Small migratory birds age faster in stressful places

Adapted from the University of Maine

Small migratory male birds that winter in a stressful environment age faster than those that winter in a high-quality habitat, according to research stemming from a collaborative National Science Foundation grant between the University of Maine and Smithsonian Conservation Biology Institute. The team of biologists, led by former postdoctoral researcher Frédéric Angelier working under the direction of University of Maine Professor of Biological Sciences Rebecca Holberton, focused on telomeres—the long, repetitive noncoding sequences of DNA at the end of chromosomes that protect chromosomes from degradation and play a role in the aging process.

The researchers found that telomeres of male American redstarts (Setophaga ruticilla) that winter in the arid Jamaican scrub habitat shortened significantly faster than telomeres of male American redstarts that winter in a lush Jamaican black mangrove forest. The findings, published in the journal Functional Ecology, suggest birds’ nonbreeding environment impacts the rate of telomere shortening and has important indirect effects on migratory bird population, the team says.

The researchers also found males with shorter telomeres are less likely to return to the nonbreeding territory the ensuing year than those with longer telomeres, confirming previous studies that telomere length is related to survival in vertebrates. American redstarts generally arrive in the Font Hill Nature Preserve in Jamaica in mid-September, where they remain until spring migration in April or May.

The NSF project is part of a long-term collaboration between Holberton and Peter Marra, a research scientist at the Smithsonian’s Migratory Bird Center. Holberton is a migratory bird expert who researches how external and internal factors affect avian survival. The Smithsonian Migratory Bird Center is dedicated to fostering greater understanding, appreciation, and protection of the grand phenomenon of bird migration.

A male American redstart (Photo by Dan Pancamo)

Current Literature


Austin, Z., Raffaelli, D.G., and White, P.C.L. 2013. Interactions between ecological and social drivers in determining and manag-


