



August 2004

1. OVERVIEW

The Plan of Management for Royal National Park (February 1999) required the establishment of a Deer Working Group to prepare a Deer Control Plan for the reserve. Following a series of public meetings and the considerations of public comments, the *Royal National Park Deer Management Plan* was approved in February 2002. The plan covers a 3 year period.

The Deer Working Group is made up of representatives of: *Sutherland Shire Council*, *RSPCA*, *Nature Conservation Council of NSW*, *Australian Deer Association*, *NSW National Parks Association*, *NSW Animal Welfare League*, *University of Sydney*, *Rural Lands Protection Board (Moss Vale)*, and the *Department of Environment and Conservation* which includes the *National Parks and Wildlife Service (NPWS)*.

Research work undertaken on deer within the Park by the *University of Western Sydney (UWS)* in 2000-2001 suggested that large numbers of deer were damaging vegetation within Royal National Park (RNP). The damage is most pronounced in the coastal rainforests, heathlands and some of the threatened vegetation communities such as the Sutherland Shire Littoral Rainforest. This is supported by more recent research by the University of Wollongong and the Department of Environment and Conservation¹. This study found that, in the Jibbon-Bundeena area of RNP, deer adversely affected 69 plant species, including saplings of *Syzygium paniculatum*, a threatened rainforest tree. Deer also increased soil erosion. Seed production and seedling recruitment are the growth stages most vulnerable to browsing by deer.

At the time of the research, the number of deer in RNP was estimated at 2,500. In December 2001, a bushfire burned 60% of the RNP and there were concerns that the large numbers of deer would exacerbate environmental impacts.

The working party meets regularly to provide advice to the NPWS and monitor the implementation of the Deer Management Plan. During the last 12 months, the *Deer Working Group* has met on three (3) occasions.

The *Deer Management Plan* requires that an annual report be prepared each year. Implementation of the Deer Management Plan commenced in late February 2002 and this report covers the progress of works between August 2003 and August 2004².

The *Deer Management Plan* identifies five (5) key objectives: reducing deer numbers; improve community and stakeholder appreciation of the impacts of large numbers of deer; fostering cooperative approaches for the management of deer; fostering research into deer; and monitoring and evaluating the program.

¹ Keith, D. and Pellow, B. (in press). Effects of Javan rusa deer (*Cervus timorensis*) on native plant species in the Jibbon-Bundeena area, Royal National Park, New South Wales. Proceedings of the Linnean Society of New South Wales.

² This annual report was prepared by the Deer Working Party and endorsed by the NPWS Regional Manager Sydney South.



2. 2003 –2004 ACHIEVEMENTS

This report addresses each of the five key objectives for management of deer as outlined in the *Deer Management Plan*.

Objective 1. - Reduce the number of deer in populations which impact negatively on the natural environment of Royal National Park and other reserves managed by the NPWS Sydney South Region.

Shooting of deer commenced in February 2002 in accordance with an approved shooting plan and protocols as outlined in Appendix 2 of the *Deer Management Plan*. Between February 2002 and August 2004, 417 deer have been removed from the park under this program. Both the RSPCA and the NSW Animal Welfare League have undertaken audits of the shooting activity and continue to be invited to every operation.

As specified in the *Deer Management Plan*, the method of management has been through ground based shooting. The NPWS has operated under an approved shooting protocol as required by Appendix 2 of the *Deer Management Plan*. Officers of the Moss Vale Rural Lands Protection Board under direction of NPWS officers and in accordance with the NPWS policy on firearms have undertaken all shooting. In response to community concerns in June 2003, the protocol was modified and then endorsed by NSW Police (Sutherland Local Area Command).

Table 1 – Deer Cull Program Summary

	1 st July 02 - 31 July 2003	1 st August 03 - 31 st July 2004
Total number of deer taken	113	190
Percentage of culled animals from coastal heath/rainforest	22%	6%
Percentage of culled animals from Sutherland Shire Littoral rainforest	30%	74%
Percentage of culled animals from open woodlands	48%	20%
No. nights where RSPCA officers were present during culling activities	5	2

One notable difference between the two years of operation is the increased proportion of deer removed from the endangered ecological community, Sutherland Shire Littoral Rainforest. This reflects a deliberate concentration of effort in those habitats which are most sensitive to adverse impacts of deer grazing.

Disposal of carcasses – The *Deer Management Plan* requires that, wherever possible deer carcasses are gutted and frozen prior to being transported to a private zoo where they are fed to the zoo's endangered tigers. Internal organs are taken to the Menai Waste Management Centre.

Animal Welfare Audits – Both the *RSPCA* and the *NSW Animal Welfare League* are represented on the *Deer Working Group*. These organisations continue to provide



advice to the NPWS on the deer program especially with regard to animal welfare issues.

RSPCA inspectors audited the first six (6) shooting operations and continue to undertake random audits of the program. The timing and nature of these audits is determined by the RSPCA, and have attended two (2) operations this year.

For the period up to July 2002 *NSW Animal Welfare League* inspectors undertook post-shoot audits of approximately 85% of all carcasses. The *NSW Animal Welfare League* subsequently advised that it was satisfied that all deer were culled in a humane manner and that it no longer intended to audit the program.

On the 26th August the RSPCA, wrote to the NPWS stating that “*The Society has formed the view that on each occasion the culling process has been carried out professionally, efficiently and without any suggestion that the animals are being shot incorrectly or inhumanely*”.

Objective 2. - Foster cooperative approaches for the management of deer on and adjacent to the reserves managed by the NPWS Sydney South Region.

The Deer Working Party includes representation from the *Sutherland Shire Council* and *Moss Vale Rural Lands Protection Board*). NPWS officers have briefed Sutherland Shire Councillors and officers of *Wollongong City Council* on the implementation of the Deer culling program and have had a number of meetings with Council staff on “off-park” deer management issues.

Members of the local community regularly report incidents of injured deer within the general area. Most of these injuries have been sustained through collisions with motor vehicles. NPWS has now commenced keeping records of these reports. The NPWS has prepared an *Injured Deer Protocol*, to ensure there is an appropriate response to deer injured, both within and outside the Reserve.

The *Injured Deer Protocol* includes the development of a training course by the *University of Sydney* on the assessment and appropriate management of injured animals. To date two courses has been conducted with 16 NPWS, 2 RSPCA, and 1 Wollongong Council officers and 3 private contractors trained. A third course is planned for late 2004.

Objective 3. - Improve community and stakeholder appreciation of the issues related to the management of introduced animals and the urgent need to manage deer populations in conservation areas.

In addition to the two community workshops conducted by NPWS in February 2002, the NPWS has published four (4) information sheets on deer management issues in the Park with a fifth (5) in preparation. Additionally, NPWS, RLPB, Sutherland and Wollongong Councils have met a drafted a joint agency fact sheet dealing with deer in the suburbs. It is hoped this will be available later this year.

NPWS has established a register of incidents reported by the local community after encounters with deer. These records will help identify problem locations and emerging issues related to deer management. The aim is to increase community awareness of the challenges facing land managers.



Objective 4. - Foster research on deer including studies on effective, humane and safe methods of population control.

The *Deer Working Group* meets regularly and provides advice on monitoring, animal welfare and operational aspects of the program including the review of available techniques. This includes reviewing previously overlooked control techniques due to either change in technology or social acceptance.

The NPWS and the University of Sydney are participating organisations in a funding bid that has been submitted to establish a new national research centre for control of invasive species (Cooperative Research Centre). Developing effective control techniques for large herbivores such as deer is one of the projects that will be considered if the bid is successful.

Objective 5. - Establish mechanisms for monitoring and evaluating the plan.

The establishment of long-term monitoring of vegetation as an indicator of the success of the Deer Management Plan is a priority for the NPWS. A contract has been undertaken for the preparation of a long term monitoring program and the NPWS is currently in discussion with tertiary institutions regarding implementation.

3. BUDGET

Expenditure on deer management for the 2003-04 year was \$58,680. The total includes activities such as establishment costs for equipment and infrastructure, shooting and financial assistance for research. It does not include basic salary costs for NPWS staff involved in the program, although it does cover overtime payments for late night operations.

Table 2 Deer Program Costs

Year	2003	2004	Comments
Establishment costs	\$3,208	\$2,627	Equipment, medical, plumbing and lighting
Consumables	N/A	\$4,512	Protective clothing, garbage bags, knives, etc
Firearms	N/A	\$5,020	Firearms
Research	\$3,505	\$15,000*	*\$15,000 in botanical survey fees undertaken in 2003/04 will be acquitted in 2004/05
After hours salary costs	\$33,654	\$30,000	Out of normal hours overtime payments for the support crew directly associated with public safety, shooting operations and carcass removal
Contract fees	\$11,665	\$9,021	RLPB assistance
Operations	\$3,371	\$7,500	Helicopter / tip fees
Totals	\$55,403	\$58,680	

The most significant single cost has been in labour associated with the night time-shooting program. While salary costs of the program are high, ensuring public safety



is of paramount importance. Adequate staff and time need to be allocated to each shooting activity to ensure that public safety is not compromised. Most deer management work is conducted at night, when deer are active and public safety can be appropriately managed.

Operational costs include helicopter lifts (to remove carcasses) from remote locations, vehicle running costs and tip fees for the disposal of offal removed from carcasses prior to freezing. Establishment costs included medical vaccinations, adequate lighting and plumbing.

While the cost per animal removed is still high, there has been significant improvement in cost per animal removed. In 2003 it cost \$490 per animal. In 2004 this was reduced to \$308 per animal. This improvement is a result of refining techniques and the instigation of the foot-based remote areas program which relies upon helicopters remove carcasses.

4. CONCLUSION

The initial stages of this program have focussed on three (3) key areas: an effective culling program; public safety; and ensuring animal welfare issues are managed appropriately. The current focus is directed towards improving the efficiency of the operation.

Over the past eighteen months, there has been a marked improvement in the operational aspects of the deer management program. These include a better understanding of deer movements under particular environmental conditions, significant improvement the effectiveness of the shooting program (see table 1) and more effective team work. These improvements are reflected in operations reports where over a period of 9 nights 144 animals were culled, during August to October 2003. A similar period in 2002 resulted in only 17 animals culled.

Working relationships with the various agencies involved with the program have been very positive. The NPWS acknowledge the expertise and advice provided by the members of the *Deer Working Group* and in particular the Moss Vale Rural Lands Protection Board, the *NSW Animal Welfare League* and the *RSPCA*. The advice and support of the *NSW Police* is also appreciated.

NPWS will direct substantial effort over the next twelve months to distributing information on the program to the, local community undertaking, cooperative programs with *Sutherland Shire Council* and *Wollongong City Council*, and to the implementation of an environmental monitoring program.

In addition NPWS will continue to focus on improvements to operational aspects of the program. The next annual report on the implementation of the deer management plan is due in August 2005.



5. REVIEW OF THE DEER MANAGEMENT PLAN

The current Deer Management Plan was endorsed in February 2002 and has an operational life of 3 years, upon which it must be reviewed. This period will expire in February 2005.

Over the next few months the Deer Working Group will be undertaking this review process where the current program will be critically reviewed. This will include an examination of all control techniques including considering advancement of technologies and social acceptance.

It is anticipated that the draft plan will be available late 2004 or early 2005 for public comment.

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