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Marsupial and human interactions in Perth


Title: Interactions between humans and urban-adapted marsupials on private properties in the greater Perth region

Abstract: This study documents a range of interactions between humans and quenda (Isoodon obesulus) and brushtail possums (Trichosurus vulpecula) in urbanised Perth, Australia. These interactions are of veterinary public health significance. Findings suggest public education is important to safeguard the health of both the marsupials and humans involved in such interactions.

Additional keywords: wildlife, supplemental feeding, biosecurity

Background: In Perth, the marsupials quenda (or southern brown bandicoots, Isoodon obesulus) and brushtail possums (Trichosurus vulpecula) remain in many areas despite urbanisation. Human interaction with such wildlife is specifically discouraged by the Western Australian government agency responsible for wildlife (Land for Wildlife/Department of Conservation and Land Management, 2005; Department of Parks and Wildlife, 2013). This is due to concerns about potential adverse impacts of interactions on wildlife health. Direct adverse impacts of supplemental feeding on wildlife may include nutritional imbalances, leading to metabolic disorders and/or obesity, and juvenile animals becoming dependent on anthropogenic food sources. Indirectly, supplemental food availability may lead to an abnormally increased marsupial population density, which may result in problems such as increased aggression and increased infection transmission. Further, wildlife losing their fear of humans and pets may increase their vulnerability to abuse and predation. Additional concerns around human-wildlife interactions are transfer of infections between humans, domestic pets and wildlife, which may have adverse consequences for all parties (Orams, 2002; Bradley and Altizer, 2007).
Despite these recommendations, interactions between these marsupials and humans are known to occur. For example, in south west Western Australia, quenda are sometimes offered food by members of the public, and have access to other anthropogenic food sources (Howard, et al., 2014). Documenting the range of interactions that occurs between humans and these marsupials in Perth would help to guide public education messages designed to protect the health of marsupials, domestic pets and humans cohabiting in urban areas.

We aimed to document a range of interactions that people in Perth have with quenda and brushtail possums on their property. This included documenting the types of food offered to or scavenged by quenda and possums, and documenting other types of interactions that occur between humans and these marsupials.

Materials and Methods:
All private properties participating in a Perth quenda and brushtail possum parasite survey from March 2013 to December 2014 were invited to participate in this wildlife interactions survey. Properties were recruited to the parasite survey via non-proportionate methods - primarily via a register held by WWF- Australia from the Community Quenda Survey 2012, run in conjunction with the Department of Parks and Wildlife.

One questionnaire was completed per property, by the property residents, or by the property owners in the case of private non-residential properties. The questionnaire asked both closed and open questions. Closed questions inquired about: the presence of quenda, possums, dogs, cats and chickens on the property; whether the property owners offered quenda and/or possums food; whether quenda or possums ate food intended for the dogs, cats or chickens; and whether people living on the property had any other interactions with the marsupials. Open questions asked respondent to describe: the types of food they offered to the marsupials; the types of dog/cat/chicken food that the marsupials scavenged; and any other types of interactions that people had with these marsupials on the property. Questions asked respondents to specify whether any listed meat products were raw or cooked.
This survey was undertaken under Murdoch University Human Research Ethics Committee permit 2013/167.

Results:
Of the 29 private properties involved in the parasite survey, questionnaires for this wildlife interactions survey were received from owners or residents of 27 properties (26 residential and one non-residential). Questionnaires were not received from two residential properties. 26 respondents reported having quenda on their property, and 14 respondents reported having brushtail possums (13 respondents reported having both quenda and possums).

Food specifically offered to marsupials by property residents:
Twelve respondents (44%) reported specifically offering quenda and/or possums food. Foodstuffs offered included vegetables, fresh and dried fruits, bread, rice, muesli, wholegrains, rolled oats, horse muesli, seeds, nuts, cheese, cooked meat bones, cooked meat scraps, cooked meat fat and cooked leftover table scraps.

Anthropogenic foodstuffs taken from properties by marsupials:
Nine respondents kept chickens on their property; all reported having quenda on their property, and 6 reported having possums. Seven respondents (78%) reported quenda and/or possums eating food intended for the chickens. Such foodstuffs included commercial poultry foods, cracked corn, wheat, fruit and vegetable scraps, porridge, bread, noodles, cooked meat (sausage, steak, chicken skin), raw bacon rind and other dinner scraps.

Eight respondents owned cats; all reported having quenda on their property, and 4 reported having possums. Three of the eight properties (38%) reported quenda and/or possums scavenging cat food, which was described as commercial cat biscuits. Seven respondents owned dogs; all reported having quenda on their property, and four reported having possums. None reported quenda and/or possums scavenging the dog food.

Though no specific questions addressed backyard pigs or aviary birds, one respondent volunteered that quenda entered the backyard pig’s pen to eat the goat muesli fed to the
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pig, and that quenda scavenged bird seed thrown out of cages by a pet cockatoo and
galah. Another respondent reported quenda scavenging from an open compost heap on
their property. One respondent described quenda regularly scratching around an area of
the backyard that is specifically used for the disposal of old cooking oil. Another
respondent reported quenda on the property “feasting on Multiguard iron pellets”
(presumably the iron EDTA version of commercial snail and slug pellets).

Interactions between quenda and residents on private properties:
Of respondents who reported quenda on their property, ten (38%) described interacting
with the quenda in ways additional to offering food.

Three respondents (12%) reported that quenda entered the house when they got the
chance. In all cases, it was specified that the quenda were not encouraged to do so. In
the house, quenda scavenged food off the floor, rummaged through the rubbish or
“ripped open packets of food on the teenager’s floor”. One respondent described having
to chase/order the quenda out.

Four respondents (15%), reported that quenda would approach humans. One respondent
reported that quenda were skittish in doing so. In two cases, it was specified that this
particularly occurred when residents were eating. One respondent would occasionally
feed quenda on such occasions, while the other respondent stated that the quenda
scavenged scraps on the ground.

Two respondents (8%) reported occasionally hand feeding quenda, and three (12%)
described occasionally patting quenda (one when handfeeding). One of the respondents
who hand fed quenda stated that some quenda would come when called.

One respondent described removing ticks from the quenda, if the quenda would allow it.
Another respondent reported accidentally trapping a quenda when trying to trap the
neighbours’ cat.

Interactions between possums and residents on private properties:
Of respondents who reported having possums on their property, two (14%) reported
interacting with possums in ways additional to offering food. One respondent described
having to remove, by hand, a possum that had entered the house. Another respondent reported that possums on the property would come when called, and were sometimes hand fed. Several of these possums were described as being comfortable to sit on the residents’ laps or shoulders when being fed.

Discussion:
The findings of this survey - that a substantial proportion of respondents offer quenda and/or possums food - concur with the findings of a larger telephone survey of members of the public regarding quenda in south west Western Australia (Howard, et al., 2014). This survey also documented a varied range of additional interactions between humans and urban dwelling marsupials in Perth. They indicate the possibility of transfer of infectious agents from humans and pets to marsupials via foodstuffs offered and scavenged, and via direct contact. Similarly, interactions documented here indicate the possibility of transfer of infectious agents from marsupials to humans could occur via various modes of direct contact (such as biting, faecal or urine contamination of living areas, or exposure to marsupial blood via ticks, if the ticks rupture upon removal) or possibly via ectoparasite inoculation. Similar concerns regarding infection transmission in human-wildlife interaction have been expressed in regards to marsupials and other mammals elsewhere in Australia and overseas (e.g. Eymann et al., 2006; Friend, 2006; Cahill, et al., 2012).

Even in consideration of the survey limitations of a small sample size and non-proportionate sampling, we believe the results suggest a need for a pragmatic, science-driven community education campaign regarding human interactions with cohabiting marsupials, for the benefit of the health of all involved parties. Though recommendations against feeding wildlife are justified and should be upheld, secondary advice regarding appropriate types and quantities of supplemental food, and approaches to supplementary feeding which minimise the potential for harm to marsupials, may be of benefit if some members of the public will feed wildlife irrespective of recommendations. Such secondary advice would help safeguard the health of the marsupials where supplemental feeding is occurring. This is particularly pertinent in the context of the high proportion of overweight or obese quenda trapped in urbanised environments as part of the parasite survey (A. Hillman, unpublished data). Further, as relatively little is known about the zoonotic potential of many infections of native
Australian marsupials, and similarly little is known about infectious agents of humans and domestic animals that can infect marsupials, a conservative approach towards biosecurity in wildlife interactions should also be promoted to the public to safeguard the health of all parties. In the absence of informed education on this topic, misleading media-driven “hype” (e.g. Crawford and Mayoh, 2015) becomes the unhelpful, and unacceptable, substitute.

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