



## Results Summary

### *Technology Innovation Program Test of IdentiFlight*

AWWI's Technology Innovation program conducted an independent evaluation of the IdentiFlight camera-based eagle detection/curtailment technology. This proof-of-performance test evaluated IdentiFlight's ability to detect and classify eagles by comparing its capabilities to those of human observers.

The full report, published in *Biological Conservation*, is [now available online](#).

#### ABOUT THE TECHNOLOGY

IdentiFlight was developed to detect eagles near wind turbines to determine in real-time if turbines should be shut down or prevented from starting to reduce risk of eagle take. IdentiFlight's tower-mounted camera units are designed to detect moving objects within a 1000-meter radius, take photographs, use an algorithm to classify them as eagles or non-eagles, track them, and issue a curtailment order if an eagle is determined to be at risk of collision.



#### KEY TAKEAWAYS

- In this test, **IdentiFlight was significantly better than human observers at correctly identifying eagles**, while observers were significantly better than IdentiFlight at correctly identifying non-eagles. An observed relatively high rate of false positive classification by IdentiFlight is likely because IdentiFlight is programmed to be conservative with eagle classification and errs on the side of misclassifying birds as eagles when there is uncertainty.
- IdentiFlight was substantially more likely than human observers to **detect and correctly identify eagles at a distance**; human observer accuracy decreased as distance increased.
- IdentiFlight **classified birds almost instantaneously** – less than half a second for eagles and even less for other birds.

Results of this study suggest that **automated camera technology, such as IdentiFlight, is useful in detecting and classifying eagles.**

#### NEXT STEPS

This study was a beta test of IdentiFlight. Further testing is needed to examine the effectiveness of IdentiFlight for applied use in informed curtailment. AWWI is conducting additional testing in 2018-2020 with funding from the U.S. Department of Energy to evaluate performance at multiple sites over a longer time period.



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## Study Details

### STUDY DESIGN

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The test was conducted at Duke Energy Renewables' Top of the World wind energy facility outside of Glenrock, WY. Four human observers and four IdentiFlight units surveyed the same area over a one-month period in 2016.

Observers recorded all birds the size of an American kestrel or larger and identified them as eagles or non-eagles, and IdentiFlight recorded data as designed. IdentiFlight and observer data were examined to determine the number of birds detected by both IdentiFlight and the observers, and the number of birds detected by one but missed by the other.

Experts examined the IdentiFlight photos of the birds detected both by IdentiFlight and observers and classified them either as eagles or non-eagles to compare IdentiFlight's and observer's classification abilities.

### STUDY RESULTS

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IdentiFlight detected 96% of the birds that the observers detected, missing 53 birds. Observers detected 17% of the birds that IdentiFlight detected, missing 5,958 birds.

For the birds detected by both IdentiFlight and the observers and classified by experts, IdentiFlight correctly classified over 90% of the eagles, while observers correctly classified around 70%. IdentiFlight incorrectly classified around 30% of non-eagles as eagles, while observers incorrectly classified around 2%.



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