Study finds foul owls use faeces to show they are in fine feather

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Some years ago, within the Department of Conservation Biology of the Estación Biológica de Doñana (EBD-Consejo Superior de Investigaciones Científicas; Seville, Spain), a recently established group (colloquially named the Night Ecology Group) started to explore the possibility of visual communication in crepuscular and nocturnal birds.

New research on this topic challenged the common belief that social communication in this group of species is limited to vocal signaling. By using the largest European owl (the eagle owl) as their biological model, members of this EBD group (Drs Vincenzo Penteriani and María del Mar Delgado) discovered that these crepuscular and nocturnal species use visual signaling in intraspecific communication, both in territorial and in parent-offspring contexts.

As a direct consequence of their receptiveness to visual communication, the researchers surmised that owls could potentially employ various visual signals in other situations involving intraspecific interaction.

In a paper published in the online, open-access journal *PLoS ONE,* August 20, Penteriani and Delgado now provide descriptive and experimental evidence that suggests that owl faeces and prey remains could act as previously unrecognized visual signals for this nocturnal, avian predator.

"I believe that this novel signaling behavior could indicate the owls' current reproductive status to potential intruders, such as other territorial

owls or non-breeding floaters," Delgado said. "Such marking behavior may have been overlooked in birds, and I hope that our story will represent the beginning of new and stimulating explorations on other questions and mechanisms in territoriality and social communication."

"Moreover," Penteriani added, "faeces may represent an ideal substance for marking, because it has a minimal energetic cost to the signaler, and can continue to indicate possession of a territory when the owner is occupied in activities other than territorial defense."

In an unpredictable natural world in which some birds are capable of masticating vegetables to paint a saliva-plant mixture on their shelters, or arrange the brightest feathers to decorate their nests, the scientists present preliminary evidence suggesting that owls may use faeces and prey feathers to signal their breeding status to conspecifics.

But Penteriani also stressed that the information presented in the PLoS ONE paper mainly serves to provide a baseline for further testing of this hypothesis. "To obtain stronger evidence on the intriguing idea that eagle owls use faeces and prey feathers to signal current reproduction," he said, "we will need to perform further experimental studies and behavioral observations that examine whether faeces and feathers provoke specific behavioral reactions and what functional significance these behavioral reactions have."

Their study on visual signaling with faeces had some funny episodes. During the research, they removed eagle owl faeces from a large number of posts as additional evidence that faeces in the areas surrounding nests were used for signaling. In the morning, the researchers covered the faeces by spray-painting the marks with a paint color similar to the background color.

"In most cases," said Penteriani and Delgado, "owls responded so rapidly

to the removal of their faecal marks that during the night after the spraying that they came back to defecate not only on the same posts but precisely on the painted stretches!"

Citation: Penteriani V, Delgado dMM (2008) Owls May Use Faeces and Prey Feathers to Signal Current Reproduction. PLoS ONE 3(8): e3014. doi:10.1371/journal.pone.0003014
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