

Glowing pink owl wings may be sending secret messages

Under certain lighting conditions, scientists have found that the long-eared owl's dappled woodland camouflage is revealed by its bright, fluorescent pink wing feathers.

The long-eared owl, *Asio otus*, is a majestic bird of prey known for its sharp, horn-like ear tufts and mysterious herringbone markings that help it blend into its arboreal habitat. But under certain lighting conditions, scientists have found that its dappled woodland camouflage is revealed by its bright, fluorescent pink wing feathers.

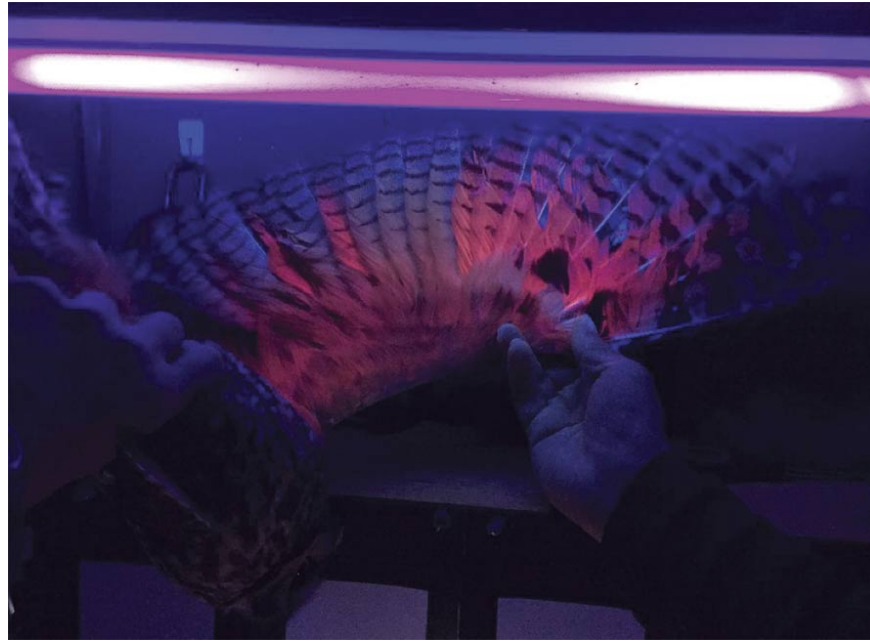


Ornithologist Emily Griffith and her colleagues, from Northern Michigan University and the state's Whitefish Point Bird Observatory, examined feathers collected from the inner wings of 99 long-eared owls as the birds migrated through Michigan's Upper Peninsula in spring 2020.

They want to catalogue the different shades of pink fluorescent pigment this population possesses, to see if they can decipher what they mean to those who can see them.

Owl eyes can detect this bright red fluorescence — emitted from light-sensitive pigments called porphyrins, derived from the Greek word for purple — even without the aid of UV light, just like other birds that can see in the ultraviolet spectrum.

The fact that it's not in the spectrum that our mammalian eyes can see suggests that it could be a perfect way to signal to others without being detected by its main prey - rodents and other small mammals.



The photosensitivity of porphyrins not only causes them to glow in the first place, but also causes them to degrade with continued exposure to sunlight, which often means that the bird's fluorescence will fade as the feathers age between molts.

We know that other types of pigment in bird feathers serve to signal age, sex, size, and overall health to competitors and potential mates. For example, even without a blacklight, researchers can still tell the sex of long-eared owls by whether their plumage is dark (female) or light (male), although even this system is imperfect, with about a third of owls not having a sex assigned due to their intermediate plumage color.

But it remains unknown whether similar messages were written on the ultraviolet underwear of these owls.

Griffith and the team found that the feathers of older birds had much higher concentrations of fluorescent pigments than those of younger birds, and were stronger in darker-plumaged females than in lighter-plumaged males.

Young birds and those with lighter plumage generally had more intense pigmentation if they were heavier. The authors note that this suggests that pigmentation may act as an 'honest signal' of an owl's health.

" It is possible that the fluorescent pigments expressed in long-eared owls are used in sexual selection ." *" The only time these pigments could be expressed directly (other than during flight) is during courtship behavior, in which males perform courtship flights to attract females ."*

But even if male owls are sensitively tuned to subtle differences in wingtip light displayed in flight, that doesn't explain why the female's wings are so much brighter.

" Furthermore, this trait does not follow a strict binary system—the amount of fluorescent pigment in these owls exists on a spectrum where the amount of pigment is related to size, age, and sex, " Griffith said.

The team suspects something else might be driving the big difference in pigmentation: thermoregulation. Fluorescent pigments in eggshells are known to help regulate temperature by reflecting infrared wavelengths,

and they may have a similar function in the female's inner wing feathers to limit heat loss during nesting.

'This alternative hypothesis would explain why females have significantly more fluorescent pigments, as males do not incubate eggs and are more physically active as they hunt while females play a major role in incubation,' the authors write.

The study was published in the Wilson Journal of Zoology.

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