

CHAPTER 7

LONG-TERM CONTROL METHODS: FERTILITY CONTROL

Introduction

7.1 ANZFAS and other witnesses who appeared before the Committee maintain that a humane, practical and long-term approach to feral animal management is required. The Committee was told that this could be achieved through fertility control methods.

7.2 This position is based on the view that current methods of control are “fatally flawed”.¹ Lethal control methods are applied as a response to overpopulation of a species and therefore address the symptom rather than the source of the feral animal problem. The current approach to feral animal management, apart from being inhumane, perpetuates the problem as it is based on *ad hoc* and short-term reduction methods.²

7.3 According to ANZFAS, fertility control methods recognise breeding as the source of the feral animal problem. Control of the source, rather than the symptom of the problem, will result in humane and sustained management of feral animals.³

7.4 Although fertility control received unanimous “in principle” endorsement, several witnesses raised concerns about its feasibility. For example, the Northern Territory Government maintains that, at present, fertility control is “impractical” and “prohibitively expensive”. The Government’s view is that fertility control will only become an option for feral animal control when a fertility agent is developed which is species-specific, harmless to humans, sufficiently long-acting, automatically administered and cheap.⁴

7.5 In this chapter, the Committee considers evidence on fertility control, its feasibility and effectiveness and the need for further research.

Fertility Control

7.6 Fertility is the ability to reproduce and fecundity is a measure of the number of offspring produced. Fertility control is defined as any technique that reduces offspring and includes a reduction in fertility or fecundity. Fertility control of animals may involve the following mechanisms:

- Chemosterilants, which are chemicals that cause permanent or temporary sterility, reduce the number of offspring or alter the fertility of offspring produced.

- Immunisation, which raises antibodies against sperm or reproductive hormones in order to inhibit reproduction. Immunosterilisation stimulates an animal's immune system to block production of hormones necessary for the completion of the reproductive cycle. Immunocontraception stimulates an animal's immune system to block fertilisation.
- Genetic engineering, which uses specific recombinant viruses to deliver foreign genes that disrupt reproduction.
- Hormone agonists, which inhibit the release of reproductive hormones.⁵

7.7 It has been recognised that fertility control is perceived as being more humane and morally acceptable than current lethal control methods. This is because fertility control acts to reduce birth rates rather than increase mortality rates.⁶

Feasibility of Fertility Control

7.8 Dr Mary Bomford, Senior Scientist, Bureau of Rural Resources, provided the Committee with her recent review of the role of fertility control entitled **A Role for Fertility Control in Wildlife Management?**

7.9 The review is based on an extensive assessment of the published literature on tests of fertility control in wildlife and provides the first comprehensive scientific assessment of the use of fertility control for wildlife management.⁷

7.10 In an important section of the review, Dr Bomford evaluates the practical applications of fertility control techniques to the management of wild animal pests in Australia.⁸ The feasibility of fertility control techniques is assessed against the following seven criteria:

1. the availability of a drug or technique that will temporarily or permanently sterilise target animals, leading to reduced recruitment to the population;
2. a delivery mechanism that allows an adequate proportion of the target population to be treated, including widespread and abundant animals in areas with poor access;
3. a treatment effect on the target population that is of sufficient magnitude, rapidity and duration to achieve the objective of damage control;
4. no undesirable side effects on the target species, such as welfare problems caused by toxicity or behavioural changes;

5. the drug, the technique or the delivery mechanism and handling process are target-specific, so that non-target species, or people handling the drug, are not affected;
6. no build up of environmental or food-chain residues that are toxic or polluting, nor release of genetically engineered organisms that upset environmental balance; and
7. the program is cost-effective in terms of cost of treatment versus savings in damage, or in relation to the cost of alternative conventional control programs.⁹

7.11 After considering these matters, Dr Bomford concludes that “antifertility agents will not be a panacea”.¹⁰ The best use of fertility control as a population management tool may be to use it to slow population recovery or stabilise numbers after conventional methods have been used to reduce numbers. The overall conclusion of the review is that the present role of fertility control is extremely limited.¹¹

7.12 In reaching these conclusion, Dr Bomford considered three significant aspects of fertility control. These are:

- availability of a drug or technique;
- effective delivery system; and
- population dynamics.

Drugs and Techniques

7.13 The review of fertility control by the Bureau of Rural Resources concluded that there are no chemosterilant drugs that can be field-delivered to cause permanent, humane, non-toxic sterility in both sexes of target wildlife species. Most drugs and techniques reviewed only cause temporary sterility and require repeat doses to be effective.¹²

7.14 The review recognised that the potential for population management by fertility control would be greatly increased if permanent sterilants, effective after a single dose, became available or if genetic engineering allowed the passive spread of sterilants by infectious organisms. Currently, no such sterilants are available.¹³

7.15 Dr Bomford told the Committee that research is being conducted in this area. She stated:

There is some research under way at CSIRO [by Dr C.Tyndale-Biscoe] on genetic engineering whereby they insert genes into a live virus that will sterilise the animal, immunise it against its own reproductive hormones. The virus will spread that gene passively to the population, so it overcomes some of the problems of delivery technique. But these processes are in early

developmental stages ... it is too early to assess whether they are likely to be successful for fertility control, and certainly they are not available for use in the near future.¹⁴

7.16 The review also concluded that the use of agonists or immunisations against reproductive hormones has potential, but even if developed, the expense of application would limit use to small groups of intensively managed animals.¹⁵

Delivery Mechanisms

7.17 The lack of mechanisms to deliver fertility drugs or techniques to an adequate proportion of the target population is a major obstacle to control of feral animal populations. Current mechanisms for delivery include surgical implantation, repeated injections or daily doses in food or drink.¹⁶

7.18 The Bureau of Rural Resources told the Committee that these options are not feasible for widespread and abundant feral populations and, in particular, those living in remote and inaccessible areas. Dr Bomford summarised the views of several witnesses to the inquiry when she stated:

This is one of the major problems for fertility control in wildlife management in Australia, largely because our animals are so numerous and widespread and often in such remote areas, that getting a drug or technique out into the wild population would be extremely expensive and technically difficult.¹⁷

7.19 In evidence to the Committee, Mr David Berman, an author of several studies on feral horses in central Australia, also expressed the view that fertility control will only be feasible if a drug with long-term effects and appropriate delivery methods are developed. He concluded that "it will be a long time before it could have any possible use in central Australia".¹⁸

7.20 The Committee was advised that research on delivery mechanisms is being undertaken in Australia. For example, work is proceeding on microcapsules with three different time-release patterns to overcome the requirement of multiple injections.¹⁹ Research is also being developed on automatic delivery systems, including an automated trap-door device triggered by animals going to water or other sites.²⁰

Population Dynamics

7.21 The Committee was told that most tests on antifertility drugs and techniques examine effects on reproduction rather than on population dynamics. Models that have been developed to predict the effect of sterilising populations overestimate the efficacy of sterilising as a means of population control.²¹

7.22 The review of fertility control by the Bureau of Rural Resources examined the comparative effects of culling or sterility on populations and concluded:

For most pest populations, fertility control is likely to be less effective at reducing numbers than conventional [lethal] techniques ... fertility control is likely to be of more value for preventing or reducing the rate of growth of pest populations that have been reduced to levels well below their uncontrolled density by other means, such as drought, disease or conventional control.²²

7.23 This evidence suggests strongly that, even if scientific and practical aspects of fertility control are developed successfully, current lethal methods must continue to play a role in population control.

7.24 Several witnesses expressed concern about animal welfare issues associated with the introduction of fertility control and, in particular, possible adverse effects on social dynamics and behavioural patterns of feral animals. For example, animal welfare problems may arise if harem structures of feral horses are altered by the application of fertility control methods.

7.25 In its evidence to the Committee, ANZFAS maintained a more optimistic view on the future of fertility control. The Federation told the Committee that scientists working “in this emerging field of research” reported “positive results” to a recent international conference in Melbourne.²³ ANZFAS recognised that this research is in the developmental stage but added that “just sitting back and saying that it is too difficult in Australia will not solve the problem ... there must be a vigorous attempt at finding long-term solutions”.²⁴

The Need for Research

7.26 Although the current limitations of fertility control were recognised, most submissions supported further research into fertility control.

7.27 Ms Glenys Oogjes, Director of ANZFAS, summarised the views of several witnesses when she stated:

I see fertility control as more of a long-term result, but it has to start right now ... While some of these methods may take, say, five years to develop, others even ten years or more, if we do not start now it will not happen in five years time ... We see the results as somewhere down the track but we see it as so important that the research should be given a boost right now.²⁵

7.28 ANZFAS expressed the view that the Commonwealth Government should demonstrate a positive commitment to non-lethal, long-term control methods. In particular, the Government should take a leading role in funding further research into fertility control.²⁶ According to ANZFAS, “it is in their interests, as well as the animals’ interests, to look into long-term control”.²⁷

7.29 The review of fertility control by the Bureau of Rural Resources also recognises that the long-term potential of fertility control will depend on the successful outcome of research, development and extension.²⁸ The review

identifies several promising research directions, including the development of genetically engineered viruses to spread sterility-inducing agents through pest populations.²⁹

Conclusions

7.30 The Committee acknowledges that a practical, long-term mechanism of fertility control would be the ideal means of managing feral animal populations. The reality, however, is that such a mechanism does not exist and that, for some time to come, conventional methods based on lethal controls will continue to play a significant role in feral animal management. Furthermore, evidence indicates that a feasible fertility control mechanism would be more effective on populations that have already been reduced significantly by other means, including conventional methods of control.

7.31 The Committee welcomes the comprehensive and timely review of the role of fertility control in wildlife management conducted by the Bureau of Rural Resources. Although the review concludes that the present role of fertility control in wildlife management is extremely limited, it identifies some promising areas of research into non-lethal, long-term control methods.

7.32 In the Committee's view, the review provides a valuable framework for policy development and future directions in research. It will also encourage informed and considered debate on conventional and alternative methods for feral animal control.

7.33 As the nature and extent of the feral animal problem in Australia is unique, the Committee considers that Commonwealth, State and Territory Governments should take a leading role in research into feasible, non-lethal and long-term solutions.

7.34 The Committee recommends that the Commonwealth Government, through relevant Departmental, industry and research agencies and inter-governmental arrangements, accord priority to research into non-lethal, humane and long-term methods of control of feral animals.

ENDNOTES

1. *Evidence*, Australian and New Zealand Federation of Animal Societies, p. 378.
2. *ibid.*
3. *ibid.*, p. 367.
4. *Evidence*, Northern Territory Government, p. 66.
5. *Evidence*, Bureau of Rural Resources, pp. 422-431.
6. *ibid.*, p. 417.
7. *ibid.*, p. 413.
8. *ibid.*, pp. 440-446.
9. *ibid.*, p. 440.
10. *ibid.*, p. 446.
11. *ibid.*, p. 418.
12. *ibid.*, p. 431.
13. *ibid.*
14. *ibid.*, p. 482.
15. *ibid.*, p. 431.
16. *ibid.*
17. *ibid.*, p. 482.
18. *Evidence*, Northern Territory Government, p. 146.
19. *Evidence*, Bureau of Rural Resources, p. 429.
20. *ibid.*
21. *ibid.*, p. 417.
ibid., p. 484.
22. *ibid.*, p. 439.
23. *Evidence*, Australian and New Zealand Federation of Animal Societies, p. 389.
24. *ibid.*, p. 394.
25. *ibid.*, p. 371.
26. *ibid.*, p. 350.
27. *ibid.*, p. 369; p. 394.

28. *Evidence*, Bureau of Rural Resources, p. 418.
29. *ibid.*, p. 417.