ANIMAL BEHAVIOUR, 2007, ■■, ■■–■■
doi:10.1016/j.anbehav.2007.08.003

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Featured Articles in This Month's *Animal Behaviour*

To Thine Own Self Be True

In human societies we generally accept that people differ a lot in their personalities. We also recognize that if you understand a person's personality, you can be reasonably successful at predicting his or her future behaviour. Until recently, characterizations of animal behaviour were more typically typological, with the assumption that all animals in a population expressed similar ranges of behaviour.

Under the rubric of 'behavioural syndromes' we are beginning to understand that behavioural variation among animals is very important in natural populations. Individual animals can display consistent behavioural responses through their lifetimes, thus bringing predictable behavioural variation into the realm of animal studies. The study of alternative behavioural strategies has gained new life from the behavioural syndrome approach.

In this issue, Wilson & McLaughlin (pp.) present a study of behavioural syndromes in brook charr (sometimes called brook trout, a member of the salmon and trout family of fish; Fig. 1). Brook charr are native to North America and live in cool, clear-running streams. By focusing on very young fish, Wilson & McLaughlin are able to identify behavioural syndromes that are relatively uninfluenced by experience.

In the field, brook charr display two feeding syndromes. Sit-and-wait brook charr reside near the stream bottom close to the bank, and forage for prey that passes by in the stream. In contrast, active feeders live nearer the surface away from the bank and forage on prey that falls into the water (this is a boon to humans that fly-fish).

Figure 1. Young brook charr. Photo: Rob McLaughlin.

Wilson & McLaughlin brought fish whose field-based behavioural feeding syndromes had been identified into a laboratory environment. Even with this radical environmental change, the fish maintained their behavioural syndromes, with the active feeders moving more, staying closer to the surface, and showing better ability in a test of exploratory behaviour. Sit-and-wait fish were correspondingly less active.

Interestingly, a test of startle response (a pebble dropped into the aquarium) revealed no consistent differences between active and sit-and-wait fish. This suggests that foraging syndromes are not linked to escape syndromes. Perhaps most importantly, fish were consistent in their behavioural expression between field and laboratory, and between laboratory experiments.

The recognition that behavioural syndromes exist in a wide range of animal species is a key development in the understanding of animal behaviour. The significance of these findings, and of other studies dealing with behavioural syndromes, is that we cannot assume that all animals in a population fit into precisely the same niche, or that they will all show the same degree of flexibility.

Studies of how food webs are shaped by predator–prey interactions, for example, often falsely assume that all animals in a population are ecologically interchangeable. Behavioural differences such as these may also provide a platform for rapid speciation. Findings such as those of Wilson & McLaughlin add a layer of richness and complexity to ecological and evolutionary analyses.

Michael Breed
Executive Editor

Ain't Too Proud to Beg

The begging behaviour of young nestling birds is familiar to us all, and, in the past few years, a number of theoretical and empirical studies have demonstrated convincingly that begging functions as a signal of offspring need: hungrier nestlings beg more than those that are better fed. What is perhaps less well known is that burying beetle larvae, *Nicrophorus vespilloides* (Fig. 2), also

0003–3472/07/$30.00/0

Please cite this article in press as: Michael Breed Louise Barrett In Focus, Anim. Behav. (2007), doi:10.1016/j.anbehav.2007.08.003

Figure 2. Burying beetle larva begging from its parent. Photo: Allen Moore.

beg from their parents and, in an elegant experiment reported on pages of this month's issue, Per Smiseth & Allen Moore show that beetle larvae display begging tactics that are strikingly similar to those of birds.

Specifically, Smiseth & Moore set out to test whether the asynchronous hatching of these beetles (where offspring hatch over a certain period of time, rather than all at once) influences offspring behaviour in a manner similar to that of asynchronously hatching bird species. Among birds, it has been found that, whereas early and late-hatched offspring respond similarly to a change in their hunger levels, when nestlings are equally hungry, late-hatched nestlings beg more than early hatched ones.

Burying beetles breed on the carcasses of small vertebrates. Although larvae can feed for themselves immediately after hatching (in openings that the parents create on the carcass), they are also provisioned directly by their parents, which feed them predigested carrion. Provisioning speeds up larval growth and development, and parents repeatedly feed their young following hatching. Just like altricial birds, the larvae beg for food from their parents, which takes the form of fondling the parents' mouthparts with their legs.

To test the effects of hatching date on begging behaviour, Smiseth & Moore generated standardized experimental broods in which 'senior' (early hatched) larvae were placed on the carcass 12 h earlier than 'junior' (late-hatched) larvae (a period well within the range of variation that is seen in the wild). These broods were then further manipulated by assigning senior and junior larvae to groups that were either deprived of food for 2 h or that had full access to food from both the parents and their own self-feeding efforts. As predicted, food-deprived offspring begged more than nondeprived offspring (confirming that begging signals need), and junior offspring begged more than senior offspring for a given level of hunger. However, there was no evidence that the two types of larvae responded differentially to food deprivation: food-deprived junior and senior offspring showed similar responses to changes in their hunger levels. This suggests that parents can assess offspring need reliably by monitoring any changes that occur in offspring begging levels, rather than monitoring their absolute levels of begging. Combining information on offspring size rank and changes in begging behaviour means parents can allocate food resources to those larvae that would benefit most from them.

These similarities between the begging tactics of beetle larvae and altricial birds are clearly important from an evolutionary perspective. Despite the fact that asynchronous hatching has arisen independently in the two groups, and the obvious taxonomic differences between birds and beetles, offspring in both these groups have converged on very similar begging tactics. This suggests that asynchronous hatching produces very robust and predictable evolutionary effects on offspring behaviour, regardless of the differences in the overall level and quality of parental care that different species provide.

Louise Barrett
Executive Editor

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