Tree dens play a critical role in panda lifestyle

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In a paper recently published in the journal *Biological Conservation*, an international team of conservationists highlights the importance of tree dens for pandas raising infants in native habitats. The study, conducted in Fengtongzai and Foping Nature Reserves in China, analyzed the difference in microhabitats of cave dens and tree dens used by female pandas. The result of the research suggests that conservation efforts need to take into account key resources, such as large old trees that provide important microhabitats that support rare and endangered wildlife.

"Pandas are found in different kinds of forests in China," said the study's lead author, Wei Wei, an associate professor at China West Normal University. "Old growth forests provide large tree cavities for den sites, but pandas living in forests without these large old trees must use cave dens instead. We studied the microclimates inside these den habitats, and found that tree dens were better at buffering against extremes of temperature and humidity than cave dens—indicating that tree dens provide a more stable microclimate for rearing cubs."

The study was conducted with support of the National Natural Science Foundation of China, the State Forestry and Grassland Administration of China, the Ministry of Science and Technology of the People's Republic of China, and San Diego Zoo Global.

"Current monitoring practices for giant pandas and their habitat do not include systematic surveys of large old trees, but our data points to the possibility that these trees are critical limiting resources used by denning

maternal females, possibly facilitating offspring survival," said Zejun Zhang, professor and director of the Science Department at China West Normal University. "Future monitoring and management plans should emphasize this critical resource, so that we can better judge its importance for giant panda conservation."

Findings of this study may help guide future giant panda conservation efforts—in habitat management and, where needed, in construction of artificial dens. "Management practices that preserve large old trees may increase capacity of reserves to sustain larger giant panda populations," said Ron Swaisgood, director of Recovery Ecology at the San Diego Zoo Institute for Conservation Research. "Our data on preferred characteristics of dens also will provide important guidance for construction of artificial dens. Future experiments will evaluate whether building artificial dens that mimic the qualities of preferred natural dens will be a useful tool for improving den habitat while we wait for old growth forests to re-establish."

More information: Wei Wei et al, The role of den quality in giant panda conservation, *Biological Conservation* (2019). DOI: 10.1016/j.biocon.2018.12.031

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