

Owls' dawn and dusk concerts promote visual communication

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The extremely visible white badge on the breast of a calling male." Credit: V. Penteriani

Reporting in the online, open-access journal *PLoS ONE* April 8, Vincenzo Penteriani and Maria Delgado of the Estacion Biologica de Doñana, Spain, describe the evolution of white throat badges in association with dawn and dusk vocal signals in certain species of nocturnal bird, which maximise the potential for these species to communicate during hours when light is low.

Previous research has suggested that visual communication is important only for diurnal species of bird, the variety and colour of birds' feathers being one of the best examples of the evolution of visual signalling. However, at sunset, colours become progressively indistinguishable, requiring a more effective mode of visual communication.

Penteriani and Delgado found that eagle owls (*Bubo bubo*) show both a peak of vocal displays at sunrise and sunset and a white "badge" on their throats—a patch of white feathers, which is inflated and deflated at each call and so is only visible during call displays. At dawn and dusk, when the light is low, contrast is more important than colour in visual signalling, indicating that the white badge is a good candidate in visual communication.

The researchers also suggest that visual behavioural displays during certain conditions of ambient light, such as the crepuscular light of dawn and dusk, could also serve as additional cues for social communication by nocturnal species. "If daylight played a central role in determining the appearance of amazing colour-based signalling, why should nocturnal birds have renounced the use of ambient light to communicate?" asks Penteriani. "Just as daylight allowed diurnal birds to use colours to communicate, twilight offered crepuscular and nocturnal species the possibility of evolving white patches to signal in dark surroundings."

The dawn and dusk chorus is a peculiar vocal behaviour of [songbirds](#), based on a sunrise and sunset peaks in vocal displays. However, the scientists wanted know why the nocturnal eagle owls also display activity peaks at sunset and sunrise. They discovered that this species performs these choruses because of the peculiar conditions of ambient light at twilight, which allow the best contrast between the white badge and the surrounding background. The researchers conclude that visual signalling may be more widely employed than previously thought in nocturnal species.

More information: Penteriani V, Delgado MM (2009) The Dusk Chorus from an Owl Perspective: Eagle Owls Vocalize When Their White Throat Badge Contrasts Most. [PLoS ONE](#) 4(4): e4960. doi:10.1371/journal.pone.0004960, dx.plos.org/10.1371/journal.pone.0004960

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