Predators of swiftlets and their nests in the Andaman & Nicobar Islands

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The Andaman and Nicobar Islands are inhabited by two species of swiftlets: the echolocating Edible-nest Swiftlet *Aerodramus fuciphagus inexpectatus* and the non-echolocating Glossy Swiftlet *Collocalia esculenta affinis*. Both taxa are endemic to the islands where they habitually nest and roost inside caves, crevices and rock shelters (Sankaran 1998, 2001; Koon & Cranbrook 2002; Naguyen *et al*. 2002). In addition, the Glossy Swiftlet also roosts and nests in man-made structures like buildings, houses, jetties and bridges. Edible-nest Swiftlets, under enormous pressure from the bird's-nest trade, have become endangered in the archipelago, having faced an estimated population decline of up to 80% in a decade (Lau & Melville 1994; Sankaran 1995, 1998, 2001). Some colonies of the Glossy Swiftlet are also exploited despite the low proportion of saliva used in their nest construction, which reduces the market value of the nests.

Nest-site selection by swiftlets is believed to be primarily based on avoidance of predation. Nest safety is likely to be influenced by the specialised search strategies of the potential predators (Cody 1983; Martin 1995). This means that documenting nest predators is of great interest in understanding the nest-site selection of the species and the benefits of their adaptations towards it.

Swiftlets are adapted to nest on walls and ceilings, both in complete darkness as well as in poorly lit zones of caves. Echolocation appears to be a strategy of the members of genus *Aerodramus* that enables them to roost and nest in the dark zones of caves, free from visually orienting predators or competitors (Fenton 1975; Medway & Pye 1977). Despite this, swiftlets are not without depredators.

Our study of these species in the Andaman and Nicobar Islands spans almost 13 years, from 1997 to 2009. During this time, we have observed several instances of predation of nests, eggs, nestlings and adult swiftlets. Across the distributional ranges of these swiftlets, their predators include both vertebrates (e.g., owls, raptors, snakes, geckoes, bats, cats, and rats), and invertebrates (e.g., cockroaches, lice, flies, giant crickets, and centipedes), (Sankaran 1998; Koon & Cranbrook 2002; Naguyen *et al*. 2002). In our study, with the species conformed as predators of swiftlets, some potential predators were also observed inside caves. Our observations on the potential predator species and the species conformed as predators of swiftlets and their nests are summarised in Table 1. We could not confirm whether the potential predators indeed depredated nests of adult swiftlets.

Table 1. Predators of swiftlets and their nests in the Andaman & Nicobar Islands

Species	Description
Brown-Hawk Owl *Ninox scutulata obscura*	Individuals were observed hunting both species of swiftlets in the cave openings of Chalis-ek and Interview islands, in North & Middle Andaman, while the birds entered or exited from the caves at dusk and dawn, during May and June of each year from 2001 to 2008. In May 2005 an individual was also seen roosting just bellow the Edible-nest Swiftlet colony on the man-made scaffolding inside the cave at Interview Island.
*Besra *Accipiter virgatus*	According to the nest collectors, Besras were recorded hunting swiftlets near the cave openings and also in the dim-lit zones inside the cave in North & Middle Andaman and Baratang Island, round the year.
Large-billed Crow *Corvus macrorhynchos*	In the morning of 19 March 2007, a Large-billed Crow, while in flight, was observed preying on the breeding colony of Glossy Swiftlets, under Panighat bridge in North & Middle Andaman Island.
*Red-tailed trinket snake *Gonyosoma oxycephalum*	A known bird predator (Whitaker & Captain 2004), this species was found near cave openings and inside caves, close to the swiftlet breeding colonies, at Chalis-ek North Andaman and Interview Island, during the breeding season of the swiftlets in February 2002, May 2005, May 2007 and January 2009 (Fig. 1). We did not directly observe predation.
*Reticulated python *Python reticulatus*	A common visitor to the caves, it is known to prey on swiftlets in other regions (Koon & Cranbrook 2002), but we did not observe predation. During the survey in 1997 an individual was encountered in a cave on Great Nicobar.
*King cobra *Ophiophagus hannah*	The species was observed resting in the crevice inside the cave at Bartang Island. We believe that King Cobra can be a potential predator of the swiftlets or the bats inside the cave.
*Vipers *Trimeresurus* (unidentified sp.)	During the survey in 1997, inside the caves at Pambuka and Pagget islands, vipers were seen resting near the swiftlet colony, most probably for hunting the adults approaching nests and also flying from the nests. These species were never observed predating on the swiftlets or their nests.

Table 1. Predators of swiftlets and their nests in the Andaman & Nicobar Islands

Species	Description
*Sea snake (unidentified sp.)	During the survey in 1997, sea snakes were seen resting under the swiftlet colony in the coastal caves in Nicobar Islands. They were presumed to be predating on the fallen chicks or eggs. Predation was never observed.
*Lizards (unidentified spp.)	Geckos from south-eastern Asia were recorded predating on swiftlets eggs in houses. In the cave at Interview Island we recorded a lizard moving in the Edible-nest Swiftlet colony. We did not observe any type of predation of the swiftlets by the lizard.
Crabs (unidentified spp.)	Different species of crabs were found predating on fallen swiftlet chicks and also scavenging on dead ones. During the survey in 1997 crabs were observed inside most of the coastal caves in Andaman and Nicobar Islands. Under Mayabunder jetty, in February 2007, an individual was observed predating on a Glossy Swiftlet chick that had fallen from the nest.
Spider (Order: Arachinida)	At Great Nicobar a Glossy Swiftlet was caught in a spider's web; the spider took almost three days to finish sucking it dry (Manish Chandi, Per. comm.; Fig. 2). In another instance, during June 2006, an adult Edible-nest Swiftlet was observed caught in a spider's web within 200 m of the nearest cave on Interview Island.
Ants (Order: Hymenoptera)	Red ants are one of the major predators of eggs and chicks inside caves. In almost all the caves on Interview Island and Chalis-ek ants were seen attacking newly hatched chicks (Fig. 3) and also feeding on the material inside the eggs by making a hole in the egg.
Cockroaches (unidentified spp.)	Not a conventional predator, cockroaches inside caves reduced the breeding success of Edible-nest Swiftlets by feeding on their nests. In the several caves on Interview Island this incidence was observed. There is a cave on Interview Island called Cockroach cave because of their high number and rate of nest predation.
*Crickets (unidentified spp.)	Giant crickets in south-eastern Asia are known predators of swiftlets. Crickets were also encountered in the caves at Baratang Islands during the survey in 2007, but were never observed predating on the swiftlets.
Domestic cat	During cyclonic weather of April, May and June in 2004, 2005, and 2006, in front of the police station at Mayabunder, North and Middle Andaman, when Glossy Swiftlets foraged close to the tar road, a domestic cat was observed hunting them by hitting them with its forelimb.
*Rats (unidentified spp.)	Rats are present in most caves of the Andaman and Nicobar Islands. Rats were recorded predating on swiftlets in south-eastern Asian countries but we never observed them predating on swiftlets. Rats were observed feeding on the edible nests fallen on the ground, in the cave at Interview Island.

Note: * Potential predators of the swiftlets.

Predation can affect the population of the colonial breeders like Edible-nest Swiftlet, as it was proved in one of the caves under continuous observation. The population of the Edible-nest Swiftlet was recorded using the roost count method (Medway 1969). Predators like Brown-Hawk Owl *Ninox scutulata obscura* and the Red-tailed trinket snake *Gonyosoma oxycephalum* were observed predating on adult individuals of both species of swiftlets inside the cave on Interview Island, using a man-made wooden scaffolding set up to study the breeding biology of the species. Despite its successful breeding seasons the population of the Edible-nest Swiftlets declined between 2000 and 2004. But after the removal of the scaffolding, used by predators to launch an attack inside the cave, the population in 2005 started rising again (Fig. 1).

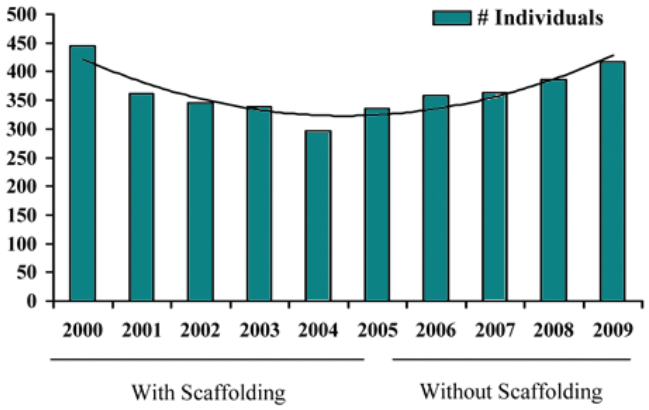

Fig. 1. Population of the Edible-nest Swiftlets in the cave at Interview Island Wildlife Sanctuary, during the existence, and after removal, of the man-made scaffolding causing heavy predation.

Photo: *Shirish Manchi*

Fig. 1. Red-tailed trinket snake *Gonyosoma oxycephalum* resting just below the swiftlet colony in the cave at Interview Island.

Photo: *Manish Chandi*

Glossy Swiftlet *Collocalia esculenta* caught in the spider web at Great Nicobar.

Photo: *Shirish Manchi*

Red ant attack on the freshly hatched chicks of Edible-nest Swiftlet *Aerodramus fuciphagus* in the cave at Interview Island.

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— Ravi and the camel —

This was in January 1999 when I went to Jaisalmer with a friend to visit another friend. In the middle of the desert, like some lunatic mirage, I saw this man with a luxuriant moustache wearing a hat and smoking a pipe while perched on a camel! I had met Ravi several times before and like anyone else would be, was delighted to see him again. He immediately took it onto himself to teach me and Swapna the art of riding a camel. After several hours of training he had to leave us as he was invited for lunch at a village some 3km away. He decided to go on camel back. After a couple of hours we saw him return, hurriedly (the camel was racing back) and get into a jeep and speed off in the same direction that he came from. We were puzzled but later learnt that it was the camel who was in a hurry and not him and this was the story: After he left us, he prodded and poked the camel into taking him to the village and the beast would not relent. The camel took a step at a time, stopping here and there to eat a morsel of some vegetation, with long halts to simply observe the countryside. An impatient Ravi in the meanwhile kept prodding and managed to get the camel to move a bit at a time. This went on for more than an hour till they finally reached the boundary of the village and the camel decided to move even slower and observe the countryside more keenly. Ravi who was very hungry and at the end of his patience prodded again - this time the camel turned around with gusto, and with energy never seen in a camel before, raced back 3 km with a stunned Ravi stuck to his back (and the pipe still stuck in Ravi's mouth)! A scene straight out of Tintin! But this is what I always remember Ravi as- a total clown – lovable, full of life and fun!

– Shomita Mukherjee
on Facebook, January 20, 2009

(Post No. 3: <http://www.facebook.com/topic.php?uid=59602514000&topic=6400> downloaded on 25 September 2009)