Audubonmagazine.org

Published on *Audubon Magazine Blog* (http://magblog.audubon.org)

Speciating with Flying Colors: Birds with Color-Polymorphism Speed Up Evolution

By *Anna Sanders*
Created *05/17/2012 - 1:26pm*

Red-phase and gray-phase eastern screech owls at the Carolina Raptor Center, Huntersville, N.C. This color-polymorphism speeds up evolution, researchers at the University of Melbourne in Australia found. (Photo: Dick Daniels [1]/CC-by-3.0 [2])

The North American eastern screech owl is a particularly small and cute ball of fluff. Found in most of North America's dense deciduous forests, these little guys boast large heads, striking ear tufts, and golden eyes. Though most of the owls' intricately patterned plumage is a rusty red, a pale grey variation is also common in parts of western Canada and the north-central United States. Side by side, the so-called red and grey "morphs" look like completely different species—and that might be what Mother Nature intended. A new study shows bird species that exhibit such color-polymorphism evolve into new species faster, suggesting the characteristic plays an active role in accelerating speciation.

Color-polymorphism can enhance speciation in two ways, explains study co-author, Andrew Hugall. Color forms might differ because of habitat preferences, physiology, or behaviour, and this increases the probability different populations might evolve into new species.

“Second, color-polymorphism can promote reproductive isolation by acting as a signal for assortative mating,” Hugall says. “[This] is unlikely to cause speciation by itself, [but] among populations spread across different environments it can act as a catalyst pushing speciation to completion.”

Hugall and Devi Stuart-Fox, Hugall’s co-author and colleague at the University of Melbourne in Australia, modelled evolutionary rates using taxonomy, morphology, and genetic data from public internet databases accumulated over 25 years. The study, published May 9 online in *Nature* [3], found that color-polymorphism—found in almost all animal groups—speeds up the generation of new species. Those color-polymorphic species, the study says, usually evolve into new species with a single color form.

Color- polymorphic species are rare, Hugall says. Only 330 birds, for example, are color-polymorphic in over 10,000 species total. The authors chose to focus their study on birds, specifically hawks and eagles, owls, and nightjars, because color-polymorphism is common enough in those groups to estimate speciation. In addition, the taxonomy and morphology of the species in those families are well-known and there is a wealth of data on the birds.

Eastern screech owls, like these drawn by John James Audubon, exhibit color-polymorphism, which a new study suggests speeds up evolution.

“Using birds allowed us to use the latest methods on the most comprehensive phylogenies of one of the best known of animal groups,” Hugall says.

He adds the web was a vital tool in this study.

“Centuries of avian taxonomy and a quarter of a century of genetic data from researchers around the world are available via a series of excellent databases freely available via the internet, enabling a whole new range of scientific studies,” Hugall says.

-

Related:

- - “Owl Populations Change Color as the World Warms” [4]
- - “The Science of Feathers” [5]

Animals Birds Nature Wildlife

//> //>

var gaJsHost = (("https:" == document.location.protocol) ? "https://ssl." : "http://www.");
document.write(unescape("%3Cscript src='" + gaJsHost + "google-analytics.com/ga.js' type='text/javascript'%3E%3C/script%3E")); var pageTracker = _gat._getTracker("UA-6149536-1"); pageTracker._trackPageview();

Source URL: http://magblog.audubon.org/speciating-flying-colors-birds-color-polymorphism-speed-evolution

Links:
[1] http://carolinabirds.org/
[2] http://commons.wikimedia.org/wiki/File:Eastern_Screech_Owl_RWD1_at_CRC.jpg
[3] http://www.nature.com/nature/journal/vaop/ncurrent/full/nature11050.html
[4] http://magblog.audubon.org/owl-populations-change-color-world-warms
[5] http://www.audubonmagazine.org/articles/birds/science-feathers