Solar panels can attract breeding water insects

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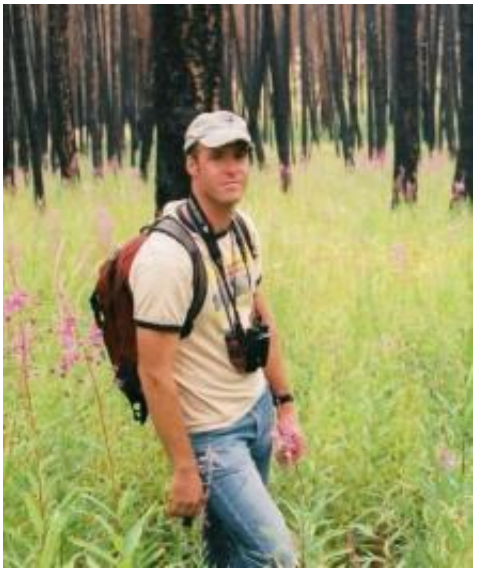

Bruce Robertson is a research associate at Michigan State University's W.K. Kellogg Biological Station. Credit: Bruce Robertson

Solar power might be nature's most plentiful and benign source of energy, but shiny black solar cells can lure water insects away from critical breeding areas, a Michigan State University scientist and colleagues warn.

Applying white grids or other methods to break up the polarized reflection of light, however, makes mayflies and other aquatic insects far less likely to deposit eggs on the panels thinking that they are water, the

group discovered.

"This research demonstrates that solar panels are a strong new source of polarized light pollution that creates ecological traps for many types of insect," says Bruce Robertson, a research associate at MSU's Kellogg Biological Station in Hickory Corners. "This is of significant conservation importance given the radical expansion in solar energy development and the strong negative impacts of ecological traps on animal populations."

Using nonpolarizing white grids, he adds, demonstrates a novel approach to reducing the attractiveness of a false habitat by applying what biologists call habitat fragmentation. That is an effect that usually is harmful to species, but in this case promises to solve a conservation problem.

Robertson's team estimates that adding white markings to solar cells might reduce their ability to collect solar energy by perhaps 1.8 percent, depending on the amount of space the strips cover.

Conventional solar cells share a problem with glass-clad buildings and other expanses of shiny dark surfaces - even vehicles. Reflected sunlight becomes polarized, or aligned in a single, often horizontal plane, which is how at least 300 species of insect recognize the surface of water bodies to lay their eggs.

When species such as mayflies and caddis flies mistake shiny dark surfaces for water, they set themselves up for reproductive failure and often become easy targets for predators, Robertson and colleagues noted in a recent online article in the journal Conservation Biology. Local population collapse could be a result, with cascading impacts on predators and other species up the food chain.

Humans typically recognize reflected sunlight as glare, which polarized sunglasses overcome by filtering the horizontal waves through vertically polarized lenses.

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