

Best of frenemies: Unexpected role of social networks in ecology

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Social networking, even between competing species, plays a much bigger role in ecology than anyone previously thought, according to three biologists at the University of California, Davis.

"There's mounting evidence that different [species](#) pay attention to each other in the wild, especially if they share predators," said Mike Gil,

postdoctoral researcher at UC Davis. "The theory of ecology has lagged behind."

Gil and co-authors Marissa Basket, associate professor of environmental science and policy, and Sebastian Schreiber, professor of evolution and ecology, outline their new theory in a paper published in the November issue of the journal *Ecology*.

Gil wants to understand how populations interact with each other and change over time. Traditionally, ecologists have focused on competition between species for food and other resources.

"But we typically leave out the specifics of animal decision making and [social behavior](#)," Gil said.

Ecological frenemies

For example, gazelle, wildebeest or zebra could cue in to the presence of a predator such as a lion by seeing other species react, using the "network" to keep themselves safe. The new model by Gil, Basket and Schreiber is the first to take this kind of short-term information sharing into account at the [population level](#).

"It completely changes the long-term dynamics of the system," Gil said.

The effects are especially strong at low population densities, he said. When population density is high, the models show, competition between species is a stronger influence. Sheer numbers may also crowd out social cues.

The new theory could clear up some existing puzzles in ecology. For example, how do competing species co-exist without one driving the other out? A bit of help through social interactions could help

"frenemies" get along, Gil said.

Technology brings new insights

Advances in technology—including cheaper cameras and sensors, and the [computing power](#) to manage large amounts of data—have made it easier than ever to study short-lived interactions between species in the wild, Gil said.

"We can collect data now that we could only dream about a decade ago," he said. "It's an exciting time to be a biologist."

More information: M. A. Gil et al, Social information drives ecological outcomes among competing species, *Ecology* (2019). [DOI: 10.1002/ecy.2835](#)

Provided by UC Davis

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