Life from Headwaters to the Coast

NIAH

Biodiversity That Survived Time

Edited by

Jayasilan Mohd-Azlan
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Half title: View of the tower karst features of Niah. Photo: Chien C. Lee.
Frontispiece: Niah Cave Gecko (*Cyrtodactylus cavernicolus*). Photo: Chien C. Lee.

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SWIFTLET FARMING

Haidar Ali, Mohamad Fizl Sidq Ramji* and *Lim Chan Koon

Although humans have occupied the Great Cave of Niah as far back as 60,000 years before present, swiftlets within the caves were left unmolested. Humans began collecting edible nests for sale in the last two centuries, and within a span of 170 years, the swiftlet populations were nearly decimated. Fortunately, within 25 years, descendants of the same group of human, successfully rescued the swiftlets from local extinction. This is the story of humans and swiftlets at Niah.

Swiftlets are small swifts of the family Apodidae (Apodiformes). Of five species of swiftlets found in Borneo, three use the Niah caves as their roosting and nesting sites: the Black-nest Swiftlet (*Aerodramus maximus*), Mossy-nest Swiftlet (*A. salanganus*) and Glossy Swiftlet (*Collocalia esculenta*). Because of their short legs, swiftlets cannot perch like typical passerine birds, hence need to stay adrift, spending the entire day outside caves in flight. Swiftlets are insectivorous, their diet comprising a wide diversity of arthropods, mainly insects of the orders Hymenoptera (winged ants, fig wasps and bees), Coleoptera (beetles), Homoptera (leafhoppers), Diptera (flies) and Ephemeroptera (mayflies).

Fig. 1. Black-nest Swiftlets (*Aerodramus maximus*).

After a day spent skimming over the forests canopy while foraging, swiftlets return to their cave roosts in the late afternoon. Thousands gather outside the cave entrances, swirling in large flocks, small groups sometimes pursuing one another, in an acrobatic

courtship display. As dusk falls, stomachs full of food, and taking advantage of the twilight, they dash inside the cave, accompanying by series of clicking sounds.

The clicking sound is a remarkable ability of swiftlets. Nonetheless, only member of the genus *Aerodramus* has the capability of echolocation, or capacity to detect objects using sound waves. Swiftlets can determine the direction and temporal differences of the emission and returning echo, hence, giving them a "sound-scape" of the surroundings in total darkness. This ability enables them to take advantage of the safety of a true cave interior.

Another interesting fact about swiftlets is that they use a type of salivary secretion in nest building. This "nest cement" is produced by a pair of sublingual glands located underneath their tongue. Both males and females possess this gland, and both sexes participate in nest building. This salivary nest cement, the edible portion of the swiftlets' nest, is the main ingredient of an Oriental gastronomy delicacy — the Bird's Nest Soup.

Of the three species of swiftlets found in the caves of Niah, only the Black-nest Swiftlet and Glossy Swiftlet produce nests of commercial value, and are subjected to harvest. The nest of the Black-nest Swiftlets is made of salivary nest cement, mixed with significant amount of their own feathers, which the swiftlets gather from the body plumage via bouts of preening while at roost. As a result, the nests look blackish and fluffy. The main bulk of edible bird's nests collected from Niah caves are from the Black-nest Swiftlets. Nests of Glossy Swiftlets are also exploited, even though the nest is made of vegetative matters, mostly mosses. The nest cement is only used as basal attachment, sticking the mossy nest-cup to the cave wall.

The edible bird's nest trade can be traced back to the imperial court of the Chinese Ming Dynasty (1368–1644). However, the western world became aware of the commodity around the early part of the 17th century. With reference to the Niah caves, there are no written records of bird nest harvest prior to 1840. Nonetheless, anecdotal accounts from the inhabitants of Niah suggest a date shortly before 1800. Edible nests have been harvested and traded, at least at Niah Caves, while Sarawak was under the sovereignty of the Brunei Sultanate.

Traditionally, bird nest harvesting practices observed a delicate balance of exploitation and sustainability. Niah Caves used to be the largest producer of "black nest" with annual nest yields of up to 18,500 kg. In 1935, the swiftlet population at Niah was estimated to be in the range of 1.7 million birds. Six decades later, by 1995, a more scientific census placed the population at around 200,000 birds, a whopping 88% decline, doubtless due to overexploitation. The pace of nest collection had accelerated since 1987, following an increase

in international market demand to such an extent that the swiftlets have not had an undisturbed breeding season. Sadly, a species that had apparently withstood traditional exploitation began to decline rapidly because of uncontrollable and indiscriminate harvesting in recent years.

In response to widespread concerns, the Sarawak Government imposed a total ban on nest harvesting within Niah National Park from 1989 to 1992. Another 4-year ban was subsequently imposed. This caused strong resentment from the local communities who hold traditional collection rights to the nest-yielding caves. By 1996, it was clear that the total ban was ineffective in curbing the decline of the swiftlet populations, yet expensive to maintain. Consequently, it was lifted in 1997, without any foreseeable solution in sight.

Fortunately, another attempt was initiated between 2000 and 2003, a sort of last ditch effort, under the ambit of DANIDA-SWMPI project — a collaboration between the Sarawak Government in Malaysia and that of Denmark. But, what is new? What is the difference from previous failed attempts? Well, by 2000, the breeding biology of swiftlets was well understood. The Earl of Cranbrook, and his then student, Lim Chan Koon, had conducted research on swiftlets, which came up with practical sustainable harvesting recommendations. Every year, the breeding season of Black-nest Swiftlets begins around September. There are three breeding cycles annually, each breeding cycle lasting about four months (i.e., 30 days of nest building, plus 25 days incubation, plus 45 days to fledging). In addition, data have shown swiftlets employ a multi-brooded reproductive strategy, meaning each pair will try to raise as many babies as possible within a favourable breeding season. If their nest is harvested, they will rebuild a new nest. If they lost the egg, they will lay a replacement clutch. If they lost their nestlings, they will quickly produce a new clutch. This will go on until the intrinsic fecundity of the breeding pair is stretched to its limit. This normally happens when there is a deficit, whereby energy from food intake is not enough to sustain daily metabolic requirements, reproduction and moult all at once. Based on this new knowledge, the sustainable harvesting plan calls for an uninterrupted 4-month period to allow a complete breeding cycle and multiple nest harvests thereafter. Each breeding pair should be allowed to raise one baby every year. This is the minimum off-take rate.

Armed with these new scientific data, and the successful implementation of sustainable harvesting model for Black-nest Swiftlets elsewhere at Bukit Sarang in Bintulu Division, the DANIDA-SWMPI project went into full throttle. Marathon discussions were held with various stakeholders who have vested interest in the bird nest industry. They include the Penan/Muslim licensees, bird nest traders (locally referred to as “Pemajak”), cave guards and

nest harvesters who are mainly from the Iban ethnic group from Rh. Patrick Libau (formerly Rh. Chang). This culminated at the grand Niah Gathering in 2001, where 160 attendees representing these stakeholders agreed to collaborate on implementing a management plan to rescue the swiftlet populations in Niah Cave. Harvesting activities were suspended for four successive months from April to July in 2002 and 2003. Thereafter, the local communities are allowed up to eight harvests a year. After the conclusion of the said project, this mandatory 4-month cessation of harvesting continued under the management of Sarawak Forestry Corporation. This practice continues to this day.

Fig. 2. Glossy Swiftlet (*Collocalia esculenta*).

Fig. 3. The Niah Gathering, 14–16 November 2001.

Recent records from several areas within Niah caves indicate notable increases in breeding success. For example, Lubang Petang, which is managed by Saimi bin Othman, as well as Lubang Kelit and Lubang Bungkuk, managed by Roni bin Osman, have shown significant improvements in nest-yield, reflecting a larger swiftlet colony. These groups of people have been strong supporter of the project since 2002. Their sacrifice, sweat and tears, of 23 years, are now being paid off and areas under their management have registered a 364% increase.

Other areas worthy of a mention include Lubang Perintah, Lubang Lelong, and Lubang Iman. These co-management initiatives focus on fostering close cooperation between the management of Niah National Park and license holders. Over a span of 23 years since its implementation, Lubang Perintah and Lubang Lelong have recorded 150% to 200% increment of the swiftlet population within. The aim of these co-management areas is not solely to increase the yield of bird's nests, but also to improve the economic livelihood of the local communities. It allows the licensee to implement various initiatives that benefit both swiftlet management and employee's welfare. Initiatives such as fixed salary with annual increments plus bonuses, employee protection insurance, welfare funds for less fortunate students in their villages, etc, are a few examples. With this in mind, a new working paper for the Lubang Dat Project has been developed to refine the co-management model, and extension to wider coverage, with more stakeholders involved. It is crucial not only to maintain current momentum, but to involve the younger generations. After 25 years of plain sailing, despite all the successes, it is time to administer the vitality boost, now that Niah National Park is a UNESCO World Heritage Site.

Finally, how will the human-swiftlets affair develop in the future? Only time will tell. However, one thing is sure. It is still a one-sided affair. The swiftlets couldn't care less about humans, and will continue doing what they do best. Flying majestically. Find their way into the safety of pitch darkness of Niah caves. Build nests, reproduce to perpetuate their kind.

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ABOUT THE SERIES

'Life from Headwaters to the Coast' is a series of illustrated guides to the biological diversity of the State of Sarawak, published by the Institute of Biodiversity and Environmental Conservation, Universiti Malaysia Sarawak (UNIMAS).

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The volumes cover geology, flora and fauna as well as sociological aspects of areas covered and are written by specialists, including staff, students and associates of the Institute, the Faculty of Resource Science and Technology in UNIMAS and other experts when relevant, with naturalists, students, conservationists, administrators and decision-makers in mind.

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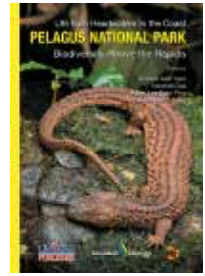

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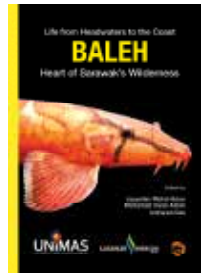

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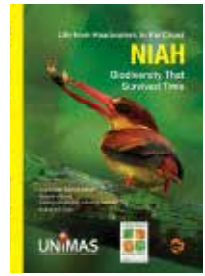

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