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RENEWABLE ENERGY:

Wildlife impacts of solar development not fully understood -USGS

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Scott Streater,
E&E reporter

A recent government finding of a dearth of academic research on the impacts of solar-power development on wildlife has prompted some environmentalists to call on federal regulators to slow development of the renewable energy resource.

At issue is a U.S. Geological Survey-led study published last month in the journal BioScience that concluded more research is needed to properly evaluate cumulative impacts of large-scale solar development to wildlife and wildlife habitat, particularly threatened desert tortoises in the Southwest.

"We are not aware of any published studies documenting the direct effects of [solar development] on the survival of wildlife," according to the 12-page analysis, entitled "Wildlife conservation and solar energy development in the desert Southwest."

A new analysis by government and academic experts suggests that more research needs be to done to determine the wildlife and habitat impacts of commercial-scale solar-power development. Photo courtesy of Department of Energy.

Such information is critical, according to experts, to determine appropriate mitigation for environmental impacts associated with solar power developments that often remove thousands of acres of prime habitat for sensitive species.

"Our analysis shows that, on a local scale, so little is known about the effects [of solar development] on wildlife that extrapolation to larger scales with any degree of confidence is currently limited by an inadequate amount of scientific data," according to the study. "Therefore, without additional research to fill the significant information void, accurate assessment of the potential impacts of solar energy development on wildlife is largely theoretical but needs to be empirical and well-founded on supporting science."

The study comes as the federal government is undertaking an unprecedented effort to expand development of solar, wind and geothermal power production on public lands.

As part of that push, the Bureau of Land Management is developing a programmatic environmental impact statement (PEIS) that would establish 17 solar energy zones (SEZs) covering 285,000 acres across six Western states (E&ENews PM, Oct. 27, 2011).

At the same time, BLM is processing nearly 80 applications for energy projects that would carve up about 685,000 acres of desert habitats. The size, scope and relative haphazardness of development in the Southwest has begun to alarm federal biologists, conservationists and some sportsmen (Greenwire, Dec. 23, 2011).

The new study's authors -- USGS research ecologist Jeffrey Lovich and Joshua Ennen, a biologist at Maryville College in Tennessee -- said last week that a search for academic papers going back nearly four decades found only one peer-reviewed study addressing the impacts of solar development on wildlife. That study, published in 1986, dealt only with the impacts of solar plant operation, not construction and decommissioning activities.

The researchers pointed out that some information on wildlife habitat impacts has been compiled by energy developers and government regulators in environmental compliance documents, but those findings have either not been published or are not independently written and reviewed.

"The dearth of peer-reviewed studies, as shown by the USGS review, can happen whenever society rapidly embarks on major undertakings, such as developing large-scale solar projects," USGS Director Marcia McNutt said in a statement. "Our goal is to raise the visibility and accessibility of information of impacts of solar energy impacts on wildlife as these important projects move forward."

But some environmentalists say this dearth of scientific information warrants slowing solar development.

Researchers and environmentalists are growing increasingly concerned that increased solar-power development in the Southwest could wipe out federally threatened desert tortoises. Photo courtesy of WildEarth Guardians.

"What USGS has done is shown what we've been saying all along, and that is that the agencies are not taking these impacts on species as a whole very seriously," said Michael Connor, California director of the Western Watersheds Project in Reseda, Calif. "They're ignoring impacts to habitat, and they're ignoring habitat fragmentation."

He added: "I think they should basically stop processing of these projects until they've completed a study of the large-scale impacts."

Moving forward

At the very least, BLM should take greater effort to site solar projects on brownfields and other disturbed sites, said Ileene Anderson, staff biologist for the Center for Biological Diversity in Los Angeles.

"I certainly think they should prioritize projects that are on already disturbed lands as opposed to pristine lands where we don't know the full impacts of buildout," Anderson said.

But BLM officials defended the agency's solar development efforts.

David Quick, an agency spokesman in Washington, D.C., pointed to the evolving solar energy zones PEIS, which is designed "to facilitate better, smarter siting of utility-scale solar projects to avoid or minimize conflicts with important wildlife, cultural and historic resources," he said in an emailed statement.

"On the projects that we are approving in the meantime, the BLM is working closely with federal, state and local partners, members of the environmental and conservation community and interested stakeholders to advance environmentally-sound projects and put in place mitigation measures where necessary," Quick added.

Example: the 275-megawatt Centinela Solar Energy Project in Imperial County, Calif., approved by BLM last week, which Quick said will be built on private agricultural land to avoid "impacts to higher-quality habitat."

And BLM has no plans to slow the pace of permitting. The agency has identified nine priority solar power proposals for 2012 covering 23,000 acres of federal land.

Last week, the agency published a Federal Register notice announcing plans to develop a new rule that would allow wind and solar companies to bid for leasing rights on public lands, increasing competition and boosting revenues to taxpayers (See related story).

For its part, the solar power industry is doing the best it can to locate projects away from sensitive habitat.

"The current permitting process is rigorous and it requires rigorous review," said Monique Hanis, a spokeswoman for the Solar Energy Industries Association, an industry trade association. "This rigorous review process involves various stakeholders and has actually resulted in projects being adapted or altered to address [habitat] concerns."

But, she added, "I think we would welcome peer-reviewed studies and more empirical data outlining the best practices, and the industry would adapt to those findings. But right now we're using the best information available and coming up with the best solutions we have now."

Proper mitigation?

The USGS analysis made particular note of the lack of research on impacts to threatened Mojave and Sonoran desert tortoises, the protection of which has already been a major sticking point for several large-scale solar projects.

The tortoises roam more than 6 million acres in Arizona, Nevada, Utah and California, spurring both lawsuits from environmental groups and multimillion-dollar mitigation plans from some solar developers.

While BLM's forthcoming PEIS seeks to site solar projects in areas with few environmental conflicts, the USGS study notes that as many as 1.9 million acres of Mojave desert tortoise habitat would be directly and indirectly impacted by solar development within the BLM study area.

"Some SEZs are adjacent to critical habitat designated for the recovery of [Mojave] desert tortoise, and this proximity is considered part of the indirect impacts," according to the USGS study.

The study also questions whether currently accepted mitigation strategies that call for relocating tortoises off the project site are actually causing more harm than good to the animals.

"Current mitigation strategies for desert tortoises and other protected species include few alternatives other than translocation of the animals from the footprint of the development into other areas," according to the study. "Although this strategy may be appealing at first glance, animal translocation has a checkered history of success, especially for reptiles and amphibians."

As a result, the strategy "has yet to be demonstrated as a viable long-term solution that would mitigate the destruction of [Mojave] desert tortoise habitat," according to the study.

But the strategy continues to be employed by BLM as a condition for approval for some large-scale solar projects on federal land.

For example, BrightSource Energy Inc. has purchased 4,000 acres and plans to relocate hundreds of tortoises off the Ivanpah Solar Electricity Generating System site in San Bernardino, Calif.

BLM last April suspended construction of the Ivanpah plant after determining that construction would lead to the loss of 3,520 acres of tortoise habitat, the capture of as many as 274 tortoises and the deaths of as many as 608 of the iconic desert species -- far above a previous prediction that said only dozens of the animals would be disturbed. A new assessment was conducted, and BLM allowed plant construction to resume (Land Letter, June 16, 2011).

"You can take tortoises out and move them, but one of the principle rules of reproductive success is the carrying capacity of the habitat in which they live," said Anderson, the CBD biologist. "If you move more tortoise onto existing tortoise habitat, are you subjecting them to increased competition for limited resources that are there, and will that impact not only the relocated tortoises but the host population? There are so many unanswered questions."

Without those answers, according to the study's authors, "resource managers will be unable to effectively minimize the negative effects of [solar development] on wildlife, especially before permitting widespread development of this technology on relatively undisturbed public land."