

SHORT COMMUNICATION

POLLEN AND NECTAR FEEDING BY PURPLE-CROWNED LORIKEETS ON *EUCALYPTUS OCCIDENTALIS*

Purple-crowned Lorikeets *Glossopsitta porphyrocephala* are reported to feed on flowers of some fifteen different species of eucalypts in temperate regions of southern Australia (Hopper and Burbidge 1979). Yet little has been recorded on the precise feeding behaviours adopted by these birds on small-, medium- or large-flowered eucalypts. Moreover, the relative importance of pollen and nectar in the diet of Purple-crowned Lorikeets in given habitats remains controversial and deserves detailed investigation (Churchill and Christensen 1970; Christensen 1971; Hopper and Burbidge 1979).

In an earlier report of a Lorikeet feeding on the small flowers of *Eucalyptus buprestium* (Hopper and Burbidge 1979), it was difficult to ascertain whether the bird was eating pollen or nectar or both because each flower was enclosed within the beak so that anthers and nectaries could have been touched by the tongue simultaneously. However, because the Lorikeet fed on freshly open flowers and on some older flowers, both pollen and nectar were probably being eaten. This is because in most eucalypts anthers shed much of their pollen during the first few days after dehiscence of the operculum (bud cap) and stigmata become viscid and receptive several days later (Pryor 1976; Griffin and Hand 1979). Hence, freshly opened flowers offer pollen and sometimes nectar, whereas older flowers offer only nectar.

The difficulty of determining what is being eaten on small-flowered eucalypts is avoided on species with larger flowers, where Lorikeets have to take pollen and nectar in different feeding positions because anthers and nectaries are well separated. I observed Purple-crowned Lorikeets feeding on Flat-topped or Swamp Yate *E. occidentalis* and can confirm that both pollen and nectar are actively eaten by these birds on this species of gum.

Eucalyptus occidentalis flowers in autumn and winter and is endemic in southern Western Australia (Chippendale 1973). It grows on winter-wet flats to twenty metres tall with erect spreading branches and a flat-topped canopy. It is a mass-flowering species; the entire canopy appearing creamy-yellow when in full bloom. Each inflorescence has up to seven elongate pendulous buds. The stamens attain a length of about fifteen millimetres at anthesis.

Dehiscence of anthers appears to occur while the stamens are still enclosed within the operculum after it has separated a few millimetres from the base of the flower. At this time, the anthers are grouped in a tight

cylinder four or five millimetres across. When the operculum falls away, the stamens splay out and present the anthers in a hemisphere that increases in diameter from fifteen to seventeen millimetres soon after anthesis to about twenty-five when the stigma becomes viscid and receptive and finally to thirty to thirty-five when it becomes necrotic. Pollen can be gleaned from anthers only at the stage when the bud is mature and in young flowers whose stigmata have not yet become viscid.

OBSERVATIONS

The Purple-crowned Lorikeets were observed in the Stirling Range Caravan Park (34°20'S, 118°11'E) in a pure woodland of *E. occidentalis* ten to fifteen metres tall on 20 August 1979 from 10:50 to 11:05. Lorikeets were the most numerous birds feeding on the nectar of *E. occidentalis* at this time, with up to five birds per tree. A few Red Wattlebirds *Anthochaera carunculata* were also feeding and chased Purple-crowned Lorikeets away from trees in which they were resident at least six times while under observation. Also noted were a few Yellow-plumed Honeyeaters *Lichenostomus ornatus* and Brown Honeyeaters *Lichmera indistincta* in the trees but not actually feeding at the flowers. In addition, feral bees *Apis mellifera* and some native hymenopterans were active at the flowers.

Two Purple-crowned Lorikeets, feeding low in the canopy, were each observed with binoculars for five minutes to determine feeding behaviour. Both birds took pollen from mature buds and nectar from open flowers. They approached buds in which the elongate operculum had dehisced from the base but still remained attached to the stamens and removed the operculum with the beak, thus uncovering the tightly packed cylinder of freshly dehisced anthers. With their heads at right angles to the stamen cylinder, they could enclose the entire bundle of anthers in their beaks and nibble at them to remove pollen. No attempts to take nectar from the base of these buds were observed. On open flowers, however, the Lorikeets thrust their bills into the central cup for nectar and ignored the splayed array of anthers. They fed on all open flowers and mature buds within reach from a given perch and spent about as much time taking pollen as taking nectar. Only a few seconds were needed to forage on each flower or bud.

The Lorikeets worked their way through dense clusters of flowers on a given branch moving as little as possible (usually only a few decimetres) between

clusters. Several birds were observed flying from tree to tree and some flew several hundred metres out of sight.

CONCLUSION

These observations established that both pollen and nectar are eaten by Purple-crowned Lorikeets from flowering eucalypts. Both items are probably an important part of their diet because the birds spent about the same time taking each, which agrees with proposals by Cleland (1969) and Hopper and Burbidge (1979). The Lorikeets appeared not to prefer pollen to nectar, as would be expected if Churchill and Christensen's (1970) hypothesis that pollen is the major item of diet was correct. Because foraging on pollen of *E. occidentalis* can easily be distinguished from foraging on nectar, large-flowered eucalypts would probably be best for further studies of the importance of pollen and nectar in the diets of these birds.

Purple-crowned Lorikeets probably were important pollen vectors of *E. occidentalis* at the Stirling Range site. They were most numerous nectarivorous bird and,

while foraging, their bodies came in contact with stamens and stigmata. Moreover, several Lorikeets interrupted feeding and flew from tree to tree, often as a result of aggressive chases by Red Wattlebirds. Thus, they may have effected cross-pollination.

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