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Solar Farms Threaten Birds

Certain avian species seem to crash into large solar power arrays or get burned by the concentrated rays

By John Upton, Climate Central on August 27, 2014

Yuma clapper rail. Credit: Fish & Wildlife Services

You might never have seen an Yuma clapper rail. Fewer than 1,000 are thought to still be sloshing about in cattail-thick marshes from Mexico up to Utah and across to California. But if you were lucky enough to spot one, you might chuckle at its oversized toes.

When officials with the National Fish and Wildlife Forensics Laboratory saw one of these endangered birds last year, it was no laughing matter. It was dead. It was one of 233 birds recovered from the sites of three Californian desert solar power plants as part of a federal investigation. The laboratory's wildlife equivalents of CSI stars concluded that many of the birds had been fatally singed, broken, or otherwise fatally crippled by the facilities.

Last week, that long-dead clapper rail stoked a legal action that challenges at least a half dozen additional solar plants planned in California and Arizona.

Conservationists say they're also worried about yellow-billed cuckoos, which might be added to the federal government's list of threatened species, and endangered southwestern willow flycatchers, though none of those birds have been found dead at any of the solar sites.

The effects of wind turbines on birds, which research suggests kill far fewer birds per megawatt hour than do fossil fuel plants, have long been a source of consternation for many environmentalists. Their bird-killing effects have been serious enough to kill and hamper some planned projects. Now, as concentrated solar farms start to sweep the globe, solar energy developers are facing similar outcries and opposition for the harm that their clean energy facilities can cause to wildlife.

The construction of solar panel farms and concentrated solar power are both booming businesses. In California, industrial-scale facilities like these are helping utilities meet a state mandate that 20 percent of electricity sold by 2017 is renewable. But if the problem of wildlife impacts festers, the growth of concentrated solar, which by one recent estimate could grow to a $9 billion worldwide

industry in 2020, up from $1 billion in 2013, could be crimped by lawsuits and opposition from conservationists.

Much of the problem appears to lie in the "lake effect," in which birds and their insect prey can mistake a reflective solar facility for a water body, or spot water ponds at the site, then hone in on it. Because of the power of the lake effect, the federal investigators described such solar farms as "mega-traps" in their report.

"I strongly believe there's a way to show the birds that the PV panels are solid surfaces, not water," said Ileene Anderson, a scientist at the Center for Biological Diversity, which is preparing to sue over Yuma clapper rail mortality at solar power plants.

The Associated Press reported last week on "streamers" at BrightSource Energy's concentrated solar plant -- a futuristic-looking facility that gamers pass as they drive through the desert between Las Vegas and Los Angeles. That's the name given to birds as their feathers ignite, mid-air, after flying through a concentrated beam of sunlight. Such hapless birds can be burned to death, killed by brute force when they crash to the ground, or eaten a predator swoops in to claim their maimed body. These are just some of the ways that large solar plants can kill birds. It's not known how many birds are being felled by the groundswell of such facilities, but the numbers are high enough to concern bird and conservation groups -- regardless of the environmental benefits of solar power.

"We can safeguard our irreplaceable wildlife, like the Yuma clapper rail, through thoughtful implementation of renewable energy projects," Anderson said.

Within days of the AP report, Anderson's group, which had obtained the federal report through a public records request, dispatched a notice of intent to sue. In the letter, an attorney for the group threatened to take the U.S. Department of the Interior, U.S. Fish & Wildlife Service, and U.S. Bureau of Land Management to court in 60 days unless the agencies agreed to more thoroughly review the potential bird impacts of other large solar power plants proposed within the Yuma clapper rail's range. The notice alleges violations of the Endangered Species Act.

The attorney cites findings from the federal investigation report, which showed that the Yuma clapper rail had been killed at First Solar's 4,400-acre Desert Sun Solar Farm in California's Riverside County. The facility uses a 550-megawatt photovoltaic array that produces clean electricity for Californian utility customers. (The group also cited a media report of another Yuma clapper rail death at a similar facility.) Birds can be killed when they smash into the facility's solar panels, the investigation concluded.

The other solar farms analyzed by the investigators were of the newfangled trough and solar power tower varieties. They included the Genesis Solar Energy Project, also in Riverside County, which uses a trough system in which parabolic mirrors focus sunrays into a tube where water boils into steam that spins a turbine to produce electricity. The mirrors pose similar threats to birds as solar panels. The third facility studied was the Ivanpah Solar Electric Generating System in Bernardino County, Calif., where birds can be burned as they pass through concentrated sunrays that are reflected off thousands of mirrors toward a solar power tower, where water is boiled to produce electricity-generating steam.

The problem of bird deaths at solar power farms is a complex one. Some solar developers have been powering down bright lights that had attracted insects at night, or switching to LEDs, and using nets to keep birds at bay. But that apparently is not enough. "The diversity of birds dying at these solar facilities, and the differences among sites, suggest that there is no simple 'fix' to reduce avian mortality," the federal report states.

The report recommends improving bird- and bat-death monitoring through the use of sniffer dogs, video cameras, and daily surveys. It also lists recommendations for directly reducing avian mortality. Those recommendations include clearing vegetation around solar towers to make the area less attractive to birds, retrofitting panels and mirrors with designs that help birds realize the solar arrays are not water, suspending operations at key migration times, and preventing birds and

bats from roosting and perching at the facilities. The recommendations are being considered by regulators.

The Center for Biological Diversity supports those proposed measures. It also suggests restoring bird habitat elsewhere to draw birds away from the solar facilities, which could help the rails and other species recover. And it wants the government to undertake new scientific research -- research that could offer clues for better protecting birds from solar power farms.

“We’d like the FWS to start looking at the potential problem that the Yuma clapper rail may be being attracted onto the sites,” Anderson said. “These large-scale solar projects in the desert are giant experiments, and we should be learning something from them in order to avoid and minimize impacts. We’re so low on the learning curve that there’s a lot of unanswered questions.”

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