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Finding Order
in Chaos

Big brown bats seem to lead a chaotic life in Saskatchewanâ€™s Cypress Hills, their social order marked by tenuous loyalties and shifting alliances. They abandon perfectly good tree roosts every few days and move into new ones. They form small groups that move together from roost to roost, then abruptly split apart. This looks like very peculiar behavior. How could such fickle bats possibly constitute a colony?

There is, it turns out, a likely and logical explanation to this apparent bedlam, one that would increase both the size of the colony and loyalty of its members. But it took a team from the University of Regina in Saskatchewan, Canada, three long, sometimes-frustrating and often-freezing summers to find it.

Ph.D. candidate Craig Willis was studying the roosting behavior and ecology of the big brown bat (*Eptesicus fuscus*) in an area where they roost exclusively in trees. The Cypress Hills, which straddle the Alberta-Saskatchewan border about 60 miles north of Montana.

For three summers, Willis kept tabs on radio-tagged bats as they moved from tree to tree. What they found confusing. Occasionally, a few bats in a roost tree would switch while others would stay behind, usually leaving a day or two later. Some pairs or subgroups of bats would switch roosts together several times, then split up and switch roosts at different times. Sometimes bats would leave a tree for a few days, and then return to it.

But after extensive monitoring of dozens of bats and conducting a field experiment, Willis concluded that bats in the same patch of forest tend to stick together, even though no two individuals spend all their time together. This pattern of behavior called as a fission-fusion social structure. It has been described in some toothed whales and primates and among several species of bats.

Among big browns, the â€œfusedâ€ colony includes all individuals in one roosting area. â€œfissionâ€ part of the structure occurs during roost switching, when subgroups break apart and mix, with the bats ending up in different trees and often with different roostmates.

Given enough time, each bat would likely end up roosting with most, if not all, of the other individuals in the roosting area, allowing them to expand their social network and, in effect, increase their colony size without gathering all the bats in one place.
BCI members can read the whole story the complex social structure of these big brown bats in the Spring 2005 issue of BATS magazine.

All articles in this issue:

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- A â€˜Gentleâ€™ Boot for Wayward Bats

Barbara French, Bat Conservation Internationalâ€™s Science Officer, gets the same frantic call fairly often: â€œHow do I get this ...