AVIAN ANTI-PREDATOR STRATEGIES

Specificity of Mobbing and Predator Inspection in the Australian Magpie
(Gymnorhina tibicen) and the Zebra Finch
(Taeniopygia guttata)

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Photograph of an Australian magpie (*Gymnorhina tibicen tibicen*). Australian magpies are large passerines of the family Artamidae. Males weigh 260-385g and females 255-270g (Schodde and Mason, 1999). They occur throughout Australia. *Gymnorhina tibicen tibicen* is found along the eastern seaboard of Australia from the New South Wales/Victorian border to Brisbane (Schodde and Mason, 1999). The diet of magpies consists primarily of invertebrates (Baker and Vestjens, 1984) but they are generalist feeders (Kaplan, 2004). They forage by walking on the ground and listen for slight vibrations caused by worms or scarab beetle larvae beneath the surface and then strike at the ground with their beaks (Floyd and Woodland, 1981). Magpies are a territorial species (Carrick, 1972).

Photograph of a zebra finch (*Taeniopygia guttata*). Zebra finches are small passerines. Male zebra finches weigh 10.0-15.2g and females 9.4-16.2g depending on location (Zann, 1996). Zebra finches are found throughout arid Australia (Zann, 1996). While zebra finches eat a large range of seeds (Zann, 1996), they tend to specialise on certain locally abundant seeds (Morton and Davies, 1983). Zebra finches are semi-nomadic and occupy home ranges (Zann, 1996).
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ABSTRACT

Many species have developed anti-predator defences beyond a flight and avoidance response. Some species approach predators (i.e. to mob or inspect) despite the fact that this behaviour might increase risk of capture. At the very least, it seems a counter-intuitive behaviour that requires explanation, even if some advantages may partially counteract the risks. While there have been quite detailed studies of mobbing in birds, predator inspection has only had scant mention and has been based on a study by Kruuk (1976) that, to my mind, rather described mobbing. My research was particularly interested in investigating closely the similarities and differences between mobbing and of predator inspection, having to find more evidence of the latter in birds. The thesis addresses the problem of function in both major forms of approach behaviour and it was my aim to place these questions in an ecological, developmental and territorial context. These questions were tested experimentally in the field using Australian magpies (*Gymnorhina tibicen*) and in the laboratory using zebra finches (*Taeniopygia guttata*) by presenting groups of both species with models of predators. Five experiments were conducted between September 2005 to February 2008. The results showed that juvenile dependency had little influence on mobbing/inspection of magpies but the species of predator did produce significant differences in all categories. The magpies discriminated between the aerial and ground predators and altered their response accordingly. The results strongly suggest that mobbing and predator inspection are not behaviours that are closely related, even though some overlap occurs, and are, in fact, functionally different: For instance, eye preference to view a model predator was analysed and it was found that predominantly the left eye (the right hemisphere of the brain) was used during inspection-only approaches while no bias was found during mobbing behaviour. To conclude, my results show, for the first time, that mobbing and predator inspection are functionally different and that predator inspection is functionally different from general exploration behaviour.
CERTIFICATION

I certify that the substance of this thesis has not already been submitted for any degree and is not currently being submitted for any other degree or qualification.

I certify that any help received in preparing this thesis, and all sources used, have been acknowledged in this thesis.

Signature
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