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BEHAVIOUR AND DISTRIBUTION GENERALLY

What species are mostly present at the water point and how do they interact?

Abstract

Water point availability in dry forests influence animal behaviour and constitutes an important resource during the dry season. This study focused on the bird interactions at one point in the Kirindy Forest of Morondava. Six days of observation were carried out early in the morning (5h30-9h) and in the evening (4h30-6h30). The results showed that six species mostly use the pond. Some of them exploit insects, the others drink water. Activity in birds was higher in the morning than in the evening. For species in groups there were intraspecific and interspecific interactions which could have changed during the rainy season. This reflects one aspect of ecology in dry forests.

Mamisolo Raolison, Antananarivo University, Madagascar

Moussa Diarrassouba, Biosciences University, Ivory Coast

Asma Trabelsi, Sciences University Tunis, Tunisia

2002

Vigilance behaviour of crested drongo (*Dicrurus forficatus*), giant coua (*Coua gigas*), and red-fronted brown lemur (*Eulemur fulvus rufus*) at an open and covered area in Kirindy forest

Abstract

During the dry season, the permanent water point in Kirindy becomes particularly important for many animal species. In this study, we observed three species, comparing their vigilance behaviour and group size in open and covered areas, with the assumption that the pond is a risky area compared to the forest. Vigilance behaviour was higher in open areas and the red-fronted brown lemur and the crested drongo come to the pond in bigger group sizes, relative to covered areas within the forest. We also observed a decreasing trend of the incidence of head-cocking by individuals when the group size increased, which might represent a so-called dilution effect. The presence of other species including raptors also increased the vigilance behaviour at the pond.

Ana Rita Mateus, University of Leiden (The Netherlands), Portugal

Harisoa Rakotonzoely, University of Antananarivo, Madagascar

Zingfa Wala J., APLORI, Nigeria

2009

Foraging behaviour of the white-breasted mesites (*Mesitornis variegata*) and their associated followers in deciduous dry forest of Kirindy, Western Madagascar

Abstract

Many studies have shown that birds forage in association with other species, but few have described insectivorous birds habitually following ground foraging birds. This pilot study identified 5

insectivorous species, the crested drongo (*Dicrurus forficatus*), Madagascar paradise flycatcher (*Terpsiphone mutata*), rufous vanga (*Schetba rufa*), long-billed greenbul (*Bernieria madagascariensis*) and blue vanga (*Cyanolanius madagascarinus*) as habitual followers of the white-breasted mesite (*Mesitornis variegata*). The frequency of followers was not dependent on the mesite-group size, nor was the feeding success of mesites dependent on the presence or absence of followers. While accompanying, the crested drongo and paradise flycatcher maintained closer proximity to the mesites than other followers and stole invertebrate prey items directly from mesites. Mesites showed some forms of response to alarm calls made by crested drongo. So this interaction may confer mutual benefits to both the mesites and their followers.

Fidelis Atuo, University of Jos, Nigeria

Christine Wu, University of Vienna, Austria

2010

Territorial response to bioacoustic playback in *Copsychus albospecularis*, Madagascar magpie-robin, in Kirindy Forest

Abstract

Copsychus albospecularis is a common bird endemic to Madagascar, with sub-species *C. a. pica* occurring in Kirindy dry deciduous forest. Bioacoustic playback experiments were conducted in order to observe territorial behaviours of male and female birds in eight territories. Two types of playback tracks were used for the experiments – repetitive ‘repeat-mode’ and diverse ‘serial-mode’. Four behavioural variables were recorded in order to ascertain differences between male and female territorial response, and differences in response to each mode of playback.

Male response to both types of playback was significantly higher than female, showing a significant increase compared to before playback. Male behaviour differed in response to repeat- and serial-mode playbacks, indicating distinct functional roles for the two song modes.

Victoria Betts, Writtle College, University of Essex, United Kingdom

Henry Massa Makuma, Makerere University, Uganda

2010

Drinking behaviour of group and non-group living birds in Kirindy

Abstract

Living in groups is thought to have advantages including predator avoidance, feeding opportunities and social learning. In this project, we identified group and non-group living birds in Kirindy forest, located in western Madagascar, to determine whether they require each other’s presence to drink. We also determined whether their duration of drinking correlates with their vigilance rates. From the 12 species observed, four were group living and eight were non-group living. It was determined that vigilance rate is not significantly different between the two groups. However, the drinking duration was significantly different between the two groups and there were equally intra-group differences; larger birds drunk for a longer period than smaller birds. Approaching predators, whether aerial or ground, tend to disperse other individuals at the site showing the importance of threat of predation for drinking birds.

Stephanie Razakaratrio, University of Antananarivo, Madagascar

Tegomo Alain Awungia, University of Dschang, Cameroon

Kabuku Likando, University of Zambia, Zambia

2011

Is there a difference in bird diversity, abundance and density in logged with grid, logged without grid and unlogged forest compartments in Kirindy?

Abstract

Point counts were used in three different forest compartments in Kirindy Forest to examine bird abundance, diversity and density. A total of 402 individual birds of 28 species were recorded. The logged forest with a grid system had more species and individuals than either logged forest without grids and unlogged forest habitats. The most abundant species were Common Jery, Souimanga Sunbirds and Common Newtonia which were abundant in all three habitats, whilst Madagascar Magpie Robins were absent in unlogged forest and Crested Drongos also less abundant than in logged areas of either type.

Gelaye Gebremichael, Jimma University College of Natural Sciences, Ethiopia

Vololontsoa Misaharimanana Ravalimahery, University of Antananarivo, Madagascar

2012

Bird species richness and abundance in forest and edge habitats in Kirindy Forest, Madagascar

Abstract

The presence of habitat edges in an intact matrix can have both positive and negative effects on species richness, and may also produce differences in characteristics of community species structure. We compared species richness, species structure and habitat preferences of individual bird species in edge and forest habitats in a tropical dry deciduous forest of western Madagascar. Edge and forest habitats had broad similarities in species richness and species structural composition. Habitat preferences of individual species were difficult to identify, but two species displayed a significant correlation with the forest habitat.

Tom Duncan, Charles Darwin University, Australia

Erasme Uyizeye, National University of Rwanda, Rwanda

2013

Nest predation in logged and unlogged sites in Kirindy Forest, Madagascar

Abstract

Forest exploitation has been shown to increase bird nest predation rates mainly in temperate climates, but there is no such a clear support for this hypothesis in tropical forests. In this study we examined nest predation in logged and unlogged sites in the dry deciduous forest of Kirindy (Madagascar) at the end of dry season. An important effect on nest survival was found for the forest type and nest type. Nests in the canopy suffered from different proportions of predation and type of predator than ground nests. Both canopy and ground nests were preyed upon more often in logged forest, but the effect was more significant for terrestrial nests. The overall percentage of predation was almost 50% higher in the site with logging history. The most abundant predators in both types of forest were birds, rodents and a Narrow-striped Mongoose (*Mungotictis decemlineata*). The most significant effect for bird predation was found in ground nests, for rodent predation in canopy nests. We provide hypotheses about possible changes in predator composition and abundance linked to nest survival caused by human disturbance in unique dry seasonal forest habitat in Madagascar.

Matej Dolinay, Masaryk University, Czech Republic

Adam Krupski, University of Warsaw, Poland

2013

DRONGO BEHAVIOUR

Foraging behaviour of the crested drongo (*Dicrurus forficatus*) in the Kirindy deciduous forest, Madagascar

Abstract

Foraging behaviour in crested drongos were studied in Kirindy deciduous forest. The crested drongo showed no difference in its foraging behaviour in flowering and non flowering trees. This was probably because insect prey of drongos were equally common in both tree types. Our observations showed that flies were the most common food type eaten, followed by butterflies and lastly cockroaches. It therefore seems that the drongos were selective in catching different species of food. The main foraging activities were dominated by searching. This was probably due to scarcity of the prey and some of the prey had the strategies to escape from the drongos.

Deogratias Tuyisingize, Karisoke Research Centre, Rwanda

Gideon Muhereza, Makerere University, Uganda

2006

Strategies and success of *Dicrurus forficatus* feeding behaviour

Abstract

Studying the behaviour of a species can provide valuable information for its subsequent conservation. The feeding behaviour of the crested drongo (*Dicrurus forficatus*) was examined to gain knowledge of this regionally endemic bird's behavioural ecology. Hence, we report data collected in Kirindy Forest Madagascar, during seven days in November 2007 that provides insight into the feeding behaviour, strategies, and success of the species in different habitats. The study shows that, even though there is no significant difference of feeding rates or prey captures strategies when comparing individuals from the different habitats, predation is more successful along paths than in open area. We suggest that perch height and distance to prey are prominent factors in determining feeding success rates. Furthermore, human settlements do not appear to disturb the feeding behaviour of *D. forficatus*.

Onja Razafindratsima, Université d'Antananarivo, Madagascar

Jacques-Olivier Laloë, University College London, United Kingdom

2007

PARROT FEEDING

The impact of flower predation through the lesser Vasa parrot (*Coracopsis nigra*) on big and small trees (*Hildegardia* spp.) in Kirindy forest

Abstract

The *Hildegardia* tree, which occurs in the Kirindy forest in Madagascar is dependent on birds for successful pollination. However not only the red trumpet shaped flowers are pollinated but also predated by the lesser Vasa parrot (*Coracopsis nigra*). The impact of this flower predation was investigated on both big and small specimens of the aforementioned tree by fallen flower collection and daily observation of visitation. Both big and small trees were predated at the same level. However, the absolute number of predation was higher on the big trees. In contradiction with the same level of predation, the relative number of visits was higher on small trees. This could mean that the level of visitation is higher than the level of predation. Probably the lesser Vasa parrot is not

only predating but also pollinating the flowers of *Hildegardia*, with a higher level of pollination on small specimens.

Malalotiana Razafindrakoto, University of Antananarivo, Madagascar

Anita Kikkert, Wageningen University, the Netherlands

2004

SUNBIRD FORAGING

The pattern of sunbird visits on *Hildegardia erythrosiphon* and *Combretum* sp. in Kirindy Forest, Madagascar

Abstract

We investigated nectar production by *Hildegardia erythrosiphon* and *Combretum* sp. and the foraging behaviour of two sunbird species, *Nectarinia souimanga* and *N. notata*, on the same tree species. We found that nectar production by *Hildegardia* varies over the day, peaking around midday, and also between individual trees. *Combretum* produces very little nectar with no appreciable diurnal pattern. *N. souimanga* is the more common visitor to the flowers than *N. notata*. The diurnal pattern of *N. souimanga* visits is different on the two plant species: on *Hildegardia* visits peak in the morning and on *Combretum* visits are rare and there is no diurnal pattern. *N. souimanga* visits therefore seem to reflect patterns of nectar production. We observed very few visits by *N. notata* and none on *Combretum*. Use of the two plant species by the two sunbird species differed significantly.

Roma Randrianavelona, University of Antananarivo, Madagascar

Ola Kotsalainen, University of Stockholm, Sweden

2003

Foraging behaviour of the Nectariniidae in Kirindy Forest, using *Chadsia irondoensis* as the focal plant species

Abstract

We studied the foraging behaviours of the sunbirds in Kirindy forest, our aims were to investigate: whether time of day and foraging behaviour are related; whether nectar availability and foraging behaviour are related; and whether tree patch size and foraging behaviour are related. We found that foraging frequency (number of individuals visiting a patch) and flower foraging (number of flowers foraged per visit) seemed to correlate and both had a peak at 6.00 am. We found that nectar volume was highest at the beginning of the day and decreased as the day progressed, this may partly explain the temporal pattern if high nectar volumes are favoured. There was a large variance in the data, which may partly be explained by variance in patch size. We found that the sunbirds preferred larger tree patches, both in terms of frequency of foraging and flower foraging. This could be because the larger patches offered more energy so birds were willing to travel from further a field to the larger patches where they were sure to regain the costs of travel. Another explanation could be trap-lining effect.

Titus Adhola, National Museums of Kenya, Kenya

Emily Permain, Anglia Polytechnic University, UK

2004

Feeding ecology of Souimanga sunbirds (*Nectarinia souimanga*)

Abstract

A six-day study was carried out from 14-19 November, 2006, to examine the feeding ecology of Souimanga sunbirds on three flowering plant species (*Hildegardia erythrosiphon*, *Berchamia discolor* and *Chadsia flammea*) in Kirindy forest, Madagascar. Birds were observed in the morning and afternoon for three hours each with scans of 15 minutes. We found a relationship between time of day, the number of sunbirds visiting, and the number of flowers probed. We observed aggressive interactions between sunbirds on *Hildegardia* and *Berchamia*, but not on *Chadsia*. Souimanga sunbirds spent more time per visit foraging on *Berchamia*, but made more visits to *Hildegardia* than to *Berchamia* and *Chadsia*.

Agnes Anthony Sirima, Sokoine University of Agriculture, Tanzania

Mary Wanjiru Warui, National Museums of Kenya, Kenya

2006

Specialisation pollination? A case study of *Chadsia flammea* and the Souimanga sunbird in Kirindy Forest, Madagascar

Abstract

Chadsia spp is an important dry forest shrub, endemic to Madagascar, whose pollination biology has been relatively little studied. In this project we studied the pollination of the *C. flammea* in Kirindy forest. Our aims were to investigate whether *C. flammea*, with its morphologically unusual flowers, does indeed have specialised pollination by the Souimanga sunbird. To achieve this objective, the following questions were asked: 1) Is Souimanga actually the sole efficient pollinator of *Chadsia*? Or is it just one of many pollinators? 2) What is the relationship between the unusual morphology of the flower and the beak of the Souimanga sunbird? Several factors like time of the day and nectar availability, had significance effects on visitation rates. We found that visitation rate and frequency of bird visits to trees correlated with time of day, being highest in the morning. We found that nectar volume and sugar content were highest at the beginning of the day and decreased as the day progressed. This may partly explain this temporal pattern of bird visitation.

Abdullahi Gabho, University of Nairobi, Kenya

Jacquelin Randriamihaja, University of Antananarivo, Madagascar

Claver Sibomana, University of Burundi, Burundi

2006

Environmental effects on sunbird (*Nectarinia souimanga*) activity and nectar resources at *Combretum coccineum* in Kirindy Forest

Abstract

The visiting and foraging behaviour of sunbirds (*Nectarinia souimanga*) on *Combretum coccineum* flowers was observed in Kirindy forest at the end of dry season. Total number of visiting individuals, inflorescences visited and time spent on foraging bouts were observed over 4 days. Nectar characteristics were recorded for another 4 days. Temperature and relative humidity were taken into consideration throughout. There was a significant difference in the number of individuals, inflorescences visited, and foraging time across the day. No significant difference was recorded between male and female sunbirds with respect to inflorescence visitation and foraging time. There was also a significant difference in nectar volume and concentration of sugar over time.

Sa'idu Abdullahi, Ahmadu Bello University, Nigeria

Hermann Ghislain Chabi, University of Abomey-Calavi, Benin

2013