

# Prairie dogs disperse when all close kin have disappeared

March 7 2013

---



Prairie dogs look for a new place to live when all their close kin have disappeared from their home territory. Credit: ELAINE MILLER BOND, [elainemillerbond.com](http://elainemillerbond.com)

Prairie dogs pull up stakes and look for a new place to live when all their close kin have disappeared from their home territory—a striking pattern of dispersal that has not been observed for any other species. This is according to a new study published in *Science* by behavioral ecologist John Hoogland, Professor at the University of Maryland Center for

Environmental Science's Appalachian Laboratory. He has been studying the ecology and social behavior of prairie dogs in national parks in Arizona, South Dakota, and Utah for the last 40 years.

For most animals, individuals leave a territory, or disperse, to avoid competition with nearby relatives, such as mother or sibling. For three species of prairie dogs, however, individuals are more likely to disperse in the absence of nearby close kin. Females are 12.5 times more likely to disperse when close kin are absent for one species, and 5.5 times more likely for another species.

Prairie dogs are large, burrowing rodents of the squirrel family. They live in colonies in grassland ecosystems of western North America, and forage aboveground on grasses and other plants from dawn until dusk. Within colonies, prairie dogs live in territorial, contiguous family groups called clans, which typically contain one mature male, two to five mature females, and one or two adolescent males. Hoogland has been trying to figure out which individuals disperse from the territory of birth, and why.

"The key to our research is that we live with the prairie dogs for five months of every year," says Hoogland. "Students and I climb into our observation towers at the study-colony at dawn each morning before the prairie dogs wake up, and we stay there until the last individual has submerged into its burrow for the night."

The prairie dogs all have numbered eartags (which are inserted at [weaning](#) and remain their entire lifetime), and the flank of each individual is uniquely marked with fur-dye so that it can be identified from a distance. The researchers therefore can document which prairie dogs get captured by predators, which ones mate and produce offspring, and which ones disperse to new territories.

"Prairie dogs are excellent models for a study of dispersal because they are easy to live-trap, mark, and observe," says Hoogland, "And they usually move only short distances to nearby territories."

Why are prairie dogs so different regarding dispersal? According to Hoogland, prairie dogs resemble other animals and compete with nearby kin for resources such as burrows and mates. But prairie dogs also cooperate with kin in the excavation of burrows that can be as deep as 15 feet; in defense of the home territory against prairie dogs from other territories; by giving alarm calls when a large predator such as a coyote attacks; and by helping to chase small predators such as long-tailed weasels. Another important cooperative behavior is communal nursing (the suckling of non-offspring), which can be life-saving for the unweaned offspring of close kin when the mother of those offspring dies for any reason.

Hoogland hypothesizes that the benefits of cooperation with close kin exceed the costs of competition with those same close kin. When all close kin disappear, individuals disperse because they have nobody with whom to cooperate. When the option is available, [prairie dogs](#) frequently disperse into a territory that contains close kin who dispersed there earlier—so that benefits from cooperation are once again available.

Scientists at the University of Maryland Center for [Environmental Science](#)'s Appalachian Laboratory in Frostburg actively study the effects of land-use change on terrestrial and freshwater ecosystems and how human activity may influence their health and sustainability on local, regional and global scales. The scientific results help to unravel the consequences of environmental change, manage natural resources, restore ecosystems, and foster ecological literacy.

**More information:** "Prairie Dogs Disperse When All Close Kin Have Disappeared," by J.L. Hoogland, *Science*, 2013.

Provided by University of Maryland Center for Environmental Science

Citation: Prairie dogs disperse when all close kin have disappeared (2013, March 7) retrieved 23 June 2024 from <https://phys.org/news/2013-03-prairie-dogs-disperse-kin.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.