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# LECTURE SERIES

FALL/WINTER 2017/18

Max Planck Institute  
for Ornithology



MAX-PLANCK-GESELLSCHAFT

THURSDAY | March 15th, 2018 | 13 P.M. | HOUSE 4 LECTURE ROOM

## GERRY CARTER

Max Planck Institute for Ornithology; Radolfzell | Host: Görlitz Research Group

### Cooperative Relationships In Vampire Bats: The Reciprocity Controversy

Food sharing in vampire bats has been a classic textbook example of “reciprocal altruism”, or reciprocity. In the last two decades, however, evidence of reciprocity in nonhuman animals has been much debated. In this talk, I review the current evidence for and against the importance of reciprocity in food sharing among both kin and nonkin vampire bats. Fasting trials with familiar captive bats show that reciprocal sharing is more important than kinship for predicting food sharing and for predicting attraction to playback of contact calls. Power-analysis simulations using behavioral data from vampire bats (563 observations, 36 individuals), mandrills (1703 observations, 10 individuals), and macaques (737 observations, 22 individuals) show that kinship effects can mask reciprocity, even when reciprocal help is more predictive. This is because, the precision of kinship estimates is independent of the number of behavioral observations that accumulate, so nepotism is detected earlier and symmetrical sharing between kin is counted as evidence for kinship bias, not reciprocity, in a linear model with both kinship and reciprocal help as factors. Both food-sharing and allogrooming rates are responsive to experimental manipulations of neuroendocrinology, social experience, donor costs and receiver benefits. Most notably, exclusion experiments show that helping kin yields greater inclusive fitness benefits per capita, but helping nonkin creates more ‘backup’ partners that allow bats to cope better with loss of primary donors. Current work is tracking how food-sharing bonds form between previous strangers. In summary, several lines of evidence support the reciprocity hypothesis, but it has yet to be demonstrated that reducing cooperative returns from a specific partner reduces a bat’s food-sharing rates to that partner. Finally, I discuss evidence that food-sharing is one part of a long-term cooperative relationship that may provide other social benefits.

#### WHO IS GERRY CARTER?

2005	BSc, Presidential Research Scholar, Cornell University, USA
2008	MSc, Ontario Graduate Research Fellow, University of Western Ontario, Canada
2015	PhD, Ford Predoctoral Fellow, University of Maryland, USA
2016	Smithsonian Fellow, Smithsonian Tropical Research Institute, Panama
2017	Humboldt Fellow, Max Planck Institute for Ornithology, Germany (November 2017 – July 2018)
2018	Assistant Professor, The Ohio State University, USA (starting August 2018)

#### SELECTED PUBLICATIONS

- Carter G, Farine D, Wilkinson G. 2017. Social bet-hedging in vampire bats. *Biology Letters*. 13:20170112.
- Carter G, Wilkinson G, Page R. 2017. Food-sharing vampire bats are more nepotistic under conditions of perceived risk. *Behavioral Ecology*. doi:10.1093/beheco/arx006
- Carter G, Wilkinson G. 2016. Common vampire bat contact calls attract past food-sharing partners. *Animal Behaviour*. 116:45-51.
- Carter G, Wilkinson G. 2015. Social benefits of non-kin food sharing by female vampire bats. *Proceedings of the Royal Society B*. 282: 20152524.
- Carter G, Wilkinson G. 2015. Intranasal oxytocin increases social grooming and food sharing in the common vampire bat. *Hormones and Behavior*. 75: 150-153.

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