

The Outside Story



Singing a Different Tune

By: Laurie Morrissey

Birdsong has always fascinated humans. Besides waking some of us up a wee bit too early in the morning, it has inspired musical compositions and immortal poetry. It has produced lush descriptions, like those of the early 1900s field guide author F. Schuyler Mathews, who wrote of the wood thrush's song: "It is like the harmonious tinkling of crystal wine-glasses, combined with the *vox angelica* stop of the cathedral organ."

Simon Pease Cheney, Mathews' contemporary, wrote in *Woods Notes Wild*, "...one is oblivious to all else, and ready to believe that the little song is not of earth but a wandering strain from the skies."

The language of birds is also an inspiration to scientific researchers. One of these is Jay Pitocchelli, an ornithologist at Saint Anselm College in New Hampshire.

Pitocchelli specializes in singing behavior, specifically geographic variations in the songs of the mourning warbler and the MacGillivray's warbler. The two wood warblers are believed to have diverged from a common ancestor about a million years ago.

The MacGillivray's warbler is a bird of the western United States and Canada, while the mourning warbler is a common summer resident of northeastern forests. The main plumage difference between the two is that the mourning warbler lacks the bold white eye-arcs above and below each eye that are characteristic of the MacGillivray's warbler. Their breeding ranges do not overlap, although there is a narrow hybrid zone in northeastern British Columbia.

Because both are notoriously shy and difficult to find, little has been known about their songs and communication systems. Pitocchelli is interested in how song differences across large regions of the breeding range, called regiolects, diverge within a species. A mourning warbler in the White Mountains may look identical to one in Nova Scotia, but its sound is different.

Pitocchelli's research may shed light on the role of song variation in the process of speciation. Presumably, songs from different regions of the breeding range become so different that birds of the same species cease to recognize each other. This gradual process of song divergence followed by behavioral isolation may have contributed to the evolution of new species.

Regiolects do not appear to be common in eastern North American birds. The black-capped chickadee, for example, sounds the same in Montana and Maine. The mourning warbler, on the other hand, has four regiolects: Western, Eastern, Nova Scotia, and Newfoundland. Pitocchelli has been studying mourning warblers in each of these regions. He described their song as “a rolling ‘cheery cheery chory chory,’ with the first part having a higher frequency.” By recording songs and using playback experiments, he has tested the ability of male birds in each of the four populations to discriminate between their own songs and the other three regiolects of their species.

What he has discovered is that there’s significant variability in how mourning warblers from different areas interpret the same songs. “The Newfoundland males could detect differences between themselves and the three other regiolects,” Pitocchelli said. “Western birds showed similar levels of discrimination. The Eastern and Nova Scotia males had much more trouble detecting differences between their own songs and songs of the other regiolects.”

Besides researching how the song changes across the mourning warbler’s breeding range, Pitocchelli has tried to identify what he described as the “raw materials” that distinguish different regiolects. In other words, what kinds of differences between songs, are likely to matter to the birds, and therefore “someday diverge enough to prevent reproduction.”

Bird vocalization is just one of the fascinating aspects of bird behavior, and the body of research is growing. Early naturalists like Mathews and Cheney would be amazed how much has been learned about the sounds of “the little feathered musicians of nature’s great orchestra.”

Interested in learning more on the subject? You can follow Pitocchelli’s tweets: @oporornis.

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