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Reintroduction of the 'Critically Endangered' Delacour's langur (*Trachypithecus delacouri*) – a preliminary report

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Summary

In August 2011 the first Delacour's langurs (*Trachypithecus delacouri*) were introduced into Van Long Nature Reserve. This has been the first planned and monitored release of any leaf-eating langur. Prior to reintroduction several studies were carried out on the ecology, behavior, nutrition of the species, population genetics and on habitat conditions and carrying capacity of the area.

Van Long Nature Reserve is divided into four more or less isolated parts. One smaller part of the nature reserve harbors the world's largest population of this species. This population increased through the elimination of poaching and human activities and is currently the only population with long-term viability. Several isolated populations outside Van Long Nature Reserve have been exterminated during the last decade or decreased dramatically due to poaching.

To connect the largest Delacour's langur population in the smaller part of the nature reserve with a relic population in the largest part of the nature reserve is the goal of the reintroduction. A larger population in this part would increase the possibility of an exchange of individuals supporting the panmixia and the genetic stability of the nature reserve's whole population.

Báo cáo ban đầu về việc tái hòa nhập về môi trường tự nhiên loài linh trưởng cực kỳ nguy cấp, vọoc mông trắng (*Trachypithecus delacouri*)

Tóm tắt

Tháng 8 năm 2011, những cá thể đầu tiên loài vọoc mông trắng đã được tái thả về Khu Bảo tồn thiên nhiên đất ngập nước Vân Long. Đây là dự án thả vào tự nhiên đầu tiên và có giám sát sau khi thả đối với các loài khỉ ăn lá. Trước khi thả vào môi trường tự nhiên, những nghiên cứu về sinh thái, tập tính và đặc điểm dinh dưỡng của loài cũng như nghiên cứu về di truyền học quần thể, đặc điểm hệ sinh thái và khả năng cung cấp thức ăn của khu vực tái thả đã được nghiên cứu. Khu Bảo tồn thiên nhiên đất ngập nước Vân Long được chia làm 4 phần tách biệt. Một phần nhỏ trong khu bảo tồn là nơi sinh sống của quần thể vọoc mông trắng lớn nhất thế giới. Quần thể này đang tăng trưởng về số lượng bởi các hoat động săn bắt và tác động khác đã bị loại trừ. Quần thể này dường như là duy nhất có thể tồn tại lâu dài. Các quần thể khác ngoài Khu Bảo tồn thiên nhiên đất ngập nước Vân Long đã bị tiêu diệt hoàn toàn hoặc suy giảm nhanh chóng do hoạt động săn bắt. Mục tiêu của việc tái hòa nhập những cá thể vọoc mông trắng là nhằm tạo sự kết nối giữa quần thể lớn nhất ở Vân Long với các quần thể nhỏ hơn trong một vùng sinh thái rộng lớn. Việc kết nối thành công sẽ làm tăng tính bền vững của nguồn gen của toàn bộ quần thể lớn trong vùng.

Introduction

The Delacour's langur (*Trachypithecus delacouri*) is one of the 'Top 25 Most Endangered Primates in the World' (Mittermeier et al., 2012) and is also considered as a 'Critically Endangered' species (IUCN 2012). The langur is endemic to Vietnam and only occurs in a restricted area in a number of isolated sub-populations in the north of the country (Ebenau et al., 2011; Nadler et al., 2003, Nadler, 2004; 2010a). The species is threatened by intense hunting pressures, agricultural encroachment, and limestone quarrying for cement production. The total number is unlikely to exceed 200 individuals (Nadler, 2010b). Van Long Nature Reserve is thought to contain the largest remaining population of Delacour's langurs (Nadler, 2010a) and this is most probably the only population with long-term viability.

In 1993 the population in Van Long was discovered during extensive surveys by Frankfurt Zoological Society (FZS) to investigate the distribution and status of the species. In 2001 the area was declared a nature reserve and FZS intensified the support for protection through a close cooperation with the Management Board. A community based patrol group was established, trained and the wages are covered by FZS. The group was enlarged over the years from 20 members in 2001 to 28 members in 2011. Five ranger stations were constructed around the nature reserve to facilitate the access of the community patrol groups to the nature reserve. An important activity since the beginning of the protection efforts has been the involvement of local authorities, village leaders, village police, and local groups, like women's club, youth organization, farmers union with regular meetings at the nature reserve head quarters to inform about laws and regulations, to discuss protection activities, violations, and to raise awareness about the unique value of the area.

The monitoring of the largest subpopulations of the species outside Van Long Nature Reserve shows a dramatic decline over the last decade (Le Van Dung & Nadler 2010; Nadler 2010b). Only in Van Long Nature Reserve has the Delacour's langur population increased as a result of a complete elimination of hunting and influence of human activities in the core area of the population.

The elimination of poaching and human activities in the area resulted in the langurs becoming less fearful of human presence. It is easy to observe the langurs by boat from a close distance.

Background for the reintroduction project

Legitimacy

The Delacour's langur (*Trachypithecus delacouri*) as an endemic and critically endangered species occurs in a very restricted distribution area in northern Vietnam. Reintroduction of this species is recommended in the Biodiversity Action Plan of Vietnam (Government of the Socialist Republic of Vietnam & Global Environment Facility Project, 1994). The reintroduction of the Delacour's langur into Van Long Nature Reserve is approved by the Management Board of the nature reserve, the Provincial Forest Protection Authority and the Ministry of Agriculture and Rural Development.

The reintroduction follows the Guidelines for Reintroduction of Non-human Primates (Baker, 2002), and is the first reintroduction of any leaf-eating langur species which follows these guidelines with long-term planning and monitoring.

Locality for reintroduction

The result of protection activities in Van Long Nature Reserve, with the involvement of the local communes lead to the decision about reintroduction in this area. Over the time span of ten years

the population in the core area, the eastern part of the nature reserve, more than doubled from about 50 individuals to more than 100 individuals (Nadler et al., 2003; Ebenau, 2011). But this core population of the species exists in the smallest part of the reserve and the reintroduction should stabilize the population in the whole nature reserve as probably the only one with long-term viability.

Animals for reintroduction

In 1993 the Endangered Primate Rescue Center was established in Cuc Phuong National Park and started breeding programs for highly endangered species. With five Delacour's langurs confiscated from the illegal wildlife trade 20 Delacour's langurs were born between 1996 and 2011 at the center and 16 reached maturity

Implementation of the reintroduction

Studies of the species

Prior to the final decision for Van Long Nature Reserve as a reintroduction locality several studies were carried out on ecology, behavior and nutrition of the species and on habitat conditions and carrying capacity of the area (Klein, 1999; Nguyen Thuy Hue, 2010; Workman 2010a; 2010b). Additionaly a genetic study was carried out which includes also a number of larger subpopulations outside Van Long Nature Reserve (Ebenau, 2011; Ebenau et al., 2011).

Van Long Nature Reserve – the reintroduction site

Van Long Nature Reserve is comprised of four parts which are not completely isolated but which have barriers for primates inhibiting easy contact between the subpopulations and the exchange of individuals (Fig. 1). The two barriers between the three parts of the nature reserve are a small road and an 80 m long dam. The genetic study shows a limited contact between the three subpopulations (Ebenau, 2011; Ebenau et al., 2011). The largest population, with about 100 individuals, exists on the small eastern part of the reserve. The larger western part carries only a relic population of about 20 individuals. In the past this population was reduced due to high hunting pressure. The western part of the nature reserve was chosen as a reintroduction site to support this population for further contact with the core population on the eastern part. The total area of the nature reserve comprises currently about 3000 ha. To provide a larger area for a stable population an extension of the western part is planned with an additional area of about 4000 ha.

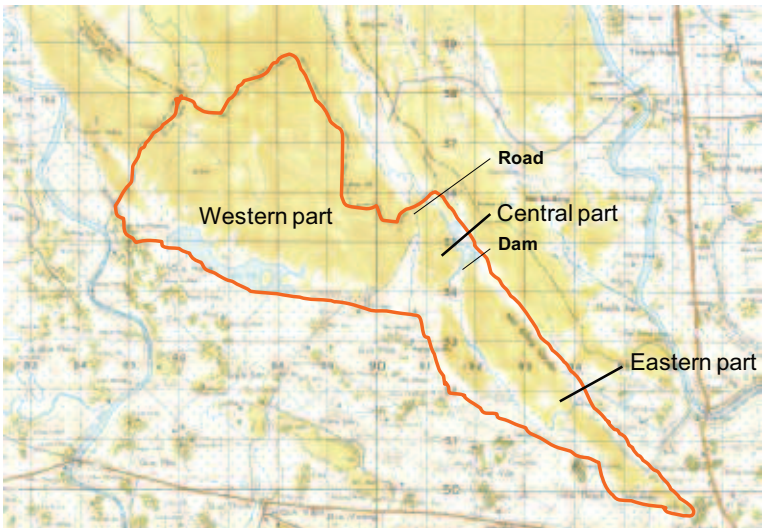

Fig.1. Map of Van Long Nature Reserve.

At the beginning of February 2011 a survey was started to locate the release site in the western part of the reserve. In total one and a half months were spent to checking potential release sites

Animals for reintroduction

A family group of three individuals has been chosen for the reintroduction. All animals are captive born, one male born in 2003, one female born in 1997, and their male offspring born in February 2001.

The animals were kept for three months in quarantine and adequate health screenings were carried out. All three individuals were equipped with GPS-radio collars from e-obs, Germany.

Transfer and release of the Delacour's langur

In Early August 2011, prior to transfer of the animals, a temporary cage was constructed at the release site to check the animals again after transportation from the Endangered Primate Rescue Center and to enable the visual contact of the animals with the new environment. The cage was constructed from 16 iron frames 1,0 x 2,5 m and covered with fishing net. The cage with a surface of 16 m^2 was furnished with a bamboo construction (Fig. 2). On August 20th the three animals were transported in separate boxes from the EPRC to the release site over a distance of about 35 km, first by car and then by hand up to the release site (Fig. 3). The animals were kept inside the cage two days/two nights and on 22nd August released into the nature reserve. Leader of province and district administrations attended the release (Fig. 4), and the release was broadcasted throughout the country by Vietnam TV (Fig. 5).

Fig.2. Temporary cage at the release site. The cage is constructed from 16 iron frames, covered with fishing net. Photo: Tilo Nadler.

Fig.3. Transport of the animals to the release site. Photo: Tilo Nadler.

Monitoring of the reintroduced Delacour's langur

The monitoring of the released animals was planned with data download of the coordinates from the GPS-radio collars over a period of one year, the time which were expected for the working period of the batteries. After this time observation of the individuals and the natural population should continue.

With the move of the animals into the cage, three observers stayed in tents close to the release site to observe the behaviour of the

Fig.4. Leader of province and district administrations attended the first release of Delacour's langur. Photo: Tilo Nadler.

Fig.5. The release of the Delacour's langur was Vietnam wide broadcasted by Vietnam TV. Photo: Tilo Nadler.

animals. The released animals were monitored daily and the coordinates of each individual also daily downloaded.

The downloaded coordinates allows information to be gathered about travel routes, home ranges, habitat use, activity rhythm and daily and seasonal differences, contact with groups of the wild population, reactions by human disturbance, and other behavioral activities (Fig. 6).

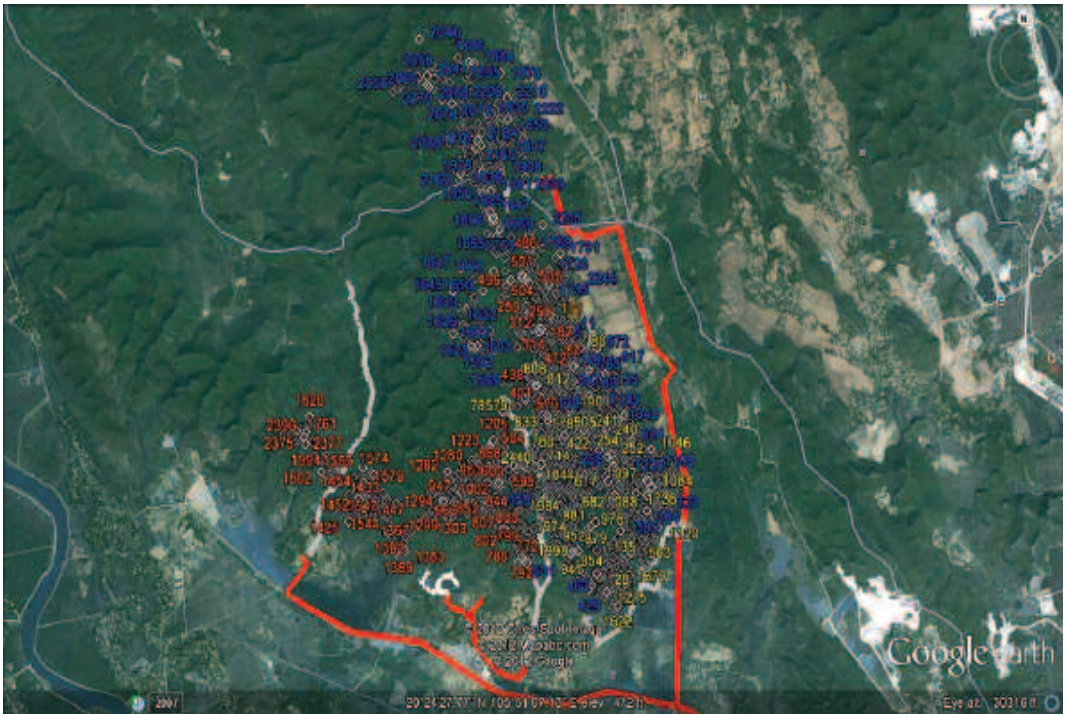

Fig.6. An example of downloaded coordinates of the three released individuals of Delacour's langur in Van Long Nature Reserve.

The release and monitoring of the released animals are the content of a PhD thesis of Fiona Agmen, student from the Australian National University, Canberra under supervision of Prof. Colin Groves. Parts of the release are also the content of a master thesis for the Vietnamese biologist Nguyen Hong Chung.

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The People's Committee and the Forest Protection Department of Ninh Binh Province supported the reintroduction with great engagement. Many thanks for the efforts to recognize the Delacour's langur as a flag ship species for the province.

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