

Bird-brained? Birds' personalities are correlated with their hormone levels

November 29 2010, by Klaus Wassermann

Individuals of Great Tit vary in their levels of curiosity, with distinctions being made between "fast" and "slow" explorers. Mareike Stowe from University of Veterinary Medicine, Vienna has now shown significant differences in the levels of glucocorticoids in fast and slow birds. Her results are published in issue 58 of the journal *Hormones and Behavior*.

The Great Tit is a common garden bird of many countries in Europe and Asia. Great Tits are generally thought of as fairly inquisitive but it has long been known individuals vary considerably in their willingness to explore new surroundings. Some [birds](#) – known as "fast" or "proactive" – are quick explorers and are comparatively aggressive, whereas "slow" or "reactive" birds are more cautious. The differences are at least in part genetically determined and as a result scientists in Holland, with whom the Vienna group has been collaborating closely, have been able to use this behavioural trait as a basis for selecting lines over several generations.

Stöwe measured the breakdown products of glucocorticoid hormones in the droppings of great tit nestlings of both "fast" and "slow" lines. She found that slow nestlings excreted more glucocorticoids than "fast" ones. She also noticed that subjecting nestlings to stress caused an increase in the amounts of glucocorticoids they excreted. The rise was far more dramatic in fast nestlings than in slow ones, showing that the more proactive birds respond more intensely to stress than less curious individuals.

Stöwe's results indicate for the first time that birds that have been genetically selected on the basis of their levels of [curiosity](#) show pronounced differences both in their baseline levels of stress hormones and in their reactions to stress. Interestingly, these factors are known to be important indicators of the young birds' future survival and the novel findings would suggest that the "fast" birds might have certain advantages over slower individuals. Clearly, however, environmental factors are also important in determining survival and there must be circumstances that favour less inquisitive birds: when a large number of predators are around, fortune may no longer favour the bold. Variation in the behaviour of the "bird-brained" Great Tit is presumably important in helping the species cope with a range of different conditions.

Because higher glucocorticoids are thought to be associated with more intense begging activity, Stöwe also examined the begging behaviour of the "fast" and "slow" nestlings. She found no differences between the lines but did observe an interesting difference between the sexes, with male nestlings begging significantly more often than females.

Intriguingly, the difference disappeared when the birds were stressed. As Stöwe says, "male nestlings beg more to ensure they obtain enough food to meet their higher nutritional needs. But when they are frightened they are much less forward and actually behave just like female nestlings."

More information: The paper 'Selection for fast and slow exploration affects baseline and stress-induced corticosterone excretion in Great tit nestlings, *Parus major*' by Mareike Stöwe, Balázs Rosivall, Pieter J. Drent and Erich Möstl is published in the journal *Hormones and Behavior* (Vol. 58, 864-871).

Provided by University of Veterinary Medicine -- Vienna

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