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Wildlife management in the extreme:

Managing Magpies and mothers in a suburban environment

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Abstract Attacks by Australian Magpies *Gymnorhina tibicen* on humans are among the most common forms of human-wildlife conflict in Australia, especially in suburban environments. Despite the familiarity of these interactions, remarkably little is known about the phenomenon, significantly undermining attempts to develop a sound basis for management. To redress this, a series of studies spanning most of a decade were carried out in Brisbane, designed to explore all dimensions of the conflict. This paper describes several relevant aspects of the phenomenon including temporal patterns of reproduction and attacks, and summarises key findings of investigations into community attitudes towards managing what is a favourite Australian species. In particular, it was established that lethal control was opposed by a clear majority of survey respondents while translocation as an option for management was supported. As a result, comprehensive studies into this approach were carried out, establishing that the technique reduced specific conflicts. However, we were unable to account for the fate of most released birds.

Introduction

Attacks on humans by Australian Magpies *Gymnorhina tibicen* are one of the most significant forms of human-wildlife conflict in Australia and among the most problematic for wildlife managers. These claims are based on the scale and range of the conflict, the types of impacts on victims and the particular challenges associated with undertaking management in an urban setting (Jones *et al*. 1980, Jones 1996, Jones 2002). Magpies occur throughout most of the continent and in a wide variety of habitats; they are absent only from the extreme northern latitudes and closed forests (Blakers *et al*. 1984). Originally preferring open grassland and savannahs, the species prospered well from the initial clearing of bushland for agriculture (Robinson 1956). However, it was the development of European settlements, featuring vast areas of well-watered lawns in lightly treed anthropogenic woodlands that resulted in the ubiquity of Magpies in Australia's towns and cities. In many urban areas Magpies are now the most commonly seen and widespread native bird species, with densities much higher than that achieved in agricultural regions and their original habitats (Hughes and Mather 1991, Rollinson and Jones 2003).

This pronounced move into suburban environments inevitably lead to close contact with large numbers of humans. For many people this was a welcome and reassuring phenomenon: the Magpie is frequently portrayed and valued as an Australian icon, its conspicuous presence, cheeky demeanour, and especially its remarkable vocalisations, often being cited as reasons for its unofficial status as a 'favourite bird' (Jones 2002). Moreover, it has repeatedly been found to be the most common and most welcome species visiting domestic wildlife feeders throughout Australia (Rollinson *et al*. 2003).

Nonetheless, it is equally well known for its habit of attacking humans during the spring breeding season. Although frequently dismissed as simply 'part of growing up in Australia', these attacks are so common and the risks so significant that state agencies responsible for wildlife devoted considerable time and resources to what is an increasingly complex issue (Jones and Thomas 1999).

Magpie attacks occur wherever humans and Magpies co-exist, a small but consistent proportion of most populations apparently becoming aggressive. While most attacks are harmless, some birds become increasingly intense, purposefully targeting the face and eyes. As a result, facial lacerations and eye injuries are not uncommon while serious indirect accidents (especially in the case of cyclists) are almost certainly frequent, though reliable data are difficult to obtain (Horsburgh *et al*. 1992). Not unexpectedly, litigation by injured parties toward city councils and wildlife agencies is increasing, with resulting expectation of appropriate management actions by the agencies to mitigate or prevent the attacks (Jones 2002).

The aims of such management is reliant on a sound and reliable understanding of all relevant dimensions of the phenomenon, including those of community acceptance of potential methods of management. Remarkably for such a common and apparently 'well-known' issue, many aspects of the behaviour of urban Magpies are either poorly or incorrectly understood. Furthermore, many state wildlife managers appear to have been unaware and unprepared for increased levels of public interest and concern over wildlife management, especially actions regarded as being potentially harmful or cruel (Dunlap 1990). As a result, traditional management actions such as shooting or lethal trapping have been found to be unacceptable to the community, especially in the highly visible arena of the suburban park or schoolyard. Thus agencies have found themselves caught between expectations to 'do something' immediately and effectively, while constrained by concern over public acceptance of their approaches (Jones *et al*. 1998).

In attempt to provide a reliable basis for the development of a management plan for aggressive Magpies, the Suburban Wildlife Research Group based at Griffith University undertook a detailed investigation of Magpies in the suburbs of Brisbane over almost a decade (1992-2001). Almost all of this work was strongly supported and funded by the Queensland Parks and Wildlife Service. Various aspects of these studies have appeared in scientific papers and articles (Cilento and Jones 1999, Jones and Nealson 2003, Jones and Thomas 1999, Rollinson and Jones 2002, Warne and Jones 2003) while the entire project has

been summarised for a popular audience in the book *Magpie Alert: Learning to Live with a Wild Neighbour* (Jones 2002). In the present paper, I will provide a concise version of information pertinent to a clearer understanding of the issues, including new material from several recent studies.

Patterns and predictability

During the course of this research, our research group interviewed – formally and informally – a large number of people, including concerned members of the community, victims of Magpie attacks and wildlife managers (see Jones and Thomas 1999, Thomas and Jones 1999). Two divergent themes were discerned from these interviews regarding the predictability of Magpie attacks: first, a small proportion of participants regarded attacks as being essentially unpredictable; second, a clear majority of participants believed attacks were relatively predictable on the basis of some dominant feature (especially physical characteristics of the victim). Such perceptions are important as a starting point for the development of meaningful advice to members of the public. With this in mind, a series of studies were undertaken to discern patterns of relevance within the reproductive behaviour of the Magpie breeding in suburban Brisbane. Comparisons with Magpie populations from Sydney, Canberra and Melbourne (see Jones 2002) suggest a remarkably similar calendar of breeding throughout south-eastern Australia, although I will only refer to Brisbane data here.

The breeding schedule

The first signs of Magpie reproductive activities typically occur in late June-early July and involve an increase in disputes between resident birds and their neighbours along well-established and relatively permanent territory boundaries, often including vigorous joint carolling by the male and female (Hughes and Mather 1991). This activity immediately precedes the start of nest building, usually in a tall tree located somewhat centrally within the pair's territory. Eggs, usually two to four in number, are normally layed in early August and hatch about three weeks later. Chicks are then present in the nest from late August to early October whereupon they fledge, leaving the nest to spend an extended period of decreasing dependency on their parents for most of the following year or more (Robinson 1956, Carrick 1972, Brown *et al.* 1993).

This very generalised schedule may be disrupted by many things such as drought, destructive storms, predation of eggs and nestlings, and death of a mate (Robinson 1956). Nonetheless, this pattern of activities is remarkably reliable, as is the resilience of Magpies to many of these common disturbances. In the case of a lost nest or other catastrophe, most suburban Magpies will simply build a new nest and start again, albeit with a somewhat delayed

timetable. It is also normal for suburban Magpies to attempt to re-nest (at least once) almost as soon as the first fledglings have left the nest, resulting in a pair of Magpies attending chicks of obviously differing ages (Brown *et al.* 1993, Rollinson and Jones 2002).

Brood defence or territoriality?

As well as being extremely territorial – defending their patch against intrusions from other Magpies – these birds are also exceptionally capable of protecting their offspring against potential predators. These two forms of aggressive behaviours – territorial defence and brood protection – while appearing similar to us, have very different evolutionary functions (Brown *et al.* 1993). The first involves a daily and unrelenting vigilance by the holders of the territory against incursions from neighbours. The intensity of territoriality seems to be especially high in suburban Magpies where the high quality of resources – lawns for foraging, the availability of human-supplied foods etc. – allows much higher densities of Magpies than is found in rural areas (Rollinson and Jones 2002). Suburban territories are also smaller, meaning more birds are crammed into smaller patches, presumably with an increased level of stress (Rollinson 2003). Such conditions require constant attention to the territorial boundaries, which has lead to Magpies being one of very few species that is perennially and permanently territorial (Brown *et al.* 1993). This chronically high aggressive tendency is, however, directed only at other Magpies, although there is some evidence that unlikely intruders such as doves and cockatoos may be swooped in a form of re-directed territorial aggression (Rollinson 2003).

While territorial activity can be witnessed daily, though becoming somewhat more intense immediately leading up to the start of breeding (Robinson 1956, Carrick 1963), the pattern of brood defence behaviour is very different (Rollinson and Jones 2002). Most significantly, brood defence is only seen when there is something valuable to defend. Our observations of Magpie swoops and attacks on a wide variety of territorial intruders, including cats, dogs, goannas, snakes – and people – all show the same clear temporal pattern: they start when the chicks hatch and cease when they leave the nest, with an obvious increase in intensity as the nestlings grow (Warne 2001, Rollinson 2003). Thus the largest number of attacks, and the most savage, occur typically around late September-early October, and fall very quickly soon after (Jones 2002). Thus, as well as providing a highly predictable temporal pattern of Magpie activities – which demonstrates that the period of potential attacks is relatively brief (typically only a few weeks) for a particular location - this finding shows that attacks on human are almost always best understood as simply a form of brood defence. This means that the phenomenon is essentially a natural reaction of a parent to perceived threats to their young,

and not the so-called ‘rogue’ behaviour often attributed to the ‘atypical’ activities of aberrant individuals (Cilento and Jones 1999, Jones 2002).

This perspective is important because it redirects attention away from the punishment of criminal behaviour to more constructive attempts to understand attacks in terms of adaptive behaviour. Furthermore, although attacks on humans seem to be evident in all or most Magpie populations only a small minority appear to exhibit this behaviour. Indeed, we estimated that less than 10% of breeding pairs showed any levels of aggression towards humans – although the proportion varied greatly between locations with some places having no aggressive birds and other places having numerous attackers (Jones 2002).

We also confirmed that the attacking bird is almost always the male; aggressive females were exceptionally rare and were usually associated with aggressive mates who had been removed (Warne 2001, Rollinson 2003). Male Magpies that attack humans are trying to keep all potential predators away from the nest and swoops and pecks are a very effective means of doing so (Cilento and Jones 1999).

Exploring the cause of Magpie aggression

This pattern of male attacks further strengthens the picture of aggression toward humans being an extension of natural brood defence: Magpie attacks are a means of breeding adults protecting their young from what the bird perceives to be significant threats. The problem with this idea, however, is that humans are not very effective predators of Magpie nestlings. There are thousands of aggressive Magpies every year but it seems unlikely that many of these birds would have witnessed a human acting like predator. Certainly it has been established that the single most common cause of death in juvenile Magpies, in urban areas at least, is car accidents (Burger and Gochfeld 1992). However, parent Magpies witnessing such events are more likely to see the ‘predator’ as the vehicle and not a human *per se*. In contrast, a small but non-trivial number of Magpies do witness apparent predation in the form of nestlings that have fallen from the nest and being rescued by well-meaning people (Nattrass 2004)). Despite the good intentions involved, from the perspective of the Magpie, such rescues are stark and unequivocal evidence that humans, or that individual, is a serious threat to their young. We now have sufficient anecdotal evidence to suggest that these chick rescues are indeed a major cause of the origin of aggression in Magpies (D. Jones unpublished data).

Such an obvious and direct relationship between an action by a human and a response by a breeding Magpie is, however, unlikely to be an adequate explanation for the large number of aggressive Magpies. Given that all breeding male Magpies routinely attack a wide variety of

potential predators but only a minority target humans (Warne 2001, Rollinson 2003) - despite their abundance in Magpie territories - is seems plausible that the aggressive birds have learned to regard some humans as potential predators, and that this reaction may be based on human actions other than direct predation. To investigate these crucial issues, we undertook several studies (see Jones 2002, Warne and Jones 2003) aimed at discerning whether aggressive Magpies attacked certain types of human intruders more often than others, and whether simple but repeated intrusions near the nest tree were sufficient to generate an aggressive reaction.

All intruders are not equal. As with almost every aspect of Magpie aggression towards humans, theories and potential explanations were legion (see Jones 1996, 2002). Among the most pervasive were suggestions that certain characteristics of humans, such as hair length, hair colour and clothing colour and style, are more likely to result in attacks than others. Although this was not assessed exhaustively, our investigations were sufficient to confirm that none of these 'human plumage' features – and certainly no particular colours - of targets were involved as 'releasing-aggression stimuli' (Warne 2001, Jones 2002). Far more important were relatively overt characteristics such as body size (smaller – and usually younger – victims were targeted more than larger ones), number in group (solitary or separate people were attacked more than those in intact groups) and speed (faster intruders, especially when riding or running, seemed to stimulate more intense attacks)(Warne 2001, Jones 2002).

There was, however, clear evidence that most aggressive Magpies tended to 'specialise' on certain types of intruder. By noting carefully the types of victims targeted by Magpies during one prolonged breeding season in Brisbane, we found that most aggressive Magpies concentrated on either cyclists, mail deliverers or pedestrians, although a very small minority appeared to attack all intruders (Warne & Jones 2003). More significantly, while the cyclist and 'postie' specialists attempted to attack all individuals of that type passing by the nest tree, Magpies specialising in pedestrians were far more discerning. Although these birds often lived in suburban areas and shared their territory with large numbers of pedestrians, a clear majority targeted a very small number of individuals, in many cases a single person. As over half of all Magpies included in this study only attacked pedestrians, these results suggest that most aggressive Magpies are engaged in attacks on specific individuals rather than all pedestrians (Warne 2001, Jones 2002). This could have important implications on the way that certain aggressive Magpies are managed (Jones and Nealson 2003).

While this may appear counter intuitive to what is generally thought about many aggressive Magpies which are known to attack and swoop large numbers of people in locations such as

school grounds and busy public parks, our data indicate that such instances are actually atypical of most aggressive Magpies which receive relatively little publicity.

Magpie are very sensitive about their nests. These observations confirmed that most Magpie attacks on humans were clearly non-random in nature: certain types of people and certain specific individuals were actively targeted. However, such information does not provide any clues as to the origins of this human-orientated aggression, other than suggesting that some level of discrimination is involved. However, all of the Magpies included in these studies were birds already exhibiting aggressive behaviour. Understanding the influences leading otherwise normal suburban Magpies to include humans in their list of potential predators is not well understood at all.

One step towards addressing this critical deficit involved a series of experimental intrusions into the area surrounding nesting trees of Magpies known to be habituated to the presence of humans (D. Jones and N. Cilento unpublished data): people were largely ignored and the birds had never exhibited aggression towards them. During the nestling phase, the single intruder (Nick Cilento), starting 100m from the base of the nest tree, approached the tree directly while looking intently at the nest. When he was within 10m of the tree, he slowly circled the tree still staring continuous at the nest before withdrawing. Throughout the intrusions, a distant observer noted all reactions of the Magpies and the distance of the intruder from the tree. The intrusion was repeated ten times in eight different Magpie territories each well separated in space (1.5 - 5.5 km).

While the full details of this experiment will be reported elsewhere (Jones and Cilento in prep.), it was found that all but two of the pairs exhibited an aggressive reaction to the intruder after between 6-9 intrusions. By the tenth and final experiment, the intruder elicited a violent reaction in all six territories immediately upon his emerging from his vehicle, often at a distance of 200m from the nest. Significantly, although the reaction to the intruder was intense, this individual was the only person subsequently targeted by the Magpies; no other people were reported as being attacked by these birds. Furthermore, on a visit to one of the experimental territories five year later, the intruder was again attacked, presumably by the same bird involved in the earlier experiments (D. Jones and N. Cilento unpublished data.

These simple but unexpectedly effective experiments indicate that Magpies have a remarkably low threshold for stimuli that could be perceived as associated with predation, respond with increasingly intense reactions to repeated ‘threats’, relate such threats to specific individuals rather than to generalised human types, and appear able to recognise and

remember these individuals for extended periods of time. All of these apparent features require careful investigation but, if supported, have important implications for the development of management plans.

Human perceptions are important

It has become increasingly obvious to many working within the field of contemporary wildlife management, especially in urban areas, that the involvement of humans in the development of mitigation approaches is an unavoidable reality. Historically, the presence of the humans has been regarded as simply a nuisance or impediment to the execution of professional management actions (Jones *et al.* 1998). Unfortunately, such attitudes have frequently resulted in serious conflicts and damage to the public standing of wildlife agencies who are often accused of being out of touch with community aspirations (Decker and Chase 1997). This is especially likely in situations in which lethal control is planned (Miller and Jones 2005). More recently, however, attempts to seek and include the views and opinions of the community have become more common (Decker and Chase 1997, FitzGibbon and Jones 2006). While such developments require considerable planning and have been portrayed as delaying critical decisions, when carefully designed, such approaches may improve the effectiveness of the management and reduce the likelihood of conflicts.

Traditionally, management of many aggressive Magpies has been rapid appraisal and subsequent lethal removal, often by shooting (Jones 1996). This approach is still commonly practiced throughout Australia away from the larger towns and cities (Jones and Thomas 2003). In urban areas, however, local laws prohibiting the use of firearms in built up areas – as well as widespread community opposition – has meant that such traditional approaches have become untenable. In the Brisbane area, this lead to the exploration of a range of possible alternative management options, including the posting of warning notices, the removal of nests and translocation (Thomas and Jones 1999). The latter was the action regarded as the most appropriate alternative to lethal control as it involved the removal of the offending individual Magpie without destruction of the bird.

Before proceeding with these alternative actions, however, a comprehensive survey of the levels of community support for a hypothetical set of options was undertaken (Thomas and Jones 1999). This involved a mail questionnaire survey which asked for approval for each option from three groups: conflict (involving people directly or indirectly involved in Magpie attacks within the previous three years); wildlife (members of conservation or natural history groups); and community (a large sample selected randomly from electoral roles)(see Thomas and Jones (1999) for full details.

One of the reasons underlaying the decision to proceed with this survey was the belief held by many agency staff that most people affected by Magpie attacks favoured the destruction of the offending bird. It was, therefore, unexpected when a clear majority – over 70% - of respondents from the conflict group strongly opposed lethal control while overwhelmingly (88%) approving of translocation (Thomas and Jones 1999). This unequivocal result lead to a comprehensive assessment of all aspects of translocation as a means of mitigating the human-Magpie conflict.

Translocation for managing Magpies

Our research group was responsible for appraisals and subsequent management of all aggressive Magpies reported in Brisbane and the Gold Coast for seven consecutive Magpie seasons during which a four-year assessment of translocation was undertaken; full accounts of these projects can be found in Jones and Finn (1999) and Jones and Nealson (2003). Here I focus only on the findings most relevant to the present topic.

First, the capture and release of male Magpies known to have been dangerous almost always lead to the immediate cessation of the conflict. Only 3% of a total of 141 translocated birds returned when released at distances of 35km or more from the capture site, and these were all easily re-captured. Beyond this distance, Magpies were unable to home reliably. The removed males were always rapidly replaced by other males – often within hours – and apparently accepted by the resident female. Importantly, these new males only rarely exhibited aggressive behaviour toward humans, while immediately taking over the parental role of the previous male, a most unexpected and welcome result (Nealson and Jones, in press).

Of the crucial issue of the fate of released birds (all of which were individually marked with coloured leg bands), however, we were unable to provide reliable information. This was due to the fact that only 22 (or 16%) of birds released were detected by the public and reported to us (Jones and Nealson 2003). Thus, the fate of the majority (84%) of these birds is unknown. This was not unexpected as birds were released singly in relatively remote rural locations far from settlements. Upon liberation, all birds flew quickly away in what appeared to be random directions and most were not sighted again. Those that were detected had settled on average about 40 km from the release site, and at least some (five)of these had acquired mates and were engaged in breeding in a new territory. The remainder (12) were detected as part of non-breeding flocks of mainly younger birds utilising backyard feeders. Given that all of the released birds had previously been successful breeders, demonstrably capable of holding and defending a territory in a dense population, it is possible to argue that these birds would have

a high chance of surviving. Nonetheless, this claim cannot yet be verified, and as it critical component of translocation as a sound management action, this issue requires urgent attention.

Conclusion

The studies summarised here provide a sound basis for the development of detailed management plans for the mitigation of suburban human-magpie interactions. However, it must be stressed that while these findings appear to be applicable across most of the range of the species, the application of specific approaches to management must be informed by appropriate input from local communities. Contemporary wildlife management, especially in urban areas, requires a clear appreciation of the role of the community.

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