# Flamingos add natural color to their feathers to look good and attract mates: study

October 25 2010

Flamingos apply natural make-up to their feathers to stand out and attract mates, according to a new study by Juan Amat, from the Estación Biológica de Doñana in Seville, Spain, and colleagues. Their research is the first to demonstrate that birds transfer the color pigments (carotenoids) from the secretions of their uropygial gland for cosmetic reasons. The uropygial or preen gland is found in the majority of birds and is situated near the base of the tail. The study is published online in *Behavioral Ecology and Sociobiology*, a Springer journal.

There is evidence that the color of feathers may change due to abrasion, photochemical change and staining, either accidental or deliberate. Some bird species modify the color of their feathers by deliberately applying substances that are either produced by the birds themselves or from external sources. Among the substances produced by birds are the secretions of the uropygial gland, which may be pigmented orange, red or yellow.

Amat and team studied seasonal variations in plumage color in relation to courtship activity of the greater flamingo Phoenicopterus roseus in Spain. They then looked for the pigments that may tinge the plumage both in the secretions of the uropygial gland and on the surface of feathers. They also observed whether the birds displayed a specific behavior to acquire and maintain the coloration of their feathers. Lastly, they compared the timing of cosmetic coloration with annual reproductive patterns - egg-laying specifically.

They found that the plumage of flamingos was more colorful during periods in which the birds were displaying in groups and faded during the rest of the year. This fading occurred shortly after the birds started to breed. They also found evidence that the birds transferred carotenoids from their uropygial gland to their feathers by rubbing their head on their neck, breast and back feathers. Because rubbing behavior was much more frequent during periods when the birds were displaying in groups and the color of the feathers faded after egg hatching, the authors believe that the primary function of cosmetic coloration in flamingos may be related to mate choice.

They conclude: "Our findings in flamingos have important implications for the theories of sexual selection and signaling, highlighting the key role of the manipulation of plumage color by the birds themselves to improve signal efficacy."

**More information:** Amat JA et al (2010). Greater flamingos Phoenicopterus roseus use uropygial secretions as make-up. *Behavioral Ecology and Sociobiology*; DOI:10.1007/s00265-010-1068-z

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