

MENU

# Chronic illness causes less harm when carnivores cooperate

17 May 2015



Wolves, several of which are infected with sarcoptic mange, from Yellowstone National Park, WY. Credit: National Park Service

Gray wolves in Yellowstone National Park have given researchers the first scientific evidence from wild mammals that living in a group can lessen the impacts of a chronic disease. The research also is one of the first studies to measure the costs of infected non-human individuals of any species on members of their group. A paper describing the research will be published in *Ecology Letters* on May 18, 2015.

"Our research with wolves illustrates that social groups can help to offset the survival costs of infection with the parasite that causes mange," said **Emily AlMBERG**, a research scientist at Penn State University and the lead author of the study. "It suggests that social living might help individuals cope with a variety of other chronic conditions -- including other infections, physical injuries, or non-infectious diseases -- for which having access to supportive care and resources can make a big difference for survival."



A wolf pup, infected with sarcoptic mange. Credit: National Park Service.

The study revealed that wolves living alone while infected with mange had a death rate that was five times higher than uninfected wolves living alone. The study also revealed that wolves infected with mange that were living in a pack with at least five other healthy wolves had the same rate of death as their healthy companions. "Our hypothesis is that pack-mates are able to offset the survival costs of infection with mange -- and perhaps other infections -- by assisting with food acquisition and territory defense," said **Peter Hudson**, the senior author of the paper, director of the Huck Institutes of Life Sciences and Willaman Professor of Biology at Penn State, and a professor at the Nelson Mandela Institute in Tanzania.

The research also revealed that the size of the wolf pack did not predict the risk of individuals becoming infected with mange. But, Almborg said, there are other situations in which social living does come with an increased risk of disease transmission. "What we've under-appreciated in the past are the ways in which social species might compensate for this increased disease risk," she said. "In some cases, social species exhibit adaptive behavior to limit the spread of disease -- things like defending territories or having distinct social roles within the group that limit contact and therefore disease transmission, but our research has shown that group living can alleviate the actual cost of an infection as measured by survival rates."

In addition to Almborg and Hudson, other members of the research team are **Paul C. Cross** of the U.S. Geological Survey, **A. P. Dobson**, of Princeton University and the Santa Fe Institute, **D. W. Smith** of the Yellowstone Wolf Project, **M. C. Metz** of the Yellowstone Wolf Project and University of Montana, and **D R. Stahler** of the Yellowstone Wolf Project.

The research was supported, in part, by a Park Oriented Biological Support grant from the U.S. Geological Survey, the National Park Service, and National Science Foundation grants DDIG-1311409, DEB-0613730, and DEB-1245373.

[ Barbara K. Kennedy ]

## CONTACTS

- Peter Hudson: [pjh18@psu.edu](mailto:pjh18@psu.edu), 1-814-865-6057
- Emily Almborg: [esa5046@psu.edu](mailto:esa5046@psu.edu) and [emilysalmborg@gmail.com](mailto:emilysalmborg@gmail.com)
- Barbara Kennedy (PIO): [science@psu.edu](mailto:science@psu.edu), 1-814-863-4682