

POLLINATION SERVICES

Batshit barcoding

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Credit: FLPA / Alamy Stock Photo

Plants use many methods of pollination, either passively relying on environmental conditions (such as air currents) to distribute their pollen or employing active animal pollinators. While insects are the most commonly considered pollinators, some mammals can also fulfil this role

— in particular, bats. The cave nectar bat (*Eonycteris spelaea*) of southeast Asia is one such, but the extent and importance of its pollinating activities have been difficult to assess. Using DNA barcoding, Voon-Ching Lim, of the University of Malaya, Kuala Lumpur, and colleagues have now shown that *E. spelaea* is a promiscuous consumer of native and introduced plants alike.

The standard approach to identifying what plants nectar-eating bats have visited is to identify the pollen present in their faeces. This is no easy task as pollen grains can be difficult to uniquely identify, especially after passing through a bat's digestive tract. Instead, Voon-Ching Lim took an -omic approach, collecting faeces under the roost of a colony of some several thousand *E. spelaea* bats situated in Batu Caves on the northern outskirts of Kuala Lumpur, Malaysia, extracting the DNA present and amplifying it using common-to-plant sequences as primers. The sequences obtained were identified as coming from at least 55 different plants, 49 of which were not previously known to be part of *E. spelaea*'s diet. Of those that could be identified at the species level, 24 were natives of Malaysia and 16 were introduced. The analysis also provided evidence of lengthy foraging journeys by the bats to feed on mangrove plants, such as

Sonneratia caseolaris, despite the nearest mangroves being around 40 km from the caves.

Although much larger than previous estimates of *E. spelaea*'s diet, this survey must be considered a lower limit. The caves were sampled for a relatively short 10-week period and would thus have missed plants flowering at different times of the year. The study also failed to identify some plants that had previously been recognized as food sources for these bats, perhaps indicating that the primers used for DNA-amplification were not sufficiently universal. Nevertheless, it is clear that bats are playing a role in the pollination of native and non-native plants alike, including agriculturally important crops such as banana, jackfruit and papaya. The substantial presence of ornamental plants, such as chrysanthemum and Golden Penda (*Xanthostemon chrysanthus*), shows that the bats focus much of their foraging in the nearby urban districts of Kuala Lumpur. While presumably advantageous to the bats, this may indicate that exotic introductions are outcompeting native species for the attention of this important pollinator.

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