Foraging of Glossy and Pygmy Swiftlets in Palawan, Philippine Islands

CHARLES T. COLLINS

In the Philippines, Glossy Swiftlets Collocalia esculenta, forage within 2 m of the ground in open areas while Pygmy Swiftlets C. troglodytes forage near canopy height. This seems to be a form of resource partitioning among similar-sized swiftlets.

Geographically sympatric multi-species assemblages of swiftlets Collocalia and Aerodramus [subsumed in Collocalia in Inskeep et al. 1996, An annotated checklist of the birds of the Oriental region] are common throughout their range in South-East Asia, Indonesia and the Pacific Islands (Medway 1962a, Rand and Gilliard 1968, Diamond 1972, Chantler and Driessens 1995). These swiftlets, like other Apodidae, feed on a diverse array of aerial arthropods (Medway 1962b, Harrison 1976, Langham 1980, Hails and Amirrudin 1981, Lourie and Tompkins in press, Collins and Francis in prep) with similar sized birds taking a similar range of prey sizes (Collins in prep). Accordingly, syntopic similar-sized swiftlets would be expected to show some form of resource partitioning. Altitudinal segregation between pairs of swiftlets has been recorded at several sites (Diamond 1972, Bechler 1978, Watling 1983, Coates 1985, Finch and McKean 1987): other mechanisms may also be present. This study examines the preferred foraging areas of two diminutive swiftlets, the Glossy Swiftlet Collocalia esculenta, and the Pygmy Swiftlet C. troglodytes, in an area of sympoty on Palawan, Philippine Islands.

The Glossy Swiftlet has an extensive range from the Andaman and Nicobar Islands eastward through Peninsular Malaysia, Indonesia, the Greater Sundas and northern New Guinea to the Bismarck, Admiralty and Solomon Islands (Rand and Gilliard 1968, Salomonsen 1983, Chantler and Driessens 1995, Sankaran 1998). The grey-rumped Philippine populations, studied here, have sometimes been considered as a separate species, C. marginata (Sibley and Monroe 1990, Chantler and Driessens 1995). The Pygmy Swiftlet, a Philippine endemic, is widespread in the archipelago, including Palawan (duPont 1971, Rabor 1977, Dickinson 1989, Chantler et al. 1991). Although these two species appear nearly ‘of the same size’ (duPont and Rabor 1985), Glossy Swiftlets are slightly larger and heavier than Pygmy Swiftlets (Table 1). The Glossy Swiftlet and Pygmy Swiftlet widely co-occur in many areas of the Philippine Islands (duPont 1971, Rabor 1977, Chantler et al. 1991, Chantler and Driessens 1995) and appear to be ecologically syntopic as well.

Field observations of Glossy and Pygmy Swiftlets were made opportunistically at the St Paul’s River Subterranean National Park, Palawan, during a more detailed study of the echolocation acuity of the co-occurring Palawan Swiftlet, Aerodramus [vanikorensis] palawanensis (Collins and Murphy 1994). Both Glossy and Pygmy Swiftlets were observed daily from 13-22 September 1990 in the vicinity of the park visitor facilities. More detailed observations of Glossy Swiftlet foraging were made from 20-22 September.

Table 1. Linear measurements and body mass of Glossy Swiftlets Collocalia esculenta and Pygmy Swiftlet C. troglodytes in the Philippines

<table>
<thead>
<tr>
<th></th>
<th>C. esculenta</th>
<th>C. troglodytes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wing*</td>
<td>97-101 mm</td>
<td>90 mm</td>
</tr>
<tr>
<td>Tail*</td>
<td>42 mm</td>
<td>40 mm</td>
</tr>
<tr>
<td>Culmen*</td>
<td>4 mm</td>
<td>3.5 mm</td>
</tr>
<tr>
<td>Tarsus*</td>
<td>8 mm</td>
<td>9 mm</td>
</tr>
<tr>
<td>Mass**</td>
<td>7.1 g (6.3-8.3)</td>
<td>5.4 g ± 0.48 SD (4.5-6.8)</td>
</tr>
</tbody>
</table>

* from duPont (1971)  
** from Dunning (1983)
around the edges of isolated trees but were never observed to drop much below canopy height in any foraging flight. The height of their flight paths was not quantified.

On 20 September Glossy and Pygmy Swiftlets were noted foraging in a mixed flock just south of the visitor area where a large tree had fallen on a steep seaward-facing hillside. This resulted in an opening in the forest with very low new brushy growth. A mixed flock, consisting of about 18 Glossy Swiftlets and 2 Pygmy Swiftlets, had established a foraging ‘beat’ there, roughly 30-40 m in diameter. At the innermost part of their circular route they were flying 1-2 m over the emergent growth, while at the outermost part of the route they were close to or just above the canopy of the tall forest trees growing much lower on the steep slope (Fig. 1.). This unique situation contained elements of what appeared to be the preferred foraging habitat of both species and was the only time they were observed foraging together.

In many parts of their range, Glossy Swiftlets have been noted by several observers to characteristically forage low over open grasslands, cultivated ricefields and inside openings or clearing in forests (Medway 1962b, duPont and Rabor 1973, Diamond 1975, Rabor 1977, Hails and Amirrudin 1981). In New Guinea this species ‘habitually flies at a lower level, closer to vegetation, and less swiftly, than other swiftlets: often low to the ground around clearings, along forest trails, and low over shores shaded by beach trees and coconuts’ (Coates 1985). This is distinctly different from most other swiftlets, which typically fly higher over the forest canopy (Medway 1962b, Hails and Amirrudin 1981, Lourie and Tompkins in press). Pygmy Swiftlets have similarly been noted to use ‘cultivated fields and open grassland areas with patches of dense tree growth’ (Rabor 1977). However, no mention has been made of any differences in foraging height, even in areas where the two species occurred in close proximity (duPont and Rabor 1973). The long wings and tail and low body mass enable Glossy Swiftlets to ‘forage much closer to vegetation than other swifts which demand more room to manoeuvre’ (Hails and Amirrudin 1981). This would apply as well to the morphologically similar Pygmy Swiftlet (Table 1).

The pronounced non-overlapping foraging heights of Glossy and Pygmy Swiftlets noted in this area of syntopy seems to represent a form of resource partitioning which would allow them to exploit similar types and sizes of food items but in distinctly different microhabitats. However, it is difficult to show conclusively that such segregation is in fact the result of competitive interactions. In New Guinea, where the Pygmy Swiftlet does not occur, Glossy Swiftlets appear to forage in much the same manner as in Palawan, but also around the crowns of tall trees (Coates 1985). Similarly, in Kuala Lumpur, Malaysia, Glossy Swiftlets spend considerable time foraging at medium heights (>5m <50m)(Hails and Amirrudin 1981). These observations suggest that Glossy Swiftlets forage at a greater range of heights in areas of allotopy than in areas of syntopy with Pygmy Swiftlets. This would support the interpretation that the observed differences in foraging height of Glossy and Pygmy Swiftlets represents competition based resource partitioning. Further observations of foraging in other areas of syntopy of these two swiftlets were not possible during this brief trip; such data would be informative.

<table>
<thead>
<tr>
<th>Height above ground</th>
<th>Observation periods (15 minutes)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-1 m</td>
<td>60 24 74 84 63 50 38 77 107 49 57 683 (45.29)</td>
</tr>
<tr>
<td>1-2 m</td>
<td>60 17 63 94 105 51 39 82 98 81 30 720 (47.75)</td>
</tr>
<tr>
<td>2-3 m</td>
<td>9 3 7 12 14 6 10 13 8 11 5 98 (6.50)</td>
</tr>
<tr>
<td>&gt; 3 m</td>
<td>0 0 2 0 2 0 0 2 1 0 0 7 (0.46)</td>
</tr>
<tr>
<td>Total</td>
<td>129 44 146 190 184 107 87 174 214 141 92 1508</td>
</tr>
</tbody>
</table>

Table 2. Foraging heights of Glossy Swiftlets (*Collocalia esculenta*) in Palawan

Figure 1. Flight path of mixed foraging flock of Glossy and Pygmy Swiftlets in tree-fall area, Palawan, Philippines Islands.
I would like to express my appreciation to The Cousteau Society for economic and logistic support for this research. Special thanks to the late Captain Cousteau for his interest in better understanding the biology of swiftlets in Palawan.

REFERENCES


