

# Birds use social networks to pick opponents

June 9 2020, by Michael Miller

---



UC postdoctoral researcher Annemarie van der Marel uses binoculars and a spotting scope to observe monk parakeets from a bird blind. Credit: University of Cincinnati

Knowing when to fight and when to flee is a big part of many animal

societies, including our own.

University of Cincinnati biologist Elizabeth Hobson says some [animals](#) make the call based on a sophisticated understanding of social standing and their place in it.

"We have a phrase: Choose your battles wisely. Animals do that. People do that," said Hobson, an assistant professor in UC's College of Arts and Sciences.

In a new article published in the journal *Current Opinion in Psychology*, Hobson says some animals seem to understand where they fit in a dominance hierarchy and pick their fights accordingly. This high-level social information helps animals improve or maintain their status.

Dominance hierarchies are common social organizations in nature. They're found in everything from hermit crabs to human society, Hobson said.

"Understanding how information is perceived, processed and used by individuals in hierarchical systems is critical to understanding how animals make aggression decisions because different types of information can underlie different kinds of aggression strategies," she said in the article.

## **Making informed choices**

The most basic understanding comes from firsthand experience.

"The low-information case is when animals only perceive and remember things that happened to them. A good example of this is if you are beaten in a fight. You remember that you lost but not to whom you lost," she said.



Chelsea Carminito, who will begin her Ph.D. studies at UC soon, worked with monk parakeets in Florida. Credit: University of Cincinnati

Biologists say these battles can have a lasting impact on the combatants called winner effects and loser effects. Winners are more likely to be aggressive in future conflicts while losers are less likely to meet aggression with aggression or pick a new fight.

"With a strong loser effect, if you got beaten, you're less likely to fight again in the future," Hobson said.

Other animals might remember losing to a particular foe and be less inclined to challenge that foe in the future.

"What if you don't just remember the outcome but you remember who beat you? You can build on that," she said. "Going forward, you'll be less aggressive with the individual who beat you. It's a different social dynamic."

## **Transitive inference**

But some animals can make judgments not just through their own direct interactions but by observing other animals and making inferences about where those would-be opponents stand in the hierarchy.

This ability, known as transitive inference, goes like this: If animal A beats animal B and animal B beats animal C, you know animal A can beat animal C. It's a logical conclusion some animals seem to understand, Hobson said.

"Maybe they never have to fight C or they'll know they can beat C," she said.

Hobson has studied a variety of birds, from macaws in Peru to roseate terns in the Caribbean to Hawaiian songbirds called honeycreepers. She has focused much of her research on [monk parakeets](#), a South American parrot that lives in large colonies. Each day, the parakeets wage a persistent battle to be top bird.



Captive Mexican wolves display aggression before reaffirming ties with collective howls. Credit: Michael Miller

At a private enclosure in Florida, Hobson and her UC students study the green and gray parakeets in an aviary to learn how they climb the social ladder.

Monk parakeets are a little smaller than a crow. They've established themselves as invasive species in some U.S. cities. They build massive stick nests where groups of a dozen or more birds can live.

To study parakeet [social structure](#), Hobson's team employs a computational approach. Hobson's team uses a custom biology app to document interactions between and among the birds, noting the

instigators and targets. Students use coding and computational modeling techniques to make statistical sense of their observations.

The birds' behaviors are purposeful, Hobson said.

"One will sidle over to the other and lunge at it with an open beak. The loser of the fight runs or flies away and the winner gets the spot," she said.

It didn't take long for researchers to notice some birds were bullies of the group.

"From a personal perspective, it seems that way. You get a sense for their individual personalities," student Chelsea Carminito said. She will begin her doctoral studies at UC in January.

Hobson said her previous experiments with the parakeets show that higher ranking monk parakeets don't seem to "punch down" by attacking the lowest-ranking birds. Since any fight carries inherent risk, there is little benefit. Instead, they typically target opponents closer in rank to themselves in a close-competitor strategy.

"If you want to maintain your rank, differentiating those close and far from you in social standing could help you choose your fights," she said.



Claire O'Connell, who will begin her Ph.D. studies at UC soon, works with monk parakeets in Florida. Credit: University of Cincinnati

## **UC student research**

Some of Hobson's students plan to pursue their own research questions using the parakeets as a model.

"They're fun to watch. They can be extremely vocal," UC graduate student Claire O'Connell said.

"Monk parakeets live in large groups with a lot of information to process daily," O'Connell said. "Since there is so much social plasticity, they need to be able to adapt quickly to their social situation."

But O'Connell said they can be gentle, too.

"On the other side of aggression they have affiliative behavior. They'll work out these friendships and groom each other, called allopreening," she said.

Because they're so social, there are hundreds of interactions to observe each day to help understand monk parakeet society. But they're not the friendliest animals toward researchers, who wear heavy gloves when handling them.

"Monk parakeets are very bitey," Carminito said. "Parrots have strong beaks. They use their beak like a third foot to climb and hold onto things and crack into food. So those beaks are very strong. And they will bite you."

And with their notorious dexterity, most ID tags don't last very long under the crushing power of their beaks, Hobson said.





UC biologist Elizabeth Hobson, right, and postdoctoral researcher Annemarie van der Marel mark a monk parakeet for identification purposes. Credit: University of Cincinnati

"They're extremely interesting but incredibly frustrating to study," Hobson said.

While monk parakeet society has little in common with ours, Hobson said you can draw some comparisons. Take social media, where celebrities and politicians usually refrain from picking fights with people with few followers.

"Sometimes you get a rule-breaker. A famous person on Twitter gangs up on someone with 20 followers because they said something the famous person disagreed with," she said.

But people tend to notice because it happens so infrequently, Hobson said.

With new graduate students joining her lab, Hobson said she can't wait to explore more questions about animal social structures.

"This paper is setting up a perspective I want to push in my research program. It will be an exciting time," Hobson said.

**More information:** Elizabeth A Hobson. Differences in social information are critical to understanding aggressive behavior in animal dominance hierarchies, *Current Opinion in Psychology* (2019). [DOI: 10.1016/j.copsyc.2019.09.010](https://doi.org/10.1016/j.copsyc.2019.09.010)

Provided by University of Cincinnati

Citation: Birds use social networks to pick opponents (2020, June 9) retrieved 26 April 2024 from <https://phys.org/news/2020-06-birds-social-networks-opponents.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.