

# When a 'UFO' flies by, does it bother bears?

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On a completely autonomous mission, the UAV flies towards the location of a collared bear in northwestern Minnesota. Credit: Jessie Tanner (@jessiectanner)

If an unidentified flying object suddenly appeared in the sky, it's likely your heart would beat faster. Now, researchers reporting in the Cell Press journal *Current Biology* on August 13 have found that the same is true for bears.

The UFOs in this case are actually [unmanned aerial vehicles](#) (UAVs), which have become increasingly valuable to [wildlife researchers](#), allowing them to observe animals, including [endangered species](#), in their natural settings from long distances and over difficult terrain. It had appeared as though the animals were taking these encounters in stride. For instance, American black bears rarely seem to startle or run away when a UAV comes near. But the new study reveals that despite the bears' calm demeanor when in the presence of UAVs, their heart rates soar, a sign of acute stress.

"Some of the spikes in the heart rate of the bears were far beyond what we expected," says Mark Ditmer of the University of Minnesota, St. Paul. "We had one bear increase her heart rate by approximately 400 percent—from 41 beats per minute to 162 beats per minute. Keep in mind this was the strongest response we saw, but it was shocking nonetheless."

The researchers fitted free-roaming American black bears living in northwestern Minnesota with Iridium satellite GPS collars and cardiac biologgers. The collars sent the researchers an email with each bear's location every 2 minutes while the biologgers captured every heartbeat. Then Ditmer and his colleagues programmed a UAV to fly to the bear's most recent location.



Mark Ditmer downloads the current GPS coordinates of a collared bear to input into a UAV mission. The bear's location is emailed every 2 minutes via Iridium satellite-capable GPS collars, and the researchers programmed the UAV to fly to the most recent location of the bear. Credit: Jessie Tanner (@jessiectanner)

In the end, the researchers were able to analyze their data very precisely to find out what hidden effect their UAV flights—which lasted only a brief 5 minutes due to battery life and other logistical constraints—might have had on the bears.

In 18 UAV flights taken in the vicinity of four different bears,

individuals only twice showed any major change in their behavior in response to the UAVs. However, the biologgers revealed consistently strong physiological responses. All of the bears in the study responded to UAV flights with elevated [heart rates](#). Fortunately, the bears recovered very quickly.

"Without the use of the bilogger, we would have concluded that bears only occasionally respond to UAVs," Ditmer says.



Mark Ditmer watches the successful landing of a UAV after a mission involving flying over a bear foraging in a cornfield in northwestern Minnesota. Credit: Jessie Tanner (@jessiectanner)

The [researchers](#) say it will now be important to consider the additional stress on wildlife from UAV flights when developing regulations and best scientific practices. UAVs are growing in popularity for many uses in addition to research—for example, to discourage poachers and track down wildlife for ecotourists. In many countries, few rules are in place to guide UAV use.

"UAVs hold tremendous potential for scientific research and as tools for conservation," Ditmer says. "However, until we know which species are tolerant of UAVs, at what distance animals react to the presence of UAVs, and whether or not individuals can habituate to their presence, we need to exercise caution when using them around wildlife."

Ditmer and his colleagues are now working with captive [bears](#) to find out whether the animals can get used to overhead UAV flights over time and, if so, how long it takes.

**More information:** *Current Biology*, Ditmer et al.: "Bears Show a Physiological but Limited Behavioral Response to Unmanned Aerial Vehicles" [dx.doi.org/10.1016/j.cub.2015.07.024](https://doi.org/10.1016/j.cub.2015.07.024)

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