



ScienceWatch - How Does That Song Go?

“Loss of song culture is a major warning sign the regent honeyeater is on the brink of extinction and we still have a lot to learn about how to help them.” – R. Crates

Throughout human history languages have come and gone. Many indigenous tribes lose their native tongue along with their culture as their numbers dwindle. One estimate is that 573 known languages have gone extinct. Now a team headed by Ross Crates, Australian National University, Canberra, AU, reports in the March 17, 2021 issue of the *Proceedings of the Royal Society B* that the same thing is happening to a critically endangered Australian songbird.

Birds learn to sing by listening to adults, either their father or other males they hear in their first year. For regent honeyeaters (*Anthochaera phrygia*), a small, nomadic, nectar-eating bird endemic to southeastern Australia, it is other males. And that becomes critically important as their population has declined.

In order to avoid attracting predators to his nest a breeding male doesn't sing until his offspring are fledged and chased away. He also chases away any singing males that appear in his territory. This means juvenile males must learn mating songs from adult males in distant areas. The system worked fine when there were lots of honeyeaters. But now it imperils the birds' very existence.

Once common in wooded areas across eastern Australia, logging reduced regent honeyeater numbers in 1980 to about 1,500 birds persisting as small scattered groups in the south. Now continued habitat loss has caused the population to crash and fewer than 300 birds remain in about 10% of their ancestral range, but still a large area.

The study analyzed data collected from sightings from July 2015 to December 2019 and used the numbers to estimate the distribution and density of the remaining wild birds. “They're so rare and the area they could occupy is so big probably 10 times the size of the UK that we were looking for a needle in a haystack,” said Dr. Crates.

The researchers also compiled several sets of regent honeyeater bird songs. They used recordings of songs collected from 14 wild males between 1986 and 2011 (wild historical) to compare with what males are currently singing. They sighted 228 wild males in the field and were able to record the songs of 146 (wild contemporary). They also recorded the songs of 12 males from a captive breeding program begun in 2015.

The team found that eighteen (12%) of the 146 wild contemporary males whose songs they recorded were singing songs of males of other species. “This lack of ability to communicate with their own species is unprecedented in a wild animal. We can assume that regent honeyeaters are now so rare that some young males never find an older male teacher,” said team member Dejan Stojanovic. “The poor birds are not getting the chance to learn what they should

be singing,” added Crates. “As young birds, when they leave the nest and go out into the big wide world, they need to associate with other, older males so they can listen to them sing and repeat that song over time,” he said.

The recordings of captive-bred birds showed that they were also singing the wrong songs. Their songs differed considerably from both wild contemporary and wild historical songs, being less complex and shorter.

Importantly, males that sing the wrong song appear to be less successful breeders. Females were less likely to pair with males whose song didn’t match what they were hearing in the wild and those that did pair were less likely to lay eggs. “The unusual songs of captive-bred birds could reduce their attractiveness to wild birds when they are eventually released,” said Crates.

The captive breeding program has been releasing birds banded and fitted with transmitters into the wild for seven years. Until now captive-bred juveniles were taught to sing by playing recordings of regent honeyeater songs from speakers inside their aviaries. But Dr. Crates and his colleagues are putting their discoveries to the test.

In the same way that indigenous peoples are trying to preserve their language by learning from elders, the team has now put wild-caught adult males in with captive-bred juvenile males to see if that can help them learn the right song before they’re released into the wild.

Hopefully, Dr. Crates and his colleagues can arrest and even restore the declining song culture they documented for these birds on the brink of extinction.

Saul Scheinbach