

# A qualitative study of wildlife feeding in south-east Queensland

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Although feeding wildlife in urban settings appears to be widespread in Australia, there is little information on why people do it. This two-part qualitative investigation used a grounded theory approach to present the perspectives of two groups with interests in the practice, namely wildlife managers and a self-identified group of people who feed wildlife. The initial phase consisted of 29 unstructured, in-depth interviews with wildlife feeders, people negatively affected by wildlife feeding, wildlife managers and wildlife policy makers. Analysis of these data informed the second phase of the study, the drafting and mail out of an open-ended questionnaire to 220 residents of southeast Queensland who volunteered to take part in the study. Returned surveys were analysed for content and theme. The most common theme throughout the datasets was that of dependency. Dependency was perceived as both a positive and negative aspect of feeding. Both managers and those who feed wildlife expressed concerns for the welfare of wildlife. However, managers expressed their opposition to feeding as a threat to welfare while feeders claimed the practice improved the welfare of wildlife. A conclusion drawn from the study is that the different constructions of wildlife by the two groups could be linked to the way in which wildlife knowledge is acquired: strongly knowledge-based for wildlife managers and primarily experience-based for feeders.

**Key words:** wildlife feeding, bird feeding, wildlife provisioning, urban wildlife, supplementary feeding, social construction, human dimensions.

## Introduction

Intentional feeding of wildlife in urban areas has probably been practised for centuries. It is widespread in North America and Europe with some estimates suggesting Americans spend annually \$200 (US) per capita on food for wildlife and a half a billion dollars on bird feeders (Deis 1986; Petterson 2000). In the United States alone an estimated 80-100 million birdfeeders have been erected on urban properties with the presumed purpose of attracting birds to gardens (Petterson 2000). In Britain, birds are fed at one in every five homes (Cannon 1999). It is claimed these practices are of benefit in conserving biodiversity in urban areas. As an example, Savard *et al.* (2000) promoted the provision and maintenance of bird feeders as one of ten approaches for planning the enhancement of bird abundance and diversity in city landscapes. It is a common theme among some conservationists and others seeking to increase the presence of wildlife in cities (e.g. Pizzey 2000; Deis 1986; Cannon 1999).

In Europe and North America some concerns have been raised regarding the consequences of providing food for wildlife (e.g. Deis 1986, Knight and Anderson 1990, Dennis 1986, Elliot 1994). In the US, birdfeeders have been implicated in the spread of avian disease (Brittingham and Temple 1986). However, the utilisation of provisioned food resources by a species of nomadic parrot was claimed not to have impacted on their basic nomadism (Cannon 1984). A worldwide survey of ornithologists noted the role domestic gardens played in attracting or sustaining bird populations (Cannon 1999). Cannon stated, “generally more conservation-minded and

knowledgeable individuals in Australia do not feed their garden birds”. Kofron (1999) interpreted a number of attacks on humans by cassowaries in Queensland as food solicitation and North America human-bear conflicts have been attributed to bears becoming “attraction-conditioned” through the availability of human or “unnatural” foods in areas close to human settlement (Peine 2001). In Australia, following the death of a nine year old boy on Fraser Island in 2001 and the subsequent cull of more than 30 dingoes, much of the management of human-dingo interactions has focused on altering tourist behaviours with regard to the handling, storage and disposal of human foodstuffs (Howard and Burns, unpublished data, Burns and Howard in press).

Over the last four years, data have emerged indicating a substantial proportion of households in some major Australian cities feed wildlife. In a study of randomly-selected Brisbane households, Thomas (2000) reported 38% of respondents purchased food specifically to feed wildlife. Rollinson *et al.* (in press) reported 40% of Brisbane households within a sample of territories of paired Australian magpies provided food for these birds. McLees (2001) found 57% of respondent households in Melbourne fed wildlife on a regular basis.

The Australasian Wildlife Management Society has no stated position on feeding of wildlife and, other than newsletters and agency publications, little has been published in this country exploring the phenomenon. Rather than entering the debate on whether wildlife feeding is right or wrong, harmful or beneficial, it was

the primary intention of this study to describe some of the rationalisations people use in their decisions to feed wildlife. The purpose of this investigation was to augment studies reporting on prevalence, and to develop an understanding of the motivations behind the practice. As little is understood of why people choose to feed, and to a lesser extent how feeding occurs, managing its impacts, or even the practice itself, is problematic.

## Theoretical approach

For this study, an approach was adopted which allowed us to examine wildlife feeding in the absence of established theory. Aslin (1996, p.80), in challenging the traditional approach to studying the human dimensions of wildlife management, argues that measuring attitudes or "...orientations (to wildlife) and correlating these with demographic and activity related factors... is not an explanation of *why* people hold these attitudes." In a comparison of methods, Burns (1997, p.295) argued the relative strength of a qualitative approach lies in its conceptualising and contextualising of events rather than the development of generalisations and predictions that typify reductionist approaches. He characterised the qualitative approach as being data-driven, concluding, rather than commencing, with hypotheses and theory. Using such methods, sampling will differ markedly from a quantitative or experimental study: what is sought is a diversity of perspective and opinion not guaranteed by using probability sampling techniques (Burns 1997, p.293).

## Objectives

The initial phase of the study sought to identify common patterns surrounding the practice of feeding and to develop a set of categories and themes to be used in the design and analysis of the second phase of the study. The second phase was designed to capture the diversity of experiences and practices of people who fed wildlife around homes; and to allow limited description of the prevalence of themes among feeders.

## Methods

### First phase

At the commencement of the study it was known to the authors that wildlife managers held a variety of opinions on issues related to feeding. To explore this diversity we sought informants who performed at different levels in their respective organizations. Using existing informal networks, a small number of wildlife managers were recruited to participate in face-to-face, unstructured in-depth interviews. The participants, drawn from Queensland Parks and Wildlife Service, were: rangers (2), middle managers (1), policy officers (2). Other wildlife professionals were: a state Government salaried wildlife interpretation officer; a Brisbane City Council park manager; and a pet care industry representative. These interviews were tape recorded and later transcribed. To recruit members of the public who fed wildlife, public notices were placed in the *Courier Mail*, Brisbane's sole daily newspaper. These notices invited comment from people who fed, or were opposed to feeding, wildlife in urban settings. A similar request was made on a regular

ABC talk back radio programme on wildlife. The first 21 callers who contacted us were interviewed in depth over the phone. Statements were recorded as notes and read back to the participant to ensure accuracy. All interviews were analysed for content and theme.

### Second phase

A short survey instrument was developed from the findings of the initial phase of the study and mailed to 220 people volunteering to participate in the study. Comprised primarily of open-ended questions, the survey sought: demographic information; whether or not the respondent fed wildlife; species fed; types of food provided; amount spent per week on food; species seen but not fed, species the respondent wanted to see more and less of; reasons for feeding or not feeding; perceived benefits or harm to fauna; and perceived benefits to humans. A space was provided at the end of the survey for further comments.

### Coding and analysis

Twelve of the respondents who returned questionnaires indicated that they did not feed wildlife. Although there was considerable overlap in the content and themes appearing in the surveys of feeders and non-feeders, it was reasoned these respondent groups were unlikely to have been drawn from the same populations and the surveys of non-feeders were subsequently excluded from further analysis.

In cases where the questionnaire was apparently filled in by a couple (both boxes 'Male' and 'Female' were ticked), the gender of the respondent was randomly assigned (a coin toss). All questionnaires in which the respondent indicated that they fed wildlife were coded and entered into an electronic database. The item asking respondents to list species fed was scored as the number of species listed. Similarly, to the item asking respondents to list the species seen in the vicinity of their back yard but not fed, the respondent was scored according to the number of species listed.

Where respondents described feeding, and listed the foods offered but made no estimation of the amount spent each week, a value equal to the average for the overall sample was assigned. Averages were also substituted in the cases where respondents gave answers such as "all welcome" or "anything" to the item inviting respondents to list species they would like to see more of around their home.

Key themes were identified in an initial analysis of all returned surveys. They were: empathy towards wildlife; guilt regarding feeding; ownership of the wildlife being fed; and, anthropomorphism. All questionnaires were assessed against a scale measuring the degree to which these themes were expressed and scored as: 1 = not present, 2 = low/some occurrence, 3 = moderately present, 4 = pervasive, 5 = strongly pervasive.

Many responses were relevant to the study but not to the question asked. For example, to the question: "Can you describe how you think wildlife benefits from being fed by humans?", respondents often wrote statements like, "I see no harm as long as they don't become dependent". Such statements might also be interpreted as, "I think dependency harms wildlife." Rather than attempting to guess at the intended meaning of these statements, we

simply recorded the occurrence of the theme 'dependency'. This approach was used to record the incidence of the other themes covered here. While most surveys contained more than one theme on any question, the occurrence of a theme was recorded only once per survey form.

Responses to the question: "What do you feed the animals that visit your yard?" varied considerably and alerted us to potential harms some practices may cause. A veterinarian with experience in the management and treatment of wildlife was asked to comment on some of the foods and practices described by respondents (Young, pers. comm.). Based on these comments, a scale was developed to assess diets and practices reported by respondents. "Appropriate", was scored as a "1": such a score recognised efforts to ensure foods were balanced, targeted at specific groups of animals, and included some mention of mineral supplements and the like. If foods deemed inappropriate, such as bread, were included in an otherwise sound menu it was scored as 2: "mostly appropriate". Menus including bread and sugar and no mention of attention to the dietary requirements of the species being fed, were scored 3: "inappropriate". Menus including foodstuffs, and some practices, deemed detrimental were scored 4, "most inappropriate". Descriptions of feeding practices considered a threat to the individuals and wider populations, for example seeds gathered from aviary floors, were scored as 5: "highly inappropriate".

## Results

### Phase 1

Age and/or stage of life were apparent influences on whether people fed wildlife. The length of time people had been feeding wildlife varied, as did the foods given to wildlife. Both feeders and managers named species they considered "good" and "bad". There was considerable diversity in both the reasons people gave for feeding wildlife and in the benefits and harm perceived to accrue to wildlife being fed. Most feeders wanted to share positive experiences they had in feeding wildlife.

Managers often referred to wildlife feeding as a "people problem", believing the problem would dissipate if "they (feeders) knew better" or were better informed. Feeding wildlife, they claimed, led to conflicts between people, a situation some managers felt they lacked both the powers and skills to resolve.

Interviewees, particularly wildlife managers, described a variety of ways in which feeding occurred. These were categorised according to the places in which it occurred and the way in which food was made available. Such categories were of particular relevance to managers because the legislation under which they acted differed according to the places in which wildlife were being fed. In particular, managers drew our attention to issues surrounding the feeding of dolphins in national parks. From interviews with both managers and feeders, the situations in which feeding occurred were categorised as:

1. *Natural areas (parks, national parks, state forests)*. Examples of wildlife feeding in these areas include dolphins, birds, kangaroos, wallabies and dingoes.

2. *Non-residential private property such as campgrounds*. These properties may adjoin or be in the vicinity of natural areas. The owners or managers of these properties often promote wildlife feeding as a way of attracting tourists or customers.
3. *Parks and public spaces within urban environments*. In these settings, the most commonly fed species are birds, particularly waterfowl, at ponds and lakes in parks within cities. Other examples included feeding possums, birds and lizards in public open spaces.
4. *Residential property*. This is most often seen as residents feeding animals either attracted to, or naturally occurring on, their property. In urban settings, this typically involves the feeding of birds and possums. At urban fringes, some larger residential properties, often called 'acreage', adjoined similar properties or natural areas. The animals fed on such properties sometimes included larger mammals such as wallabies.

Similarly, feeding can be categorised according to the manner in which it occurred:

1. *Intentional*. This includes hand feeding and provisioning, and may involve purchasing commercially available products (e.g. bird seed, pet mince, nectar mixes); products purchased as ingredients (e.g., oats, shell grits, honey); items to be fed directly (e.g. ox heart, cheese); or table scraps. In some cases, animals were encouraged to take food from the hand or from food left in feeders and dishes.
2. *Unintentional*. This includes wildlife scavenging human foods from rubbish and compost bins. Also, animals accustomed to being fed may raid food left unattended on picnic tables, or may force their way into food storage containers and forage food from within homes. There are occurrences of food being taken without being offered, which in some cases entails food being snatched from the hand, a table or from a barbeque, or may involve actions in which a human is harassed into dropping food as they retreat or defend themselves. Incidents such as these were of particular concern to managers when they involved children and had the potential for trauma and injury.
3. *Consequential or 'natural'*. A common practice, and one often promoted by wildlife managers, is to plant trees and shrubs known to be a food source. Many managers and wildlife fanciers believe this to be a 'natural' substitute to providing other types of food. Many feeders stated that in addition to providing foods they had also planted 'food trees'. While arguably similar to intentional feeding, both managers and feeders made clear distinctions between these two types of feeding.

Some managers acknowledged that "backyard feeding" as typically practised, that is, with small numbers of animals being fed on a regular or semi-regular basis, was essentially benign. However, other managers argued that people who fed in their yards would be just as likely to feed fauna in natural areas and parks: an activity with more serious management implications.

## Phase 2

Without following up unreturned survey questionnaires with reminder letters, 169 completed surveys were returned. Some survey recipients photocopied their questionnaire and passed them on to others. Depending on how these, and questionnaires from those stating that they were opposed to feeding were counted, the response rate was calculated to lie between 71-77%. The results presented below are from the 157 respondents whose questionnaires indicated that they fed wildlife.

## Demographics

Women and men were equally represented, with women making up 50.3% ( $n = 79$ ) of respondents with four questionnaires apparently completed by a couple. Most respondents (83.8%) were aged between 45 and 75 years, with more than a third (35.7%) aged 45-54, a quarter (24.7%) aged 55-64 and a further quarter (23.4%) aged 65-74. The stated domestic arrangement for three quarters of respondents (75.7%) was to live with a spouse or partner and no others. One in ten either lived alone (9.9%) or lived with another family member (9.9%). The mean length of time respondents claimed to have lived in the area was 16.6 years ( $SD = 13.81$ ), one fifth indicated five years or less and less than five per cent had lived in the area for 50 years or more. The majority of respondents (67.3%) indicated that they had been feeding for 10 years or less (mean = 10.1 years,  $SD = 8.08$ ).

## Feeding practices

Respondents reported feeding, on average, eight species of wildlife (mean = 7.9,  $SD = 5.1$ ) and, saw but did not feed, a further 12 species. One respondent attached a detailed list of 112 species giving both common and scientific names. Over two-thirds (67.5%) of respondents wanted to see more wildlife around their homes. Yearly spending on food for wildlife was calculated by extrapolating the

amount respondents gave as their weekly outlay. Annual mean spending was \$466 ( $SD = 573$ ), although this figure was skewed by a small number of respondents ( $n = 13$ ) who reported spending \$1300-4160 per annum. Both modal and median amounts were \$260 per annum (\$5 per week). Two-thirds of respondents (67.5%) reported purchasing commercially prepared products intended for consumption by pets or wildlife. More than half (54.1%) of the respondents described feeding practices and menus, which were assessed as being “appropriate” or “mostly appropriate”. One-third (33.1%) of respondents offered foods scored as ‘inappropriate’ and 5.1% described foods and practices considered ‘highly inappropriate’.

## Thematic prevalence

The single most pervasive theme in the survey data was that of dependency (69.4%). While for most wildlife managers interviewed during the pre-study and for most survey respondents, dependency was considered to be a negative aspect of feeding, one fifth of respondents (19.1%) described their yards and gardens using terms such as “haven” and “sanctuary” or that they had provided “a reliable food source” or a food supply on which “they could depend”. A perception expressed by just under half (45.9%) of the sample was that there was “less wildlife now than before”. The quality or suitability of food offered to wildlife (“poor” or “right” diet) was an issue raised by 37.6% of survey respondents. The majority (70.1%) identified Australian native species they would like to see less of in their yards (“bad” wildlife). Among the bush species they listed were, crows ( $n = 48$ ) brush-turkeys ( $n = 37$ ), flying-foxes ( $n = 22$ ) and snakes ( $n = 20$ ). The perception that “bad” wildlife was responsible for a decline in the numbers of “good” wildlife was interpreted from the statements made by one-fifth of respondents (19.1%). Statements urging that “something should be done” to better manage wildlife were made by 12.7% of respondents.

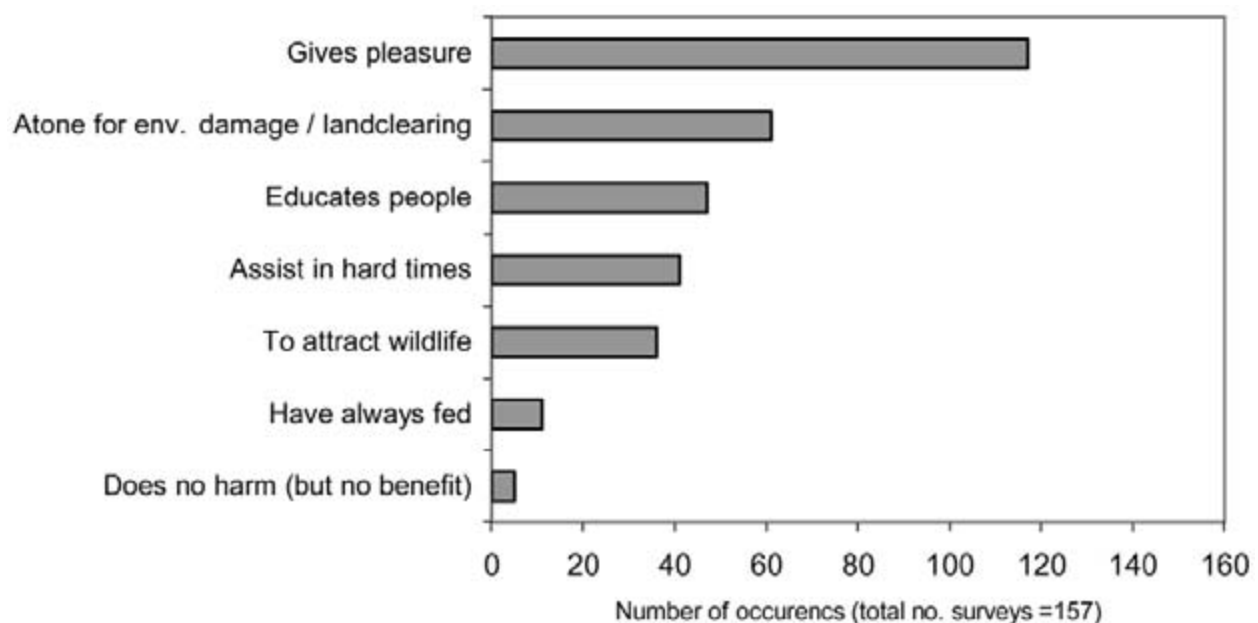


Figure 1. Reasons given for feeding (More than one reason could be given for feeding).

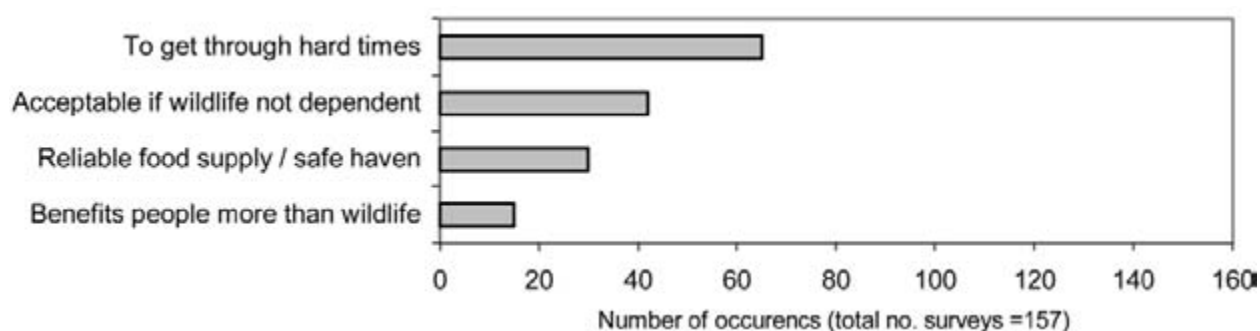


Figure 2: Perceived benefits to wildlife from feeding (more than one perceived benefit could be recorded per respondent).

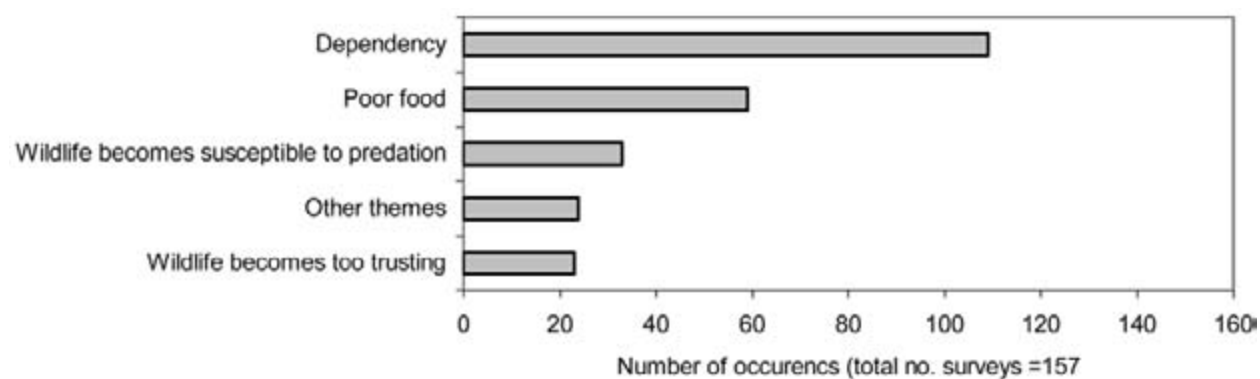


Figure 3: Perceived harm to wildlife from feeding (more than one perceived harm could be recorded per respondent).

### Reasons given for feeding

In response to the question asking why people chose to feed, the majority of respondents (75.3%) indicated that feeding wildlife gave them pleasure. More than a third (38.9%) believed feeding compensated for land clearing and loss of habitat. Almost one-third (29.9%) considered feeding to be educative. Feeding as a means of attracting wildlife was described by 22.9% of respondents (Figure 1).

### Perceived benefits to wildlife from feeding

One quarter (26.1%) of respondents wrote statements suggesting feeding assisted some species through “hard times”, “dry periods” and “droughts” (Figure 2).

### Perceived harm to wildlife from feeding

The most commonly perceived harm to wildlife was that the wildlife would become dependent on human-supplied foods (69.4%), be given the “wrong” foods (37.6%), would be made susceptible to predation (21.0%) or made susceptible to injury or capture by humans (14.6%) (Figure 3).

### Presence and strength of identified themes

Assessments of the thematic presence in the data set of: empathy; anthropomorphism; guilt about feeding; a sense of ownership of wildlife being fed; and the spiritual dimensions of feeding wildlife, are presented Table 1.

### Post hoc qualitative analysis

The following thematic exploration is an analysis of the materials drawn from both study phases. In presenting these exemplars, an attempt was made to represent the diversity of material falling under that theme. Statements drawn from survey forms are presented verbatim.

### Dependency

The most pervasive of all themes, stated in a variety of ways and in all contexts, by feeders, those opposed to feeding, and wildlife managers, was that of “dependency”. For most, it meant that if an animal was thought to rely on human foods it was “dependent”. Some managers and feeders expressed the concern that

Table 1. Presence and strengths of identified themes (percentages of all surveys, n=157, in which themes were identified and rated for strength).

Theme	Strongly pervasive	Pervasive	Moderately Present	Low/some Presence	Not present
Empathy with wildlife fed	77.1	12.7	7.0	3.2	0
Ownership over wildlife fed	10.8	18.5	21.7	6.4	42.7
Wildlife behaviour anthropomorphised	10.2	10.8	20.4	8.3	49.7
Feeding has spiritual associations	3.2	2.6	7.7	4.5	81.5
Guilt regarding feeding wildlife	2.5	5.1	10.2	8.9	73.2

dependent animals would perish if the person feeding stopped (went on holiday, moved house or died), while others believed that by regularly feeding, recipient fauna would have a 'reliable' food supply, or one "they could depend on". For some, dependency *per se* was considered negative,

"... people mustn't make the birds and animals totally dependent on what they give." (Industry Representative (IR)).

"They become dependent on humans in many cases, which we know is not good." (Female Feeder (FF) 45-54yrs)

"... don't want to make dole bludgers of them." (F telephone interviewee).

Others believed dependent animals would lose their ability to forage, or would stay in the one area waiting to be fed:

"Creatures may become too dependent and suffer if the food supply is not maintained." (Male Feeder (MF) 65-75yrs)

"They may become too dependent and not look for their own food so I cut down the amount I feed them." (FF 35-45yrs)

The consequence of this, some reasoned, was that some animals would lose their territories and other animals would move in to be fed as well:

"...it creates overabundance of animals, it creates a dependence on alternate food supplies, it changes the social structure and behaviour of animals." (Wildlife Manager (WM) )

Some people took what they believed to be precautions to avoid dependency;

"I only feed the birds in the afternoon – They get into a routine and live off their instincts..." (MF 45-54yrs)

"... I feed them infrequently and irregularly. This also (I hope) minimizes dependency." (MF 45-54yrs)

"We make sure that... it is all eaten within 20 minutes." (IR)

Feeders who believe "their" recipient fauna had become dependent described other problems:

"There are the sorts of extremes that people get themselves into ...and then you are feeding 20 and next thing you know, you've got 50 and they are all begging for food... they stress themselves out over it." (WM)

"Unfortunately the White Ibis turned up in droves and were taking all the food... There are far too many pigeons now too – they are bringing all their friends – but I am probably too soft hearted to stop." (FF 55-64yrs)

There is the inference that feeding devalues or diminishes the dignity of the "dependent" animal:

"If wildlife depends wholly on humans for food, it is

not wildlife in the true sense, ie being able to search, hunt or forage. Total dependence makes wildlife into pets." (FF 45-54yrs)

"Believe that total dependence on human feeding is harmful. People should not attempt to make pets out of wildlife." (MF 65-75yrs)

## Welfare concerns and neighbour conflicts

Wildlife managers tended to focus more on the perceived threats to the welfare of animals and humans and raised the issue of feeding wildlife as a cause of conflicts between neighbours. Some believed feeding stations to be vectors for the transmission of disease, "predation bottlenecks" or that there were health concerns associated with food being left out, and presence of excreta as risk to human and wildlife..

"It's much more concentrated, you know, you've got 200 birds visiting one little plate of stuff... it is not nearly the same contact level (as in the wild)." (WM)

"In one case we actually had a childcare centre next door to a feeder who was determined not to change their ways and the Health Department ended up issuing an order on the childcare centre to do something about it because the playground equipment was just covered in bird excreta and it was actually a health problem." (WM)

"... feeding often led to other management problems such as conflict with neighbours over noise, faecal deposits and in some cases was linked with poisonings of resident flocks of magpies and crows." (WM)

## Right or wrong?

Although study participants were not asked if they believed feeding to be right or wrong, many respondents gave statements to the effect that they "saw no harm in it." Respondents who claimed feeding was acceptable supported their claim by stating the animals they fed had gone on to breed, and in some cases, the respondent now feeds the offspring. Others asked questions on their forms seeking information on whether what they doing was good or bad, right or wrong.

## Spiritual

A small number of respondents added a spiritual dimension to their actions by suggesting they were "looking after God's creatures." Or that feeding put them in closer touch with nature and this in itself was a spiritual experience.

## Quality of life

The level of dedication, the often-expressed regularity of feeding and the amount spent on food implied the presence of wildlife is an extremely important part in the lives of most respondents. Some respondents made extensive lists of the fauna occurring in and around their gardens. Some enclosed photographs and others went to considerable lengths to convey the joy they experienced in feeding "their" wildlife.

## Ownership / responsibility /attachment

Some respondents put inverted commas around the word “my” when referring to the wildlife that they feed (e.g. “I try to feed “my” birds the right foods.”) This was interpreted as meaning that there was a sense of irony in claiming ownership of visiting wildlife. However, in spite of this apparent self-knowledge, many implicitly acknowledged a responsibility to the animals they fed by wanting to make up for the loss of habitat (“man’s greed”) and by recognizing that animals had, or might become, reliant or dependent on them.

## Anthropomorphism

Many respondents described the behaviour of animals in human rather than ecological terms, for example, “squabbles” between family members over food, and some individuals being “greedy” and dependency described in terms of “dole bludging.” Believing feeding was reparation made to wildlife for the loss of habitat suggests either a poor understanding of ecological processes or is a restatement, in human terms, of the requirements of wildlife.

## Discussion

The willingness of feeders to bear the sometimes substantial cost of feeding, the level of detail given to observations, and the sense of wonder expressed in describing the antics of the wildlife they feed, suggest that these experiences are an important part of daily routines and in all probability add considerably to a respondent’s quality of life. Recognising that Australia’s population is ageing, two findings are of particular interest, namely, the age of the survey participants and the relatively late stage in the respondents’ life when they began feeding. If the survey reflects the demographics of people who feed, it may point to the practice becoming more popular in the future as the Australian population ages. For many, feeding may be a pastime taken on after retirement or at a time of life when people begin spending more hours at home. This accords with US studies reporting the growth in bird watching as recreation among seniors (Adams *et al.* 1997).

The commonly raised issue of dependency is complex. If animals do become dependent, are the issues different for migratory or nomadic species to those for territorial and/or sedentary species? Other Brisbane studies (Thomas 2000; Rollison *et al.* 2003) have suggested, on average, that one in three households feed, either on a regular or irregular basis. Observations of birds being fed at more than one backyard within a territory (Rollinson, pers. comm.) suggested that if birds are dependent then they have become dependent on more than one provisioned food source. This raises the question: at what point does the behaviour we call “dependency” become an adaptation? Low (2002) gives numerous examples of wildlife adapting to environmental changes caused by humans or to human behaviour itself and argues co-existence rather than dependence typifies the relationship between humans and animals.

An observation made during the course of the study was that the differences in perspectives expressed by managers

and feeders was characterised by the use of different types of knowledge. Typically managers made statements based on a “big picture” level of analysis, their concerns were for the welfare of meta-populations. Respondents who fed in their backyards often described species at the level of the individual or family group, for example, respondents identified migratory birds that returned to their homes over many years. The inherent problem in this dichotomy is that the concerns of managers for the welfare of populations are in conflict with the experiences of those who see “their” animals survive and prosper on the food they give them. An explanation lies in the way in which the two groups construct wildlife. During interviews, managers primarily used knowledge-based descriptions, including elements of evolutionary, ecological and management theory, in their interpretations of wildlife feeding. For feeders their descriptions of wildlife feeding appeared experience-based (feeding, observing, rearing). The basis of “wildlife knowledge” for managers is abstract and for feeders it is concrete. Managers interviewed in the course of our studies believed better education regarding not just feeding but wildlife in general would result in the practice declining. We suggest, however, any attempts to raise levels of community knowledge that do not recognise the difference in the way knowledge is acquired may have little impact.

## Conclusions

Given the particularly strong empathy many respondents expressed towards the animals they feed, the length of time many respondents claim to have fed, its prevalence and the probable resistance of the target population to change, it seems likely the practice of backyard feeding will possibly grow in prevalence, or at least, continue unabated.

Orams (2002) presented the three options available to wildlife managers with regard to feeding as prohibition, management, or to ignore. He noted the often strongly-worded messages regarding the effects of feeding may overstate the truth and undermine the credibility of agencies. We present here a restatement of Orams’ (2002) topology with focus being the commonly shared concern managers and feeders hold for the welfare of fauna populations and to address some of the human conflicts arising through feeding.

1. Maintain the present policy of discouragement and manage the more serious impacts of feeding on a case by case basis. The practicalities are that agencies are typically poorly resourced and maintaining the *status quo*, whether by choice or otherwise, is likely.
2. It has been proposed a ‘zero tolerance’ approach be adopted to virtually ban feeding wildlife in all settings. To achieve this would require strengthened legislation and the resources to police it. In addition, any attempts to modify the behaviours of people feeding will need to overcome high levels of anthropomorphism and issues related to the ownership of the animals involved, thereby requiring a significant public education campaign. Given that feeding is popular among a growing segment of the population, such an approach may have little political appeal.

3. As all groups express particular interest in the welfare of wildlife, a “harm minimisation” approach may be a more effective management tool. Such an approach would recognise that, for a large part of the community, wildlife feeding is a quality of life issue and move towards the development of a set of best practices to ensure feeding does not adversely affect wildlife populations or create other management problems. It was noted that many managers accepted this, often reluctantly, as probably the default option for managing feeding in urban areas.

If such policies were to be pursued, elements of harm minimisation must be unambiguous and include: the identification of species being fed; dietary

recommendations; times of the day to feed; length of feed times; hygiene requirements; and recommendations regarding appropriate numbers of animals to be fed in urban settings. Feeders appear to have ignored agency-sponsored programs aimed at discouraging feeding (see Anon. 1996) believing instead that feeding can be “done right” if precautions are taken. In that managers and feeders both seek a common outcome, although greatly differing on what constitutes threats to the welfare of wildlife, an opportunity exists to deliver educational messages to an already sensitised population. Such campaigns might also address some of other commonly-held misconceptions, which often cloud wildlife management, regarding the relationships between wildlife and the environment.

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