

Emotion can cause chickens to get red in the face

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Assessing the reddening of a hen: lighter red when at rest (on the left), scarlet red during negative experiences such as capture. Credit: INRAE - Bertin and Arnould

Studying emotion in animals is a complex research field, little explored up to now in birds, although reddening of the skin had already been observed in previous work on the blue-and-yellow macaw. An INRAE research team focused on domestic fowl, in particular the popular Sussex

laying hen, to determine if a similar phenomenon existed in chickens.

A total of six three-to-four-month-old Sussex hens were observed and filmed in a 363 m² grove located in the Loire Valley, France, over a period of three weeks and in a variety of situations ranging from distribution of very appetizing feed to capture.

Through some very detailed work on two other breeds of chicken, the team selected 18,000 photos for use in a computer program they developed to detect [chicken](#) profiles and automatically extract them. Imagery software then made it possible to measure the levels of redness of the hens' facial skin in those photos.

The results showed that chickens do get red in the face in degrees that vary according to their emotional state. When presented with appetizing feed such as mealworms, the hens did get a bit red but their entire face became scarlet red during negative experiences such as capture. In contrast, when they were at rest, their skin appeared much lighter in color.

Assessing animal welfare

On the basis of this new information, the researchers looked at the human-animal relationship. They set up a trial involving a group of 13 Sussex hens that they gradually accustomed to the presence of one experimenter over a five-week period. In contrast to 13 other hens who had not undergone such preparation, the group maintained a lighter skin color, indicating a calmer state when the experimenter was nearby.

This may indicate a more positive perception of human presence as compared to chickens that are not used to humans, and so it could be a new tool for assessing [animal welfare](#).

This research has opened up several new prospects, beginning with the description of all possible means of expression for chickens, particularly movement of the head feathers in addition to skin color changes during positive situations such as play or in negative ones such as frustration, e.g., appetizing feed that is visible but inaccessible, or chronic stress.

The researchers would also like to understand how such reddening signals work within the species, especially in social interactions of dominance or subordination.

The research is [published](#) in the journal *Applied Animal Behaviour Science*.

More information: Delphine Soulet et al, Exploration of skin redness and immunoglobulin A as markers of the affective states of hens., *Applied Animal Behaviour Science* (2024). [DOI: 10.1016/j.applanim.2024.106268](#)

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