

Wild deer herds in Australia's urban fringe: issues, management and politics

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ABSTRACT

Deer were introduced into Australia by acclimatisation societies in the late 19th and early 20th centuries to enhance the aesthetics of the local environment and provide sport. Several of these populations survived and formed the basis of larger, well established wild deer populations. Deer were also introduced by farmers in the late 20th century through the release of animals during poor climatic and economic conditions and through their escape from poorly-maintained farms. In addition, hunters and hunting agencies have released deer into the wild in the late 20th century for trophy development. As a consequence, Fallow, Red, Sambar, Chital, Rusa and Hog deer have formed wild populations in many habitats, ranging from arid woodland to rainforest. The alarming increase in the number of wild deer over the last three decades, and the continued expansion of Australia's urban areas, has seen the development of conflicts between wild deer and people. Disagreement and politics among the wild deer stakeholder groups and a lack of knowledge of deer ecology, impacts and management techniques by government agency land managers continues to impede the effective management of urban deer populations in Australia despite the potential for deer species to become important pests.

Key words: wild deer; Australia, urban fringe, management, politics

Introduction

Wild deer in Australia have moved from a minor component of the Australian biota to one which is now widespread. As a result of this shift, wild deer species are now considered agricultural and environmental pests, traffic hazards and potential carriers of stock and wildlife diseases. However, a contrary view, one that sees wild deer as a sought-after game resource and an aesthetically pleasing and valued addition to the Australian environment, continues to gain support (Harrison and Slee 1995; Bentley 1998). The division within the Australian community on this issue has seen the management of wild deer become a contentious issue, particularly in and around larger urban centres where wild deer have increased in abundance over the last three decades (Moriarty in prep.). This paper outlines the process of deer introductions, describes some of the current issues involving wild deer, particularly in urban areas, and proposes some future strategies which may benefit wild deer management in Australia.

Where have they come from?

Acclimatisation societies

Deer species were introduced into Australia by acclimatisation societies to enhance the aesthetics of the local environment and provide sport for the gentry (Frith 1973; Bentley 1998). Some notorious pest species, for example the fox *Vulpes vulpes* and the rabbit *Oryctolagus cuniculus* were introduced for similar reasons (Rolls 1969).

Eighteen deer species were introduced in the 19th and 20th centuries (Table 1). Most introduced deer populations perished, with only 6 of the 18 deer species able to subsist and form viable wild populations (Bentley 1998). These populations formed the basis of Australia's many large, well established wild deer populations (Figure 1) (Low

1999; Moriarty in prep.). There are currently 14 deer herds which originated through release by acclimatisation societies (Figure 1). These herds now range in size from 500-1000 animals to over 10 000 animals.

Table 1: The species of deer liberated in Australia and the species which have formed viable wild populations. (O denotes that a wild population of this species currently survives in Australia, X denotes that a wild population of this species does not currently survive in Australia).

| Common name | Scientific name | Surviving wild population |
|--------------------|-------------------------------|---------------------------|
| Bawean deer | <i>Axis Kuhlii</i> | X |
| Chinese water deer | <i>Hydropotes inermis</i> | X |
| Chital deer | <i>Axis axis</i> | O |
| Eld's deer | <i>Rucervus eldi</i> | X |
| Fallow deer | <i>Dama dama</i> | O |
| Hog deer | <i>Axis porcinus</i> | O |
| Mule deer | <i>Odocoileus hemionus</i> | X |
| Muntjac | <i>Muntiacus muntjak</i> | X |
| Musk deer | <i>Moschus moschiferus</i> | X |
| Red deer | <i>Cervus elephus</i> | O |
| Reindeer | <i>Rangifer tarandus</i> | X |
| Roe deer | <i>Capreolus capreolus</i> | X |
| Rusa deer | <i>Cervus timorensis</i> | O |
| Sambar deer | <i>Cervus unicolor</i> | O |
| Sika deer | <i>Cervus nippon</i> | X |
| Swamp deer | <i>Rucervus duvauceli</i> | X |
| Wapiti | <i>Cervus canadensis</i> | X |
| White-tailed deer | <i>Odocoileus virginianus</i> | X |

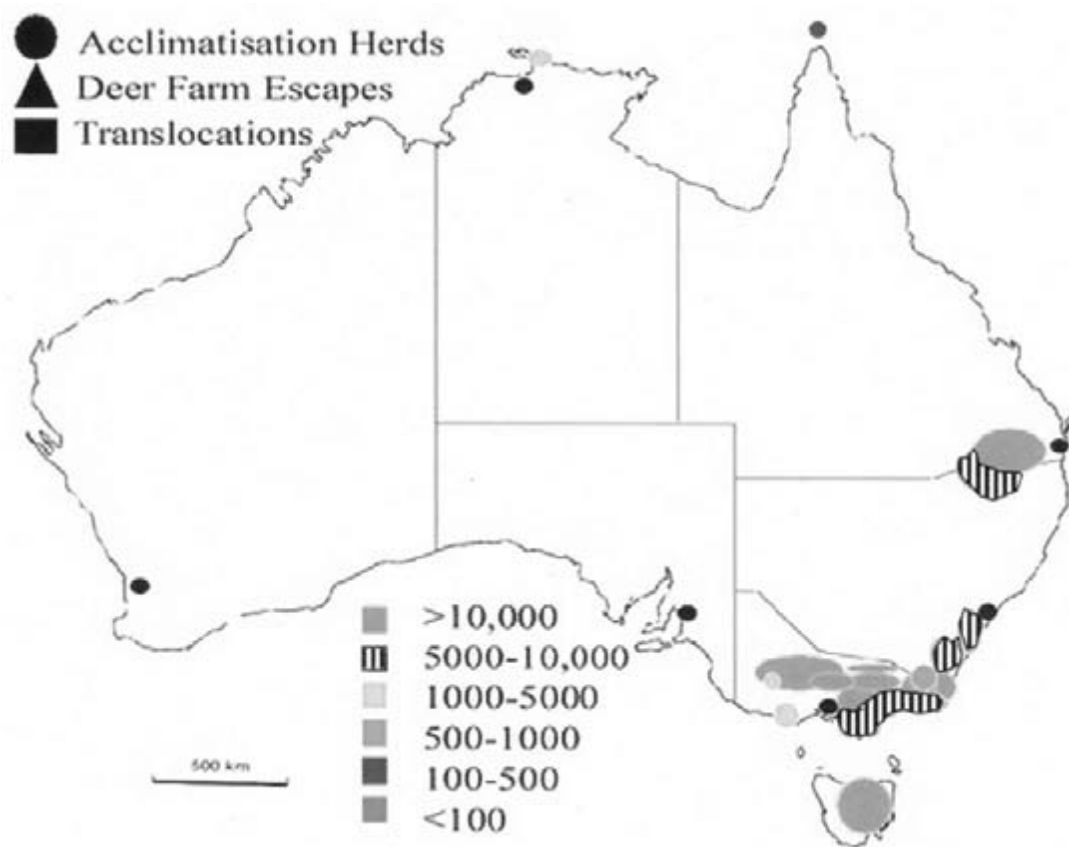


Figure 1. Current Australian wild deer herds which were introduced by acclimatisation societies (Moriarty, unpublished data).

Deer Farms

Deer have been farmed in Australia since the 1850s, with most farms containing a small number of animals for meat and exhibition (Bentley 1998; Tuckwell 2001). In the 1970s and 1980s, the number of farmed deer increased dramatically with their increased popularity as a business and alternate farm commodity (MacDonald 1995). Consequently the number of deer escaping from farms also increased during this time, adding to existing wild herds or creating new wild deer populations. A downturn in the deer commodity market in the early 1990s, and the drought of 1994 and 1995, saw the liberation of larger numbers of deer. Many bankrupt farmers released their stock into adjacent farmland and bush to fend for themselves (Low 1999). Many deer farms continue to have animals escape into the wild. This is mainly due to a lack of fencing and tagging regulations for deer farming. Similar problems have also been experienced in New Zealand (Anon. 2001; Fraser *et al.* 2001).

Australia currently has 77 deer herds which originated through the release or escape from deer farms (Figure 2). These herds range in size from less than 100 to over 500 animals.

Hunters and Hunting Agencies

Hunters and hunting groups have been translocating game animals into secluded areas such as State Forests, National Parks and catchment land for most of the 20th century (McKnight 1976). Until the 1980s and 1990s

these practices were minimal due to the availability of game (Harrison and Slee 1995). The recent use of more effective pest control measures by government agency land managers (Olsen 1998), and the resultant lack of game, has seen this practice increase dramatically (Low 1999). Many hunters were given or bought deer herds from bankrupt farmers during the 1994 and 1995 drought and translocated them to remote areas for potential trophy development or kept them on small hobby farms for future translocation (Glover 2000). Australia currently has 128 deer herds which originated through release by hunters (Figure 3). These herds range in size from less than 100 animals to over 500 animals. Today, translocation of deer, together with other game species (e.g. feral pigs), is widespread (Low 1999). This presents a challenge to government land management agencies which are charged with the prevention of further translocations, halt of illegal hunting of existing populations on public and private land, and management of existing wild herds. Similar problems have been experienced in New Zealand (Anon. 2001; Fraser *et al.* 2001).

Wild deer in Australia's urban fringe

The alarming increase in the number of wild deer in Australia over the last three decades and the continued concentration of Australia's human population into urban areas has seen the development of conflicts between these two groups.

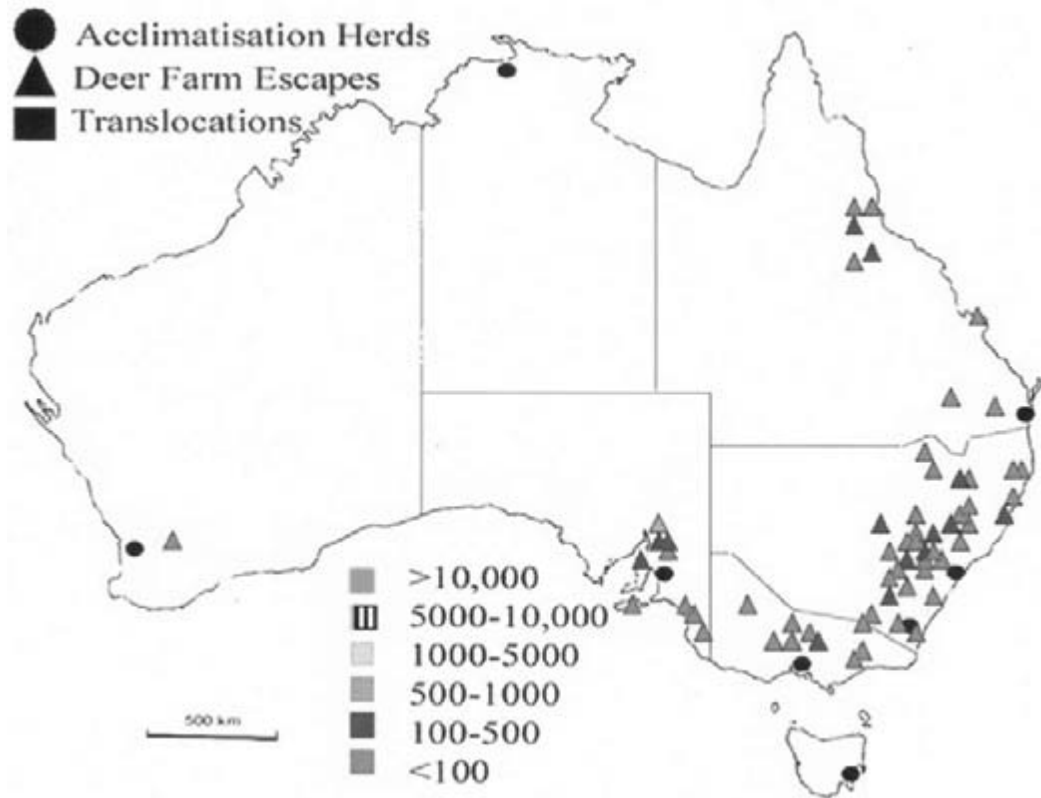


Figure 2. Current Australian wild deer herds which have escaped from deer farms (Moriarty, unpublished data).

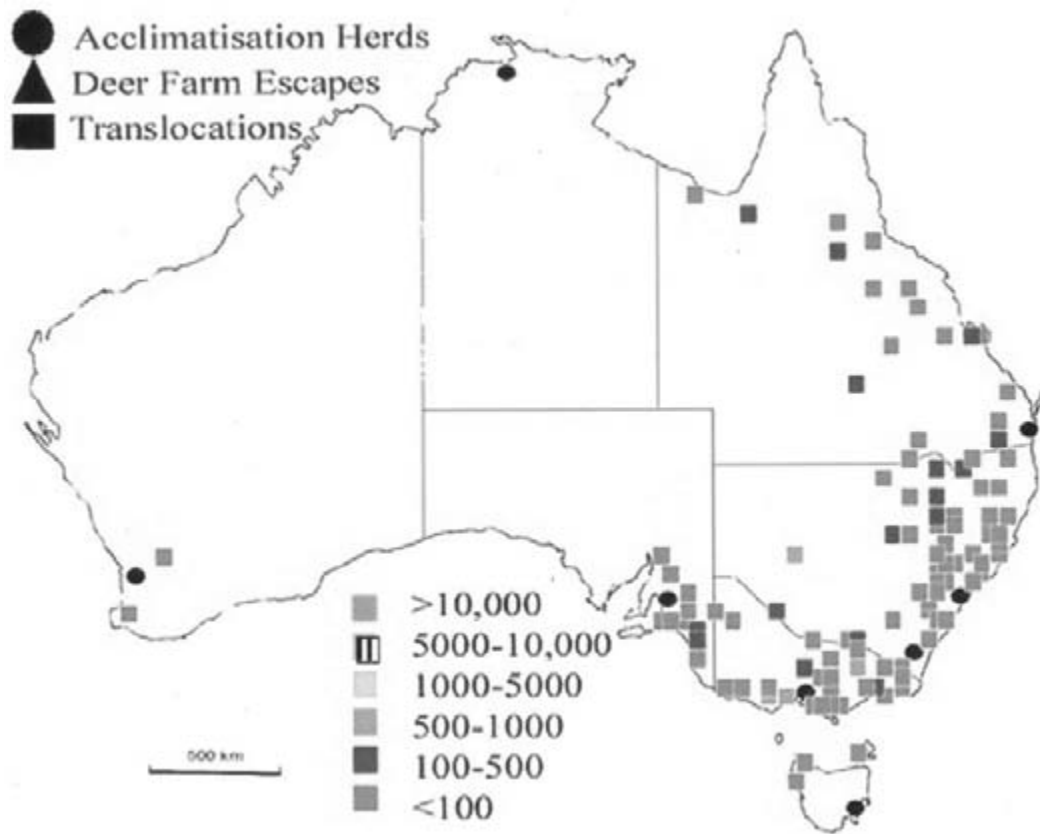


Figure 3. Current Australian wild deer herds which were translocated by hunters (Moriarty, unpublished data).



Figure 4. Deer warning sign near the corner of the Princess Highway and the entrance to Royal National Park, south of Sydney.

Public risk

The six wild deer species in Australia range in size from the small Hog deer *Axis porcinus* (25 – 45 kg), to the medium sized Fallow deer *Dama dama* (36 – 97 kg) and Chital deer *Axis axis* (50 – 130 kg), to the medium to large sized Rusa deer *Cervus timorensis* (60 – 140kg) and Red deer *Cervus elephus* (92 – 158 kg) to the large Sambar deer *Cervus unicolor* (109 – 245 kg) (Bentley 1998; Geist 1999; Moriarty in prep.). The size of many of Australia's exotic deer species has created public safety concerns. Of greatest concern is vehicle collisions (Figure 4). The presence of expanding deer populations close to urban areas has resulted in a greater frequency of road crossings by deer, particularly during peak times for vehicle activity (to and from work or school) and deer activity (travelling to and from feeding areas) (Anon. 2002a, b). A combination of vehicle speed and the size of most deer species results in a substantial number of collisions with deer that cause irreparable vehicle damage and serious injury (or death) to the occupants of the vehicle (Anon. 2002b). In some cases, severely injured animals survive collisions with motor vehicles, which raises animal welfare concerns (Anon. 2002a).

The popularity of deer as a game species has also created public safety issues. In many areas, deer feed in urban locations in the night, early morning and late afternoon (Glover 2000). While many hunters are content to watch and admire these feeding deer, and pursue them away from urban areas, some hunters show no regard for public safety and shoot deer with high-powered rifles close to houses (Figure 5) (Harrison and Slee 1995). Hunter safety has also been an issue in the past, with numerous hunting accidents occurring in the popular Sambar deer hunting areas of Eastern Victoria (Harrison and Slee 1995).

Other less likely public safety issues include being trampled by aggressive or frightened deer and the transmission of zoonotic diseases (including internal and external parasites).

Deer shot, decapitated and dumped

By HEATH GILMORE
Urban Affairs Reporter

TROPHY hunters armed with high-powered rifles have shot a deer and cut off its head in a suburban street near the Royal National Park, south of Sydney.

The animal, which had been part of a three-year study into the growing feral deer population, was dumped in a Bundeena street.

Professor Barry Richardson, from the University of Western Sydney, who is supervising the Rusa Deer Project, said there had been unconfirmed reports of other headless deer being found on the edges of the park over Easter.

The project has fitted radio collars on 13 deer and has learnt that many spend much of their time outside the reserve and



range over public and private land.

"This is downright dangerous and silly," Professor Richardson said of the shooting. "I just cannot believe it."

"The killing is a minor setback to our program but not devastating. We had been tracking this particular animal since the beginning of last winter."

The rusa deer, introduced in the early 1900s from Java, have adapted so well they have spread as far south as Ulladulla in their search for food and

breeding opportunities.

Sutherland police told *The Sun Herald* they had received reports recently about indiscriminate shooting inside the national park.

Acting Inspector Gary McEvoy said they were investigating but they were not told about the killing outside the park until weeks afterwards.

Bundeena resident Michael Weekes said he heard shots being fired sporadically in the Royal National Park over Easter and the week before.

He said four-wheel-drive trucks with large spotlights often were seen driving through the streets of the township.

"The deer are an issue which really divides the community," he said. "I don't like them. But I don't like people shooting up the place around here."

Resident Boo Johnson said the killing was cowardly and wanton.

Figure 5. Newspaper clipping from the *Sutherland Shire Leader*, 21 June 2001.

Public disturbance

A number of public disturbance issues are also created due to deer feeding in and around urban areas. These include destruction of gardens, barking dogs and late night noise (many deer vocalise and fight during the rut and vocalise when in distress).

Management

The increase in wild deer in Australia has increased the conflicts between government agency land managers and the other stakeholder groups (Anon. 2000a). Such conflicts are common wherever deer are overabundant (Nugent and Fraser 1993; McShea *et al.* 1997; McShea and Rappole 1997). As with wild horses, wild deer management evokes an emotional response from some groups within the community (English 2001). The debate centres on strong and differing viewpoints from government agency land managers, hunting groups and animal rights groups. Other groups include private land holders/managers, animal welfare groups, local councils and the general community (Figure 6). Conflicts between stakeholder groups, a lack of funding for management and research, and insufficient knowledge of the impact of wild deer on social, rural and conservation values, commonly negates attempts to initiate effective management of wild deer in Australia.



Figure 6. The Bundeena Public School (Royal National Park) notice board, with the school emblem incorporating a Rusa deer.

A test case for urban deer management: Rusa deer in Royal National Park

Royal National Park (Royal NP) is the second oldest national park in the world. It has significant cultural and natural heritage value and it is one of Australia's most popular parks, due to its location 30 km south of Sydney (Goldstein



Figure 7. Rusa deer on Garie Beach, Royal National Park. Photo:NPWS/A. Hutchings

1976). The Zoological and Acclimatisation Society of NSW first introduced Rusa deer into the Royal NP in 1906. This society had previously unsuccessfully released 10 other deer and antelope species into the area (Anon. 1904).

Currently the Rusa deer population south of Sydney is estimated to be between 5000 and 7000 animals. The distribution of this population ranges from the southern Sydney suburb of Sutherland to the mid-south coast at Ulladulla. The largest concentrations that can be found in this range are in Royal NP, where between 2000 and 3000 animals are estimated to live (Moriarty in prep.) (Figure 7). The management of this population has had a high public profile over the last three decades, due to the increasing number of deer creating noticeable social and environmental impacts at the interface of the large, expanding urban centres of southern Sydney and Wollongong (Figure 8). For most of its existence conflict over the presence of Rusa deer in the Royal NP and surrounding areas has occurred since the deer were introduced. Politics and conflicts within the community and government land management agencies have overshadowed the need for careful management of this herd.

Two recently-implemented strategies have been successful in achieving positive outcomes for the management of Rusa deer in Royal NP. The first was to fund research into basic deer ecology and their impacts to assist management decisions concerning the deer population, and to provide information on the need for management for the community. The second was to form a management working group, comprising various stakeholder groups, including state government agencies, universities, welfare and hunting groups (Anon. 2000a). The formation of such a management group allowed conflicts to be resolved and the formation of common ground between stakeholders to be found. Management plans are either developed or endorsed by the working group, which allows a balance of community interests in the management process. Similar working groups have been set up around Australia to address the increasing conflicts arising from wild deer management (Anon. 2000b, 2002b).

Don't worry, deer, today you can roam on the range

By LINDA DOHERTY

They have roamed the Royal National Park for more than a century, survived shoot-to-kill orders and are so relaxed they hold midnight rose-munching parties.

But time is now ticking for the Javanese rusa deer. Quietly and without fanfare, the National Parks and Wildlife Service (NPWS) is entering the second year of its feral deer relocation trial, moving the animals at night in straw-bedded trucks to commercial deer farms, where the NPWS says they join the farms' breeding herds.

So far only 50 of the estimated 800 deer have left their home on the range but now that the fauns are weaned the program is about to recommence.

The trial, approved last year by the Minister for the Environment, Ms Allan, is running in tandem with NPWS research which will determine if Australia's oldest national park can ecologically sustain even a small deer population.

Attitudes in Bundeena and Maianbar, the two villages nestled in the national park, have changed in the past five years when plans to shoot the deer after the devastating 1994 bushfires met with outrage.

Now the Bundeena Progress Association is largely behind the relocation but there are still many in the two villages who have a soft spot for the deer.

"I think feral is too strong a word for these noble creatures," the former president of the progress association, Mr Chris Lighthart, said.

The new president, Mr Bill Sinclair, has no such regrets. "I'd be very happy to see them go. Yes, they are cute but they're a danger to motorists."

Apart from their increasing incursions into town, the NPWS cites environmental reasons for the trial. An 80 kilogram doe eats two to three native shrubs a day and the park population consumes 750 tonnes of grass and shrubs each year.

They have a similar diet to plant-eating native animals like the swamp wallaby, and their hard hooves leave tracks that form watercourses and create soil erosion.

Bundeena deer sympathiser Mr David Rodgers calls the relocation "eco-fascism" and says university research, which found the deer and swamp wallaby had different diets and did not compete for food, has been ignored in the debate.

Bundeena caravan park owner Mr Neil deNett has one of the two NPWS deer-feeding enclosures behind his property.

"I have put in 1,000 plants but I'd be lucky to have 100 left," he said.

"It would be more humane to shoot them on the spot. It's not as if they go to an old-age farm for deer. They go to venison farms."

Discussion

The issues, conflicts and politics involved in wild deer management, in and around urban areas, are not unique to Australia. In their native ranges, overabundant deer cause similar problems to those experienced in Australia and, in most cases, these problems are on a much larger scale (e.g. McShea *et al.* 1997; Moore *et al.* 1999; Akasi and Nakashisuka 1999). Human and deer populations are expanding and directly competing for such resources as space, food (e.g. crops and pasture), water and shelter (Martinez *et al.* 1997). In the USA, deer and human conflicts are common, with the largest issue centring on vehicle accidents (McNulty *et al.* 1997). Hundreds of thousands of deer are hit on roads in the USA every year with, on average, 50 human fatalities (Kareiva 2001) and deer management is plagued by politics and conflicts (Krausman 1998). However, unlike the Australian situation, the politics of deer management in the USA centres on the need for deer control and how it is delivered (McShea and Rappole 1997). In Australia, a similar debate exists, with the added issue of whether deer are pests or a resource.

In New Zealand, the debate over the management of overabundant deer populations has encompassed most of the 20th century (Caughley 1983; Nugent and Fraser 1993). Similar to the current debate in Australia, much of it has centred on the pest or resource potential of deer with the added conflict of commercial harvesting (Caughley 1983). In New Zealand, research on the ecology and environmental impact of many deer populations has been completed and effective management strategies implemented (Nugent 1988; Anon. 2001; Nugent *et al.* in press).

In Australia, deer are not currently a major problem, but their distribution and abundance is increasing rapidly (Moriarty in prep.). If more resources are not committed to research on wild deer ecology, impact, distribution and management, similar issues and problems experienced in New Zealand and North America may develop in Australia. In Australia, conflicts between wild deer stakeholders must be resolved at the local level through working groups, with wild deer management strategies developed and endorsed by these groups.

Conclusion

Wild deer have the potential to establish significant populations in Australia. The proliferation of human-induced herds and expanding established populations close to urban centres has created problems and challenges for government agency land managers. Research on wild deer ecology, impacts and management techniques, the resolution of conflicts, and development of management strategies through stakeholder working groups, will be required wherever deer problems exist.

Figure 8. Newspaper clipping from the *Sydney Morning Herald*, 15 September 2001.

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