**Solving the Red Panda: News from the Lab**

Recently, the red panda was reclassified from “Vulnerable” to “Endangered” on the IUCN Red List of Threatened Species due to a plausible population decline of 39% over the last three generations, showing that conservation actions for this remarkable flagship species are urgent. Our conservation project “Assessing the Genetic Diversity of Red Pandas” was initiated to clarify the genetic status of Himalayan red pandas (*Ailurus f. fulgens*) using molecular methods. Under the umbrella of a WAZA Global Species Management Plan (GSM) coordinated by Rotterdam Zoo, zoos from all over the world established a reserve population over the last decades. Together with our international team, we aimed to establish a non-invasive genetic monitoring scheme using molecular markers for the genetic assessment of both wild and captive red pandas. As two thirds of all captive red pandas are kept in European zoos, we started with a detailed analysis of theEEP.

Over the last nine months, we contacted zoos participating in the red panda EEP to obtain samples. A total of 224 faecal samples from 95 zoos across Europe reached the conservation genetics section of the Senckenberg Research Institute. This incredible number of samples and the financial support from WWF Germany gave us the power to establish the necessary non-invasive genetic marker system for the red panda. Many thanks to all participants!

The effort turned out to be highly successful. The marker system performed well and the analysis revealed that the red panda population in Europe is stable and genetically diverse, even after several generations and over 40 years in captivity. Both traditional studbook analysis and molecular methods give testimony to the good management of the captive red panda population.

Our first objective has been achieved. But for the overall conservation of red pandas it is important to establish a link between the captive animals and their wild relatives. We need information on the genetic status of red pandas in the wild. Also, it would be important to assess the genetic composition of the other, smaller regional breeding populations of red pandas. We have documented the procedure and welcome any institution from these regions that are keen on working with us.

Furthermore, a new partner joined our conservation project – the Natural History Museum of Erfurt, which has a research focus on the natural diversity of the Himalaya region. Welcome on board!

**Map showing the zoos across Europe that submitted samples for molecular analysis**

...that the red panda population in Europe is stable and genetically diverse...

**Linking ex situ Measures and Ecological Research for the Conservation of the Endangered Psychedelic Rock Gecko**

The psychedelic rock gecko (*Cnemaspis psychedelica*) was only recently described from Hon Khoai Island, Ca Mau Province, beneath the southernmost tip of Vietnam. The species’ name derives from its very bright colour pattern. Only few years after its discovery, the colourful gecko appeared in the pet trade and has been offered for up to 2,000 Euro per pair. Given the fact that Hon Khoai Island covers only 8 km², and facing the alarming development of the illegal collection of this endemic gecko species, we planned together with Khoi Vu Nguyen from Wildlife at Risk (WAR) as a first conservation measure the building-up of a captive insurance colony as basis for a conservation breeding programme. In 2014, together with Cologne Zoo’s terrarium section keeper Anna Rauhaus, we planned and built a gecko house at the grounds of WAR in the southernmost tip of Vietnam in the journal *Der Zoologische Garten*. In parallel, on behalf of the German Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (BMUB), and as legwork for the Species Program, UNEP World Conservation Monitoring Centre, Cambridge, UK, our team has analysed the international trade in the species, the results of which were recently summarised in an overview paper on trade in live reptiles and its impact on wild populations in the journal *Biological Conservation*.

Besides aforementioned preliminary trade analysis and our first and fortunately already successful ex situ initiative, our team also initiated first in situ action with the consent of the local authorities, viz. nature conservation-based ecological field research on Hon Khoai Island. Funded by the BMUB and Rufford Foundation, further supported by the Institute of Ecology and Biological Resources (IERR), the Vietnam Academy of Science and Technology (VAST) and Cologne Zoo, our students Hai Ngoc Ngo and Tan Van Nguyen collected first data about the psychedelic rock gecko’s ecology, population and threat status on Hon Khoai. The first population assessment of the gecko, jointly evaluated with our PhD student Mona van Schingen and Frank Barsch from the BMUB, will be published in the journal *Amphibian and Reptile Conservation*. Our preliminary analysis revealed that the population seems to be rather small, only covering several hundreds of individuals. The preferred habitat, densely forested granitic rocks, is rare and increasingly threatened by human activities (e.g. poaching, building activities, forest destruction, invasive animals). Thus, the timely build-up of an ex situ breeding facility and conservation breeding programme in southern Vietnam was reasonable, as negative influences by anthropogenic impact both on the habitat and density of the population are obvious.

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1. Natural History Museum Erfurt, Germany
2. Senckenberg Research Institute and Natural History Museum Frankfurt, Germany
3. Rotterdam Zoo, The Netherlands
4. Cologne Zoo, Germany
5. Truong Quang Nguyen – Institute of Ecology and Biological Resources, Vietnam Academy of Science and Technology, Hanoi, Vietnam
Stefanie Reska – Zoologisch-Botanischer Garten Wilhelma/Stuttgart Zoo, Germany

Congohounds Project

Virunga National Park in the Democratic Republic of the Congo (DRC) is a UNESCO world heritage site and home to roughly a quarter of the remaining population of mountain gorillas (Gorilla beringei beringei). The species has made a comeback from less than 500 to an estimated 880 individuals in recent years, with most of the mountain gorillas in Virunga being habituated to visits by tourists, thus generating an important income for the park, its people and other national parks in the DRC.

Due to continuous political instability, there is still a large number of rebel groups hiding inside the park, poaching wildlife and clearing rainforest for illegal charcoal production. The situation poses a grave security issue, as rangers are frequently killed during encounters in the field or armed attacks on ranger posts. 150 rangers lost their lives defending the park during the last 15 years, making it one of the most dangerous parks worldwide to work in as a wildlife guard.

To combat poaching, habitat destruction and giving the rangers an advantage in the field, the park’s director Emanuel de Merode asked mantrailing specialist and veterinarian Dr Marlene Zähner in 2011 to establish a canine unit that would enable the rangers to track offenders back to their hiding places. The unit was founded the same year, starting with the selection of well-suited bloodhounds and talented rangers by Dr Zähner and the subsequent training of dogs and handlers in mantrailing techniques over the next three years.

Now, the development of in situ conservation measures is urgently required. For this reason, in March 2016, we have met with the authorities of the Forest Protection Department (FPD) of Ca Mau Province, which is responsible for Hon Khoai. As a first initiative, we have handed over ranger equipment, further materials and self-made panels pointing towards the threats and protection of the psychedelic rock gecko. Together with the Ca Mau FPD and WAR, we try to preserve the psychedelic rock gecko in the long term and jointly engage in habitat protection measures. Here, further population monitoring and extended biodiversity research, currently supported by the Zoological Society for the Conservation of Species and Populations (ZGAP), will be mandatory for the establishment of a reserve.

Our preliminary population assessment and threat evaluation recently already has led to the inclusion of the species in the IUCN Red List of Threatened Species (see http://www.iucnredlist.org/details/97232381/0; our data also were provided for the official application to list the species on the CITES Appendices on the occasion of the seventeenth meeting of the Conference of the Parties (CoP) in Johannesburg, South Africa. Summarized, this is a good example of how interaction between research and conservation in collaboration with zoo engagement can make a contribution towards threatened species’ protection – or which role modern, scientifically led zoos can play in international species conservation.

Psychedelic rock gecko (Cnemaspis psychedelica).

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Gecko house in southern Vietnam with large information banner developed by our team.

© Anna Rauhaus

© Adam Kiefer

Ranger Cristian and his bloodhound Dodi.

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The park used to have the highest density of large mammals anywhere in Africa, but decades of civil unrest and warfare as recent as 2013 have caused a drastic decline in elephants, hippos and other wildlife due to the presence of armed militia and the consequent poaching for bushmeat and ivory. Infant gorillas and chimpanzees also fall victim to the pet trade.

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It is now possible to track a poacher either from a snare or a poached animal over many kilometres, even if the incident has happened several days before and there was heavy rainfall. Identification by the dog is accepted proof to arrest and convict the person. The presence of the canine unit in and around the park on their routine training sessions is already showing a deterring effect on poachers.