Primate and Predator Project Annual Report 2015

Reviewing achievements from the partnership between Durham University, Lajuma Research Centre, the Earthwatch Institute and landowners in the Soutpansberg Mountains
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1. Introduction

The Primate and Predator Project (PPP) was established through a partnership between Durham University and Lajuma Research Centre in early 2011.

The Primate and Predator Project aims:

(i) To assess the role of mountainous regions in biodiversity conservation
(ii) To understand the behavioural ecology of predator-prey interactions focusing on diurnal primates and their predators as a model system
(iii) To evaluate the nature and extent of human-wildlife conflict within the Soutpansberg Mountains

This report summarises some of the project’s scientific and community engagement achievements in 2015.

2. Scientific results and developments

2.1 Publications

Peer reviewed publication is one avenue for sharing our scientific findings. Other ways we communicate our results include newspaper articles, social media and presentations.

In 2015 the following papers were published or are currently in press / in prep / in review:


- Howlett, C. and Hill, R.A (in prep) Researcher effects on study subjects: Samango monkeys see red.

- Howlett, C. and Hill, R.A (in review) Can zoo enclosures inform exclosure design for crop


The published papers are available to download from [https://primateandpredatorproject.wordpress.com/downloads/](https://primateandpredatorproject.wordpress.com/downloads/).

### 2.2 Primate data

Our primate research is currently focussed on habituated samango monkeys, vervet monkeys and chacma baboons on Lajuma and neighbouring properties. We collect behavioural, dietary and ranging data on these species, and conduct habitat and phenological assessments to understand changes in their food availability.

#### 2.2.1 Samango monkey research

At Lajuma Research Centre there are two habituated troops of samango monkeys - the House and Barn groups. Since February 2012 the two troops of monkeys have been followed from when they wake up at dawn until they settle in their sleeping sites just after dusk. Researchers collect behavioural data through scan sampling every 20 minutes using a uniform methodological procedure developed by the Primate and Predator Project.

1. **Researcher effects on study subjects: Samango monkeys see red**
   by Caroline Howlett

   The aim of habituation is to become a neutral presence to study subjects, usually with the purpose of observing wild animals in their natural environment and displaying natural behaviours. A group of animals can be described as habituated when they show no fear of the observer but also no interest in the observer. However, through various unconscious behaviours the observer may unknowingly influence the behaviour of their habituated subjects. A potential way in which this may occur is through clothing colour, such as observers wearing the colour red. Red is a signal of dominance and aggression in competitive situations and is seen as threatening in many animals including non-
human primates. This study aimed to assess whether observer clothing colour, in particular red clothing, had any effect on the behaviour of two habituated samango monkey groups living at Lajuma. We chose three colours of the same brightness: red, blue and yellow. We wore different t-shirts of each colour on follow days with the two monkey groups over a two month study period and recorded their behaviour.

We found that across both troops, risk-related vigilance behaviour was found to be higher when the observer wore red clothing in comparison to when they wore yellow or blue clothing. This suggests that the monkeys perceived a greater risk to themselves when the observer was in red and were more vigilant as a result (Figure 1).

![Figure 1: Rate of risk-related vigilance displayed by members of both troops for each colour worn.](image)

Samangos consistently used lower tree heights when the observer wore blue, a pattern observed in both troops (Figure 2). We found that samangos preferred greater tree heights when the observer was wearing red suggesting that they are more fearful of the observer and/or regard the observer as a greater threat when wearing this colour. Unusually, House group samangos were found to prefer greater tree heights in response to observers wearing the colour yellow; something that was not observed in Barn group. This result is rather unexpected and while differences in habituation between the groups may offer one possible explanation, we are conducting additional analyses to try and better understand these results.
Nevertheless, our results suggest that observer presence can never become truly neutral and many of our unconscious behaviours, such as clothing choice, have the ability to affect the behaviour of our study animals. The type and accuracy of data collected can be influenced by wearing colours that study subjects perceive as dominant or threatening. Observers carrying out research with habituated groups should be mindful of this and modify their behaviour accordingly in order to have the least possible impact on their study subjects. The findings of this study are being submitting for publication at present.

Figure 2: Average height above the ground (m) for each age-sex class when wearing red, blue and yellow t-shirts in (a) Barn troop and (b) House troop.
2.2.1.2 The effect of reproductive status and neighbour composition on vigilance in samango monkeys

by Zoe Melvin

The PPP has been supporting year in industry students from Cardiff University since 2011. Zoe Melvin was one of three students who spent the 2014 - 2015 academic year working with our project. Cardiff undergraduates contribute to our on-going data collection and conduct an independent research project. Here is a summary of Zoe’s findings on vigilance in samango monkeys:

Group size has been described as a major factor in determining vigilance levels in prey species. However recent studies suggest that individual and troop-related features may be more reliable in predicting vigilance levels. As social animals, primates also have to compete with other group members for limited resources and their vigilance can be divided into anti-predator and social vigilance accordingly. Through the use of behavioural scan data this study aimed to investigate the effect of specific troop features on both types of vigilance in samango monkeys. Data show that having a dependent infant affected both types of vigilance in adult female monkeys. Number of neighbours proved to be important in explaining the vigilance patterns of individuals but its effects varied between age-sex classes i.e. it had no effect on social vigilance in adult females with dependent infants, adult males and sub-adults of both sexes. The age-sex class of neighbours was an important factor in certain individual-neighbour age-sex class combinations. These results reveal information about the roles of troop members and how individuals perceive their environment to prioritise behaviours accordingly. Further research is necessary to fully understand the relationship between group dynamics and vigilance behaviours in group-living primate species.

2.2.2 Vervet monkey research

A troop of habituated vervet monkeys is studied continuous throughout the year using similar scan sampling methodologies to the samango research.

2.2.2.1 Shifting troop dynamics

In mid-2014 when PPP researchers first started studying the vervet monkeys, the troop was comprised of 11 individuals. This slowly dropped to seven by early 2015 as Versailles (infant), Veto (infant), and Vidi (juvenile) all disappeared, whilst Vici (juvenile female) was predated on by an eagle. At the end of 2015 resident adult females, Victory and Vera, gave birth to male infants bringing the troop back up to nine individuals.

Koen Groenevelt, a Masters student from the Vrije Universiteit, Amsterdam, is currently investigating the predation challenges that vervet monkeys face in the Soutpansberg Mountains through a giving-up density experiment.

2.2.3 Chacma baboon research

The PPP devised a methodology for baboon data collection based around a combination of scan sampling (data are collected on all individuals sighted within a five minute period) and focal sampling (data are collected on a particular individual’s activities during a ten minute period). Long-term data collection allows the PPP to understand seasonal feeding, ranging and behavioural activity, and also allows us to monitor how baboons respond to significant environmental changes.
2.2.3.1 Juvenile behaviour and relationships in chacma baboons

by Pete Tomlin

Pete Tomlin is a final year PhD student at Durham University. He studied the habituated troop of baboons at Lajuma from 2011 to 2013. Here is a summary of Pete’s research aims and main findings:

Primates have many features that distinguish them from other mammals, such as forward facing eyes, opposable and dextrous thumbs, and large brain sizes relative to their body size. One of the most important, yet also most poorly understood characteristics of primates is that they have low growth rates and take a longer time to reach maturity than other similar sized mammals. This means that for a lot of their lifespan they are unable to reproduce, with this non-reproductive period between infancy and adulthood being known as the juvenile period. This study aimed to determine how the behaviour of these juveniles differs to that of adults to gain a better understanding of the evolutionary purpose of this pattern of development.

Four main aspects of baboon behaviour were examined: i) age and sex differences in activity budgets (the amount of time spent engaged in activities such as feeding, grooming, resting); ii) the extent to which the behaviour of the baboons was synchronised (i.e. are the baboons doing the same thing at the same time); iii) the effects of age, sex and social dominance on how individuals move through the landscape; iv) who individuals within the group spend their time with, and who they interact with. My major findings are that juveniles behave in a manner consistent with both maximising their chances at surviving to adulthood, and increasing their chances of success as adults. By growing slowly, juveniles reduce the risk of starvation by having reduced calorific needs, while also reducing the risk of competition for food with other group members. During this time of slow growth, they are able to learn the skills, both ecological and social, that will enable them to be successful adults. Baboons generally live in permanent groups of multiple males and females of all ages, and the prolonged juvenile period is likely to be an adaptation for living and developing within a social group.

2.3 Predator-prey ecology

One of the project’s research aims is to investigate predator-prey relationships. We use a myriad of methods to achieve this including scat analysis, experimental approaches, interacting baboon and leopard collars, and behavioural observations of primates and other prey species.

2.3.1 Leopard and baboon interactions

From June until August 2014 and from June until August 2015 Leigh West volunteered as a research assistant with the PPP. In 2015 she analysed GPS data from interacting baboon and leopard collars, and collected additional information on baboon behaviour for her undergraduate thesis with Columbia University. A proximity event is recorded when a collared baboon and a collared leopard come within approximately 60 meters of each other. These interactions frequently occurred in bush habitats rather than open areas. Following a proximity event baboon activity increased significantly, yet group spread remained unchanged. Baboons preferred rocky areas while leopards showed a preference for forested areas. When the baboons were in grassland, rocky, road, farm and high-use leopard habitats they scanned significantly more than expected while their vigilance levels were lower than anticipated in forest, bush and low-use leopard habitats. In high-use leopard areas,
baboons spent less time than expected foraging and engaged in more social behaviours than expected. These findings are important for understanding the spatial ecology of leopards and baboons and helping conservationists plan protected areas.

Durham University PhD candidate, Alec Ayers, is currently commencing a more detailed examination of predator-prey relationships between leopards and baboons around Lajuma. He will be analysing data collected from the interacting collars, baboons’ reactions to model leopards, and leopard kill site locations and prey remains.

2.3.2 Temporal and behavioural activity by two dassie (Hyrax) species

by Emily Lake

From February 2015 through to May 2015 research at Lajuma Research Centre was conducted on two species of hyrax. This research was inspired by previous research on the diet of leopards in the area, which revealed that hyrax or dassies are a large part of this predators’ diets.

Research questions were selected to investigate the activity patterns and behaviour of the two species of hyrax. Camera traps were utilised to monitor hyrax activity levels and capture the hyrax demonstrating natural behaviours. Supporting information was gathered such as vegetation surveys and weather data to accompany the information extracted from the camera trap images.

The statistical analysis program R was used to analyse over 10,000 images collected over three months. Overlap, a package within R, was chosen to process camera trap image data. Overlap produces graphs of the 24 hour period centred on either midday or midnight and could contain two sets of data overlapped which then produced a set of statistical measures explaining the degree of overlap between these two datasets. An example of this can be seen in the figure below.

![Graph produced in the overlap package using R showing the proportion of activity from hyrax throughout the 24 hour period that overlaps between summer and winter seasons. The percentage overlap calculated for this figure is 57% indicating that 57% of the activity detected during both summer and winter occurs at the same time.](image-url)
There are some unique results observed from this analysis including evidence of nocturnal activity by both species of hyrax and the use of certain sites by the hyrax for particular activities undertaken throughout the day such as foraging, basking, resting and defecating at specific latrine sites.

These findings are currently being written up as a Masters thesis, which will be completed in early 2016.

2.4 Predator data

2.4.1 Camera trapping

2.4.1.1 Leopard densities in the Soutpansberg Mountains

The conservation status of carnivores is becoming increasingly dire, particularly for larger-bodied species. The leopard is no exception; its listing is expected to be upgraded from Vulnerable to Near Threatened in the 2016 National Red List Assessment for South Africa. How are leopards in the Soutpansberg faring?

In order to determine how the leopard population density in the western Soutpansberg is changing over time, the Primate and Predator Project has been continuously monitoring leopard density over an area of approximately 6,000 hectares since 2012. We use an array of 46 camera traps in static locations to photograph leopards, which are then identified on an individual basis using their unique spot pattern. The locations and dates at which different individuals are photographed are used to estimate the population density using spatially explicit capture recapture models. This allows us to estimate the density of leopards six times per year over a period of four years.

The analysis is currently underway, but preliminary findings suggest a steep decline in the density of leopards in the Soutpansberg. In 2012 there were just over 12 leopards per 100 km², one of the highest densities outside of state protected areas in Africa. This confirmed our earlier published findings of 10.70 leopards per 100 km² in 2008, which highlights the importance of this area to leopard conservation. But by 2015, the density has dropped to just above 3 leopards per 100 km², a decline of 74% (Figure 4).
This is an alarming decline and gives us two key priorities for 2016. The first is to ensure that they results we are discovering are consistent over a large area and not a localised problem around Lajuma. For that reason, we will be extending our camera-trapping array from a monitoring area of 65 km$^2$ at present to just over 100 km$^2$. At the same time we hope to run a short-term camera grid over a much larger area to examine the occupancy of leopards away from the mountains (see section 4.7). We also need to understand what is causing the population decline. Between 2012 and 2015 we fitted GPS collars to eight leopards to determine their fate. To our surprise, only 25% of the study animals survived until the end of the 15-month period for which the collars were active. The largest source of mortality (38% of the study animals) was snaring, while 13% were shot without a permit for perceived cattle predation and 25% went missing, suspected dead (since they also disappeared from our cameras, ruling our collar failure).

In response to this we have appointed a Community Engagement Officer, Philip Faure. Philip is working hard to reduce the extremely high anthropogenic pressures on this important leopard population, while also helping the people with which they share the land (see section 3.1). We will continue to monitor the density of leopards in order to determine how effective this is at halting the population decline.

2.4.1.2 The Limpopo Leopard Project

South African governmental authorities are keen to collaborate with researchers in order to obtain reliable evidence on the population size and trends of leopards in South Africa. Dr Guy Balme and Ross Pitman, researchers from Panthera (a felid conservation organisation), are working with the authorities on the Limpopo Leopard Project, which aims to determine the population trends of leopards across Limpopo Province. They are surveying multiple sites across the province using camera traps, and in 2014 they asked the Primate and Predator Project to collaborate with them to establish an approximately 200 km$^2$ study site in the Soutpansberg Mountains, which will record data.
for two months each year for a decade. The data we collect is used to directly inform leopard management strategies, and ensure that these are sustainable in the long term.

Between August and October 2014, 31 leopards were photographed. At least one leopard was detected on the majority of the 40 camera stations (93%). Capture-recapture models estimated leopard density at between 5 and 6 leopards per 100 km\(^2\). Between February and April 2015, 23 leopards were photographed. Between 2014 and 2015 there was a turnover rate of 30% (i.e. 30% of individuals in 2015 were new). Leopard density in 2015 was estimated at just under 5 leopards per 100 km\(^2\).

Across the seven sites in Limpopo an enormous amount of photos are generated annually. To assist with managing this large data set, scientists from Panthera have proposed an idea to use citizen scientists to help tag photos at a species level through an online forum. No information on the geographical location where the photos were taken will be supplied and photos will only be included with permission from the landowners involved. Please follow our webpages to see how you can help tag camera images from the comfort of your own armchair.

We are very grateful to all the landowners who support this project and we look forward to working with them again in 2016. We are planning on starting the next survey on March 1st.

2.4.1.3 Brown hyaena density and occupancy

Little is known about the elusive brown hyena’s distribution, density and relationships with people in northern Limpopo, especially in mountainous regions. A study by Durham University PhD candidate, Katy Williams, addresses this deficiency using an interdisciplinary approach, which combines biological and social sciences. Results from camera trapping surveys conducted in partnership with the Limpopo Leopard Project and Panthera, across 200 km\(^2\) in the western Soutpansberg Mountains, estimated brown hyaena density at about 2.5 individuals per 100 km\(^2\) in 2014 and 3.5 per 100 km\(^2\) in 2015. This is unlikely to be a significant increase, and suggests that the population is stable, but the PPP will continue to monitor brown hyaena trends on an annual basis. These results represent some of the first brown hyaena density estimations in a montane environment recorded anywhere. An occupancy survey spanning around 5,000 km\(^2\) used camera traps to determine factors affecting brown hyaena distribution in the Soutpansberg Mountains and in areas to the north and south of the mountains. Preliminary results suggest that brown hyaenas occupy about 80% of the total area surveyed. Areas surveyed north of the mountains had the highest hyaena occupancy level. Brown hyaena occupancy was greater in more open areas and on game farms than closed habitats and livestock farms. Lower occupancy was found south of the mountains and on the mountains. Variables associated with human activity and human induced land management had the greatest effect on brown hyaena occupancy. Brown hyaena occupancy is lower in areas of high human activity suggesting that brown hyaenas actively avoid people. Prey availability and the presence of competitor species had a much lower effect on hyaena occupancy. The social and biological results of this study will be shared with local stakeholders and applied to conservation initiatives when all analyses are complete.
2.4.1.4 Mesopredator release effect and the role of human activity on the relative abundance of African civet and large spotted genet

by Marlon Tillmanns

Marlon Tillmanns, a Masters student from Wageningen University in the Netherlands, volunteered with the PPP between August and October 2015. Although the PPP primarily focuses on large predator research, Marlon investigated small carnivore ecology, an understudied area of research.

The mesopredator release effect describes an effect within a food web where the population of small to medium-sized predators, so-called mesopredators, undergoes a drastic increase when the population of top predators decreases. In the Soutpansberg Mountains, two mesopredator species, the African civet and the large spotted genet live together with two top predators, the leopard and the brown hyaena. This study investigated whether the mesopredator release effect is present in the 60 km² study area between 2012 and 2015 using camera trap data. The following relationships were also investigated: (i) the correlation between top predators and mesopredators, (ii) the correlation between human activity and mesopredators and (iii) the correlation between the two mesopredator species.

There was no correlation between top predators and mesopredators during the study period, when all the years were combined. However, in 2014, a correlation between both the mesopredator species and the brown hyaena was found. Interestingly there is a positive correlation between the brown hyaena and the mesopredators. The leopards had no correlation with the other species for the majority of the years.

Overall human presence did have a weak effect on the relative abundance of the species. However, the presence of vehicles had a stronger effect, especially on the relative abundance of brown hyaena. But again, this was a positive correlation.
There was also a positive correlation between the relative abundance of the African civet and the large spotted genet. This could be explained by the fact that both the African civet and the large spotted genet have an overlapping food and habitat preference. It is also possible that both species are avoiding the same predator species.

In conclusion the mesopredator release effect does not appear present in this area, at least in relation to these four species. Human activities seem to have a very weak effect on the species relative abundance but the results and correlations between the species can differ from year to year, and can therefore be affected by food availability or climatic conditions in the area.

2.4.2 Wildlife deaths from snaring on the rise

Evidence from our camera trapping data suggests a serious decline in the leopard population (see section 2.4.1.1 for details). Data from GPS collars indicate that snaring is posing one of the most serious threats to leopards in the Soutpansberg Mountains.

In 2012 a female leopard called CC was found dead with a snare around her foot. The following year a male called Michel died from snaring and in June 2015 another leopard, Pimms, died from a snare around his waist (Figure 5). The frequency of snaring-related deaths surprised PPP researchers, although the snares were probably not set to target leopards. Although snaring is illegal, people set snares to capture wildlife for many reasons, including hunger, poverty, boredom, recreation and tradition. But snaring is an incredibly wasteful way of harvesting wild meat – most of the animals captured simply rot in the bush, feeding no one but the maggots, and so it causes a great deal of unnecessary suffering. This is especially true for animals like leopards strong enough to break off the snare from it’s anchor and carry it away with them. Snaring is also non-selective, meaning that non-target species can be killed just as easily as the species the snare is set to catch.

![Figure 5: The carcass of a male leopard named Pimms that was killed by a snare around his waist on the 14th of June 2015 while wearing a GPS collar.](image)

Over the past few years, two baboons within the habituated troop have acquired snares while moving through the bush on the top of the mountains. With the help of a vet, the project
successfully removed a snare from the hand of an adult male who, then fully recovered. Last year the PPP attempted to remove a snare from the neck of a juvenile baboon named Cable but with no success. While trying to capture him researchers watched his condition gradually deteriorate over a few weeks, as he grew physically weaker and struggled to breathe as a result of the snare. Luckily the snare detached by itself (probably because he became so thin) and Cable recovered but the whole event highlighted how painful snaring is for the animals and how indiscriminate it can be.

Many private landowners and communities in and around the Soutpansberg have told the PPP researchers that they experience high levels of snaring on their land. As well as adversely affecting wildlife, snaring also injures and kills livestock and commercial game animals, which increases economic pressure on farmers.

Fortunately some local communities are striving to reduce snaring. At a community’s request the PPP team with the help of Earthwatch volunteers conducted two snare sweeps in 2015 (Figure 6). Nine active snares and 20 m of wire were removed.

Due to the complex socio-economic drivers behind snaring, there is no magic solution to the snaring problem. However the PPP hopes CC, Michel and Pimms’ deaths can be used to educate local people and help them understand the unintended consequences of snaring.

3. Community engagement

3.1 Community Engagement Officer – Philip Faure

Since 2011 the Primate and Predator Project has gained an increased understanding of human-wildlife conflict issues in the area. We have also detected an increase in human-induced predator mortality. Many of the landowners that we have spoken to expressed that they would appreciate more support farming and living with wildlife. In 2015 we received funding from the Shell
Earthwatch Stakeholder Engagement Fund to hire a Community Engagement Officer for a year to work with local communities and mitigate human-wildlife conflict. This will be achieved primarily by responding to calls for help from farmers and leading workshops on sustainable ways of farming with wildlife. The Community Engagement Officer is also responsible for developing and leading our new environmental education programme and sharing scientific results with local people. After attending our September Earthwatch team as a Community Fellow, Philip Faure was offered the position of Community Engagement Officer.

Since Philip joined the project in September, he has met with 214 local farmers, hunters, community members and conservation officials in the area. Through his networking he has helped people build bomas that effectively protect livestock from predators in the area, and offered advice on how to keep animals safe while simultaneously advocating being proactive rather reactive. Philip has led environmental education sessions with roughly 440 school children at schools in Mopane, Blouberg, Vivo, Buysdorp and Kutama (Figure 7). Philip believes that changing people’s behaviours and attitudes towards predators and primates, and making a difference for these species is a long-term process, which involves reciprocal learning and persistence.

Figure 7: Philip teaching about wildlife conservation at a local school with help from undergraduate students on the Durham University Anthropology field course.

In 2016 Philip will be hosting an evening of scientific talks for the public (Nature Night – see section 4.8) and a photography exhibition about living in harmony with wildlife. He will be helping more farmers and community members build kraals and he will be arranging community workshops about preventing human-wildlife conflict. Philip will be leading more schools outreach and is planning an eco-weekend for school children to come up to Lajuma Research Centre to help with our research and learn about environmental issues.

If you have any questions with regards to our schools outreach, human-wildlife conflict mitigation or community outreach efforts or if you would like to make a donation to one of our projects (whether raising funds for livestock guarding dogs, school supplies or fencing materials for kraal building), then
please do not hesitate to contact Philip. His email is wildlife.help@durham.ac.uk and his phone number is +27 (0) 718418361.

3.2 Environmental education

by Leigh West

The PPP has been working with the WESSA Eco-Schools programme since 2011 thanks to a partnership with Judy van Schalkwyk. In July 2015 Judy and her husband, Oldrich, left Lajuma. Though we miss Judy and Oldrich greatly, Judy’s leaving provides the PPP with an opportunity to turn over a new leaf in developing its own environmental education program. We were able to tailor the program to the project’s initiatives and expand the program to schools we have not been able to visit before. One of the first changes was designing a new predator themed game (a primate-centric one will be in the works soon). The game was created to inform schoolchildren about the carnivore species living in the area, why they are important, and the problems they face. It addresses topics such as snaring, trophy hunting, and methods of protecting livestock from depredation. The children are presented with an issue surrounding indigenous carnivores and then are prompted to speak about the implications of the issue and/or its possible solutions.

We hope to instil within the children we visit an appreciation of the environment in which they live and the species that they live alongside. As these schoolchildren represent the next generation of custodians for this area, imparting this kind of knowledge will help to create a future in which local people and indigenous species can live harmoniously.

In addition to creating new PPP-focused games, the project has been able to start visiting schools not previously involved in the Eco-schools program. While it was great to go to schools that were receptive to and excited about learning about the environment, there are many other schools in the area whose students have less environmental knowledge. We are very excited to expand our efforts to such schools. In August, a group from Bainbridge High School near Seattle helped us to kick-start our revamped environmental education program. We visited a community called Kranspoort, which lies at the bottom of the mountain near to Lajuma. The Bainbridge students played the aforementioned games with the children and painted an environment-themed mural on their school wall (Figure 8). PPP research assistants painted a similar mural at Mara Primère Skool in Buysdorp.
3.2.1 Environmental exchange between South African and American students

Jill Queen, a teacher from Wilkes Elementary School, on Bainbridge Island, received the Bainbridge Schools Foundation grant to lead an environmental project, which will promote sharing between primary school children in the US and in South Africa. The PPP has enlisted two Limpopo schools to be involved. In 2016 South African students will learn about endemic species, write and create artwork about them, and share their output with their partner school in the US who will follow a similar programme.

4. General news and upcoming research

4.1 Departures from Lajuma

Prof Ian Gaigher, the director and owner of Lajuma, 'retired' to Australia in November. He will still remain very involved with Lajuma and will be back for visits from time to time.

In August Oldrich and Judy van Schalkwyk left Lajuma. We miss Judy's amazing enthusiasm working with local schoolchildren and Oldrich's incredible knowledge of the bush and everything really.

Caroline Howlett was the PPP Primate Research Coordinator from February 2014 – 2015. She is now working on a PhD in Biological Anthropology with the University of Kent.

The PPP would like to thank Ian, Oldrich, Judy and Caroline for all the support they have given us over the years and wish them all the best in their new adventures.
4.2 Primate Research Coordinator

In February 2015 Andy Allan replaced Caroline Howlett as the Primate Research Coordinator. Andy has a Masters in Ecology from the University of York and has studied baboons at Tsaobis Baboon Project, Namibia with the Institute of Zoology.

4.3 Statistics teacher from the US joins the PPP for his sabbatical

Brad Lewis, a statistics teacher from Bainbridge High School, near Seattle, USA, has been involved with the PPP since 2013 when he volunteered with Earthwatch together with teaching colleague, Jason Uitvlugt. The pair were inspired to bring their students to South Africa to assist the PPP and since 2014 this expedition has become an annual opportunity. After the Bainbridge students headed home last August, Brad remained at Lajuma to fulfil a sabbatical year working with the PPP. He is staying at Lajuma until April 2016 assisting with statistical analysis, especially of leopard densities, helping supervise research assistants’ projects, and assisting with visiting groups. He is also using his time at Lajuma to work on a Masters in statistics and to develop a curriculum for an advanced-level statistics course for his school district. We are grateful to his significant contribution towards our work.

4.4 Racing to prevent human-wildlife conflict

In August Sam Williams (PPP Research Coordinator) ran the Skukuza Half Marathon in order to raise money for the Primate and Predator Project’s community engagement work. Sam raised R 8,000 to sponsor a livestock guarding dog which will reduce conflict between humans and leopards. The money will pay for a dog, it’s vet costs, and make a contribution towards food for the first year. As soon as a suitable farmer is identified, we plan to partner with Cheetah Outreach and/or Green Dogs, who will bring their expertise in placing dogs with farmers. Hopefully we will be able to help a local farmer live side by side with leopards without the need to kill them. Thank you to all the people who donated to this initiative.

4.5 Involvement in the IUCN Red List of Threatened Species brown hyaena listing

PPP Field Team Leader, Katy Williams, contributed to the revision of the IUCN Red List of Threatened Species' brown hyaena assessment. The 2015 revision is now available online http://www.iucnredlist.org/details/10276/0. PPP staff also contributed to revisions of the Mammal Red Data List for South Africa for six species. The national red list revision will be published shortly.

4.6 PPP’s youngest scientist

Sam and Katy Williams welcomed Finn Darwin Williams to the world on May 12, 2015. He was born in the UK but by 6 weeks old he was at Lajuma watching baboons, attending PPP team meetings and welcoming Earthwatch volunteers.
Figure 9: Finn loves animals (left). He has already been getting involved with the PPP’s scientific research by observing project staff and research assistants eartagging samango monkeys in December (right).

4.7 Upcoming occupancy analysis on leopards and mesocarnivores

Congratulations to the PPP’s Community Engagement Officer, Philip Faure, on being selected for the 2015/16 Earthwatch Shulman Award. He will use the £4,000 grant to conduct a large-scale camera trapping survey focused on predators involved in human-wildlife conflict and to supply four livestock guarding dogs to farmers experiencing conflict.

4.8 Nature Night 2016

In 2014 we hosted an evening of talks on wildlife research and conservation for the local community in conjunction with other local researchers. It was a great success with over 80 people in attendance.

On January 29th at 7 pm we are hosting Nature Night 2016. We are partnering with biologists from the University of Venda to share scientific results and increase awareness about wildlife with local people. Katy Williams from the PPP will be sharing findings from her PhD research on brown hyaenas. It will be hosted at Schoemansdal EEC, near Louis Trichardt, and it’s free to attend so please spread the word and come along if you are in the area. We hope to see you there.

5. Earthwatch Institute involvement

The PPP hosts an Earthwatch Institute project called ‘Conserving leopards and monkeys in South Africa’. Several times throughout the year volunteers from around the world work with the PPP for 12 days at a time. Their involvement helps us to achieve our research aims and financially supports the project. Since March 2011 we have led 25 groups.

In 2015 we hosted five Earthwatch teams of international and local volunteers. They helped us achieve a huge amount (Table 1).
Table 1: A summary of the 2015 Earthwatch volunteers’ physical contributions

<table>
<thead>
<tr>
<th>Contribution</th>
<th>Quantifiable outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>Camera trap images processed</td>
<td>83,807</td>
</tr>
<tr>
<td>Predator scats collected</td>
<td>23</td>
</tr>
<tr>
<td>Predator scats washed</td>
<td>105</td>
</tr>
<tr>
<td>Vegetation plots sampled</td>
<td>58</td>
</tr>
<tr>
<td>Leaves counted for phenological sampling</td>
<td>119,713</td>
</tr>
<tr>
<td>Total invasive trees removed</td>
<td>87</td>
</tr>
<tr>
<td>Fence removed (m)</td>
<td>200</td>
</tr>
<tr>
<td>Trail cleared (m)</td>
<td>150</td>
</tr>
<tr>
<td>Bomas built to protect cattle from leopard predation</td>
<td>2</td>
</tr>
<tr>
<td>Environmental education days led</td>
<td>4</td>
</tr>
<tr>
<td>Snare sweeps conducted</td>
<td>2</td>
</tr>
</tbody>
</table>

5.1 Earth Skills Network

In October we contributed towards two Earth Skills Network teams. Staff members from the Earthwatch Institute and Shell worked with PPP staff to lead a dynamic programme based around developing business management skills for managers of protected areas and conservation NGOs. The participants came from South Africa, Zimbabwe, Zambia, Madagascar and Kenya. We would like to thank the staff at Madi a Thavha Mountain Lodge for leading informative sessions for these groups and for their hospitality with all our Earthwatch teams.

5.2 Community Fellows

We received funding to invite several local ‘changemakers’ to join our Earthwatch teams as Community Fellows. Community fellows included a renowned local artist, a headteacher from a secondary school, a representative from the Buysdorp community, an educator and guide from the African Ivory Route, and the PPP’s Community Engagement Officer, Philip Faure. These participants joined international volunteers to learn about the environment and contribute to our research. They left feeling inspired to share their knowledge with local people. Thanks to Pam Chesonis for funding this valuable opportunity.

6. Donate to the Primate and Predator Project

The important work we are doing to protect primates, predators and the biodiversity of the Soutpansberg Mountains is not possible without on-going funding. Thank you so much to all the individuals and organisations that offered PPP financial support in 2015!

If you would like to donate towards the project please follow these instructions:

Visit https://www.dunelm.org.uk/donations/make-a-donation. Under “Donation Information” select “Other” enter the amount you would like to donate. In the “Comments” section write in “Primate & Predator Project – Dr R Hill”. Please email us at primate.predator@durham.ac.uk so that we can ensure that the donation gets to us.
7. Thank you

The Primate and Predator Project is extremely grateful to the following people for their support:

- Professor Ian Gaigher
- Oldrich and Judy van Schalkwyk
- Jabu and Bibi Linden
- Kyle Stuart
- Caroline Howlett
- Brad Lewis
- The landowners in the Soutpansberg Mountains who allow us to work on their land or offer support in other ways
  - Owners, families and staff of Amatola, Bergplaas, Bergtop, Buysdorp, Calitzdorp Diepkloof, Goro, Koedoesvlei, Kranspoort, Leshiba, Llewellyn, Louisville, Ontmoet, Ottoshoek, Ottosdal, Sigurwana, Tolo, Uniondale and Vierfontein
  - Peter Breedveld of Sigurwana and Tolo for driving research assistants to check camera traps
- The volunteer research assistants who helped with data collection this year
  - Zoe Melvin, Liam Thomas, Ryan Scott, Carrie Dunford, Josh Canepa, Natasha Coutts, Phillipa Goff, Meredith Keeley, Felix Schroder, Marjoleine Kopmeiners, Thomas Tillmanns, Erin MacDonald, Nelly Sheppard, Becky Easter, Sarah du Plessis, Zach Mason, Koen Groenevelt, Alice McPherson, and James Algeo-Orr
- Durham University postgraduate students who conducted fieldwork at Lajuma
  - Emily Lake
  - Alec Ayers
- The veterinarian and dog handler who helped with darting and collaring
  - Dr Adrian Tordiffe
  - Gavin Lipjes
- The Earthwatch Institute and our Earthwatch volunteers

8. More information

We are extremely grateful to the many people that support our work, including landowners, funders, stakeholders, and volunteers. We try to make it as easy as possible for everyone to keep up to date with our news (like our Facebook page! Follow us on Twitter!), but we also have a webpage to make it easier for people to find details of our research and download our outputs. This includes formal outputs such as academic journal articles, PhD theses and Masters theses, and also links to more informal sources such as newspaper articles and details of coverage on television and websites. So if you ever wondered what comes of our research, head over to http://primateandpredatorproject.wordpress.com/downloads/ to find out!
8.1 Websites

Project website http://community.dur.ac.uk/r.a.hill/primate_and_predator_project.htm
Blog http://primateandpredatorproject.wordpress.com/
Facebook https://www.facebook.com/pages/Primate-and-Predator-Project/168026853274442?ref_type=bookmark
Earthwatch project http://www.earthwatch.org/exped/hill_research.html

You can find us on Twitter @PrimatePredator
Follow us on Instagram @primate_predator

Primate and Predator Project YouTube channel
http://www.youtube.com/channel/UCp6R2F0SePk_9kEcMdV0bA

9. Contact us

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