SWIFT MANOEUVRES:
how nesting Australian Swiftlets beat La Niná floodings
Mike Tarburton investigates the fascinating survival mechanisms of the cave-nesting Australian Swiftlet.

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In April last year, members of the Chillagoe Caving Club in North Queensland told me that they thought local swiftlets were in trouble because of unusually heavy rains. Many of their nesting caves had been inundated, when normally only 7 of the 600 caves in the area contained water.

They also said that at several colonies the swiftlet nests had been washed off the cave walls, a serious situation as this was at the end of the breeding season. I was in Chillagoe at the Australian Speleological Conference to present a paper on the various predator-avoidance strategies used by swiftlets in caves across the South Pacific, but little did I realise that I was about to discover yet another swiftlet survival strategy.

The species in question was the Australian Swiftlet, an aerial specialist smaller than a swallow which nests in parts of Queensland north of Mackay. Until relatively recently, the Australian Swiftlet was considered conspecific with the White-rumped Swiftlet of Polynesia and Melanesia, but DNA studies have shown that the Australian birds are in fact more closely related to the Himalayan Swiftlet and Black-nest Swiftlet of Asia. The birds that breed in the Chillagoe area are isolated from the coastal population and are considered by some to be a species in their own right.

The Chillagoe birds nest in total darkness in caves in the district's limestone outcrops. Anyone who has observed Australian Swiftlets will be familiar with their rapid, darting flight, but it may come as a surprise that they are capable of entering their nesting caves at speeds of 111 kilometres per hour. It is unusual for high-speed birds to be manoeuvrable enough to negotiate both the tight turns in small cave entrances and the sudden change from the tropical sun to total darkness. The latter they accommodate by switching on their echolocation. The former they achieve by asynchronous use of their high-speed wings.

This dexterous achievement was finally captured on film in October 2011, when Graham Anderson spent a few days taking photos of the birds inside the caves. His photos reveal the asymmetrical wing movements of the swiftlets, which helps them to slow down and get through the tight, dark, twisting passageways to bring food to their nestlings.

What makes the Australian Swiftlets even more remarkable is that it is still the only bird in the world where sibling incubation is known to be practised. I discovered this peculiar behaviour in 1985 when I was conducting experiments on nests in two
caves at Chillagoe, I found that when the nestling from the first-laid egg was covered in feathers, its mother gave it a fresh egg to incubate. The first nestling usually fledged the day before the second egg hatched (27 days after it was laid), allowing the parents to continue feeding the second nestling and so raise two fledglings in the breeding season that was otherwise too short to raise two consecutively hatched young.

Prior to the discovery of sibling incubation, photos of brooding swiftlets were published with commentary that suggested that some of the incubating ‘mums’ were much braver than those that flew out of the cave when humans approached the nest site. The noted naturalist, John Orrell, stated in 1964 that, “one devoted mother refused to desert her egg, and remained on her nest during the 35 minutes we were in the cavern.” From his photo you can see the pale edging to the primaries that indicate the sitting bird was clearly a nestling, and therefore, not capable of flying off.

When Queensland naturalist John Busst visited the colony on Bedarra Island in January 1954 he made a similar mistake, viewing “… a considerable number of birds clinging to the walls beside the nests (doubtless the unfortunate husbands).” Actually, both parents share almost equally in incubating and feeding the young.

My own experiments showed that the birds could not capture enough prey to raise two nestlings at a time, making the sibling incubation strategy essential to their survival. It was important to find out how these birds were doing with the extra rain that La Niná had dumped on them in the preceding couple of years. Between conference meetings I visited several swiftlet colonies (with the help of other club members) and found that some colonies had indeed been wiped out by the excessive flow of water down the cave walls, and at others, that the nests were or had been under water.

I headed back to the caves in November and December to census as many colonies as possible and see what effect the extra rain was having on the population. I found that three colonies had completely disappeared and a fourth one contained a lone nest and nestling. However, 23 other colonies had bred two to three months early and had successfully fledged many of their first brood by or during December. In addition, I discovered four new colonies, though at least two of these had been occupied from before the La Niná intrusion, so were not new sites for lost colonies.

This not only encouraged me to believe that La Niná would not exterminate these birds, but demonstrated that the swiftlets had an ability to adapt to changing climatic factors. By breeding early, the birds could capitalise on the flush of flying insects which come with the first rains. The timing of the Chillagoe swiftlets was such that the first La Niná rains arrived when the nestlings needed the most food. I found no emaciated nests or nestlings as I had in the 1986/7 season, a dry El Niño period.

This means cavers and birdwatchers can still enjoy watching these incredible little birds enter small and large cave entrances alike at tremendous speeds around Chillagoe, safe in the knowledge that they are every bit as manoeuvrable in their nestling habits as they are in their flight patterns.

Dr Mike Tarchiuton is Australia’s foremost expert on swifts and swiftlets.

Above: Australian Swiftlets are the only known species of bird where the chick helps to incubate its sibling in the egg. Photo by Graham Andeson