

First evidence for a second breeding season among migratory songbirds

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These eggs, collected in August 2006 from an orchard oriole nest in Sinaloa on the western coast of Mexico, are evidence of a second breeding season. Credit: University of Washington/Burke Museum

Biologists for the first time have documented a second breeding season during the annual cycle of five songbird species that spend summers in temperate North America and winters in tropical Central and South America.

It was known that these species, which migrate at night when there are fewer predators and the stars can guide their journey, breed during their stay in temperate regions of the United States and Canada.

But it turns out that they squeeze in a second breeding season during a stopover in western Mexico on their southward migration, said Sievert Rohwer a University of Washington professor emeritus of biology and curator emeritus of [birds](#) at the Burke Museum of Natural History and Culture at the UW.

"It's pretty much unheard of to have a nocturnal migrant with a second breeding season. It's a pretty special observation," Rohwer said. "We saw these birds breeding and we were completely surprised."

Migratory double-breeding has been observed in two Old World bird species on their northward migration, but this is the first documented observation of "migratory double breeders" in the New World, and the first anywhere for the southward migration, Rohwer said.

The scientists traveled to the lowland thorn forests of coastal western Mexico to survey and collect [songbirds](#) that had raised their young in the United States and Canada and then immediately migrated to Mexico to molt, or shed and replace their feathers.

But during July and August in three consecutive summers, 2005-2007, the researchers found individuals from five species - yellow-billed cuckoos, orchard orioles, hooded orioles, yellow-breasted chats and Cassin's vireos - that were breeding rather than molting.

They found evidence that the birds had, in fact, bred earlier that year. Females of all five species examined in July had dry and featherless brood patches, indicating they had bred earlier that summer. (To more efficiently transfer heat to eggs, the abdominal brood patch becomes featherless and thickened with fluid when females are incubating, but as the young mature it dries out and remains featherless.). In the Mexican breeding ground, there was a complete absence of young birds, indicating the females had not bred in the area of the thorn forests.

Active nests were found for two species and males of all five species were singing and defending territories or guarding females, behaviors associated with breeding. In addition, isotopic analysis of the birds' tissues showed that many had recently arrived in west Mexico from temperate areas farther north.

Rohwer is lead author of a paper describing the findings, published the week of Oct. 26 in the online edition of the *Proceedings of the National Academy of Sciences*. Coauthors are Keith Hobson of Environment Canada, a national agency charged with preserving environmental quality, and Vanya Rohwer, a graduate student at Queen's University in Kingston, Ontario. He is Sievert Rohwer's son and took part in the work while a UW undergraduate. The research was funded by the Burke Museum Endowment for Ornithology, the Hugh and Jane Ferguson Foundation, the Nuttall Ornithological Club and Environment Canada.

The observation is much more than an oddity in bird behavior, Sievert Rohwer said. He noted that orchard orioles might raise a first brood in the Midwestern and south-central U.S. and a second on Mexico's western coast, yet both sets of offspring find the same wintering area in Central America. The question is how both groups find the right place, since they must travel in different directions.

Then there is the yellow-billed cuckoo, once commonly seen throughout the western United States and as far north as the Seattle area but now seldom seen along the West Coast. Disappearing habitat in the U.S. is usually cited as the reason.

But Rohwer believes the real problem could be the transformation of thorn forests of southern Sonora and Sinaloa, states in northwestern Mexico, into irrigated industrial farms. That loss of habitat, he said, could mean not enough young are produced in the second breeding season to sustain the populations previously seen on the U.S. West Coast.

"It turns out that many of those migrants, both molt migrants and the newly discovered migratory double breeders, are dependent on the low-altitude thorn forests that become very productive during the monsoon," Rohwer said.

The thorn forests lie in an arid and forbidding scrubland that springs to life with the monsoon lasting from June through August. The monsoon brings virtually all of the area's annual rainfall. The small trees leaf out and insects become abundant, making an ideal stopover for migrating songbirds.

However, with plenty of biting insects, temperatures often at 100 degrees Fahrenheit and humidity hovering near 100 percent, it is a difficult place for researchers to work, so there has been little previous documentation of life in the thorn forest. The new findings could spur more work there.

"For western North America, the conservation implications are pretty serious," Rohwer said. "Biologists know theoretically that they should pay attention to these migration stopover sites, but they've been largely ignored for their conservation implications."

Source: University of Washington ([news](#) : [web](#))

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