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Texas wind farm pioneers radar technology to protect migrating birds

US wind farms kill about 7,000 birds a year but radar systems developed for Nasa can prevent fatal collisions by detecting approaching birds and analysing weather conditions

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Conservationists argue that wind farms should still be sited away from migration routes in the first place. Photograph: David Tipling/Getty Images

It could be considered an air traffic control system for birds who have flown perilously off course. A wind farm in southern Texas, situated on a flight path used by millions of birds each autumn and spring, is pioneering the use of radar technology to avoid deadly collisions between a 2,500lb rotating blade and bird.

US wind farms kill about 7,000 birds a year, according to a recent study. Other studies of individual wind farms suggest a higher toll on bats and birds, who crash into towers, blades, power lines and other installations. Estimates from a single wind farm in Altamont, California showed as many as 1,300 birds of prey killed each year – or about three a day.

Such direct threats to wildlife, and concerns for habitats, have increasingly pitted conservationists against the renewable energy industry. A handful of wind power projects in the US have been shelved because of wildlife concerns.

But new radar technology now in use at the Peñascol wind farm in Texas claims to have found a balance between competing environmental concerns – taking action against global warming and protecting wildlife – by protecting migrating birds at times of peak danger.

The 202MW farm, operated by the Spanish firm, Iberdrola Renewables, is the first in the world to use radar systems to enable it to shut down automatically if bad weather hits in peak migration times.

The installation, which opened late last month, uses radar systems originally developed for Nasa and the US Air Force to detect approaching birds from as far as four miles

away, analyse weather conditions, and then determine in real time whether they are in danger of flying into the rotating blades.

If they are, the turbines are programmed to shut down, restarting once the birds are safely on their way, said Gary Andrews, the chairman of [DeTect, Inc](#), the Florida company that developed the technology.

The system spots the birds and assesses their altitude, numbers and the visibility. "With all these pieces coming together properly ... the turbines will shut down," said Andrews.

Conservationists however are sceptical of such an easy fix. They argue that wind farms should still be sited away from migration routes in the first place, and that the technology does nothing to solve the problem of installations that disturb bird and animal habitats and nesting grounds.

"The bottom line with wind energy is that it has great potential but it must be done correctly," said Doug Inkley, a senior scientist at the [National Wildlife Federation](#). "The windiest site may not be the most suitable and one may have to live with having less windy conditions and less impact on wildlife."

Even in Texas – where there are virtually no environmental restrictions on wind farms – there was controversy when the Peñascal project was first proposed and local conservationist organisations tried to block the project in the courts.

The Peñascal wind farm is located on the Central Flyway, a main route for migratory birds in the Americas.

Millions of birds funnel through the narrow air corridor during the semiannual migration. A study in the autumn of 2007 found 4,000 birds an hour passing overhead.

More than 30 species of warbler alone fly the route, along with waterfowl, raptors, and hawks. The area is also known as a nesting ground for reddish egret, which the [Audubon Society](#) views as threatened, terns and pelicans.

In ordinary circumstances, the birds would be thousands of feet above the wind farm, passing the turbines without incident. But that can change dramatically in a sudden storm.

A sudden cold snap, like the legendary Texan "Blue Northern", can prove fatal for migrating birds, bringing strong head winds and fog. The birds, which typically fly at night, become disoriented and exhausted, elevating the risk they will lose altitude and crash into 400ft wind towers along their route, wildlife experts say.

"If inclement weather hits the birds that are aloft at that point may be very vulnerable," said Christopher Shackelford, an ornithologist with the [Texas Parks and Wildlife Department](#).

Andrews says his radar systems can avoid such consequences – and at relatively little cost to the wind farm. Forecasts suggest the wind farm would be forced to close only between 40 to 60 hours during peak migration times.

The US Air Force has been using similar technologies for more than a decade. Nasa also turned to such systems after a turkey buzzard flew into the Discovery shuttle moments after its launch in 2005.

The radar sets developed by DeTect draw on a network of 148 weather radar to provide real-time information about bird activity. It is updated every six minutes.

The wind power industry has used such data before when planning wind farms, Andrews said. It is illegal, under US law, to kill migratory birds or damage their nesting

areas. But this is the first time that a wind farm will use such data in real time.

Andrews's company is also working on a variation that will allow wind farms to detect raptor if they start diving to close to the turbines as they chase down their prey.

Conservationists are reserving judgment. "The wind energy industry makes bold claims, and they need to prove them," said Andrew Kasner, director of bird conservation for Audubon Texas.

He added: "It's possible for them to do [switch off the turbines], but I don't know whether they would do it during peak wind time."

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