Rice-eating jackals of the Rann of Kachchh

The golden jackal (*Canis aureus*) is one among the dog family members that has a wide distribution from Africa to South Asia and southeastern Europe[1]. In western India, their density was estimated at 2/km^2, where they inhabit the harsh drylands[2,3]. In the African savannah, the jackal density reaches up to 4/km^2. These opportunistic omnivores feed on various organisms ranging from insects to vertebrates; they also scavenge on carcasses of ungulates and congregate near garbage dumps[4]. At Kalo Dungar (meaning black hill), Gujarat, India, many jackals gather twice daily near an ancient Dattatreya temple to feed. It is the highest point (462 m) from where a panoramic view of the Great Rann of Kachchh can be seen[5]. The Great Rann is India's extensive salt marsh that lies along the Pakistan border.

During a field visit on 18 June 2011, we saw 26 jackals at dusk feeding rice sweetened with cane sugar provided by the priest. The food was placed on a circular cement platform (1 m hight/3 m width) that served as a dining table (Figure 1). Each meal consisted of 8 kg of cooked rice and 4 kg of cane sugar. As soon as the priest rang the temple bell at dusk, wild jackals emerged from the scrub forest. Some ran around restlessly in anticipation of food half an hour before – a conditioned reflex connected with the sound of bell and food[6]. When the food was placed, all the jackals rushed for a bite. The feeding frenzy lasted for 15 min and all of them vanished subsequently into the darkness. The jackals looked healthy and only a few domestic dogs were seen chasing them around the feeding site.

The tradition of feeding the jackals in the temple goes back to several decades. The priest told us that the jackal density started to decline from >100 before 2009 to <50 recently, which needs further research. Kalo Dungar appears to be the only site in India where a large number of jackals congregate daily and timely in an extraordinary fashion to feed on human provision. This odd habit certainly provides an opportunity for wildlife students to study the complex behaviour of one of the elusive nocturnal mammals that roam freely in the remote Indian frontier region of Kachchh.

Figure 1. Wild golden jackals congregate to eat rice at Kalo Dungar, Gujarat, India.

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Bumblebee pollination in large cardamom of Sikkim Himalaya

Deka *et al.*[1] report *Bombus breviceps* as an additional pollinator of *Amomum subulatum* in Sikkim Himalaya. This information is useful as *A. subulatum* is a pollinator-limited commercially important plant[2,3]. Sinu and Shivanna[2] reported that *Bombus haemorrhoidalis* was the only efficient pollinator of *A. subulatum* and elaborated the factors that could determine the pollination efficiency of floral visitors, including bumblebee and honey bee. Later, Sinu *et al.*[3] reported the pollination efficiency of each caste of *B. haemorrhoidalis* and additional pollinators of *A. subulatum*.

Interestingly, the studies[1,2] took place in the same plantation (Kabi, 1594 m asl). Deka *et al.*[1] established *B. breviceps* as a pollinator of *A. subulatum* for the reason that the former is larger-bodied than *B. haemorrhoidalis*. The morphometric comparison was made by studying just three specimens of each of the species. The conclusion and comparison[1] are meaningless unless they clarify the following: (i) On which caste or sex of the bumblebee specimens were their measurements made? (ii) How did they exclude other species with the same colour pattern?

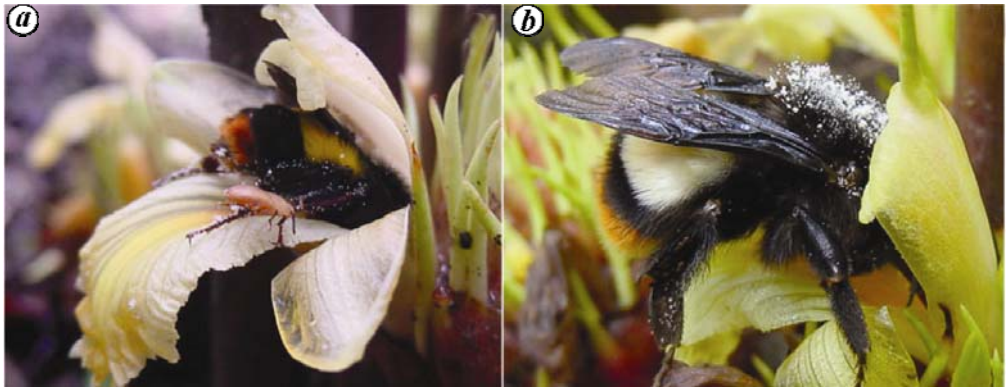

Figure 1. A worker (***a***) and a queen (***b***) bumblebee of *Bombus haemorrhoidalis* collect nectar from *Amomum subulatum* flowers.

Colour pattern and size are the two most obvious characters used to separate bumblebee species[4]. Bumblebees have three castes in a colony – queen, worker and male. Queen bumblebees tend to be rather similar in size within a species, and differ between species. Workers of most species range considerably in size within species and overlap considerably between species. Within a species, queens are the largest individuals (Figure 1). Males tend to be longer and slender, but with longer antennae and an extra abdominal segment they overlap in size with the larger end of the worker size range.

In view of the significant variability in the size of different body parts of bees among species (table 2 in Deka *et al.*[1]) and images of bumblebees[1], I requested Paul Williams[4], curator of bumblebees at the Natural History Museum, London, to kindly provide body size of different castes of *B. haemorrhoidalis* and *B. breviceps* that are deposited in their collection. The body length (26 mm) and head length (8 mm) of queen *B. haemorrhoidalis* are substantially larger than those of *B. breviceps* (20 mm and 7 mm respectively). The body length of a worker bee of *B. haemorrhoidalis* (15–16 mm) was also larger than that of the worker bee of *B. breviceps* (13–15 mm). These findings contradict those of Deka *et al.*[1]. *B. breviceps* has six large teeth (a property that allows a bumblebee to become a nectar robber), unlike *B. haemorrhoidalis* that has only three teeth. It appears that Deka *et al.*[1] may have confused different castes and sexes of bumblebees due to variation in colour pattern and sizes among the species while measurements were being made.

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Response:

We thank Sinu for his comments. We concur with him, that the taxonomy of the bumblebees is indeed difficult and at times confusing. However, we would like to clarify that the specimen studied (Hymenoptera – det. NPIB, RRS No. 1-4/09 in IARI, New Delhi) was reviewed by specialists in the Natural History Museum, London and identified as *Bombus breviceps* Smith, family Apidae. The studies reported in the concerned paper were carried out during the 2007–2009 flowering season.

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