Urban wildlife issues in Australia

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Abstract

Wildlife is common in urban areas of Australia. Human residents welcome most species of wildlife, and frequently design gardens or provide food to attract wildlife. A diverse range of problems caused by wildlife often creates controversy and calls for action to be taken by government wildlife agencies. Problems may threaten human health and safety or be expensive to rectify. Resolution of these problems provides a significant challenge for wildlife managers, since the credibility of a wildlife management organization and its ability to gain community support for its programs depend, to some extent, on how it manages conflict situations. Strategies employed by agencies to resolve these problems should be based on a sound understanding of the biological and behavioral characteristics of the wildlife involved. Understanding the attitudes and values of the various stakeholders is also critical to a successful outcome. In many cases, neither of these requirements is met, and strategies employed are, at best, short-term palliatives. At times, the measures adopted even worsen a problem. There are now several examples of problem definition and resolution that do address both the characteristics of the wildlife involved, and the human dimensions of the situation. The outcomes reflect the benefits of this approach. The importance of regular reinforcement of extension messages is emphasized.

INTRODUCTION

Australia's population is highly urbanized, and concentrated largely along the eastern seaboard in several large cities (> 1 million inhabitants), and many smaller ones. A feature of these cities is retention of indigenous and other flora in parks, amenity plantings, and private gardens. This vegetation provides sufficient habitat to support a wide range of wildlife species, including reptiles, amphibians, birds, and mammals.

Human residents, some of whom provide food for birds and mammals, welcome many of these species. Residents commonly interact with wildlife, feeding, and even handling some birds and mammals. The recent discovery of Australian Bat Lyssavirus, a virus closely related to rabies and, so far, identified in both Megachiroptera (flying-foxes) and Microchiroptera (insectivorous bats), has modified the way many Australians regard bats, but has not affected attitudes towards interactions with other wildlife species.

Not all interactions with wildlife are enjoyable, however. Situations where urban wildlife and human interests conflict can influence attitudes towards wildlife and result in polarized views within the urban community. For the purpose of this discussion, wildlife includes native mammals, birds, reptiles and amphibians, but not introduced species. This definition of wildlife is reflected in legislation in which, (in most Australian States), the majority or all native wildlife are protected by law. However, there is a range of public perceptions about what constitutes wildlife. For a useful discussion of the influ-

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ence of these different perceptions on attitudes towards wildlife, see Jones and Thomas (1998).

PROBLEM SITUATIONS

Urban Opossums

Possums in urban areas are a source of delight, and intense frustration. Two species, the Common Ringtail Opossum, (*Pseudocheirus peregrinus*), and the Common Brushtail Opossum, (*Trichosurus vulpecula*), are abundant in many urban areas of cities around Australia. Opossum feeding is a common activity that may increase the local density of the marsupials. In their natural habitat, Common Brushtail Opossums sleep during the day in tree cavities. Such cavities are rare in urban areas, and Common Brushtail opossums usually sleep instead in the roofs of houses (Figure 1), where their heavy footsteps, loud vocalizations and urine stains make them unpopular. Other complaints arise because dogs bark at the opossums, and disturb residents' sleep. The Common Brushtail Opossum and Common Ringtail Opossum eat roses, magnolias, geraniums, and a wide range of other garden plants; and often selectively browse a particular tree. Repeated browsing may kill the tree. Such garden damage infuriates many gardeners.

Birds Swooping at People

Several species of birds swoop at people, usually to defend nesting territory or young, and may cause physical injury. The crow-sized Australian Magpie, (*Gymnorhina tibicen*), a bird with nation-wide distribution causes most incidents involving injury. In Brisbane, Queensland alone, this species caused human injuries that included serious injury to or the loss of an eye at least six times in one particular year (Jones and Thomas 1998). There is the potential for road accidents where cyclists swerve to avoid a swooping Magpie. The Grey Butcherbird, (*Cracticus torquatus*), a smaller relative of the Australian Magpie, is a far less frequent attacker.

The Masked Lapwing, (*Vanellus novaehollandiae*), is armed with a long carpal spur, and nests in open positions, including lawns, golf courses, car parks, and the roofs of buildings (Marchant and Higgins 1993). Its vigorous aerial defense of nesting territory accompanied by loud calls is a frequent cause of alarm. While contact with humans seldom results, there are many calls for action to remove the perceived danger.

The Australian Magpie-Lark (*Grallina cyanoleuca*) appears not to defend nesting territory against humans, but isolated reports of a male flying at people's faces and trying to peck their eyes have caused considerable concern. These are attacks that occurred at 4 different localities in Melbourne suburbs, by apparently unrelated birds. The attacks did not appear to be correlated with the breeding season, and resulted in several severe eye injuries. No explanation has been suggested for this behavior.

Birds and window sealant

The Australian Magpie-Lark is one of a number of Australian birds that build a mud nest. There have been several complaints about this species removing fresh putty from windows, sometimes to the extent that windows have fallen out (Temby 1995). It is assumed that the putty is used as a mud substitute, to make a long-life nest, although no such nests have been found.

Noisy bird roosts

Several native bird species form noisy, communal roosts. When these roosts are in urban areas, wildlife agencies or local government receives large numbers of sometimes, vitriolic complaints. The birds commonly involved are the Long-billed Corella (*Cacatua tenuirostris*), the Little Corella (*C. sanguinea*), the Galah (*Eolophus roseicapillus*) and the Torresian Crow (*Corvus orru*) (Jones et al. 1998; Temby, unpublished data).

Overabundant Bird Species

The Australian White Ibis (*Threskiornis molucca*) and the Silver Gull (*Larus novaehollandiae*) have both benefited from food both deliberately and unwittingly provided by people, and populations have boomed in certain areas. Rubbish pits are the major food source for both species (Smith 1992; IMCG 1997). Silver gull populations have exploded near most southern and eastern Australian coastal cities in particular, and a range of problems results, with perhaps the greatest potential hazard being the risk of bird-strike to aircraft. Both species have been involved in bird-strike incidents in Australia. Other problems caused by these gulls include roosting and nesting on buildings, causing structural damage, noise, fouling, flooding and potential disease risk; nuisance at public parks, picnic areas, municipal swimming pools; and damage to vegetation at nesting colonies.

Recreational Bird Feeding

There is an industry associated with the provision of seed for wild birds in Australia. Some residents also provide meat for carnivorous birds, bread for many species, and nectar substitutes for lorikeets and honeyeaters. Providing food for birds may modify bird behavior, turning birds into beggars. Provision of food may lead some birds to depend on an artificial and perhaps nutritionally inadequate food source. Aggregations of birds at artificial

feeders may be a focus for disease transmission between birds (e.g. the viral Parrot Beak and Feather Disease) and from birds to people, (e.g. chlamydiosus caused by *Chlamydia psittaci*). Some bird species develop undesirable behaviors when encouraged by food provision or exhibit natural behavior where it creates problems. Spilt food can attract rats and mice. Introduced pest birds such as the House Sparrow (*Passer domesticus*) and the Spotted Turtle-Dove (*Streptopelia chinensis*), often congregate in large numbers at feeding sites.

The Rainbow Lorikeet (*Trichoglossus haematodus*) is a common, nectarivorous parrot found in coastal cities on mainland Australia and it congregates in large numbers at artificial nectar feeders. A major tourist attraction in southeast Queensland exploits this behavior, and attracts many tourists to the spectacle of hundreds of colorful lorikeets at close quarters. Some householders, perhaps inspired by this demonstration, also establish nectar feeders and attract flocks of lorikeets, causing some neighbors to object to noisy flocks of birds flying over their backyards, fouling their washing and outdoor furniture.

Seed usually put out for smaller parrots and other birds often attracts the familiar Sulphur-crested Cockatoo (*Cacatua galerita*). Once habituated to a regular source of seed, these cockatoos frequent the neighborhood and spend a great deal more time there. A feature of cockatoos and most, if not all other parrots, is that their beaks grow continuously, and need to be maintained in good condition. In many species, this is achieved by chewing sticks and other objects in the environment. Sulphur-crested Cockatoos attracted to houses by the provision of food often discover that window and doorframes, and outdoor furniture are made of very soft timber. Their beak maintenance chewing causes damage, sometimes costing many thousands of dollars (Figures 1 and 2). Rooftop polythene solar water heating systems are another target of cockatoo beaks, and are easily perforated.

The Laughing Kookaburra, (*Dacelo novaeguineae*) a large, well-known kingfisher, is often provided with meat by residents living near the urban-rural fringe. Certain individuals then begin to tap or fly at windows, either to solicit food or to attack their reflections. In some cases, this behavior seems to become obsessive, with attacks repeated throughout the day, and continued for months on end. These birds weigh up to 380 g (Higgins 1999), and may launch themselves from a perch up to 20 m from the window and fly straight at their reflection in the window. Broken windows may result, and the kookaburra often becomes very bedraggled, with broken feathers and bloody beak (personal observations). One house near Melbourne, Victoria had 10 windows smashed by a persistent kookaburra. Even when the windows withstand this battering, the frequent loud bangs at the window distress occupants. Several other bird species may attack their reflections in windows, annoying residents because of the repeated noise or marking of the glass. This behavior is usually a problem confined to the breeding season.

Birds in Gardens

While many species of birds are found in gardens and are mostly welcomed, 2 species have been the cause of complaints because of their scratching activity. The first, and more minor case, is that of the Superb Lyrebird (*Menura superba*), and is restricted to discrete locations on the outskirts of Melbourne, but may also occur in some Sydney suburbs that abut remnant forest. Pheasant-sized, the Superb Lyrebird feeds on soil fauna obtained by vigorous raking of the soil surface with its large feet. The Lyrebird is capable of removing leaf litter or mulch, and small plants from a garden bed. However, few residents are visited by lyrebirds, and most would welcome them because of their renowned mimicry and iconic status.

A more significant problem in at least 39 suburbs of Brisbane is caused by the litter and plant removal activities of the mound-building megapode, the Australian Brush-turkey (*Alectura lathami*). Brush-turkey mounds are constructed to form an incubator for the eggs laid by several females, and moist soil and leaf litter is required for composting and heat generation (Jones and Everding 1991). If a Brush-turkey decides to build its mound in a backyard, major reorganization of the landscape results, since 2 to 4 tons of material is moved to form a mound. Forty to 100 suburban Brush-turkey mounds are reported each year (Jones and Everding 1991). The completed mound may be up to 1.5 m in height and 4 m in diameter, and the bird may collect material from a radius of up to 20 m (Readers Digest 1977). In one case, a car was incorporated in a mound and partially buried (D. Jones pers. comm.).

Birds on Golf Courses

Golf courses in urban areas are frequently planted with a range of native and exotic plants and many also contain ornamental lakes. These features, combined with open grass areas, provide habitat for a wide variety of birds. In particular, Australian Wood Ducks (*Chenonetta jubata*) are attracted by the combination of short grass, which they graze, and nearby water for refuge. Their droppings on greens are a frequent cause of complaint. Little Ravens (*Corvus mellori*) sometimes steal golf balls, and are disliked for this reason. This species and the Sulphur-crested Cockatoo also dig for the larvae of

scarab beetles that feed on grass roots, and extensive excavation of fairways to several centimetres depth can result.

Ducks on Swimming Pools

The Australian Wood Duck and the Pacific Black Duck (*Anas superciliosa*) visit in-ground swimming pools, and are the cause of frequent complaints about fouling of the pool and surrounds. The Pacific Black Duck even visits pools in inner urban areas, usually during the breeding season, when nests are built in dense vegetation in a nearby garden.

Flying-foxes and Roost Tree Damage

Three species of flying-foxes roost commonly in remnant forest patches, botanic gardens, or mangroves, close to or within urban areas. They are the Grey-headed Flying-fox (*Pteropus poliocephalus*), Little Red Flying-fox (*P. scapulatus*), and the Black Flying-fox (*P. alecto*). Roosting colonies of these species, known as camps, may contain tens or hundreds of thousands of animals (Churchill 1998), and severe damage to vegetation at the camp may be caused. In botanic gardens, this damage may be unacceptable to managers. A large camp of flying-foxes can be very noisy, and emits a characteristic odor, both aspects being frequent causes of complaint in urban areas.

Insectivorous Bats in Houses

Several species of insectivorous bats may roost in house roofs. Complaints usually result from bats accidentally finding their way to the inside of the house, through gaps in the ceiling or walls. Large colonies can make considerable noise, and may give off a strong smell of ammonia from accumulated droppings and urine, which also generates complaints. The most serious concern however is the recently-discovered Australian Bat Lyssavirus (ABL), a virus closely related to rabies; and so far identified from 3 species of flying-foxes and 2 species of insectivorous bats. Insufficient work has been undertaken to indicate the incidence of this virus in Australian bat populations, and it is not known to be carried by any other mammalian orders. ABL has been responsible for 2 human deaths, and must be considered when dealing with bat complaints.

Swallows Roosting in Buildings

The Welcome Swallow (*Hirundo neoxena*) roosts and nests naturally in caves, overhangs, and hollows in trees. It has adopted a range of artificial sites including culverts, mines, quarry walls, and buildings. Large numbers of these swallows may roost on roof support frames on verandahs and inside open buildings, and nests are often built in similar sites. Fouling of verandahs and walls, and of stored products in warehouses, is the usual complaint. In warehouses, employees have expressed concern about potential health hazards associated with swallow droppings.

Snakes in Back Yards

Australia has many species of venomous snakes. In southern Australia most of the large snakes encountered in urban areas are likely to be venomous species. For example, Temby (1992) states that, in Victoria, nearly all snakes longer than about 40 cm, south of the Great Dividing Range, are likely to be toxic to humans. While there is certainly a risk of snakebite, there are few cases in urban areas. Large pythons are also found in urban areas. The high level of fear many people have of snakes usually ensures that prompt action is taken when a snake is reported in an urban area.

DISCUSSION

Resolution of the conflict situations described above provides a significant challenge for wildlife managers, and one that must be embraced. The credibility of a wildlife management organization and its ability to gain community support for its programs depends, to some extent, on how it manages conflict situations. In urban areas, it is especially the case that "most wildlife management problems start out as biological problems, but eventually become people problems." (Teague, quoted in Manfredo 1989).

Historically, there has been little communication or coordination between States. Many different approaches are used around the country to deal with similar problems. As a consequence, many so-called solutions are not based on a thorough understanding of the situation, but are primarily reactive and aimed at short-term alleviation of complaints. There is a tendency for agencies to spend resources trying to control a perceived problem when the problem has not been clarified or quantified (Temby and Emison 1986). Indeed, legislation has been enacted to control perceived damage by Common Wombats (*Vombatus ursinus*) (Temby 1998) when careful examination of complaints revealed that many were based on negative attitudes towards wombats, rather than on actual damage. (Marks et al. 1989). Managers may act based on assumptions about community concerns reflecting their own attitudes, but these may be well out of step with real community thinking (Jones et al. 1998). Decker and Enck (1996) refer to the importance of "replacing assumptions with knowledge [about community attitudes] for improved management decision making." Equally important is sound knowledge of the biological and behavioral characteristics exhibited by wildlife that contribute to conflict situations. Australia has lagged behind the United States of America in recognizing the importance of incorporating human dimension considerations (stakeholder perspectives, attitudes, and values) in wildlife man-

agement decision-making (Jones et al. 1988). However, an increasing number of wildlife management programs are now being developed with direct input from stakeholders, or include findings from stakeholder surveys.

The traditional approach to resolve the problem of opossums living in the roof was to trap and relocate them. Inevitably, another opossum would move in, and the process would be repeated. Pietsch (1994) demonstrated that relocated opossums usually die soon after release. In a questionnaire survey of residents in a municipality where opossums are common, Miller (1995) found that tolerance of opossums was positively correlated with knowledge about them, and that some of the most antagonistic attitudes towards opossums came from residents who did not have opossum problems. Similarly, Jones et al. (1998) describe how landholders with light to moderate damage by Black Bears (*Ursus americanus*), in the Catskill Mountains in New York State, were more tolerant of bears than those with no damage – increased knowledge led to increased appreciation of the species in both cases.

In Victoria, a opossum management group with wide community participation developed an extension program called "Living with Possums," that incorporated the findings of these studies, and encouraged residents to accept that opossums are part of the urban environment. This program was released in Victoria with community service announcements on radio and television, wide distribution of a 12-page educational booklet in 6 languages, radio interviews, and newspaper articles. Now, some 18 months later, with no follow-up publicity, community knowledge of the content of the program has waned. Local councils are usually the first points of contact for residents with problems caused by opossums. Questionnaire survey results show that only 32% of the 37 local councils who responded to the questionnaire survey are giving correct advice about the resolution of these problems, even though all local councils in Victoria had been fully informed about the legislative changes and had received multiple copies of the booklet for distribution to the public (Temby, unpublished data). Clearly, the messages in such a program need to be reiterated frequently to maintain awareness in the community. This requires a commitment of resources and a long-term extension plan by the agency promoting the message.

Problems caused by the Australian White Ibis were reduced dramatically through implementation of the pilot phase of an integrated management plan developed by a multi-partite group. The aim of the group is to "reduce the size of the ibis population in the Gold Coast/Tweed region [north-eastern New South Wales and south-eastern Queensland], not by short-term and ineffective methods such as culling and relocation, but through a multi-faceted strategy using practical and sustainable techniques for reducing unnatural food sources, limiting nesting opportunities and through public education". (IMCG 1997) This group comprises local, state, and federal government agencies, industry and environmental groups. The process used provides a model for addressing problems caused by other species such as the Silver Gull, but highlights the need for long-term commitment of funds. As with the "Living with Possums" program the ibis management strategy has stalled for lack of funding, in spite of its initial success (ICMG 1997).

The problem of noise from urban Torresian Crow roosts was investigated using surveys of residents living near the roosts. The initial assumption that population reduction would be desired by those affected was not supported by the survey results: 18% of residents surveyed considered the problem as "serious," but only 15% of this group approved of destruction of the birds (Jones et al. 1998).

While forums such as the annual conference of the Australasian Wildlife Management Society are an excellent way to disseminate new and better ways to manage wildlife conflict situations, and are increasingly being used for this purpose, staff cuts and lack of resources in some wildlife agencies can impede the uptake of new information. Recent research has been undertaken in Brisbane to determine why certain Magpies swoop at humans and to develop effective strategies to minimize the risk of human injury. This work has been complemented by attitudinal surveys, and a publicity program has incorporated the results (Jones and Thomas 1998). At the same time, the wildlife agency in Victoria used a private contractor to remove nests and nestlings of magpies that swoop, and to attempt to catch and remove the male of the nesting pair (it is usually the male that swoops). These capture attempts were often not successful.

The research in Brisbane suggests that interference with nests or removal of young magpies is ill-advised, since it will re-start the nesting period for that pair of birds, and increase the aggression of their attacks on humans and hence, the likelihood of injuries being caused. Further, Jones et al. (1998), referring to a problem caused by the noise of roosting crows, warn that actions based on the assumption that complainants want birds removed "would have led to a major public outcry…and decreased credibility for the agency." That warning is equally relevant for the situation involving magpies described above, and is borne out by telephone calls received from members of the public concerned about removal of nests, and by the increasing ferocity of attacks by the magpie, particularly on cyclists (Temby, personal observations). Effective communication between agencies had been established in this case, and should have ensured that the latest findings would at least have had the poten-

tial to be implemented. Overworked agency officers, however, inundated with over 20 magpie complaints each day, handed total responsibility for management of magpie problems to an uninformed private operator, and did not want to know what transpired. An increase in the problem and considerable media attention resulted.

CONCLUSIONS

There is a clear need for a consistent, coordinated approach to managing problems caused by wildlife in urban areas. Such an approach needs to consider stakeholder attitudes, since an understanding of these is critical to a successful outcome. Equally important is a sound knowledge of the biological or behavioral characteristics that contribute to the conflict situation. Many of the problems described earlier have been poorly researched, if at all. Solutions have therefore often been based on perceptions of the problem, rather than a clear understanding of both the nature and causes of the problem, leading to a partially effective, or even counter-productive result.

Australian universities and government agencies are now starting to accept the challenge of embracing a wildlife management paradigm that includes recognition of the importance of stakeholder perspectives in decision- making. An increasing number of Australian examples demonstrate the benefits of this approach. Maintenance of these benefits will require some level of funding into the future, and ways must be found to ensure that these funds are available. Agencies also need to recognize that information given to the public needs frequent repetition or reinforcement until there is clear evidence that it has become common knowledge.

REFERENCES

Churchill, S. 1998. Australian Bats. Reed New Holland, Frenchs Forest. 230pp.

Decker, D.J., and J.W.Enck. 1996. Human dimensions of wildlife management: knowledge for agency survival in the 21st century. Human Dimensions of Wildlife 1(2):60-71.

IMCG 1997. Ibis management: working towards a natural balance. Report into the findings of the Ibis Management Coordination Group's Pilot Program. Queensland Department of Environment, Brisbane.

Higgins, P.J. 1999. Handbook of Australian, New Zealand & Antarctic Birds. Vol. 4. Parrots to Dollarbird. Oxford University Press, Melbourne. 1248pp.

Jones, D.N., and L.T. Thomas. 1998. Managing to live with Brisbane's wildlife: magpies and the management of positive and negative interactions. Proceedings of the Royal Society of Queensland 107:45-49.

Jones, D.N., J.W. Enck, W.F. Siemer, D.J. Decker and T.L. Brown. 1998. An introduction to the human dimensions of wildlife management: taking the North American experience to Australia. Human Dimensions Research Unit publication 98-7. Cornell University, Ithaca.

Jones, D.N., and S.E. Everding. 1991. Australian brush-turkeys in a suburban environment: implications for conflict and conservation. Wildlife Research 18:285-297.

Manfredo, M.J. 1989. Human dimensions of wildlife management. Wildlife Society Bulletin 17:447-449.

Marchant, S., and P.J. Higgins. 1993. Handbook of Australian, New Zealand & Antarctic Birds. Vol. 2. Raptors to Lapwings. Oxford University Press, Melbourne. 984pp.

Marks, C., J. Carolan and R. Leighty. 1989. The pest behavior and management of the Common Wombat *Vombatus ursinus* in north eastern Victoria. Report submitted as partial requirement for the degree of Master of Environmental Science, Monash University, Victoria.

Miller, K. 1995. Human dimensions in wildlife management: community attitudes toward possums in an urban area of Melbourne, Australia, and implications for management. Honors report for B.Sc. (Hon), Deakin University, Melbourne.

Pietsch, R.S. 1994. The fate of urban Common Brushtail Possums translocated to sclerophyll forest. Pages 239-46 *in* M. Serena, ed. Reintroduction biology of Australian and New Zealand fauna. Surrey Beatty & Sons, Chipping Norton.

Readers Digest. 1977. Readers Digest complete book of Australian birds. Readers Digest Services, Sydney. 615pp.

Smith, G.C. 1992. Silver Gulls and emerging problems from increasing abundance. Corella 16(2):39-46.

Temby, I.D., and W.B. Emison. 1986. Foods of the Long-billed Corella. Australian Wildlife Research 13:57-63.

Temby, I.D. 1992. A guide to living with wildlife. How to prevent and control wildlife damage in Victoria. Department of Conservation & Environment, East Melbourne. 105pp.

Temby, I.D. 1992. Perceptions of wildlife as pests: you can teach an old dogma new tricks. Pages 174-180 *in* A. Bennett, G. Backhouse and T. Clark, eds. People and nature conservation: perspectives on private land use and endangered species recovery. Royal Zoological Society of New South Wales, Sydney.

Temby, I.D. 1998. The law and wombats in Australia. Pages 305-11 *in* R.T. Wells and P.A. Pridmore, eds. Wombats. Surrey Beatty & Sons, Chipping Norton.

Figure 1 Common Brushtail Possum emerging from roof space in house.
Photograph: I. Temby

Figure 2 Damage to window frame by Sulphur-crested Cockatoo
Photograph: I. Temby

Figure 3 Damage to outdoor furniture by Sulphur-crested Cockatoos
Photograph: I. Temby