Animal Behaviour xxx (2009) 1–2

Contents lists available at ScienceDirect

Animal Behaviour

journal homepage: www.elsevier.com/locate/anbehav

In Focus

# Featured Articles in This Month's *Animal Behaviour*

*Making a Clean Getaway*

Having a bath is one of the simple pleasures in life. There are many ways of relaxing in the bath; for children, the fun comes from having a tub that contains more toys than water (and the floor contains more water than toys), while for adults, water warms the outside and a good glass of wine warms the soul. For some animals, however, a bath may be a life or death matter; going without a bath might well put them at a greater risk of being eaten. In this month's issue (pp. 793-798), Ben Brilot and his colleagues, Lucy Asher and Melissa Bateson, show that being able to take a bath before venturing out into the world influences European starlings' escape behaviour, and that their perception of risk may well be linked to their bathing regime.

European starlings are well known for being enthusiastic bathers, and are often seen dipping and splashing in shallow water in the wild (Fig. 1). The current study was inspired by Brilot and his colleagues' observation that captive birds will often bathe after sessions in which they have been caught and handled, suggesting that bathing may help to repair feathers that been damaged or disordered by handling. Testing this hypothesis is inherently difficult because it involves a kind of Catch-22: to measure whether feather disruption caused by capture and handling is reduced by bathing one needs to catch and handle the birds so causing further feather disruption. To get around this, Brilot and his colleagues cleverly came up with the idea of monitoring the birds' flight performance. If feather disruption affects flying ability, then birds that are allowed to bathe should perform better than those prevented from bathing. Flight performance was assessed by means of an aerial obstacle course: 38 weighted strings were hung from the ceiling and the birds had to fly through them to reach an 'escape room'. A loud bang was played as the birds' cage was opened, to startle them into an escape response, allowing the experimenters to measure their flight speed and the number of strings they hit (a measure of flight accuracy).

All the starlings taking part in the experiment were held in aviaries for 3 days, following which they were captured, handled and placed into individual cages. This allowed the experimenters to vary bathing opportunities across different groups of starlings. During the 3-day holding period, one group of birds was given constant access to a water bath while a second group was given only an empty water bath. Following their capture and handling, the birds were given different bathing opportunities. One group was given access to a water bath in the 3 h prior to the test flight, while a second group was again given an empty bath. In this way, the experimenters were able to generate four groups of birds with different bathing experiences: birds that could always bathe, birds that could never bathe, birds that could bathe over the 3 days before the experiment but not immediately before it, and finally, birds that could bathe immediately before the test but had not been able to do so in the 3 days prior to it. This allowed the experimenters to determine not only whether being able to bathe at all had any effect on flight, but also whether it was long-term (3 days) or short-term (3 h) bathing that was most important.

**Figure 1.** Taking a bath keeps starlings out of danger. Photo: Jon Hall.

Of all these possibilities tested, only short-term bathing had any significant effect on flight speed and accuracy. Birds that had been able to take a bath immediately before testing were more accurate during the test, hitting fewer strings, but they paid for this greater accuracy by moving more slowly through the aerial obstacle course. Brilot and his colleagues suggest that these differences may reflect differences in the way that birds perceive risk in the environment. Birds that can bathe may have greater manoeuvrability and hence worry less about escaping as fast as possible, choosing instead to avoid damaging themselves in collisions with the obstacles. Nonbathers, on the other hand, may have perceived a greater threat in their release conditions (both the noise and presence of humans) and therefore chose to escape as fast as possible, weighing the risk of collision as less important than the need to escape. Brilot and his colleagues suggest that the inability to bathe may increase anxiety in captive birds because of their compromised ability to escape from potential danger, and that this anxiety is the proximate mechanism that produces the speed–accuracy trade-off. While Brilot and his colleagues' experiment cannot demonstrate whether anxiety

0003-3472/$38.00 
doi:10.1016/j.anbehav.2009.08.004

functions in the manner suggested, their argument is highly plausible and fits well with previously published findings from the group showing that birds deprived of bathing water show more signs of negative affect.

As well as helping us to understand the function of bathing, Brilot and his colleagues' findings therefore have major welfare implications: making sure that captive birds can bathe regularly and freely may avoid the undue stress that poor feather condition might cause them. Bathing could therefore be essential not only for their physical health, but also for their mental health.

**Louise Barrett**
**Executive Editor**

*When Females Choose, Brains Win Out*

Exactly what makes a good mate? Does beauty, brawn or brains drive a female's choice among males? In this issue (pp. 799-807), Jason Keagy and his colleagues at the University of Maryland ask this question by exploring the ability of male bowerbirds to solve problems. They were then able to determine whether males that performed better at the problem-solving tasks are also more attractive to females.

Bowerbirds, which are found in Australia and New Guinea, gain their name from the construction, by males, of 'bowers': a structure used only to attract mates (Fig. 2). There are nearly 20 species of bowerbird, but one, the satin bowerbird, stands out as the most intensely studied species. Male satin bowerbirds are unremarkable at first glance, black and somewhat like a small crow in size and overall appearance, but they are the unparalleled experts at bower construction.

Satin bowerbirds construct their bower with parallel walls of stems or twigs and then decorate it with found objects; each male's bower is unique and decorations range from bits of plants to flowers, berries and parrot feathers. They also use human-made artefacts such as bottle caps. Male bowerbirds prefer objects that are rare in their immediate environment and they are particularly fond of blue objects. Important for Keagy and his colleagues' experiments is the aversion of males to red objects, which, if experimentally placed in the bower, are removed by the male.

Mate choice has been extensively studied in the satin bowerbird, and females are known to inspect the bowers of a number of males when the males are absent and to use this information to select a subset of males that they revisit. Their choice of mates is shaped by the displays and by the bower and is age dependent, with younger females more influenced by the bower and older females by the displays.

Keagy and his colleagues gave males problems to solve by placing difficult to remove red objects in their bowers. In one set of experiments, red objects were placed under a clear plastic barrier. To solve this problem and remove the red objects, the male birds first had to displace the plastic barrier. In the second set of experiments, red tiles were super-glued to screws placed in the ground within the bower. These tiles could not be removed; to solve the problem, the birds needed to cover the offending red object, removing it from view. Male mating success was then compared with measures of their problem-solving ability; males that were better at solving problems were more likely to obtain mates.

These fascinating findings raise the compelling question, how do females cue in on 'smarter' males? Keagy and his colleagues suggest either that females watch male displays for evidence of cognitive abilities, or that males with better cognitive abilities are able to shape their displays to influence individual female's choices. For example, if a female seems to respond positively to a particular aspect of a display, the male may amplify that signal; it takes considerable cognitive ability on the part of a male to modify its displays to cater to the preferences of each female to which it displays.


**Figure 2.** (a) A nicely decorated bower. Note the walls, constructed of twigs, and the variety of objects placed in front of the bower. (b) A male satin bowerbird (foreground) displaying to a female near his bower. Photo: 2a: Jason Keagy; 2b: Jason Keagy and Gerald Borgia.

Following this logic, selection pressure on males may lead to enhanced cognitive abilities over time, but females are not necessarily left out of the equation. Females must have the cognitive abilities to discern what the males are demonstrating, and must also be able to parse out true from false representations of cognition. This study opens the door for a broader consideration of how brains, as well as beauty and brawn, influence mate choice.

**Michael Breed**
**Executive Editor**

Please cite this article in press as: Barrett, L., Breed, M., Featured Articles in This Month's *Animal Behaviour*, Animal Behaviour (2009), doi:10.1016/j.anbehav.2009.08.004