Songbirds sound the alarm about traffic noise

December 1 2016

A great tit listens for predators near a busy road. Noise pollution could reduce its ability to detect dangerous predators in its environment. Credit: Sue Anne

Zollinger & Richard Ubels

A new study led by Pacific University biologist Chris Templeton demonstrates that the alarm calls of songbirds are dramatically impaired by road traffic noise. Research by Templeton and colleagues has shown that signals critical for the survival of animals are compromised when birds live near even moderately busy roads.

The study appears in the Nov. 21 edition of *Current Biology*, and notes that "failure of species to detect anti-predator signals could have significant negative consequences for animals living near roads and other sources of anthropogenic noise."

Previous research strongly suggests that noise pollution impacts the ability of birds and other animals to effectively transmit information in their courtship signals. Templeton and his colleagues' findings look at the impact that noise generated by nearby vehicular traffic has on the ability of birds to alert one another of impending danger, such as the presence of predatory species. "When a bird of prey like a hawk or owl is discovered, many species of birds produce alarm calls to warn other individuals in their flock of the impending danger," Templeton said.

In collaboration with Sue Anne Zollinger and Henrik Brumm (Max Planck Institute for Ornithology, Germany), Templeton examined how traffic noise affects both how birds produce alarm calls and how other individuals in their flocks respond to them. He and his team researched the behavior of a songbird species named the great tit (Parus major).

"We found that when great tits (Parus major) were exposed to road noise, they produced calls of higher amplitude, essentially shouting to be heard over the racket made by passing cars," Templeton said. "When

these calls were broadcast to others living near highways when traffic noise was present, we found that the this 'yelling' was not enough to overcome the effects of noise. Other individuals in the flock failed to detect these critical signals, potentially exposing them to higher levels of attack from predators."

Templeton said there may still be hope, however. The study also found a reduced effect of sound "masking" when quieter road noise was generated, which could result from modifications to asphalt composition, tires, or roadside noise buffers. "Such modifications could potentially reduce the negative effects of roads on the ability of animals to communicate."

More information: Christopher N. Templeton et al. Traffic noise drowns out great tit alarm calls, *Current Biology* (2016). DOI: 10.1016/j.cub.2016.09.058

Provided by Pacific University