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Abstract:

Peru is one of the most biodiverse countries on earth, with an associated high diversity of primate species. Northern Peru is home to two Critically Endangered and endemic species of primate, the yellow tailed woolly monkey (*Lagothrix flavicauda*) and the San Martin titi monkey (*Plecturocebus oenanthe*), as well as countless other threatened species and habitats. Since 2007 we have been working with communities and local organizations in this area, helping to develop a community-based conservation network using primates as flagship species to preserve natural areas and improve the socio-cultural status of local human populations, fighting deforestation, hunting and land trafficking, hand in hand with reforestation, investigation and sustainable economic development. Much of our work focuses on environmental education for both adults and children. This holistic approach has led to the formal creation of ~80,000 ha of communally protected areas with a wider conservation impact at the landscape level. We continue our education programs in the buffer zones of the community protected areas, employing adaptive techniques to engage local stakeholders and build conservation capacity throughout the region. Our experience has shown us that local people have the desire and ability to conserve local forests and wildlife when given the correct tools and that these efforts are already showing positive results.

Community Conservation as a tool for primate conservation in Peru

Introduction:

Shifts in conservation paradigms to a greater focus on inclusive strategies, moving away from the traditional ‘fines and fences’ approach and towards modern conservation programs involving local management and co-management of protected areas, as well as more sustainable management of natural resources on a broader, landscape scale are increasingly leading to success for the protection of threatened species and habitats. Similarly, actions to mitigate threats to wildlife, such as hunting and habitat fragmentation, are benefiting from more holistic approaches that deal with both the root causes and social perceptions whilst providing tailored responses that generate solutions in the short and long term.

Peru is one of the most biodiverse countries on earth, this diversity is well represented by its 58 primate taxa, ranking 3rd globally. Of these taxa one third (17) are threatened with extinction, listed on either the IUCN Redlist of Threatened species or under Peruvian law. Among the most threatened are the endemic yellow tailed woolly monkey (*Lagothrix flavicauda*) and the San Martin titi monkey (*Plecturocebus oenanthe*) both of which are Critically Endangered, and the Peruvian night monkey (*Aotus miconax*), which is considered Endangered, all of which are endemic to the montane and pre-montane forests of northern Peru (IUCN, 2016). The main threats faced by these species are from habitat loss, fragmentation and degradation from the expansion of the agricultural frontier, timber extraction, mining and the growth of infrastructure as well as hunting for subsistence and trade.

In 2016 the United Nations Educational, Scientific and Cultural Organization (UNESCO) recognized the Gran Pajatén Peruvian Biosphere reserve (Fig 1), covering an area of 2,509,699 ha, incorporating the Rio Abiseo National Park and surrounding protected areas (UNESCO, 2017). This biosphere reserve covers altitudes ranging from ~500 to over 4000 meters above sea level (masl). The higher areas, over 1,200 masl, are home to *L. flavicauda* and *A. miconax* whilst *P. oenanthe* is found in the lower elevations, up to 1,100 masl. Within the biosphere reserve are several Conservation Concessions run by local NGOs and communities with the aim of preserving biodiversity and ecosystem services whilst also supplying economic alternatives to unsustainable land use practices.

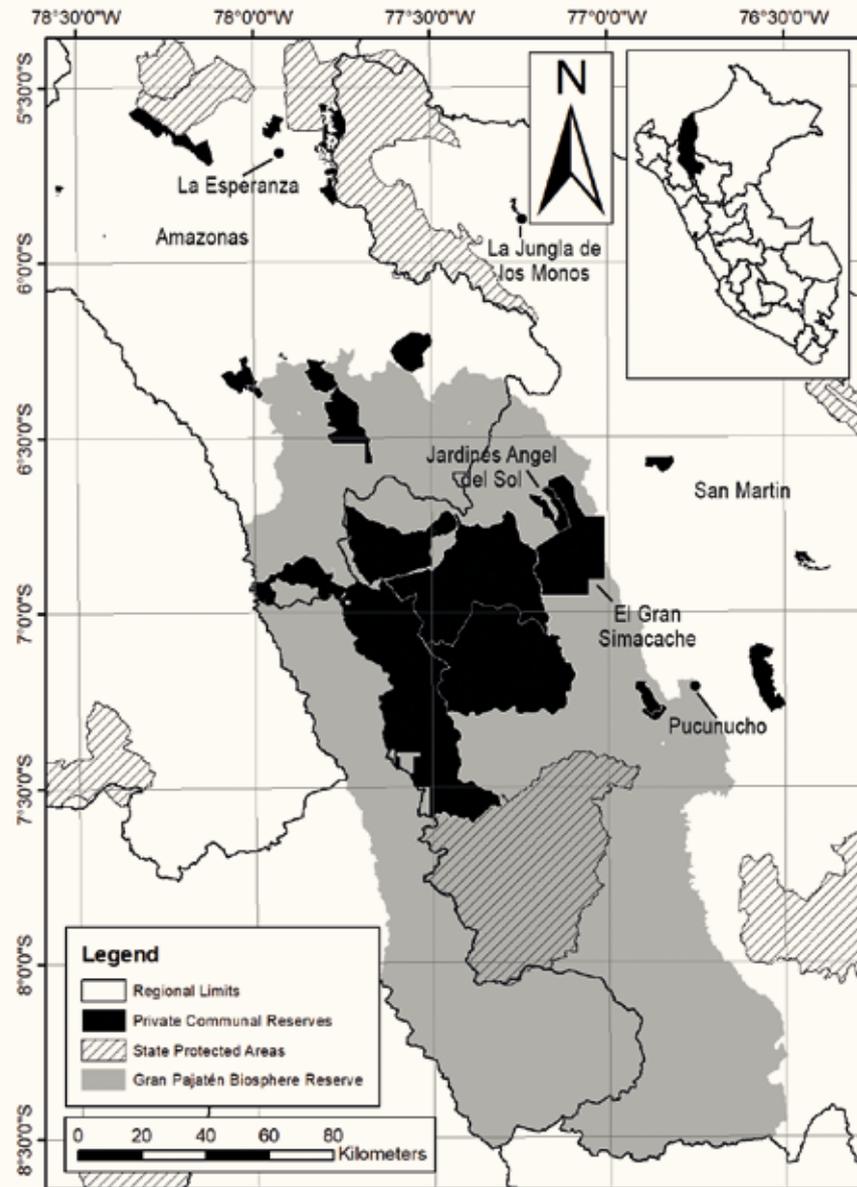


Figure 1. Gran Pajatén Peruvian Biosphere reserve.

British NGO Neotropical Primate Conservation (NPC) has been working in this area since 2007, leading programs of conservation based scientific investigation, environmental education and alternative economic development with the aim of creating community managed protected areas in conjunction with local authorities and villagers (Shanee and Shanee, 2009). Neotropical Primate Conservation also focuses work on combating the illegal wildlife trade, informing local populations of the environmental impact and possible legal repercussions of hunting; rescuing animals from the illegal trade; helping local wildlife authorities with investigations, and aiding rescue centres in management and care of animals.

The holistic approach we have employed is centred on fully integrating communities into all aspects of conservation work, with final products being fully managed and controlled by local people with help and support from us and other institutions.

Similarly, as an organization with few economic resources, NPC is mainly staffed by volunteers from Peru and Latin America. Since the start of our work we have provided funded volunteer internships and thesis opportunities for many dozens of young biologists, trainee teachers, conservationists and others coming from 18 countries. This commitment to professional development in Latin America led to the official creation of NPC's two sister organizations, NPC Peru and NPC Colombia, in 2013 and 2016 respectively. Each of these organizations are headed by past students and volunteers who participated in our projects and have since gone on to continue conservation work and are now developing their own projects.

As well as the project's three endemic flagship species, conservation programs executed in the area are also protecting another endemic, the Andean saddle back tamarin (*Leontocebus leucogenys*) as well as another 10 primate species (*Alouatta seniculus* - VU, *Ateles belzebuth* - EN, *Aotus nigriceps* - LC, *Aotus sp.*, *Cebuella pygmaea* - VU, *Cebus yuracus* - NT, *Pithecia sp.*, *Plecturocebus discolor* - LC, *Saimiri boliviensis peruviansis* - LC and *Sapajus macrocephalus* - LC) (Shanee et al., 2013). These primates are variously protected in a number of state, private and communally protected areas. In Peru local individuals, communities, associations and businesses can be awarded either a Private Conservation Area (*Area de Conservacion Privada* - ACP), on privately titled lands, or a Conservation Concession (*Concesion para Conservacion* - CC), on un-titled state lands. Both of these mechanisms are increasingly popular in Peru and now protect over 1.5 million ha (Shanee et al., 2017). The region of San Martin has more of these types of PA than any other region in Peru (25). Through our programs of developing community conservation initiatives in northern Peru we have been instrumental in creating six of these and have helped in the creation and management of a further 15 reserves (Fig 1), covering a considerable area. Privately and Communally protected areas are particularly important mechanisms in this part of Peru as San Martin has among the highest deforestation and immigration rates in the country, meaning that the creation of new extensive state protected areas is difficult, especially in areas more suitable to agriculture. Thus these initiatives provide the only protection to the San Martin titi monkey and important protection to many of the other primate species found in the area.

Community Conservation

Community conservation activities are not limited to the creation of protected areas. As these initiatives are commonly managed by local people living in and around the reserves they also have a positive effect on the broader landscape, involving better management of natural resources by local communities and control of hunting activities. The 7,174 ha Royal Sun Angels Gardens Conservation Concession (Fig 1) lies within the Gran Pajatén Biosphere Reserve (UNESCO, 2017), is managed by the Association of Farmers of La Primavera (APALP), a group of local coffee farmers set up in 2007. This groups' proactive approach to ensuring sustainability of their own conservation efforts has led to them securing organic certification of their produce and they are now marketing their own brand name and looking for international buyers to enter the export market. Similarly they have been able to

gain funding for several complimentary projects and secure the purchase of a further 700 ha to increase the size of the protected area; most of these recent advances have been led by the local association members and largely without assistance from outside institutions. The advances made by APALP epitomise the successes that Community Conservation approaches can generate by properly empowering communities.

One major problem in Peru is land trafficking, the usurpation, illegal appropriation, and commerce of lands, which is closely linked with migration, but has rarely been examined in the academic literature (Shanee and Shanee, 2016). In the 41,000 ha El Gran Simacache reserve (fig 1), which also lies within the Gran Pajatén Biosphere Reserve (UNESCO, 2017) land trafficking is a major issue causing forest clearance and hunting. Even though several traffickers have been prosecuted, they continue to promote further trafficking and repeatedly threaten local conservationists and environmental authorities. Until now the complaints to authorities which resulted in prosecution have had little effect as the sentences were suspended and the perpetrators have returned to the area, highlighting inefficiencies and the lack of an adequate response when dealing with this issue.

In rural areas of Peru the Ronda Campesina fulfils an autonomous role of self-protection for local communities, practicing vigilance and civil justice where state control is often insufficient or absent (Starn, 1999). The Ronda Campesina has existed since 1976 and has had considerable success in maintaining order and combating local criminal activity, the Rondas have been adopted by many villages throughout Northern Peru, with hundreds of thousands of members. Thanks to success in controlling crime and mediating disputes the Rondas have since expanded their responsibilities to include environmental issues and have been one of our strongest allies in promoting conservation. Their role in conservation has included the control of wildlife trafficking and bushmeat hunting, illegal logging and land trafficking. In 2012 we began developing a new land protection mechanism together with the Ronda leaders, Ronda Conservation Areas (*Area Ronderil de Conservacion Ambiental* - ARCA) (Shanee, 2016). Although not legally registered with the state, ARCAs are effective in conserving areas important to local communities as they are an integral part of the Rondas activities, similarly as each Ronda is made up of all members of each village they have a much more active presence in each area than the handful of park guards usually found in state PAs.

Near the city of Rioja in San Martin region, the Ronda Campesina of El Tambo village is protecting the 'Monkeys' Jungle' ARCA (fig 1). This is a 260 ha remnant forest that is home to a naturally highly diverse primate community of the Alto Mayo area of San Martin in one of the last remaining mid-elevation seasonally flooded forests in the region and is home to seven sympatric primate species, including the CR *P. oenanthe*. Since its inception this reserve has hosted three international field courses on primate conservation with students and instructors from five Latin American countries and 12 months of primate censuses comparing primate population densities and habitat preferences between the flooded and un-flooded periods.

Environmental Education

As one of the most important long term strategies to ensure sustainability of any conservation program, environmental education for adults and children also forms one of the main focuses of our conservation work. Alongside traditional classes we have run summer schools for primary and secondary students, free English classes, field guide training for adults interested in developing eco-tourism and participating in ecological data collection, as well as hands-on reforestation training activities such as tree planting in schools and practical classes in tree nursery care for villagers. Education activities have used a variety of alternative methodologies, employing games, art, drama and storytelling.

Beginning in 2009 we signed an agreement with the *Universidad Nacional Toribio Rodriguez de Mendoza de Amazonas* (UNTRM), the regional state university in Amazonas, to arrange practical training opportunities for students training to be secondary school teachers. The three way agreement, between UNTRM, individual schools and NPC, has led to the placement of many groups of student teachers in some of the most remote schools in Amazonas for annual three month periods. The schools and pupils benefitted from the additional help given by the student teachers (some schools have only one or two teachers shared between all age groups), whilst the university and trainee teachers benefitted through funded opportunities to complete the obligatory practical training portion of their degree courses. As part of their participation in this scheme each trainee teacher had to produce an environmental education syllabus that they would employ during their period in the project. This was developed together with the participating institutions and received final approval from the head of each school involved. An additional final product developed through this project was the production of an environmental education text book. The idea was born out of the first year's participation by UNTRM students and was developed with the local education authority. We secured funding for an initial print run of 3000 copies which were freely distributed to rural schools in Amazonas and San Martin to be used during classes. What made this text book unique was its use of illustrative examples with local flora, fauna and the socio-economic situation present in the area, using poems, paintings and stories by children from the surrounding area, thus making it more accessible to local students.

Wildlife Trafficking

Wildlife trafficking is one of the most lucrative illegal trades globally. Valued at around \$10 billion dollars per year (Haken, 2011), many primate populations are being decimated by the illegal wildlife trade (Estrada et al., 2017). In Peru a substantial local and national trade exists for live primates as well as primate bushmeat, as trophies and for use in traditional medicines (Shanee et al., 2016). This trade has been estimated at over 35,000 individuals hunted per year in just the Peruvian Amazonian regions of Loreto and Ucayali (Shanee et al., 2016). Wildlife laws in Peru are often contradictory: officers regularly change positions within the authorities,

and those charged with stopping the trade often lack the proper support, training and equipment necessary.

Since starting the project in 2007 we have worked in close coordination with the wildlife authorities of Amazonas and San Martin to confront the illegal wildlife trade at all levels by organizing road blocks, market searches, and operations against roadside zoos, tourist centres and private homes as well as in transport hubs. This has resulted in the seizure and rescue of well over 4,000 animals or animal derivatives, many of which were primates. In all cases of live animal seizures we try to re-home the animals as quickly as possible in suitable rescue centres. Although the ultimate hope is that one day rescued animals can be returned to the wild, in the vast majority of cases this is not possible. Our investigations have identified national and international traffic routes and hotspots of illegal trade such as the markets of Iquitos and Pucallpa (Shanee et al., 2016). Simultaneously with direct action against traffickers we also run mass media and education campaigns throughout the Amazonian regions of Peru, with articles and interviews in magazines, newspapers, radio, and television and online as well as poster campaigns at trafficking hotspots. One of the most effective campaigns we ran was the 'Denuncia fauna' campaign. In this campaign the general public were asked to anonymously provide us with information about the illegal capture, sale or ownership of wildlife anywhere in Peru. We would subsequently make official complaints to the authorities and follow the progress of each complaint to see what actions, if any, were taken. This program resulted in the seizure of many primates, but more importantly highlighted the shortcomings and strengths of the different environmental authorities and the differences in capacities between the different regions of Peru (Shanee, 2017).

Species and Habitat Protection

The projects main flagship species, the yellow tailed woolly monkey (*L. flavicauda*), is listed as Critically Endangered by the IUCN (IUCN, 2001) and has been listed as one of the world's top 25 most threatened primate species 3 times (Mittermeier et al., 2012). We began surveys of *L. flavicauda* at our La Esperanza (fig 1) field site in 2007, coupled with voluntary hunting bans imposed by local community authorities and two small land purchases for protection of the site. Repeat population density surveys in 2007–2008 and 2012–2013 recorded a ~35% increase in group sizes of this species and a drop in deforestation levels below the regional average (Shanee and Shanee, 2015). Similarly, the San Martin titi monkey (*P. oenanthe*), another of our flagship species, is listed as Critically Endangered (IUCN, 2016) and has also been listed three times as one of the world's top 25 most threatened primate species (Schwitzer et al., 2016). At one small private reserve, ACP Pucunucho, in San Martin region (Fig 1), we documented the natural repopulation of an area of regenerated secondary forest that had also received enrichment planting. The population had grown from zero to ~30 individuals in the period to 2010 (Allgas et al., 2016).

Through our activities with the Ronda Campesina and coordination with local authorities we have aided the formal registration of 11 local conservation associations,

and have been the lead institution in creating seven communally owned and managed conservation areas, either as Private Conservation Areas or Conservation Concessions (Fig 1). Combined, these areas protect ~80,000 ha. These reserves vary in size from ~430 ha up to ~40,000 ha and protect areas of several habitat types: Peruvian Yungas; High Andean forest; Oriental sub-Andean forest; Western Marañón shrub forest; Sub-Andean forest mixed with shrub; Ucayali moist forest, as well as the endemic Lowland forest of the central Huallaga and the only reserve protecting an area of Marañón dry forests, also endemic to the country (Olson and Dinerstein, 2002).

Conclusions and Recommendations

Peru is internationally recognized as a priority for conservation investment and its high diversity of primate species, particularly the large number of threatened and endemic species, makes it a key country in the fight against biodiversity loss. To effectively confront the myriad threats facing primates and their habitats, conservation planners and practitioners need to employ a broad approach that deals not only with the multiple threats but also adapted to the unique social, economic and political situations that drive these threats. In many cases the same activities that threaten wildlife have negative consequences for local human populations as well, causing the loss of traditional natural resources and development opportunities. In northern Peru we have tried to achieve this by working in conjunction with the local population, political actors and other institutions.

Private Conservation Areas and Conservation Concessions provide important protection for Peruvian primates, their habitats and wildlife in general (Shanee et al., 2017). Governmental and non-governmental institutions should look for ways to further promote these initiatives, facilitating their creation and helping fund their management and protection. As these types of reserves can be created in areas where traditional state protected areas are often unfeasible they can provide vital, and in some cases the only formal protection for species. For example the San Martin titi monkey (*P. oenanthe*) is only protected in a handful of conservation concessions, ACP's and ARCA's. However, in many cases the state does not comply with its duties to support the protection of these reserves, putting them at risk of becoming paper parks. Including a strong component of environmental education in all projects is also key to possibilities of long term success and sustainability; however, these programs also need to include adult audiences to enhance understanding of the immediate need for conservation. Finally, hunting and trafficking of primates in Peru and the rest of Latin America is consistently neglected by government authorities, international conservation agencies and conservation funders. The fight against hunting and trafficking needs to receive the same level of attention as in Africa and Asia if we are to hope to keep some of the world's most charismatic species from extinction.

References

- Allgas, N., Shanee, S., Shanee, N., Chambers, J., Tello-Alvarado, J. C., Keeley, K. and Pinasco, K. 2016. Natural re-establishment of a population of a critically endangered primate in a secondary forest: the San Martin titi monkey (*Plecturocebus oenanthe*) at the Pucuncho Private Conservation Area, Peru. *Primates*, Vol. 58, pp. 335-342.
- Estrada, A., Garber, P. A., Rylands, A. B., Roos, C., Fernandez-Duque, E., Di Fiore, A., Nekaris, K. A.-I., Nijman, V., Heymann, E. W., Lambert, J. E., Rovero, F., Barelli, C., Setchell, J. M., Gillespie, T. R., Mittermeier, R. A., Arregoitia, L. V., De Guinea, M., Gouveia, S., Dobrovolski, R., Shanee, S., Shanee, N., Boyle, S. A., Fuentes, A., Mackinnon, K. C., Amato, K. R., Meyer, A. L. S., Wich, S., Sussman, R. W., Pan, R., Kone, I. and Li, B. 2017. Impending extinction crisis of the world's primates: Why primates matter. *Science Advances*, Vol. 3, no. 1, e1600946. DOI: 10.1126/sciadv.1600946.
- Haken, J. 2011. *Transnational Crime in the Developing World*. Washington DC, Global Financial Integrity.
- IUCN, 2001. *IUCN Red List Categories and Criteria: Version 3.1*, Gland, Switzerland and Cambridge, UK, IUCN.
- IUCN, 2016. *IUCN Red List of Threatened Species* [Online]. Available: www.redlist.org [Accessed 05 March 2014].
- Mittermeier, R. A., Schwitzer, C., Rylands, A. B., Taylor, L. A., Chiozza, F., Williamson, E. A. and Wallis, J. 2012. Primates in Peril: The worlds 25 most endangered primates 2012-2014. Bristol, IUCN/SSC Primate Specialist Group (PSG), International Primatological Society (IPS), Conservation International (CI) and Bristol Conservation and Science Foundation.
- Olson, D. M. and Dinerstein, E. 2002. The global 200: priority ecoregions for global conservation. *Annals of the Missouri Botanical Garden*, Vol. 89, pp. 199-224.
- Schwitzer, C., Mittermeier, R. A., Rylands, A. B., Chiozza, F., Williamson, E. A., Wallis, J. & Cotton, A. 2016. *Primates in Peril: The World's 25 most Endangered Primates 2014-2016*. Arlington, VA: IUCN SSC Primate Specialist Group (PSG), International Primatological Society (IPS), Conservation International (CI), and Bristol Zoological Society.
- Shanee, N. 2016. Government and community based primate conservation initiatives in Peru. Waller, M. T. (ed.), *Ethnoprimatology: Primate Conservation in the 21st Century*. Springer International Publishing, pp. 215-231.

Shanee, N. 2017. *Denuncia Pública General Sobre Casos de Fauna Silvestre en Cautiverio: Volumen 3 – Informe Final*, Amazonas, Peru, Neotropical Primate Conservation. Shanee, N., Mendoza, A. P. and Shanee, S. 2016. Diagnostic overview of the illegal trade in primates and law enforcement in Peru. *American Journal of Primatology*, Vol. 79(11), pp. e22516. <https://doi.org/10.1002/ajp.22516>.

Shanee, N. and Shanee, S. 2016. Land trafficking, migration, and conservation in the “No-Man’s Land” of Northeastern Peru. *Tropical Conservation Science*, Vol. 9, 1940082916682957.

Shanee, S. and Shanee, N. 2009. A new conservation NGO, neotropical primate conservation: Project experiences in Peru. *International NGO Journal*, Vol. 4, pp. 329–332.

Shanee, S. and Shanee, N. 2015. Measuring success in a community conservation project: local population increase in a critically endangered primate, the yellow-tailed woolly monkey (*Lagothrix flavicauda*) at la Esperanza, northeastern Peru. *Tropical Conservation Science*, Vol. 8, pp. 169–186.

Shanee, S., Shanee, N. and Allgas-Marchena, N. 2013. Primate surveys in the Marañon-Huallaga landscape, Northern Peru with notes on Conservation. *Primate Conservation*, Vol. 27, pp. 3–11.

Shanee, S., Shanee, N., Monteferri, B., Allgas, N., Alarcon Pardo, A. and Horwich, R. H. 2017. Protected area coverage of threatened vertebrates and ecoregions in Peru: Comparison of communal, private and state reserves. *Journal of Environmental Management*, Vol. 202, pp. 12–20.

Starn, O. 1999. *Nightwatch: the Politics of Protest in the Andes*, Los Angeles, Duke University press.

UNESCO. 2017. *Gran Pajatén* [Online]. United Nations Educational, Scientific and Cultural Organization. Available: <http://www.unesco.org/new/en/natural-sciences/environment/ecological-sciences/biosphere-reserves/latin-america-and-the-caribbean/peru/gran-pajaten/> [Accessed 01/12/2017 2107].