**Project title:** Distribution and density of Grey Parrot in response to anthropogenic pressures in the buffer zone of Lobeke National Park, East Cameroon: Implication for the conservation

**Introduction**

The Grey Parrot *Psittacus erithacus* is one of the most threatened species by wildlife trafficking in the world. It has been recently upgraded to ‘Endangered’ by IUCN (IUCN, 2020) and listed in CITES Appendix 1 (CITES, 2016) because of the rapid decline of its population due to habitat loss and trapping for pet trade. While international trade has mostly been for the pet trade, in some African countries, Grey Parrots are also exploited for consumptive and non-consumptive use (Tamungang *et al.*, 2016; Assou *et al.*, 2021). Cameroon is the largest exporter of Grey Parrots in Africa and the world, and 80% come from the Lobeke forest (CITES, 2007). Declines have been reported in Cameroon, where the species has now disappeared from many areas where it was common only few years ago (Tamungang and Cheke 2012; Dueker *et al.*, 2019). Lobeke National Park in eastern Cameroon may harbour a large population of Grey Parrot (Marsden *et al.*, 2013), but its ecology, demographic trends and conservation status are still very poorly known in Lobeke as in several areas of its distribution range (Martin et al., 2014; BirdLife International, 2014; Valle, 2015). With the recurring incursion of poachers in the eastern region of Cameroon, the frequent sightings of Grey Parrots carcass in Lobeke forest (MINFOF, 2015) and a continue setting of Chinese forest concessions in Cameroon, there are growing concern to the extension of human pressure on the Grey Parrots.

Quantifying the abundance of parrots is not easy because they are often rare and patchily distributed, fly long distances quickly, and inhabit hard-to-reach areas. In Cameroon several attempts have been made to estimate the minimum population size and demographic trends of grey parrots. The inventory methods used were point-counts (Kamgag, 2007; Tamungang and cheke, 2012), observations from a watchtower (Iyali, 2015; Bille, 2019) and the camera integrated into the drone for counting parrots in the Djangui clearing (Fodom 2020). However, despite these studies, very little information is available on the ecological and
socio-demographic level in the Lobèke National Park (LNP) and its peripheral zone. Common methods for estimating parrot populations are line transects, point counts, and roost counts (Casagande and Bessinger, 1997). Count points are particularly useful in difficult terrain (like LNP) where it is not possible to establish transects or conduct counts while traversing the transect line; for example, terrestrial counts of wetland birds in shallow marshy habitats with soft substrates, or counts in steeply sloping terraced agricultural land (Buckland et al., 1993).

In this study, the main objective was to obtain information on the distribution of the Grey Parrot and threats in order to make informed conservation decisions in the LNP and its peripheral zone. Data collection was carried out in six villages on the periphery of the LNP through surveys of individuals and in four clearings through direct observations (point count methods) of the grey parrot population and trade.

**Methods**

**Project location:** the study was undertaken in the Lobèke National Park and its peripheral area.

**Figure:** Location of Lobèke National Park and its peripheral area

**Data collection:**

Two phases were used for data collection. The socio-demographic data will be a key for the next phase of the study which concerns research ecological. Thus, six villages were
selected for the socio-demographic surveys and four clearings (Makece, Waya, Potto, Djangui) for ecological research. The criteria for the choice of villages and clearings are:

- Villages with a high capture index, villages identified by Kangang (2007) and by the conservation service of the LNP.
- The clearings identified by the conservation service and by the former captors surveyed.

- **Point count sampling to determine the density of grey parrots**

The point count distance sampling method were used to generate an estimate of population density (Walford, 2008). Each point consists of a circle composed of two bands or count rays (Bibby et al., 1992). The first band had a radius of 50 m ($r = 0-50$ m). Any parrot detected outside the 50 m radius was recorded in the second band, the radius of which was fixed at infinity ($r = 50$ m-$\infty$). It was assumed that as the radius decreased, the probability of detecting grey parrots increased, both in terms of the number of birds detected and the numbers recorded in a series of spot counts. The aim was to use as wide a radius as possible, but within which detection of all parrots could be reasonably assured, in both open and dense vegetation types. Thus, the 50 m radius was a compromise between open and closed habitats. All visits were performed during morning hours (between 06:00 and 10:00) as birds are more active in the morning (Bibby et al 1992). Counting began immediately upon bird arrival, as recommended for canopy frugivores (Lee and Marsden, 2008).

**Socio-demographic data**

The interviews were conducted in the field and consisted of asking a set of pre-determined questions including open, closed and multiple-choice questions. Interviews were conducted with guides from the three villages that captured the parrots, all of whom had previously been observed as parrot catchers. Capturers and hunters who were willing to participate in the study were identified through an on-chain referral process (Newing, 2010), whereby participants recommended other potential participants or have asked others to participate. In addition, the questionnaires were also administered to other people present in the village (Farmers, households) and to conservation service personnel.

In accordance with the British Sociological Association’s Statement of Ethical Practice, informed consent was obtained verbally from each survey participant prior to the interview. Participants were informed of their rights to voluntarily participate or decline. No identifying data of participants or households was collected and the established database was completely anonymous (BSA, 2017). Additionally, captors were coded in the database and names are not reported to further protect study participants from harm or discrimination (John et al., 2016).
a-Parrots without long feathers (no longer able to fly) observed in captors during our survey. They use them to trap parrots in clearings (decoy method).

b-Project proponent in the Lobeke National Park office and as you can see, the red-tailed African Grey Parrot is the bird that led to the classification of Lobeke National Park as a UNESCO world heritage site.

c- Outreach campaign in local school
Main findings:
At the end of this study where the goal was to determine information on the distribution of the Grey Parrot and threats in order to make informed conservation decisions; it was found that the distribution of parrots in the LNP and its peripheral zone is conditioned by anthropic activities (captures) and by ecological factors (aggregation sites). The clearings are 83.08% of the main capture sites (decoy method) for parrots and on average 531.88 ± 228.72 grey parrots are captured and killed per year in the clearings of the LNP and its peripheral zone. The total net sale of parrot feathers and heads on the local (Kika, Moloundou), national (Yaoundé and Foumban) and international (Nigeria, Benin, India and Togo) markets amounts to 8.5 million per year. The profit rate of this activity is relatively low for the local (10.42%) and national (21.88%) markets and high for the foreign market (67.71%). The clearings remain the sites par excellence for the gathering of grey parrots, a total of 2559 grey parrots were counted in the clearings with a presence rate of 81.25% per clearing and an average daily observation rate of 0.51% per clearing. Among these clearings, Djangui contains the highest concentration of parrots, i.e. 2522.33 ± 560.12 individuals corresponding to 96.99% of the workforce, Makessé has 42.33 ± 23.09 or 1.63% of the workforce, Waya has 20.33 ± 7.57 or 0.78% of the workforce and Potto which totals 15.67 ± 2.89 parrots or 0.60% of the total workforce.

Figure. Distribution of parrots by group and by clearing in LNP

The greatest concentration of parrots in the Djangui clearing (in the center of the core of the park) is justified not only by the involvement of the conservation process, but also by the
living space which has a large surface area, good drainage and high food content. While the low concentration of parrots in the clearings of Makesse, Waya and Potto in the South part to Mouloundou (Kika and PK14), is linked to the fact that the living space, the presence of food is almost weak or even absent in certain clearings, and also the regular incursion of the captors.

![Figure. The captors arrested by the authorities of the Lobek National Park](image)

Outreach campaign

An awareness campaign was organized in schools in the area to teach students the ecological role of birds. A quiz was organized at the end and prizes (books, pencils, and school bags) given to the best students. An environmental club of rare and endangered birds was created in the area to recruit students interested as ambassadors.

Implication for conservation

The fact that the presence and distribution of *Psittacus erithacus* were predicted by the anthropic activities, the living space, good drainage and the presence of food showed that they are the important factors for the conservation of this bird. Our results can then be used to suggest concrete conservation strategies.
## Budget

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References


