

Birds communicate reproductive success in song

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Some migratory songbirds figure out the best place to live by eavesdropping on the singing of others that successfully have had baby birds – a communication and behavioral trait so strong that researchers playing recorded songs induced them to nest in places they otherwise would have avoided.

This suggests that songbirds have more complex communication abilities than had previously been understood, researchers say, and that these "social cues" can be as or more important than the physical environment of a site.

The discovery was just published in a professional journal, *Proceedings of the Royal Society B*, by scientists from Oregon State University, along with collaborators from Wellesley College, Queen's University and Trent University in Ontario, Canada.

"Finding the right habitat in which to breed is a matter of life and death for most birds," said Matthew Betts, an OSU assistant professor of forest science and expert on avian ecology. "They don't live a long time and they need to get it right the first time."

"The common wisdom is that these birds select sites solely on vegetation structure," Betts said. "If a bird selects a site for its nest that doesn't have the appropriate cover and food supply, it most likely won't be able to successfully breed. But now we know that young birds can listen to the songs of more experienced and successful birds and use this to help

decide where they will nest the next year."

The scientists discovered this in experimental studies at 54 research sites with the black-throated blue warbler in the White Mountains of New Hampshire. During the fall when some of these birds had successfully mated and were singing to their young – probably to teach the young ones how to sing – the researchers played recordings of their song in other places that were, in fact, lousy bird habitat. Other black-throated blue warblers flying overhead heard these songs and decided it must be a good place to live, all visual evidence to the contrary, and returned to these exact sites the next spring to nest.

Male birds were four times more likely to follow the cues provided by song than by their own observations of the physical environment, the study showed. And even though the male had made a poor choice, the females – too trusting for their own good - followed them there.

"We had a lot of birds come to settle in inappropriate habitat, just because they had heard our recorded bird songs there the previous year," Betts said. "We were actually pretty surprised that the effect of this communication was so strong."

The study was done with a single species of songbird, Betts said, but its findings are probably relevant to at least some other songbirds and perhaps other animal species as well. Much is not yet understood about the nature and importance of animal communication, but studies such as this make it clear that animals are, in fact, talking to each other in a social manner with information of considerable significance.

In the natural world, Betts said, there's a cost to making noise of any type – among other things, it can alert potential predators to your presence. So "it makes sense that if there's a risk to vocal communication, there must also be some important benefits."

It's been understood for some time, he said, that birds make various noises and songs for specific reasons, such as to defend their territory or attract mates – a "soft song" is often used in the presence of the female. This study takes the significance of that communication to a higher level, implying that what a bird hears may be more important than what they actually see or experience.

This ability, he said, may also be highly useful in the advent of climate change or other rapidly changing habitat conditions. It's a valuable shortcut. If birds can simply listen to vocal cues and make rapid decisions about something as important as future nesting habitat, Betts said, they may be able to respond more quickly and appropriately to degraded environmental conditions without having to experience them personally.

"If a bird can fly over a broad area and just by listening to songs identify 10 good places to nest, there's a real value to that," Betts said.

"Most migratory songbirds are very territorial and still might fight for those places next year, but one of them might be vacant, just from some bird that died over the winter," he said. "With little energy the songbird has found a successful place to rear its young, just by listening to other birds sing about their parental success."

Source: Oregon State University

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