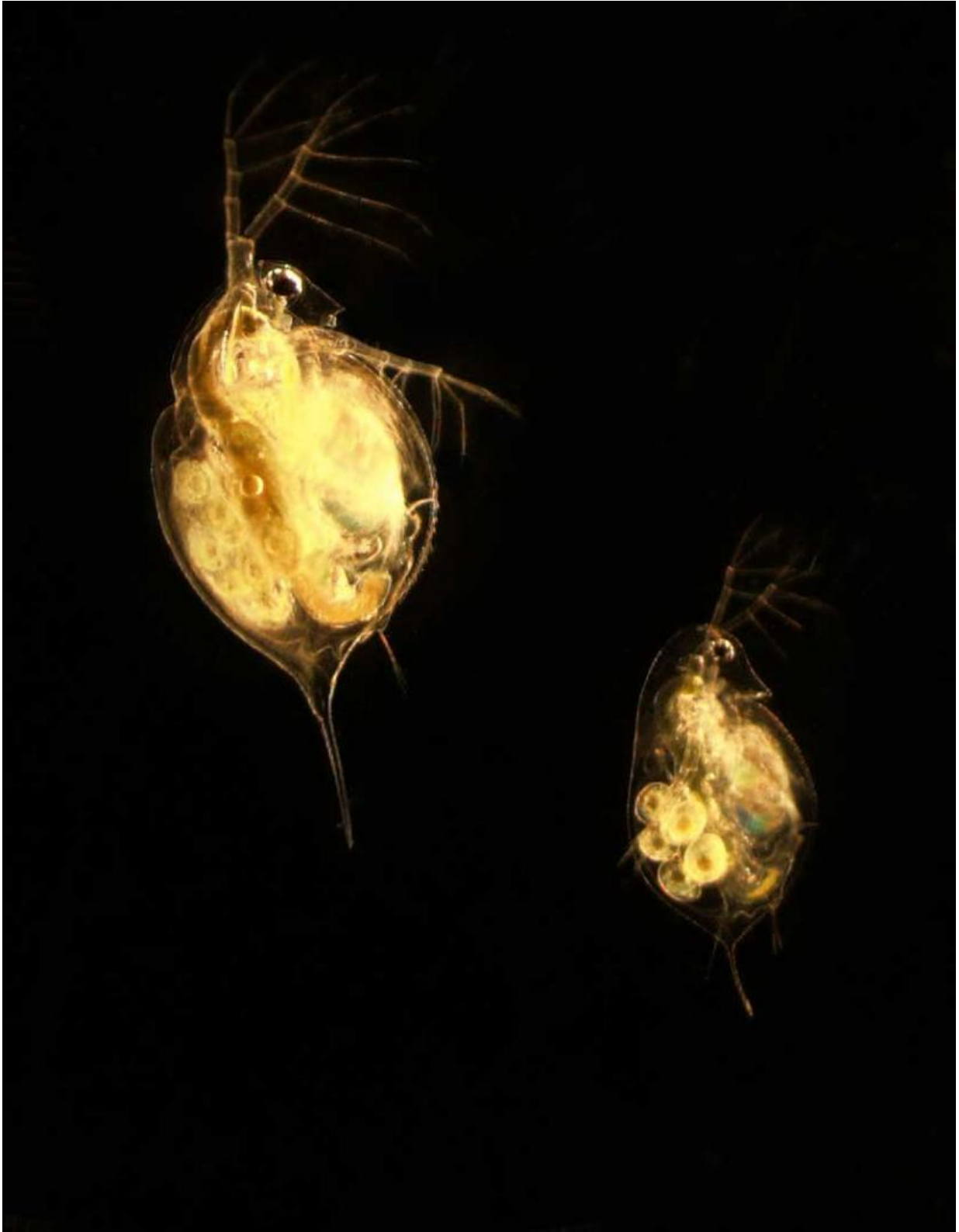


Invasive species may unexpectedly reduce disease prevalence

September 22 2016, by Liz Wason



An adult female *Daphnia lumholtzi* (top left) and an adult female *Daphnia*

dentifera (bottom right. Credit: I. A. Oleksy

Humans are remarkably good at moving species around: We unwittingly carry stowaway organisms in our luggage when we fly, in our cars when we take a road trip, and on our bodies when we're simply taking a stroll.

But what happens to the parasites of [native species](#) when a [new species](#) shows up, and could knowing what happens help us predict the effects of an invasive species on [disease](#)? A new study has found something unexpected—that invasive species may actually help prevent disease from spreading.

To figure out if such predictions are possible—and what information is needed to make those predictions—a team of researchers from the University of Michigan, Purdue University and Utah State University carried out a study on an invasive water flea, *Daphnia*, that has begun to spread in freshwater areas throughout the United States.

Their experiment asked how the invasive water flea is affecting the dominant native water flea and the fungal parasite that the two species share. Results of the study were published online in *The American Naturalist* on Sept. 20.

Researchers noticed that the invasive water flea became infected by the fungal parasite very easily. Thus, they predicted that the presence of invasive water fleas would easily spread the fungus, which would cause higher rates of disease. To test their hypothesis, the researchers created multiple miniature indoor "lakes" out of buckets, adding invasive water fleas to some buckets but not others.

Surprisingly, they found that the presence of invasive species actually

decreased the amount of disease present in the miniature ecosystems.

To understand their unexpected result, the research team created a mathematical model to mimic the conditions in the buckets. They found that the invasive species reduced disease because the invasive water flea competed for resources with the native water flea, which reduced the total number of water fleas present in the buckets.

With fewer hosts in the buckets, fewer parasites could survive, which led to lower rates of disease in buckets containing invasive water fleas. The fungus had a harder time finding new individuals to infect, thereby reducing disease.

The study has broader implications for predicting how an invasive species will affect disease prevalence. Scientists must take into account the ecological characteristics of invasive species, including the ways in which the [invasive species](#) affect the number of other organisms in a community.

More information: Catherine L. Searle et al. Population Density, Not Host Competence, Drives Patterns of Disease in an Invaded Community, *The American Naturalist* (2016). [DOI: 10.1086/688402](https://doi.org/10.1086/688402)

Provided by University of Michigan

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