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Robot birdwatcher joins hunt for elusive woodpecker

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Gaia Vince, San Francisco

Ornithologists seeking the elusive ivory-billed woodpecker have been given a much needed boost: the world's first fully automated, robotic birdwatcher.

Believed extinct for more than half a century, the iconic woodpecker, with its distinctive plumage, appeared to stage a miraculous return in April 2005, when ornithologists claimed to have spotted the bird in a nature reserve in Arkansas, US.

However, other experts quickly questioned the findings (see [Doubts cast on superstar woodpecker's return](#)), sparking a renewed search for concrete proof of the woodpecker's existence.

Enter robo-birdwatcher. Not only does the device digitally photograph every bird that flies overhead, it stands watch in an inhospitable snake and mosquito-infested swamp for months on end. If the ivory-billed woodpecker is out there, the tireless robot should snap it.

Sky, interrupted

The system has two video cameras that photograph the sky at 22 frames per second. This stream of images is rapidly screened for birds flying overhead using computer vision algorithms. The software automatically discards other images, keeping about one in every 20,000, and saving only those in which the sky is suddenly interrupted by a passing object.

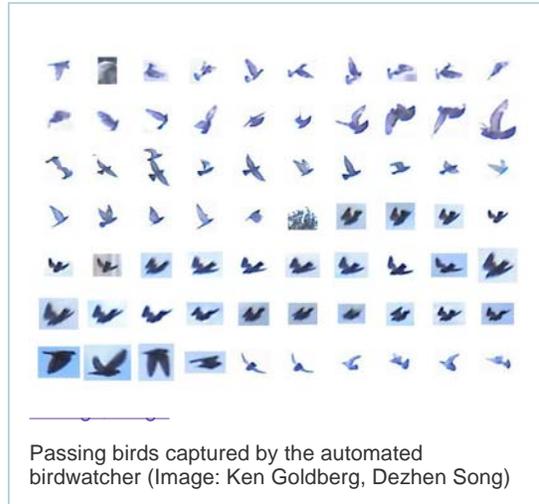
The device sometimes mistakes a falling leaf or another flying object – like a helicopter – for a bird. But it has also captured images of passing hawks, geese and a blue heron during the first three months of operation, says Ken Goldberg at the University of California in Berkley, US, who designed the robot with Dezheng Song at Texas A&M University, US.

[Watch video footage of birds automatically collected by the device](#) (9.7 MB, avi format) during testing at the College Station campus of Texas A&M University.

Radiation warning

In a bid to discourage hunters in boats from using the robot for target practice, Goldberg ingeniously fixed a large "radiation hazard" warning sticker on it, which he hopes will be more effective than bullet-proofing. So far, he says, it seems to have worked.

The next challenge is to develop the system so it can be used to monitor trees and forest floors. For that,



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more sophisticated algorithms will be required, capable of distinguishing a passing animal from swaying branch or plant.

The device was presented at the American Association for the Advancement of Science meeting in San Francisco on Saturday.

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