Swifts' migratory behavior may have conservation implications

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Vaux's Swifts like these roots in chimneys during their annual migration. Credit: J. Garner

Resembling swallows but more closely related to hummingbirds, swifts have unique migratory behavior, roosting for days at a time in chimneys

or hollow trees along their migratory route in groups of hundreds or thousands of individuals. Little is known about whether groups that travel and roost together during migration are all from the same wintering site or are made up of individuals from across their winter range. A 2012 mortality event in British Columbia that killed more than 1,300 migrating swifts provided researcher Matthew Reudink of Thompson Rivers University and his colleagues with the opportunity to determine where the birds had spent the winter. Their results, forthcoming in *The Condor: Ornithological Applications*, suggest that the birds in the roost all came from the same two or three wintering sites. Bird breeding populations strongly connected to specific wintering areas may be more vulnerable to population declines, so this has important implications for swift conservation.

Like many birds that catch insects on the wing, Vaux's Swifts (*Chaetura vauxi*) have experienced significant population declines, and the May 2012 mortality event in Cumberland, British Columbia, may have killed nearly 3% of the province's population. "The circumstances surrounding the event are a bit unclear, but our understanding is that the birds became trapped in a chimney that was in a residence and were unable to escape out of the top," explains Reudink. "The resident created a tunnel using tarps and opened up the bottom of the chimney to allow the birds to escape through the house and out the front door, but unfortunately only about half escaped and the rest perished." Reudink was contacted due to his expertise on swifts to see if he could make use of the deceased birds for his research, and he and his colleagues randomly sampled 98 individuals, measuring each one and taking a small sample from the tip of the claw for isotope analysis.

The proportions of isotopes of hydrogen, carbon, and nitrogen in birds' bodies can tell researchers where they've been, because isotopes in bird tissue are determined by the isotopes found in nature where they've been eating and drinking. In this case, the results from the swifts' claws

suggested that they had all spent the winter in only two or three different areas in Mexico. While this result doesn't fully answer the questions about the swifts' degree of migratory connectivity, whether individuals from the same breeding site travel to the same wintering site, it's an important start. High levels of migratory connectivity can make populations more vulnerable to stochastic events—random, one-time events that kill large numbers of individuals, such as storms or the incident in the Cumberland chimney—and this information can be vital for protecting vulnerable species.

"Investigating whether these wintering clusters are linked to specific breeding regions is a next step we're beginning to consider," says Reudink. "As so many aerial insectivores are continuing to decline, it is all the more important to continue to make these links between different phases of the annual cycle, and hopefully this is a good first step. Undoubtedly, this was an awful event, but I hope that we can use these samples to learn a bit more about this fascinating, but under-studied bird."

More information: "Patterns of migratory connectivity in Vaux's Swifts at a northern migratory roost: A multi-isotope approach" will be available October 28, 2015 at www.aoucospubs.org/toc/cond/117/4

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