

**A community-based wildlife survey: the knowledge and attitudes of residents of suburban
Brisbane, with a focus on bandicoots**

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Abstract. Within the expanding city of Brisbane in south-east Queensland, numerous fragments of native and re-growth vegetation are scattered across the largely urbanised landscape. These fragments provide refuge to a great diversity of native wildlife, and provide residents with the opportunity to experience nature on their doorstep. To assess the diversity and abundance of this wildlife, recent changes in these parameters, and the value of wildlife and bushland fragments to residents of Brisbane, a questionnaire survey was distributed to 300 households each located adjacent to one of 38 urban bushland fragments. A total of 172 surveys (57%) were returned producing 768 records of 83 fauna species, dominated by birds and mammals; bandicoots were widely reported from the 38 fragments. Several historical records provided evidence of recent local extinctions within fragments, highlighting the continuing declines in various species of native wildlife within Brisbane. Several human-wildlife conflicts were identified, but overall residents were tolerant of such conflicts. Bandicoots were disliked by a small minority (3%) of residents due to the holes they dig in lawns and gardens in search of food, and their potential as vectors of ticks. The vast majority of respondents expressed an appreciation for the presence of native wildlife (96%) and bushland fragments (97%) in their local area, emphasising the importance of incorporating human dimension values into the management of this urban biodiversity.

Introduction

Urbanisation, the process by which rural or natural areas are converted to urban and suburban environments, is one of the most rapid and influential human activities ever undertaken (Collins *et al.* 2000). In North America, this process is now regarded as the most significant cause of extinction for that continent (Marzluff *et al.* 2001), especially where development is encroaching directly into natural areas. The impact of urbanisation in certain parts of Australia has been similarly dramatic; in south-east Queensland, currently the fastest growing region of Australia (Australian Bureau of Statistics 2004), the rapid and continuing expansion of the urban sprawl has massively reduced the total area of bushland and left much of that remaining as fragmented patches of varying sizes (Catterall and Kingston 1993).

Although some species of vertebrate exhibit a remarkable ability to survive and even prosper following urbanisation, many appear intolerant of such impacts, often becoming locally extinct (Adams 1994; Low 2002). Such outcomes have recently become a concern of considerable importance to wildlife agencies, environmental planners, and local governments as well as the community (Catterall and Kingston 1993). As interest in understanding the dynamics of urban wildlife has increased rapidly throughout the world (Murphy 1988; Marzluff *et al.* 2001), agencies and planners have realised that the ecological and behavioural knowledge essential for the development of effective management plans is extremely limited or even non-existent (Jones 2003). In attempting to redress this serious impediment, considerable effort is currently underway to understand some of the most important components of the urban ecosystem (Collins *et al.* 2000; Jones 2003). Largely because of the unavoidable presence of humans in such areas, these efforts have often necessitated the use of innovative techniques in combination with standard ecological survey techniques (McIntyre *et al.* 2000). One such approach is the use of community-based knowledge as an adjunct to traditional wildlife survey techniques.

The general community can be a valuable source of information regarding the presence and abundance of local wildlife (see Lunney *et al.* 2000; Lunney and Matthews 2001), although some caution must be exercised in the use of such information due to the possibility of species mis-identifications. Community-based wildlife surveys are of most use when seeking information on the presence of species that are easily identified and have proven an effective tool in describing the distribution of several such species, including the koala (*Phascolarctos cinereus*) (Lunney *et al.* 1997), spotted-tailed quoll (*Dasyurus maculatus*) (Lunney and Matthews 2001), and Lumholtz's tree-kangaroo (*Dendrolagus lumholtzi*) (Kanowski *et al.* 2001). In addition, residents who have lived in the same area for extended periods can provide valuable insights into changes that have taken place in the diversity and abundance of local wildlife. This is especially true of developing urban areas where such changes can be rapid and marked.

Community wildlife surveys can also serve to provide the public with an opportunity to express their opinions and concerns regarding the presence of local wildlife. The importance of incorporating public opinion and values into wildlife management decisions is being increasingly recognised in various fields of environmental science (VanDruff 1987; Harding 1998; Miller and McGee 2001). The wildlife management profession is currently being expanded to include not only the scientific expertise of biologists, but also the values and attitudes of the public that have an interest in the wildlife being managed (Decker *et al.* 1992). Integrating public and stakeholder input into a management framework may complicate the decision-making process, but is more likely to result in an outcome that is satisfactory to all concerned (Decker and Chase 1997). The inclusion of such 'human dimensions' in wildlife management planning is particularly important in urban areas where the potential for human-wildlife interaction and conflict is increased (Murphy 1988).

This paper reports on a community-based wildlife survey conducted as part of a broader investigation into the survival and management of northern brown bandicoots (*Isoodon macrourus*) in urban areas of Brisbane. Although the short questionnaire distributed to residents

was designed primarily to elicit local knowledge on the presence of bandicoots, it also provided recipients with the opportunity to record their knowledge of the diversity of wildlife in the urban environment, and to express certain attitudes towards this wildlife. This paper expands on the knowledge obtained through an extensive community-based wildlife survey of Brisbane, conducted by the Wildlife Preservation Society of Queensland more than two decades ago (Davies 1982).

The aim of the study was to employ community-based knowledge as part of an examination of the current abundance and distribution of bandicoots and other species of interest in the urban landscape, and to gain some insight into how these parameters have changed over the past 30-45 years through the perception of the recipients. The study was also designed to investigate human-wildlife interactions and to identify areas of conflict and positive association, to enhance future management of wildlife and habitats in urban Brisbane. We were especially interested in assessing the potential human-wildlife conflict arising from foraging bandicoots making holes (digs) in the lawns of residents in search of subterranean food items.

Methods

Study area

Questionnaire surveys were distributed to residents living within the Local Government Area of the City of Brisbane (153°2'S, 27°E) in sub-tropical eastern Australia. The region has a population of 917,200 and has grown rapidly at approximately 1.7% per annum over the past decade, and is expected to reach 1,018,230 by 2011 (Queensland Department Local Government and Planning 2003). The city centre is located on the Brisbane River and surrounded by an extensive suburban area within a 12 – 15 km radius. The growing population is expected to be largely accommodated through an expansion of this suburban environment on the fringes of the

city (Brisbane City Council (BCC) 2001). Although some of the region's original vegetation cover exists as large tracts of bushland on the outskirts of the city, numerous small fragments (1 - 350 ha) of remnant and re-growth vegetation remain scattered throughout the urban landscape (Catterall and Kingston 1993). The habitat within these fragments is highly variable, ranging from intact native forest (mostly dry sclerophyll) to weed-infested mosaics with sparse native vegetation (Catterall and Kingston 1993, BCC 2001). These vegetation fragments, and the urban matrix to a lesser extent, serve as habitat to a considerable variety of native and introduced wildlife (Low 1993, Poole 1995, Sewell and Catterall 1998).

Community-based questionnaire survey

During February 2003 questionnaires were hand-delivered to 300 freestanding houses located immediately adjacent to one of 38 bushland fragments. These households were selected because targeted searches had been conducted in the neighbouring fragments for evidence of the presence of northern brown bandicoots, as part of a broader study into the survival of the species in urban Brisbane. Questionnaires were enclosed within a hand-addressed official University of Queensland envelope stamped with 'Brisbane Wildlife Study'. Enclosed within each envelope was a brief cover letter on University letterhead, a one-page questionnaire, a bandicoot information sheet, and a stamped, self-addressed envelope for the return of completed surveys. The cover letter emphasised the important role of the public's knowledge and opinion in wildlife and bushland management, in an attempt to convince recipients that their responses would be valued. The bandicoot information sheet contained a picture of the species and details of its appearance to assist with identification. Recipients were also assured of the anonymity of the survey.

The questionnaire consisted of ten multiple-choice questions (MCQ 1 – 10) and three short answer questions (SAQ 1 – 3), and was designed to take on average less than 5 minutes to

complete (Table 1). Recipients were asked to complete the survey only with regard to the bushland fragment immediately adjacent to their house. Each survey was printed with a unique identification code and the address of the recipient was noted at the time of delivery so that returned surveys could be matched to the corresponding bushland fragment. Recipients were requested to return completed surveys within a 10-day period using the supplied stamped, self-addressed envelope.

Verification of information

Where further information was required to verify a noteworthy record, a follow-up letter was mailed to the appropriate household requesting the respondent to contact the survey coordinator at the University by telephone or e-mail. An answering machine was available for the supplied telephone number so that missed calls could be returned. Respondents that obliged and contacted the coordinator were thanked and asked about the record of interest. A total of 19 residents were contacted and the validity of noteworthy records was assessed from these conversations; only if the respondent expressed a high degree of confidence and knowledge was the record accepted.

Results and Discussion

Survey returns

Of the 300 questionnaires distributed, a total of 172 (57%) were returned covering all of the 38 bushland fragments, although not all respondents provided an answer to each question. This return rate compares favourably to that reported in other community-based wildlife surveys of koalas (10%, Lunney *et al.* 1997) and tree-kangaroos (8%, Kanowski *et al.* 2001), although both these surveys were conducted on a larger scale. The mean (\pm s.e.) length of time between the date

of delivery and return postage was 6.4 ± 0.7 days, ranging from 0 (same day delivery and return) to 73 days. A majority (87%) of questionnaires were returned within the requested time frame of 10 days. Given the initial substantial rate of return no follow-up reminder letter was delivered to houses from which a response was not received. The overall high rate of return suggests the majority of surveyed residents had a high level of interest in local wildlife.

Urban wildlife diversity

A considerable diversity of wildlife species was reported to occur in urban bushland fragments, comprising 83 fauna species from 768 records. Records of birds ($n = 277$) accounted for 43 of the species described, but mammals (16 species identified) were more frequently reported ($n = 293$). Other taxa represented in the records include reptiles (18 species), amphibians (3 species), invertebrates (2 species), and fish (1 species) (Fig. 1).

The most commonly identified species were possums (common ringtail possum *Pseudocheirus peregrinus* and common brushtail possum *Trichosurus vulpecula*, $n = 129$ combined), followed by the Australian brush-turkey (*Alectura lathami*) ($n = 57$). Records of flying foxes were also frequent ($n = 55$) though few residents specified one of the two species common in Brisbane (black flying fox *Pteropus alecto* and grey-headed flying fox *Pteropus poliocephalus*), which were assumed to comprise all flying fox records. The profusion of records of possums, flying foxes and brush-turkeys most likely reflects the abundance of these species, but also the ease with which they are identified and their tendency to move into and utilise resources within the urban matrix (Van Dyck 1995). These species were also the source of several reported human-wildlife conflicts: noisy possums rummaging through roof cavities, thieving flying foxes raiding fruit trees, and messy brush-turkeys disturbing gardens. Such conflict presumably leads to a heightened awareness of the implicated species' presence, and may bias residents' reports of the wildlife in their area. Brush-turkeys and brushtail possums are well

known for the disturbances they cause to residents, and some degree of public resentment directed towards them is inevitable (Jones and Everding 1991; Miller *et al.* 1999).

Many other species were widely reported from the 38 bushland fragments surveyed, and a few single records of particular interest were also included (Table 2). There were numerous reports of ‘frilled’ lizards inhabiting fragments, but all were considered to be mis-identifications of bearded dragons (*Pogona barbata*), as the frilled lizard (*Chlamydosaurus kingii*) is currently known only from continuous bushland on the outskirts of Brisbane (see Historical records and local wildlife disappearances). One record of an *Antechinus* sp. and a very recent historical record of a spotted-tailed quoll (*Dasyurus maculatus*) were not included after a follow-up telephone conversation with each of the responding residents revealed they were not confident about the identification of the single individuals encountered.

From 170 completed questionnaires, 92% of respondents indicated that mammals were present in the bushland situated adjacent to their households; only 3% reported no mammal species were present, while 5% were unsure (MCQ 1, Table 3). Given that both the common ringtail possum and brushtail possum are considered ubiquitous throughout developed areas of the city (Van Dyck 1995), it is likely that these species were either overlooked or not detected by those residents who did not respond positively to MCQ 1. Although asked to list any native animals seen in the past 12 months, many respondents included introduced wildlife species, though some of these acknowledged the distinction. Of the 16 mammal species reported, four are introduced (cat, fox, hare, ship rat) and widespread throughout urban Brisbane (McRae and Smith 1987; Low 1993; pers. obs.). The effects of these species upon native wildlife in Brisbane have not been quantified but it is widely known that both cats and foxes prey upon native species, including a variety of birds and small-medium sized mammals, such as northern brown bandicoots and brushtail possums (Fitzgerald 1988, 1990; Proulx 1988; Brown and Triggs 1990; May and Norton 1996; Marks and Bloomfield 1999; Hutchings 2003).

Bandicoot distribution and residents' attitudes

The majority (54%) of questionnaire respondents were unsure if bandicoots occupied the bushland adjacent to their households; 34% reported that bandicoots were present and 12% reported that they were not (MCQ 2, Table 3). From a prior investigation into the presence of northern brown bandicoots in the bushland areas surveyed (FitzGibbon unpublished data), it was known that 24 (63%) of the 38 fragments examined here were occupied by bandicoots. Of the 172 residents who returned a survey, 128 (74%) were living adjacent to bushland occupied by bandicoots, but only 53 (41%) of these residents indicated they considered bandicoots were present; 13% indicated bandicoots were not present, while most respondents (46%) living beside occupied bushland were unsure. That only 41% of residents living adjacent to occupied fragments knew of the presence of bandicoots is not surprising, given the secretive, nocturnal behaviour of the species and the difficulty in directly identifying individuals. Unless residents sight evidence of bandicoots (usually digs) and are able to recognise these signs, it is likely that the species would remain undetected.

Of the residents who reported that bandicoots were present in adjacent bushland ($n = 58$), 83% indicated they had found diggings in their lawn while 17% did not. Presumably the latter group had either directly sighted a bandicoot or recognised their diggings in the adjacent bushland. However, because of the nocturnal behaviour of northern brown bandicoots it is very likely that most residents relied on the recognition of digs rather than direct sightings to establish the presence of bandicoots. Of the residents who indicated they were unsure whether bandicoots occupied nearby bushland, 85% revealed they did not find diggings in their lawns while the remaining 15% reported they did (MCQ 3, Table 3). Although the latter group observed diggings in their lawn it is presumed they lacked either the knowledge and/or confidence to discern whether the holes were created by bandicoots. However, overall there was a high degree of awareness amongst those residents living near bandicoots regarding their digging behaviour, with

only 15% of respondents who reported finding digs in their lawn ($n = 60$) indicating they were not previously aware that bandicoots were responsible (MCQ 4, Table 3).

A potential human-wildlife conflict arises due to the foraging behaviour of bandicoots and their tendency to dig in the lawns of nearby residents, leaving holes about the size of a golf ball or tennis ball, and occasionally consuming vegetables from gardens or pet food from bowls. However, there was a high degree of acceptance or tolerance amongst residents towards the digging behaviour of bandicoots, with only 21% of 159 respondents indicating they do, or would, get annoyed at finding bandicoot holes in their lawn (MCQ 5, Table 3). Several of these residents clarified that it was only when bandicoots foraged in their vegetable gardens that they became concerned. The vast majority (79%) of respondents indicated they do not, or would not, find the presence of foraging holes to be annoying. The outcome of this analysis was altered only slightly when restricted to those residents that reported actually finding diggings in their lawn ($n = 60$), with 81% indicating that the presence of bandicoot holes in their lawn was not annoying. The tolerance of most people is reflected in the following quote from one resident: *'If one chooses to live near wildlife then one has to make allowances for any inconveniences they cause.'*

Another potential human-wildlife conflict arises with bandicoots due to the fact that they are the natural host for various tick species, including the paralysis (scrub) tick (*Ixodes holocyclus*). The paralysis tick can cause severe discomfort in affected humans, and death in affected domestic pets such as cats and dogs (Lawless 1995; Gemmell *et al.* 1991; Collins and Ingwersen 2000). Five (3%) of the 172 respondents commented that they were wary of bandicoots because they act as potential carriers of ticks, which threatened the health of domestic pets and family members. One of these residents had lost two pet dogs to ticks in the previous three years, and was vehemently opposed to the presence of bandicoots in the adjacent bushland. A telephone conversation with this resident established that he had gone to great lengths to eradicate bandicoots from the local area, including trapping and relocating several individuals. This study did not assess the level of public awareness regarding the issue of bandicoots acting as

hosts and potential vectors for the movement of paralysis ticks, but it would be of interest to assess the attitudes towards bandicoots among those residents who are aware of this relationship.

When presented with the statement ‘I am/would be pleased to know bandicoots survive near my home,’ 85% of 171 respondents indicated they either agreed or strongly agreed; 12% were neutral, and five respondents (3%) indicated they either disagreed, or strongly disagreed (MCQ 8, Table 4). The latter group was comprised of three residents who found bandicoot diggings in their lawn to be annoying, and a further two residents who complained that bandicoots were hosts to ticks which threatened their pets. Interestingly, three of the residents previously discussed who commented they were wary of bandicoots as tick hosts, were not opposed to their presence in adjacent bushland; two answered neutrally to the given statement (MCQ 8), while the third strongly agreed with the statement despite the fact that a family member had recently been affected by numerous small ticks. Overall, the vast majority of residents (85%) indicated they either are, or would be pleased to know bandicoots survive near them, illustrating a high level of appreciation for this native species and probably for native wildlife in general. The general goodwill of people living alongside bandicoots in Brisbane bodes well for public involvement in their conservation. The education and involvement of the public has been identified as a key management strategy in the conservation of two isolated bandicoot populations occurring in urban areas: the eastern barred bandicoot (*Perameles gunnii*) near Hamilton in Victoria (Brown 1989; Backhouse 1992), and the long-nosed bandicoot (*Perameles nasuta*) at North Head in Sydney, New South Wales (Scott *et al.* 1999).

Historical records and local wildlife disappearances

Fifty-five residents provided historical records of species that they had not observed for at least one year prior to completing the survey, but which they previously knew to inhabit the adjacent bushland. In total, 29 species identified in 75 records were listed as having disappeared from at

least one of the 38 bushland fragments examined. Most records (67%) supplied by residents indicated a very recent disappearance of the species in question (< 10 yrs), though this is likely to be heavily influenced by the length of residency and the most recent recollections of respondents. A small number of respondents noted that they had occupied their current residence for between 20 and 45 years and had observed considerable change in the diversity of species; this group of residents seemed particularly knowledgeable about the wildlife in their area. It is possible that many of the reported disappearances may simply represent either a reduction in the abundance or distribution of the nominated species within a fragment, a reduction in the number of chance observations, or even a mis-identification in the first instance. In support of the first two suggestions, several residents noted for certain species that it was the first individual they had seen for a 'long time' or many years (eg. goannas in sections of Toohey Forest). Such species may become locally scarce or extinct in a section of a large bushland fragment, but then expand their range within the fragment under favourable conditions.

Some of the respondent's perceived disappearances of species may actually represent local extinctions, particularly those made by the more wildlife-aware residents and those concerning easily identified, large species (eg. wallabies) in very small fragments (< 5 ha). The accuracy of disappearance records was assessed through a comparison with species records obtained during ground searches in each of the 38 fragments just prior to the distribution of questionnaire surveys, as part of a broader study into the distribution of northern brown bandicoots in urban Brisbane (FitzGibbon unpublished data). For a large proportion of these fragments (40%), the trapping/observational data obtained conflicted with one or more of the residents' reports of species that had disappeared from the fragment. However, many of the records were considered accurate, including several that were verified through telephone conversations to determine the confidence and knowledge of the reporting residents. The most noteworthy of the accepted reports of recent local extinctions in select urban bushland fragments include: the satin bowerbird (*Ptilonorhynchus violaceus*), sacred kingfisher (*Todiramphus*

sanctus), frilled lizard, lace monitor, red-bellied black snake (*Pseudechis porphyriacus*), short-beaked echidna, swamp wallaby (*Wallabia bicolor*), northern brown bandicoot, koala, and common dunnart (*Sminthopsis murina*). Some of these historical records represent species that are no longer found in developed areas of Brisbane (eg. frilled lizard) (Low 1993; Wilson and Czechura 1995). However, all the accepted local extinction records represent range reductions for the associated species, and highlight the continuing declines that are occurring to the wildlife of Brisbane.

Domestic cats and dogs

Both cats and dogs are known to prey upon various Australian wildlife (May and Norton 1996, Newell 1999, Dique *et al.* 2003), and their abundance, behaviour and management are important issues for the protection of native species in urban environments (see Fitzgerald 1990). Of the 172 returned questionnaires, 53% of respondents indicated that they owned a pet dog or cat. Dog ownership was reported in 32% of returned questionnaires, and all but one of these (98%) stated that their pet dog was contained either in a yard or indoors at night. Cat ownership was reported in 21% of returned questionnaires, and 68% of owners indicated their pet cat was contained indoors at night while the remaining owners reported their cat was allowed to roam outside of their bush-side property at night. The effect of cats roaming urban habitat fragments at night has not been quantified, but it is assumed to be largely negative (The Wildlife Society 2001) and probably most damaging to small-medium sized ground-dwelling nocturnal species, such as native rodents and juvenile bandicoots. The widespread disappearance of small dasyurids such as antechinuses and planigales from urban habitat fragments in Brisbane is probably heavily linked to predation by cats (Van Dyck 2001). Greater public education is required to increase the awareness of residents with regards to the potentially negative effects of their domestic pets, particularly cats that are allowed to roam bushland at night (see Ash and Adams 2003).

Residents' attitudes towards native wildlife and local bushland

Overall, surveyed residents expressed a high level of appreciation for native wildlife and bushland fragments. When presented with the statement 'I am/would be pleased to be living amongst native animals,' 96% of 171 respondents either agreed or strongly agreed (MCQ 9, Table 4). Residents were also given the opportunity to identify animals they either particularly liked or disliked, to which 96 residents provided a specific response, and a further 21 simply commented that they either liked all wildlife, or all native wildlife. In total, residents supplied 29 records of animals that they particularly liked, comprising 14 species dominated by birds (6 species) and mammals (4 species), including possums (5), kookaburras (3), and wallabies (3). A far greater number of records ($n = 128$) were obtained for animals that were particularly disliked. This group comprised 18 species dominated also by birds (7 species) and mammals (9 species), including crows (27), cats (26), dogs (13), brush-turkeys (11), foxes (6), flying foxes (6), toads (5), and ten records for snakes in general. Interestingly, only four complaints were made about possums and none were made about magpies, although both species have previously been identified as the subject of widespread public resentment (Miller *et al.* 1999; Thomas 2000). The nature of the human-wildlife conflict for the disliked species varied widely; crows were largely disliked because of their noisy calls (especially during the early morning) and aggressive behaviour towards other birds, while cats were disliked because they attack native wildlife. Other sources of conflict revolved around wildlife that were noisy (eg. dogs), destructive in yards/households (eg. brush-turkeys, flying foxes), or threatening to native wildlife (eg. toads, foxes) or people (eg. snakes). Despite the large number of residents that listed disliked species (including several natives), the great majority (96%) of respondents indicated they appreciate living amongst native wildlife. However, it should be noted that the 57% of distributed surveys that were returned may be biased towards those residents that have a favourable view of wildlife

and nature, as it is conceivable that this group may have been more inclined to take the time to respond, given their interest in the subject.

The final statement to which residents were asked to respond was ‘I consider the bushland near our home to be an important area for wildlife conservation’. Of 171 responses, 97% of residents indicated they either agreed or strongly agreed with this statement (MCQ 10, Table 4). Further to the largely positive response of most residents, numerous respondents provided specific comments on their favourable attitude towards native wildlife and bushland, as illustrated by the following examples: ‘*We are so close to the city, yet feel like we have a great slice of nature living,*’ and ‘*We love having the animals next to our property – It’s such a contrast living on a main road. It’s vital to protect bushland to ensure their survival.*’

Conclusion and management implications

This community-based wildlife survey has confirmed the considerable wealth of knowledge about wildlife within the general community, but also the need to interpret this information cautiously. Although a great diversity of native species within Brisbane was identified by survey respondents, an alarming number of local extinction records considered accurate were also received. This result highlights the continuing declines many native species are experiencing in habitat fragments within developed areas of the city, and the need to manage these areas with the requirements of wildlife in mind. Even with appropriate management it is highly likely that further localised losses will occur as a result of the ‘extinction debt’ whereby the demise of some species in fragments is inevitable due to habitat changes that have already taken place (see Tilman *et al.* 1994; Cowlshaw 1999; Hanski and Ovaskainen 2002).

This wildlife survey also indicates that residents of Brisbane clearly appreciate and value local bushland areas and the wildlife contained within this habitat. These areas, although typically small (< 10 ha) and degraded to some degree, are perceived by residents as important in terms of

local wildlife conservation, and provide a place of connection to the natural world in a largely urbanised landscape. Incorporating these human dimension issues will be particularly important for the future management of habitat fragments and wildlife in urban areas of Brisbane.

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Table 1. The 10 multiple-choice questions (MCQs) and three short answer questions (SAQs) contained on the one-page wildlife survey distributed to 300 residents whose property was located adjacent to bushland in suburban Brisbane.

Residents were invited to make further comment on any of these issues on the back of the questionnaire form.

Question No.	Question description	Available responses
MCQ 1	Do species of native mammals live in the bushland near your home? (i.e. Furry animals such as possums, fruit bats, koalas, wallabies etc.)	Yes / No / Unsure
MCQ 2	Do bandicoots live in the bushland near your home? (See the attached information sheet for a description of a bandicoot)	Yes / No / Unsure
MCQ 3	If YES or UNSURE, do you ever find bandicoot holes in your lawn? (Usually 5-10cm deep with opening about size of a golf / tennis ball, tapering to a point).	Yes / No
MCQ 4	If YES, were you previously aware that bandicoots make these holes?	Yes / No
MCQ 5	Do/Would you get annoyed at finding such holes?	Yes / No
MCQ 6	Do you own the following:	A cat (Yes / No) A dog (Yes / No)
MCQ 7	If YES, do you keep your pet contained at night?	Cat indoors (Yes / No) Dog indoors / in yard (Yes / No)
MCQ 8*	I am/would be pleased to know bandicoots survive near my home.	SA, A, N, D, SD
MCQ 9*	I am/would be pleased to be living amongst native animals.	SA, A, N, D, SD
MCQ 10*	I consider the bushland near our home to be an important area for wildlife conservation	SA, A, N, D, SD
SAQ 1	Please list <u>any</u> native animals you have seen in the bushland near your home in the last 12 months:	{2 lines made available}
SAQ 2	Do you recall seeing animals in the bushland near your home that have since disappeared from the area? If so, please list these historical records and if possible, the approximate time of their disappearance: (1-2yrs ago, 2-5yrs, 5-10yrs, 10-20yrs, >20yrs).	{2 lines made available}
SAQ 3	Are there any animals in your local area you particularly like or dislike, and if so why?	{2 lines made available}

* Residents were asked to circle the most appropriate response to these statements, using the following categories:

SA = strongly agree, A = agree, N = neutral, D = disagree, SD = strongly disagree.

Table 2. The diversity of fauna species reported by residents to occur in bushland of suburban Brisbane, from a community-based wildlife survey.

A total of 768 records were received comprising 83 species. The three most frequently reported species within each taxa are presented, as well as select other species of particular interest.

Taxa	Species reported (Scientific name)	No. records (Percent of taxa)
Birds	Australian brush-turkey (<i>Alectura lathamii</i>)	57 (21%)
	Laughing kookaburra (<i>Dacelo novaeguineae</i>)	40 (14%)
	Rainbow lorikeet (<i>Trichoglossus haematodus</i>)	20 (7%)
	Powerful owl (<i>Ninox strenua</i>)	2 (0.7%)
	Guinea fowl (<i>Numida meleagris</i>) [#]	1 (0.4%)
Reptiles	Carpet python (<i>Morelia spilota variegata</i>)	32 (17%)
	Blue-tongue lizard (<i>Tiliqua scincoides</i>)	30 (16%)
	Eastern water dragon (<i>Physignathus lesueurii</i>)	21 (11%)
	Lace monitor (<i>Varanus varius</i>)	21 (11%)
	Tommy round head (<i>Diporiphora australis</i>)	1 (0.5%)
	Rough-scaled snake (<i>Tropidechis carinatus</i>)	1 (0.5%)
Mammals	Possums [^] (<i>Pseudocheirus peregrinus</i> & <i>Trichosurus vulpecula</i>)	129 (44%)
	Fruit bat [^] (<i>Pteropus alecto</i> & <i>P. poliocephalus</i>)	55 (19%)
	Northern brown bandicoot (<i>Isodon macrourus</i>)	26 (9%)
	European red fox (<i>Vulpes vulpes</i>) [#]	14 (4.8%)
	Short-beaked echidna (<i>Tachyglossus aculeatus</i>)	5 (1.7%)
	Water rat (<i>Hydromys chrysogaster</i>)	1 (0.3%)
Amphibians	Striped marsh frog (<i>Limnodynastes peroni</i>)	4 (36%)
	Cane toad (<i>Bufo marinus</i>) [#]	4 (36%)
	Green tree frog (<i>Litoria caerulea</i>)	3 (28%)
Invertebrates	Golden orb weaver (<i>Nephila</i> sp.)	1 (50%)
	Paper wasp (<i>Polistes</i> sp.)	1 (50%)
Fish	Long-finned eel (<i>Anguilla reinhardtii</i>)	1 (100%)

[#] Species is introduced.

[^] Many respondents did not distinguish between the listed species.

Table 3. The responses of residents of suburban Brisbane to five multiple-choice questions inquiring about local wildlife as indicated from 172 completed surveys

MCQ	Description of question*	Yes	No	Unsure	No. surveys
1	Native mammals present in local bushland?	92%	3%	5%	170
2	Bandicoots present in local bushland?	34%	12%	54%	172
3	- If Yes/Unsure, holes present in lawn?	41%	59%	N.A.	145
4	- If Yes, aware bandicoots responsible?	85%	15%	N.A.	59
5	Do/Would bandicoot holes in lawn annoy?	21%	79%	N.A.	159

* See Table 1 for complete details of survey questions

Table 4. The attitudes of residents of suburban Brisbane to three statements concerning local wildlife and bushland as indicated from 171 completed surveys

MCQ	Description of question*	SA	A	N	D	SD	No. surveys
8	Pleased bandicoots survive in local bushland.	65%	20%	12%	1%	2%	171
9	Pleased to be living amongst native wildlife.	73%	23%	3%	1%	0%	171
10	Local bush important for wildlife conservation.	84%	13%	2%	1%	0%	171

* See Table 1 for complete details of survey questions

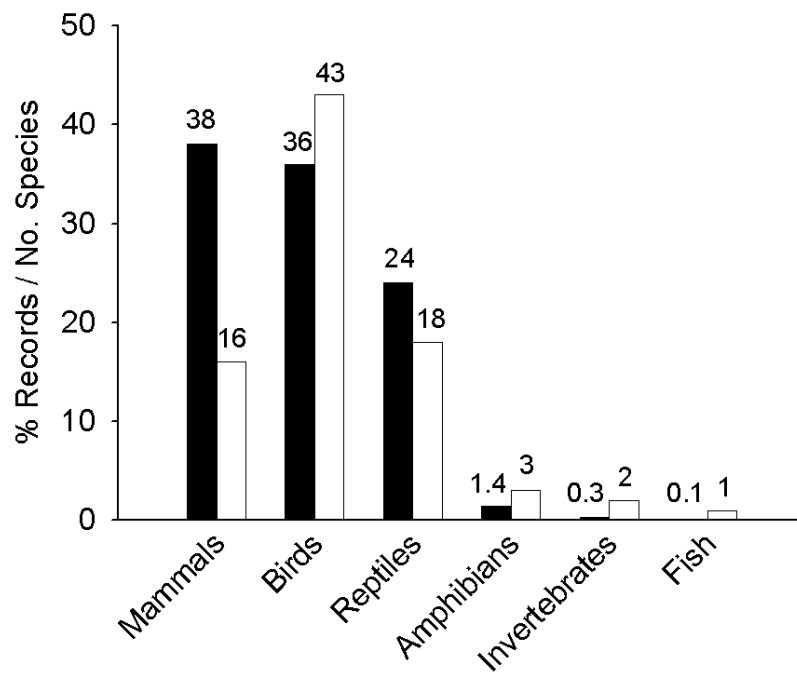


Fig. 1.

Fig. 1. The major fauna groups reported by Brisbane residents on 159 completed wildlife surveys. Black bars indicate the percent of total records received; white bars indicate the number of species reported within each fauna group.