

## **Non-Volant Mammals of the Konashen COCA, Southern Guyana**

Authors: Sanderson, James G., Alexander, Eustace, Antone, Vitus, and Yukuma, Charakura

Source: A Rapid Biological Assessment of the Konashen Community Owned Conservation Area, Southern Guyana: 69

Published By: Conservation International

URL: <https://doi.org/10.1896/054.051.0113>

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## Chapter 8

### Non-Volant Mammals of the Konashen COCA, Southern Guyana

James G. Sanderson, Eustace Alexander,  
Vitus Antone and Charakura Yukuma

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#### SUMMARY

We present the results of a large non-volant mammal survey conducted during a Rapid Assessment Program (RAP) expedition at two sites in the Konashen Community Owned Conservation Area (COCA) of southern Guyana from October 4 - 27, 2006. The purpose of the survey was to assess and document the biological diversity of large mammals and use the results to guide the development of a conservation management plan for sustainable resource utilization by inhabitants of the area. To survey for the presence of large mammals we used three methodologies: (1) tracks, scats, sounds, and visual observations (including hand-held photographs), (2) interviews with local people, and (3) camera phototraps. We suspect the presence of 42 large mammal species and confirmed 21 in the region. According to the 2008 IUCN Red List the Brown-bearded saki monkey (*Chiropotes satanas*) and the Giant otter (*Pteronura brasiliensis*) are listed as Endangered, and the Giant armadillo (*Priodontes maximus*), Bush dog (*Speothos venaticus*) and Brazilian tapir (*Tapirus terrestris*) are considered Vulnerable. Both study sites are utilized as hunting areas for two weeks per year by the local people, but were otherwise pristine, undisturbed tropical rain forest. Our evidence suggests that the sites we sampled contain the full complement of the large mammal species characteristic of the Guayana Shield. Because this region has a very low human population density (0.032 humans/km<sup>2</sup>) the forests of the Konashen COCA is likely to contain an intact faunal assemblage of large mammals.

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#### INTRODUCTION

To implement effective conservation strategies, information on specific local biological diversity is essential. Often such information is unknown, incomplete, or unavailable to policymakers. The large mammalian fauna of the Guayana Shield Region is well known and widely distributed and, because the human population density is low, few species are severely threatened. Though much of the region is unoccupied, some areas support small numbers of Amerindian communities. Residents of these communities are mostly subsistence hunters that clear out small areas for cultivation. The region of southern Guyana such as the Konashen Indigenous District that borders Brazil to the south is an example.

The Konashen Indigenous District (KID) is approximately 625,000 hectares and is legally owned by fewer than 200 Amerindian individuals, mainly of Wai-Wai ancestry, living in the single community of Masakenari (labeled as Konashen on typical maps of Guyana) along the Essequibo River, and just north of the confluence of the Essequibo and Kamoa rivers. Small areas near the village have been cleared for cultivation. During the wet season the nearby landing strip at Gunns (located south of the confluence of the Essequibo and Kassikaityu rivers) in the savanna is flooded, preventing access by air to the village. Masakenari consists of single family houses, a school house, and a community center built of wood on a hill overlooking the Essequibo River. During the wet season the flooded river can rise more than 6 m. The previous village – Akuthopono – approximately 6 km distant, was flooded in 2000, and forced the establishment of Masakenari.

Since little is known of the local biodiversity in many of these remote regions, and because conservation programs include increasing local awareness and interest in biodiversity, a RAP survey of birds, amphibians and reptiles, insects, fishes, and large mammals was undertaken. The objective of the RAP survey in the forests of the Konashen COCA was to provide quick, efficient, reliable, and cost-effective biodiversity data at two sites to support local, national and regional conservation strategies.

## MATERIALS AND METHODS

### Study Area

We conducted our surveys in the dry season at two sites in the Konashen COCA of southern Guyana (N 1°25', W 58°57') from 4-26 October, 2006. The Konashen COCA is the most southerly area of Guyana and borders the Brazilian state of Para along the Acarai Mountains, an arc of mountains running east-west that separates Guyana from Brazil. The Wassarai Mountains and the Kamoa Mountains are located north and west of our study areas. Henceforth, we refer to our study sites as Acarai (N 1°22'59.4", W 58°56'49.2"), and Kamoa (N 1° 31'52.0", W 58°49',40.2"). The elevation range surveyed was 230 - 1300 m, and 250 - 512 m, for Acarai and Kamoa, respectively. The Acarai study site was located on a tributary of the Sipu River, and the Kamoa study site was located along the main Kamoa River. Both the Sipu and the Kamoa rivers form part of the Essequibo River headwaters.

We include here the results of two other camera trapping efforts also performed in the Konashen Indigenous District: the first during February 2006 at Wanakoko (N 1°41'46.3", W 58°38'52.4") located 15 km north of Masakenari along the Essequibo River, and the second along the old trail to Suriname (located at N 1°23'52.8", W 58°22'14"). In the greater Konashen Indigenous District the forest below approximately 250 m was seasonally inundated. At Acarai our camera traps were located in the foothills of the Acarai Mountains at an elevation of approximately 350 m, and at Kamoa our camera traps were in seasonally flooded forest.

## METHODS

To survey for the presence of large non-volant mammals we used three methodologies: (1) tracks, scats, sounds, and visual observations supplemented with hand-held photographs when possible, (2) interviews with local people, and (3) camera phototraps at each of the two study sites. Because these methods provide different confidence levels all results are presented separately. To determine the presence of large non-volant mammalian species, we recorded direct observation of species, track and sound identification, nests, dung and other indirect information made each day during daily

excursions from base camp. Because our records were also collected opportunistically by our colleagues, and some observations may have been repeated, we used this information only to document species presence.

Interviews of local people were conducted using *Neotropical Rainforest Mammals* (Emmons 1999) as a guide. During interviews, individuals were asked to page through the book and identify the photos of mammals they had observed in the recent past in their forest. We avoided making comments that might influence their decisions, and no time pressure was used to coerce responses.

For shy mammals experiencing hunting pressure, camera trapping methods might be more effective than walking transects, especially when observers have different and varied levels of expertise. Camera trap photographs also provide direct evidence for species presence because the pictures are available for anyone to review. The passive method included the use of eight camera phototraps (Trapa-camera, São Paulo, Brazil) operated at each study site. Trapa-camera photo traps are triggered by heat-in-motion and operate with a standard 35 mm camera set on autofocus, loaded with ASA 200 print film, and powered by 5 AA batteries. Cameras were set to operate continuously and to wait approximately 10 seconds between photographs. Cameras were placed at sites suspected of being frequented by various mammalian species. Den sites, trails, feeding or drinking stations, and fallen trees across streams were chosen for camera placement. Cameras were typically located at least 500 m from base camp. Animals were attracted to the camera traps with Hawbaker's Wild Cat Lure #2 (Adirondack Outdoor Company, Elizabethtown, NY USA).

## RESULTS

We observed, identified by tracks, scats, or sound 17 and 19 species of large mammals at Acarai and Kamoa, respectively (Appendix 4), yielding a combined total of 22 species of large mammals. Interviews with local people revealed the possible presence of a total of 42 species of large mammals in Konashen COCA including several species such as the Crab-eating fox (*Cerdocyon thous*) and White-tailed deer (*Odocoileus virginianus*), found mostly in savanna (Appendix 4). A total of 3 and 2 large mammals were photographed by our camera traps at Acarai and Kamoa, respectively, during 18 and 12 camera-trap days, respectively. Our camera traps at Wanakoko photographed 7 mammal species during 32 days of operation. Our local guides also provided direct evidence of species' presences.

## DISCUSSION

Our results suggest that the full biologically rich assortment of large mammals, which characterize the Guayana Shield, remains intact within the Konashen COCA. Because the human population is very low in the Konashen Indigenous

District, hunting pressure is unlikely to have any significant impact on the large mammals.

According to the 2008 IUCN Red List the majority of large mammals we documented to occur were not threatened. However, the Brown-bearded saki monkey (*Chiropotes satanas*) and the Giant otter (*Pteronura brasiliensis*) are listed as Endangered, the Giant armadillo (*Priodontes maximus*), Bush dog (*Speothos venaticus*), and Brazilian tapir (*Tapirus terrestris*) are considered Vulnerable, and the Giant anteater (*Myrmecophaga tridactyla*), the Oncilla or Tigrina (*Leopardus tigrinus*), Puma (*Puma concolor*), and Jaguar (*P. onca*) are Near Threatened. However, these large mammal species, that occur throughout the Guayana Shield, are relatively secure in this area given the low human population density throughout the region.

Because so few camera trap pictures of large animals were obtained, a discussion of photographic rates is not useful. However, the fact that so few photographs were obtained suggests that wildlife occurs in low densities or is extremely shy at the sites we surveyed. We suspect that seasonally flooded forests are less than optimal habitat for territorial, large mammals.

Local pressure on forest resources for fuel wood, building of homes, hunting, and clearing forest patches for cultivation is minimal. With fewer than 200 occupants living within 625,000 ha and readily available fish and birds as alternate sources of protein, the large mammalian fauna is secure. Unlike other intact forests in some regions of the world, our results suggest that the so-called *empty forest syndrome* (Redford 1992) does not occur and, moreover, is not in danger of occurring. Our results show that an intact faunal assemblage of large mammals is secure in the Konashen COCA of southern Guyana.

## CONSERVATION STATUS AND ACTION RECOMMENDATIONS

Because the human density is low and pressure on natural resources is carefully managed by community leaders, the intact faunal assemblage of large mammals typical of the Guayana Shield remains secure in the Konashen Indigenous District.

The greatest threat to biodiversity is likely to come from external sources far beyond the Wai-Wai community. The task of Wai-Wai community leadership is to manage their resources in a sustainable manner and prevent outsiders from jeopardizing the ecological integrity of the area.

Though the intact faunal assemblages of large mammals appear to be secure, the community needs to implement and manage a long-term monitoring program to detect any changes in the occurrence of species, especially those that are listed by IUCN as Endangered.

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