Study shows birdsong loses complexity as population numbers decline

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A team of researchers with members from several institutions in Hawaii

and one in Spain has found that as a type of songbird in Hawaii drops in population, the songs they sing lose complexity. In their paper published in the journal *Royal Society Open Science*, the group describes their study of three species of honeycreeper birds and what they found.

Prior studies have shown that songbird populations on the Hawaiian Island of Kauai have been decreasing for several decades. Researchers have suggested much of the drop can be attributed to global warming—the higher temperatures have led to the spread of such diseases as avian malaria. One such type of bird, the honeycreeper, has been especially hard-hit. The researchers with this new effort report that their numbers have fallen sharply, beginning in the 1970s—they note that forests on the island are noticeably quieter than they used to be. In their effort, the group studied the songs of three species of honeycreeper: the anianiau, the Kauai amakihi and the akekee. They note that such songbirds create their own songs after listening to other adults of their species as they grow up. The songs they create are used by the birds as both a defense mechanism and to help in obtaining a mate.

To learn more about how birdsongs have changed over the past several decades, the researchers analyzed the acoustic characteristics of songs made by the birds and recorded over the past 40 years. In so doing, they found that song complexity decreased as the numbers of birds declined. They also found that the songs sung by different birds sound more alike today than they did in the past.

The researchers suggest the loss in complexity is due to young birds having fewer adults to learn from as they grow. They note that because song learning is a cultural trait, what has been lost cannot be recovered, because there are no longer any birds around to pass on more complex songs. They report that it is not yet clear if the loss in complexity is having an impact on the birds, though they suggest it could be creating problems surrounding the mating process.

More information: Kristina L. Paxton et al. Loss of cultural song diversity and the convergence of songs in a declining Hawaiian forest bird community, *Royal Society Open Science* (2019). DOI: 10.1098/rsos.190719