

# Feeding observations of a Binturong *Arctictis binturong* group in Namdapha National Park, Arunachal Pradesh, India

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## Abstract

A group of Binturongs *Arctictis binturong* was observed feeding on fruits of the fig *Ficus drupacea* in Namdapha National Park, India, in November 2012. The group, three adults and one juvenile, was monitored for 22 hours spread over five nights to record behaviour. The Binturongs spent 50.8% (SE  $\pm$  3.33) of the total time resting, 35.8% (SE  $\pm$  2.82) of time feeding on *F. drupacea* fruits and 13.3% (SE  $\pm$  0.84) of time grooming. They were never observed to interact with Red Giant Flying Squirrels *Petaurista petaurista* or Particolored Flying Squirrels *Hylopetes alboniger*, both of which also fed in the same tree. Local hunters reported Binturongs to be a rare non-target species, killed for food whenever encountered.

**Keywords:** *Ficus drupacea*, fig, flying squirrels, group size, nocturnal activity

## Introduction

Binturong *Arctictis binturong*, the largest arboreal civet (Viverridae), is widely distributed in forest from Sikkim to Myanmar, south-west Yunnan (China) and Indochina to Malaysia, Sumatra, Java, Borneo, Palawan and associated small islands (Corbet & Hill 1992). In India, it inhabits only the northeastern states (Menon 2003). Despite its large geographical distribution range, it remains very poorly studied. It is part of the Asian endemic subfamily of palm civets (Paradoxurinae), comprising highly frugivorous species (Estrada & Fleming 1986, Rabinowitz 1991, McKenney 2011). Binturongs are active day and night and are hypo-carnivores that eat a lot of fruit and a wide range of animal matter (Prater 1971, Lambert 1990, Menon 2003, McKenney 2011, Nettelbeck 1997, Shrestha *et al.* 2011). They might be effective seed dispersal agents for some plants (Colon & Campos-Arceiz 2013). Binturongs are declining through forest destruction and degradation, and through hunting for their fur, meat and scent gland, so are categorised as Vulnerable by *The IUCN Red List of Threatened Species* (Widmann *et al.* 2008).

A group of Binturongs located by chance in Namdapha National Park, India, was followed over several nights to document their behaviour until relocation of the survey camp forestalled future watching of them. The observations are documented here.

## Observation area

Namdapha National Park (Namdapha NP; 27°23'30"–27°39'40"N, 96°15'02"–96°58'33"E) covers 1,985 km<sup>2</sup> in the eastern Himalayan region of Arunachal Pradesh and harbours some of the northernmost tropical rainforests in the world (Proctor *et al.* 1998). Its high habitat heterogeneity, stemming from vast altitudinal range (200–4,571 m asl), allows a rich mammal fauna (Proctor *et al.* 1998, Datta *et al.* 2003). Hunting in the park is prohibited by law but continues at levels sufficient to threaten several species' survival there. Namdapha NP's floral and faunal diversity was detailed by Ghosh (1987) and Nath *et al.* (2005).

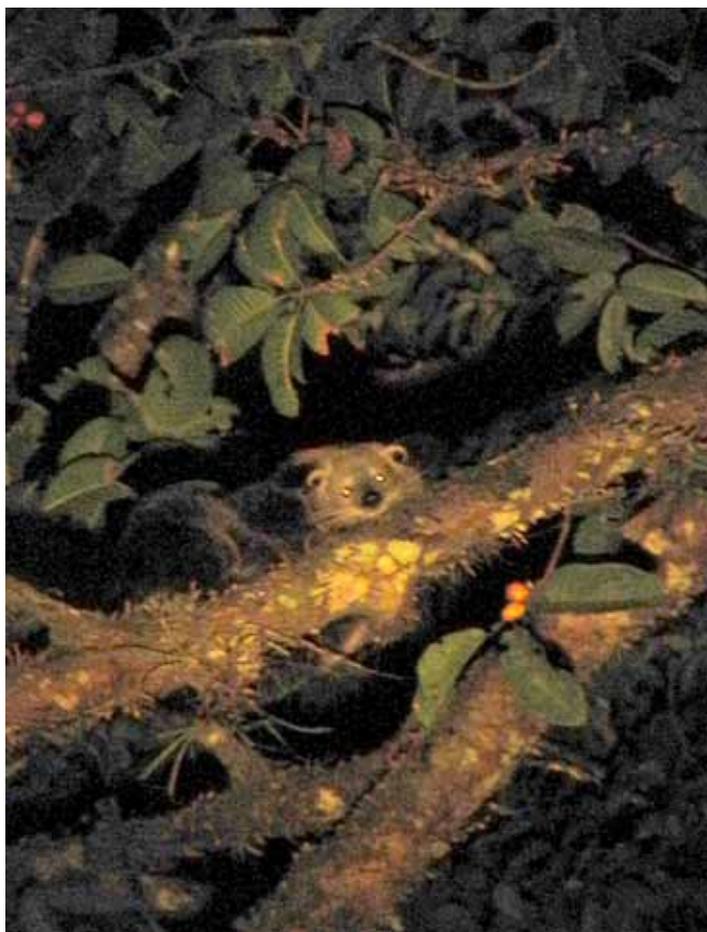
## Methods

During a long-term survey of flying squirrels *Petaurista* and *Hylopetes* in Namdapha NP, we chanced upon a group of Binturongs

between Hornbill Camp and Bulbulia Camp at 27°32'06.2"N, 96°27'14.5"E (datum WGS84; about 625 m asl) in November 2012. The group was monitored for 22 hours on five nights from 16–24 November 2012. Animals were located by scanning the canopy with red lights. Two spotlights (6 V, solar powered) and National Geographic 5× night-vision binoculars were used to observe the animals found. Heights of Binturongs above ground were measured with a Bosch laser distance measurer. Behavioural observations were recorded using scan sampling (see Altmann 1974), which started after sunset at 18h30 and lasted until 00h30 at the latest (because the solar-charged spotlight batteries had then discharged), with scans every 30 minutes. Behaviour was categorised as resting, feeding and grooming. 'Feeding' comprised time in consumption and in walking in order to forage. 'Resting' comprised time spent stationary. 'Grooming' included activities such as complete body shaking, body licking and scratching. At each scan, the behaviour of the first-sighted animal was recorded. Forest guards and experienced hunters in villages surrounding Namdapha NP were interviewed informally and opportunistically about Binturongs.

## Results

A group of Binturongs first encountered, by chance, on 16 November 2012 in a fig *Ficus drupacea* tree was observed and relocated for further observations on four alternate nights. The group when found comprised three adults and one juvenile, but on subsequent nights fewer individuals were sighted (Table 1). Animals were difficult to sex under prevailing low visibility. During the 22 hours of observation (44 scans), the Binturongs were always in the same tree. They fed exclusively on ripe *F. drupacea* fruits, which were bigger and brighter, darker red than unripe fruits (Figs 1–2). Feeding height ranged between 12 and 25 m above ground; the feeding tree was 30.6 m high. The juvenile, seen only on the first night, was observed to follow a single adult and often remained out of view behind thick foliage during spotlight observations. The adults did not seem disturbed by the spotlight, exhibiting no apparently abnormal behaviour. Their activities comprised feeding (35.8%; SE  $\pm$  2.82), resting (50.8%; SE  $\pm$  3.33) and auto-grooming (13.3%; SE  $\pm$  0.84) (Fig. 3). No interactions were obvious between members of the group. The adults often maintained a distance of 5–10 m from each other. Mostly, they fed in the up-



**Fig. 1.** Binturong *Arctictis binturong* resting in a fig *Ficus drupacea* tree, Namdapha National Park, India, 16 November 2012.

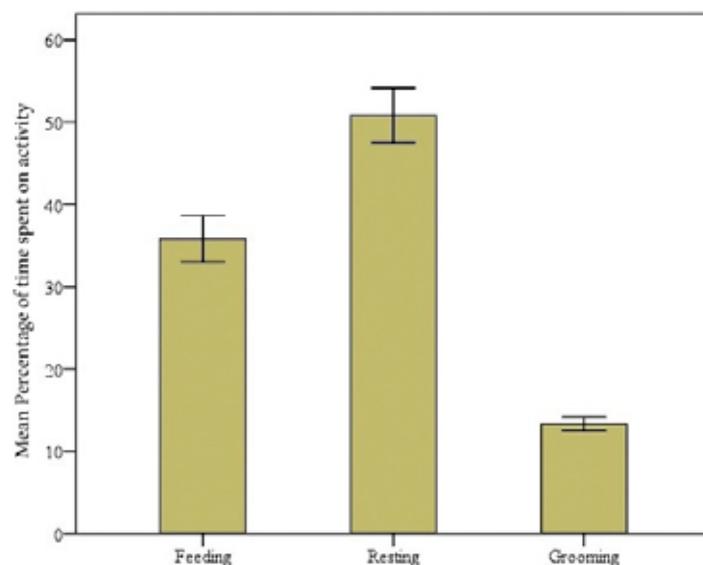


**Fig. 2.** Leaves and ripe fruit of the fig *Ficus drupacea*, Namdapha National Park, India.

per canopy (20 m and above) while they rested by lying down over the large horizontal branches in the middle canopy (10–20 m above ground). They moved into the terminal branches only rarely. Two feeding tactics were observed: plucking fruit directly by the mouth, and grabbing fruit and/or fruit-bearing branches with the front limbs to steer it into the mouth.

**Table 1.** Date, time and number of individual Binturongs *Arctictis binturong* observed in Namdapha National Park, India, in November 2012.

Date	Observation time	Individuals observed
16 Nov	18h30–22h30	3 adults, 1 juvenile
18 Nov	18h30–22h30	2 adults
20 Nov	18h30–22h30	3 adults
22 Nov	18h30–22h30	2 adults
24 Nov	18h30–00h30	2 adults



**Fig. 3.** Percentage of time (mean  $\pm$  SE) spent in various activities by wild Binturongs *Arctictis binturong* in a fruiting fig *Ficus drupacea*, Namdapha National Park, India; first half of night only.

The same tree held Red Giant Flying Squirrels *Petaurista petaurista* and Particolored Flying Squirrels *Hylopetes alboniger*. Binturongs fed immediately after dusk (18h30) until 20h00, but not seemingly after (although there were no observations in the second half of the night), whereas flying squirrels fed in the upper canopy when the Binturongs were resting in middle canopy after their feeding peak. Particolored Flying Squirrel *Hylopetes alboniger* appeared in the tree much earlier than did Red Giant Flying Squirrel *P. petaurista*, but both species could feed in proximity to each other, even on the same branch (Krishna *et al.* 2013). Flying squirrels maintained a typical distance of 8–10 m horizontally and vertically from the Binturongs. No aggression was recorded between flying squirrels and the Binturongs.

Out of 11 experienced hunters and forest guards interviewed, four (36.4%) considered Binturong to be 'rare', two (18.2%; both were forest guards) had camera-trapped the species on several occasions, and the remaining five (45.4%) did not apparently know of the species's existence. According to Kabuk Lego, a forest official belonging to the Adi tribe, Binturong is known as 'situm peya' in the Adi language, meaning 'not bear', although this remains to be validated by direct physical observation shared by speakers of both languages.

## Discussion

Binturong has often been stated to be solitary (Menon 2003) and indeed many sightings are of singles (e.g. Nettelbeck 1997),

although small groups of adults with immature offspring were noted by Medway (1978). Binturongs are well known to eat figs (e.g. Lambert 1990, Rozhnov 1994). Arivazhagen & Thiyagesan (2001) recorded that 63.7% of active time of Binturongs (captive old male and old female, averaged) was spent in resting, while in the present study they spent 50.8%. Conversely, the average time spent feeding by the captives (6.1%) was much lower than in the present study (35.8%). These differences presumably stem from the captive animals' easy access to food but may also reflect the restriction of the present observations to the first half of the night, whereas the zoo animals were watched round the clock (Arivazhagen & Thiyagesan 2001). All grooming observed was auto-grooming. Typically, Binturongs licked their fur, then scratched and, often, shook their body. Rozhnov (1994) suggested that body-shaking was the preferred maintenance activity, followed by licking and scratching.

Binturongs and flying squirrels fed in the same tree, albeit at different heights and at different times of the night. They were never seen to interact, in contrast to the aggressive encounters between gibbons *Hylobates* and Binturongs documented by Nettelbeck (1997).

Local people around Namdapha NP said that they find Binturongs occasionally or not at all. In nearly 110 hours of spotlighting over several nights in other parts of Namdapha NP we never encountered the species. Binturongs are apparently killed as a source of food whenever chanced upon, but were not stated to be a hunters' target, perhaps because they are so rarely encountered.

## Acknowledgements

The Natural Resource Data Management System (NRDMS) division of Department of Science & Technology (DST) and Council of Scientific and Industrial Research (CSIR), Government of India, New Delhi, and IDEA WILD are thanked for financial and equipment support respectively. We thank the Principal Chief Conservator of Forest (Wildlife & Biodiversity), Arunachal Pradesh, and the Field Director and the Research Officer of Namdapha National Park for permissions to survey and for logistical support. Also, we thank Rubul and Raju Borthakur for help in identifying plant species and for language editing, respectively. Also, most importantly, we thank the reviewers Christina Colon and Miyabi Nakabayashi for providing us with necessary comments and suggestions that helped us improve the manuscript. Last but not the least, we are grateful to Erebo Chakma, Bironjay Basumatary and Tinku Chakma for their assistance in the field.

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