**AMAZON BIRDS SHRINK BUT GROW LONGER WINGS IN SIGN OF GLOBAL HEATING**

Several recent papers have reported birds getting smaller, but as their subjects were migratory birds there were many confounding factors that could have explained the results, such as hunting, pesticide use or habitat loss. The new study was conducted on non-migratory birds in pristine rainforest [...] but the results were the same: the birds are getting smaller, and the warmer climate is the only known variable.

The research took place in the Brazilian Amazon. Since the 1970s scientists have been using the remote area as a control location so they can study the effects of deforestation and development on the ecosystem.

Generations of scientists have been capturing and examining birds in the area with an unvarying methodology: they catch them in mist nets, weigh them and measure their wings. Now scientists analysing data on 77 bird species over the past 40 years say nearly every non-migratory species found there has become smaller. One-third of them also bear longer wings.

The researchers believe global heating is behind the morphological shift. Since the 1970s, the region has warmed 1.65°C in the dry season and 1.0°C in the wet season. In addition, the wet season has become wetter and the dry season has become drier.

Last year, the lead author of the new study published a paper reporting falling populations in nine of 79 non-migratory bird species. Climate was the only factor that has changed there, as far as anyone knows, and they concluded it must be the cause.

Most of the birds in the new paper spend their lives within a radius of a few kilometres, but the researchers found some species had shrunk by nearly 10% over 40 years of measurements. The Integral Ecology Research Center in California said changing temperature or precipitation – or both – must play a role in the findings.

How could climate change alter avian physique? One plausible explanation the researchers invoke is a 150-year-old principle which states that closely related organisms are smaller the closer they are to living at the equator, thought to be because larger bodies retain warmth better. The same process could be at work in the Amazon: increased temperatures, which one might normally expect to find closer to the equator, are causing smaller bodies.

The scientists say the increase in wing length is more puzzling but suggest birds may now need to fly further. They were unsure whether the changes were caused by evolutionary pressures – individuals with advantageous characteristics breeding more successfully – or whether the birds were changing shape as they aged to adapt to the changed environment. [...] Perhaps, with longer wings, now-sedentary species might begin migrating to more suitable habitats.

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