Threat to wildlife from carnivorous pets: A case of cat attacking Indian Pipistrelle *Pipistrellus coromandra* (Gray, 1838)

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Ecology of urban wildlife is sparsely known despite its relevance in sustaining exclusive populations of many species and instilling environmental awareness among citizens. While a number of species have adapted to human modified habitats, domestic pets pose an impending risk to their populations. We report such an incidence from the Wildlife Institute of India (WII) campus in Dehradun, Uttarakhand (30^0 17' 2.47"N 77° 58' 30.48"E), a semi-natural habitat of forest and human-built areas with a large interface between wild and domestic life (Figure 1). On April 15, 2013, at 22:15 hrs, a semi-domesticated cat was spotted with an unusual hunt. A small bat was rescued from its mouth. The rescued animal was still alive, injured with visible but very small blood stain, a hole in patagia, and breathing rapidly. The animal was covered in cloth and kept in a box away from disturbances to relieve its stress and come out of trauma. Holes were made in the box for air circulation and continuous fan was supplied to lower the body temperature of the animal. After the animal became active and commenced normal behaviour, it was examined, measured and identified to species level. Despite a little injury caused by the cat, there was no critical effect on its flight as it was observed flying comfortably within confined space. The bat, therefore, was set free before dawn, and it flew away successfully.

Rescued Indian Pipistrelle. Full view of the animal in hand (a hole in right side patagia is visible)

Animal kept in box after the rescue

The rescued bat was identified as a male of Indian Pipistrelle *Pipistrellus coromandra* (Gray, 1838), also called the Coromandal Pipistrelle or the Little Indian bat. Order Chiroptera is one of the 26 mammalian orders, characterized by the ability of sustained flight. The order is divided into two sub-orders: Microchiroptera and Megachiroptera. Small body size and absence of claw at the second toe of the forelimb of the rescued bat indicated it to be a michrochiropteran. Species level identification was done with the help of keys to identification of South Asian bats (Srinivasulu *et al.* 2010). It was classified to the family Vespertilionidae based on its small eyes, well developed tragus, long tail, interfemoral membrane covering the tail, absence of nose leaf or dermal ridge on muzzle, and a slightly longer second phalanx of third finger in forelimb than the first phalanx. Further, it was classified to the genus *Pipistrellus* based on its short and broad ears, short and wide tragus with rounded tip, dentition characteristics, and the absence of clearly visible anti-tragus. Morphometric measurements of head to tail length (75 mm), ear pinna length (7 mm), forearm length (34 mm), condylocanine length (11 mm), an occlusion to form a bicuspid canine of the upper jaw and interfemoral membrane having sparse and dark coloured hairs near the body

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Close view of facial characters of the bat

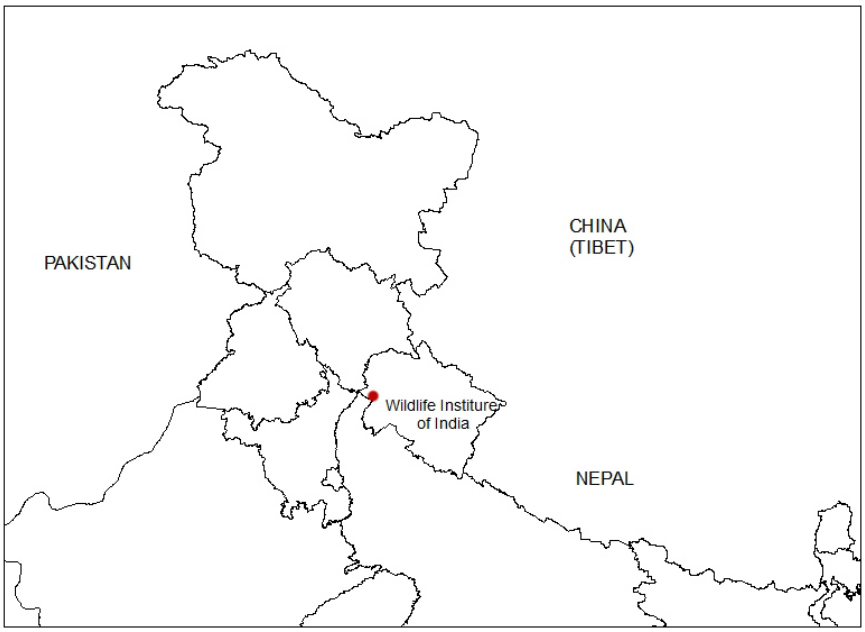

Figure 1. Location of the bat rescue- Campus of Wildlife Institute of India, Dehradun.

dorsally and ventrally confirmed the species to be *Pipistrellus coromandra* (Gray 1838).

P. coromandra is found in small groups in forested, agricultural and urban areas, and its roosting sites include trees, cracks and crevices in buildings, roof tiles of huts, old buildings etc. It feeds on flies, ants and small insects; and are seen in fast erratic foraging flights. The species is found at elevations ranging from 185 m to 2769 m above mean sea level (Molur *et al.* 2002). Its life history comprises of three breeding seasons with 2 pups per season (Bates and Harrison 1997, Csorba 2008). Hibernation has been evident in this species from the northern parts of the country (Prater 1948). *P. coromandra* is listed as Least Concern in the Red List of IUCN in view of its wide distribution, therefore, presumed large population.

The WII campus is spread over 80 acres, and with a large portion under mixed Sal forest, agricultural fields of the adjoining village Chandrabani, and some unused rooms and structures, it offers a variety of roosting and foraging habitats for different bat species. The campus holds a rich faunal biodiversity, estimated at 310 species of birds, 90 species of butterflies, 16 species of moths, 22 species of reptiles and 17 species of mammals (http://www.wii.gov.in/biodiversity). The number of bat species present within the campus is not known, while a substantial number of cats and dogs could be hunting on them and other fauna without being frequently detected. Incidental records of cats and dogs hunting on ground-dwelling birds, rodents, mongooses, skinks, juvenile Monitor lizards and shrews have also been reported from the campus.

Carnivorous pets, if kept without movement restrictions, can follow their natural instincts and hunt available prey in the surroundings. While their populations are sustained by human food provisioning (pet food and garbage), they are known to kill their natural prey as substitute food. Stray dogs have been reported forming hunting packs and killing wild animals as well as livestock (Bhatta 2008; Habib *et al.* 2013). Cats particularly have been reared in homes to hunt on rodents for thousands of years. A considerable impact of domestic cats on wildlife of the United States of America has been estimated where free-ranging domestic cats kill 1.4–3.7 billion birds and 6.9–20.7 billion mammals annually (Loss *et al*. 2013). Presence of domestic/semi-domestic cats and dogs turns into a concerning issue around wild/ semi-wild habitats. Such areas are not only important for big, charismatic, well-known and threatened species, but also for small, cryptic, ignored and often Data Deficient (DD) species. Carnivorous pets around such areas could impose a threat to many small mammals, birds and reptiles by hunting them, and such events should be avoided to the best possible extent.

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