Sick Damselflies Hit the Road

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In this season of swine flu, you'd be forgiven for staying home if you felt a bit under the weather. But what if you got in your car and drove to the next state? That's essentially what male damselflies do when they're not feeling well, according to a new study. The move may help these delicate-looking cousins of dragonflies find more sanitary surroundings and colonize new habitats.

There's been circumstantial evidence that damselflies and even songbirds such as great tits move far from home when sick, but no one had rigorously tested the idea, says evolutionary ecologist Markus Rantala of the University of Turku in Finland. His team wasn't planning on testing it either. Instead, Rantala and colleagues wanted to see whether damselfly males become less territorial when they have to spend energy fighting an infection. They do, to an extreme. When the researchers inserted snippets of nylon fiber--which provoke the immune system by imitating the mouthparts of a parasitic mite--into the insects' abdomens, all of them fled, says Rantala.

That inconvenient result inspired the team to tackle the link between dispersal and sickness. With the help of several students, the researchers netted 234 male damselflies--which are easier to capture and track than females--at three sites. Under a tent by a river, they inserted bits of nylon fiber into some of the insects. A second group got a sham operation, a slender puncture wound without the filament. And a third group was only handled. The researchers returned each insect to his original territory and checked back over the next 4 days to see who stayed home and who flew off.

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Spooked? When their immune systems see trouble, damselflies take off.

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The males "infected" with faux parasites flew four times as far as the control males--about 400 meters on average and up to 2.5 kilometers, the researchers report online this month in *Oecologia*. Only a single control male flew that far, and, by the end of the study, he had symptoms of a real disease, a fungus. The sham-operated males were in between, which makes sense, Rantala says, because wound healing requires a mild immune response.

"It was a very dramatic shift in how far these insects went," says ecologist Robert Holt of the University of Florida, Gainesville, who was not involved in the study. Even though parasites harm the individual, he adds, they could actually help the species by goading damselflies to spread across the landscape.

As to why sick damselflies disperse, it may be that fighting infection takes so much energy that the insects can't muster the strength to defend their territory, Rantala says. At the same time, the move might help them find a habitat where they are less likely to be parasitized again. That idea "needs a lot more attention," says Sonia Altizer, an ecologist at the University of Georgia, Athens, who was not involved with the study. If dispersal is a defense against parasites and pathogens, she worries that humanmade barriers such as roads and dams could cause animal populations to get stuck in one place and accumulate diseases.

Still, evolutionary ecologist Mark Forbes of Carleton University in Ottawa warns against overinterpreting the study. He wants to see whether real parasites have the same effect as artificial ones--and to know how widespread the phenomenon is in other species. "It's one of those studies that's going to generate a lot of interest" in how parasites influence the movement of species, he says.

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