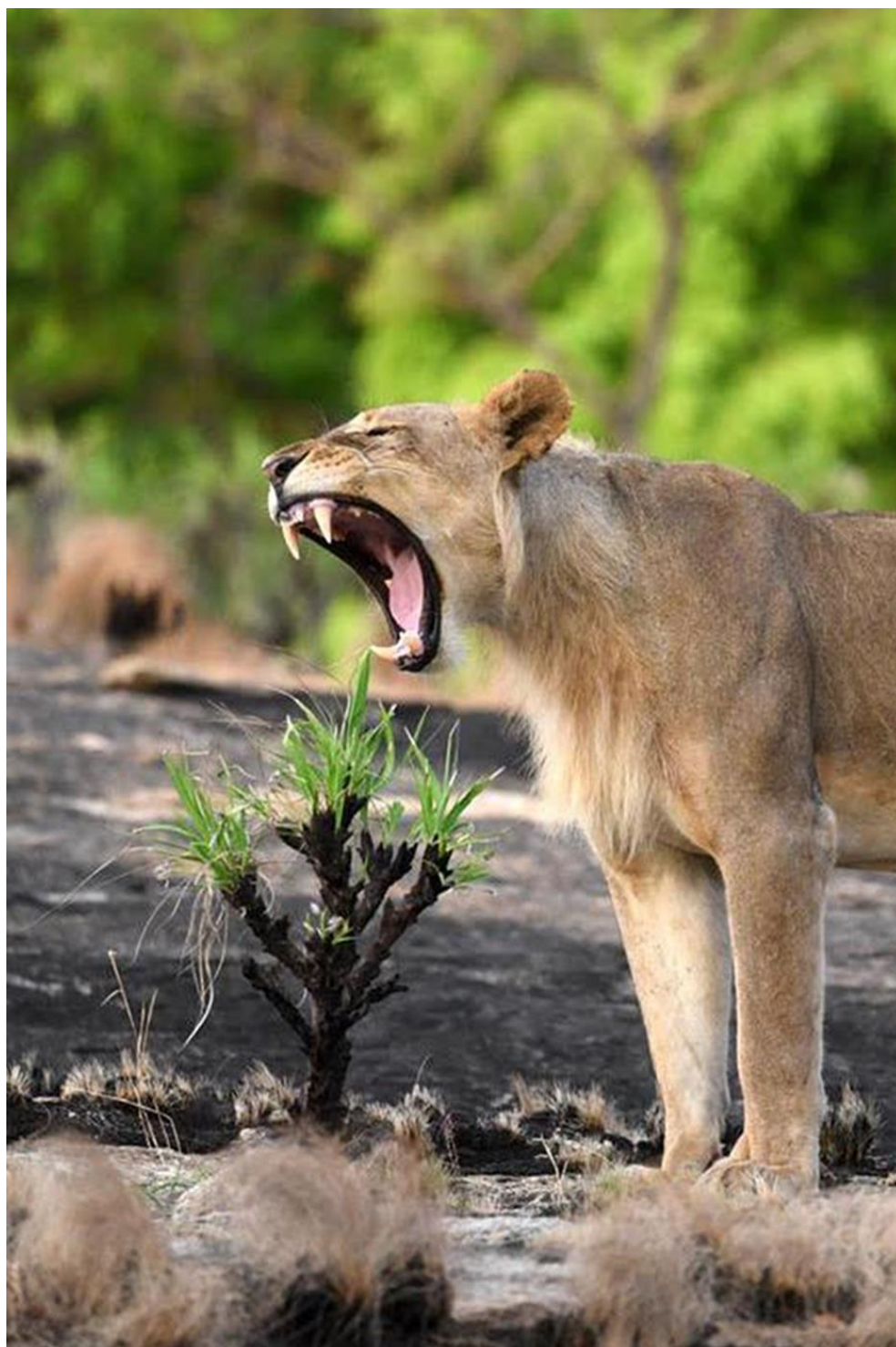


# ANNUAL REPORT 2016

## Niassa Carnivore Project



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TRT Conservation Foundation

## VISION

A unique wilderness of Niassa National Reserve where carnivores continue to persist and thrive with the full participation and support of local communities.

## MISSION

Promoting coexistence between carnivores and people in Niassa National Reserve, Mozambique.

We work in in collaboration with the communities who live inside Niassa Reserve, the Mozambican Governments and the Niassa National Reserve management authority (ANAC & Wildlife Conservation Society).



The Niassa Carnivore Project (NCP) serves to secure and conserve lions and other carnivores (leopard, spotted hyaena and African wild dog) in Niassa National Reserve, northern Mozambique by promoting coexistence between carnivores and people, and directly mitigating threats. We acknowledge the costs to Niassa communities who live with carnivores while recognizing the potential of these carnivores to provide substantial ecological, cultural and economic benefits to Niassa Reserve and Mozambique.

NCP is an independent conservation project administered and managed by the **TRT Conservation Foundation** (NPC 2017/024322/08) This is a not for profit company.



It was previously administered by The Ratel Trust from 2004 to 2016.

TRT Conservation Foundation also directly supports a concession inside Niassa Reserve -L5 South and on future L4E through the Mozambican operating company Mariri Lda. Mariri is a partnership between NCP and Niassa communities inside the concessions we manage.



## EXECUTIVE SUMMARY

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Niassa National Reserve (NNR) is in northern Mozambique on the border with Tanzania and is one of the largest protected areas (42,000 km<sup>2</sup>; 16,000 ml<sup>2</sup>) in Africa. It is managed through a co-management agreement between the Government of Mozambique (National Administration of Conservation Areas with Ministry of Land, Environment and Rural development (MITADER) and Wildlife Conservation Society (WCS). The protected area supports the largest concentrations of wildlife remaining in Mozambique including an estimated 800 - 1000 lions and more than 350 African wild dogs as well as leopard and spotted hyaena. Recent research has reaffirmed the important role that large carnivores, play in ecosystems (Ripple *et al.*, 2014) and the cascading negative ecological effects when they are lost. The large carnivores really are indicators of ecosystem health. Free-ranging African lions (*Panthera leo*) have declined over the last century to fewer than 20,000 today (Riggio *et al.*, 2012; Bauer *et al.*, 2015). Well managed protected areas, particularly large protected areas like Niassa National Reserve that can support more than 1000 lions, will be critically important for future recovery efforts for lion conservation (Lindsey *et al.*, 2017). These types of landscapes are becoming increasingly rare.

Securing these large lion landscapes should be of local, national and international importance and will go a long way to securing NNR itself as many of the threats facing lions and other carnivores are also the threats facing much of the wildlife in this area. But the challenges are immense as NNR supports a growing population of more than 40,000 people resident in 42 villages inside the protected area. Some of the poorest people in the world are living with these lions. Major current threats to the lion population in NNR are habitat transformation from a growing human population, bushmeat snaring where lions and leopards and their prey are caught in snares set to catch wild meat and increase in poisoning for bushmeat, skins, bones and other body parts. Our recent monitoring data (2015) suggest that the Niassa lion population is starting to decline with some areas inside the protected area becoming increasingly “empty” of carnivores. The data from the community wildlife guardians who monitor mortality and sightings of carnivores and other special species in 26 villages across Niassa Reserve and from informer networks are alarming showing that in the past three years alone (2014, 2015 and 2016) a minimum of 59 leopards, 21 lions, 35 hyaenas and 23 wild dogs have been killed illegally. This is likely to be the tip of the iceberg given that many lions die unnoticed in the bush.

The Niassa Carnivore Project (NCP) has been working in NNR since 2003 in close collaboration with the Mozambican NNR management authority, Niassa communities and tourism operators. Fifteen years of experience in NNR has shown us that conservation of large carnivores is impossible without partnering with local communities, NNR management authority, district, provincial and national government, and tourism operators. We feel that supporting conservation friendly development and alternative livelihoods to alleviate poverty and meet basic health needs and thereby improving human well being is essential. For this reason, our conservation programs focus not only on directly reducing threats like poaching, snaring and retaliatory killing in response to attacks on people and livestock, but also on developing alternative livelihoods, testing ways to partner with communities, revenue flow and education.

Our long-term vision is a protected area where carnivores persist with the full support and participation of Niassa’s local people. The mission of our project is to secure and conserve the large carnivore populations of NNR in partnership with the NNR management team and promote coexistence between these large carnivores and the people who live inside the protected area. We base our conservation actions on targeted ecological and socio ecological research to provide baselines against which actions can be measured, to understand threats and then to find and test locally based solutions for each threat in turn before scaling up

successful programs in partnership with the NNR management authority. We are a Mozambican team with more than 80% of our team from local villages within Niassa Reserve. Skills training is provided on the project recognising that employment provides one of the most significant incentives for conservation in the area and we recognise that developing a local conservation culture is essential for long term success. We implement this through the Mariri Environmental and Skills training centre for local residents. We are strongly committed to mentoring Mozambican conservationists and recognize that conservation is a process and not an end goal and we therefore have a long-term view (more than 25 years).

### **Summary of key achievement and activities in 2016**

Our annual reports form a critical part of assessing our progress and provide a holistic overview for our team on what we have achieved and how the programs are progressing and all link together. Monitoring data has to be assessed regularly to better inform our actions, otherwise what is the point? This report is also one way we report back to the communities we work with, our team, Government officials, Reserve management team and others who support our work. The funding we receive deserves the utmost respect and attention to detail. Only once all these data are together can we assess how we need to move forward and where the gaps are. Many of our programs are experimental and the details are important if these programs are to be scaled up in Niassa or elsewhere. By reading our past annual reports we have a full record of the development of our community programs, challenges and successes. For these reasons, our report is very detailed and long. We hope you will find the time to look through our detailed report and the progress we have made towards achieving our goals or just dip into the sections that interest you.

### **Improving management of NCP and building capacity**

Our focus in 2016 was in improving our middle management team through hiring new people (head of anti-poaching and second officer in charge) and through providing intensive mentorship. We believe that the presence of a strong middle management layer increases stability and effectiveness and also ensures that the managers are not overwhelmed. This year we have also transitioned from a not for profit trust to a not for profit company, TRT Conservation Foundation. The transition is ongoing but will add stability for the program moving into the future. Members on our team have received training in anti-poaching, financial management, leadership, human wildlife conflict and donor engagement in this past year. We currently have 82 permanent staff and 120 seasonal staff with over 85% of our team from local villages inside Niassa National Reserve. Our annual expenditure was \$1 170 834 and we raised \$1 551 032 with the additional funds raised donations for 2017 that were raised in the last half of 2016. Our funding is growing but is still largely single year donations and we are working to increase the number of 3-5 year grants to ensure stability and allow for growth. After 4 years, construction has largely been completed with the headquarters, Mariri Environmental Centre, staff housing, workshop, carpentry area with store rooms, 3 control posts, plane and rapid response unit all completed. We were still hampered by a poor radio communications network.

### **Conservation Monitoring**

We are monitoring our efforts through repeated surveys, grid camera trapping, radio tracking of lions, SMART for anti-poaching data, MOMS wildlife guardians, fish catches, ungulate transects etc. Inside the area we manage with a large community of 2000+ people, ungulate, hippo, lion numbers have all increased and fish catch sizes are stable (2005, compared with 2016). In the intensive study area of 580 km<sup>2</sup>, the lion prides have increased from 2 to 6-7 in past 10 years, with 27 adults and 9 cubs born in 2016. One lion was killed illegally (snared and then speared). This is the first recorded illegal killing in the area since 2012. Litter size has increased as has cub recruitment.

Across Niassa Reserve the lion population appears to be stable between 800-1000 lions but may be starting to decline with some areas of concern where no carnivores (lion, leopard, hyaena, wild dog). There are still worrying indications of poisoning and lion bone trade with the first record of a poacher caught with lion bones recorded in 2016 by L7, Niassa Wilderness. In the past 3 years, 64 leopards, 23 lions, 37 hyaenas and 24 wild dogs at a minimum have been killed illegally across Niassa Reserve. It is likely to be more than this. This excludes the legally hunted lions, leopards and hyaenas taken through sport hunting in 9 NNR concessions.

The MOMS Community wildlife guardians continue to provide excellent data on mortality, human wildlife conflict and fishing activities as well as extension work in their home villages and now supports 30 guardians over 30 villages with our first women guardians hired in 2016. We continue to manage and financially support the NNR community guardian program (MOMS) and have done so since 2006. All the data is available online for shared management. The wildlife guardians in villages across Niassa Reserve collect information on special species seen in the village surrounds (dead or alive), fishing activities and human wildlife conflict events. In 2016, they again recorded more than 9000 sightings of special species with 499 lion sightings, 167 sightings of leopard, 1108 sightings of wild dog and 365 sightings of hyaena from the 30 villages. Lion sightings declined in Mecula and Negomano areas but wild dog sightings were stable across Niassa Reserve as is pack size. In total 122 animals were recorded as dead, and these are likely the result of snaring, poisoning or retaliatory killing. The majority were buffalo, crocodile and tortoise.

## **GOAL 2 Reduce threats and provide alternative livelihoods**

### **THREAT 1 REDUCE BUSHMEAT SNARING**

Bushmeat snaring (the trapping of wild animals for meat) is the most significant threat to large carnivores in NNR at present. NCP aims to address snaring through a holistic approach of providing alternative income generating opportunities for hunters through skills training and employment of local people, providing an alternative protein source through small livestock breeding, increasing food security and developing effective anti-poaching that involves resident communities. We believe that similar amounts of funding should be spent on the both a “boots and guns” and on community engagement approaches to conservation.

#### **Providing alternative protein sources -Livestock Breeding Programs** *(lead by A.Jorge, Conservation Manager)*

The livestock husbandry program aims to increase the quantity and diversity of meat protein available in the villages which we hope will increase food security, decrease reliance on bushmeat and provide an alternative income for local households. The program is now active in 5 villages in 100 households. More than 20 households have earned income from selling their livestock (rabbits, ducks, turkeys) and some were bartered for chicken wire to improve hutches. We hired a new Community Liaison Officer, Hugo Pereira, who is also a vet and he will be assisting with this program in future. Hutches were improved in 40 households and we designed two new mobile hutches from offcuts from the beehives and from bamboo. One new livestock breeding group with 18 members was started with bushmeat hunters. We will be monitoring through intelligence whether they stop bushmeat snaring or do both! Only three of these people had livestock at home previously.

#### **Improving Food Security through Conservation Agriculture** *(lead initially by Mbumba Marufo (up until May 2016) and then Hugo Pereira (August 2016) with Tomas Buruwate)*

Improving food security is essential if conservation is to be successful in NNR. It is impossible to have a conversation about conservation when people are worrying about where their next meal is coming from.

Increasing food security is a critical need that lessens the need for income from extractive use of wildlife resources (ivory, skins and bushmeat) and will decrease the rate of habitat transformation through slash and burn agriculture. The conservation agriculture program is a community based approach to increase productivity of Niassa fields in a sustainable way. It relies on the farmers to test, manage and maintain the conservation agriculture plots through a Farmer Field School (FFS) approach as developed by CARE International. We focused on assessing this program in 2016, developed a vegetable garden at Mariri to test new crops and natural fertilisers and hired a soil scientist to complete an analysis of soil quality in fallow fields in Mbamba and Ncuti villages to guide in ways to recover this land that has been abandoned.

### **Reducing human – elephant conflict: Elephant-Beehive Fences**

Crop raids by elephants are a major challenge for many farmers during the wet season. This not only leads to severe food stress but reduces support for conservation. Elephants do not like bees and avoid beehives. Dr. Lucy King from Save the Elephants developed and tested the use of elephant-beehive fences in Kenya to reduce crop raiding by elephants. We tested the potential use of this fence in NNR to reduce human-elephant conflict. The results showed that it was at least 60% effective at reducing elephant crop raids and there was additional benefit of marketing the honey as Elephant friendly Honey which provides an alternative income. By end of 2016 more than 300 hives had been distributed with 100 hives in Ncuti to surround their fields. The previously distributed hives were assessed and many were found to be in poor condition and not maintained. We tested two ways to reduce honey badger damage – a metal sleeve on the pole and a collar of bamboo spikes. The best defense is a well-maintained hive hung more than 1.1m above the ground. An assistant was hired to assist with regular monitoring, registration of the beehives and livestock breeding program.

### **Grupo Kushirika**

This is our newest livelihoods program focusing on artisans in villages who can produce items to sell to visitors and in shops. In this first year, we partnered with Monique Fagan who has extensive experience with craft groups. She lead three design workshops with men, women and children, assessed local materials and provided guidance on items that are already being made. The initial aim was simply to record the skills and items available and then in 2017 to refine items for an international market. A label was developed and the first items were sold internationally at the WCN Wildlife Expo on San Francisco in October. At present eight people are consistent member of the group and are assisting to design rules and prices. The items include embroidery, baskets, pottery bowls, spoons, woven mats, etc.

### **Conservation Tourism**

We are developing Conservation Tourism as an alternative livelihood for partner villages. The objective is to develop a tourism product that is not investor lead but designed to generate income for local people at every level from a bed night levy, performance payment for sightings of key animals, building of camps using local skills, refurbishment each year of blinds, mats, bamboo, items in camps from craft group and finally employment in tourism services and conservation services (opening roads, airstrips etc.). Three locally designed decks based on the “Sanja” tradition or houses on stilts built in fields to protect crops (safe shelter) were built at Mpopo hippo pool. These are no cement camps with a very low footprint, run on solar, pit toilets and low impact principles. The design of decks was tested and refined in 2015 /16. We expect Mpopo camp to be tested and completed in 2017 and to be officially open in mid 2018 as the first of a planned four camps each linked to a different village or group of villages.

### **Reducing snaring, mining and armed poaching through community supported antipoaching**

We conduct anti-poaching in L5 South, to complement Reserve wide efforts. In 2016, we increased our anti-poaching scouts from 28 to 32 scouts with an additional 5 scouts at control posts. We hired an experienced



head of anti-poaching and second in command from outside Niassa Reserve to minimise nepotism and corruption in the scout force. All scouts completed a 30-day training with Provincial Police as well as 30 days mentorship training with ANAC approved Conservation Outcomes. SMART is fully operational and providing monthly reports for ourselves and NNR management team as well as assisting with debriefing of scouts when they get back from patrol. The scouts completed 199 patrols and covered 11, 579 km. In 2016 4 elephants were illegally killed in two incidents. We have lost 6 elephants since July 2014 which is a marked decrease in poaching compared to 22/ year. More than 100 snares were recovered and 2277 illegal gold miners were apprehended. Elephant poaching and snaring have gone down substantially however illegal mining has increased exponentially. The lack of clarity on the mining policy in Niassa Reserve and lack of arrests and prosecutions by other operators and NNR management led to increasingly dangerous conditions for NCP / Mariri as we were increasingly isolated. Communities blocked district roads in protest and in early December, the family members of 19 miners that were arrested rioted. A scout was assaulted, two vehicle windscreens were damaged, equipment was vandalised and staff threatened. We continued to face problems with the radio network and cannot effectively communicate.

## **THREAT 2: RETALIATORY KILLING IN RESPONSE TO ATTACKS BY CARNIVORES ON PEOPLE AND LIVESTOCK**

### **Reducing attacks through living fences, safe shelters, safe behaviours and effective corrals**

Human-carnivore conflict results in retaliatory killing of lions and leopards. Research in previous years has shown that lion and leopard attacks can be reduced through behavior changes, specifically sleeping inside a shelter during the wet season, never walking alone and improving goat corrals etc. We continue to include information on ways to reduce conflict in educational materials (comic book, storybook, poster, plays). We use visual deterrent lights and reflective tape on goat corrals and small livestock corrals. Fortunately, human carnivore conflict is relatively rare in NNR compared to other areas perhaps due to the relatively low densities of lion, availability of natural prey and lack of cattle. The community wildlife guardians collect ongoing data on human wildlife conflict in their villages and additional information is provided by Reserve management team and opportunistic records from operators and informers. We urgently need a Human wildlife conflict protocol and poisoning protocol to be established by NNR management team to guide activities. In 2016, 3178 conflict events were recorded by the wildlife guardians, with the majority bushpigs, baboons and elephants. Of the 18573 conflict events recorded in ten years, only 4 % were from carnivores with hyaenas, jackal and leopard the main culprits. As far as we are aware no one was killed or injured by a lion in 2016.

## **THREAT 3: UNSUSTAINABLE SPORT HUNTING OF LIONS AND LEOPARDS**

### **Reduce unsustainable sport hunting of lions and leopards**

In NNR, sport or trophy hunting is allowed inside the protected area across nine designated hunting concessions covering 27,989 km<sup>2</sup> (66.6%) of the protected area estate (42, 500 km<sup>2</sup>). Sport hunting is increasingly controversial particularly for species that are facing widespread declines across their range like lions, leopards and elephants and particularly in a protected area. The decision to allow sport hunting inside Niassa Reserve rests entirely with the MITADER and the NNR management team. NCP ages all lion and leopard trophies taken in the reserve to ensure that regulations are being adhered to and on request advises the NNR management team on quotas. The Lion regulations were developed by NCP and implemented in 2006 by the Reserve Management Authority (SGDRN & FFI) with consultation of the operators. These regulations were updated by WCS / ANAC in 2013, while the leopard regulations were implemented in 2010 by SGDRN / FFI and updated by WCS / ANAC in 2013 with a decrease in leopard quotas in 2014 based on NCP data. In 2016, three lions were taken as trophies only 13 % of the total (n = 22 quota) and all were over the age of six years. The percentage of lions taken as trophies that are over 6

years of age has increased from only 25% in 2004 to 100% in past three years. The NNR lion regulations and Points system has clearly been successful at reducing the unsustainable sport hunting of lions and reducing off-take to sustainable levels. For all concession operators, the need for effective anti-poaching and community engagement has to be enforced to reduce illegal off-take. Illegal off-take particularly snaring and poisoning is the main threat to lions, leopards and other carnivores in Niassa Reserve both within and outside of hunting concessions.

#### **THREAT 4: DISEASE SPREAD FROM DOMESTIC DOGS**

##### **Reducing the disease risk to carnivores**

The presence of a growing, unvaccinated population of domestic dogs inside villages in NNR is of concern. Domestic dogs are known to be the reservoirs of disease and the spread of canine distemper and rabies to carnivores poses a potential risk to lions and African wild dogs in particular. The domestic dog populations in Mbamba Village inside L5-South appear to have stabilised in Mbamba Village at around 40 dogs. There was no progress on this objective in 2016 although we continue to motivate strongly for a domestic dog management plan for NNR. Rabies Awareness was again a focus of the 2016 MOMS Wildlife guardian workshop.

#### **GOAL 4 ENVIRONMENTAL EDUCATION AND OUTREACH**

Environmental education and outreach is part of all our programs as we share what we have learned with communities to increase knowledge, increase tolerance, promote action, provide practical solutions and provide skills training. This program grew substantially in 2015 under the leadership of our Education Manager, Andrew Mkanage. In 2016, the Mariri Environmental and Skills training centre was fully operational with 122 people (>400 bed nights) staying at the centre. This included 91 local children, 12 teachers, 16 traditional leaders, 35 wildlife guardians, and participants in law enforcement workshop which included environmental police, district prosecutor, reserve warden, and scouts. 1000 storybooks were reprinted and are being distributed with teacher training and poison posters were printed and distributed. We initiated a program of wildlife clubs to complement the bush visits, a proposal was created and permission given from the Director of Education. Two clubs were initiated in 2016 and more will follow as this program grows. We supported a Conservation Olympiad in partnership with Mecula teachers in 4 schools. The aim was for them to make posters on environmental issues. In November, more than 500 people attended the lion fun days with their activities of dance, theatre, races, art and design. This was attended by the warden of NNR as well as Mozambican journalists and was part of the wider NNR cultural festival. It has become a tradition. The lion scholarship is growing with 19 children on secondary school scholarships (14 ongoing and 5 new scholarships were provided for 2016. For 2017, Chuilexi Conservancy are partnering with us to support 6 scholarships from schools within their area all managed by our education program. We continue to battle with poor boarding school conditions and lack of preparedness of children. In 2016, we hired a tutor for Grades 8-10. Of the 19 children on scholarship, 14 passed and 5 failed and the scholarships were not renewed for these 5 individuals.

#### **COMMUNITY PARTNERSHIP**

NCP considers sustainable social, economic and community development in local villages a priority and we are trialing our approach in Mbamba Village (>500 households; >2000 people) Communities are a part of all our conservation, education and ecotourism programs. Our approach is to concentrate employment and benefits into the Mbamba community that live inside the concession with clear agreement on benefits and responsibilities. In April 2015, the Associação de Utendeli ni Mazengo received formal notification that the Governor of Niassa has officially recognize the association with NCP assistance. The community now has a legal structure to enter into a partnership agreement. In 2016, we also finished construction of the



Association Office in Mbamba village in 2016. Regular meetings are held with the Association, traditional leaders and Mariri to discuss all aspects of conservation management in L5-South with an open Annual general meeting held with the entire community in June –July of each year to report back progress from both partners.

In 2016, more than 1700 people in total benefited from our community programs. Through our agreement with Mbamba Village, \$90,000 went to the village through seasonal salaries (individual benefits), school lunch program and community conservation fund with performance payments linked to visitors, sightings of animals, elephant poaching, snaring and poisoning. These performance payments are working well. With the community conservation fund the community drew up a budget and decided to buy a third strand of the electric fence to reduce buffalo crop raids, pay for three community scouts to remove snares and two cooks for school lunch program. The partnership went well until 3<sup>rd</sup> of December when the riot in response to arrests of illegal miners resulted in a breaking of the agreement and all benefits were stopped. The village has apologised and we will all work towards a new agreement in 2017. Food security is a serious threat to people living inside NNR. The majority of soils in the reserve, particularly in the eastern section of the protected area have low fertility. Our conservation agriculture, beehive fence and small livestock breeding programs are a community based approach to support alternative livelihoods and increase food security. While these are all volunteer groups they are now reaching more than 110 households in five villages. In late 2015 we started a school lunch program. In 2016, 347 children started school and 305 wrote exams. This has never happened in the past ten years as normally more than half the children drop out of school before the end of the year. This was simply the result of the school lunch program which provides one meal a day and incentivises children to come to school and parents to send them to school. While the program is expensive (\$15,000 to feed 350 children for one year) the return on investment is very high. We hope to scale this up into more households and villages in 2017.

## **GROWTH FOR OUR TEAM**

We were very excited when Eusebio Waiti (a Mbamba resident) who has worked on our lion monitoring team for 12 years, won two international awards – the Disney Wildlife Conservation Hero Award and the Houston Zoo Wildlife Warrior award. This was a great honour for Eusebio and met with great excitement by our team. Also in 2016, Agostinho Jorge continued working on his PhD on bushmeat consumption and trade and completed his two -year training on the Emerging Wildlife Conservation Leaders Course. Andrew Mkanage our Education Manager attended a Pathways training course in Kenya and visited Ewaso lions and their programs. Andrew also attended the WCN Wildlife Conservation Expo in San Francisco where he learned about public speaking and donor interactions before visiting Utah's Hogle Zoo to learn more from their education programs. SOS International held First Aid courses for 18 staff members from NCP, Chuilexi, Niassa Wilderness and Reserve management. It has been a year of growth and learning. Our team is stable, motivated and have the skills to be effective.

## **THE WAY FORWARD**

We believe our combined approach of monitoring, direct mitigation of threats, and anti-poaching couple with strong community engagement is a practical and feasible model for securing carnivores in NNR. We are having some success. We will continue to build on our 2016 activities and a new five-year period for 2017-2021. We remain deeply committed to Niassa Reserve, its conservation and communities for the long term and look forward to collaborating and working together further. We are very concerned about the increasing threats of alluvial gold mining and poisoning but hope to rise to the challenge as best as we can. None of this would have been possible without the tremendous support of our amazing team, our partners and our donors.

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## LONG TERM GOALS (25 YEARS: 2012 - 2027)



Logging



Elephant poaching



Population growth & habitat loss



Gold & Ruby Mining



Bushmeat snaring



# THREATS



Unsustainable trophy hunting



Retaliation due to attacks



Skin trade



Disease – domestic dogs

All NCP activities are achieved in collaboration with local communities and NNR Management Authority (ANAC/ WCS) as we work inside a national protected area. Our work is to complement the efforts of the NNR Management team..

### Goal A

To secure ecologically stable leopard, spotted hyaena, wild dog and lion populations in Niassa Reserve, with at least 1000 - 2000 lion with no concomitant increase in carnivore attacks on livestock and no unprovoked attacks on people from lions or other large carnivores. This will require reducing direct threats to large carnivores (bushmeat snaring, attacks, disease and underage sport hunting), monitoring effectiveness; and employing increasing community engagement through Goals B and C.

### Goal B

To develop a model for sustainable partnerships between local communities and a conservation organisations resulting in excellent conservation management with increasing wildlife populations, decreased illegal activities and increasing income and benefits for local communities to support conservation friendly development. (L5-South Concession)

### Goal C

To develop a locally relevant, sustainable environmental education and skills training program for Niassa residents centered around the Mariri Environmental and Skills Training Centre to promote conservation and ways to coexist with large carnivores and provide alternative livelihoods; with at least 300 -400 people visiting or attending courses at the Mariri Environmental Centre per year and a measurable increase in tolerance towards large carnivores and knowledge of conservation.

## OBJECTIVES (2017 - 2021)

### MEDIUM TERM GOALS (2017 - 2021)

Our four medium term goals (2017 – 2021) are listed below. For each goal we have identified targets and indicators where possible. It is important to bear in mind that this is a rapidly changing environment and these are moving targets as more information is collected and priorities change. For example, three years ago alluvial mining, poisoning and trade in lion parts were not major threats in NNR. In addition, in many cases it is difficult to specify a specific target as there is no clear meaningful threshold for what can or should be achieved. For example, we don't know what lion population Niassa can support as there is a growing human population and prey populations are still recovering. There is also no historical data. In most cases what we are looking for is a trend in the right direction i.e. an increasing and then stable population of lions, decreasing trend in human-wildlife conflict, decreasing trend in bushmeat snaring.

| Medium term goals                                                                                                                                                                                                                                                                                                                                               | Monitoring and Solutions                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Goal 1;</b><br><b>Conservation Monitoring</b><br><br>Provide long term (> 20 years) monitoring of the status of lions, leopards, spotted hyaena and African wild dog and their threats in Niassa Reserve to assess the trend in their populations and the success of interventions.                                                                          | <ul style="list-style-type: none"><li>• Systematic monitoring of lions and hyaenas in NNR through call up survey to monitor trend in population density every 3 years (2018, 2021).</li><li>• MOMS wildlife guardians in place in more than 30 villages collecting ongoing information on human-wildlife conflict, morality of carnivores, domestic dogs, wild dog pack sizes and provide assistance to communities on ways to reduce conflict.</li><li>• Provide support and training to ensure implementation of SMART across entire NNR.</li><li>• <b>Long term permanent camera trapping program in place across Niassa Reserve in partnership with NNR team to assess carnivore populations and their prey with effective, ongoing labelling, data entry and analysis through citizen science and collaboration through Pride Lion Conservation Alliance and a partnership with Snapshot Safari.</b></li><li>• Systematic collection of carnivore sightings data and threats data in a central database with development of an app for carnivore sighting across NNR</li><li>• Long term monitoring of lion population in L5 South and across Mecula-Marrupa corridor to assess recruitment, turnover and movement patterns.</li></ul> |
| <b>Goal 2</b><br><br>To directly reduce the four major threats to lions and other carnivores in NNR (retaliatory killing, snaring, disease and sport hunting of underage individuals) by finding and implementing practical, sustainable and effective solutions and alternative livelihoods in collaboration with local communities and Mozambican government. | <b>Bushmeat Snaring</b> <ul style="list-style-type: none"><li>• Detailed analysis of the issue to find possible solutions and ongoing monitoring of snaring through SMART. Agostinho Jorge is completing his PhD on bushmeat consumption, trade and snaring in NNR.</li><li>• Increase number, production and income generated from small livestock breeding programs.</li><li>• Trial chicken vaccination program in collaboration with NNR team and Agriculture.</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |

- 
- Establish rapid reaction desnaring team with vet, plane and experienced team to respond to snaring events across NNR.
  - Increase the number of households involved in alternative livelihoods programs to > 500 with increasing income, households (Elephant friendly honey, small livestock, craft and design - Grupo Kushirika).
  - Test ability of community partnerships with performance payments to decrease snaring in L5 South and L4 east.

#### Retaliatory Killing and conflict with carnivores

- Monitor through MOMS wildlife guardians in more than 30 villages
- Programs based on initial surveys across NNR to establish safe behaviours and safe shelters for people and livestock with educational materials already developed (toolkit, safe behaviours poster, comic book, Mariri visits)
- Target is for no people to be killed by -lion, leopard or spotted hyaena in Niassa Reserve in unprovoked
- attacks by 2020 and no increasing trend in attacks on livestock.
- Assist NNR with development of HWC protocol in place and training provided for problem animals.
- Effective communication network (WhatsApp of community wildlife guardians in 30 villages) to ensure that all attacks by carnivores to livestock and people responded to by wildlife guardians, Reserve staff or NCP staff within one week to empathize, help provide solutions and collect detailed information.
- Train MOMS community wildlife guardians in use of foxlights, reflective tape, building of corrals.

#### Poisoning

- Data collected through poison survey in 2016; monitored through SMART and intelligence in collaboration with NNR management team
- Education materials developed to ensure people are aware of human health risks associated with poisons include poison poster, app game (completed 2017).
- Investigation into possibility of bringing in detection dogs or hero rats to identify poison specifically and if possible to implement.
- Assist NNR with development of poison protocol to ensure poisoning events are responded to quickly, correct data and samples are collected in collaboration with NNR team

#### Sport hunting

- Data collected for past 11 years on trophy ages and offtake.
  - Monitored through actual aging each year by NCP.
  - Solutions in place through Niassa Lion Points System to assign quotas and limits of one leopard / 1000 km<sup>2</sup>.
-

- 
- Continued strictly enforced regulations for lion and leopard sport hunting with offtake of lions and leopards stable or decreasing with increasing proportion of “old” animals taken as trophies.

#### Disease

- Data collected in 2004-2006 and provided to NNR including data on disease from blood samples of carnivores.
  - Monitoring through MOMS wildlife guardians across NNR.
  - Domestic dog numbers stable in Niassa Reserve with NCP continuing to motivate, and support a zoning and vaccination plan in place for domestic dogs inside Niassa Reserve with NNR team.
- 

### Goal 3

To develop a model of community based management of an area that results in effective protection of wildlife and wild habitats while increasing income and opportunities for communities that reside within the area (L5S and possibly L4E) that will have broader applicability across Niassa Reserve and elsewhere.

- Ungulate and carnivore populations in L5S stable or increasing.
  - Elephant poaching decreasing compared to 2010 - 2012 levels.
  - Human-wildlife conflict continues to decrease.
  - Illegal mining stable or decreasing compared to 2016 level.
  - Bushmeat snaring decreasing.
  - Mbamba village receives regular and increasing sustainable benefits and revenues with clear rights and responsibilities for both parties through an ongoing legal agreement.
  - Initiate effective ecotourism model in L5S to increase sustainable income for Mbamba Village and generate ongoing employment for local people.
- 

### Goal 4

To increase tolerance for conservation and promote coexistence through environmental education, outreach and skills training.

- Mariri Environmental Centre and educational outreach program fully operational with at least 150 children/year (10 schools) attending a bush visit 4 days per year.
  - At least 3 skills training workshops for adults at Mariri per year as determined by need of NNR community and management (as needed etc.).
  - Monitoring of effectiveness of environmental programs in place to assess increase in tolerance and knowledge.
  - At least 10 Wildlife Clubs operational in at least 10 villages.
  - At least 25 Lion scholars - secondary school scholarships provided to deserving scholars in schools in eastern NNR.
- 

## MANAGEMENT STRUCTURE AND APPROACH

Colleen and Keith Begg founded The Ratel Trust (TRT) a South African not for profit conservation trust in 2004 to support their conservation work in Africa. TRT was managed by three trustees, Colleen and Keith Begg and Stephen Clark.



In 2017, TRT was transformed into a not for profit company (NPO), TRT Conservation Foundation (TRT CF) to meet the needs of our growing conservation activities and budget. The three trustees are Directors of the NPO and additional Directors may be added in due course. The Niassa Carnivore Project (NCP) is a project of TRT CF. NCP works across Niassa Reserve and is governed by an MOU with the NNR management authority which currently runs until the end of 2018. Our reserve wide activities include (MOMS community wildlife guardians, trophy monitoring of carnivores, surveying, environmental education, reducing human-carnivore conflict, reducing snaring and environmental education. We also directly manage a concession (L5-South (580km<sup>2</sup>) in eastern NNR. We set up a Mozambican company, Mariri Investimentos to govern our conservation work, fulfil all legal requirements and provide long term security for our permanent staff. Our not for profit is the 75% shareholder in the company with the other 25% currently held by our Mozambican staff. The headquarters of NCP and the Mariri Environmental and Skills Training Centre are based in this concession, L5-South and this area has also been our long term intensive study area since 2003 and our testing ground for new programs.

Mariri Investimentos and Niassa Carnivore Project, only hire Mozambicans (96%), aside from the Directors (Colleen and Keith Begg - RSA, Mozambican residents) and skills trainers. Over 88% of our staff are from villages inside Niassa Reserve, particularly Mbamba Village. In 2016, we had 70 permanent staff with an additional 100 people working in construction and conservation services (roads, airstrip, etc.) for the dry season.

In 2016, our team were comprised of four Mozambican Managers representing our four long term goals, Agostinho Jorge (Conservation Manager); Andrew Mkanage (Education Manager); Tomas Buruwate (Camp and Logistics Manager) and Hugo Pereira (Community Liaison Manager). We have worked hard on development of a middle management team to ensure a strong, stable and professional team. Staff development, training and involvement in our conservation program are considered a priority and a critical part of our capacity building approach. We work with partners and are strongly collaborative both within and outside Niassa Reserve. We partner with the NNR management authority (a co-management partnership between Ministry of Tourism and Wildlife Conservation Society) through the GDA ECOSMART Alliance and our MOU; and with neighbouring conservation holders through the Niassa Conservation Alliance (NCA). Both the GDA ECOSMART Alliance and NCA are focused on collaboration and communication. Central to our long-term strategy is the Mariri Environmental and Skills Training Centre which is our HQ in concession L5 –South. And forms the hub of all our activities from where we can scale. Here we have accommodation for all our staff, established workshops, an airstrip, officers and meeting areas.

Our long-term strategy for lion conservation in NNR is to develop a holistic model of community engagement with practical solutions to reduce threats and conflict and increase food security, that can be sustainably implemented across NNR with local partners as well as provide excellent, monitored antipoaching to decrease illegal offtake. We don't have a community program, we ARE a community program with local communities involved in every aspect of our work from antipoaching to conservation education and monitoring. We have demonstrated significant success with our grass roots approach. We try to work with the Reserve Management team and Reserve Administrator to scale up successful programs one village at a time across Niassa Reserve where given the opportunity. Further afield information is disseminated to wider conservation community through the social and scientific media, African Lion Working Group, Cat Specialist Group and Canid Specialist Group. We are also proud to be founding members of Pride Lion Conservation Alliance.

## 2016 PROGRESS TOWARDS REACHING OBJECTIVES

Our Annual workplan linked to our budget is the critical document we use to measure our progress, our failures, challenges and successes measured against objectives and specific planned activities. We believe we made significant

progress and have reported on this in detail. We recognize that this is a long report so a detailed executive summary and table of contents are provided to allow you to skip through those sections that are not of interest.

The threats to NNR wildlife in general and carnivores in particular continue to increase with logging and gold and ruby mining escalating dramatically over the past 2-3 years exacerbating habitat loss. Direct killing of elephant for ivory and wild animals for meat and skins (bushmeat snaring, and targeted snaring for skins) continue. Poisoning of lions for lion bones is an emerging threat that needs attention. The potential disease risk from increasing populations of unvaccinated domestic dogs inside NNR remains high. An emerging threat includes Charcoal production which will lead to increased habitat destruction.

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## **OBJECTIVE 1: TO IMPROVE AND STREAMLINE THE BUSINESS AND LOGISTICAL MANAGEMENT OF NCP AND ITS MOZAMBICAN ENTITY, MARIRI INVESTIMENTOS**

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We believe that long term programs are the most effective, particularly because of the levels of trust and respect that are needed to work effectively with local communities and local Government, the need to develop the capacity and skills of our staff and the need to provide ongoing assessment of our actions to minimize unforeseen consequences. We are committed to building a motivated and capable Mozambican team with the leadership, management and conservation tools they need to be effective. In addition, while our overall mission is conservation our internal mission is also to build a project that is ethical, productive and supports our staff with training and mentorship at all levels.

### **2016 Activities and outputs**

- In 2016, we focused on mentorship of our middle management team.
- Management of our donor database was improved through outsourcing the daily maintenance of the database.
- Ken Harmen, joined us as our workshop manager and trainer for 2 years to ensure that our three local mechanics get onsite training and that systems are set up.
- We decided to transition The Ratel Trust, from a simple trust to a not for profit company, TRT Conservation Foundation.
- Lisette Gelber again joined us to assist with onsite skills training for Rachide in accounting / bookkeeping, to align our reporting needs with those of the Lichinga accounting company and to assist with the end of year NCP financial report which requires us to put together two sets of books (Mariri Investimentos and TRT).
- Our middle management team is now in place, have accommodation and are being mentored into place. Significant amount of the workload has been taken off the managers.
- Registration of the Mariri airstrip is still currently being handled by the Reserve management team. In December, the airstrip was inspected and several recommendations given (direction numbers on each end). We are still waiting for a follow up visit.
- We continue to work with Reserve team as GDA partners and collaborate other concessions through an alliance of like-minded concession managers (Niassa Conservation Alliance).
- Almost all the major construction has been completed.
- Mariri Investimentos and Niassa Carnivore Project, wherever possible, only hires Mozambicans (96%), aside from the Directors (Colleen and Keith Begg -RSA, Mozambican residents) and over 88% of our staff are from villages inside Niassa Reserve, particularly Mbamba Village. In 2016, we had 82 permanent staff, 96% Mozambican; 88% from local villages) with an additional 120 people working in construction and conservation services (roads, airstrip, etc.) for the dry season.



## CHALLENGES

- Very few of our local staff are conservationists and understand and believe in conservation; they simply have their first job. We need to ensure that we provide additional experiences and training in conservation to build a team of conservationists. This takes time and will be done through on-site training and discussions as well as offsite field trips to other conservation areas and teams. We believe this is essential for the long-term stability and sustainability of the project.
- The majority of our funding is single year funding. We need to attract more multiple year donors to ensure that we can plan and grow and ensure sustainability. This is a priority for our funding strategy both through small monthly donations and convincing donors to commit for 3-5 years.
- We are still short of onsite accommodation for our staff and in 2017 will be building staff quarters at airstrip for Head of Antipoaching and second in charge and a fourth Junior staff quarters which will consist of bunk beds.

## INFRASTRUCTURE

Almost all infrastructure for NCP HQ and Environmental Centre has now been completed. We currently have three manager houses, 4 middle manager cottages, 14 staff rooms as well as three guest cottages and one guest deck. The workshop was completed with additional roofing so there is undercover parking during the wet season, a carpentry area, three store rooms (Ecotourism, food and diesel) and an additional three container store rooms for tools, spares and other materials at the workshop and an additional food store near the office for day to day use. A diesel pump with meter was installed to better manage fuel stores. There is a reception with office area (6 desks) with strong rooms as well as an additional office and an operational room for antipoaching with one bed. The Mariri Environmental centre consists of 5 cottages, a library, showed, toilets, and refectory (or meeting areas). There is a kitchen, laundry area and a visitor's toilet near the refectory. We upgraded our solar system in 2016 to meet the needs of our team (at least 12 people using computers, printers, projector, lights) and have a generator for power tools or emergencies. At night, the HQ and centre is primarily lit by solar lanterns. In 2016, more than 100 children visiting the centre with their teachers as we held workshops and courses on first aid (by SOS International), law enforcement, wildlife guardians, Onehealth, conservation course for leaders of 7 villages, craft and design etc. We supported two students from University Lurio and one international researcher from University of Cambridge. This will be continued in 2017.

The M.E.C also operates as a model conservation farm as we continue to develop an extensive vegetable garden, set up model goat corral, example of a safe sleeping shelter (Sanja), elephant beehive fence, rabbit hutches so that visitors to see examples of our alternative livelihoods programs to spread information.

The Control posts at Mbamba and Changawe are fully operational and have been completed. In addition, we have built a scout quarters at the airstrip with a hangar for the plane as well as accommodation, office and safe area for the scouts. All buildings were built in the same style with ecoblock locally produced bricks, thatching for the accommodation and corrugated iron roofs for the workshop and airstrip building to reduce fire risk. As building stopped we are able to concentrate on developing paths and indigenous gardens. We are still using a petrol water

pump but hope to switch to solar pump in 2017. We also dug a well to ensure a steady supply of clean water for drinking.

We have to open and maintain all the roads in the concession where the HQ and Environmental Centre are located. Using local labour in 2016, we re-opened the Ncuti / Mbamba district road (12km), wet season road (36 km) and upgraded the existing concession roads, widening and removing stumps (44km) and putting in mitre drains. Further ring roads along the Msangezi River and inselbergs were completed to allow for more game drives for environmental centre game drives and initiation of ecotourism in 2017. In 2016, an access road was opened from Ncuti along the Lugenda River into L4 east to allow access. Wet season access is still problematic due to heavy flooding of some areas in the peak wet season. Additional roads in L4 East will be opened in 2017.

In 2016, we purchased a second hand tractor to assist with roads and construction, we also have 9 20 year old Landrovers and 2 second hand military trucks. Our philosophy is to only have one kind of vehicle (1997 Defenders) so that we only have one type of spares and our mechanics are very familiar with these cars. We also prefer to have many second-hand cars so that each program has a car with a licensed driver rather than only a few brand-new vehicles for the management team. We are more productive this way and it builds confidence and initiatives.

The table below details our current equipment.

| Type              | Quantity                        | Details                                                                       | Observations                                                                 |
|-------------------|---------------------------------|-------------------------------------------------------------------------------|------------------------------------------------------------------------------|
| Vehicles          |                                 |                                                                               |                                                                              |
| Light Vehicles    | 10                              | Toyota Land Cruiser (1), Land Rovers (9)                                      | All second hand                                                              |
| Trucks            | 2                               | Truck Leyland DAF (3)                                                         | 4.5 ton – bought second hand. One used as school bus one for logistics trips |
| Tractors          | 1                               | John Deere 4x4 5503                                                           | Second hand                                                                  |
| Motorbikes        | 2                               | Sanlg 125 cc (1), Honlg 50cc (1)                                              |                                                                              |
| Boats             | 4                               | ! plastic canoe, 2 fibreglass canoes, 1 inflatable with motor for wet season. |                                                                              |
| Aereoplanes       | 1                               | Husky Aeroplane                                                               |                                                                              |
| Equipment         |                                 |                                                                               |                                                                              |
| Generators        | 01                              | Honda (Model No EP 5000 CX                                                    |                                                                              |
| Water pumps       | 01                              | Honda                                                                         |                                                                              |
| Communcation      |                                 |                                                                               |                                                                              |
| Digital Rádio     | 2 camp radios<br>18 hand radios | Digital Motorola                                                              | Guided by Reserve network                                                    |
| V-Sat Email       | 2 Base                          | Itelplus                                                                      |                                                                              |
| Telefone Satélite | 01                              | Thuraya Sat-phone (1)                                                         | Nr: <a href="tel:+8821655533290">+88216 55533290</a>                         |





Library and Museum



Office and reception



### Refectory

All water is pumped from the Lugenda River. No artificial waterholes or pools are planned to ensure the ecology is not disrupted by unnatural congregations of animals. A well has been dug at Mariri to provide clean drinking water during the wet season (see below). A similar well will be dug at the school in Mbamba in 2017.

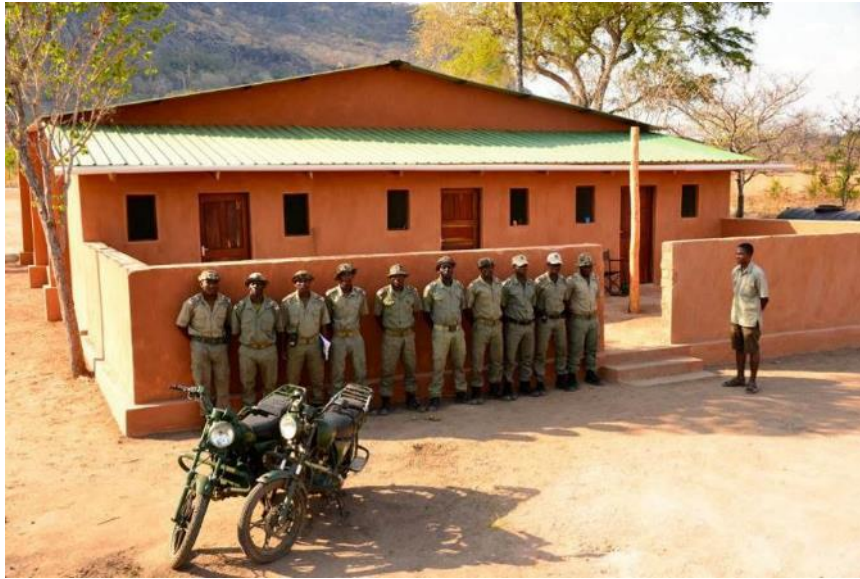


**Middle management houses and cottages follow the same airy style**



Two adjoining guest cottages with shared bathroom





SCOUT QUARTERS ATTACHED TO HANGAR WITH 10,000LT WATER TANK, COVERED COOKING AND WORKING AREA AND ACCOMMODATION FOR 12 SCOUTS.



MBAMBA SCOUT POST WITH SLEEPING QUARTERS FOR 2 SCOUTS AND A BOOM GATE

## CONSTRUCTION IN MBAMBA VILLAGE

In 2016, we completed the construction of the office and meeting room for the Mbamba Association. This contains a large meeting room as well as store room and closed veranda. *See section on Mbamba Association.* In addition, the step to the old school was completed using gin bottle bricks that the children collected. We plan to paint the two old colonial school buildings in 2017.

## CONSTRUCTION PHILOSOPHY

- Our philosophy is to use local people, local materials and local techniques wherever possible.
- All buildings have been built by local men largely from Mbamba Village to provide ongoing employment and skills training.
- Most men employed did not have prior building skills. They have been trained on the job as part of a skills training course and have been provided with certificates for skills acquired to allow them to find other employment. Four men trained during the building of the Environmental have been hired as permanent staff for ongoing maintenance and to lead future construction products
- Some Master builders have used their salaries to buy the tools necessary for them to be completely independent. The Scout posts and Association building were built in 2015 by a local construction team on contract trained by Mariri but now working independently on contract.
- All main buildings (except for Changawe post) have been built using ecoblocks (locally produced bricks with low amounts of cement).
- Most the buildings are thatched using local grasses to ensure an ongoing livelihood for local women. More than 400 local women have received an income from collecting and cleaning local grasses. These roofs will need to be replaced on an ongoing basis.
- Large timber requirements have been sourced outside of Niassa Reserve either through planks bought in Pemba with appropriate permits or furniture constructed at a Mozambican sustainable forestry (all bunkbeds, tables and couches).
- Wherever possible we use local skills adapted for our needs to support local economy – blinds, benches, screens, pottery.

## NAKATOPI CAMP

A second simple, grass and tent camp is used by Directors (Colleen and Keith Begg) and lion research team at Nakatopi. This camp consists of simple small tents with thatched office area, sand floors (no cement). There are no plans to upgrade this bush camp. It is designed to be very ecologically friendly, low footprint and blend into the bush.



Bull elephant visiting Mariri Environmental centre and Niassa Carnivore project HQ.

## GOAL 1: MONITORING TO ASSESS EFFECTIVENESS

### OBJECTIVE 2: TO PROVIDE LONG TERM MONITORING OF THE STATUS AND THREATS TO LIONS AND OTHER CARNIVORES TO ASSESS PROGRESS AND PROVIDE EARLY WARNING SYSTEM FOR CHANGE

Wildlife and socioecological Monitoring is essential to assess threats and monitor effectiveness. We do monitoring at two scales – across Niassa Reserve and within our concession L5-South. Key indicators have been identified for threats to the large carnivores (these are summarized in the table below) that are monitored on an ongoing basis to provide trends. These data are fed into larger datasets for biodiversity conservation that are collected by the Reserve management team (livelihoods, habitat transformation, prey population through aerial census etc.).

| Indicator                                                                | Threat              | How it is measured and scale                                                                                          |
|--------------------------------------------------------------------------|---------------------|-----------------------------------------------------------------------------------------------------------------------|
| Attacks by carnivores on people and livestock                            | Retaliatory killing | Whole Reserve – monitored by wildlife guardians, Reserve team and NCP team.                                           |
| Mortality of carnivores (snaring, poisoning, sport hunting, retaliatory) | All                 | Whole reserve – wildlife guardians, concession operators, informer network, radiocollared lions                       |
| Population trend in lions and hyaenas                                    | All                 | Niassa Reserve through call up survey every three years and groundtruthed through monitoring in L5-South              |
| Population trend in wild dogs                                            | All                 | Wildlife guardians, opportunistic sightings of pack – we use pack size as well as individual recognition in L5-South. |
| Population trend in leopard                                              | All                 | Camera trap surveys in key sites                                                                                      |

|                                                                               |                               |                                                                                                                                                                                                                                                 |
|-------------------------------------------------------------------------------|-------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Sport hunting offtake, age of trophies and efforts                            | <i>Sport hunting</i>          | All of Niassa Reserve through monitoring and aging of all lion, leopard, hyaena trophies.                                                                                                                                                       |
| Snares removed; bushmeat poachers apprehended; bushmeat sales and consumption | <i>Bushmeat snaring</i>       | SMART for antipoaching developed for whole NNR but currently only operational in L5-South; informer information from two villages and two external markets – Lichinga and Marrupa; specific surveys for consumption                             |
| Domestic dog population; blood samples of carnivores; disease outbreak        | Disease                       | Across NNR through wildlife guardian program;                                                                                                                                                                                                   |
| Fishing activities (fish catch, fishing camps, fishing oven)                  | L5 South - fish catches (All) | We did a baseline survey across Luganda River and Rovuma River in 2006 / 2007. MOMS Guardians collect fishing data from 26 villages across NNR; We also collect fish catch data, and survey fishing camp and indicator species inside L5 South. |
| Wildlife densities                                                            | L5 South, L4 east             | Camera trapping in 2 x 2 grid format                                                                                                                                                                                                            |

For monitoring of the success of our community partnership in L5-South, we monitor benefits to people (employment, participation in alternative livelihoods programs, revenue) as well as densities of key indicator species (lion, leopard, wild dog, hippo, impala, waterbuck, kudu, African skimmer). We have been collecting baseline data in this area since 2005. Not all surveys are done every year. In 2016, we did not count ungulates or African Skimmers. This will be done in 2017. In addition, the Wildlife densities in Block L5-South are monitored in five ways:

- a) **Scout patrol records** all scouts are trained in data collection and digital devices to collect information on sightings of species. These data represent patrols completed in 2015 by Mariri antipoaching scouts, however the data are incomplete as some scouts are still learning how to use the digital devices. This should be seen as minimum distribution of wildlife. This type of data collection is on-going and will be improved as we go along.
- b) **MOMS Wildlife Guardians:** Mbamba village inside L5-S has a Niassa Reserve community monitor (Pedro Ajali) who collects information on the sightings of lion, leopard, wild-dog inside Mbamba village as well as information on human-wildlife conflict and fish catch measurements. This is part of the NNR community monitor program that has been in operation since 2006 and currently supports 26 guardians in 24 villages across NNR. MOMS/ SMOG is co-managed by NNR and the Niassa Carnivore Project. NCP provides full funding for the program as well as technical and monitoring assistance to NNR for this program. The data collected are supplied in NCPs annual report. See section on MOMS - Community guardian program) with results.
- c) **Camera traps are** set up at dry season water points specifically to monitor lion, leopard and wild dog densities. These remote cameras are triggered by movement of all animals. In 2016 100 camera traps were set up in L5-South at specific locations in 2 x2 km grids to monitor the lion and leopard populations. We have joined Snapshot Safari to analyze the camera trap photos through citizen science in collaboration with Ruaha Carnivore Project.
- d) **Opportunistic sightings** of lion, leopard, wild dog, spotted hyaena, buffalo herds and other sightings of interest are collected by Mariri research staff (Colleen and Keith Begg, Agostinho, Eusebio Waiti).

**Specific surveys:** Ongoing regular surveys are conducted to monitor indicator species: lion, leopard, hippo, ungulates, fishing camps, African Skimmer. Lion are monitored through individual identification, camera traps and radio marking



as part of a long-term study by NCP on lions in L5-South. Leopards are monitored every three years through a camera trapping survey (2008, 2009, and 2010). Lion and Hyaena survey will next take place in 2018.

The lions in the intensive study area have been monitored since 2005 using individual recognition of individuals (scars, freckle patterns) and wherever possible radio collars. The aims of radio collaring are to assess density, mortality, turnover, cub recruitment, movement patterns around people and density. We do not do pure research. These data are used to ground truth and validate the reserve wide call up survey and to assess whether our community programs are having a positive effect. It was through these data that we were able to prove that bushmeat snaring is the major threat to lions in NNR causing direct mortality to lions, rapid turnover in pride males and infanticide in cubs. In this section, we provide information on our wildlife monitoring with other data presented under the wildlife guardian or antipoaching programs

## CONSERVATION MONITORING IN CONCESSION L5-SOUTH- EVIDENCE OF A SUCCESSFUL COMMUNITY PARTNESHIP

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L5-South holds relatively high wildlife densities particularly along the Lugenda River and the secondary rivers, Msangezi and Mbamba Rivers. It incorporates the most extensive network of braided channels on the Lugenda River (with concession L7 on the south bank) – a habitat high in biodiversity. All the plains game (Annex 1) found across broader Niassa Reserve are here, although Niassa wildebeest and reed buck are uncommon. Bushpigs and wart hog are becoming increasingly common. Side striped jackals are being increasingly seen in camera trap pictures.

Lion, leopard, spotted hyaena and African Wild Dog are present and relatively common. Cheetah and caracal do not occur in Niassa Reserve. Of the smaller carnivores' African civet, Miombo genet, common genet, slender mongoose, banded mongoose, bushytailed mongoose, water mongoose, side striped jackal and water mongoose are very common. Honey badger, large spotted genet, African wild cat, African clawless otter, white tailed mongoose, dwarf mongoose, African polecat and serval are present. Antbear (aardvark) and porcupine are relatively common while pangolin is present but not often seen

Our goal is to conserve this wilderness areas with all its biodiversity and habitats. The value of birds, fish, reptiles, and amphibians as well as the even smaller beetles, spiders etc. are all part of the Niassa Reserve ecosystem and negatively affected by habitat destruction through agriculture and mining and use of mercury. There are many treasures here that are important for conservation efforts, biodiversity, medicinal and cultural uses and ecotourism. Through the Mariri Environmental Centre and Tomas Buruwate, our camp and logistics manager we are beginning to document the biodiversity in the area.



**TWO NEW MALE LIONS ARE PHOTOGRAPHED BY A CAMERA TRAP AFTER KILLING A BUFFALO**



**ELEPHANTS AND HIPPO AT THE MPOPO HIPPO POOL WHERE THE ECOTOURISM TRAILS CAMP IS BEING BUILT**



**WATERBUCK NUMBERS HAVE INCREASED ON THE FLOODPLAIN**



**PRIDE OF 7 LIONS SEEN ON A CAMERA TRAP IN L4 EAST**



**SOME OF THE SMALLER CREATURES LIKE THIS BABOON SPIDER**



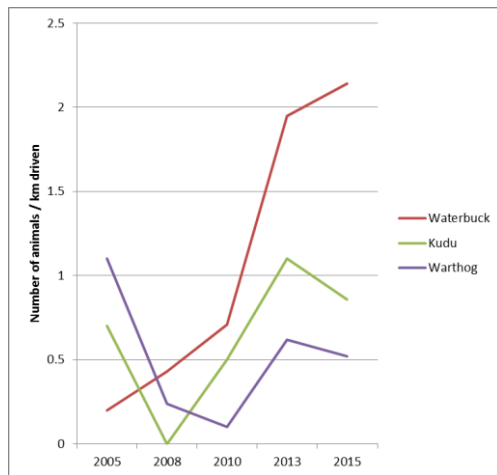
**A FROG DISCOVERED BY TOMAS BURUWATE THAT MAY BE A NEW SPECIES**



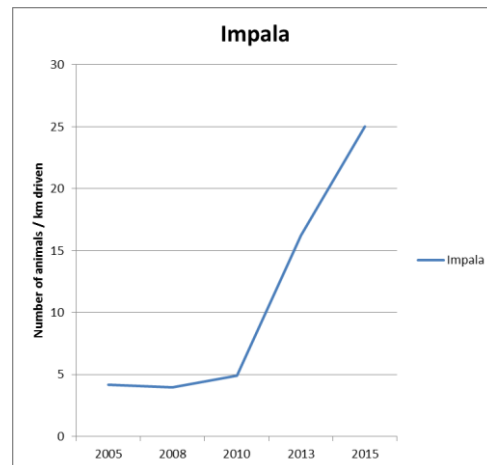
**Ungulates (Impala, waterbuck, Kudu and warthog).** Herbivores are counted along a repeated road transect (25 km) driven through the study area within 10 km of the river in the open grassed woodland. The transect count is done in a vehicle in September / October by two observers between 05.30 and 08.00. This road is driven 3-5 times and the largest number of individuals seen of each species is used. This has been done since 2004 along the same road in the same way. The intention is not to provide a density of these species inside the study area within different habitats but to use a simple repeated method to monitor the trend in impala, waterbuck, and kudu and warthog numbers in this section of the concession. Results are then converted to the number of animals / km driven and compared. This was not done in 2016, however 2015 results are shown here. It will be done again in 2017. The 2015 results show a



continued increase in impala, waterbuck numbers on the floodplain with slight decrease in kudu and warthog. As bushmeat snaring now seems to be under control these fluctuations in numbers are most likely to be due to rainfall.



TREND IN WATERBUCK, KUDU AND WARTHOG POPULATIONS IN L5-SOUTH ALONG THE 21 KM OF THE LUGENDA BETWEEN 2005 AND 2015



TREND IN IMPALA POPULATIONS IN L5-SOUTH ALONG A 21 KM TRANSECT ON LUGENDA RIVER FLOODPLAIN BETWEEN 2005 AND 2015 SHOWING THE INCREASING POPULATION.

### Hippo:

A regular count of hippo in the Lugenda River between the Mbamba River confluences and the Msangezi River confluence (26 km) has been done between 2004 and 2016. The count is done on foot and by canoe. In 2015 and additional aerial survey was done.

The hippo population has steadily increased from 76 hippos in 2004 to 183 hippos in 2015 and will be counted from the air in 2017. The Mashaa hippo pool has increased from 38 individuals in 2013 to 56 and the Mpopo hippo pool has stayed stable at 63 individuals (compared to 67 in 2013). There are now two new pools with >10 hippos. Counts will again be done in 2017. Note that in braided channels where river is at some points more than 1km wide this only counts on the northern half of the river. The Hunting concession L7 is on the south bank. In 2017, we will also initiate counts from Mbamba River confluence to Ncuti confluence in L4-East.

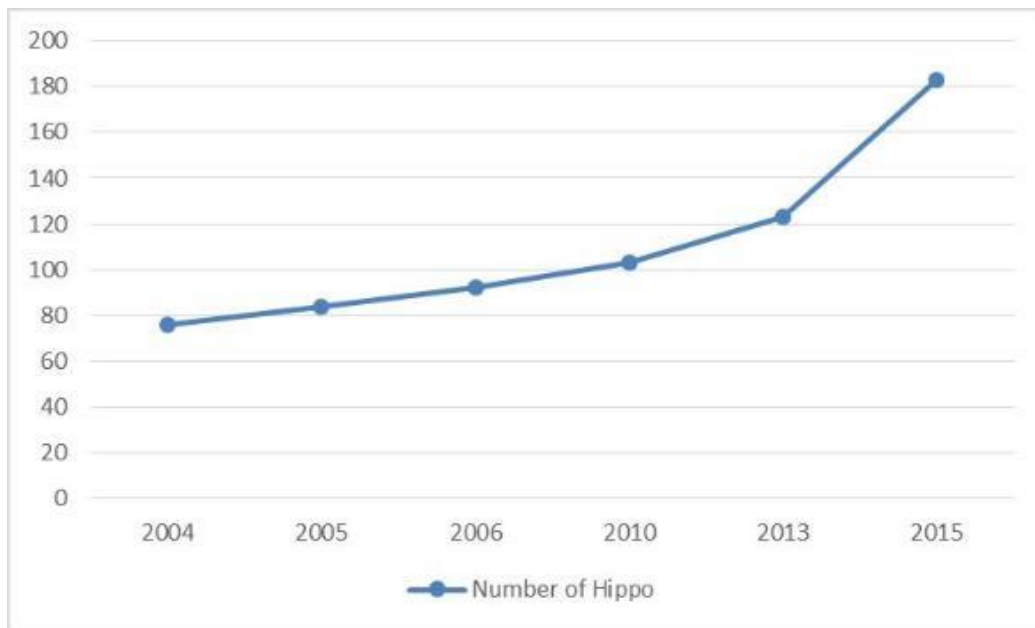


FIGURE: INCREASE IN HIPPO NUMBERS OVER TIME



## LION MONITORING

- In 2016, there were 6-7 lion's prides living inside L5-South, totally 25-27 adults with 9 new cubs born in 2016.
- One female from the F-Pride was snared and speared and died leaving the F-Pride with only one adult female of the original 4. This is the first known lion to be killed in L5-South since 2012. For the first time a community apologised for the death of a lion, and funds were taken off the community conservation fund for this village.
- In November 2016, the prides were made up of F- Pride (1 females, 3 subadult males); A-Pride (1 female, 4 cubs), MA-Pride (1 female, 1 subadult male); R-pride (5 females, 3 Sub adult males); J-Pride: one female; M-Pride (2 AF, 4 cubs); C-Pride (1 adult female). In addition, there are at least a coalition of 2 adult males, 2-3 unidentified lions, AF and 1 cub unknown., 1 Af and 1 SA unknown

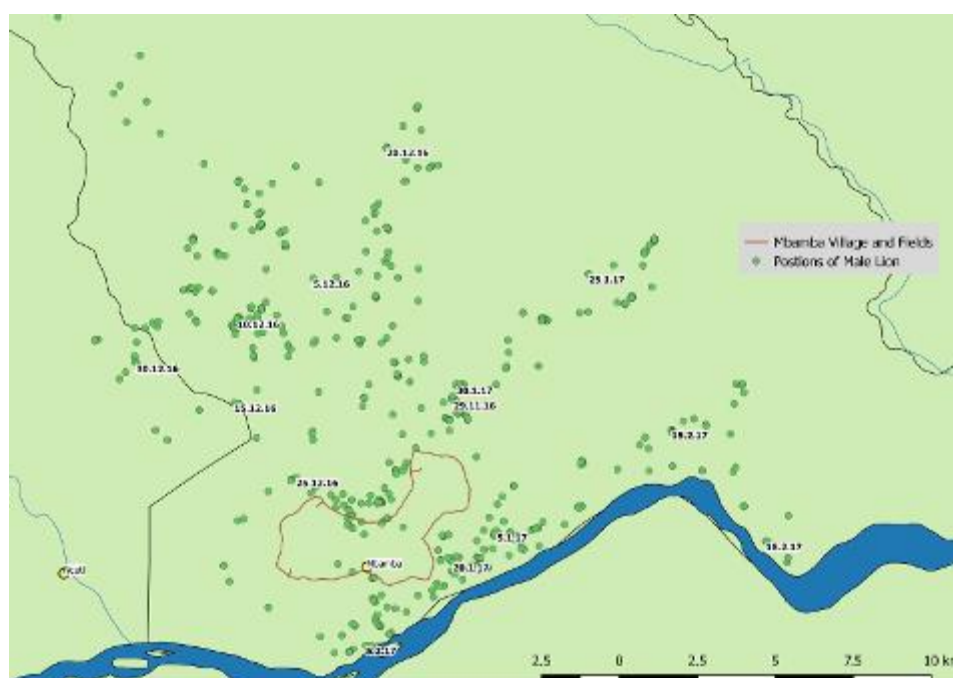
- The lion population in L5 South has increased over past 5 years from 2 prides to 6 prides with 9 cubs born in 2016.
- Between 2010 and 2012, only 22% of the known cubs born in the study area reached 1 year old. Sport hunting in neighbouring concessions and high levels of snaring within the concession of both males and females resulted in high male turnover which in turn resulted in infanticide (cubs killed by incoming males). **Between 2012 and 2016, the proportion of lion cubs reaching 1 year of ages has risen to over 70%.** Litter size still seems low with only 1-2 cubs reaching adulthood and a bias towards male cubs which is commonly seen in low density lion populations. This will be monitored.



One of four cubs born in 2016 to M-Pride female

- In 2016, two collars were replaced and two new lions were collared (a lioness and young male lion). In 2016, we collared one young male with a Satellite collar to see where he would go once he separated from his natal pride.
- In 2017 we will be placing 4 more satellite collars on lions, with three to be placed on the Mussoma-Mecula corridor to assess movement patterns and determine best areas for corridors in L4-East in collaboration with the Reserve Management team.
- All collared lions are regularly followed by our lion monitoring team to assess mortality, cub recruitment and movement patterns.





*Movements of young adult male around Mbamba village in L5 South since separating from his natal pride  
– F-pride.*

- Niassa Carnivore Project conducts a lion and hyaena call-up survey across Niassa Reserve at regular intervals according to our MOU with Reserve Management. It has been conducted in 2005, 2008, 2012, 2015 and will be done again in 2018. Full results are provided in our Niassa Carnivore Project Annual 2015 report. This provides an index of the lion population and should not be a count of the actual lion numbers.
- The most recent Reserve wide data suggest that the lion population is stable at between 800-1000 lions but showing a slight decrease with some areas of concern (sinks) where no carnivores (lion, leopard, hyaena, wild dog) presence were observed during the call-up. One area of concern is the area in L9. The next lion and hyaena call up survey will be completed in 2018 and will be put together with presence and absence records to determine current distribution. These data will be updated as soon as more data is available.

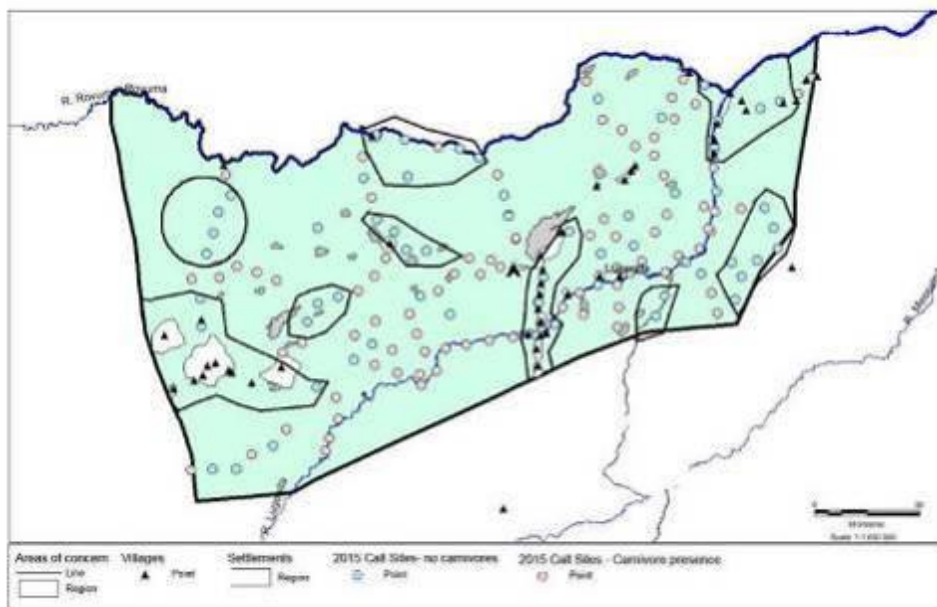
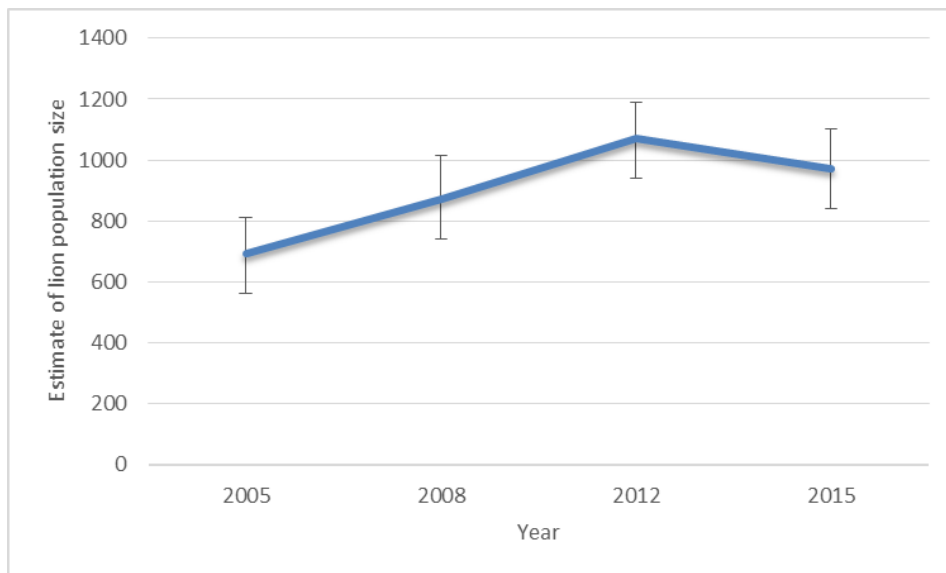


Figure: 2015 lion and hyaena call-up survey results suggest several areas of concern where no large carnivores were seen during the survey. This does not mean that no carnivores are in these areas only that densities appear to be low and illegal offtake and threats might be increasing in these areas.

Increasing mortality of lions in NNR recorded by NCP are of concern as is the growing use of poison and trade in lion bones, parts and skins. In 2016, records from the Niassa Carnivore Project which works across Niassa Reserve shows that 3 lions were sport hunted and at least 5 lions were killed illegally (recorded by MOMS wildlife guardians from 24 village inside Niassa Reserve). On the outskirts of NNR in a concession an article reported two lions killed and deboned. One poacher was caught with lion bones in concession L7 in 2016. Intelligence reports increased offers from outsiders for lion skeletons. One poisoned lion was found in Chuilexi Conservancy.





*Poisoned lion with cut off paws and teeth removed*  
© Wim Ebersohn, Chuilexi Conservancy



*Lioness snared and then speared*



**Akomwana's cub**

## AFRICAN WILD DOGS

African wild dog numbers are difficult to assess directly. We monitor their status and distribution through long term monitoring of pack size and through opportunistic sightings from operators, our team, camera traps and community wildlife guardians. Due to the difficulties in monitoring the wild dogs over the expanse of Niassa Reserve, we primarily focus on reducing the threats to their survival (disease, snaring and poisoning) and providing environmental education and awareness. In the intensive study area we monitor all packs through photo ID. The opportunistic data collected on "special species" and mortality by the Community wildlife guardians spread across 24 villages in all three districts is very important for monitoring the distribution and health of the wild dogs. (See Objective 7 for more information on the Community wildlife Guardian Program).

African wild dogs are regularly seen in L5-South. Four packs are currently resident. One pack of 17-21 individuals around the Mariri Environmental Centre and three smaller packs of 9 and 7 and 4 around Nkopola and Msangezi. The wild dogs are breeding in the area and are regularly monitored through camera traps. ID cards have been developed



for all individuals that can be identified from their coat patterns. In total 45 individuals have already been visually identified from their coat patterns.



**Leopard:** Data are available from camera trap surveys completed in 2008, 2009, and 2010 in L5-South. We remain very concerned about leopards in L5-South and Niassa Reserve as they are illegally killed in snares set specifically for leopards for their skins and are inadvertently killed in bushmeat snares. Their presence is monitored through camera traps.



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### OBJECTIVE 3: TO INVOLVE COMMUNITY MEMBERS IN VILLAGES THROUGHOUT NNR IN WILDLIFE MONITORING AND REDUCING THREATS THE COMMUNITY WILDLIFE GUARDIAN PROGRAM - COMMUNITY WILDLIFE GUARDIAN PROGRAM - MOMS

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*The program is managed by Horacio Murico (MOMS Coordinator) and Celestino Dauda (Head Wildlife Guardian) MOMS coordinator through the Niassa Carnivore Project based at Mariri Environmental Centre*

Since 2006, Niassa Carnivore Project (NCP) has been supporting the community monitoring and guardian program, MOMS. While all the data are shared with the communities and NNR management team, the program is entirely funded and managed day to day by Mariri/ NCP. The MOMS coordinator, Horacio Mauricio is hired by Mariri as permanent staff in a middle management position as is the Head Guardians, Celestino Dauda from Macalange Village. Guardians are paid monthly subsidies for part time work, provided with caps and T-shirts and all materials needed) as well as provide ongoing mentorship and support, and we provide skills training for coordinator. The community monitors not only collect information on fishing activities, human wildlife conflict and special species sightings but they also convey important information to their communication on rabies, ways to reduce human-wildlife conflict, safe behaviours and conservation. Through an active Whatsapp group we can now respond quickly to snaring and conflict events. This program is financially supported by NCP/ Mariri. Data has been provided in section on human wildlife conflict.

#### Principal results and activities from 2016:

1. At the suggestion of Mariri/ NCP, three guardians took part in the NNR participatory discussion on the NNR community program of the General Management Plan at Mbatamila. This was important as it meant that representatives of the community were at the meeting. This is the first time that community members have been included in development of the management plan.
2. MOMS guardians were also interviewed for the One Health Survey conducted by Mike Kock, for NNR/ WCS with support from Mariri/ NCP.
3. All Guardians were paid on time from Negomano, Mecula and Mavago.
4. In 2016, we trained and selected four new guardians successfully (1 Nahavara, 1 Ncuti, 1 Mbamba, 1 Macalange). For the first time two of the new Guardians are women; we are delighted to welcome women to the team.
5. We distributed Foxlights (flashing lights to reduce conflict), and the guide to reduce conflicts to all Guardians to reduce conflict.
6. We increased the monthly subsidy from 800mt per month to 1200mt per month from October 2016.
7. Three regional workshops were completed in Mecula, Mavago and Negomano and one annual workshop in Mariri for all Guardians.
8. At the annual workshop at Mariri Environmental centre
  - o 27 wildlife guardians too part in the course, as well technicians from SDAE from Mecula and Mavago and 3 staff members from the community department of NNR.;
  - o During the workshop, the following topics were discussed:
    - The importance of MOMS for communities in the Reserve.
    - The work of the guardians as extension officers to sensitive and assist their communities with the construction of effective goat corrals, safe shelters, and to mitigate against the use of poisons in our river.
    - Prevention and mitigation of human wildlife conflict.
    - Prevention of rabies and the importance of vaccinating domestic dogs and cats.
    - Development of a code of conduct for the Guardians.

- Communication with the Guardians via WhatsApp and the importance of regular communication.
  - Prizes and incentives of a bicycle, radios and other materials were distributed to those Guardians who had performed particularly well in 2016.
  - All Guardians received new T-shirts, caps and other materials needed for their work
9. The new poison posters were distributed to all the Guardians with explanations for them to return this information to their villages and to SDAE of Mavago and Mecula.



New Wildlife Guardian from Mbamba



Horacio and Dauda who lead the team of Guardians



## 2016 Activities and Data

Note that all data is collected on paper forms these are then transferred to Excel databases by Horacio and Dauda and uploaded onto a Google Drive so that they can be accessed by NNR management team. The Human wildlife conflict data has already been presented in this report. Other data collected is on special species sightings (which allows us to assess presence and absence across NNR) and fishing catches. There is a lot of data and only a few summaries are presented here to give an indication of the importance of these data.

### Special species

- The number of sightings of different species were remarkably similar in 2014, 2015 and 2016 which suggests that these data are a reliable indicator of presence in these district and declines are possibly an indicator of concern. Once all the data is on the computer this will be a very interesting historical dataset: 2006-2015.
- The data do also provide presence/ absence data for special species such as wild dogs, lion, leopard and spotted hyaena across NNR which can be tracked over time.
- In 2016, the guardians recorded 9002 special species sightings from 27 Guardians across 26 villages.

### Summary of sightings reported in 2016

|          | Buffalo | Wildebeest | Hippo | Crocodile | Tortoise | Lion | Leopard | Wild dog | Hyaena | Total |
|----------|---------|------------|-------|-----------|----------|------|---------|----------|--------|-------|
| Mavago   | 874     | 69         | 589   | 154       | 80       | 175  | 80      | 358      | 134    | 2513  |
| Mecula   | 2819    | 427        | 861   | 153       | 31       | 267  | 72      | 486      | 209    | 5325  |
| Negomano | 444     | 218        | 43    | 69        | 32       | 57   | 15      | 264      | 22     | 1164  |
| Total    | 4137    | 714        | 1493  | 376       | 143      | 499  | 167     | 1108     | 365    | 9002  |

- It is exciting to note that in 2016 there were more than 1000 sightings of wild dog packs across these villages and 499 sightings of lions. The wild dogs are Endangered and the logo of Niassa Reserve, so this is a positive sign that the wild dogs are still doing well.
- More than 45% of the sightings were of buffalo (slightly less than in previous years), with hippo and wild dogs making up 16.5% and 12.3% of the rest of the sightings.
- It is difficult to assess whether these high levels of special species in these villages reflects diligent guardians or high biodiversity in these areas. Additional surveys will need to be done.
- Mbamba village in L5-South continues to record the most frequent sightings of lions, wild dogs, and buffalo.



The number of sightings of special species between 2014 and 2016 can provide an early warning system for areas of concern and suggest where more attention needs to be placed. The sightings are likely to be related to densities of these key species in these areas given that the number of guardians remained stable. Lion and leopard sightings have declined in both Mecula and Negomano areas over the past three years. There also seem to be increases in sightings of Hyenas in Mavago and Mecula and an interesting increase in wildebeest sightings in Mavago. African wild dog sightings are stable across Niassa Reserve. While we need to be cautious when interpreting these results, we can use these data as an indicator that we need to pay attention to what is happening to these species in these areas.

TABLE - SUMMARY OF THE NUMBER OF ANIMALS SEEN IN VILLAGE SURROUNDS BY MOMS WILDLIFE GUARDIANS. DATA SHOW IN ORDER 2016,2015, THEN (2014).

|          | Buffalo | Wildebeest | Hippo | Crocodile | Tortoise | Lion  | Leopard | Wild dog | Hyena |
|----------|---------|------------|-------|-----------|----------|-------|---------|----------|-------|
| Mavago   | 874     | 69         | 589   | 154       | 80       | 175   | 80      | 358      | 134   |
|          | 521     | 45         | 309   | 116       | 86       | 143   | 97      | 307      | 117   |
|          | (525)   | (4)        | (372) | (138)     | (96)     | (159) | (77)    | (392)    | (101) |
| Mecula   | 2819    | 427        | 861   | 153       | 31       | 267   | 72      | 486      | 209   |
|          | 4014    | 387        | 1130  | 157       | 40       | 287   | 79      | 464      | 178   |
|          | (2994)  | (440)      | (964) | (189)     | (116)    | (389) | (135)   | (489)    | (174) |
| Negomano | 444     | 218        | 43    | 69        | 32       | 57    | 15      | 264      | 22    |
|          | 620     | 222        | 55    | 73        | 40       | 94    | 29      | 216      | 65    |
|          | (498)   | (124)      | (87)  | (114)     | (38)     | (84)  | (44)    | (223)    | (24)  |
| Total    | 5155    | 654        | 1494  | 346       | 166      | 524   | 205     | 987      | 360   |

## Mortality

Of particular conservation importance are the data collected on the number of dead animals seen in the villages as this is an indication of illegal killing. At present, most of the MOMS guardians do not record why the animal has died to ensure information is freely given however some data are provided wherever possible. As a result, animals killed illegally as part of human wildlife conflict, retaliatory killing and bushmeat or for skins are all recorded. This information is very interesting and highlights the threats to animals in Niassa and is important for management purposes and to illustrate to communities how many animals are dying.

- In 2016, 122 animals were found dead in the villages that were monitored by the wildlife guardians. It is likely that most these deaths were due to bushmeat snaring and retaliatory killing in response to human wildlife conflict not natural deaths. It remains difficult for the wildlife guardians to record the reason for the deaths without compromising their neutrality.
- As was the case in 2014, and 2015 the highest mortality in a special species was recorded in buffalo, followed by crocodile, and tortoise. 82 buffalo were reported killed in 2016. This is not sustainable, given that buffalo are also legally sport hunted, and their numbers are relatively low.

- In our opinion Buffalo are largely killed for bushmeat but recorded as problem animals. The first response to a buffalo in a field is to kill it as the meat incentive is enormous.
- The number of lions recorded dead in 2016 was only 2, compared to 12 in 2015 and 9 in 2014. This decline might simply be because fewer lions are being seen (see special species sightings above) not because killing is less.
- In total 2 lions, 5 leopards, 2 hyaenas and 1 wild dog were reported killed in 2016. The number of carnivores being killed illegally should be of concern.

In total in the past three years (2014-2016), a minimum of 64 leopards, 23 lions, 37 hyaenas and 24 wild dogs have been killed illegally in only 26 villages covered by the wildlife guardians. This is a minimum as many will be killed by snares and poison in the bush and might not be noted by the community wildlife guardians. There are 44 villages inside Niassa Reserve. We also have the large numbers of prey killed illegally for bushmeat particularly buffalo which will negatively affect lion numbers. This also does not include the additional mortality from sport hunting (legal).

Table: Summary of animals recorded dead in 2016

|          | Buffalo | Wildebeest | Hippo | Crocodile | Tortoise | Lion | Leopard | Wild Dog | Hyaena | Total |
|----------|---------|------------|-------|-----------|----------|------|---------|----------|--------|-------|
| Mavago   | 7       | 0          | 0     | 0         | 2        | 0    | 1       | 0        | 0      | 10    |
| Mecula   | 53      | 2          | 1     | 10        | 10       | 2    | 1       | 1        | 2      | 82    |
| Negomano | 22      | 2          | 0     | 3         | 0        | 0    | 3       | 0        | 0      | 30    |
| Total    | 82      | 4          | 1     | 13        | 12       | 2    | 5       | 1        | 2      | 122   |

Mavago district recorded the highest mortality of wild dog and tortoise while Mecula recorded the highest mortality of buffalo, crocodile, leopard and hyena. Negomano again recorded highest record of mortality for wildebeest and lion.

### Community fishing

Monitoring of fishing activities has been a central part of the MOMS program since its inception in 2006. In the rainy season fisherman extend their activities to the small and seasonal rivers. This is the breeding time for the fish during the dry season woman and children also fish. The majority of fishermen recorded are Mozambican and very few were from Tanzania. These data are important as fish provide the main source of protein in Niassa Reserve year round. Any failure in fish stocks is likely to result in an increase in bushmeat snaring. To add to this information Mariri also has a fish monitor that has been measuring the sizes of fish catches in L5-South since 2004. The data show that for the 6 most common fish species there has been little change in fish size. This suggests that the Lugenda has not yet been overfished.

### Pangolin Rescue

In a collaboration with the previous NNR Warden, Cornelio Miguel and Government official in Nampula, we have been assisting ANAC with collecting (plane), rehabilitating and then release in Niassa Reserve, pangolins that have been confiscated from people trying to started them in Nampula. This is the most trafficked animal in the world and in serious trouble. We are happy to help.

To date we have collected one female with a baby (the mother died on arrival but we were able to hand rear the baby for 9 months and release when he reached 7kg), and an additional two adults. One adult was confiscated in Niassa Reserve and released by us after being observed overnight.

We have a dedicated team that take the Pangolins walking each night in the bush to find food – termite and ants until the animals can be released.



Pangolin is collected from customs official in Nampula by Matequenya and Keith and transported by our light aircraft to Niassa Reserve.



## **GOAL 2: DIRECTLY REDUCE THREATS AND PROVIDE ALTERNATIVE LIVELIHOODS**

### **THREAT 1: BUSHMEAT SNARING**

Snares are used to kill wild animals for meat and non-target species like carnivores are killed inadvertently. It is the major threat to lions, leopards, spotted hyaenas and African wild dogs in Niassa Reserve as it kills both their prey and them directly. The mortality of lions in the intensive study area in 2008-2010 was 28% when natural mortality in other well protected areas was only 6 % of adults. Snaring causes rapid turnover in adult male lions and infanticide of cubs. Turnover in leopards is also high with no leopards camera trapped in 2009 being camera trapped in 2010 which suggests very high turnover (Jorge *et al.* 2013). Agostinho Jorge, our conservation manager is currently conducting his PhD on bushmeat consumption and trade and these data will be available in the next 18 months to assist us with understanding this threat better.

Research has shown that the majority of meat protein eaten in Niassa Reserve is currently being provided by bushmeat (meat of wild species). The main reasons for not keeping domestic livestock are a large die off of chickens due to disease and lack of money to buy initial stock. In addition, domestic livestock are kept as a savings account for emergencies and with small numbers are seldom eaten. There is little knowledge of animal husbandry and no veterinary care. In 2012 the majority of Niassa Residents were eating bushmeat at least 1-2 times a week (n = 1229 across; 34 villages).

The wire snares set to catch wild animals for meat not only kill the carnivores directly but also kill their prey reducing all wildlife densities. The bushmeat trade not only provides meat but the sale of ivory, meat, and skins provide a lucrative source of income for local hunters who have limited skills and job opportunities. The increasing snaring and poaching in Niassa are therefore exacerbated by food insecurity, lack of alternative livelihoods and low skills levels of local people inside Niassa Reserve. Indications from the 2014 aerial censuses suggests several ungulates are declining (Grossman *et al.*, 2014).

A major challenge in NNR at present is that illegal activities provide significantly more opportunities and income than any legal, commercial activities. Bushmeat snaring, elephant poaching, mining, logging is all illegal but widespread and lucrative. Until the opportunity costs for these activities are increased through prosecutions (fines and jail time), few Niassa residents will choose to do alternative activities. Antipoaching and implementation of the law must be effective to “encourage” people to switch to legal alternatives.

NCP aims to address snaring and habitat destruction through a holistic approach of providing alternative income generating opportunities through skills training and employment of local people, providing an alternative protein source through small livestock breeding, increasing food security and developing effective anti-poaching that involves resident communities. The continued need for community involvement is critical as we do not believe that antipoaching alone will solve the problem in Niassa given size of the area protected and high levels of movement of people inside the protected area. We believe that equal amounts of funding should be spent on the guns and boots and community engagement approached. *Conservation of wildlife in areas where people are resident needs to be an informed choice not a forced activity.*

Without effective antipoaching and prosecutions to discourage illegal activities, we think that most programs to provide alternative livelihoods are doomed to failure. Some of the poorest people in Africa are living with wildlife and substantial income can be earned through illegal use. Who will want to breed rabbits when it is easier, less effort and provides bigger returns to go and put out poison or snares? Who will wait for crops to grow and weed and tend them when gold mining offers an immediate cash benefit. Alternative livelihoods programs without law enforcement will



**not work and law enforcement without alternative livelihoods and development programs will result in higher levels of poverty and food insecurity. Neither scenario will result in conservation success.**

We expend equal amounts of money, time and effort into antipoaching and community programs. We continue to test and refine programs to provide income, food security and improved agriculture production for people inside L5 South and our results are reported below. We hope the lessons we are learning and challenges we face will help inform other programs in NNR and help insure that we do not waste time making the same mistakes repeatedly. While scaling is important, scaling before we have learned what works becomes a top down process that is doomed to be unsustainable. Solutions are not simple and context is important.

At present our alternative livelihoods and agriculture programs reach more than 200 households (1200-2000 people depending on household size) in 5 villages. The aim is to increase food security and income generation in local communities by providing alternative (to illegal) livelihoods. All these programs are voluntary with technical support and materials provided by Mariri/ NCP. They are grass roots programs that include small livestock breeding, conservation agriculture, sale of the honey from elephant beehive fences, and a crafts and artisan group.

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#### **OBJECTIVE 4: TO DEVELOP ALTERNATIVE PROTEIN SOURCES TO REDUCE RELIANCE ON BUSHMEAT AND SNARING**

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##### **LIVESTOCK BREEDING GROUPS**

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*Lead by and data collated by Agostinho Jorge, Conservation Manager*

Bushmeat snaring is one of the main threats to wildlife in Niassa Reserve. Snares are used to kill wild animals for meat and non-target species like carnivores are killed inadvertently. The bushmeat trade is becoming a commercial trade in Niassa Reserve and intelligence shows that District government are eating and trading bushmeat on a regular basis. It is the major threat to lions, leopards, spotted hyaenas and African wild dogs in Niassa Reserve. This program is focused on providing alternative protein source, increase food security and an alternative income to households through sale of small livestock. It is important to note that domestic rabbits cannot breed with any wild rabbits, and there is no danger of interbreeding with wild rabbits. In addition, domestic rabbits that escape are quickly eaten by local predators.

##### **Why is this program important?**

1. It provides a locally based, sustainable alternative income for very poor households that requires relatively little investments in time, money or equipment. Cash is important so that people can buy basic food (soap, oil, salt, sugar) and money for emergencies. Research in other areas has shown that ability to generate cash is a critical element of alleviating poverty and supporting community development.
2. It provides an alternative to bushmeat, and chickens and can significantly increase food security in a household in an uncertain environment. It increases food diversity, reduces risk from disease (i.e. Newcastle's disease) and provides an alternative to bushmeat.
3. There is a critical need for conservation programs to show that people's needs and requests are taken seriously. Conservation need to be about more than just saying No. It is also critical that we generate political will for conservation. It currently has a very bad reputation as increasing poverty. As we reduce illegal activities through more effective antipoaching we have to provide alternatives for income and food. We cannot keep closing doors without providing alternative opportunities. This program has generated significant positive support for our conservation work at household, village, district and even provincial level. It will not solve all the problems but shows we are committed to finding real solutions to food

security and the need to generate income. It shows that conservation is not a choice between people and animals. We believe that community development is an essential part of conservation.

Literature suggests that alternative livelihood programs, particularly small livestock breeding can be an important way to reduce the demand for bushmeat however successful examples of this are hard to find. There are few long-term programs (more than 2-3 years). We focus on adaptive management and have a long-term view. We are focused on experimenting and finding solutions that can be used in other areas over a 20-year period. What are the elements of success and what are the real on the ground challenges that are never reported in scientific publications and how can these programs be sustainable? We believe that livelihoods programs are negatively impacted by short term funding that does not allow program time to mature (at least 5 years). At present domestic meat protein is scarce and very expensive. To reduce bushmeat consumption we must provide a viable alternative. The objective of this program is not generating large scale protein production (game farming, commercial chicken farming) but to improve food security at a household level and provide a little income for a family. We expect only 1-2 individuals in each LBG group to be entrepreneurial and breed at a large scale for significant sale. These individuals receive more support with materials not available locally.

This program forms part of a suite of benefits we provide in these villages linked to clear conservation responsibilities. Mbamba village has been partnering with us the longest with Cuchiranga and Lissongile the newest villages to join our programs. Each village has its own challenges and approach to solving problems. The voluntary groups agree to their own rules with only guidance and technical advice from Agostinho Jorge, Conservation Manager of NCP. This means that scaling needs to come from the communities themselves and cannot be driven entirely by conservation agendas although we can provide encouragement and help the groups solve problems.

### **How does this program work?**

The program started in 2011 with data collected on snaring, bushmeat consumption and food needs of local households. The focus is on micro livestock that are already present in Niassa Reserve. This program has full community support and assistance with livestock breeding was identified as a priority for community. These are voluntary groups and no payments for activities are provided. Each group decides on its own name, a leader and secretary as well as the rules to guide the functioning of the group. The NCP representative (Agostinho Jorge) provides advice but does not lead the process. Each person wishing to receive domestic livestock has to first show commitment by building a rabbit hutch and chicken coop before receiving animals. Guidance is provided on the elements needed in each coop (air, sunlight, safety, slated floor to keep clean, ease of access etc.).

All animals (rabbits, ducks, guineafowl, doves, and guinea pigs) involved in the Mariri LBG already existed in the Niassa Reserve before Mariri distributed the specimens in each village. No animal has been introduced in the reserve by Mariri to implement the programs with the LBGs. Domesticated rabbits, guineafowl, ducks, doves, turkeys are the animals available for the group. The first members chose animals from the list of available animals. Each member of the group is "seeded" with two female rabbits or a pair of domesticated guineafowl, ducks or guinea pigs as a micro loan. Other interested people can put their names on the waiting list kept by the "secretario" (secretary) of the group. The waiting list closes when double the number of names is on the list as each original member will pay back their loan in animals (barter micro credit scheme) to two new members supplemented with animals from Mariri to provide breeding stock. Eventually in the third or fourth generation it's expected that a considerable number of household in the village will have received animals, the group will become too big and difficult to manage. That might be the moment for Mariri to leave the LBG group moving on its own and stop providing animals as microloan or incentives. It is the intention that each member of the group will eventually have several different types of micro-livestock (rabbits, ducks, guineafowl, guineapig, goats and turkey) to spread risk and increase diversity.

Detailed records are kept of breeding to ensure inbreeding does not become an issue and to monitor breeding and income generated to assess success. The mating dates are recorded in the calendar to allow the members to control the gestation period. Records have to be kept by the group. This approach also increases the interaction between LBG members where they visit each other and provide support and sharing of experiences.

## 2016 Activities

- The Livestock Breeding groups (LBG) are now active in five villages (Mbamba, Ncuti, Macalange, Cuchiranga and Lissongile) in the Mecula District of Niassa Reserve with close to 100 active households.
- All the villages involved voluntarily expressed an interest in partnering with NCP in conservation. For example - Lissongile sent two doves to Mariri as an indication of their interest in working with NCP in conservation. We believe this approach has the highest chance of sustainability.
- A total of 08 households derived income from the livestock sales to Mariri that were used as ration. Another 15 households in sold all their stock of animals to illegal miners. Some bartered animals for chicken wire mesh to improve their hutches.

**Table 2.** Amounts generated from the sale

| Year | # animals paid |      | TOTAL     | Value (MT) |       | TOTAL  |
|------|----------------|------|-----------|------------|-------|--------|
|      | Cash           | Mesh |           | Sold       | Mesh  |        |
| 2015 | 28             | 20   | <b>48</b> | 6,850      | 4,200 | 11,050 |
| 2016 | 69             | 24   | <b>67</b> | 19,400     | 7,520 | 26,920 |

- This program provides seed animals as loan that has to be paid back with when animals breed with additional animals provided as incentives for people who pay back their loans. This not only to prevent this being a handout and ensures commitment but also ensures that members have diverse livestock to reduce disease risk. In general, the payback rate (about 50%) is still higher than the pay back rate (8% to 10%) from other similar programs that operated within Niassa Province previously. However, it has declined this year possibly due to increased food insecurity (low rainfall) and certainly due to difficulties we have had in sourcing and purchasing stock animals as seed animals and for incentives. It is not clear why so few producers are now active. Sourcing a new market for stock animals is a priority for the next 6 months.
- Of the livestock species, we have been experimenting with (rabbits, ducks, domesticated guineafowl, turkeys), **ducks have proved the most successful in terms of pay back, sales and consumption with rabbits the second most successful.** We are still testing turkeys however they have been difficult to source and sensitive when young.
- Guinea fowl have been difficult to breed and keep, turkeys have been difficult to source breeding stock and are very sensitive when young. People have been having difficulties to get guinea fowls to breed successfully and some members asked to be given chickens instead of guinea fowls.
- We have managed to reduce the depredation of baby ducks and chicks by ducks by improving the management of the animals.
- We hired a Community Liaison officer, Hugo Pereira who is also a vet and can help with this program solve some disease issues and with the growth of the whole program.
- No member has reached the level of Turkeys. The member that is raising them experimentally had chicks but they did not survive. Getting the turkeys to breed successfully before allocating them to the members will be critical.
- Performance of Mariri LBG was compared with the performance of farmers in Lichinga for similar species (Muscovy duck, landi rabbit-local- and turkey) in subsistence systems:
  - There is no much difference in terms of the reproductive output between breeders from Lichinga and breeders from Mariri LBG for the three species, rabbits, ducks and turkeys have similar number of eggs and babies
  - People in Lichinga tend to invest more time and effort and money looking after and feeding animals which seems to translate into higher survival rate of the young animals;

- This is likely to be due to lack of husbandry experience in NNR and general lack of energy that people in Niassa face from extreme poverty.

**Table** Species included in the Mariri LBG in Lissongole-Cuchiranga, Macalange, Mbamba and Nkuti villages

| Poultry      | Lissongole-Cuchiranga | Macalange | Mbamba    | Nkuti    | Total     |
|--------------|-----------------------|-----------|-----------|----------|-----------|
| Duck         | 15                    | 17        | 30        | 6        | 68        |
| Rabbit       | 5                     | 4         | 4         | 2        | 15        |
| Chicken*     | 0                     | 8         | 3         | 0        | 11        |
| Guineafowl   | 0                     | 2         | 0         | 0        | 3         |
| <b>Total</b> | <b>20</b>             | <b>31</b> | <b>37</b> | <b>8</b> | <b>96</b> |

\*Included later in the program on the request of the members because of difficulties to source ducks and rabbits and people not willing to get guineafowls

- In 2016, we helped households improve their rabbit hutches and duck's hutches in Mbamba, Macalange and Nkuti and designed a produced a new Mariri hutch model
  - 1) We improved the hutches of rabbits and ducks from 40 households through provision of transport poles and bamboo and assistance to improve hutches. This will help contributing to the reduction of mortality caused by depredation of animals and diseases such as "loboto". Through this process many villagers came up with their own models of hutches;
  - 2) Two types of mobile hutches (plywood and bamboo) were produced and made available to the villagers in Macalange and Mbamba. These models take into consideration the requirements of rabbit design (standard size of the hutch, next boxes, etc.). The bamboo hutch is cheaper than the plywood hutch and is more relevant for the context of Niassa because use of materials (bamboo, poles) that are easily available in the villages. In addition, the hutch that can easily be produced at village level, with slight modifications. The next boxes on the bamboo hutches are produced with leftover of plywood from beehives produced at Mariri) and nails.

**Table 2.** Cost to produce different types of rabbit hutches

| Types of hutch                   | cost to build* | # animals  |
|----------------------------------|----------------|------------|
|                                  | USD            | to payback |
| Mobile plywood hutch (1.5m long) | 25             | 6          |
| Mobile bamboo Hutch (1.5m long)  | 3              | 1          |
| Fixed bamboo hutch (6m long)     | 3.5            | 1          |

\*Excluding labor

- 3) Mariri provided technical support, transport and labor for construction of 03 fixed hutches for LBG members. These hutches were preferable placed in shade places close to the houses; 08 Bamboo hutches were deployed in Mbamba, Macalange, Nkuti and Lissongole. Additionally, Mariri provided support and transport for the construction of 40 hutches in Lissongole, Mbamba and Macalange.





- We experimented with directly engaging known bushmeat hunters by forming a new LBG group in Mbamba Mariri engaged with 18 bushmeat hunters from Mbamba and they voluntarily accepted to be part of the new Mariri LBG with 20 members (two non-hunters). As part of the rules for the group, they should be key bushmeat hunters in Mbamba village and were identified in Mbamba through the network of informers in Mbamba. We had a conversation with them and about their interest to join the group or not. 2 out of 20 individuals invited to the meeting accepted ready to be part of the group while other 2 individuals refused to be part of the group. Out of these 20 individuals only 03 had domestic chickens.
- The 18 bushmeat hunters represent more than 75% of hunters that have been active in the past three years in L5S concession known through intelligence and antipoaching efforts. Before them, there were only two bushmeat hunters Nipepe (Mbamba) and Cinco Matola (Macalange). The effect of this LBG program on the Bushmeat hunters will be assessed over time. Do they stop bushmeat hunting?
- 20 new households from Lissongole were included in the Mariri LBG program. This village is in L4-east and will be included in Mariri activities in 2017 as we move forward to partner with villagers to manage L4 East.
- 50 ducks and 07 rabbits were allocated to the bushmeat hunters in Mbamba and to the Lissongole LBG

#### **Empowering and supporting entrepreneurial breeders to increase their production.**

- Usually 4 to 5 individuals in a group of 16 individuals do well and are able to have more than 2-3 adult animals. In Mbamba and Macalange we identify these individuals as leaders and provided them with special attention and they showed potential to influence the majority, the followers to adopt better practices. For example, Fatima Balassane, was able to transfer to the fixed hutch rabbits born in the holes and raise them with success. Later a rabbit from Fatima gave birth inside the fixed bamboo hutch. In previous years villagers tried to get rabbits to breed in the next boxes inside the hutches, however they gave up when the rabbits died. Two other rabbits (one from Fatima and another from Bibi Amisse/Sabado Bacar) are also pregnant and are expected to give a birth in the hutches. These women have the potential to create significant change in the program by getting other followers to implement new practices. In our opinion, this is a sustainable way to increase husbandry.
- Among several visits that Mariri LBG received, three visits had a very positive impact on the program in 2016:

- 1) Prof Luis Neves – visited the group while Mariri was building the hutch for Fatima Balassane and provided useful inputs on the program including the refine the data collection on the weight of the rabbits, alternatives for nutrition of the rabbits and mobile hutches for wet season. Data is now being collected by Hugo Perreira on a regular basis.
- 2) Members from Macalange and Lissongole LBG & traditional chiefs from the villages that will be partnering with Mariri – heard from Mbamba breeders and saw with their eyes the results of the implementation of the fixed hutch for rabbits. They took the message to their villagers and the two members from Macalange built fixed hutches in their villages when they returned;



The baby rabbits transferred to the fixed hutch were easily available to assess the weight gain at different ages as indicated below. As more rabbits are born and raised in the hutches Mariri will continue tracking the weight of the rabbits.

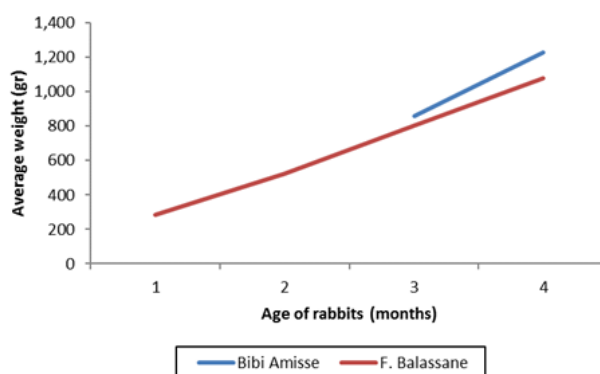


Fig. 1 Estimated weight of rabbits from two breeders at different ages

## Challenges

- 1) We continue to battle with the lack of tradition of raising poultry and rabbits in the villages Mariri is operating. We must have a long-term view.
- 2) Very few duck's rabbits, guinea fowl have been for sale in Lichinga which caused some delays to deliver as incentives or seed animals on time to the groups.
- 3) Difficulties to collect information on the output from the Lichinga breeders, few individuals filled the datasheet with information about their operations.

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### OBJECTIVE 5: TO DEVELOP WAYS TO INCREASE FOOD SECURITY, REDUCE HABITAT DESTRUCTION, AND INCREASE ALTERNATIVE LIVELIHOODS (CONSERVATION AGRICULTURE, BEEHIVE FENCES, CONSERVATION TOURISM AND GRUPO KUSHIRIKA)

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#### CONSERVATION AGRICULTURE

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Food security is a serious threat to people living inside Niassa Reserve who are some of the poorest in Africa. It is impossible to have a conversation about conservation when people are food stressed and are worried about where their next meal is coming from. Most soils in Niassa Reserve, particularly in the eastern section of the protected area, have low fertility and after 5-7 years' people move onto new areas both due to a decrease in fertility but also due to increase in parasitic plant which attacks maize. Food security and increasing production on less land is a critical issue in Niassa Reserve from both a human health and environmental standpoint. As the human population grows in Niassa Reserve we have to find a way to increase production without an increase in rate and extent of miombo woodlands cut down for fields or we need to encourage people to move off subsistence agriculture on marginal land into alternative livelihoods so that food can be bought. Several of our staff have abandoned farming and are now buying food with their salaries.

The conservation agriculture program which has been running since 2012 is a community based approach to increase productivity of Niassa fields in a sustainable way through farmer field schools based on the CARE International approach. It relies on the farmers to test, manage and maintain the conservation agriculture plots through a farmer field school (FFS) with technical advice provided by NCP. The conservation agriculture program is a community based approach to increase productivity of Niassa fields in a sustainable way. It relies on the farmers to test, manage and maintain the conservation agriculture plots through a farmer field school (FFS). This program is independent but receives information, assistance and some training from CARE international. The FFS is testing the use of techniques to:

- Retain water in the soil through mulching because the low and irregular rainfall in Mbamba;
- Improve the soil fertility through the use of legumes intercropping with the main crops, namely maize and sorghum;
- Improve the soil fertility through the use of fallow land approach using legumes;
- Identify leguminous perennial crop that can still cover the soil until the next crop season and at the same time is not attacked by kudus, impalas and other small antelopes.

The FFS also create an environment where the farmer can learn by experimentation as they are the ones who design and implement the crop rotation. They also take care of the crops and harvest them at the end of the season. They compare the conservation agriculture approach with their traditional approach and take the decision themselves which approach better suits their needs.

However, while farmers in Mbamba that these methods work and productivity was significantly higher there is a major challenge to get farmer to implement these techniques into their own fields or to encourage others to do so. This is despite significant effort and sharing results and methods with clear success. People are reluctant to try new techniques particularly if they require more work.

In many cases the behaviour change at the level required is not happening. This program was reassessed in 2016 by our new Community Liaison Officer to experiment with new approaches to get community involved and increase effectiveness in 2017. We have also decided to increase our efforts to look at ways in which fallow fields or fields abandoned for being infertile can be reclaimed.

### 2016 Activities

- Through our vegetable garden at Mariri Environmental centre (under the guidance of Tomas Buruwate) we have been experimenting with alternative crops, ways to increase soil fertility through natural fertilizers, mulching and mixed cropping.
- An informal assessment of the program was done with Conservation Agriculture group to assess a more productive way forward. It was clear that while farmers liked the farmer field school it was not resulting in them employing these techniques in their own fields.
- Additional experiments were continued in the Farmer field school using new seeds and green mulch.
- We invited a soil scientist, Jacinto Mafalacusser from Maputo to do an analysis of fields, fallow fields and bush in Nkuti and Mbamba in the wet and dry season to assess ways to productively use fallow fields (those abandoned as infertile), better understand low soil fertility, and develop a focused plan to increase soil fertility or increase production by using alternative crops.
- The report has been shared with NNR team and will guide our activities in 2017.



*Testing the soils in eastern Niassa Reserve in Mbamba and Ncuti Villages*

### ELEPHANT – FRIENDLY HONEY

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*Lead by Hugo Periera*

Elephants do not like bees and avoid beehives. Dr Lucy King from Save the Elephants developed and tested the use of elephant-beehive fences in Kenya to reduce crop raiding by elephants. We are testing the potential use of this fence in Niassa Reserve to reduce human-elephant conflict. The experimental beehive fence aims to reduce human and elephant conflict incidents in Mbamba village (and if successful, Niassa Reserve) and reduce the loss of yield due to elephant crop raiding. At the same time, it is expected to produce honey that will help the community members improve their diet and earn revenue from the sale of the honey. This project is funded by NCP with support from Houston Zoo. As we move forward with the program we see opportunities for increasing beekeeping in corridor areas across the Mecula- Mussoma Corridor to encourage micro landuse plans and alternative livelihoods in untransformed land. These corridors will be essential to allow the continue free passage of elephants and lions across Niassa Reserve and prevent it from being split into an eastern and western section by a road.



The initial goal was to test the potential for the elephant-beehive fence system to reduce crop raiding by elephants in community farmlands inside the Niassa National Reserve in Mozambique.

### Effectiveness of the fence

Between 2012-2015 we tested the effectiveness of the elephant beehive fence. Six experimental beehive fences were built in Mbamba and Macalange villages during the 2012/2013 and 2013/2014 crop seasons. Four fences are located in Mbamba village and another two fences are in Macalange village. Together these experimental fences made up 1,122m perimeter, have 72 beehives among which 24 are currently occupied by bees, and 69 dummies hives. In 2015 three successful crop raiding events were recorded in Micangaula's neighbouring control farms while no crop raiding was recorded in the farm protected by the beehive fence. In the Minache beehive fence farm there were no elephant crop raiding events while the control farms had two elephant crop raiding events. During the three crop seasons, elephants raided the beehive protected farms on 13 occasions while the neighbouring control farms had 41 successful crop raids. On two occasions, elephant raided the fields where there were beehives but did not eat crops and appear to have been chased out by bees. The majority of the crop raiding of the beehive fence farms occurred when occupancy of beehives was low. In control farms, all 41 successful crop raids resulted in crop loss. The data show that the beehive fences reduce crop raiding by more than 60% but are not 100% effective so expectations need to be managed. In other areas across East Africa (Uganda, Tanzania, Kenya) beehive fences have been found to be 60-80% effective. There is no doubt they work. In addition, they do also have significant potential to create alternative income to farms through the selling of honey produced under the elephant friendly label.

TABLE: CROP RAIDING EVENTS OVER THREE YEAR EXPERIMENTAL PERIOD (2012/2013; 2013/2014 AND 2014/2015 CROP SEASONS)

| Beehive fences                        | Crop Raids         |               |
|---------------------------------------|--------------------|---------------|
|                                       | Experimental farms | Control farms |
| Minache's fence (Mbamba village)      | 2                  | 14            |
| Uacondoa's fence (Mbamba village)     | 6                  | 17            |
| Namena's fence (Mbamba village)       | 5                  | 10            |
| Namango's (Mbamba village)            | 0                  | 0             |
| Mr Victor's fence (Macalange village) | 0                  | 0             |
| Mr. Mário's fence (Macalange village) | 0                  | 0             |
| <b>Total</b>                          | <b>13</b>          | <b>41</b>     |

In total, more than 300 beehives and dummies hives have been distributed as well as fencing material were given to households 2014-2016 that were members of the farmer field school and had experience in maintaining the experimental hives. These beehive fences cover more than 4100m.

### 2016 Activities

- Mbamba Marufo our previous community manager left in May 2016 and our new Community Liaison Officer, Hugo Periera started work in August. Hugo is a vet and comes to the project with a lot of enthusiasm and new ideas.
- In September 2016, Hugo Pereira our new community Liaison assessed the hives. The majority were poorly maintained, the hives were hanging low and no attempt had been made to fix the fence. As a result, honey production was low. Honey badgers were causing a problem and had broken into and damaged some hives,

however most these hives had not been protected as recommended and hives were hanging very low to the ground due to a slack rope.

- Two methods of protecting hives were developed, a metal sheet on the pool and a collar of bamboo spikes. This together with good maintenance of the hives and making sure they are more than 1.1 m above the ground will reduce honey badger damage. These methods were demonstrated to the community.
- A demonstration fence was put up at Mariri to allow us to show visitors what the elephant beehive fence looks like and what it looks like.
- In 2016, we worked in Ncuti village to assist them with surrounding their fields with a beehive fence. To date more than 100 hives have been distributed and this hive will be active in the 2017/2018 wet season once the bees have taken up residence. This is a small isolated village in a high-density wildlife area. This activity provided the starting point for developing a partnership with this village in 2017.
- All honey produced will be sold under the elephant friendly label and income generated for households with jars, labels and marketing by NCP/ Mariri at no cost. This will hopefully provide an example to Mbamba of what can be achieved with some effort.
- An assistant was hired for the community program from Lissongile given the current scale of the livelihoods programs
- In addition we will be investigating an opportunity to place beehives in corridor along the Mecula-Mussoma Rd in L4 E to provide an alternative livelihood, reduce elephant crop raids and delineated the corridor area.



**Manuel and Luis bottling honey for sale from community owned beehives from an elephant beehive fence.**

Each jar of honey (500ml) is sold for Mt300 / \$7.9 under the Niassa Reserve Elephant Friendly label (Portuguese and English labels have been developed).

- We estimate that each beehive fence which surrounds one field with a 500m of perimeter, needs 24 beehives and 24 dummies hives. This costs an estimated \$740 to build (materials, labour to build beehive, tyre rope, baobab rope).
- If only half of these 24 beehives are occupied and well managed it has potential of generating 50- 100 litres of honey per year for a single family. This honey can be sold under the elephant friendly label for \$789-\$1578 per household per year. This is a significant amount of income and is more than the costs of producing the fence.
- Each beehive costs \$30 to build (4 bottles of honey). We subsidise the cost and each beehive can be bought for two bottles of honey,
- Four local carpenters have been trained to make top bar beehives. Currently the carpenters can produce manually bars with precise 32mm or 33mm of width. Carpenters are paid a basic wage and then bonus for each beehive successfully produced.

- Moving forward additional beehives (Kenya top Hive hives) will also be used to protect critical elephant habitats, delineate boundaries in micro landuse planning and can be a positive income generating opportunity under the elephant friendly label.

#### GRUPO KUSHIRIKA – ARTISANS AND CRAFTS



In 2016, we initiated a new livelihoods program focused on the development of skills for local crafts and designs that can be sold to visitors at Mariri, future ecotourism and markets in the US (Houston Zoo shop, Wildlife Conservation Network Expo).

For this first phase, we collaborated with Monique Fagan, from South Africa who has extensive experience in craft and design and working with community groups. Monique came to Mariri and ran three day long courses on design and craft with young men, young girls and mixed group of older men and women. People were invited to come and bring any things that were making (baskets, pottery, mats, pestle and mortar, embroidery) so that skills could be assessed and new products using existing skills developed.

As with all our livelihoods groups, this was voluntary, no payment was given to attend, rules were established and materials were group owned. The objective was to assess existing skills, local materials and explore ideas for unique saleable items. All members learned to draw their own designs, for many it was the first drawing they had ever made. Women and girls were taught basic embroidery, knitting and crocheting and ways to adapt existing skills for smaller item – placemats instead of mats, bowls instead of pots, small trinket baskets with animal designs instead of big baskets. A wide variety of items were created, a name was chosen (Kushirika means to come together), a label was designed, and the first items were sold in the US. All income generated goes directly back to the creator. At this first phase 8 people are creating basic items that be sold. The second phase in 2017 will be to refine these items, improve quality control and create a series of similar items that can be used in the ecotourism camp, set prices. Monique Fagan will again be providing assistance.







## CONSERVATION TOURISM

In 2016 NCP / Mariri initiated development of a new sustainable alternative livelihoods in partnership with Mbamba Village – Conservation tourism. The aim is to ensure constant and increasing revenue flows to Mbamba and other villages in our partnership agreements through a bed night levy of 4000mt per person per night, employment in tourism services and annual employment to refurbish parts of the camps each year. Community-based conservation tourism provides a great opportunity to generate sustainable income and increased benefits, not only through payment of a bed night fee to Mbamba's Community Conservation Fund, but also through ongoing employment in conservation services such as seasonal refurbishment of the camp, opening game drive roads, crafts, , employment.

Our model is not to provide a for profit business for shareholders or an investor driven model. Our model is to generate as many benefits as possible for local communities through alternative livelihoods. At every opportunity, we look for ways to generate additional work and income – from quilts, to mats, to screens to employment, to purchasing of food locally to bednight levy.





This conservation tourism project, unlike many traditional models, is designed to **provide a sustainable, locally derived conservation tourism model** for the Reserve that does not require large investor funding or a profit-driven model with critical occupancy rates that might be difficult to achieve at present. Pricing will be demand driven from a base level that covers all the costs. The primary objective is to generate a growing economic benefit for local villages with L5 South and L4 east.

The five-year objective is to have four trails camp each specifically linked to linked local communities in L5 South and L4 east but sold as one tourism experience so visitors can have different experiences (river, rock, homestay). Costs are low as the camps are only active when they are booked out and are set up ahead of the visitors but packed away in between. All the staff is local. Visitors will be expected to book out and pay for an entire camp to ensure an exclusive experience with a maximum of 6 and minimum of two people. They will at present bring in an outside guide from a select list to provide walking, canoeing and game drive safaris. The Guides fee will be on top of the fee charge by Mariri and agreed through negotiation. Guides will also be able to bring their own clients booking online through a calendar system. The first visitors will test the first trails camp, Mpopo trails camp in 2017 and we hope to be fully operational by 2018 at Mpopo and at all camps by 2020. We have had significant interest already from guides and visitors, and our donors, both local and international.

## 2016 Activities

- Based on our experience in building Mariri Environmental Centre and using the locally trained construction team, in 2016 we constructed three simple, rustic treetop decks and a thatch refectory on an island near the Mpopo hippo pool. This first trails camp will be duplicated in other areas.
- This trails camp is entirely handcrafted and locally maintained (combed thatching grass, woven rope, bamboo screens and mats, furniture etc.) and has not used any cement or permanent structures to ensure the least possible disturbance to the riparian habitat and highest possible employment in future in replacing materials (thatching grass, mats, screens each year). Dry toilets, solar lanterns and bucket showers ensure the camp has a very low footprint in keeping with our mission.
- These decks are based on the centuries-old Mozambican tradition of sleeping on raised platforms, called *Sanja*, for safety from wild animals during the wet season. These Sanja are locally built and can be seen in fields



throughout Niassa. The decks were built by the team of Mbamba artisans who have honed their construction skills over the past four years whilst building NCP's Mariri Environmental and Skills Training Centre

- In addition, river guides, field rangers, cooks and camp staff are being trained at the Environmental and Skills Training Centre and will all be Mozambicans, primarily local. Food will come locally from vegetable garden and local fields.
- Traditional eco-tourism activities will be based around walking and canoe safaris on the spectacular Lugenda River and surrounding mountains. Tourists can visit NCP's Environmental and Skills Training Centre and see conservation in action in Nkuti village.
- Not only will a bed night fee be generated through a community levy as well as employment, but performance payments will be made to the Community Conservation Fund for sightings of key species (lion, elephant, buffalo, hyena, wild dog and leopard) in the area that is protected in partnership with the Mbamba community. This initiative is already in place for visitors to the Environmental Centre and will be expanded to include ecotourism visitors



Each deck has its own character as it is built around the trees at the site with a view of river and hippo pod.



The decks are made from local materials and locally designed with no cement.



Each year local artisans redo the weaving, grass and screens to create ongoing alternative livelihoods

## Assumptions / Constraints / Risks

The ability for us to initiate conservation tourism in Niassa Reserve will depend on increased security in Niassa Reserve to minimize armed incidents between poachers and scouts and elephants being killed in the bush. Tourists cannot visit when there is gunfire at night. Peace in Mozambique so that visitors are confident to fly into the country. The riot we had in December 2016 in response to arrest of illegal miners would destroy any options for tourism. There needs to be a combined effort by District, Concessionaires and Reserve management to provide clear rules for Niassa Reserve with consequences for those that break them. No one has yet been charged for vandalism, theft and assault that occurred.

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## OBJECTIVE 6: TO REDUCE BUSHMEAT SNARING AND OTHER ILLEGAL ACTIVITIES BY EFFECTIVE ANTIPOACHING ACTIVITIES WITH COMMUNITY SUPPORT

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*Lead by Agostinho Jorge, Silto Cristovao, Fernando Macamero*

We conduct antipoaching activities in the area under our management - L5-South (58,000 hectare) We collaborate with NNR antipoaching teams that work across the whole Reserve and neighbouring antipoaching teams in concessions L7, L5-N and L8. In addition, we are a trial site for implementation of SMART (see below) with the intention that SMART will be implemented across NNR to monitor and incentivise antipoaching efforts in future. Anti-poaching is needed to remove snares, apprehend gold miners and increase the opportunity costs for bush-meat and ivory poachers. In addition, this forms a valuable form of employment and engages communities in the responsibilities of conserving “their” wildlife. As one elder put it “you don’t steal from your own shop”. Just like a goat is used as a saving account, so are the wildlife and natural resources in the area a “bank” for the community for the future as wildlife has the potential to generate revenue, employment, provide skills and continue to provide resources for building, medicinal use etc. into the future.

The aim of the antipoaching activities of NCP is to secure the L5-South concession using men and women from the local communities.

### 2016 Activities and Results

- In 2016, the NCP/ Mariri scout force increased from 28 antipoaching scouts to 32 scouts with 5 scouts manning the control gates. All are Niassa Residents and predominantly from local villages in the area (mainly Mbamba Village).
- We hired an Antipoaching Coordinator (Fernando Macamero) and second in command in 2016 both from outside Niassa Reserve to increase discipline, training and leadership of the scouts. This also reduces conflict when local villages are arrested that are related or family of scouts.
- We have four control posts. The Mariri Camp scout HQ, (-12.1779; 38.09302), Cancela Mbamba (S12.18976; E38.05869), Changawe control gate and airstrip.
- The scouts are equipped with: Motorola radios, Trimble + Cedars (digital devices to collect information on SMART system), GPS (Garmin GPSmap 62), cameras (Olympus), binoculars, In addition all scouts have backpacks, and full uniforms.
- Firearms: 10 shotguns 1 7 x 57mm), 2 rifles (.416). We also have an additional 10 shotguns that have been purchased but are in the process of being licensed.
- Additional equipment dedicated to antipoaching includes a vehicle (Landrover Defender) with dedicated driver, two motorbikes dedicated to the rapid response unit (Sanlg shotgun25) and 1 inflatable boat with motor for deployment in the wet season on the Lugenda River.
- A two-seater plane was purchased to assist with antipoaching and monitoring and was fully operational in 2016 piloted by Keith Begg (Operations Director).
- We completed 30- day training by the PRM (police certification) and 30-day training in Basic Skills and mentorship by Conservation Outcomes in 2016 (1 month).

- Two SMART experts from Panthera again visited Mariri to assist with resolving problems with the model (Peter Lindsey and Michelle Moehler).
- This coincided with the visit of a monitoring expert to Niassa Reserve headquarters (Hannah O’Kelly) and this provided an opportunity for Michelle to assist Hannah with the training of scouts to implement SMART at Mbatamila (Reserve HQ)
- All activities of scouts are monitored through SMART and reported to NNR by the 10<sup>th</sup> of every month.
- All arrests of residents and antipoaching activities are reported to the community within 48 hours.
- Results of antipoaching efforts are reported back to the community at least 1-2 a year.
- We believe that equal amounts of effort and funding should be put into antipoaching and community efforts if we want to be successful. We believe that our results show this works.
- On the 2 & 3<sup>rd</sup> of June we held a workshop at Mariri for 24 people involved in antipoaching including scouts, operators, environmental police, prosecutor and Reserve warden. This workshop was organised by Mariri in coordination with the NNR reserve management and the Prosecutor of Mecula District to provide guidance on all the different legislation available (Lei da conservação da biodiversidade, Lei de Florestas e Fauna Bravia, Lei do Ambiente, Lei de Minas, Estatuto do Fiscal e o código Penal) and to create an open platform where problems and challenges could be discussed and solutions found. It was a very successful workshop and will be repeated in July 2017 to provide follow up actions

### **Antipoaching results**

*The detailed results of our antipoaching efforts are provided in the SMART report that can be provided on request.*

- L5-South/ Mariri is the only site in Mozambique that has currently successfully implemented SMART and has it up and running. As a result, we can provide detailed reports every month to the NNR management team.
- In 2017, we will be working with Reserve Management authority to scale up SMART into Chuilexi Conservancy, Niassa Wilderness (L7) and NNR management. SMART has proven to be a very effective way to monitor scouts, antipoaching activities, debrief and set incentives. It forms part of an adaptive management approach.





Training and certification by Provincial Police

Table: Summary of antipoaching activities in L5 South in 2013-2015.

| Category                                       | Year                   |                       |                       |                       |
|------------------------------------------------|------------------------|-----------------------|-----------------------|-----------------------|
|                                                | 2013                   | 2014                  | 2015                  | 2016                  |
| Concession Area                                | 576.5 km <sup>2</sup>  | 576.5 km <sup>2</sup> | 576.5 km <sup>2</sup> | 576.5 km <sup>2</sup> |
| Number of scouts                               | 14                     | 20                    | 28                    | 32                    |
| Number of control posts                        | 3                      | 3                     | 4                     | 4                     |
| Area per scout                                 | 57.65 km <sup>2b</sup> | 41.17                 | 28.825                | 20.59                 |
| Scout per area                                 | 0.017/km <sup>2</sup>  | 0.024/km <sup>2</sup> | 0.034/km <sup>2</sup> | 0.094/km <sup>2</sup> |
| Total number of patrols                        | 102                    | 83                    | 112                   | 199                   |
| Total distance of patrols                      | 7.380km                | 7.00km                | 4.375km               | 11.579km              |
| Training courses                               | 0                      | 4                     | 0                     | 2                     |
| Number of days training                        | 0                      | 120                   | 0                     | 60                    |
| Number of illegally killed elephants           | 15                     | 13                    | 1                     | 4                     |
| Number of suspected elephant poachers captured | 1                      | 3                     | 0                     | 0                     |
| Number of ivory recovered                      | 7                      | 28                    | 6                     | 12                    |
| Number of ivory recovered through informers    | 5                      | 6                     | 4                     | 2                     |
| Ammunition recovered (AKM)                     | 13                     | 151                   | 9                     | 0                     |
| Illegal Hunters captured                       | 9                      | 1                     | 3                     | 0                     |
| Wire Snares removed                            | 25                     | 45                    | 45                    | 100                   |
| Rope snares recovered                          | 14                     | 1                     | 8                     | 59                    |
| Guineafowl snares removed                      |                        | 6                     |                       |                       |
| Illegal miners captured                        | 6                      | >200                  | >1000                 | 2277                  |
| Minerals confiscated                           | 2                      | 2                     | 2                     | >20                   |
| Mining instruments confiscated                 | <20                    | >200                  | >600                  | 1961                  |

- Results show that while elephant poaching and snaring have gone down, illegal mining is increasing exponentially and is consuming a large amount of resources and time with little potential for resolution. The current NNR position that we should confiscate equipment is not a sustainable long-term solution and is becoming increasingly dangerous.
- In the table below we summarise the current conservation threats in concession L5-South and their severity and trend. This is updated annually and is part of our monitoring process.
- Driving these threats are increased human population and traffic inside concession L5-South, largely due to illegal gold mining. Illegal mining results in increased bushmeat snaring, alcoholism, prostitution etc. In addition, it destabilises leadership structures and community programs and we have data showing that elephant poachers can hide in these camps. This is jeopardising our community conservation partnership with Mbamba village as well as our conservation work.
- Additional information has been collected by A. Jorge on bushmeat consumption and trade in the region. This will be analysed and available as part of Agostino's PhD and is not included here. Gold mining is increasing



exponentially in L5-South and L4-East with more than 2200 miners apprehended in 2016, and this is only a fraction of the people involved.

- The lack of arrests by other partners in 2016 and the lack of prosecutions of gold miners despite it being illegal created dangerous conditions for Mariri that resulted in two road blockages and a riot in 2016. This could have been averted if there was a combined effort by all parties – Reserve, District, Concessions to stop illegal mining.

**Conservation threats in L5- South which we directly manage. Note that this does not reflect NNR only the small area we directly manage. Elephant poaching is not declining across NNR at present.**

| Conservation threat                | Severity  | Trend                                              |
|------------------------------------|-----------|----------------------------------------------------|
| Illegal mining                     | Very High | Increasing                                         |
| Bushmeat Snaring                   | High      | Decreasing                                         |
| Elephant poaching                  | Low       | Decreasing                                         |
| Commercial fishing                 | Medium    | Decreasing                                         |
| Poison                             | Low       | Increasing                                         |
| Trade in lion bones                | Low       | Increasing                                         |
| Hunting with dogs                  | Low       | Stable                                             |
| Charcoal production                | Very low  | Potential                                          |
| Logging                            | Low       | Increasing                                         |
| Domestic dogs- disease and hunting | Low       | Stable                                             |
| Habitat loss                       | Medium    | Increasing but managed through land use agreements |

## COLLABORATION

Given the increasing threats and the need to secure as much of Niassa Reserve as possible, we with our neighbours, Chuilexi Conservancy (L5N, L6, R5) and Niassa Wilderness (L7) formed the Niassa Conservation Alliance. This is some grassroots, operational alliance to assist each other to secure the eastern Niassa Reserve that we currently collectively manage. At present the area under the direct management of these three organisation is 28% of the total area of NNR (11,852 km<sup>2</sup>) and more than 15.5 million USD has been invested in conservation here in the past 5 years. Through significant investment, a focus on community engagement and good antipoaching wildlife in these areas is still plentiful. Significant investment and results are being achieved by this collaborative effort through the informal sharing of skills training opportunities, lion scholarships, intelligence and join patrols, protocols, providing emergency assistance, joint ordering of Avgas, intelligence etc.

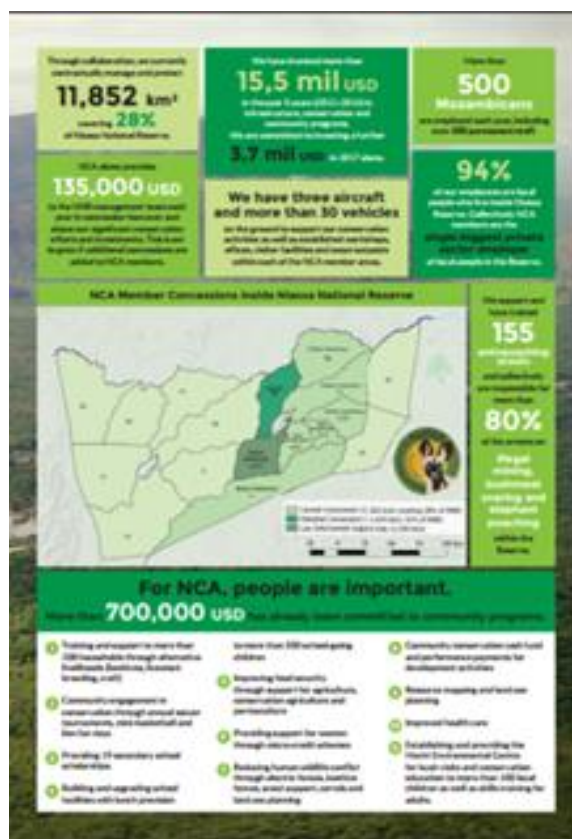


Figure: Pamphlet highlighting the Niassa Conservation Alliance and its collaborative approach in eastern Niassa National Reserve to provide support to the NNR management team..

## Elephant poaching

- In L5-South, 5 elephants have been killed in past 21 months (since July 2015), with 1 elephant killed in 2015 and 4 elephants killed in 2016 in two incidents. This is a dramatic reduction in poaching in L5 South and much less than in neighbouring concessions.
- This is not due to lack of elephants in the area as herds and bulls are regularly seen.

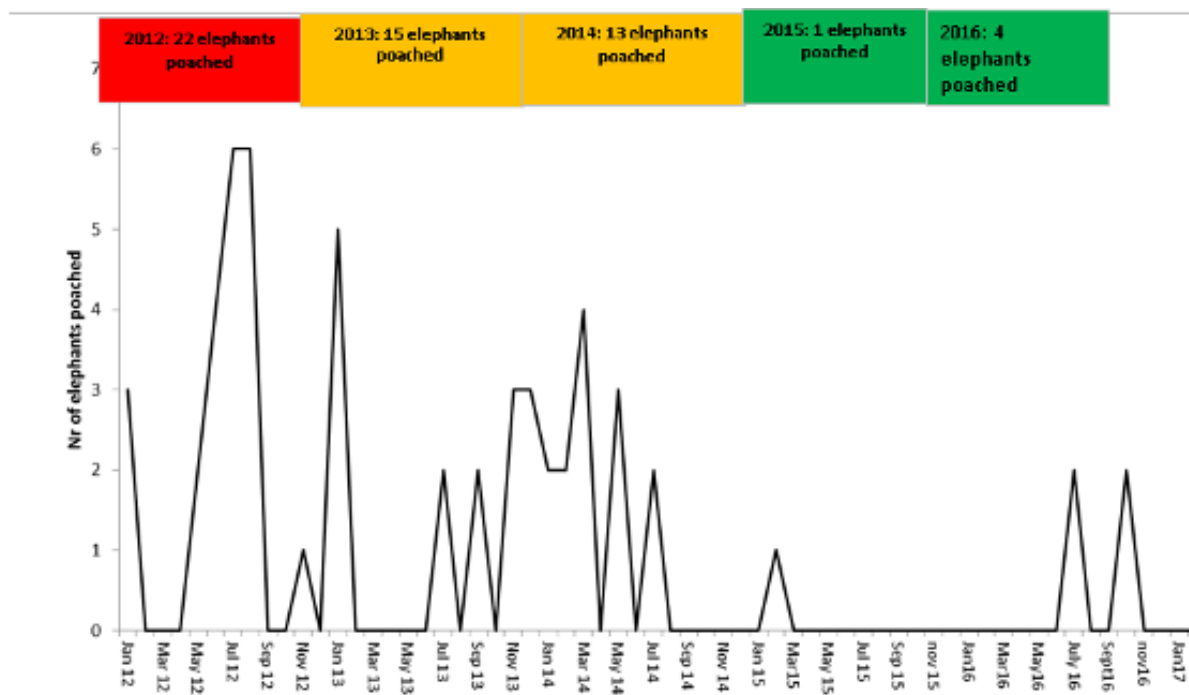


Figure: Number of elephant killed illegally in L5-South per month since January 2012. These data show the successful reduction in elephant poaching in L5-South since Mariri Investimentos/ NCP took over management in 2012.

### Illegal Mining

Gold Mining has increased exponentially and is the biggest risk to ecotourism development and community partnership in L5 South and L4 east and is connected to bushmeat snaring, pollution of the rivers with mercury and possible human health risks in future. Mining is increasing in several areas of Niassa Reserve not only L5 South (L8, L7, L4, L5N,). Experience in many other conservation areas is clear about the devastation this can result in a protected area.

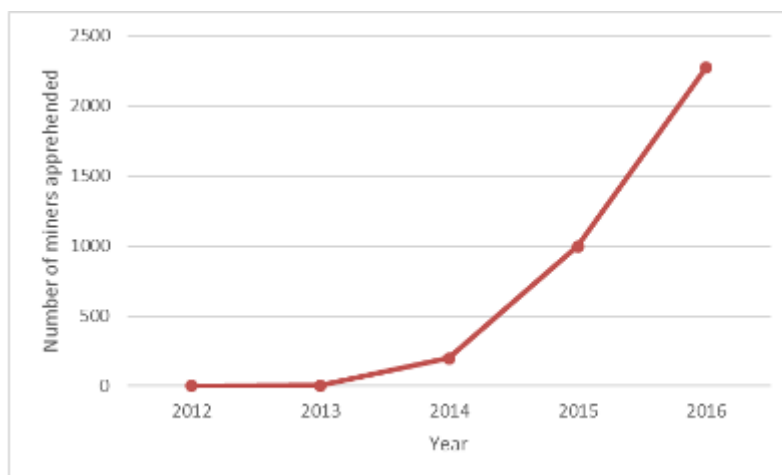


Figure: Exponential Increase in illegal gold mining in L5 South over past 5 years, showing the increase in the number of miners apprehended during this time.



*Images of a gold mining camp in a neighbouring concession inside Niassa Reserve – L8- showing the scale of illegal mining in Niassa Reserve and the importance of maintaining pressure on the mining camps so that they do not result in this size*

- In December 2016, approximately 40 people rioted in response to the arrest of 19 miners. This resulted in the assault of a scout and one other staff member, theft, vandalism (two windscreens were broken, Mozambican flagpole broken, latrines burnt down), threats and intimidation. Those responsible have been reported to the police and initial investigations were done but to date no arrests have been made.
- On numerous occasions in 2016 we warned that we were becoming increasingly vulnerable as we were the only company arresting illegal miners. We asked for clarification on the mining policy in October and November given that we were the only ones arresting miners and were assured that we should continue to do so. It was agreed that a major joint mining patrol would take place before the end of December. This did not happen.
- An urgent decision needs to be reached by NNR management team on how illegal mining should **be addressed, even before the General Management Plan is passed. Illegal mining is increasing exponentially and any delay may result in it being difficult to recover. In our opinion, illegal mining is currently the biggest threat to Niassa Reserve as it is not only linked to damage of rivers and poisoning through mercury but it undermines community conservation efforts and increases general lawlessness inside NNR.**
- We continue to have major problems with NNR radio network. This is a fundamental need for effective antipoaching efforts. We understand that a plan is in place for the radio system to be assessed and fixed in 2017. This is necessary not only to increase effectiveness of antipoaching but to keep our scouts and teams safe given increasing insecurity in NNR.

### Bushmeat Snaring

- Bushmeat snaring is a major problem in Niassa National Reserve and L5-South. We run the risk of having an empty woodland. While the District government believe this to be a livelihoods issue, our data show that this has shifted from a subsistence issue to a commercial enterprise. Intelligence shows that some District government officials are eating and trading bushmeat on a regular basis. Bushmeat is also in demand by illegal miners.
- Snares are used to kill wild animals for meat and non-target species like carnivores are killed inadvertently. It is the major threat to lions, leopards, spotted hyenas and African wild dogs in Niassa Reserve. These species are critically important for ecotourism and ecological stability. Unless bushmeat is taken seriously and



acknowledged as a major threat to Niassa Reserve not simply a livelihoods issue, Niassa Reserve will not be able to achieve conservation success.

- In 2016, miners bought all the rabbits from four owners in Mbamba that are part of our Livestock breeding programs. This illustrates the demand for meat.



### Solutions and a way forward

- **Improved antipoaching and intelligence effort to remove snares and arrest bushmeat hunters** and traders is needed. There has been an almost total focus on reducing elephant poaching in NNR with very little attention paid to other threats. Snare sweeps and intelligence are essential to clean out heavily used areas, and catch bushmeat hunters. Across NNR there is almost no data on extent of snaring due to lack of consistent monitoring of antipoaching patrols. This will change as SMART is scaled up into other areas.
- **We urgently need effective prosecution of bushmeat hunters and traders**, particularly District officials that are heavily involved to send the message that bushmeat hunting is illegal according to the Conservation Law. This will provide a cost to bushmeat hunters and traders that is not there at present. We have caught the same bushmeat poacher three times in 6 weeks and he is simply released. Many people feel that local communities should be allowed to snare and hunt in their mashambas and elsewhere as this is seen as a livelihood issue. Buffalo are regularly stated to be problem animals simply because a community wishes to have the meat. There needs to be a clear problem animal policy that states that meat from a problem animal may not be distributed in the village in which the animal it is killed but to clinics and schools in other areas.

### Alternative protein sources

- **Newcastle's Vaccination** program for chickens. Decreasing mortality of chickens from Newcastle's disease will make a huge difference to food security in households. There is NO reason why this cannot be achieved in NNR. The vaccine is simple to administer (eye drops, no fridge necessary) and can be done by community assistants. This has been highlighted as an issue repeatedly by NCP/ Mariri and was again highlighted by the **One Health survey** completed by Dr. Mike Kock in a consultancy for WCS/ NNR in partnership with Mariri/ NCP in 2016 (report available through NNR, Kock et al, 2016)). This should be a priority and a benefit provided from conservation to communities in NNR. Mariri / NCP is committed to supporting this initiative through fund raising, providing veterinary and technical support and will work with Agriculture department and NNR Management team to achieve this.



- **Alternative small livestock breeding programs** to provide diversity and alternative sources of small livestock for Niassa households. Goats are not a good alternative as they can be very destructive to local environment and attract lion and leopards into villages when they are not kept in proper corrals. **Currently Small Livestock Breeding Groups are operational in 97 households across 05 villages (Macalange, Mbamba, Nkuti and Lissongole and Cuchiranga) of Niassa Reserve and are showing some success and are well supported by local communities and District government.** We focus on ducks, rabbits, and possibly turkeys. These programs run by Mariri / NCP have significant support. (see section on alternative livelihoods).

### The Challenges:

The different messages given from different levels of government and NNR Management on what is allowed and what is not allowed is confusing to local communities. We continue to have substantial problems with absenteeism, poor health and poor performance from the scouts with high turnover and disciplinary actions. For almost all the scouts this is their first ever job and work ethic is poorly developed and many are past poachers of one type or another. We have taken men from the village with low levels of education, little world view, and no experience with conservation and equipped them as antipoaching scouts with the aim of protect wildlife from the same local communities they come from. But it will take many more years for them to become conservationists. This will not only require skills training in antipoaching/ ranger skills but also a concerted effort to provide an education in conservation and opportunities and experiences that convince them of the vision of conservation as a viable future for local communities rather than a developing a livelihood from illegal activities. At present, most of the scouts are working on a job not working for conservation. This will take time and will result in high turnover. We believe that equal amounts of effort and funding have to be put into antipoaching and community efforts if we want to be successful.

To improve our antipoaching activities in 2017:

- Our Husky aeroplane will be operational for the entire dry season.
- If possible the airstrip will be registered (this is in the control of NNR Management team).
- We will continue to mentor and train our scouts on an ongoing basis and will be implementing a new incentive system to encourage scouts to work hard and achieve good results. We will also be improving our conservation education of the scouts (and all of our local team) to help them understand and believe in conservation.
- We will be training our scouts every 6 months with Conservation Outcomes.

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## THREAT 2: RETALIATORY KILLING DUE TO ATTACKS ON PEOPLE OR LIVESTOCK

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### OBJECTIVE 7: TO REDUCE HUMAN-CARNIVORE CONFLICT THROUGH SAFE SHELTERS AND SAFE BEHAVIOURS

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Human-carnivore conflict results in retaliatory killing of lions and leopards. Human – wildlife conflict in general leads to a loss of support for all conservation initiatives. Research in previous years has shown that lion and leopard attacks can be reduced through behaviour changes, specifically sleeping inside a shelter during the wet season, never walking alone and improving goat corrals etc. A safe behaviour poster was developed to promote awareness of behaviours that make people vulnerable and what actions people can take to reduce attacks themselves. We have developed a toolkit of methods used to protect livestock across Africa in collaboration with other lion projects which is freely available on our website in Portuguese, English and French ([www.niassalion.org](http://www.niassalion.org)).

We have the following programs to reduce human - carnivore conflict (and in fact all human-wildlife conflict).

1. **NNR community guardian (MOMS) program:** The Community wildlife guardians collect information on all HWC conflict events in 24 villages across NNR. In program is financially support, managed and mentored by NCP in partnership with the NNR warden, Cornelio Miguel and NNR management team. Monitoring of lion attacks has

across Niassa Reserve has been ongoing since 2003. Data is collected through MOMS guardians as well as NNR reports, operator reports and village reports.

2. **Elephant Beehive fences:** The aim of this program is to reduce elephant crop raids in village surrounds using a community supported and maintained elephant beehive fence.
3. **Community Conservation Fund:** A Conservation fund is provided to the Mbamba village as part of our partnership in return for achieving targets in micro land use planning and reducing snaring (performance payment). In 2014 and 2015 they used their fund to put up 20 km of polywire fencing to protect their fields.
4. **Quick response team to react to problem carnivores:** 4-permanent staff members from both our antipoaching team and our carnivore research team have the necessary experience, tools (firearm, traps, predator flashing lights) and skills (chasing elephants out of day time refuges, reflective tape, building effective corrals) to respond and deal with “problem” carnivores and elephants. A radio system has been donated to the community to allow them to contact NCP whenever they have a problem. In addition, we work with the Reserve management team to respond to “problem carnivores” and provide our expertise and equipment to resolve these issues. This partnership needs to be strengthened as we are frequently not contacted and data on attacks are not passed on. We will address this in 2016.
5. **Safe behavior and effective goat corrals:** In 2014, we continued to reaffirm the importance of people taking responsibility for their safety through the Community Guardian program and environmental education programs. The Safe behavior posters were redistributed throughout MOMS villages. Several activities at Lion fun days reiterated the importance of safe shelters and a comic book has been developed for wider distribution on safe behaviors. An incentive system for people who improve their goat corrals is being trialed in Mbamba Village.
6. **Predator Deterrent lights:** Use of flashing predator lights and reflective tape to reduce attacks on livestock particularly goats. We are currently collaborating with a number of other carnivore projects and Wildlife Conservation Network to develop a predator deterrent that uses light and sound to scare away predators when they come close to corrals. We are also testing a variety of predator lights (predator guard, Niteguard and Fox lights) and reflective tape on livestock corrals.



*Solar powered flashing lights that look like eyes and deter predators and elephants*

7. **NNR Protocols for dealing with problem animals and reporting on attacks:** NCP has repeatedly requested that NNR management team develop clear protocols to deal with problem animals (What is a problem animal? Who should be contacted? Who should get the meat? How can conflict be prevented etc., who can destroy the animal) and this need to be made clear to scouts, communities and operators. Once these protocols have been developed then these guidelines can be included in the Environmental education and outreach programs at Mariri Environmental Centre. There is still a widespread attitude that animals should be destroyed rather than livestock protected. This message has also been spread by District, National and Provincial Government officials who visited NNR. This is incompatible with long-term conservation goals. The protocol developed by NNR management team needs to detail clearly responsibilities and rights. People need to take responsibility for protecting their livestock effectively to prevent attacks before assistance with problem animals is given.

## HUMAN-WILDLIFE CONFLICT ACROSS NNR

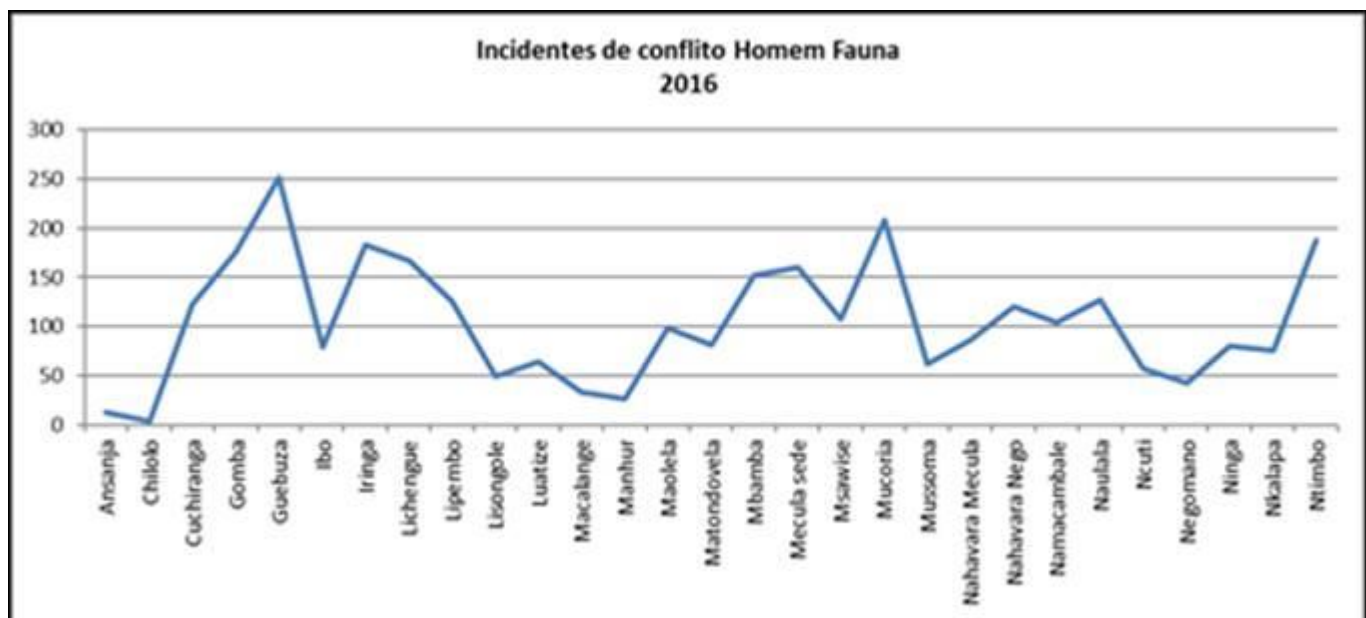
Some of the most important data collected by the MOMS wildlife guardians are on human-wildlife conflict events.

NCP is committed to assisting the Mbamba Village community reduce human-wildlife conflict and to reduce human-carnivore conflict across NNR through the Niassa Carnivore Project with the Reserve management team. We firmly believe that coexistence between carnivores and other wildlife and people is possible if we take precautions and are proactive about protecting ourselves, crops and livestock. We collect detailed information on all human –wildlife conflict events through our partnership with Mbamba Village and collect data on human wildlife conflict events across NNR through the MOMS wildlife guardian program that we manage in partnership with NNR team.

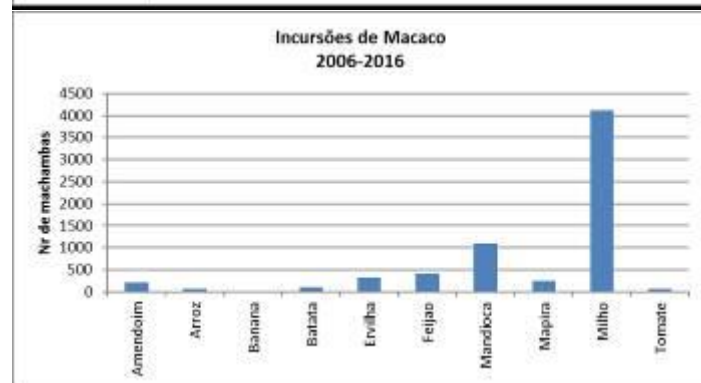
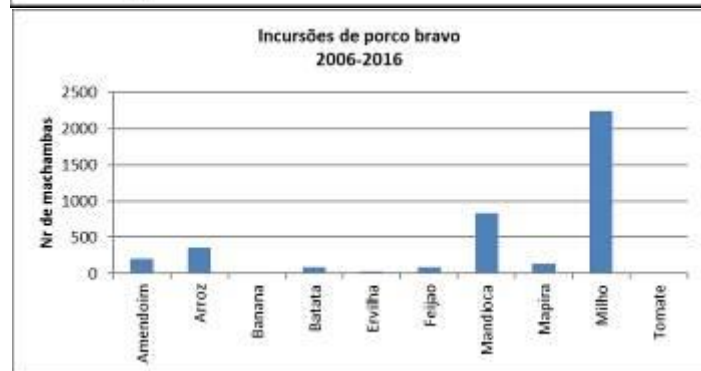
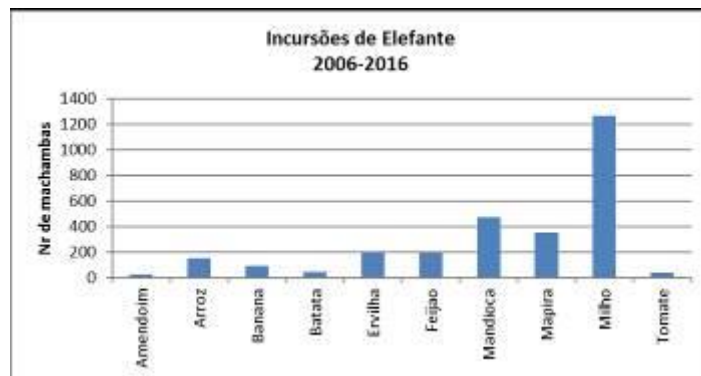
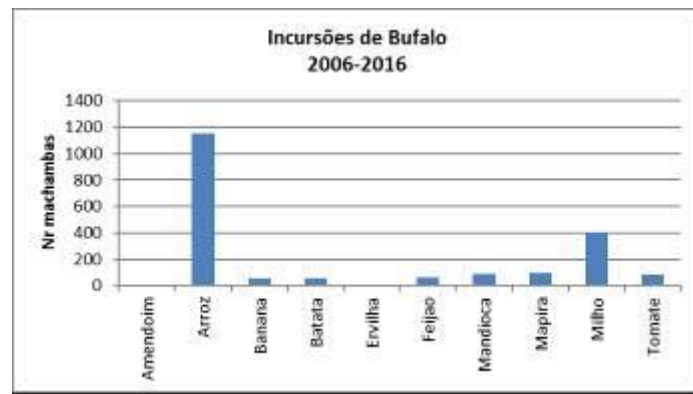
**We again urgently request an agreed NNR problem animal protocol that guides actions when problem animals are reported and ensure that all stakeholders- community, farmers, district government, Agriculture, Guarda Fronteira, Environmental Police, NNR team, concession teams, etc. all understand and follow the same procedure to prevent confusion and conflict. This will reduce unrealistic expectations and should clearly state the responsibilities of each group.**

We believe that killing an animal in a protected area should be the last resort and only implemented when all other options have been exhausted and there is a clear danger to people. Livestock need to be effectively corralled and this should be responsibility of the owner. NO meat from a problem animal that is killed i.e. buffalo should be distributed to community which reported the problem.

Data collected by the MOMS Community Wildlife Guardians allows us to compare conflict over time and between different areas in Niassa Reserve. In 2016, across NNR 3178 incidents of human wildlife conflict were recorded by MOMS guardians. The figure below shows the events per village. The highest level of conflict of all types were recorded in Guebuza, Mucoria and Ntimbo- all in the Mecula district. In Mbamba there were 159 conflict events in 2016



We are also able to track conflict over time in different types of fields. Data for four main species, buffalo, elephants, bush pig and baboons are shown below showing the very high impact by bushpigs and baboon and the type of data collected. Buffalo mainly impact rice fields while elephants destroy mainly maize fields. In event of an animal causing a major problem the WhatsApp group allows information to be transmitted to NNR management team and NCP (for carnivores) to allow for rapid response.

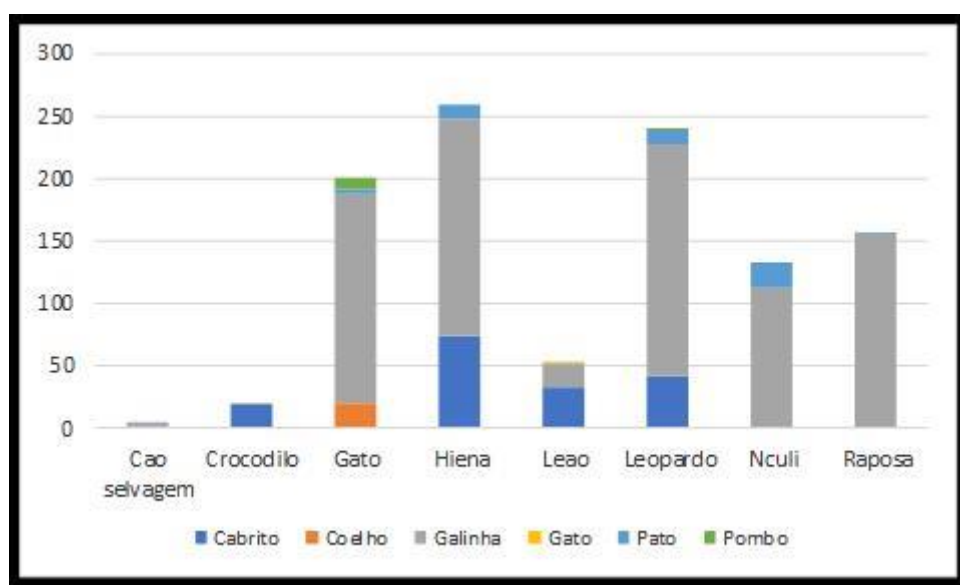


AS NCP, we can respond quickly to carnivore attacks on people and livestock. We now have a vet on staff and extensive experience in reducing conflict through behavioural changes, removing incentives for carnivores and if necessary removing the problem animal. All our work is done with permission and collaboration with NNR reserve team. Data on carnivore attacks is collected through MOMS guardians as well as NNR reports, operator reports and

village reports. We use education and outreach to share ways to reduce conflict and “Safe behaviours) – poster, theatre, visits to Environmental Centre.

Overall in eleven years (2006-2016), ten species of carnivores have been reported to be causing problems in villages across NNR. However, in comparison with other Human wildlife conflict events, problems with carnivore is relatively low. Of the 18,543 human wildlife conflict events reported over the past ten years only 4 % were by carnivores (753 events). Hyaenas, side striped jackal and leopard were the main culprits and were responsible for 56% of the events reported.

Human carnivore conflict in Niassa Reserve is relatively rare due to low numbers of domestic livestock and the fact that Niassa Reserve has no cattle. Unlike many other areas in East Africa, conflict with cattle is not the main risk to lions in NNR. In addition, it can be reduced even further if households take responsibility for their livestock and put them into corrals at night and do not allow animals to move around free range. Unfortunately, there is no tradition of livestock husbandry in Niassa Reserve and many households leave their goats, rabbits and ducks outside at night. This needs to be taught.



**Fig. Number of domestic livestock killed and injured by carnivores in Niassa National Reserve recorded by MOMS wildlife guardians between 2006 and 2016 (African Wild Dogs, crocodile, wild cat, hyaena, lion, leopard, honey badger and jackal)**



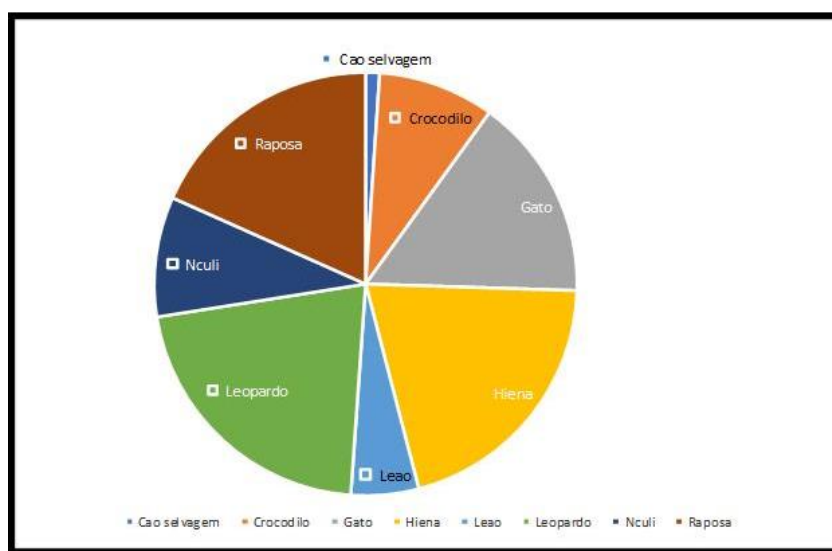


Figure: Carnivores species responsible for human carnivore conflict events in Niassa Reserve between 2006 and 2016 (wild Dog, Crocodile, wild cat, hyaena, lion, leopard, honey badger and jackal).

### Safe Behaviours

Attacks on people can be minimised if people sleep in safe shelters in their fields in the wet season when 80% of the attacks by carnivores have occurred. These safe shelters or Sanja have been used for 100s of years by local people and represent the best way for people to reduce risk. Goats should be in a strong goat corral with a secure roof and door. The Portuguese version of the Lion-Human Toolkit produced by NCP details ways to reduce attacks on people and livestock and is available here:

[http://www.niassalion.org/library\\_files/Portugese Toolkit May 2016 small.pdf](http://www.niassalion.org/library_files/Portugese Toolkit May 2016 small.pdf)

This toolkit was distributed to all MOMS guardians, NNR community team and others in NNR in 2016. It is freely available for download and can be distributed as necessary. It is also available in English and French for conservation programs across Africa.

**The Challenges:** Human and wildlife conflict (HWC) is a reality in all village and was monitored throughout the year. Collection of data on HWC is not an easy task as often the wildlife guardians are confronted with angry farmers which sometimes threaten the guardian with violence. When detailed data is collected i.e. the measurement of damage done to crops this often creates the expectation that there will be compensation later. This is particularly common for elephant damage. As the year pass by and no compensation is paid it becomes more difficult for some guardians to deal with the farmers in their villages. This can be reduced if the data collected is reported back to the communities and it is clear to the communities that these data belong to them. This was improved in 2015 and 2016 and several report back meetings were done with regional workshops held in Mavago, Mecula and Negomano. This is an essential part of the MOMS guardian approach. It can in future be used by communities to help them make decisions about which animals cause the most problems and to have more realistic view of the level of conflict. These issues are extensively discussed during the annual training and report back workshops. Livestock owners are also reluctant to take responsibility for protecting their livestock, this is exacerbated by government officials who state that wildlife that enters villages should be killed. We believe that 80% of all carnivore attacks on livestock could be prevented through proper corralling and protecting in hutches.

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### THREAT 3: UNSUSTAINABLE SPORT HUNTING

#### OBJECTIVE 8: TO ENSURE SPORT HUNTING OF LIONS AND LEOPARDS IN NNR IS SUSTAINABLE AND MEETS CONSERVATION OBJECTIVES.

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In Niassa National Reserve, Mozambique sport or trophy hunting is allowed and supported by the Mozambican government inside the protected area across nine hunting concessions covering 27,989 km<sup>2</sup> (66.6%) of the protected area estate (42, 500 km<sup>2</sup>). The intention is to generate a tourism economy and provide additional infrastructure in an area that does not have ecotourism at present. Sport hunting is increasingly controversial particularly for species that are facing widespread declines across their range like lions, leopards and elephants and particularly in a protected area. Though illegal offtake (snare, poison), habitat conversion and retaliatory killing remain the main threats to lions, sport hunting has also been directly implicated in population declines in other areas with altered sex ratios of lions and leopards when it is unregulated, offtake is too high and young or female animals are taken (Loveridge *et al.* 2007; Lindsey *et al.*, 2013). Research has also shown that sport hunting can be sustainable with little to no negative impact on the long term persistence of a lion or leopard population if sport hunting is restricted to males that are at least six years of age in lions, seven years in leopards and quotas do not exceed 2-4 % of the adult male population.

As a result, in 2015 Australia and France banned all import of lion trophies and USFWS listed lions from Eastern and Southern Africa as “Threatened” on the Endangered Species Act of the USFWS. A specific 4d rule was implemented which stated that from January 2016, lion trophies shot by USA clients could only be imported into the USA if it could be shown that the sport hunting activity “enhanced” lion conservation efforts. It is no longer enough for sport hunting of lions to simply be sustainable, it has to be shown to be beneficial to lion populations. Leopards are already on Appendix 1 of CITES and sport hunting is allowed but only if it can be shown to have a positive impact. In 2016, leopard sport hunting was stopped in South Africa due to increasing concerns about leopard population numbers.

The goal of the Niassa Carnivore Project is to secure the large carnivore populations in Niassa National Reserve by promoting coexistence between lions and people and actively mitigating human induced threats to large carnivores. Sport hunting was identified as a threat to lion, and leopard populations in 2003. The Lion regulations were written by NCP and implemented in 2006 by SRN (Reserve management authority) and updated by WCS/ ANAC in 2013, while the leopard regulations were implemented in 2010 by SRN and updated by WCS/ ANACA in 2013. The aim of these regulations was to ensure sport hunting was at least sustainable and offtake was minimized. NCP has been independently monitoring the offtake and age of lion and leopard sport hunting trophies in Niassa National Reserve for more than ten years. Our goal is to ensure sport hunting is not a threat to lions and leopards in Niassa and that it enhances lion and leopard conservation. At the same time we work in partnership with the NNR team to conserve this wilderness as a whole. It is important to recognise that this work is funded by NCP by independent donors and is not paid for by either WCS, Niassa hunting operators, sport hunting clients or ANAC and we do not have any vested interest in sport hunting. We do not make any value judgement about sport hunting.

For lions, these regulations and the “points system” for assigning quotas coupled with ongoing monitoring of lion and leopard sport hunting trophies have been successful at reducing offtake in NNR. The number of underage lions taken as trophies has decreased from 75% to zero and the total offtake in a year has decreased markedly. These data are currently in press (Begg, Miller, Begg, 2017. “Effective implementation of age restrictions increases selectivity of sport hunting of the African lion” *Journal of Applied Ecology*, in press. All lion and leopard trophies have to be seen, measured and aged before they leave the protected area and full information must be provided. It is clear that lion sport hunting in Niassa is currently sustainable, well monitored and transparent. The sustainability of leopard sport hunting is more difficult to assess as leopards are very difficult to age from visual criteria and most of the animals taken as trophies are not over 7 years of age and illegal offtake is very high. Data do suggest that if quotas are limited to one leopard per 1000km<sup>2</sup> this will err on the side of caution (Packer *et al.*, 2011; Jorgé *et al.* 2013).

Proving that sport hunting actually enhances the conservation of lions and leopards is more complicated. On the surface, it seems counter-productive and hypocritical to allow the sport hunting of lions and leopards while fighting

against illegal hunting since both are sources of non-natural mortality in this protected area. Illegal offtake is high for both species and increasing, particularly poisoning and bushmeat snaring (see antipoaching data and data on mortality in this report). The benefits to the lion and leopard populations must clearly outweigh the costs of individual animals being killed for sport for sport hunting to be a conservation tool -simply put; more animals must be saved than are killed.

At the moment, the measurable conservation benefits to Niassa Reserve from sport hunting in nine concessions are not trivial and include individual benefits to local people living inside NNR through employment as camp staff, trackers and antipoaching scouts in an area that has very few alternative sources of employment and currently no operational ecotourism; the establishment and maintenance of roads, camps, airstrips, and other infrastructure that allow the Niassa Management team access to remote areas for antipoaching efforts; daily communication by people on the ground of poaching events and informer information on poisoning, logging, mining, snaring etc. that allow for rapid response; provision of additional aerial support (more planes); and the employment and training of operator antipoaching scouts that complement the NNR antipoaching team (50-100 scouts are employed by operators in Niassa Reserve). In addition, the concession fees generate about \$200,000 for conservation management for NNR and by law, 20% of the trophy license fees and concession fees are also required to be returned to communities living inside Niassa Reserve to provide a benefit from living with wildlife.

On the flip side, some concessions are not doing effective antipoaching and their community engagement is poor to non-existent. The 20% of the concession fees and trophy fees that are meant to be returned to communities by law are not tightly linked to wildlife presence so are unlikely to be acting as an incentive for communities to reduce illegal offtake or increase tolerance for human wildlife conflict. As shown by Jorge *et al* 2013, very few economic benefits are trickling down to communities from the sport hunting of leopards and this in no way compensates for attacks by leopards on livestock. There is no reason for this to be any different for lions. In fact, the opposite seems to be true where communities are sometimes resentful that outsiders can kill animals for fun and money but they are not allowed to kill animals for food and income. However, this can be improved through better communication of where the 20% comes from, increased and better managed benefits flowing from operators to communities and better operator/ community relationships.

Therefore, in NNR, perhaps counter intuitively and despite the caveats, stopping legal sport hunting of lions and leopards has a high risk of increasing illegal offtake of both species. Lions are the highest value species for sport hunters, since elephant hunting was stopped in 2016. By stopping legal offtake of lions and/or leopards, we may cause sport hunting operators to become unprofitable which will reduce the funds they put into antipoaching and community engagement and ultimately may result in some operators abandoning their areas when a critical point is reached. These hunting concessions are very large (2200-4300km<sup>2</sup>) and Niassa is currently managed by the NNR management team in partnership with concession holders (both hunting and non-hunting). Open concessions have higher levels of illegal offtake as there is no regular presence, no resident antipoaching scouts, no infrastructure (roads, airstrips) allowing for rapid response and no benefits to communities. There is no viable ecotourism in Niassa Reserve at present and these concessions would therefore be abandoned and left unoccupied. Several concessions designated for ecotourism are currently available in Niassa Reserve and have not been taken by tourism operators. It is naive to think that the hunting concessions could all easily be converted to ecotourism concessions. More open concessions at this point would be disastrous for many species including elephants, lions, leopards, hyaenas, pangolin, plains game etc., as it would lead to less conservation management at a time when threats are increasing. Overall these benefits from sport hunting do not enhance lion and leopard conservation efforts specifically but they do enhance overall conservation efforts and better protection of Niassa Reserve as a whole. Despite our ethical reservations about sport hunting lions and room for substantial improvement in conservation and community efforts, particularly in the distribution of revenue to communities in some concessions, we suggest that a ban on lion sport hunting should not be implemented at present until a viable plan is in place to prevent creating a vacuum.

**We therefore recommend that (these are the same recommendations as in 2015 and still apply):**

- 1) Lion and leopard sport hunting should continue in 2016 with quotas following the Points system and 1 leopard / 1000km<sup>2</sup> (see below). The regulations should remain in place, strictly enforced and monitoring should continue.
- 2) Increased pressure from NNR management team should be placed on ALL sport hunting operators to a) hire and train more local people, b) implement effective, monitored antipoaching, c) ensure daily radio communication and a year-round presence and d) improve distribution of meat to local communities to provide a direct benefit from sport hunting to communities and to provide added support to programs to provide alternative red meat protein i.e. livestock breeding to reduce bushmeat snaring.
- 3) A desk top study is initiated to assess objectively whether stopping the sport hunting of lions (the 6-10 lions taken a year) could be done without causing operators to become economically unviable and to assess what alternatives are available to secure the land currently occupied by sport hunters i.e. a Plan B. It is likely that the sport hunting of lions will be stopped in the near future through international pressure and concern for declining lion populations so this study should be a priority.

## 2016 Activities and progress

### Lion Trophy Monitoring

- Three lions were taken as trophies in three hunting concessions. All were over the age of size.
- Of the nine hunting concessions, 5 did not hunt lion in 2016, 1 was not operational and 3 each took one lion.
- The low offtake was largely the result of the restrictions in allowing trophies to enter in the US.).
- Quotas should remain the same as 2016 except that the lion and leopard quota for L7 should be halved as they are no longer hunting in the eastern section of their block. The full quota is therefore not appropriate.
- All lion trophies were seen, measured and aged before they left the reserve.
- This is the third year in a row that 100% of the lions taken as trophies have been all been over 6 years of age



## GOAL 4: TO DEVELOP AN ENVIRONMENTAL EDUCATION PROGRAM FOR NIASSA RESIDENTS - MARIRI ENVIRONMENTAL AND SKILLS TRAINING CENTRE

### OBJECTIVE 10: TO DEVELOP A COMMUNITY OUTREACH AND ENVIRONMENTAL EDUCATION PROGRAM IN NNR THAT INCREASES TOLERANCE AND REDUCES CONFLICT AND PROVIDES NIASSA RESIDENTS WITH LOCALLY RELEVANT CONSERVATION MATERIAL

THIS PROGRAM IS LEAD BY OUR EDUCATION MANAGER, ANDREW MAKANAGE WITH THE ENVIRONMENTAL CENTRE MANAGED BY TOMAS BURUWATE WHO IS ALSO THE RESIDENT NATURALIST.

MARIRI ENVIRONMENTAL AND SKILLS TRAINING CENTRE (S12.17780; E38.09151)

#### Comments from children who visited the Environmental Centre:



*"My father buys bush meat and we have in our fridge at home, now I have learnt about conservation, I will ask my father if what he does is legal and to stop it"*

*"I didn't like to see skulls; many elephants are killed". This was in response to the elephant memorial which shows the scale of the elephant poaching with 10,000 elephants killed since 2010.*

*"Conservation is to keep, to protect so that we can use in the future"*

*"Elephants are good because they help our mothers to collect firewood. Elephants break branches of trees, when those branches dry mothers go and collect them"*

The aim of the Environmental Centre is to provide a field venue for bush visits by adults and children to see animals, conservation programs and hold locally relevant community workshops. We hope to build a relationship between Niassa residents based on local relevant information, foster conservation values and provide skills training for adults to enable them to seek alternative nonextractive livelihoods and a place for community training workshops.

In 2012, a long-term dream became a reality with the building of an Environmental and Skills Training Centre in Niassa Reserve. Architectural plans were developed by Mozambican Architect Romina Gaona. Funding was sourced for the first of three years of building (WCN donor and Houston Zoo). The plans were presented to Executive Director of SRN, MITUR (Dr Pariela, Dr Harun) Director of Education, Administrator of Niassa Reserve, and Administrators of Mecula and Mavago districts for comments. In May before building began the traditional leaders and elders from Mbamba village were invited to view the site, see the plans and comment. Several visits by and consultation with the Director of Education, Reserve management and Mbamba leadership have occurred throughout the process. The Centre was completed in 2015 and in 2016 was fully operational with

accommodation for 19 adults or children in cottages with three additional guest cottages.

We do not have time to only educate the children of Niassa, we must educate the adults too. Many of the children and adults living in one of the largest remaining wilderness areas in Africa do not know what it means to live inside a protected area, and the importance of sharing this wonderful place with wildlife. They have never seen wildlife in a non-confrontational way and never seen Niassa through the eyes of a visitor. The aim was to bring people who live inside Niassa Reserve to a place where they could see conservation in action and to a beautiful area of Niassa Reserve where it is possible to understand what conservation and ecotourism are and to see animals. Through the M. E. C, we are also able to disseminate information on human –carnivore conflict, elephant beehive fences, small livestock breeding, conservation agriculture, rabies, SMART, reserve regulations, mining, safe behavior in protected areas, ecosystem, conservation law, etc.

## **2016 activities**

- In 2016, 122 people spent 3-4 (more than 400 bednights) nights at the Mariri Environmental centre for overnight bush visits and conservation education. This includes school groups, the Lion scholars and one group of Traditional leaders from seven villages (7 de Abril primary school, Ntimbo 1 primary school, 16 de Junho primary school, Lichengue primary school, Gomba – Naulala 1 and 2 primary schools, Moms group, Manhur primary school).
- An adult conservation course was planned for Government officials from Mecula but they postponed their visit at the last minute (one the day before they were due to arrive).
- We therefore hosted ninety-one (91) children and twelve (12) teachers from eight schools for four nights at M. E. C. as well as 16 traditional leaders and 35 wildlife guardians and community representatives at the MOMS workshop.
- We held three craft and design one day workshops as well as a First aid course for 18 scouts and staff across three concessions and NNR.
- We hosted two members of the Lipilichi Community team for 7 days as well as the One Health Survey team.
- A program of activities for a basic adult course in Conservation has been designed with input from all our local staff - it covers topics on living in a protected area, responsibilities that every Mozambican has to secure and protect the population of animals inside NNR, conservation law, benefits that wildlife can bring to communities, stable ways of earning living in protected areas etc.
- We are designing an evaluation tool (app) together with a PHD student Lily Maynard and Wild Knowledge that will enable us to evaluate our environmental programs and assess increase in knowledge, tolerance and behaviour change through a series of close ended questions. Additional open questions questions will be assessed through theatre, drawings, stories etc.
- This is a fluid program that will adapt and change as critical messages are identified by NNR management team and ourselves.
- More than 1000 storybooks were reprinted in a second edition and will be distributed with teacher training in 2017.
- Tomas Buruwate, a camp and logistic manager guided the future development of M.E.C to ensure that it could be a model farm with an extensive vegetable garden, solar electric fence, beehive fence, goat corral and safe shelter. In this way, we can show all our visitors what we have learned about reducing human wildlife conflict and alternative livelihoods.
- A new poison poster was developed with the assistance of WCS Tanzania and printed and distributed in Niassa Reserve through our wildlife guardians and teachers with permission from NNR management team. This joins the rabies poster and Safe behaviour posters that have already been printed and are regularly

distributed.



A detailed framework for our activities and their evaluation has been developed and can be shared on request. This is not a traditional classroom, here children learn by doing, debating and experiencing. We have a varied program of activities depending on the literacy, age and capability of the children with seven topics that must be covered. We aim to be an adaptive program that integrates new information collected across NNR as we go i.e. the results of the One Health Survey conducted in 2016 showed that diarrhoea and malaria were two of the main health risk to people in NNR. Ways to improve water quality and drinking water will therefore be integrated into the educational program. We receive ongoing expert help in our Environmental Education programs through the Houston Zoo and Utah's Hogle Zoo in the USA who have experience in environmental education.



Children watch hippo for the first time through binoculars



Environmental centre truck arriving to pick up the children from their home villages



Drawing the differences between life in the village and life in the bush



Traditional games with a conservation message



Pin the tail on the lion



Using binoculars for the first time – appreciating the landscape and Niassa Reserve





Game drives should not only be for foreign visitors – all our visitors go on game drives and may even see a lion.



The Lion scholars made posters on conservation issues and took them into the village to present to their comm.

The elephant memorial continues to be a powerful way to talk about the 10,000 elephants that have been killed in Niassa Reserve since 2010 and what this means to NNR, ecotourism and the future. We make sure that all our activities are grounded in actual conservation and wherever possible we take them out to see poaching events so that they can learn more. Our programs focus on letting our conservation staff speak to their communities about antipoaching, education, health, conservation etc.



Agostinho talking about elephant poaching at the elephant memorial      School group goes out to see poached elephant

This is not simply about conservation but aligns with the One health philosophy, health of environment, livestock and people. The visitors to the Environmental centre are able to see aspects of conservation they might not have thought about – beekeeping, the vegetable garden, goat corral, safe shelter, beehive fence and livestock breeding. We include parts of the school curriculum and health aspects to create an experience that is relevant to their lives.

We hope that as time goes on we can integrate more aspects of community health into the program.





Learning about carpentry and beehives



Tomas explain about how to grow vegetables, and health



Future conservationists



Escola Primaria Completa 16 de Junho – from Mecula township



Escola Primaria de Manhuri



### Visit by tradition leaders to Mariri

In November 2016, we held our first conservation education bush visit for adults at Mariri Environmental centre and it was a resounding success. The aim is to provide a holistic view of conservation to show that conservation not only serves biodiversity conservation but also benefits human wellbeing, development and that the Niassa communities are part of Niassa Reserve and play a very important role.

Chiefs from seven villages inside NNR and their assistants spent three days at Mariri Environmental Centre seeing wildlife, debating conservation issues and learning about conservation programs. We included Traditional leaders from Mbamba Village so that they could share their experiences, both positive and negative, at being part of a conservation partnership.

- Representative of chief Nhuka, Omar Buanachique – Mbamba village;
- Chief Nkolange (Santos Salimo) – Mbamba Village;
- Chief Namanha (Felisberto Caisse) – Mbamba village;
- Chief N'gongo – Mbamba village
- Chief Cuchiranga (Pedro J. Auade) – Cuchiranga village;
- Chief Macanga (Macanga Joao) – Makalange village;
- Chief Micunde (Mecunde Ali) – Ntimbo 2 village;
- Chief Macande (Saide Macande) – Ntimbo 1 village;
- Chief Cuchamuala (Margues Mussa) Lisongole village;
- Chief Namaluma (Martinho Ajali) – Nkuti village





During their time with us, they visited various community programs in Mbamba village that come through conservation benefit, including livestock breeding (rabbits), community office and mosque built with the community fund, beehive fences, effective goat corral and safe shelter.



Livestock breeding groups



Safe shelters



Elephant beehive fences and elephant friendly honey – learning how to reduce elephant crop raids and get income from selling the honey.



Mariri vegetable garden where Tomas explained how villages can reduce food insecurity. Chiefs learnt how to use different crops in the garden/field in order to maintain soil fertility; and advantages of eating vegetables. Chiefs learnt how to process and use organic manure, ie: dungs of elephant, buffalo and from bats, ash, and to maintain humidity in the soil. They also learnt to make organic pesticides from piripiri.

A defining moment came by chance, when we could offer the Chiefs an opportunity to collar a new lioness that had arrived in the study area. They named the lion Julieta. They saw how our Mozambican team, Eusebio, Samuel, and Hugo put GPS collars onto lions to monitor their movements. They also saw leopard, buffalo, waterbuck, impala, Eland, hippo, wildebeest, kudu, baboons, etc. This can increase tolerance and make communities feel part of conservation not enemies of it. Chiefs also visited Mpopo ecotourism camp which has been built to generate funds for Mbamba community where Keith, Colleen and Tomas explained what conservation can bring in communities if people are dedicated in conserving and protect wildlife. As an example, Mbamba receives conservation fund, school food program, secondary scholarship, livestock breeding, etc. as a result of their commitment to conservation.



Eusebio explaining why we collar and follow lions and why they are important to local leaders who were fortunate to take part in collaring of lioness they named Julieta.





#### Discussing ecotourism at Mpopo conservation

**tourism camp:** Mpopo camp is being built to generate fund for Mbamba community, but tourist can only come if there is calm, no firearm shooting, snaring, poisoning, mining because these are not threats to wildlife only, they do also affect tourists.

### Discussion and Debate

This visit provided a unique opportunity for traditional Chiefs and our team to debate conservation issues in a non-confrontational format. Mbamba chiefs, Namanha and Nkolange were provided with an opportunity to show all that they had been doing as part of our partnership. Chiefs from other villages said: - ***“Mbamba is very lucky compared to other villages inside NNR. Nowhere else in the reserve do communities receive funds directly from operators for their own projects”***. Chiefs are interested to implement programs like beehive fence, livestock breeding and were interested in the performance payment scheme. Conservation law and law enforcement was represented by Cristovao who, presented the work of scouts and asked chiefs to collaborate so that scouts can do their work successfully. Scout teams work to enforce the Mozambican law – not NCP law. For example, it is against the law to do mining illegally. Therefore, chiefs should not be surprised when miners are arrested as they break the law. Apart from mining, Cristovao talked about poaching, snaring, poisoning are some of the illegal activities that are not allowed inside protected areas. In response, one chief said, ***“People do mining because they have nowhere to go and nothing to do to feed their families, so they see mining as means of surviving”***. They asked Mariri if scouts could tolerate this illegal activity. Cristovao said Mariri is just implementing the laws that the Mozambican government have agreed on and this is part of our contract with the Government and ANAC. It is not for Mariri to decided what the laws are.

Lion monitoring team, Eusebio and Samuel spoke about their work of tracking lions; reasons why lions are put collars (to control their movement). Eusebio said to the chiefs that commitment and understanding are key issues to protect and conserve wildlife in Niassa, so leaders need to act in their villages so that people can feel development through conservation. Rachide Herculano, our human resources manager and Andrew Mkanage, discussed about sending children to school. Chiefs were asked to tell community members to send children to school; only education can bring bright future for children. Finally, NCP/Mariri Director, Dr. Colleen encouraged chiefs to work hand in hand with government, NNR management team and operators to protect and secure wildlife of Niassa National Reserve. She thanked them for coming to Mariri to learn and see our programs and commented that Mariri is available and open to work with any community that is ready to do conservation in L4E if NNR and WCS permit NCP to operate the concession. Mariri follow the laws of Mozambique and it is good that chiefs and communities understand this.

### Fishing debate

***“Will our grandsons eat Kampango of Lugenda in twenty years’ time?”***

We are worried about the Lugenda – said the Leaders. The question that was raised was: “How to conserve Lugenda river and fish in it?” Lugenda river is the heart of the Niassa Reserve, this is where many people from

different parts of Niassa Province, Cabo Delgado and Tanzania come and make their life. The Lugenda River can be described as bank for people of Niassa National Reserve. People get money from this river through fishing, and many families are fed from this precious river. But people, represented by chiefs are worried about the future of this river and they had some ideas on what could be done. We feel these points are very important and should be included in any NNR fisheries management plan.:

- Chiefs claimed that the methods that fishermen use to catch fish are not appropriate, methods like chingundenge (when three or four get into the water holding fishing net); Nzunchi (using nets with small eyes, small size gill nets), Chikwekwere (pushing the net while fishermen are in the water) the use of mosquito net, blocking water flow, method, use of condoms (?) and poison. They stated that these methods kill even small fish that could grow, and some of them block the flow of water.
- Chiefs are also concerned with what the office of agriculture in Mecula and other neighbouring district do as they provide fishing license to fishermen without considering what method do fishermen are going to use, where the fishermen come from and which side of the river they are going to fish on. Chiefs gave an example of fishermen who come from Tanzania to fish in Lugenda, saying that they have finished the fish in Ruvuma river and now want to finish the fish and destroy Lugenda, but these fishermen come to the river with license.
- Some Chiefs said that the issue of Lugenda river has already been discussed and the warden of the NNR was there too but nothing has happened yet. It was agreed to divide the river into sections, whereby each community could have its section to fish. But the current situation shows that the agreement does not make sense, people from different places are going everywhere they want to fish.

#### **The leaders suggested a few practical ways to move forward.**

- Talk to agriculture office to have proper procedures when giving out licenses to fishermen: Where is the fisherman from? Why did he decide to fish in Lugenda river? Where or which section of the river is he going to fish? What methods is he going to use? If the fisherman is not from Mecula, he should not be given license to fish and destroy the river in Mecula district.
- Each village that is along the river should have who they called “bwana samaki” (fishing camp controller), a person to control the fishing camps. This person will help to control methods that fishermen use to catch fish, and where the fisherman from. Anyone found using unacceptable methods should be punished or arrested.
- Divide the river in sections and do rotation fishing; some pools should be for fishing while others for reproduction, then next year you change
- Each village should have its section of the river to fish
- Chiefs need the little fish that is left in Lugenda river to multiply so that the future generation have fish to eat.

Mariri / NCP firmly supports these suggestions and believe that a new system for regulating fishing in NNR is long overdue and should primarily benefit the people living inside the protected area who are not allowed to kill animals or mine. Fishing remains an important resource and income for Niassa Residents. We would be interested in hosting workshop on fishing in 2017 at Mariri with NNR management, communities, District government etc. to trial a new system in L4-East/ L5 South to manage the River with the communities inside the block and NNR management if this is useful to NNR management team.

#### **WILDLIFE CLUBS**

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Wildlife clubs, also referred as Environmental clubs, are youth groups created in communities and schools to voluntarily promote and support conservation programs, and protect environment around them. NCP decided to create wildlife clubs in schools that are within Niassa National Reserve, linked to groups of children and schools



that come on bush visits to Mariri Environmental Centre. This will ensure that the children who come to Mariri can share their experience with other children and more children can get involved in conservation. This program was only started in 2016 and will grow over time.

- In 2016, criteria of how to create a wildlife club was designed and letters were written to District Education office asking for a permission to create wildlife clubs in schools. This followed by writing letters directly to schools for permission. Then letters were distributed into five schools, namely: Mbamba Primary School, Macalange Primary School, 16<sup>th</sup> of June Primary School in Mecula and Ntimbo 1 Primary School and Lisongole Primary School.
- In 2016, the first two wildlife clubs were created in two schools that responded positively to our request, Ntimbo 1 Primary Wildlife Club, who chose their symbol “Lion” and Acordo de Lusaka Primary School Wildlife Club who chose their symbol “Elephant”. A third Wildlife club was created at Mbamba Primary that has not been officially established.
- We are putting together a “starter pack” for each wildlife club with lists of possible activities and basic materials to support their activities and this will be a focus in 2017.
- We held two meetings with clubs (Ntimbo and Makalange) to officially declare them as club, and discuss the programs and activities that clubs these included livestock breeding, tree planting, debates and discussion, activism and mobile education, art and craft, and training board members of the club.



Ntimbo Wildlife Club

## CONSERVATION OLYMPIAD IN SCHOOLS

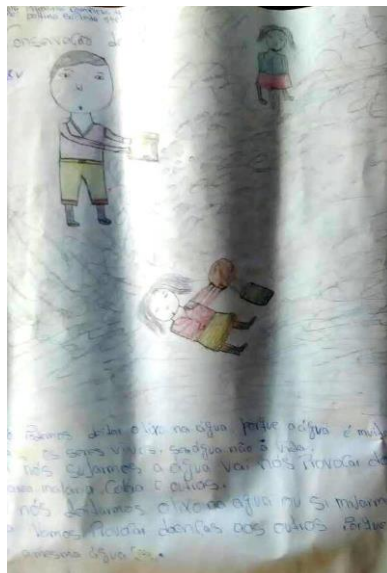
As a way of reaching children and communities with conservation messages and on request from the Director of Education, NCP funded a project that was led by District Education of Mecula, intended to promote art ability and literacy by designing posters on ways to live safely with wildlife and conservation issues in NNR. This competition was supposed to be done by children from four full primary school of the district, Mbamba Full Primary school; 16 de Junho Full Primary School, Lichengue Full Primary School, and Lugenda Primary School. The following topics were agreed for posters

1. Bush fires;
2. Poaching;
3. Illegal mining;
4. Deforestation;
5. Conservation of water and rivers;
6. Safe behaviour; and

## 7. Environmental sanitation.

In response to the project proposal, NCP provided funding of \$1300 to assist with art materials and prizes.

The winning children will also be invited to Mariri to learn more about conservation issues, refine their posters so that they can be put up at Mariri Environmental Centre.



**Delfina Baptista's poster talks about conserving rivers and water**

### LION FUN DAYS

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The Lion Fun Days are held in Mbamba Village in November for the past 8 years. They are two mornings of fun art and game activities with a conservation theme. They involve Mbamba teachers and adults as well as 350 Mbamba children. These were started in 2009 by the Niassa Carnivore Project and have become a tradition. The aim is not only to involve the community in conservation through theatre, art and games but also to make conservation fun and grow and conservation culture in this community that lives so closely with wildlife.

In 2016, many adults and children were involved with more than 500 people attending. The activities consist of theatre, art, races, car toy design and car race, Terra-Mar game that include both children and adults with a conservation theme. These games are brought to Mbamba village by Mariri to bind us together. The Mbamba teachers, dance group (Nsegue), cultural groups and schools play an active role in these days and the days are led by the Mariri/ NCP staff with assistance from local teachers and Houston Zoo and Hogle Zoo, USA.



- More than five hundred (500 +) children and adults participated in two Lion fun days with full support from teachers and Mariri staff.
- The days were also attended by Mozambican journalists, the Reserve warden and Chefe da localidade, as well as the village association and traditional leaders. And were part of large Cultural festival held by NNR management – with soccer competition and cultural festival in Mecula over the same week.
- The 2016 activities included painting of murals with conservation messages (poisoning the rivers, mining, and snaring), terra-mar, lion conservation dances and songs, theatre and Macuaela dance by school and NCP staff on snaring and benefits of conservation, poisoning in rivers and importance of animals for future tourism. The 10km race for men and 5km race for women are increasingly popular.
- Prizes for “Running for lions” race included a bicycle (first prize) and cell phone and radio (second and third prizes) with gold, silver and bronze medals for all who finished the race.
- Children painted murals, ran 100 m race and mango spoon race, designed cars and had car race. For these activities, children receive toothbrushes, soap, toothpaste, school materials, lion bracelets, schoolbags, soccer ball, and t-shirts as prizes.
- Highlights were the Nsegue dance group who have developed a special conservation anti-poaching dances, and the lion, zebra and goat game to illustrate the importance of goat corrals, school theatre illustrating anti-poaching with all the NCP staff represented.
- Lion Fun Days are all about celebrating conservation, honoring the name of our project ‘Niassa Lion Project”, having fun and binding the reserve and its communities together at a time of year when conflict is high, food stocks are low and everyone is starting to wait for the rain. From preparation to implementation this is a community affair, led by our staff from Mbamba village.








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## LION SCHOLARSHIP PROGRAM

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The Lion Scholarship Program aims to provide secondary school scholarships to children living inside Niassa National Reserve. The scholarship is managed through the Mariri / Niassa Carnivore Project (NCP) and the Mariri Environmental and Skills Training Centre based in concession L5-South. The scholarship program has two objectives: a) to promote education by providing an opportunity for children in remote villages with only a primary school to go to secondary school so that they have an increased opportunity to get a job rather than earning a living through fishing and poaching and b) to provide a strong benefit to communities from wildlife conservation. This scholarship comes to children from the wildlife in Niassa National Reserve. The need for secondary school education was identified as a critical need by fishermen and farmers in Mbamba Village (survey conducted in 2009 by NCP). This program also directly involves the Lion scholars in conservation through a mentorship program and visits to the Mariri Environmental and Skills training Centre with game drives and links to research and community conservation programs. This program has the full support of the Mecula Director of Education.

### Beneficiaries of the scholarship

In the first phase of this program (2013-2015), it has been children from Mbamba village who finish their education in Grade Seven (7) who have benefited from the lion scholarships to the Mecula Secondary School. This was initiated in 2009 as no children from Mbamba Village were attending secondary school. In 2016-2017 we extended the program to other children from different schools within the Mecula district linked to the Mariri Environmental Education and Skills Training Program in partnership with neighbouring concessions. Children from schools in different concessions will be sponsored by that operator but form part of the same scholarship programs with all children receiving the same benefits and mentorship from Andrew and a series of tutors. So, for example, the Chuilexi Lion Scholars are sponsored and chosen by Chuilexi community team but are mentored with the Mariri Lion Scholars and this is all managed by NCP. We would also like to find funds to improve the boarding school which is currently not acceptable for children to board at as it is an old military barracks and the children sometimes share accommodation with police or army.

### Criteria for selecting the candidates

- The candidate (child) must pass with good marks (13 above) in grade seven;
- The candidate (child) should write a short (less than one page) essay on why he/she needs a scholarship and what his/her future dreams (who does he/she want to become? E.g.: nurse, teacher, manager, etc.);



- Family conditions (the candidate can have an access of the scholarship if his/her parents are not able to pay for secondary school education;
- The candidate should have a record of good behaviour at school;
- The candidate's parents/guardians should show their interest in their children's career and give permission for their child to go to secondary school.

#### **What the scholarship includes**

The scholarship includes school materials, school fees, and costs for boarding school, school uniform, school shoes, casual shoes and casual clothes. It also provides pocket money, travelling allowance for holidays so that the children can return to their home village. An important part of the program is the link to conservation, wildlife and research through visits to the Mariri Environmental Centre.

#### **2016 Activities**

NB: If a lion is killed in a snare or any death caused by human, the community will lose one vacancy

#### **2016 Activities**

- In 2016, Mariri awarded scholarships to nineteen (19) children, all from Mbamba village. Among them, fourteen (14) were on ongoing scholarship while five (5) were new scholars.
- In 2017, the first 6 scholars from villages inside Chuilexi Conservancy have been included in this initiative. These Chuilexi Lion Scholars are supported by Chuilexi Conservancy with funds and transport but remain part of our full Lion Scholarship Program mentored and supported by our education team.
- In 2016, all lion scholars were registered and paid fees in three secondary schools, Mecula District Secondary School (Escola Secundaria Geral 16 de Junho); Marrupa Secondary School (Escola Secundaria Geral de Marrupa) and Paulo Samuel Kankhomba Secondary School, and in a technical school (Escola Industrial e Comercial de Gungunhane); and three boarding school: Lar de Estudantes Alberto Joaquim Chissamo – (Mecula boarding school); Lar de Estudantes de Marrupa- (Marrupa boarding school); and Lar de Estudantes Paulo Samuel Kankhomba (Paulo Samuel Kankhomba boarding school).
- In 2016, all school materials were bought and distributed to scholars, including notebooks, pens, pencils, casual clothes, cloth to make uniforms, shoes, etc.
- Books for lion scholars' library were increased, library was painted, roof and doors arranged. We bought furniture for the library, two tables, sixteen chairs and bookshelves. All boarding schools experienced problems with providing food for the lion Scholars. Mariri supplemented food wherever necessary.
- It was observed that many scholars did not do well in many subjects due to poor preparation in primary school. In Lichinga, Elisa Macamo Jorge was hired to assist with mentorship of the NNR children attending boarding school and we hired a teacher in Mecula to tutor our lion scholars there.
- All 19 scholars finished the year; one wrote Grade 12 exams, four wrote Grade 10 and one wrote first year exams at Institute. The rest (13) wrote normal final tests. Out of six scholars who wrote exams, four passed while two failed in grade ten. Out of thirteen scholars who wrote normal tests, nine passed while four failed.
- Five students did not pass exams - Lucia Vasco, Mussagi Oscar, Julio Francisco, Domingos Daude, Alberto Sauade and Safiri Djei failed and their scholarships will not be renewed.
- The Lion Scholarship program is unique in that it also provides mentorship for the scholars. In 2016, nine scholars visited Mariri as part of mentorship, at this visit; scholars were placed in different sections where they were learning skills, mechanics, research, garden, and beehive fencing. They made posters on the dangers of fires and poison and took their poster to Mbamba Village to talk to their community.

## Challenges

- Children are poorly prepared in Primary school and frequently do not have the Portuguese language skills and literacy to be able to understand and achieve in secondary school. Teachers are absent for many days in Mbamba for example. This means that children that go into secondary school are frequently barely literate and cannot cope.
- The condition of the Mecula boarding school is unacceptable. The rooms have broken windows, no beds in the rooms, and some were laying mattresses on the floor in rooms without locks which is a particular concern for girl students. We pay for a boarding fee but get nothing for this.
- In addition, despite paying for boarding school, there is no money for food and children are not being fed. We thus provided extra food for the children that they cook themselves.
- The room that we rehabilitated for library was taken over by military, so this affected its function and studies of scholars and all our efforts were destroyed.
- Boarding school is a military base and children were about to be kicked out when large number of army force came to Mecula. This is a very insecure situation. This is not a sustainable long-term solution and a dedicated boarding house for the Mecula children is urgently needed. Similarly, the students in Marrupa boarding school were removed to another place for accommodation as the boarding was within military base.
- Shortage of food in all boarding schools is not acceptable: We frequently received messages from our scholars requesting for food. Mecula and Marrupa boarding school were the most affected with lack of food, seldom in Lichinga boarding school.

## Way forward

To minimize some of the challenges, we did the following

- Shortage of food: Mariri was supplying food to scholars whenever boarding schools were running out of food. And we had to adjust budget to respond to the requests of food. Therefore, we need to make a full food budget for lion scholars so that we can supply food regularly.
- Mentorship: Mariri contracted a person in Lichinga to help to mentor Lion scholars who study in Lichinga.
- Low literacy: Mariri hired a teacher to tutor lion scholars in Mecula, however we started this program late and we hope to continue in coming years.
- Library: Mariri bought bookcase for scholars to put in books and read whenever they had time, but this was not effective enough as the reading was done in public rooms where there was too noisy.
- We would like to build a boarding school for 50 scholars with good security, excellent management, hygienic and safe for Niassa's children.

## **GOAL 3: TO DEVELOP A MODEL OF COMMUNITY BASED MANAGEMENT OF A CONCESSION (L5-SOUTH, POSSIBLY L4)**

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### **OBJECTIVE 11: DEVELOP COMMUNITY BASED MODEL OF CONSERVATION MANAGEMENT IN L5-SOUTH THROUGH PARTNERSHIP WITH MBAMBA VILLAGE COMMUNITY**

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In 2012, we were tendered for and were awarded the management lease for concession. L5-South (580km<sup>2</sup>; 58,000 hectares) by Government of Mozambique, Ministry of Tourism. This is the smallest concession in Niassa Reserve and has been the intensive study area and base of the Niassa Carnivore Project since 2003. This concession, is being managed by us (NCP) in partnership with the Mbamba Village community (2000 people) who live inside the concession as a Mozambican company Mariri Investimentos (name chosen by the community).

The aim is to develop L5-South as the first community based concession inside Niassa Reserve to provide a model of community engagement that works. We hope to scale this model into a neighbouring concession (L4 east) with an additional 7 villages. Our goal is to successfully manage and secure this wildlife area in Niassa Reserve in partnership with the local community showing decreased poaching (bushmeat snaring and ivory poaching), increased wildlife populations, reduced human-wildlife conflict, increased food security and real benefits and revenues from conservation flowing to the Mbamba community and people across Niassa (revenue, employment, conservation assistance).

The concession also provides security of land tenure for the Mariri Environmental and Skills Training Centre and Headquarters of NCP. Block L5-South lies in Niassa Province, Mecula District inside Niassa National Reserve (NNR) in the south eastern Lugenda Valley. L5-South borders two sport hunting concessions on the south bank of the Lugenda River (L8, L7) with ecotourism concessions to the west (L4, not active) and east (L5-north). It includes Mbamba village, a major village inside the protected area which supports approximately more than 2000 people and 410 households) and encompasses a mosaic of habitats. The southern boundary of the intensive study area is a 30 km stretch of the Lugenda River, which is the most intensively fished area along the 350 km of the Lugenda River contained within NNR. The river provides a critical protein and income source for several communities. This is the smallest concession in Niassa Reserve and has been the intensive study area and base of the Niassa Carnivore Project since 2003.



MAP OF NIASSA RESERVE, SHOWING THE POSITION OF CONCESSION L5-SOUTH, THE SMALLEST CONCESSION IN NNR



LIPUMBULU MTN AND THE EASTERN LUGENDA RIVER INSIDE CONCESSION L5-SOUTH

NCP considers sustainable social, economic and community development in Mbamba Village and other NNR villages a priority and believe this should be an integral part of a conservation strategy. Our approach is to concentrate employment and benefits into the Mbamba community that live inside the concession unless these skills are unavailable as it is these people who are helping to manage this area and living with L5-South wildlife. The Mbamba Village community is involved in all aspects of conservation and social development of L5-South. Substantial investment into the Mbamba community was made in 2014.

It is important that we monitor the scale of community and individual benefits accrued by Mbamba village so that it can be determined what the costs will be to scale up these types of partnerships. There is no doubt that for communities to accept conservation and wildlife as a viable land use and to actively engage in conservation, substantial revenue and benefits need to flow to communities and individuals otherwise agriculture, development and extractive use will always be a more attractive alternative. People cannot be kept in abject poverty to suit conservation goals. Not only is this unethical but it is also unsustainable as Niassa communities aspire to better lives, better food security and all the trappings of success similar to everyone. The only alternative is to link conservation with “conservation friendly” development with excellent land use planning through performance payments and opportunity and revenue sharing.

The revenues, time, meetings and effort provided to the Mbamba community are therefore logged. At this point the revenues are all generated through philanthropy in the absence of sport hunting or ecotourism in this area. However, if at all possible we plan to develop community based ecotourism in the area (2017 onwards) to provide a sustainable revenue stream to offset some of these conservation costs. It is apparent that some level of philanthropy will always be needed as revenues are likely to be low.

Employment provides the best and most obvious benefit from conservation but it is not the only benefit that can flow from wildlife. We also provide skills training, educational opportunities and community programs to increase food security and are concentrating on generating revenue for the community. Skills development is a critical component of our conservation programs and can be as simple as providing a person with the skills to improve the productivity of their own fields (conservation agriculture program) or breed livestock successfully (livestock breeding program, through to providing technical construction skills, training as a scout, researcher or driver.

Mariri Investimentos considers sustainable social, economic and community development in Mbamba Village a priority and an integral part of our conservation strategy. Communities are a part of all our conservation, education and ecotourism programs. Our approach is to concentrate employment and benefits into the Mbamba community that live inside the concession unless these skills are unavailable as it is these people who are helping to manage this area and living with L5-South wildlife. The Mbamba Village community is involved in all aspects of conservation and social development of L5-South. Substantial investment into the Mbamba community was made in 2016 following our investment in 2013 and 2014 and based on specific responsibilities.

In 2016, more than 1700 people benefited from NCP conservation, alternative livelihoods, education, skill training and employment programs.



Mbamba Association meeting room and store room built by Mariri for the community in 2015 /2016

This included:

- 350 children fed per day in a school lunch program at Mbamba School.
- 19 Children were provided with secondary school scholarships and are attending schools in Mecula, Marrupa and Lichinga



- 180 people from local communities employed as permanent or seasonal staff. The total amount paid directly to local staff (permanent and seasonal) from Mbamba village in salaries in 2016 was more than \$150,000 (our annual financial report for 2016 is not yet complete).
- 40 women from Mbamba and Macalange paid for thatching,
- 200 households involved in livelihoods program (1000-2000 beneficiaries) – livestock breeding, beehive fences, crafts
- 24 people employed as wildlife Guardians
- 35 local antipoaching scouts
- 30 local people employed as permanent staff members

We also have a philosophy of buying as much of our food requirements as possible locally – this includes maize, goats, rabbits, ducks, chickens, honey and beans.

### **MBAMBA- MARIRI PARTNERSHIP**

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The simple agreement that currently exists between Mbamba and NCP/ Mariri is based on the following principles of community based conservation:

- a) Benefits go to the lowest community governance structure possible to prevent capturing of benefits by elites and ensure benefits go to people who bear the costs.
- b) Benefits are linked to agreed conservation responsibilities as we are not a charity.
- c) Individual as well as community benefits are provided
- d) How the funds are spent depends on community not Mariri if a budget is drawn up and not against conservation or the NNR regulations.
- e) Performance is judged on things that are easily measured, can be counted and mutually agreed.

### **History of the Mbamba Agreement**

In 2012, we recognised that a) the expansion of the agricultural fields of Mbamba for slash and burn agriculture threatened the eastern section of L5 South especially the Mbamba River which is important for wildlife, b) the lack of prosecutions for bushmeat snaring, ivory poaching etc despite it being illegal meant that there were few consequences for breaking the law and c) we needed to get revenue flowing into the community living with wildlife to incentivise them to conserve it. Conservation was seen as a wholly negative thing against development. While antipoaching was clearly important we felt that it was insufficient.

We decided to test whether a system of simple performance payments set against clear conservation targets could be used to incentivise the community to follow the conservation law and protect wildlife and habitat in L5 South. The bulk of the conservation fund is paid out if the community honour a land use to stop expansion of fields across the Mbamba Village (easterly direction). This “limite” took two years to negotiate reaction before it was finally agreed by community, Reserve management and District Administrator. It was put in place in 2015 and demarcated by a road. For this the village receives a base fund of \$6500. This amount was arbitrarily agreed simply based on the amount available in the budget. This provides the baseline community fund. Added or subtracted to this fund are an agreed set of performance payments or debits. These are negotiated in public meetings. The year of performance payments runs from July to June, with an AGM held in Mbamba Village every June to calculate payments. At the AGM, NCP/Mariri reports on our responsibilities and the Association report on their activities and expenditure in a public meeting and benefits are calculated. The rules of the performance payment items are that they must be easy to count and verify. At present in Mbamba Village they include payments for months without elephants killed in concession area, children who finish school year and write exams, sightings of key animals by visitors, payment per bed night per person per visitor. They also include money taken off for elephants and large elephants killed, snared

recovered by scouts, uncorralled goats. NCP also guarantees work for 80 people from the village in conservation services (seasonal labour) and provides a school lunch program if the community (or at least its leadership) commit to reducing illegal activities particularly, snaring, mining etc, agree to not riot in response to arrest of people involved in illegal activities.

This approach has shown success as detailed in this annual report through measurement of indicators. Elephant poaching, snaring and bushmeat consumption have decreased markedly while ungulate and lion populations have increased markedly. School attendance increased by more than 150 children and the community has been able to commit funds to community projects. In the first two years, the community built a Mosque with their funds and in past three they have purchased electric fencing wire as well as paid for maintenance of the fence etc. Elephant crop raids have been reduced to almost zero through electric fence.

Unfortunately, in December 2016, the agreement was broken by Mbamba in December 2016 when people from the community (who were receiving benefits) rioted in response to illegal miners being taken to the police. The agreement was broken, not by the action of the individuals that were involved in the illegal activities but because the Association Committee and traditional Chiefs called for the release of the miners which is against the law and our agreement. No arrests have been made despite investigation from the police into vandalism, assault, threats and theft.

However, the positive news is this riot and the subsequent pulling out of benefits has resulted in a new appreciation of what the agreement actually means and a clear understanding that the benefits are linked to conservation. The benefits are not charity they are linked to responsibilities. Without the agreement, we would have had no recourse against the riots and there would have been no consequences. We believe that this will lead to a stronger agreement in 2017. By the end of the year, the Association and four traditional Chiefs had already asked for a new agreement and apologized for the riot. To date we have conducted a door to door awareness campaign in Mbamba of a possible new agreement to ensure that all residents are supportive and understand the terms and what it means

#### **2016 Benefits Paid out to Mbamba Village for conservation responsibilities as part of agreement**

| Item                                                               | Number              | Value (Mt)       | Value USD      |
|--------------------------------------------------------------------|---------------------|------------------|----------------|
| School lunch program                                               | 350 children        | 780,000          | 10,833         |
| Seasonal work salaries in conservaiton services (June to November) | 116                 | 4,365,000        | 60,625         |
| Construction of meeting room wiht store room for Association       | 1 Office with store | 280,000          | 3,888          |
| Lion Scholarships                                                  | 19 x36,000MT        | 684,000          | 9,500          |
| Community conservaiton fund and performance payments               | July 2015-June 2016 | 486,100          | 6,751          |
| <b>TOTAL</b>                                                       |                     | <b>6,595,100</b> | <b>91, 597</b> |

The Community Conservation Fun and performance payments were calculated as follows;

| Category                                                                                                                             | Number | Unit Value<br>MT | MT             |
|--------------------------------------------------------------------------------------------------------------------------------------|--------|------------------|----------------|
| Baseline Community Conservation Fund – meeting responsibilities of limit and conservation                                            | 1      | 247,000          | 247, 000       |
| Visitor fee per night (46 visits @4000 per visitor)                                                                                  | 46     | 4000             | 184,000        |
| Elephant killed                                                                                                                      | 1      | 11,400           | -11,400        |
| Months with no elephants killed                                                                                                      | 11     | 7,600            | 83,600         |
| Snares found by scouts                                                                                                               | 64     | 100              | --6,400        |
| Carnivores killed                                                                                                                    | 4      | 9,500            | -38,000        |
| Sightings of animals by 11 groups at Mariri (4 saw lion, 2 saw leopard, 9 saw elephant, 5 saw buffalo, 2 saw wild dog, 2 saw hyaena) | 24     | 100              | 2,400          |
| Children who passed exams                                                                                                            | 233    | 100              | 23,300         |
| Good corrals                                                                                                                         | 9      | 200              | 1,800          |
| Bad goat corrals                                                                                                                     | 1      | 200              | -200           |
| <b>Total</b>                                                                                                                         |        |                  | <b>432,100</b> |

On presentation of the following budget drawn up by the Association for the Community Conservation Fund, the funds were disbursed and were all spent. All electric fencing materials were ordered by Mariri for the Association in accordance with the budget and delivered to the Association in 2016 with the customs and transport costs donated by NCP.

## Orçamento 2017

## "Utendele Ni Mazengo"

Fundos: Julho 2016-Junho 2017 = 485,100.00 Mt

| Item                        | Custo por unidade | Unidade | Total             |
|-----------------------------|-------------------|---------|-------------------|
| Cozinheiro                  |                   | 2       | 36,000.00         |
| Mbamba Fiscais              |                   | 6       | 104,000.00        |
| Control Vedacao             |                   | 7       | 87,000.00         |
| Herculano                   |                   | 1       | 7,000.00          |
| Lunche Comite               |                   | 1       | 5,000.00          |
| Novo wire (3 strands 810km) |                   | 30      | 92,490.00         |
| Antiga wire 20km (1 strand) |                   | 20      | 61,660.00         |
| Maquina                     | 17,590.44         | 2       | 35,180.88         |
| Bateria                     | 11,083.26         | 1       | 11,083.26         |
| Painel Solar                | 10,200.00         | 1       | 10,200.00         |
| Reguladores                 | 1,574.70          | 1       | 1,574.70          |
| Black insulators            | 3480.84           | 1       | 3480.84           |
| Galvanized Spikes           | 5590.08           | 1       | 5590.08           |
| <b>Total</b>                |                   |         | <b>460,259.75</b> |
| Balanco                     |                   |         | <b>25,840.25</b>  |

Presidente: Felipe da Silva Data: 24/10/2016Secretario: CAS, 16, 10, 2016 Data: 24/10/2016Tesereiro: Domini Data: 24/10/2016

Vice-Presidente: \_\_\_\_\_ Data: \_\_\_\_\_

Mauri 24/10/2016Recebido: Hugo 31/10/16

## Additional benefits and funds provided to Mbamba in 2016 outside of agreement included

|                                                                    |              |
|--------------------------------------------------------------------|--------------|
| Salaries of permanent staff from Mbamba Village                    | Mt 4,625,000 |
| Purchase of grass cut by women for thatching                       | Mt 335,000   |
| Subsidy paid to Chiefs for assistance with management of agreement | Mt 50,400    |

## Minimum value of good provided in total

Mt11,605,500

(US\$161,188)

## Additional support provided included

|                                                                                                                          |              |
|--------------------------------------------------------------------------------------------------------------------------|--------------|
| Number of households involved in livestock breeding                                                                      | 37           |
| Number of beehive distributed                                                                                            | 93 Number of |
| people trained in craft group _kushirika                                                                                 | 16           |
| Members of Farmer Field school                                                                                           | 24           |
| Participants in Lion Fun Days                                                                                            | 500          |
| Transport of tobacco rounds to markets                                                                                   | 160          |
| Ammunition used in chasing animals out of fields (HWC)                                                                   | 40           |
| Assistance provided when person was attacked and killed by crocodile (response, recovering body, funeral, transport etc. |              |
| Provision of school materials ( 1000 exercise books and stationery) and fixed school step                                |              |
| Ongoing emergency and other lifts.T                                                                                      |              |

## Investment of community fund

Every year the Community Conservation Fund is the subject of intense and participative discussion among Mbamba community and 2016 was no exception. The discussion about investment of the money is guided by Mbamba Association but is meant to be a community decision with a participative process. In 2016, the village decided to use their fund to purchase additional materials for their electric fence to extend it around new mashambas and put up and additional third strand. Once a budget had been agreed on, Mariri purchased the materials and transported them



to Mbamba Village. We donated the customs and transport costs to assist the community. The following materials were purchased.

#### Challenges in 2016:

- The low number of people that come to community meetings. As a result, meetings are frequently not representative of the full community. It is hoped that as the fund grows and has the potential to affect more individual lives, attendance will improve. Similar problems have been encountered by district government officials. We set a minimum number that must attend for the AGM (150 adults with at least 50 women)
- Some members of Association continue to act out of self-interest instead of recognizing that they represent community and communication of decisions to broader community is poor. It is hoped that the provision of public noticeboards in Mbamba Village will encourage transparency and accountability.
- Some funds were used by Association committee members without permission from community despite checks and balances in place. However, the good thing was that this was seen by the community and was brought up by the community at the AGM, the Association members were asked to provide receipts and challenged.
- One good result in 2016 was the first election since the Comite was established which resulted in a new Association through a proper election process.
- The lack of skills in leadership, administration, minute writing, and budgeting result in poor decision making. This will improve with skills training by NCP. For example – people employed from the fund to maintain the fence were paid for the whole year upfront instead of per month and as a result they did not do the work and there were no more funds to pay for something else.
- Poor communication by Association and Traditional Leaders on what agreements are made and what is required which lead to confusion in general population when we withdrew the benefits after the riot. One solution has been for us to conduct public awareness door to door with Association on important issues. This was an important lesson for us to learn.
- Lack of understanding of Mozambican law and lack of implementation of the Conservation law by NNR Management team and District. This leads to confusion in the village. For example, the riot in December 2016 occurred because Mariri has been the only one arresting illegal miners in 2016. We could see the signs that this would happen but despite repeated and regular requests to NNR management on what the policy on mining is and how we should handle it, requests for joint patrols to arrest mining with Reserve management nothing was done and this resulted in Mariri being the only company arresting miners and we therefore faced a backlash.
- Through communication and discussion this will hopefully not be the case in 2017.



Meetings are held in the Village Association room built by Mariri for the community

## SCHOOL LUNCH PROGRAM

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NCP and the Mbamba community have been increasingly concerned about the low level of school attendance and the low number of children reaching Grade 7. The Community suggested that this was due to parents who did not want to send the children to school and teachers who were seldom at the school. For every child that completes the school exams an additional bonus will be given to the Community Conservation Fund (US\$3 per child). Education is a key part of conservation as without an education adults cannot find work and therefore rely on natural resources for income and food. In 2015, we therefore decided to trial a school lunch program in Mbamba that could possibly be scaled into additional villages in 2017 if it worked.

**In 2015, NCP and Mbamba agreed that as an additional benefit from our partnership agreement we would initiate a School lunch program to try and incentivise parents to send their children to school.** This program was implemented as part of community benefits from conservation. For better running of the program, responsibilities were given to three parties, NCP, School and Community.

### Distribution of responsibilities

#### NCP / Mariri Investimentos

- Buy food for the program, rice, maize mill, beans, cooking oil, etc.;
- Provide cooking materials, pots, cups, spoons, forks, etc.;
- Provide two 200 litre drums for water;
- Monitoring the program

#### School (teachers)

- Controlling food and materials of the program provided by Mariri;
- Control the presence of children at school;
- Make sure that only children who come to school get food, one meal per day;
- Request food from Mariri when the school is running shortage of it;
- Send monthly report to Mariri about food program

#### Community

- Preparing food for children;
- Fetch water and firewood for food program;
- Construct refectory and kitchen to cook and eat;
- Monitoring the program.

The School Lunch program at Mbamba school started in September 2015 and was continued for the remainder of 2015 with an extraordinarily positive effect on school attendance. It was continued in 2016. At the beginning of 2016, 347 children started at Mbamba school, and 305 got to the end of the year in 2016. This has never happened in previous years. In previous years only 70-150 children stayed in school until the end of the year (teacher information). The food program is expensive with an annual investment of \$18,000 per year for 350 children but the return on investment is high and we believe is a key benefit in communities given low food security.

It must be noted that program comes to the village from the wildlife. If the wildlife disappears so does the food program. This program is linked to our conservation partnership with Mbamba Village; failure to meet conservation objectives means there is less money to put into social programs like the food program. Full classrooms due to receiving one meal a day

### Challenges in 2016

- Items like goat meat, fish, onion were not supplied regularly because these items are not locally bought, and it was difficult to often find them. In 2017, we are setting up a system for providing meat from livestock breeding programs, subsidising two licensed fishermen to provide regular fish licensed and providing opportunities for a vegetable in 2017.
- Teachers were frequently absent from school, and children frequently came to school to eat but not to learn as teachers were not there. This is a major problem facing parents in Mbamba village as their children are not receiving the education they deserve. This has been reported to District Education department. One of the problems is salaries are paid into bank accounts that are 350 km away.
- While Mariri and the Comite fulfilled their commitments, the teachers did not fulfil theirs.



Full classrooms due to receiving one meal a day

#### ADDITIONAL SUPPORT PROVIDED TO MBAMBA SCHOOL IN 2016

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Last year, Mariri help Mbamba Primary School with various educational materials (exercise books and stationery) as well as a bicycle, soccer balls and promised to consider ways to put in a well close to the school in 2017 to solve water issues.

#### Plastic bottle bricks for construction

In a new initiative, we showed children how to make eco-bricks by stuffing plastic bottle full of plastic. This is a low-cost construction technique that can not only be used to build with but reduces litter. The younger children and their teacher collected and stuffed sufficient discarded gin bottles to rebuild the step into the one classroom and received



school materials for their efforts. This is an example of what can be done with initiative. A lot more could be done by teachers and children at the school with some enthusiasm and initiative and leadership from the teachers.



Plastic gin bottle stuffed full of plastic rubbish by children of Mbamba



Arde starts to put the steps together using the gin bottles as bricks



Chefe Ngolange and Chefe Namanya are amazed at what is being done



The step takes shape



*The completed step into the school room*



*The young children and their teachers that collected the gin bottles with their school materials.*

We expect to continue to work in collaboration with the school to ensure that conservation and health messages, litter collection and cleaning of the village and other activities are supported. However, we are frustrated by the lack of enthusiasm and commitment shown by most teachers to the pupils and number of days they are absent. We are grateful for those teachers that always prepared to help.



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## OBJECTIVE 12: MENTOR, GUIDE AND TRAIN MOZAMBIKAN CONSERVATIONISTS AND STAFF AND ENCOURAGE STAFF PARTICIPATION IN THE PROJECT

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Skills development is a critical component of our conservation strategy. All our staff are from local communities and on the job training and mentorship is ongoing. We believe that all our staff need to understand the conservation vision of the project and what we are working towards not simply see this as a job. We still need to do substantial work on this.

### International Awards for Mbamba resident

Eusebio Waiti from Mbamba Village was nominated by Mariri/ NCP for two awards for his work in conservation education, lion conservation and leadership and won both – Disney Wildlife Conservation Heroes Award and Houston Zoo, Wildlife Warriors Award. These awards come with a cash prize for Eusebio, training opportunities, a medal and a certificate. We are very proud of him and all his achievements and he is the first member from local village to win an International Award.



- Our Conservation Manager is completing his PhD in Bushmeat Consumption. Between July 2017 and June 2017, he will be on paid sabbatical writing up his thesis.
- Agostinho Jorge completed a two-year leadership course in the US, Emerging Wildlife Conservation Leaders (EWCL).
- Rachide Herculano, our human resources and bookkeeping officer from Mbamba Village completed a three-month course in finances in Maputo and received on site mentorship in accounting through Lisette Gelber, a volunteer financial management expert for 2 weeks.
- SOS International completed a first aid course for 18 local conservation staff from Mariri, Chuilexi Conservancy, Luwire and NNR management.
- Four carpenters were trained to make furniture and beehives.
- 16 People received training in craft design and production.
- Education Manager, Andrew Mkanage attended Pathways conference on Human wildlife conflict in Kenya and visited Ewaso lions.
- Three local mechanics were trained on site by external Mechanic who has been hired to train them full time for three years.

- Andrew Mkanage, Education Manager, accompanied Director, Colleen Begg to the USA to attend the WCN Wildlife Expo and visit Utah's Hogle Zoo to gain experience in fund raising, environmental education at schools, public speaking etc.
- 26 Community Guardians from 25 villages attended a MOMS training workshop at Mariri Environmental Centre.
- All scouts received one month training from PRM and one month training from Conservation Outcomes in firearms, basic field techniques and mentorship.

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## OBJECTIVE 13: INCREASE AWARENESS OF NCP WORK AND IMPORTANCE OF NIASSA NATIONAL RESERVE TO A BROADER AUDIENCE BOTH NATIONALLY AND INTERNATIONALLY

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### 2016 ACTIVITIES

- We continued to work with our long-term partners Houston Zoo, Panthera and Wildlife Conservation Network to develop multiyear funding and increase our skills. Ongoing fund raising continues and remains a challenge given the level of funding required.
- The Niassa Lion Project Facebook page was regularly updated to ensure regular communication with donors and friends of the project and reached 20,000. In October, conversations with donors showed that it was working to keep people up to date on what we are doing.
- A simple email newsletter (every 2-3 months) was continued with the help of volunteers Leda Marritz and Meredith Watts.
- We remain members of the Special Matters Committee of the African Lion Working group, IUCN Cat Specialist Group and Canid Specialist Group and WAZA and are also represented on the Lion SSP conservation projects website.
- We are founding members of Pride Lion Conservation Alliance and founding member of the Lion Recovery Fund of Wildlife Conservation Network
- We collaborate informally but regularly with two other lion projects in Mozambique – Gorongosa Lion project and Limpopo Transfrontier Predator Project.
- In 2016, we provided our first grant from The Ratel Trust to Kris Everatt and the Limpopo Transfrontier Predator Project to support their work on lions in southern Mozambique.

## ACKNOWLEDGEMENTS

This project is a team effort; nothing is achieved alone and there are many people to thank. We have been working in Niassa for 14 years now and it is impossible to mention everyone individually who has been a positive part of this journey but you are remembered and your help is appreciated.

We would like to offer special thanks to the Government of Mozambique and Ministry of Tourism for granting us permission to work in the Niassa National Reserve. We particularly thank the Niassa Reserve Management team (co-management team of the Wildlife Conservation Society and Ministry of Tourism) and look forward to working with them further, with specific thanks to the warden, Cornelio Miguel, Rob Craig, Alastair Nelson, and Carlos Lopes Pereira.

We particularly thank our major partners who are those that help us with significant funding and/ or, technical advice and support in many different ways,



Thank you to our major multiple year donors who have provided so much support over the past 15 years and have been instrumental in allowing us to grow and believing in our vision and objectives. Many have become friends over the years and are part of the NCP family. We hope you know how much you are appreciated.



For 2016, we thank -

African Wildlife Foundation, Alejandro, Leah and Peter Zaffaroni, Alex Krawarik, Anje van der Naald, Becci and Mark Crowe, Betsey Brewer Bethel, Bruce and Lori Laitman-Rosenblum, The Blue Foundation, Bruce and Trish Campbell, CGMK Foundation, Diane Green, Disney Online Studios-Canada, Gemfields, Gillian Zank, Houston Zoo, International Fund for Animal Welfare, Iri Cermak, James and Lolly Nivison, Jeff and Connie Woodman, John and Audrey Ruggieri, Johnson Scholarship Fund, Judith Hamilton, Karie and David Thomson, Kristin Campbell Reed, Kristine Karnon, Lanmar Foundation, Laguntza Foundation, Leisure Group, Margaret McCarthy and Bob Worth, Mary Boardman Foundation, Meredith Watts, Meryt and Peter Harding, Michael Mattera, Michael Piuze, Michael Schaeffer and Michelle Maton, Rebecca and Tom Patton, Safari West, Sandra Fletcher, Searle Family Trust, Stephan Meyer-Ewald and Andrea Ewald, Steven and Florence Goldby, Sue McConnell and Richard Scheller, Stuff and Peewee Marshall, Sudie Rakusin, Tracy and Michael Dileo, The Tapeats Fund, Utah's Hogle Zoo, Vincent Pardieu, Wildcat Foundation, Walli Finch, Wildlife Conservation Network, Woodman Foundation, The Woodtiger Fund, Zoological Association of America, Zynga as well as several anonymous donors.

For significant support over the past ten years that has not been mentioned above we remain grateful to Mary Boardman, Bev Spector and Ken Lipson, Kris and Peter Norvig, Cincinnati Zoo and Botanical Garden, Fauna and Flora International, Fair Play Foundation, Flint Chapter, John Stuelpnagel, Rare Species Fund, Predator Conservation Trust, Rufford Innovation Award and Wildlife Conservation Society.

We thank all our donors who keep us in the field, no matter how big or small the donation. Small gestures added together and result in us meeting our budget each year. Thank you over the years for in kind donations from Claire Spottiswoode, Chip Owen, Utah's Hogle Zoo, Vincent Pardieu, Houston Zoo, Genentech, and One Africa.

We reserve a very special thanks to Lisette Gelber for spending time with us each year to refine our financial system and make it transparent but practical and for teaching us how to write a proper financial report. Thank you Lisette, you bring so much for NCP and we appreciate it hugely. Thank you to Alastair Barnes who created Mary Boardman's bench, the baobab floor and crocodile floor and helped in a multitude of other ways, Alan Evan Hanes for coming in as



a volunteer pilot for 3 months and helped with the hangar and lighting when he was not flying, Jillian Knox our first intern who came in 2014 and helped produce the Wild dog database, log camera trapping pictures and help in many ways. We are very grateful to Peter Lindsey and Michelle Moehller from Panthera who came to help us develop SMART and work with Agostinho. For assistance with our environmental education initiatives we thank Houston Zoo who assist us in a multitude of ways including grant writing, funding, training and development of educational materials with particular thanks too Angie Pyle, Renee Bumpus, Peter Riger, and Sara Riger. Thank you too to Chris Schmidt from Hogle Zoo for her masks and crafts for children. Special thanks to Meredith Watts and Leda Marritz for their help with newsletter and website, Glen Carrie for ,help with the website and Sam Worsley for help with data entry and mapping. In 2016, we were particularly grateful to Monique Fagan who came in to help with our newest livelihoods programs – Grupo Kushirika.

We thank all the Niassa tourism operators for their support and collaboration with sightings, logistics and information. A particular thanks to Niassa Wilderness and Chuilexi Conservancy, our neighbours in Niassa and members of Niassa Conservation Alliance.

Niassa Lion Project is administered by The Ratel Trust and we thank Stephen Clark for his on-going legal and financial assistance in his capacity as a trustee and Chairman of the Mariri Investimentos Board

A very special thanks to our managers, Agostinho Jorge, Tomas Buruwate and Andrew Mkanage – they are the future of conservation in Mozambique.

## SUMMARY FINANCIAL REPORT

Niassa Carnivore Project has four bank accounts (two bank accounts attached to The Ratel Trust (ZAR and USD based in South Africa) and two bank accounts in Mozambique as Mariri Investimentos Lda for operational expenses and local donations). This financial report includes expenditure from both organisations to reflect total expenditure and donations received by the Niassa Carnivore Project for the year 2016.

| <b>Statement of Financial Position<br/>(US Dollars)</b>          | <b>2016<br/>USD</b>               | <b>2015<br/>USD</b> |                    |
|------------------------------------------------------------------|-----------------------------------|---------------------|--------------------|
| <b>Assets</b>                                                    |                                   |                     |                    |
| Cash and Bank                                                    | 629 873                           | 240 131             |                    |
| <b>Total assets</b>                                              | <b>629 873</b>                    | <b>240 131</b>      |                    |
| <b>Liabilities</b>                                               |                                   |                     |                    |
| Accounts Payable                                                 | 14 408                            | 4 864               |                    |
| Total Liabilities                                                | 14 408                            | 4 864               |                    |
| <b>Net Assets</b>                                                |                                   |                     |                    |
| Emergency Response Fund                                          | 30 000                            | -                   |                    |
| Operating Reserve                                                | 300 000                           | -                   |                    |
| Temporarily Restricted Net Assets                                | 191 000                           | 86 834              |                    |
| Unrestricted Net Assets                                          | 94 465                            | 148 432             |                    |
| Total Net Assets                                                 | 615 465                           | 235 267             |                    |
| <b>Total Liabilities and Net Assets</b>                          | <b>629 873</b>                    | <b>240 131</b>      |                    |
| <b>Changes in Net Assets for the year ended 31 December 2016</b> |                                   |                     |                    |
|                                                                  | <b>Temporarily<br/>Restricted</b> | <b>Unrestricted</b> | <b>Total</b>       |
| <b>OPERATING REVENUE AND SUPPORT</b>                             |                                   |                     |                    |
| Revenue from Grants                                              | 40 000                            | 208 000             | 268 000            |
| Revenue from Donations                                           | 156 000                           | 1 119 664           | 1 275 664          |
| Release from Temp Restricted Assets                              | (86 834)                          | 86 834              | 0                  |
| Revenue from Research Activities                                 | 0                                 | 7 369               | 7 369              |
| <b>Total Revenue</b>                                             | <b>104 166</b>                    | <b>1 446 867</b>    | <b>1 551 033</b>   |
| <b>OPERATING EXPENSES</b>                                        |                                   |                     |                    |
| Program Expenses                                                 | 0                                 | (1 172 311)         | (1 172 311)        |
| <b>Total Operating Expenses</b>                                  | <b>0</b>                          | <b>(1 172 311)</b>  | <b>(1 172 311)</b> |
| <b>NON OPERATING ACTIVITIES</b>                                  |                                   |                     |                    |
| Foreign Exchange Gain (Loss)                                     | 0                                 | 1 476               | 1 476              |
| <b>Total Non Operating Activities</b>                            | <b>0</b>                          | <b>1 476</b>        | <b>1 476</b>       |
| <b>CHANGE IN NET ASSETS</b>                                      | <b>104 166</b>                    | <b>276 032</b>      | <b>380 198</b>     |
| Net Assets Beginning of Year                                     | 86 834                            | 148 432             | 235 267            |
| <b>Net Assets End of Year</b>                                    | <b>191 000</b>                    | <b>424 465</b>      | <b>615 465</b>     |

## SUMMARY EXPENDITURE REPORT

Note: Some costs such as vehicle costs, food, stationery and salaries are shared across all programs as items are bought in bulk and staff members work for multiple programs. Logistically it is impossible to accurately assign these costs to each program. The operational and running costs therefore represent Niassa Carnivore Project as a whole. The specific program costs only reflect those costs specific to each program but these should not be seen as the only costs for each program as each program also has running costs such as diesel, vehicle repairs, food and salaries associated with them.

| Expenses                                                          | 2016<br>USD      |
|-------------------------------------------------------------------|------------------|
| Concession Fee                                                    | 20 550           |
| Administration and development costs                              | 42 495           |
| Promotion, fund raising and awareness                             | 14 878           |
| Meetings                                                          | 2 911            |
| <b>Capital and Infrastructure</b>                                 |                  |
| Capital expenditure                                               | 38 340           |
| Construction                                                      | 48 409           |
| <b>Operational Costs</b>                                          |                  |
| Permanent Salaries                                                | 340 734          |
| Visitor related Expenses                                          | 11 144           |
| General Vehicles - repairs, insurance, licensing, tyres           | 116 368          |
| Logistics and running costs Office                                | 25 973           |
| Logistics and running costs Local Travel                          | 13 605           |
| Logistics and running costs Equipment                             | 59 306           |
| Logistics and running costs Consumables                           | 56 673           |
| <b>Programs</b>                                                   |                  |
| Obj.2: Conservation monitoring                                    | 47 849           |
| Obj. 3: Alternative livelihood - livestock breeding group         | 3 855            |
| Obj. 4- Alternative livelihood - Conservation agriculture         | 5 096            |
| Obj. 4- Alternative livelihood - Beehive fence                    | 5 044            |
| Obj 4 - Alternative livelihood -conservation tourism              | 12 389           |
| Obj 4 - Alternative livelihood - Grupo Kushirka -craft            | 1 577            |
| Obj. 5:Antipoaching salaries                                      | 53 807           |
| Obj. 5:Antipoaching operational costs                             | 45 820           |
| Obj. 5 - Antipoaching-Aviation                                    | 25 566           |
| Obj. 6: MOMS- Conservation monitoring and reduce HCC              | 14 565           |
| Obj. 8 : Environmental Education and Outreach                     | 36 290           |
| Obj. 10: Develop community based conservation area -              | 23 783           |
| Ob. 10. Develop community based conservation - seasonal salaries  | 71 905           |
| Obj. 10: Develop community based conservation area - Scholarships | 8 671            |
| Obj. 11 Improve training and capacity of NLP team                 | 10 357           |
| Obj. 11 Prizes                                                    | 1 920            |
| Obj. 12: Regional lion conservation                               | 8 820            |
| Obj. 13. Pangolin and other endangered species                    | 554              |
| Miscellaneous / contingency                                       | 768              |
| Taxes                                                             | 2 288            |
|                                                                   | <b>1 172 311</b> |