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Bats in the News - Bats Inspire Flying Drones

Bats are often remarkably agile flyers. Species that live in cluttered, forest habitats routinely dodge branches and foliage while racing about the treetops in pursuit of flying insects. That sounds pretty good to military aviators. So, Popular Science reports, the U.S. Office of Naval Research is financing research to tap the flying ability of bats (as well as birds and insects) to design more-maneuverable unmanned aircraft.

The five-year, $7.5 million grant to Boston University, the University of Maryland and other institutions is for a project called AIRFOILS â€“ â€œAnimal-inspired Flight with Outer and Inner Loop Strategies.â€

Prominent bat biologist Tom Kunz of Boston University is using 3-D thermal imaging to monitor bats and explore details of their flight mechanics in cluttered environments, writes reporter Rebecca Boyle. â€œIt allows me to do the biology Iâ€™ve always wanted to do, but it also inspires engineers to create new aircraft,â€ said Kunz, a member of Bat Conservation Internationalâ€™s Science Advisory Committee.

When bats emerge each evening from caves or other roosts for a night of foraging for insect prey, they typically fly together in a dense column, snaking through the air for several miles before breaking apart to feed, Boyle said.

Kunz and biologist Nickolay Hristov have shown that these bats fly at an average speed of about 20 miles per hour and their behavior is not really as complex as it looks, says Popular Science.

â€œThink of cars driving on a highway,â€ the publication reports. â€œâ€˜If you are sitting in the middle, it looks intimidating. But when you are in the traffic, it becomes an individual balancing act,â€™ Hristov said. Understanding this balancing act could help engineers design better autonomous control systems for unmanned aircraft.â€

And even as bats contribute to the military, previous military technology is being used to help bats, Boyle writes. Missile-tracking programs and Doppler radar imaging are often used to track bat migrations and cave emergences.

The National Weather Service has radar-based software that can estimate the number of raindrops inside a rain cloud, Boyle notes. Biologist Winifred Frick of the University of California-Santa Cruz hopes those algorithms can be modified to estimate the number of bats in a column. In hopes of achieving that, meteorologist Phillip Chilson, of the University of Oklahoma, is putting bats in special wind tunnels and measuring their backscatter cross-sections to estimate density.

That work, Boyle says, could sharply improve bat population counts, especially as they relate to migration patterns.

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