in finding ways forward.

Thanks to the hard work of staff and volunteers over the past decade, the information collected will prove invaluable for conservation work in the area, allowing conservationists to deduce how many lemurs may need to be translocated - should the postponed ilmenite mine go ahead. Similarly, we may be able to highlight specific areas of forest that are valuable for lemurs and therefore should be conserved. Work is scheduled to start on a multi faceted publication early in 2016 which we expect to strengthen the argument for preserving large swathes of forest in the area.

Parallel to our population assessment, a study of the feeding ecology of the collared brown lemur continued in 2015, complementing previous years of continuous work. This evidence will stand to embolden our case for the future reintroduction of *Eulemur collaris* into forest fragments that no longer support this species. Feeding data has been collected throughout the year and the effects of seasonality on the lemurs' diet will provide an insight into their survival chances in other floristically diverse forest fragments. One protected forest fragment, S8, is known to have a distinct botanical make up and we aim to provide research showing that each of the food items observed being selected in other fragments is present in S8. This will open the possibility of a significant reintroduction project into S8, a forest that has been missing its main seed disperser for at least 25 years.

Due to the role of *Eulemur collaris* as a key seed disperser in these forests, any future reforestation projects will depend significantly both on a healthy population of this species and its role in seed dispersion. Similarly, the future conservation of this species may also depend on an increased understanding of any dietary deficiencies that may exist in populations occupying particular forest fragments. As mentioned in last year's report, this lemur species has a highly varied diet, relying on a myriad of leaves, seeds, fruits and insect species that are highly seasonal. Our research can ultimately be used to benefit the conservation of this notable and endangered lemur species and support any groups or individual Brown Lemurs kept in zoos or other ex-situ breeding programmes.



A specimen of the mouse lemur, Microcebus spp., currently under investigation

During 2015 we have also refocused our research of nocturnal lemur species, working to verify the identity of the mouse lemur species (*Microcebus*

spp.) that inhabits the forests of Sainte Luce. Until relatively recently it was believed that all individuals belonged to the species *Microcebus rufus*, *Microcebus murinus* or even *Microcebus griseorufus*. However, with the recent discovery of *Microcebus tanosi* in the nearby forests of Manantantely, it became a priority to determine the exact species identity in Sainte Luce. With *M. tanosi* yet to be formally granted the distinction of being a new species, its distributional limits were also undefined, and it was thought that they might also be found in the littoral forests of Sainte Luce.

After 6 months of surveying the small mammals of the two protected forest fragments S8 and S9, we finally captured three individual mouse lemurs. Phenotypically these lemurs were very similar to *Microcebus rufus* however they seemed to differ dramatically in weight. In accordance with our research permit, we collected hair samples from each of the three individuals before releasing the animals back into their natural environment.

Analysis of the DNA is currently being performed in the German Primate Centre, Göttingen. Identifying a regional endemic in the forests of Sainte Luce would be another conservational coup for the area, highlighting the incredible biodiversity of the forests and strengthening the case for the conservation of a greater area of forest.



A southern woolly lemur with its young

The endangered southern woolly lemur, *Avahi meridionalis* is perhaps the most common lemur species in Sainte Luce, however its wider distribution has been severely diminished and fragmented. In the first half of 2015, ACP hosted a master's student, who investigated the sleeping habits and effects of human disturbance on this species. We are greatly looking forward to reading her thesis which we hope will inform the development of an appropriate conservation strategy for the area in 2016.



A fat-tailed dwarf lemur found on a night transect

The final species of lemur, the lesser fat-tailed dwarf lemur (*Cherogaleus meridionalis*) is another locally common species with a greater distribution than the woolly lemur. Sleeping sites are especially important to this species as it undergoes a period of winter dormancy and is observable only for the wetter and hotter months of the year. With the extent of forest loss in Sainte Luce, we have been researching whether the availability of sleeping and dormancy sites will be a limiting factor to the abundance of this species in the future. As a preliminary investigation, we began determining whether this species would utilise an artificial nest box, as in other species such refuges have allowed for population growth and have allowed species to persist in areas where ideal sleeping sites are scarce. To date our three nest boxes have not been used, however the true test will come as we approach next winter.



ACP volunteers carrying out a night herpetological survey

Herpetological Surveying

ACP has collected herpetological data since 2010 with data collection being focused on obtaining a reliable and complete species inventory of reptiles and amphibians for future studies to use as a baseline for conservation and monitoring work. In spring 2015, we obtained permission from the Malagasy Ministry of Environment to collect genetic material in the form of tissue samples from all species found in Sainte Luce to aid this work.

This research permit has allowed us not only

to conclusively verify the occurrence of questionable species in the area but also to authenticate the true identity of all species in the community. A major problem in reptile and amphibian taxonomy in Madagascar has been the vast diversity, high degree of micro-endemism and cryptic nature of many of the species, making it difficult to differentiate many species morphologically.

The advent of molecular analysis has allowed incredible insights to be made into the nature of Malagasy herpetology and the island is now recognised as having one of the world's greatest assemblages of unique reptiles and amphibians. The littoral forests of Sainte Luce show no exception to this enormous variety; a study of the herpetological community conducted in 2008 by the biodiversity team of the mining company QMM showed exceptional species richness. However over the course of Azafady's research in the area, we have gradually been re-assessing the nature of the community using a series of regular and year round surveys and discovered discrepancies between our work and the work of QMM.



A leaf-tailed gecko found on a night survey

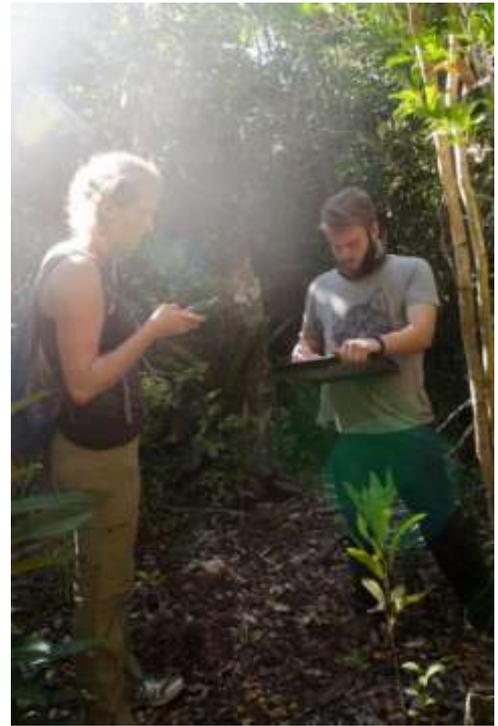
After five years of intense surveying and study, and by using a range of techniques including visual encounter surveys (VES), pitfall trapping, community involvement and genetic tools, we now possess an extensive and accurate species inventory for each of our five study fragments. These include species distributions and most importantly genetic verification. The DNA evidence allows us to be confident with our identification, where previously used techniques would have allowed a degree of error. During a period of six months, the ACP team collected a total of 225 tissue samples from a variety of reptile

and amphibian species for analysis. Currently, these samples are being analyzed at the Centre for Integrative Biology (CIBIO), Portugal.

In total we have submitted samples corresponding to 25 species of amphibian, 4 species of chameleon, 9 species of gecko, 3 species of lizard, 7 species of skink, 18 species of snake and 1 species of turtle for authentication. Furthermore we have evidence for the existence of an additional 10 terrestrial herp species present in the area, which we have

not sampled along with a further 4 species of marine turtle. Such a thorough genetic assessment of an entire herpetological community is very rare in Madagascar, and since many of these species are validated only on physical approximation, it is unclear exactly what our results will reveal.

Accompanying all of our tissue samples are photographs of the animal, a database containing a complete set of morphometric information, a GPS location and a brief description of habitat. Once we have received the results from our collaborators at CIBIO we aim to publish a conclusive species inventory for the area, which will stand as a snapshot of the herpetological community of Sainte Luce in perpetuity. The fauna is already known to contain multiple Critically Endangered, Data Deficient and regional endemic species, making the area a high conservation priority. With the assemblage of reptiles and amphibians as complex as it is in Sainte Luce, it is possible that our results will also uncover some species that are as yet undetected in these isolated and remote forest patches. Proper documentation of this diverse herpetological community is incredibly important for mitigating against potential mining impacts and for informing future biodiversity management. This research will also help to identify at risk species or vulnerable species that may need special attention in the future.



Collecting GPS data for a sampled reptile

By collecting GPS / distributional data for all of the individual reptiles and amphibians we encountered throughout 2015, we are now in a position where each individual species can be mapped and its ecological requirements and constraints can be better understood. This will be especially pertinent for species that are close to extinction and those which are poorly known. As in our lemur research, we also mapped the known water features (streams, ponds etc.) for the two protected forest fragments S8 and S9. It will be interesting to determine the associations between each species and forest hydrology and the effects of seasonality within our dataset. With five years of intense herpetological work in the now protected forests of S8 and S9, a baseline for future research and conservation work will soon be in place.

Although we regularly visit our satellite research camp set up in fragment S7, our surveying in this fragment and the adjacent S6 have not been as thorough as in the closer fragments S8 and S9. While these forest fragments have recently suffered significant human degradation, they remain a real conservation priority and support invaluable biodiversity. In the next year a priority will be to further study the communities persisting in S6 / S7, a relatively large pair of fragments (these represent some of the largest patches of littoral forest of their kind remaining, yet together cover less than 400Ha). They have remained relatively under-studied and overlooked, yet are under direct threat from poor management and mining activities.

Notable species:

Matoatoa aff. spannringi



A Matoatoa species found by a local woodsman

This year we will finally resolved a debate surrounding an enigmatic species of 'ghost gecko', an animal that has been encountered so infrequently that almost nothing is known of its ecology, conservation status, distribution or even its identity! Previous notable work has seen a community-focused questionnaire project aiming to shed light on its habits and abundance, and also the installation and use of artificial foam mats as replica tree bark. This method was adopted specifically in an attempt to locate and examine a specimen

which had proven so elusive that it did not appear on the QMM species inventory of 2008, and its first scientific record was only published in 2012 after a chance observation by the ACP team. This technique was subsequently used to collect several nocturnal species of gecko for DNA sampling, however it never revealed the target species.

With only one or two individuals observed by ACP over a five-year period, it was clear that our standard search methodologies were not suited to discovering this species, but fortunately a change of tactic brought about surprising results. Following on from our community interviews, it became apparent that the only people who were even familiar with the species were the community woodsmen, who often spent protracted periods of time in remote areas logging and collecting wood. It was clear that even these forest stalwarts encounter the species infrequently, and usually once a tree is felled and being worked. Having informed a few particular woodsmen who were well known to us and that we trusted, we explained that if they were to find a *Matoatoa* that they should contact us immediately as we had a great interest in the species.

Over the course of a single year, we have now examined and taken measurements from a further nine individuals, bringing the total of known and recorded individuals in the area to ten. Importantly, we have also been fortunate enough to be in a position to take tissue samples from 5 individuals and we now await the results to see what relationship this species has with the type of species found approximately 350km north of Sainte Luce. As well as the interesting morphological data, we have also been able to compile a list of the tree species that this gecko frequently inhabits and have GPS locations for all of the examined specimens. Our current data suggests that this species is most abundant in the threatened forest fragments S6 and S7. It appears that this species is not as uncommon as was first presumed, however its secretive habits mean that it is rarely observed using standard visual encounter survey (VES) methodologies. Once we have the results from DNA analysis we will be in a much better



A Matoatoa found by ACP volunteers in 2011

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position to make inferences about this cryptic gecko's conservation status and wider importance within the biological community.

Phelsuma antanosy:

2015 also saw the continued development of Project Phelsuma, building on from our initial behavioral study into a more comprehensive assessment of the Sainte Luce population and habitat. Our main objective in 2015 was to accurately determine the distributional parameters of this Critically Endangered species within each of the forest fragments used by the Sainte Luce communities. Previously it was thought that the threatened forests of S6 and S7 hosted the most significant population of *Phelsuma antanosy* in the area. Locating the main areas of occupancy over the course of the year and charting the extent of each sub-population, it seems that this is exactly the case. In contrast however, the number of *Phelsuma antanosy* in the two protected forests S8 and S9 is very small, and the plant species they depend upon (*Pandanus longistylus*) is restricted to a few small and exclusive locations. By using a combination of random and pre-meditated *Phelsuma* habitat plots, alongside our more general herpetological surveys, we have been able to establish the total area of suitable habitat within each forest fragment.



A male *Phelsuma antanosy* gecko

This species is believed to number between 5,000 and 10,000 individuals; however its occupancy is restricted to several very small areas within Sainte Luce. A regional endemic, this species is found in only a few forest sites outside Sainte Luce, and even these are threatened by the possibility of future mining activity. There is no doubt that the populations in Sainte Luce are of major importance to the future survival of this species, and the research Azafady has been conducting over the past few years is of great importance. In addition to the distributional work that has taken place this year, further ecological work has been undertaken to determine the exact habitat requirements for this species. The presence of a few certain plant species seems to be a requisite for this species, along with a specific combination of variables such as forest density, canopy height and canopy cover. Armed with such information, future conservation strategies will be able to better support this species both in the wild, and possibly in future captive breeding programmes.

Unfortunately, Azafady are currently the only organisation currently involved with the research and conservation of *Phelsuma antanosy*, despite previous pledges made from a number of local bodies to contribute to the *Phelsuma* Action Plan drawn up in 2012. We will continue to generate discussion focused on the conservation of *Phelsuma antanosy* in 2016 and continue to engage with key stakeholders and locally influential partners.



ACP guide Hoby with a hedgehog tenrec

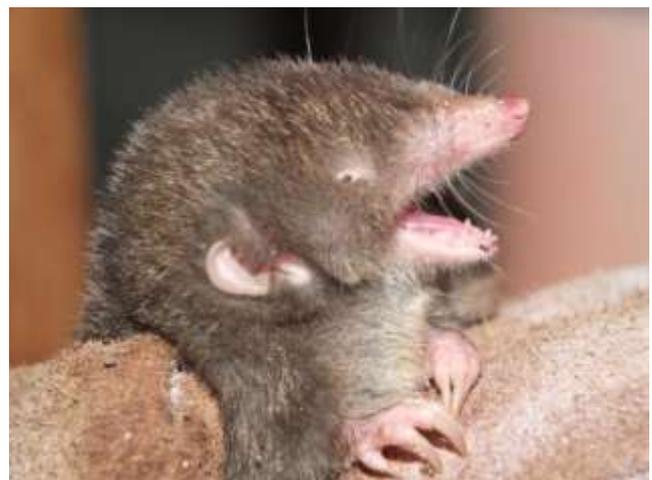
Small Mammals

Between the months of April and October of 2015 we surveyed the small mammal communities of Sainte Luce for the first time. A combination of daily pitfall and Sherman trapping allowed us the unique opportunity to observe this secretive fauna. The project was part of a larger initiative to study the entire vertebrate fauna of the Sainte Luce area, and we uncovered some unexpected findings. Despite the project being extremely time consuming and resource heavy, the information it has uncovered is highly important. Previously, members of the local community who regularly hunt tenrec for meat, and also our community guides, believed that only two species of tenrec existed in the forests of Sainte Luce. It was believed that the Common Tenrec (*Tenrec ecaudatus*) and a species of Hedgehog Tenrec were present, along with an unknown assemblage of rodents and invasive species.

An important component of this project was to determine the extent that invasive species have penetrated the now protected forest fragments

S8 and S9, and to judge what impacts these species are having. Our Sherman traps were therefore deployed in a methodical manner, being set in a particular location for a period of two weeks before being redeployed elsewhere in the forests until a sufficient proportion of the forest had been assessed. Similarly, our three 100m pitfall trap lines were in place in any location for a period of 10 weeks before being moved. In accordance with our research permit, all small mammals caught were identified, measured and had hair samples taken for later species confirmation.

The very first two mammals we observed both came as a surprise and within the first week of pitfall trapping we had captured a new tenrec species, the hova mole tenrec (*Oryzorictes hova*) and an invasive species of shrew, the Asian musk shrew (*Suncus murinus*). Soon after we began to record further species and in total we found the communities of Sainte Luce to include 3 species of tenrec (*Tenrec ecaudatus*, *Setifer setosus* and *Oryzorictes hova*), 2 species of rodent (tentatively *Elirurus webbi* and *Rattus rattus*) and a solitary species of invasive insectivore (*Suncus murinus*). Finally, in the last few weeks of the project, we also captured a single primate species – the mouse lemur whose identity is currently under investigation.



A hova mole tenrec found in a pitfall trap

Birds

The avifauna of the southeastern littoral forests is unique in the sense that it contains a bird community that it is a mixture of both spiny and humid forest species, with the southern and southeastern regions being estimated to support one of the most diverse bird communities in the country. A thorough survey of the birdlife found within the Sainte Luce forests conducted by James Watson in 2008, in collaboration with QMM, found an exceptional 73 species use the areas forests. Over the past year we have been working to create a modern image of the bird community of Sainte Luce. Given the continued rate of forest loss and increased levels of disturbance in the area, we want to determine whether the bird community could act as an indicator of forest degradation. We have initially concentrated our survey over just five forest fragments and have been surveying other important habitat types including riverine systems, marshes, flood plains and scrubland.



A pygmy kingfisher discovered on a night transect

Throughout 2015 the ACP team conducted bird surveys throughout the Sainte Luce forests and surrounding habitat mosaic, using a combination of visual and auditory



Volunteers carrying out a bird survey

observation techniques to record the species present. With a handful of national and international staff with years of bird surveying experience in Madagascar, we were able to identify the vast majority of all birdcalls and sounds in the area. A particularly noticeable feature of the littoral forests growing on the sandy substrate is the seen in the abundance of bird life. Although incredibly large species richness has previously been reported in the area, very few individual birds are actually seen on a regular basis. Despite this, over a period of 12 months we were able to record 68 species of bird in the area with a further four species observed but needing further confirmation. Interestingly our inventory varies significantly from the older species list, with potentially six new records for the area. This could put the total number of bird species using the forests and other habitats of Sainte Luce to as many as 83.

The species richness of each separate forest fragment is also interesting as it appears that some forest fragments support a greater diversity of birds than others. At this preliminary stage it is hard to prove this, as we have not spent an equal amount of time surveying birds in all fragments. Nonetheless, it is noticeable that some species are conspicuously abundant in some forest fragments whilst absent from others only a short distance away. This may hint at the unseen effects of historic forest management policy and the impacts of human disturbance. It seems that bird diversity is greatest in forests that have experienced lower levels of disturbance and are more remote and isolated, perhaps as a result of higher canopy and a greater proportion of mature trees. Similarly, it may also be partly the result of a cascade-type effect, with invertebrate diversity reduced in forest fragments that undergo high levels of dead wood collection, limiting the amount of food available to certain bird species. An investigation into this casual observation may be an important consideration in future forest management strategies.

Butterflies



ACP volunteer Bernard capturing butterflies with the help of a local villager

The butterfly community of Sainte Luce has represented a significant void in the recorded species diversity of the remaining littoral forest fragments in South East Madagascar. Almost all other large animal groups, including major insect families have been at least partially studied in recent times, however the assemblage of butterflies in and around the forest patches have been desperately under recorded. This past year however, after receiving a generous equipment grant from IDEAWild, ACP has taken up the challenge.

Up until now, the major obstacle in developing and establishing a baseline study of the butterfly community has been with identification. Aside from a few hard to procure and historical (circa 1885) publications, and with the zoological collection in Antananarivo no longer open for public viewing, identification has been a challenge. However with the permission granted by the Ministry for Environment, we have begun a partnership with Dr David Lees of Cambridge University to compile an initial species inventory for the area of Sainte Luce.

So far we have been able to identify over 50 species of butterfly in Sainte Luce, either as adults or in their caterpillar form. It seems that the littoral forests again show a restricted abundance of butterfly individuals similar to the pattern seen in the local avifauna, and especially when compared to the nearby transitional forests and habitats of Mahatalaky, a community some 15km inland. Despite having already recorded almost one sixth of the total known Madagascan butterfly species in Sainte Luce over just one period, it is almost certain that we have not established a complete inventory for the area.

With the possibility of further large forest losses in the region as a result of mining activity, logging and community usage, possessing an accurate snapshot of the area's present biodiversity is crucial to prevent major population declines, extirpations and extinctions. Although our study of the area's Lepidoptera is currently only rudimentary, we have already uncovered a series of interesting ecological findings including a huge range extension (over 600km!), an unknown *Nymphalidae* caterpillar, and a likely new species of *Arctiidae* moth. More importantly however, there is now significant testimony ascertaining that both butterfly and moth species can be indicative of ecosystem health, and that their prevalence or decline may provide symptomatic evidence for ecological instability. By initiating work on this incredible insect group we have taken an important first step towards safeguarding the future of these spectacular assemblages.

Fruit Bats

Without doubt the Madagascan flying fox (*Pteropus rufus*) is one of the most charismatic and ecologically important species present in Sainte Luce. This endemic and once widespread species has suffered huge national declines over the past 20 years and is now considered vulnerable to extinction due to a combination of over-hunting and continual habitat loss. Over the past decade, a series of publications have suggested easily implementable conservation measures, but until now such initiatives have not been put into practice. With a small and highly threatened roost situated in forest fragment S6, a forest currently being logged and under the shadow of mining operations, the presence of this keystone species is imperiled in the area. Losing such an iconic and ecologically valuable species would represent a considerable blow to the future prospects of Sainte Luce and maintaining its presence in the area has become a major priority for Azafady.

Azafady has recently secured initial funding for such a conservation project, Project *Preropus*, with a priority to protect the local roost (containing approximately 150 individual bats) by establishing a no take (logging) zone around the roost site; two separate clusters of tall trees. This proposal has been discussed with the community and other stakeholders and has received positive and encouraging feedback. The forest fragment in which the roost is situated is currently designated as a collection site for wood to support the 3 hamlets in Sainte Luce and Tsiharoa. However a lack of restrictions and forestry policing is allowing outside forces to exploit this precious community resource.



*A flock of flying foxes
in flight*



A closer look at roosting flying foxes

Over a period of two months, a small ACP team travelled to all of the known flying fox roosts within the Anosy region in order to develop an understanding of the current threats and situation faced by these impressive animals. In total 11 colonies were visited, spread across an enormous landscape, yet the expedition revealed that only two of the region's roost sites had any form of protection whilst 9 roosts were under serious threat of desertion. In all cases the principal threat was the destruction of suitable habitat.

Azafady has been committed to community education in the area for the past five years and believes that it can propose a change in the local Dina (community law) that would prohibit the hunting of bats for bush meat. This would form a basis for the future survival of the animal in the area and benefit both the community and the bats. Flying Foxes are considered a keystone species, particularly in highly fragmented environments such as Sainte Luce, and provide important ecological

services both as pollinators and seed dispersers. Losing this species from the area would be a significant blow to the future of this highly threatened habitat. ACP intends to begin taking the first steps towards implementing our proposal in 2016.

Environmental Education and Conservation Club

Over the past year we have successfully expanded our community environmental education programme, Club Atsatsaky, to include the hamlet of Manafiafy. We have continued to run English language classes for both beginners and advanced students each Saturday in Ambandrika and alternate Club Atsatsaky between both schools on Wednesday afternoons and Saturdays mornings respectively. Despite the extra distances involved for us to walk each morning, the popularity of our sessions in both communities has been extraordinary and continues to draw large attendances. Local community involvement and education is central to our philosophy; through education we endeavour to promote a sustainable and prosperous future for the people of these isolated communities.



Club Atsatsaky at the World Environment Day celebrations



Club Atsatsaky visiting the Nahampoana wildlife reserve

This year, Club Atsatsaky has focused on topics specifically relevant to the community, and has included lessons on natural resources, environmental responsibility, weather, nutrition, pollination and reforestation. Each lesson was planned and delivered by Azafady staff and volunteers and was designed for maximal student interaction and participation. In the past two months we have received a grant to enable us to teach and demonstrate the importance of growing fruit trees as well as how to maintain look after them in Sainte Luce. We have also planned a trip with the school students to a nearby wildlife reserve, Nahampoana, where the young students

have the opportunity to experience a different environment from their own, an environment which derives its wealth from the protection of nature and wildlife. We hope participants will be inspired to protect their local environmental heritage.

We believe that the local community will become the guardians of the forests and wildlife by conserving and managing resources in a sustainable manner. The future of the littoral forests depends on local people who are knowledgeable and passionate about conservation and the environment, and it is our hope that we can continue to nurture this passion and help to develop the skill sets in the next generation of community members.

More specific lessons and presentations have been given on the conservation of some of the area's more charismatic species, and particularly those, which we are working hard to study (*Phelsuma antanosy*, *Matoatoa spannringi*, *Pteopus rufus*). It is also important that our work and passion for conservation is transferred to the students. Once again the volunteers have been integral in terms of enthusiasm and innovation, suggesting novel and engaging ways to teach and convey the conservation message.

Around the village of Ambandrika, the level of spoken English is perceptibly increasing and it is encouraging to see even small children with a basic vocabulary. Many students from our advanced classes now also study English at national or private colleges either in Fort Dauphin or Mahatalaky. The English language classes too are based on a curriculum designed specifically for the Sainte Luce demographic, focusing on functional and conversationally useful topics. We have also been joined in Sainte Luce occasionally by staff and assistant English teachers based in Fort Dauphin, who bring their experience and enthusiasm to our lessons.



Volunteers teaching English in Ambandrika village



*ACP volunteers painting faces
at World Environment Day*

Our annual celebration for World Environment Day 2015 was once again the highlight of a hugely successful year and was enjoyed by the entire community. Held in June, the event centred on conserving and protecting a local Flying Fox roost (*Pteropus rufus*), and was attended by several thousand local community members. The day began with school groups from all three hamlets, including members of Club Atsatsaky planting 2,000 trees to celebrate the Malagasy Year of Reforestation. This triggered a large parade and music that led everybody down to the main event site, where educational stalls, games and activities were held. This year, the

event drew the attention of regional media and delegates and dignitaries from all over the Anosy region were in attendance, including representatives from the Ministry of Environment (DREMF), WWF, QMM, the Mayor of Mahatalaky and the Chef Fokontany (Sainte Luce).

Both Club Atsatsaky and our English Classes developed and performed conservation themed songs and sketches written especially for the occasion, an event whose main purpose is to unite people and champion conservation and sustainability. The interesting stalls were run by our staff and volunteers, providing information on ACP activities, local Miaro projects, Stitch Sainte Luce, Moringa planting and the benefits of reforestation for the community. Once again, a great deal of preparation and hard work was undertaken to facilitate another very successful event and to celebrate the environment.

Perhaps the highlight of the festival, however, occurred the night before. After hiring a generator and projector, ACP staff and volunteers were able to set up and show a special night time viewing of David Attenborough's *The Blue Planet*, complete with translator. For a community dependent on fishing and who seldom witness such films, the extraordinary footage of huge shoals of fish captivated the crowd. It was a very special night.

Thank you everyone for another successful and wonderful year!

Although the work of ACP has been varied over the past five years, and we have embarked on the study of many seemingly disparate taxonomic groups, it is important to remember that all of our work is focused on a single, achievable goal: to protect the forests and wildlife communities of Sainte Luce, whilst supporting the human populace to develop in an environmentally sustainable manner.

Over the coming year we hope to continue with the successes of 2015 and break new ground with exciting new practical conservation initiatives, research projects and publications. We hope to secure the future of an important local fruit bat colony, investigate the feasibility of much needed habitat corridors and protect important bird habitats. From a research perspective, we can look forward to further entomological study, and a potential investigation that could link forest policy and resource management to biodiversity trends across multiple taxa. Furthermore we eagerly await the results of our recent genetic studies, which are certain to provide plenty of further avenues for research!

Thank you all for your dedication, support and hard work throughout 2015, and we hope that you can join us again in the incredible forests of Sainte Luce soon!

Misaotra betsaka!

ACP! ✕

