NIGHTTIME COMMUTERS

Every September, as Tucson's streets swell with the daily commute of returning students and residents, a nightly commute also takes place as thousands of nectar-feeding bats descend into town

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Nectar-feeding bats are thought not to drink water, obtaining it instead from liquid nectar. Here, a lesser long-nosed bat undermines this theory by getting a drink from a monsoon puddle.

It is almost midnight when a flight from the East Coast finally brings me back to Tucson. A familiar half-conscious routine follows — shuffling off the plane, rushing through the airport, finding my car and starting the drive home. Then, while I am waiting for a traffic light at the intersection of Tucson and Valencia, an unmistakable sight jolts me back to reality.

A flock of large bats flies slowly over the deserted street in front of me. They maneuver among the agaves in the median, flying up to hover around the tall flower stalks and gliding down to turn sharply over the pavement.

Those agaves were planted just a few years ago, and only a handful are blooming. That the bats have already found them is a testament to their ability to track an exceptionally patchy resource, since each plant will bloom only once, if at all, in a bat's lifetime. To find them, the two species of nectar-feeding bats that spend the fall months in Tucson – the lesser long-nosed and Mexican long-tongued bats — fly for several hours each evening high over the entire city, accessing and mapping the ever-changing distribution of blooming plants.

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Every September and October afternoon, just as Tucson commuters get in their cars to drive home, the bats emerge from their roosts in the surrounding mountains. At sunset, the bats form loose groups and start on a commute of up to 40 miles to Tucson. Although they don't have to deal with traffic, don't stop to feed or rest, and fly at 20-30 mph, the trip still takes them a couple of hours. They don't take the most direct routes, preferring to follow secluded desert washes to the city's outskirts and the darker and quieter streets in town. They arrive by early evening and spend several additional hours on reconnaissance flights before feeding.

By delaying feeding until after midnight, the bats also give the agave flowers time to accumulate more nectar. Bats need about a hundred visits to flowers each night to sustain themselves; half of this is simply to replenish energy spent on the commute to and from the city. By waiting until the flowers secrete more nectar, bats can maximize their reward from each visit. In the city, bats also can take advantage of "bottomless flowers" — hummingbird feeders. After thoroughly mapping feeder locations in early fall, bats faithfully return to them for weeks, consuming up to a gallon of sugar mix in a single night.

By 2-3 a.m., feeding is over and the bats embark on their flight home. Entering their roosting caves at dawn, females search for their pups among the hundreds hanging by one foot from the cave's ceiling, nurse them, and settle for a day of sleep as the city below starts to wake. Every now and then, adventurous (or distracted) females fail to remove their young before leaving for their nightly commutes, giving the young no choice but to hold on firmly and receive an early preview of both dizzying heights and city life — a month or two before they would venture outside the cave on their own. As an extra treat, on the long flight back some of these young travelers get to lick sweet, protein-rich pollen off their mothers' fur.

As impressive as the bats' nightly commutes are, they pale in comparison to the 2,000-mile flights that the bats undertake during spring and fall migrations between southern Arizona and their wintering grounds in Mexico. These migratory routes — dubbed "nectar corridors" — are thought to be bounded by the distribution and phenology of flowering plants — columnar cacti like organ pipe and saguaro in the spring and agave in the fall.

Leaving campus the following afternoon, I find myself mentally mapping the blooming agaves en route to my home, imagining how in a few hours these busy streets and industrial neighborhoods will be transformed by flocks of large nectar-feeding bats — an unmistakable midnight sight in Tucson's fall.

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Bats' exceptionally elongated, serrated tongues enable efficient nectar and pollen removal. Nectar-feeding bats are keystone species in the Sonoran Desert because several cactuses and agave species depend on them for pollination.