

Tit-for-tat: birds found to repay wartime help

July 6, 2008

Special to [World Science](#)

When it spots a lurking predator, the sparrow-like pied flycatcher reacts in a way common among some birds and mammals. It calls up a mob of its peers to drive the interloper away.

But more than a feisty defender, the flycatcher is also a shrewd account-keeper, researchers say: it remembers which neighbors answered its call to arms, and which stayed home—and repays each in kind. Scientists say the behavior offers new insights into the evolution of cooperation and altruism, and a new appreciation of the complexity of bird social life.

Apparently even some birds have learned that “playing nice pays,” University of Chicago evolutionary biologist David Wheatcroft wrote recently, alluding to the flycatcher research, in which he was not involved.

The findings imply “a level of sophistication in bird communities greater than had previously been realized,” he went on, writing in the June 26 advance online issue of the the research journal *Trends in Ecology & Evolution*. Similar behavior to the flycatchers’ has been found in red-winged blackbirds.



A group at the University of Daugavpils, Latvia and the University of Tartu, Estonia placed 300 flycatcher couples in nest boxes in groups of three in a pine forest.

The researchers then watched what happened when they placed a stuffed owl visibly next to the nests. In certain runs of the experiment, the investigators also secretly abducted one couple from each group at random, so that these couldn’t join in any “mobbing” behavior.

The results: Other birds would initiate mobbing, by sounding special calls. An hour later, once returned to their nest, every absented bird couple saw its attempts to initiate a charge shunned by the previous initiator, though other group members usually still helped. Those who had joined the first time—and all did when available—almost all saw their assistance repaid.

“Co-operating flycatcher families won the reward,” but “non co-operators were immediately punished,” wrote the researchers, Indrikis Krams of the University of Daugavpils and colleagues in the February issue of the journal *Behavioral Ecology and Sociobiology*.

Robert Olendorf of Michigan State University and colleagues reached similar conclusions in a study with male red-winged blackbirds published in the Jan. 22, 2004 issue of *Proceedings of the Royal Society: Biological Sciences*. Olendorf's group used recorded bird calls in place of real ones.

The findings may help shed light on how cooperation evolved, even among unrelated individuals, Krams and colleagues wrote. That has been a perennially thorny question for researchers.

Evolution occurs when stronger or fitter individuals reproduce more than others in their population, so their genes spread more widely at the expense of less "fit" genes. Many repetition of this can even change species into new ones. But kindness and helping seem to provide no fitness advantage, and may even hurt, so it seems any genes for these should have died out long ago. Yet these qualities exist, and even some possible genes for them reportedly identified.

A range of explanations has been proposed. One theory is that the cooperation arises from reciprocity: animals develop the tendency to help because they will receive help in return. This poses its own difficulties—who repays the first helper's trouble? Regardless, if reciprocity is part of the equation, it clearly has a better chance of evolving among groups of animals that are familiar with each other, so each member can track who has been naughty and who nice.

Previously, reciprocal altruism had been shown only in a few species besides humans, such as vampire bats that exchange food and some apes. Flycatchers also show the ability to recognize each other as individuals, Krams and colleagues wrote—so some birds battles can be added to the list of animal behaviors explained by reciprocal altruism.

Image; The pied flycatcher Ficedula hypoleuca (Courtesy Miika Silfverberg)