Survival of a small translocated *Procolobus kirkii* population on Pemba Island

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Abstract

Survival of a small translocated Procolobus kirkii *population on Pemba Island.*— A survey to evaluate the distribution of *Procolobus kirkii* on Pemba island (Tanzania) was conducted, 20 years after they had been translocated from Zanzibar in the Ngezi forest park. A team of both expert and trained observers, guided by the authors, censused 68.3 linear km of forest, corresponding to an estimated area of 3.5 km^2 (63.6%) of the protected Ngezi forested area of 5.5 km^2. Nineteen groups of *Cercopithecus aethiops* were observed, with a total of 166 animals and an estimated density of 47.43 individuals per km2, and only one troop of *Procolobus kirkii*. Supplemented by interviewing the local people we obtained an estimate of 15–30 *P. kirkii*, including a small troop outside the protected area. This small population survived but did not increase, possibly due to adverse relations with humans.

Key word: *Procolobus kirkii*, Translocated population, Density, Conservation, Pemba Island.

Resumen

Supervivencia de una pequeña población trasladada de Procolobus kirkii *en la isla de Pemba.*— Se realizó un estudio para evaluar la distribución de *Procolobus kirkii* en la isla de Pemba (Tanzania), veinte años después de que fuera trasladada desde Zanzíbar al Parque Ngezi. Un equipo de observadores expertos y entrenados, guiados por los autores, efectuó un censo a lo largo de 68,3 km lineales de bosque, correspondiente a un área estimada de 3,5 km^2 (63,6%) del área protegida del bosque de Ngezi de 5,5 km^2. Se observaron 19 grupos de *Cercopithecus aethiops*, con un total de 166 animales y una densidad estimada de 47,43 individuos/km^2, y sólo un grupo de *Procolobus kirkii.* Complementando los datos con entrevistas a la población local se obtuvo una estimación de 15–30 ejemplares de *P. kirkii*, incluyendo un pequeño grupo localizado fuera del área protegida. Este pequeño grupo sobrevivía pero no se incrementaba en número, posiblemente debido a las relaciones adversas con los humanos.

Palabras clave: *Procolobus kirkii*, Población trasladada, Densidad, Conservación, Isla de Pemba.

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Introduction

Procolobus kirkii, member of the *Colobinae* family, represents one of Africa's most endangered primate species.

It is mainly an arboreal and folivorous species, sympatric but not in competition with *Cercopitecus aethiops* which is mainly frugivorous (Siex & Struhsaker, 1999a). It has been reported that to contrast the toxins contained in certain fruit *P. kirkii* eats a small quantity of charcoal which allow a slower, but otherwise impossible, digestion (Struhsaker et al., 1997). Its ideal habitats in Zanzibar are areas with ground water, swamp forest, scrub forest or mangrove swamp.

Troops are numerous and can include more than 80 individuals. They have a multi–male structure which is unusual for the *Colobinae* family, with a 1:2 sex ratio with adult females. Fecundity is about 1.5 new–born every 2 years and infant care is intense and shared by several related females. Infanticide is common as in most *Colobinae* when a new male joins the group.

P. kirkii is endemic and confined to the island of Zanzibar. It is present in 3 different forests with a total population of about 1,500 individuals (Zanzibar Unpublished Government Census, 1981). Two decades ago specimens were moved to new areas, mostly small islands, in order to try to inhibit their decline leading to a rapid extinction. These animals are threatened by massive deforestation and furthermore are hunted for their meat and for pet markets (Struhsaker & Siex, 1996).

An assessment of the present survival rate and the diffusion of the small *Procolobus* population (14 individuals) translocated from Jozani Park and introduced in the region of Ngezi Forest, in 1974 (Struhsaker & Siex, 1998) in the north of Pemba Island is reported in this study.

Methods

Data were collected from 15th–20th October 2000. To census the region as thoroughly as possible the forest was divided into 14 transects (fig. 1) varying in length from about 2 to 8 km (totally 68.3 km). Each transect segment was identified by a 1:50,000 topographical map, and located in the field with a GPS and compass.

Teams included volunteers who underwent prior training in the Jozani Forest of Zanzibar to identify the different species of monkeys until consensus with the trainers reached complete agreement.

Transects were walked with a fixed departure, arrival and direction. Each transect was walked by a rotating team of 3 to 4 people, scaled in experience in the field, and randomly changed each day in order to avoid individual bias in data collection (Camperio Ciani et al., 2001).

Forest quality was classified into five main habitat types: gallery forest, mangrove, savannah, swamp and cultivations. To estimate the density of monkeys in each different habitat we calculated the width of our transects in each habitat. To assess the width, as for the case of transects of indefinite width (Caughley, 1977), we used the average distance at first sighting of the *Cercopithecus aethiops* in that habitat.

Field survey was supplemented with interviews among the local people living in villages around and within the Ngezi Forest in search of witnesses and information about the presence of *P. kirkii.*

Results and discussion

A distance of approximately 68.3 km was walked in the five various habitats inside the park. Considering the length and the relative width of our transects, during the study about 3.5 km^2, 63.6% of the total forested area of the park was monitored (5.5 km^2) (table 1).

Sightings almost exclusively regard *C. aethiops*. A total of 19 troops were located from among all habitats except swamps. A total of 166 animals were observed inside the forested region (table 1), mainly sighted in the gallery forest. The estimated total density of *C. aethiops* in the park area is 47.43 individuals per km^2.

Only an elusive sighting of *P. kirkii* was noted, this occurring in the gallery forest in the south

Table 1. Distribution and habitat preference of *C. aethiops:* Tl. Transect lenght (in km); V. Visibility (in m); Nt. Number of troops; Ni. Number of individuals; D. Estimated density; * Distance not calculated because it was a sighting from the boat.

Distribución y preferencia de hábitat de C. aethiops*: Tl. longitud del transecto (en km); V. Visibilidad (en m); Nt. Número de grupos; Ni. Número de individuos; D. Densidad estimada; * Distancia no calculada por tratarse de una observación realizada desde el barco.*

	Tl	V	Nt	Ni	D
Gallery forest	41.5	20	12	95	57.23
Mangrove	5.1	–	1*	27	–
Savannah	8.7	43	4	25	33.42
Swamp	3.3	–	0	0	–
Cultivation	9.7	43	2	19	22.78
Total	68.3	–	19	166	47.43

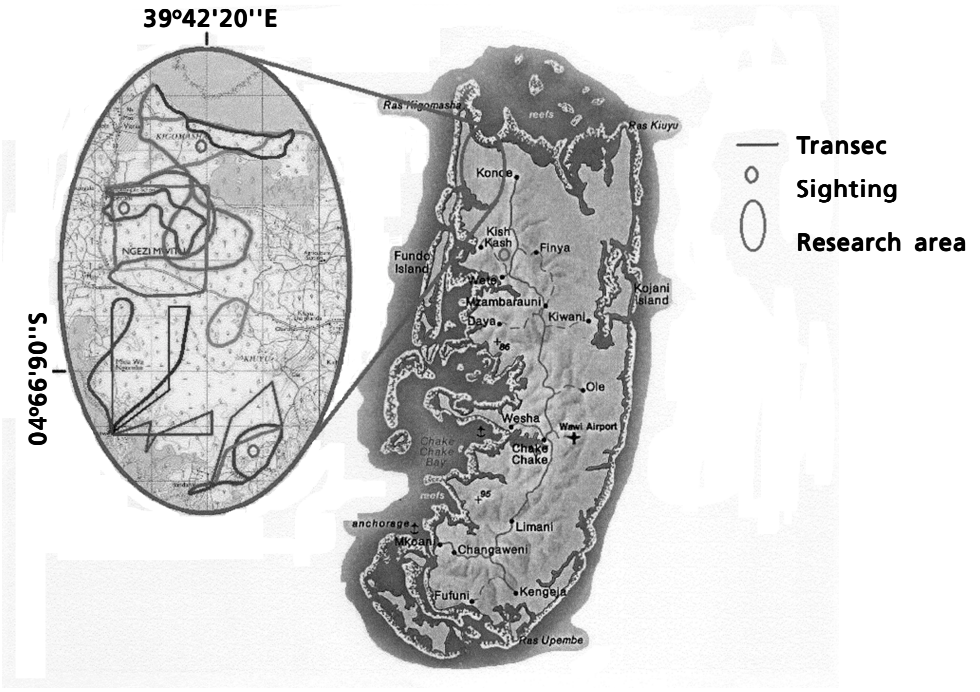

Fig. 1. Pemba island with insert indicating the study area and the 14 transects walked. Circles show the location of recent *Procolobus kirkii* sightings.

Fig. 1. Isla de Pemba con el área de estudio indicada y las 14 transecciones realizadas. Los círculos indican la localización de avistamientos recientes de Procolobus kirkii.

of the Ngezi Park near Bandarikuu village with a count of three individuals. Our field observation, however, was supplemented by frequent interviews with local people regarding recent sightings of the red monkeys (as the *Procolobus* monkeys are known). These interviews confirmed the presence of a small troop of 5 to 7 individuals in the Bandarikuu area corresponding to our sighting. Furthermore, most people interviewed reported recent sightings in two other locations in the park: the first in the Makangale school area, in a mosaic habitat of forest and rubber plantation, with counts of 5 to 8 individuals; and a second sighting, confirmed by most interviews, indicated an area near the east section of the Wumawimbi beach in a mosaic of mangrove and gallery forest, with counts of 5 to 7 individuals. Finally, various people interviewed reported the presence of another small troop of red monkeys, 4 to 6 individuals, 6 km south of the Ngezi Forest park, in a region with abandoned clove plantation, between the town of Conde and city of Wete.

The home range of *Procolobus* is particularly small and all these sightings are too far from each other to be the same troop shifting around (fig. 1). A small population of *P. kirkii* can thus be confirmed that still survives in the Ngezi Forest of Pemba, and some individuals have even moved outside the park area. However, the estimated abundance of the whole population in the Ngezi Forest region does not exceed 15–30 units (less than 6 individuals/km^2), confirming difficulties in the diffusion of these translocated *Procolobus kirkii* populations (STRUHSAKER & SIEX, 1998).

A sympatric cohabitation with a relatively high density of *C. aethiops* should not be a major problem for *P. kirkii* which has very different dietary preferences, and favors mangrove and swamp areas little used by *C. aethiops* (STRUHSAKER et al., 1997). Most problems and risks for their survival and growth in number were suggested that comes from the local people, as in the case of the Jozani park population in Zanzibar (SIEX & STRUHSAKER, 1999b). In the interviews with locals, it emerged that as the result of local superstition, farmers in Pemba fear and occasionally harass this species of monkey as they are considered to bring bad luck.

To promote the conservation of this beautiful, unique and elusive Colobinae population, we suggest the interest to develop awareness amongst the local people that these animals are

not only harmless but that their protection and an increase in numbers will eventually be beneficial in attracting tourists to the Ngezi Park, as occurred in Zanzibar.

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