Hummingbird reduces its body temperature during nightly torpor

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A team of researchers from the U.S. and South Africa has discovered that several species of hummingbirds living in the Andes drastically reduce their body temperatures during their nightly torpor. In their paper published in the journal *Biology Letters*, the group describes their study of thermoregulation in mountain-based hummingbirds and what they learned about them.

Prior research has shown that some animals, such as bears, hibernate during the winter. Doing so allows them to survive the cold temperatures without ingesting massive amounts of calories to keep warm. Prior research has also shown that some other animals go into a periodic state known as a torpor, in which their metabolism slows dramatically to allow them to conserve energy during lean or cold periods. In this new effort, the researchers sought to learn more about several of the species of hummingbirds that live in the Andes in South America—a region that can get very cold at night in the summer. In this case, the researchers looked at species that survive at altitudes up to 3,800 meters above sea level. To learn more about their thermoregulation, the researchers captured 26 members of six bird species and put them in cages with equipment for monitoring their body temperatures. They kept them there overnight to see how the birds fared. Air temperatures for the night under study fell to 2.4 degrees C.

The researchers noted that 24 of the birds went into a torpor, which included at least one bird from each species. They also found that the lowest recorded body temperatures for the birds varied between both species and individuals. And they found that the duration of their torpor varied as well—from five to 10 hours. The researchers noted that the longer the birds remained in a torpor, the lower their loss of body mass. They fed on stored fat to keep just warm enough to stay alive. The researchers also found that one of the birds, a black metal tail, lowered its body temperature to just a few degrees above freezing—to 3.3 degrees C. This finding marked a record low body temperature for any bird or non-hibernating mammal.

More information: Blair O. Wolf et al. Extreme and variable torpor among high-elevation Andean hummingbird species, *Biology Letters* (2020). DOI: 10.1098/rsbl.2020.0428