

RESEARCH

Probable extinction of the western black rhino, *Diceros bicornis longipes*: 2006 survey in northern Cameroon

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Abstract

From 25 January to 8 June 2006, the NGO Symbiose and veterinarians Isabelle and Jean-François Lagrot with their local teams patrolled the distribution area of *Diceros bicornis longipes* in northern Cameroon to assess the status of the last population of the western black rhino subspecies. Over 46 field patrols were organized in the area situated roughly between Faro National Park on the western border and Bouba Ndjida National Park on the eastern border, totalling over 2500 km of patrol effort. Using historical data, results of previous surveys, information from a network of villagers and cooperation with trophy-hunting guides, the fieldwork carried out during the dry season concluded that no reliable sign of rhino presence was found to attest to the survival of the western black rhino. The estimation of around 30 individuals produced by Symbiose in August 2004 was based on fake rhino tracks, which some of the trackers had made to preserve their jobs. Following this survey, the African Rhino Specialist Group of the International Union for the Conservation of Nature, Species Survival Commission, modified the official status for *D.b. longipes*. Thus far classified as *Critically Endangered* with 5 confirmed individuals in 2001, it has now been declared *Probably Extinct*. Symbiose continued the survey through the rainy season until the end of 2006. Despite 23 additional field patrols, no reliable sign of rhino presence was found.

Résumé

Du 25 janvier au 8 juin 2006, l'association Symbiose, les vétérinaires Isabelle et Jean-François Lagrot et leurs équipes ont parcouru l'aire de répartition de *Diceros bicornis longipes* au Nord Cameroun afin d'évaluer le statut de la dernière population de cette sous-espèce de rhinocéros noir. Plus de 46 missions de terrain ont été effectuées sur l'ensemble du territoire qui s'étend du Parc National de Faro, à l'Ouest au Parc National de Bouba N'Djida, à l'Est, totalisant plus de 2.500 km de marche. Basées sur les données historiques, sur les résultats des missions passées, sur les informations recueillies auprès d'un réseau de villageois et sur une coopération avec les guides de chasse, les recherches entamées tout au long de la saison sèche ont donné les résultats suivants. Aucun indice fiable ne permet de croire à la survie du Rhinocéros noir de l'Ouest. L'effectif d'une trentaine d'individus avancé au mois d'août 2004 par l'association Symbiose reposait sur de faux indices. Il résultait d'une falsification des traces par certains pisteurs recrutés, dans le but de conserver leur emploi. A la suite de cette étude, le Groupe Spécialiste des Rhinos d'Afrique de l'Union Internationale pour la Conservation de la Nature, Commission de Survie des Espèces a modifié le statut officiel du Rhinocéros noir de l'Ouest. Anciennement classé « en danger critique d'extinction », avec un effectif de 5 individus confirmés en 2001, il a été déclaré « probablement éteint ». L'association Symbiose a mis en place un dispositif de veille jusqu'à la fin de l'année 2006. Malgré 23 missions de terrain supplémentaires aucun indice de présence n'a été mis en évidence.

Introduction

During the last century, the population of *Diceros bicornis longipes* sharply decreased. This rhino was already on the verge of extinction in central Africa around 1930 (Blancou 1958) because it had been heavily hunted for its horns. It rapidly but only partly recovered during the following decades, because the French colonial administration implemented protection measures (Malbrant 1952; Bourgoin 1958). By 1980 in northern Cameroon, there were at least 100 animals left (Pfeffer 1980). Nowadays, it is most probably extinct in the other countries of its former distribution area; there has been no reliable sighting or report of *D.b. longipes* presence from Central African Republic since the mid-1980s or from Chad since the late 1980s or early 1990s (Pfeffer 2005).

Cameroon's Northern Province was thus the last home for the subspecies. The historical distribution area lies roughly between the cities of Garoua in the north and N'Gaoundere in the south, the borders of Nigeria to the west and Chad and the Central African Republic to the east (roughly between 7°30'N and

9°N and 12°E to 15°E). Most of that range area is a protected territory, shared between trophy hunting concessions and national parks (Faro, Benoué, Bouba Ndjida). In 1997, out of these 25,000 km², the surviving rhinos still occupied around 3200 km² (roughly 13%). At that time, 10 to 18 rhinos, divided into at least seven breeding groups of one to four rhinos each, were still roaming in the area (Walter 1996, 1997; Planton and Walter 1997; Brett 1998).

Conservation of the remaining western black rhinos has been a high priority for the last 15 years in Cameroon. In 2001, the last location and identification WWF survey concluded that five animals had survived plus three unconfirmed (Kock 2001). Because of this low number and the difficulty of implementing a recovery plan, official plans were abandoned.

Following the 2001 survey by M. Kock, the NGO Symbiose (created by Paul Bour and Michaël Walter) started fieldwork to locate rhinos based on track observations. In August 2004, Symbiose produced an estimate of 31 rhinos. But a number of AfRSG members expressed their doubts over the claim that rhinos had survived in such numbers. Early in 2005,



Jean Thaï

Female and calf photographed in Bamingui Bangoran National Park, Central African Republic, in 1974.



Jean-François Lagrot

Cameroon's Ministry of Wildlife and Forest official holding horns from Sopen, a female poached in 1996 after a transmitter had been implanted.

we did a field trip in northern Cameroon to assess the Symbiose methods and results and to bring back photographic evidence of rhino survival. We obtained no photos and the field trip revealed a need for scientific backup of Symbiose's activities.

We travelled to southern Africa in June and July 2005 on a fact-finding trip to meet rhino specialists in South Africa and Zimbabwe, to gain some field training with trackers, and to obtain advice from field scientists in various national parks and game reserves.

Supported by the IUCN French committee and financed by the French Foreign Office and private sponsors, we planned a survey over most of the historical distribution area of *D.b. longipes* in Cameroon's Northern Province during the dry season from 25 January to 8 June 2006. We had essential technical and scientific support from AfRSG members and we brought in an experienced tracker from Zimbabwe.

The project's objectives were

- to assess the previous results produced by Symbiose
- to locate and identify any remaining rhinos
- to quantify and optimize the Symbiose field-work

- to determine the viability of the population by determining whether a minimum population of 5 unrelated rhinos with at least 3 females and 1 male still survives (Brooks 2005)
- to draw up and apply a recovery plan for the population

We based ourselves in Garoua, about 80 km north of the *D.b. longipes* distribution area, and collaborated closely with Symbiose staff members, benefiting from their logistical means and intimate knowledge of the area.

From June to December 2006, Bour and the local team continued fieldwork through the rainy season in areas where they had not completed their survey during the first phase, gathering and verifying any new information.

Methods

To assess the Symbiose results, Jackson Kamwi, a senior tracker from Save Valley Conservancy in Zimbabwe, joined the survey early on, from 23 February to 22 March 2006. He was expected to confirm or reject the tracks recorded by Symbiose, help locate



M. Brunel

Photographed in 1977 in Bouba Ndjida National Park, Cameroon.

the surviving rhinos, and train local trackers. Before his arrival, the first four weeks were dedicated to creating teams, organizing logistics and fieldwork, and testing the survey method. Teams were sent to several favourable sites to collect fresh information and signs of rhino presence in preparation for Kamwi's visit.

After Kamwi concluded he had not witnessed any reliable sign of rhino presence during 11 field trips through the range area and demonstrated that some trackers had been faking spoor for an undefined number of years, the team leaders had to adapt the survey strategy. The third stage of the survey (from 22 March to early June 2006) then consisted of checking as many suitable sites as possible during the remaining time to complete the work started under Kamwi's control.

Organization and materials

In January 2006, Symbiose employed nine trackers and staff, some of whom could not read and one who could not speak French. Two could use a GPS or a satellite phone. Tracking skills were basic; locals

had lost rhino-tracking skills and knowledge of rhino behaviour.

Teams of two to three members were given a GPS, satellite phone, digital camera, customized data-collecting forms, a small kit for collecting dung, and walking and camping equipment. They hired a local tracker at each site.

All supposed signs of rhino presence as well as poaching signs were to be photographed and recorded on standardized forms. Satellite phones allowed communication with headquarters three times a day at a fixed time. Teams were asked to save GPS routes as well as all GPS points, downloaded afterwards on aeronautical Fugawi software (fig. 1).

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Access to the rhino range area is difficult because of the poor road network, mud during the rainy season, security problems because of increasing armed road attacks, and long distances from base (most field trips took teams over 150 km from Garoua). Only expensive motorcycle taxis are available in remote areas. We had two 4x4 Toyota Land Cruisers available for the field missions. When travelling by themselves, teams used

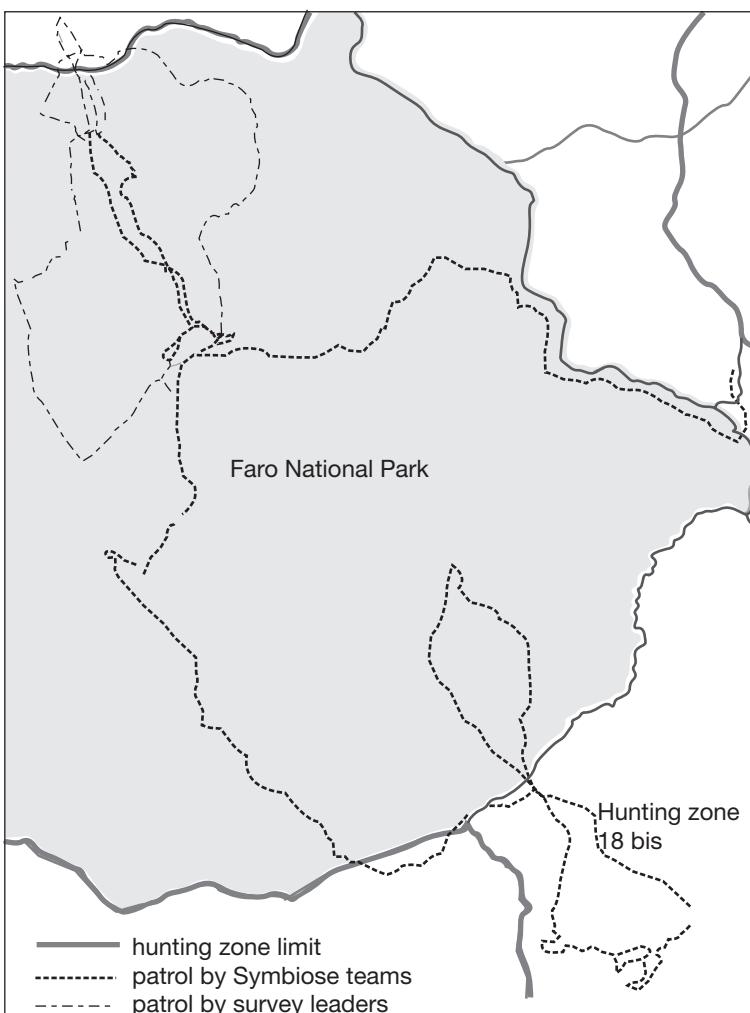


Figure 1. Routes followed during patrols in Faro National Park and hunting zone 18bis during the dry season (other patrols were done during the rainy season). Total: 469 km.

public transport, which turned out to be irregular, highly time and cost consuming, and hard to control. However, previous attempts to buy motorcycles for the teams had not been successful.

VHF radios allowed easy communication between teams. Thuraya satellite phones were used for communication between the base and teams in the field. Photo trapping was quickly abandoned because its reliability at high temperatures (40–45 °C) is low, and there was no evidence of rhino presence.

Bour's microlight plane (Joker 300-Sauper) was used for aerial surveys of selected areas to assess poaching pressure.

Fieldwork

We decided to implement a method suggested by Raoul du Toit (pers. comm. 2006) in a range of sites considered as most favourable throughout the distribution area. Systematic survey of the total suitable area was not possible because the area contained over 25,000 km² of rough and mountainous terrain, climatic conditions were harsh (40 to 45 °C in April) and the road network was poor. The global strategy was adapted according to the results. Three stages can be defined.

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The sites to be checked were selected according to historical data, previous survey results, recent information and findings. The initial method provided by du Toit (pers. comm. 2006) was adapted to local conditions after experimentation in the field.

To search for sign of rhino presence, blocks of 3 x 3 km (instead of 4 x 4 or 5 x 5) were defined. Blocks were patrolled on foot at a minimum of 0.6 km walked per square kilometre. Within the block, favourable rhino habitats or water-holes were patrolled as a priority.

At least 9 to 12 blocks would be patrolled in a few days, progressively outwards in a spiral pattern starting from a central block around the initial sign of rhino. The objective was to find and track any existing fresh spoor (fig. 2).

The method was tried at two different sites during the first month and was to be used extensively after Kamwi confirmed any possibility of rhino presence.

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During tracker Kamwi's field trip, as many suitable sites as possible were visited to assess rhino presence and suitability of habitat within the distribution area of

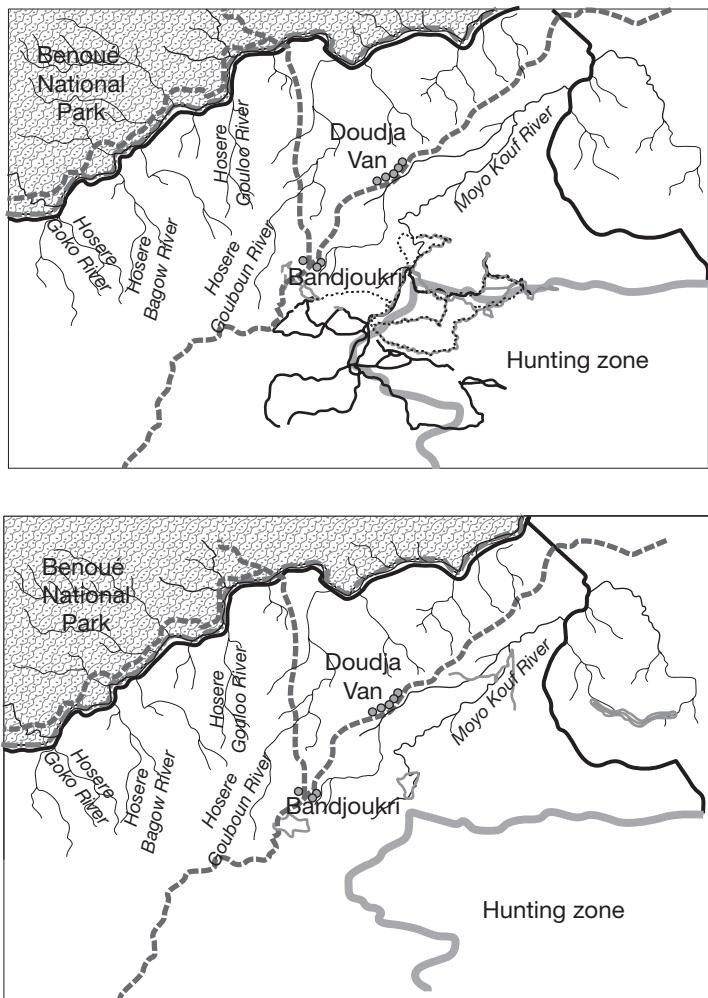


Figure 2. The favourable area of Hosere Makat was chosen to try Raoul du Toit's survey method and was visited again several times with tracker Kamwi. Above, routes of first survey; below, routes of subsequent visits.

D.b. longipes. Teams were sent in the field in advance to patrol several favourable areas; they kept in contact with headquarters to report any fresh spoor found and to allow immediate control by Kamwi. The tracker was also asked to train local staff in the field in two classroom sessions with educational material he had brought with him.

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After discovery during Kamwi's mission that Symbiose staff had made fake tracks, the complete approach of

the survey had to be reassessed. Du Toit's method was found inappropriate when no sign of rhino presence was found. Five trackers were fired and a new one hired.

Kamwi observed no evidence of rhino presence in 11 spots including most of the main historical sites. We decided to complete the survey in the remaining distribution area, searching for any authentic rhino signs.

New teams were asked to produce standardized quantification:

- patrol effort (kilometres walked, GPS routes, team members, date, time, reports to Garoua headquarter by satellite phone, etc.)
- rhino presence and poaching pressure (signs noted, position, date, photographs, poaching material, camps destroyed)

Sites to be patrolled were chosen according to the following criteria:

- historical rhino presence information, data from previous surveys (all available GPS points checked)
- information gathered during the current season and previous years by Symbiose's informer network, new information from local villagers, poachers, and Cameroon's Ministry of Wildlife and Forest

staff. In some places, after study of a detailed map an aerial survey was undertaken in search of suitable rhino biotope

- information from trophy hunting guides operating in the 27 trophy hunting zones. Most of them were aware of the ongoing survey and were willing to cooperate.

In case of any alleged evidence, a team was sent to the site to check the information. If no reliable evidence was found, the team was sent on to the next site. If rhino presence was suspected, survey leaders joined the team to check signs. Criteria to confirm

rhino tracks had been discussed with Kamwi: shape, overlapping tracks, size of front and rear foot, number of tracks and possibility to follow the tracks for a certain distance, stepping pattern, deepness of the spoor in the mud, browsing signs, dung, etc.

Questionnaire for hunting guides and national park wardens

One or more hunting guides spend several months in the field in each of the 27 trophy hunting zones from November to May each year. To benefit from their observations in the field, we prepared a questionnaire asking for any information on past or recent rhino presence as well as an estimation of poaching pressure and status of other endangered species (wild dogs and cheetah were mainly targeted). When possible, survey leaders met directly with hunting guides or national park conservators to fill in the form.

Results

Kamwi's mission

On his first field trip to Hosere Makat, a historical stronghold of the subspecies, Kamwi expressed his doubts about the tracks shown by trackers from the nearby village. No dung or browsing signs were ever observed on subsequent field trips, track shape looked unusual, tracks didn't overlap, running pattern was not logical, rear and front footprints looked similar, dust was thrown in front of the footprint instead of behind it.

Moreover, after Kamwi's training course for our staff, the tracks found became almost perfect, and started overlapping.

On the 11th and last fieldtrip with the tracker, one of the teams was tricked and admitted faking the spoor with pieces of wood or stones. As real tracks had become scarce in the last few years, trackers feared they would lose their jobs and started creating rhino tracks.

Kamwi never observed any real sign of rhino presence in all the areas patrolled, despite suitable habitat in most areas. He pointed out that rhino survival was unlikely in these areas, considering the poaching pressure observed.

General rhino survey

During the first part of the survey (25 January–8 June 2006), survey leaders went on 12 field trips totalling

526 km on patrol (fig. 3). Symbiose's teams went on 35 field missions, totalling over 2000 km on patrol. According to the criteria fixed with Kamwi, no reliable signs of rhino presence were found to attest to the survival of *D. b. longipes* in any of the areas patrolled. All available GPS points for rhino presence signs from previous surveys by M. Kock and M. Walter (GPS points from H. Planton's work are not available) were checked as well as areas surrounding them, but no signs were found. Teams were also sent to investigate any information of rhino presence out of the historical distribution area south of Garoua Boulai, around Banyo and Tchabal Mbabo. Contradictory information regarding rhino presence was collected, but later checking led to nothing of interest.

Collaboration with hunting guides and questionnaire

Paul Bour's long-term good relationship with trophy hunting guides and park conservators was invaluable. We were able to rely on their help for logistics and information at all times. On several occasions, teams were sent to check tracks reported by trackers from the hunting zones. Some hunting guides sent their own teams and best trackers to check on the information they had of possible rhino presence. However, no signs of presence were confirmed. Cooperation was efficient and several times Symbiose teams were able to report to the guides the presence of poaching camps located in their zones.

There were 27 trophy hunting guides; 22 answered the questionnaire. The last rhino sighting was reported as occurring at the end of 1998 in Hosere Makat. All hunting guides answered that they did not believe any rhinos survived in their zones, confirming the survey's results in these areas. Only park conservators from Bouba Ndjida and Benoué National Parks answered they probably still hosted rhinos in their parks. This answer goes against the survey's results, with the poaching pressures measured in Bouba Ndjida National Park being more than twice as high as in the hunting zones. The results of a WWF and Ministry of Wildlife and Forest transect survey in Benoué National Park in May 2006 also found no sign of rhino presence (Gilles Atoga, WWF, pers. comm. 2006).

Poaching

Hunting guides estimate that the hunting pressure is high and increasing. Poaching was observed on every

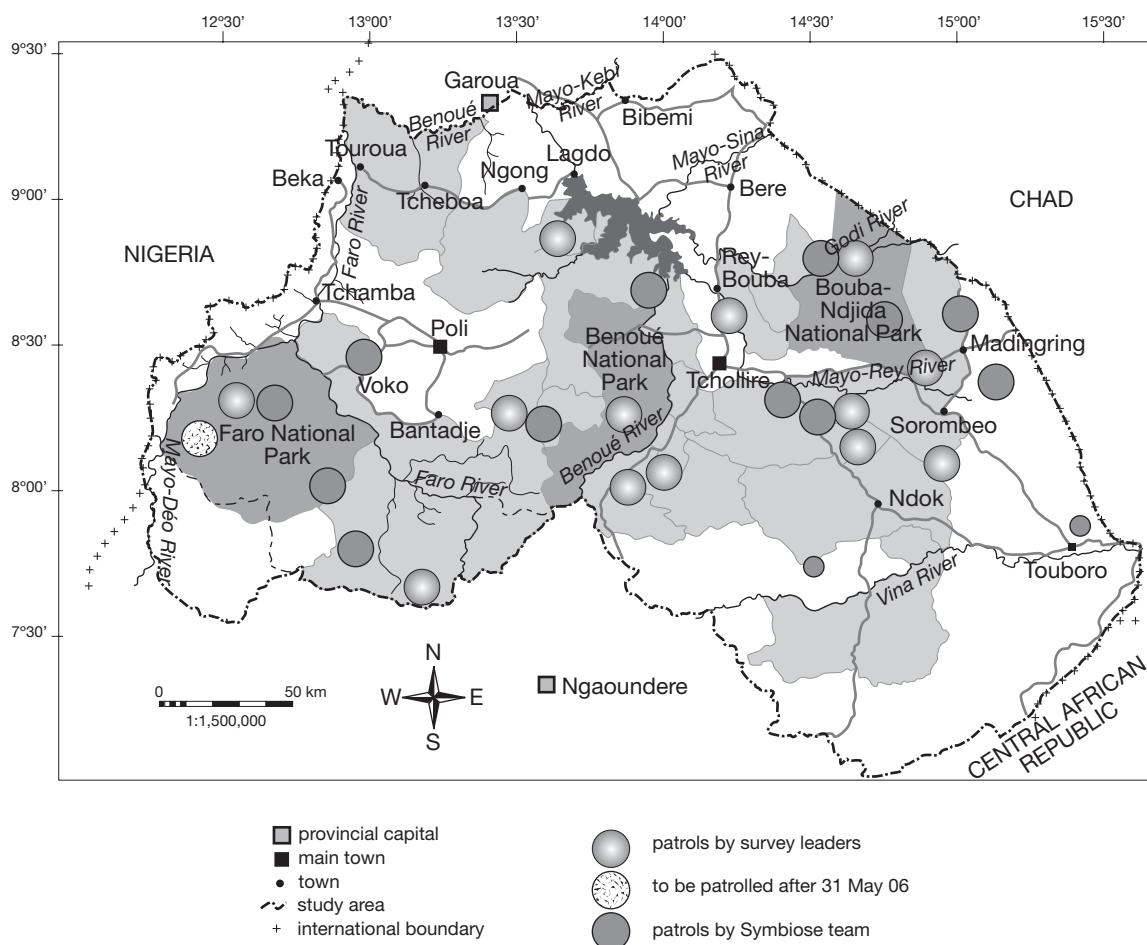


Figure 3. Areas patrolled at the end of May 2006. Dark grey: national parks; light grey: trophy hunting zones. Spots indicate areas patrolled.

field mission during the survey. Quantification was difficult to standardize among the teams. It was decided to consider any event or finding in relation to poaching as one poaching sign, whether it was a snare (or several snares belonging to the same poacher), a poacher, a poaching camp, a wounded or trapped animal, a gunshot, a poisoned waterhole, a fishermen's camp, a lost poached carcass. Between 1 February and 31 May 2006, 18 field patrols out of 46 produced reliable data that were used to calculate a poaching index out of a total of 1621 km of patrol effort:

$$\begin{aligned}
 \text{PI (poaching index)} &= \text{poaching signs} / \text{km patrolled} \\
 \text{General PI} &= 0.094 \\
 \text{Bouba Ndjida National Park PI} &= 0.140 \\
 \text{Faro National Park PI} &= 0.140 \\
 \text{Trophy hunting zones PI} &= 0.063
 \end{aligned}$$

Poaching pressure is 2.22 times higher in these national parks than in trophy hunting zones.

Discussion

A steady decline in rhino numbers over the past 15 years and the lack of protection measures or law enforcement were already strong elements to anticipate pessimistic results.

The 2006 rhino survey does not claim to have patrolled the total possible distribution area. However, all of the most favourable areas have been largely patrolled, from Bouba Ndjida National Park to the east (which historically was the main stronghold) as well as Hosere Makat area to Faro National Park to the west, with the same results. The WWF and Ministry of Wildlife and Forest survey over Benoué National



Jean-François Lagrot

Rhino nails and snares collected during patrols.

Park in May 2006 confirmed that no signs of presence were found in that area either. The enquiry with trophy hunting guides confirmed the survey's results.

One of the main difficulties during this survey was to judge how reliable a piece of information was, especially with regard to the date given for one particular event or finding. Much information on sightings was true but had actually happened several years previously and had become part of local stories. Villager mistrust, information passing through several intermediate persons before reaching headquarters, and difficulty for team members to evaluate the reliability of any information often made it difficult to have a clear idea of how true it was. The skills and reliability of the survey teams were obviously a major problem. Climate and terrain conditions, as well as insecurity were added difficulties.

A few facts raised unanswered questions during the survey.

Although we had information about supposed rhino carcasses, it was never possible to find one. Informers always changed their mind before taking us to the carcass, apparently frightened or threatened by other villagers.

An apparently reliable report of tracks from a trophy hunting guide familiar with rhino hunting in southern Africa in the favourable area of Hosere Kotape remained unconfirmed when checked. The main tracker on that zone said he had not seen rhino spoor for seven years. It was therefore impossible to conclude that a rhino survived in that area, which had been patrolled several times already, including with Kamwi.

The survey teams reported some single, isolated sightings of spoor, described as dating from the last rainy season. In accord with the required criteria, we did not classify these as signs of rhino presence. Further patrols were organized later in those locations during the year's rainy season without results.

According to all personal communications gathered during this survey, it is likely that a very small breeding population existed before an irreversible decline in 2003. The results of this survey suggest that the last western black rhinos were poached during the following years.

Though the habitat of areas patrolled was always favourable to very favourable, the totally uncontrolled poaching problem and the lack of government will do not allow for planning a reintroduction programme.

The question of what subspecies to reintroduce would also be an issue.

Conclusion

This survey tried to assess a situation that has been unclear for the last few years. The recent estimations produced by Symbiose turned out to be based on fake tracks. In search of surviving rhinos, this survey patrolled over 2500 km, including all former strongholds for rhino population, and checked information from a wide range of sources.

No reliable sign of rhino presence was found. On the most favourable sites, an experienced and respected tracker confirmed these results. Systematic survey of the total range area was not possible. But the increasing poaching pressure leaves little prospect of survival of any remaining rhino.

The western black rhino is in all likelihood extinct.

Acknowledgements

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References

Blancou L. 1958. Distribution géographique des ongulés d'Afrique Equatoriale Française en relation avec leur écologie. *Mammalia* 22(1):294–316.

Bourgouin P. 1958. Les ongulés dans les territoires de l'Union Française, *Mammalia* 22(3):371–381.

Brett R. 1998. Development of a recovery plan for the western black rhinoceros (*Diceros bicornis longipes*). WWF/Cameroun Programme Office. 42 p.

Brooks M. 2005. African Rhino Specialist Group report. *Pachyderm* 39:10–12.

Kock M. 2001. WWF Cameroon Black Rhino location and identification project. Final report. 34 p.

Malbrant R. 1952. *Faune du Centre africain français*, 2nd ed. Paul Lechevalier, Paris.

Pfeffer P. 1980. Rapport de mission en République Unie du Cameroun. Projet WWF/UICN no 1707. WWF, France. Unpublished.

Pfeffer P. 2005. Rhinocéros d'Afrique Centrale, l'ultime espoir. *Lettre de la Secas* 41:11, 15, fig. 1.

Planton H, Walter M. 1997. Situation des rhinocéros noirs d'Afrique Centrale (*Diceros bicornis longipes*). Rapport. Projet Biodiversité Nord, Coopération française / WWF. 8 p.

Walter M. 1996. Projet de conservation des rhinocéros noirs au Nord Cameroun. Rapport technique. WWF, Cameroon. 7 p.

Walter M. 1997. Projet de conservation des rhinocéros noirs au Nord Cameroun. Rapport technique. WWF, Cameroon. 7 p.