The Parliament of the Commonwealth of Australia

KANGAROOS

Report by the
Senate Select Committee on Animal Welfare

Australian Government Publishing Service
Canberra

ISBN 0 644 07745 X

No. 109 of 1988

Ordered to be printed
by authority
ISSN 0727-4181

Printed in Australia by Canberra Publishing and Printing Co., Fyshwick, A.C.T.

MEMBERSHIP OF THE COMMITTEE

Members

Senator J. Morris (New South Wales), Chairman ***

Senator D. Brownhill (New South Wales) *

Senator P.H. Calvert (Tasmania) ***

Senator B. Cooney (Victoria) *

Senator A.R. Devlin (Tasmania) ***

Senator N.K. Sanders (Tasmania) **

* From 1 July 1985
** From 21 August 1985
*** From 24 September 1987

Former Members

Senator Jack Evans (Western Australia) -
(7 December 1983 - 30 June 1985)

Senator J.M. Hearn (Tasmania) -
(7 December 1983 - 30 June 1985)

Senator the Hon. D.B. Scott (New South Wales) -
(7 December 1983 - 30 June 1985)

Senator J.R. Siddons (Victoria) -
(1 July 1985 - 21 August 1985)

Senator G. Georges (Queensland) -
(7 December 1983 - 5 June 1987)

Secretary

P. Barsdell
The Senate
Parliament House
Canberra

Telephone: (062) 726906

CONTENTS

LIST OF TABLES

ABBREVIATIONS USED IN THE REPORT

AAHQS	Australian Agricultural Health and Quarantine Service
AAT	Administrative Appeals Tribunal
ABAH	Australian Bureau of Animal Health (later became AAHQS)
ABS	Australian Bureau of Statistics
ACS	Australian Customs Service
ANPWS	Australian National Parks and Wildlife Service
ANZFAS	Australian and New Zealand Federation of Animal Societies
BAE	Bureau of Agricultural Economics
CONCOM	Council of Nature Conservation Ministers
CSIRO	Commonwealth Scientific and Industrial Research Organization
CUA	Commercial Utilisation Area (in South Australia)
KMP	Kangaroo Management Programme
KMZ	Kangaroo Management Zone (in South Australia)
NFF	National Farmers Federation
NPMK	National Plan of Management for Kangaroos
NPWS	National Parks and Wildlife Service
RSPCA	Royal Society for the Protection of Cruelty to Animals
USFWS	United States Fisheries and Wildlife Service.

PREFACE

The kangaroo has a special place in the history of Australia and enjoys the affection of people both within and outside the country. It is a national symbol of which Australians are justifiably proud and its status as a protected animal is not in question. It must be preserved and in abundant numbers.

Human habitation especially since 1788 has impacted on kangaroos. Development of areas of Australia has affected their numbers.

The Committee concludes that a balance must be struck between the need to preserve kangaroos in abundant numbers and the need to use Australia's resources for the well being of all.

The Committee found that a proper balance involves the development of a strictly controlled management programme.

LIST OF RECOMMENDATIONS

The Committee RECOMMENDS that aerial surveys of red and grey kangaroos be conducted in New South Wales, Queensland, South Australia and Western Australia at least annually but preferably twice a year. (paragraph 2.66)

The Committee RECOMMENDS that the Australian National Parks and Wildlife Service undertake or commission more research into either the further refinement of the aerial survey method or into alternative survey methods or combinations of survey methods to arrive at more reliable indices of abundance and estimates of total population size of kangaroo species. (paragraph 2.67)

The Committee RECOMMENDS that the Australian National Parks and Wildlife Service commission or conduct regular surveys by appropriate methods of all species other than red and grey kangaroos which are subject to legal killing. (paragraph 2.70)

The Committee RECOMMENDS that the quota include both the commercial and non-commercial kill and that it be incorporated into the kangaroo management programme. (paragraph 5.55)

The Committee RECOMMENDS that the Australian National Parks and Wildlife Service commission or arrange research into the effects of a male sex bias in the commercial shooting of kangaroos. (paragraph 5.62)

The Committee RECOMMENDS that before any licence or permit is issued to kill kangaroos or wallabies, the applicant must demonstrate that he is the owner of an appropriate firearm as specified in the Code of Practice. (paragraph 5.86)

The Committee RECOMMENDS that the Australian National Parks and Wildlife Service commission as a matter of urgency an independent research project to establish conclusively whether or not shotguns or rimfire rifles are appropriate to kill any species of wallaby humanely. (paragraph 5.87)

The Committee RECOMMENDS that adherence to the Code of Practice should be a requirement of any licence or permit and failure to adhere should be grounds to suspend, withdraw or refuse to renew a licence or permit. (paragraph 5.98)

The Committee RECOMMENDS that all new applicants for a kangaroo shooter's licence pass a test of marksmanship before being issued with a licence. (paragraph 6.39)

The Committee RECOMMENDS that commercial shooters applying for a renewal of a licence and who did not kill at least five hundred

kangaroos under the kangaroo management programme in the preceding year, pass a test of marksmanship before being issued with a licence. (paragraph 6.39)

The Committee RECOMMENDS that commercial shooters kill kangaroos for the carcases and not for their skins only, except where the relevant fauna authority considers a carcase trade is impracticable and authorises skin-only killing. (paragraph 6.46)

The Committee RECOMMENDS that the Australian Customs Service, the Australian National Parks and Wildlife Service and the State fauna authorities establish arrangements for the random inspection of consignments of kangaroo products which are to be exported. (paragraph 7.33)

The Committee RECOMMENDS that the Australian National Parks and Wildlife Service establish a fauna squad to investigate the illegal export of fauna. (paragraph 7.38)

The Committee RECOMMENDS that the Australian National Parks and Wildlife Service establish controls over the export of kangaroo skins by appointing inspectors to check kangaroo skins at fleshing works and to seal containers containing skins for export at those works. Only skins sealed in containers should be exported. (paragraph 7.44)

The Committee RECOMMENDS that skins taken under approved management programmes be tattooed or be able to be identified in some other way after being fleshed when the royalty tag has been detached. (paragraph 7.45)

The Committee RECOMMENDS that fleshing works which treat kangaroo skins for export be licensed by the Australian National Parks and Wildlife Service. (paragraph 7.46)

The Committee RECOMMENDS that the Australian National Parks and Wildlife Service conduct or commission research to determine the nature and level of suffering of wallabies and non-target species which ingest 1080 poison or any other poison used to kill wallabies. Depending on the results of that research, a decision should be made by the Australian National Parks and Wildlife Service and the Tasmanian National Parks and Wildlife Service on the future use of poison to kill wallabies in Tasmania. (paragraph 8.49)

The Committee RECOMMENDS that all methods of killing kangaroos other than by shooting be banned in mainland Australia. (paragraph 8.50)

The Committee further RECOMMENDS that in Tasmania the use of poison to kill kangaroos be permitted only until such time as the research recommended by the Committee has been completed, provided that the research is carried out expeditiously. (paragraph 8.50)

The Committee RECOMMENDS that, as a fundamental principle, the kangaroo remain a protected animal. However, its deleterious effects on human land use must be taken into account. (paragraph 9.27)

The Committee RECOMMENDS that the Commonwealth and the States and Territories work out on a co-operative basis over time a system for national management of kangaroos. (paragraph 9.30)

The Committee RECOMMENDS that fauna authorities conduct inspections of properties where kangaroos are allegedly causing an unacceptable level of damage to assess the extent of the problem and to advise landholders on methods of coping with the problem. (paragraph 9.38)

The Committee also RECOMMENDS that the killing of kangaroos be permitted by fauna authorities only where non-lethal methods of containing kangaroo damage are impracticable. (paragraph 9.38)

The Committee RECOMMENDS that funds be made available by the Commonwealth for research into kangaroo proof fences. (paragraph 9.39)

The Committee RECOMMENDS that commercial shooting of kangaroos continue to be permitted in areas where there is a need to reduce populations of kangaroo for damage mitigation purposes. (paragraph 9.61)

The Committee RECOMMENDS that in a non-commercial area, where a landholder does not possess an appropriate firearm or does not pass a test of marksmanship, the fauna authority arrange and subsidise the use of a commercial shooter to contain kangaroo damage, provided that no non-lethal method is practicable. (paragraph 9.91)

The Committee RECOMMENDS that fauna authorities be allocated more resources to enable them to fulfil their responsibilities for the management and protection of kangaroos and other wildlife. (paragraph 9.92)

CHAPTER 1

INTRODUCTION

Appointment of the Committee and its Terms of Reference

1.1 The Senate appointed the Select Committee on Animal Welfare on 16 and 17 November 1983 and reappointed it on 22 February 1985 and again on 22 September 1987 in each new Parliament to inquire into and report upon:

> the question of animal welfare in Australia, with particular reference to:
>
> (a) interstate and overseas commerce in animals;
>
> (b) wildlife protection and harvesting;
>
> (c) animal experimentation;
>
> (d) codes of practice of animal husbandry for all species; and
>
> (e) the use of animals in sport.

1.2 As a result of the broad nature of the terms of reference, the Committee decided to divide the inquiry into a a number of discrete areas and, as far as possible, to examine two or more simultaneously. After preliminary public hearings in mid-1984, the Committee decided to examine kangaroos and the export of live sheep from Australia. It later added dolphins and whales in captivity to this priority list. The Committee reported on live sheep exports on 13 August 1985 and on dolphins and whales in captivity on 29 November 1985.

The Kangaroo Issue

1.3 The Committee decided to examine the question of kangaroos early in the inquiry rather than deal with it in the context of wildlife protection and harvesting, because of concern expressed both in Australia and overseas about the killing of kangaroos. Animal welfare organisations have been trying to persuade Australian authorities to stop the commercial and indiscriminate killing of kangaroos while, at the same time, campaigning overseas for the imposition of a ban on kangaroo products into Europe and the United States of America, the two main destinations of such products.

Scope of the Kangaroo Inquiry

1.4 In its inquiry, the Committee is concerned with the welfare of kangaroos in present day Australia. This involves an examination of the kangaroo in its environment. That environment includes not only the pastures, farm lands and forests, but also other animals and people. All of these factors must be taken into account and proper weight given to the interests of each. The question of what weight should be given to each interest is the subject of debate. The Committee has taken a considerable amount of evidence on this issue and it has reached its conclusions on the basis of that evidence.

Conduct of the Inquiry

1.5 The Committee took oral evidence from 98 people representing 40 organisations or appearing on their own behalf. The representatives of some organisations gave evidence on several occasions. The hearings were held in all States and in the Australian Capital Territory. A list of people who appeared

before the Committee to give evidence on kangaroos is contained in Appendix 1.

1.6 As with other parts of its inquiry into animal welfare, the Committee went into the field to get first-hand experience of the problems raised in relation to kangaroos. The Committee spent three days in mid-western Queensland in February 1985 talking to graziers, kangaroo shooters and dealers. It also visited a chiller at Longreach, a meat-processing works in Brisbane and went on part of a kangaroo shoot near Longreach.

1.7 In November 1985, it accompanied members of the European Delegation in and around Roma in southern Queensland where properties were visited and discussions were held with graziers, farmers and officers of the Queensland National Parks and Wildlife Service.

1.8 In January 1986, the Committee travelled to Broken Hill and Menindee in western New South Wales for visits to the Kinchega National Park and adjacent properties. Members of the Committee went on kangaroo shoots and a simulated aerial survey and visited chillers and a kangaroo meat processing works. The Committee also held talks with officers of the New South Wales National Parks and Wildlife Service (NSW NPWS), kangaroo shooters and pastoralists.

Kangaroo Species

1.9 There are 48 species of the family Macropodoidea, comprising nine species of Potoroidae (rat-kangaroos, potoroos and bettongs) and 39 species of Macropodidae (kangaroos and wallabies).

1.10 In 1975, the Working Group on Kangaroo Biology listed six of the 48 species of Macropodoidea as extinct, but it did not

discount the possibility of pockets of one or more of these six species being discovered in the future. Another seven species were listed as being endangered by the Working Group on Endangered Fauna of the Standing Committee of the Council of Nature Conservation Ministers (CONCOM), in a report published in 1984.

1.11 Of the remaining 35 species of Macropodoidea, 25 are fully protected in all States and ten are killed in one or more States. Although the 25 fully protected species are not currently classified as endangered, encroachment on their habitats for the purposes of urban or rural development poses a long-term threat to their survival, unless adequate management programmes are undertaken to conserve their habitats.

1.12 Kangaroo species commercially killed in Australia are listed below:

COMMON NAME	SCIENTIFIC NAME	STATE KILLED
Red kangaroo	Megalea rufa] Macropus rufus] (Note: same species)	Queensland New South Wales South Australia Western Australia
Eastern grey kangaroo	Macropus giganteus	Queensland New South Wales Tasmania
Wallaroo, Euro or hill kangaroo	Macropus robustus	Queensland New South Wales South Australia Western Australia
Whiptail wallaby	Macropus parryi	Queensland
Western grey kangaroo	Macropus fuliginosus	New South Wales South Australia Western Australia
Rufous wallaby	Thylogale billardierii	Tasmania
Sandy wallaby	Macropus agilis	Queensland

Black-striped wallaby	Macropus dorsalis	Queensland
Swamp wallaby	Macropus bicolor	Queensland
Red necked wallaby or Bennetts wallaby	Macropus rufogriseus	Queensland Tasmania

Definitions

1.13 The term 'kangaroo' is sometimes used to refer to all 48 species of Macropodoidea but, at other times, it is used to refer to the six species in the macropod genus Macropus or to the three largest species of this genus (M. fuliginosus, M. giganteus and M. rufus). Where it is not clear from the context to which group the Committee refers when the term is used in the report, the group is specifically identified.

1.14 In its Supplementary Submission, dated April 1985, the Australian National Parks and Wildlife Service (ANPWS) referred to a semantic argument over the use of the terms 'cull' or 'harvest'. Rather than become embroiled in the argument, the Committee simply uses the word 'kill'.

1.15 In some State legislation there is provision to kill kangaroos for use in scientific experiments. The use of wildlife in experiments, whether for the benefit of the animal or for advances in human knowledge, has not been addressed in this report. That subject is being examined in the Committee's inquiry into the use of animals in research and teaching. Where the Committee comments on the retention of such provisions in State legislation, it is simply maintaining the status quo until it has had an opportunity to consider and report on the broader issue of experiments on wildlife.

CHAPTER 2

KANGAROO POPULATIONS

POPULATION DISTRIBUTION

2.1 Some of the 48 species of kangaroo are widely distributed while others are only found within a State or region. A few species exist in small pockets. The distribution of each species is documented in the scientific literature.

2.2 The encroachment of human land use and development into much of the range of the kangaroo has changed the pattern of distribution of many species. Some species have adapted to changes in their habitat while others have succumbed to human pressures and have become extinct or almost so. Some species have survived, and even prospered, over part of their range but have disappeared from other parts. The pattern of distribution of kangaroos is dynamic and reflects the effects of continuing human development over their range, including further destruction of the habitat.

POPULATION ESTIMATES

Introduction

2.3 To estimate the population of any species of wildlife is difficult. The task is even more complicated when the animal is small and visibility is restricted by the nature of the terrain. Few species of kangaroo have been surveyed to determine population levels and trends. Most of these surveys have concentrated on the larger kangaroos - the red and grey kangaroos

- in areas where aerial surveys can be conducted. The populations of some smaller species have been estimated by other survey methods. Details of survey methods, their limitations and the population estimates derived from them are discussed below.

2.4 Population estimates of red and grey kangaroos have been widely used and misused in the public debate on kangaroo killing. In the interest of promoting an informed debate, the Committee has tried to put the estimates into perspective.

Survey Methods

2.5 There are various survey techniques which have been used to estimate wildlife populations, including aerial surveys, ground counts, aerial photography, infra-red scanning, faecal pellet counts and kangaroo harvesting data.

Aerial Surveys

2.6 The effectiveness of aerial surveys is limited to open country where kangaroos can be seen by the observers. In heavily timbered or mountainous areas, it is virtually impossible to see kangaroos from the air.

2.7 Aerial surveys are conducted by trained observers in a light aircraft flying transects at a fixed altitude and speed. The observers count red and grey kangaroos within a 200 metre wide transect, one boundary of which is set by a marker on the wing of the aircraft and the other by the aircraft wheel. A correction factor is applied to the raw data to take account of the kangaroos which are missed by the observers. The correction factor takes into account such factors as the vegetation, weather conditions and the time of day. The ANPWS described the design of the survey as follows:

> An aircraft flying at 100 knots for 97 seconds covers a distance of 5 km; since observers scan a strip of width 200m over this distance, the area scanned by each observer is 1 km^2. The sampling intensity (i.e. the percentage of ground that is actually surveyed) can be varied by altering the spacing of the transects. The basic unit of the survey is most commonly a block of 1^o latitude by 1^o longitude (the degree block, approximately 10 000 km^2) or a block of 1^o latitude by $1^o30'$ longitude (a 1:250 000 map sheet). If two lines are flown across such an area (15' South and 45' South), the sampling intensity is about 0.7% (i.e. 0.7% of that block has actually been flown over and counted). In high intensity surveys of smaller areas like Kinchega National Park in New South Wales, or Hattah-Kulkyne National Park in Victoria, the sampling intensity may be as high as 20%, with transects 2 km apart.[1]

2.8 Aerial survey has been the most widely accepted method of assessing kangaroo populations. Regular surveys have been conducted in areas of New South Wales and in South Australia since 1975 and 1978 respectively. Some surveys have also been conducted in all of the other mainland States, mainly between 1980 and 1982 and again in 1984.

2.9 The advantage of the aerial survey is that it can cover a large area in a relatively short time. This makes it more conducive to large-scale surveying than the other methods, which would need considerable man-power to keep pace with aerial surveys.

2.10 The main criticism of aerial surveys is the correction factor applied to the raw data to give an estimated total number of kangaroos within the survey area. The correction factor has been refined with the experience gained by regular surveys but it cannot be relied on to be accurate. The Queensland NPWS, in particular, has been critical of the correction factor used in aerial surveys conducted in that State.

2.11 Professional shooters and fauna dealers expressed concern to CSIRO consultants, Mr G. Morris and Mr M. Young, in their study on the kangaroo industry in New South Wales, about the effectiveness of aerial surveying. Morris and Young commented:

> The fauna dealers interviewed did not consider that the aerial surveying technique gave an accurate estimate of kangaroo numbers at a local level and that more emphasis should be given to information which could be collected from people in the field including fauna dealers, shooters and NPWS personnel. These comments when taken in conjunction with the views expressed by licensed trappers suggest that degree block estimates obtained by the Service may not be sufficiently accurate at a regional level to form the prime basis for day-to-day management decisions.[2]

2.12 In 1984, the NSW NPWS decided to change the structure of the aerial survey from a monitor block to a long line structure. In 1984, 1985 and 1986, both methods were used with disparate results. These results are shown in Table 2.4.

2.13 The use of ground counts in conjunction with aerial surveys has been used to try to verify results of aerial surveys but, as Dr G. Caughley of CSIRO told the Committee, it has had varying results. He went on to say that it is impossible to say whether one is right or wrong, or whether both are right or both are wrong.

2.14 Repetition of identical surveys in the same area does, however, provide an estimate of changes in population levels between surveys. In other words, such annual surveys can show whether the population of kangaroos in an area has declined or increased and by the approximate percentage. Even so, caution should be exercised in comparing results because of different conditions experienced by the observers from one survey to the next. For example, there might be more ground cover one year

which makes kangaroos more difficult to see or different weather conditions might influence the counting.

2.15 As mentioned above, few kangaroos in heavily timbered country can be seen from the air which renders aerial surveys of these areas impractical. Other survey methods, principally ground counts, have been substituted to gain a rough estimate of the abundance of kangaroos there.

2.16 Aerial survey observers do not differentiate between eastern and western grey kangaroos because of the difficulty of distinguishing between the two species from the air. Ground counts have been used to calculate a ratio of the two species in the small area where they overlap and this ratio has been applied to the grey kangaroos estimated in aerial surveys in that area.

2.17 Aerial survey techniques are being continuously refined, as exemplified by new correction factors (Short and Bayliss), research on the impact of time of day on the sighting of kangaroos (Wilson) and the introduction of long line surveys instead of monitor block surveys in New South Wales. There is little doubt that the techniques will become more sophisticated as further experience is gained and greater reliance will be able to be placed on the results of aerial surveys in formulating indices of abundance of red and grey kangaroos. The fact that the techniques are changing in the light of this experience suggests that a degree of caution must be exercised in interpreting the results of surveys.

Ground Counts

2.18 Ground counts of kangaroos are normally conducted by observers who walk or are driven along transects and countkangaroos within a specified field of vision. This method is similar to an aerial survey except that it is much slower and requires more manpower to cover a large area. There are several

variations to this method. It is also possible for observers to obtain more detailed information (such as size, sex and condition) about the kangaroos in ground surveys than in aerial surveys.

Aerial Photography and Infra-red Scanning

2.19 Aerial surveys using these methods have been used mainly overseas but with limited success. Dr G. Caughley told the Committee that they were inferior to the unaided eye of an experienced observer.

Faecal Pellet Counts

2.20 Faecal pellet counts have been used to estimate population levels of various species of wildlife. It is not suited, however, to the wide-ranging surveys of kangaroos which are conducted in Australia. Their use is mainly in obtaining population estimates in smaller areas.

2.21 Dr P. Jarman of the University of New England explained the method to the Committee:

> Pellet count usually depends on your subsampling the country that you are working over. You would probably take evenly spaced or randomly spaced quadrates, circles or something like that and count pellets within those, and you can extend it to sample any area that you choose. But I would say that a working area for one person to survey in one day - that is an area in which to count pellets in one day - could probably not easily be more than about two square kilometres. I should be able to tell you the intensity of sampling; it would be a low sampling rate. You would probably be sampling less than 100 points within that two square kilometres, and each point might be two square metres, let us say.[3]

Commercial Harvest Data

2.22 The Queensland NPWS uses statistics compiled from returns submitted by kangaroo shooters and, recently, fauna dealers, to estimate increases or decreases in populations. These statistics may include the number of kangaroos killed by area, species and sex, and the average weight. Any significant variation in the general pattern of commercial harvest data may indicate the existence of a problem, which would then be investigated. For example, a decline in average weight may indicate a decrease in large bucks which may, in turn, point to a decline in the total population in an area.

2.23 The Queensland NPWS combines observations on the general distribution of kangaroos with the above data. Dr T. Kirkpatrick told the Committee:

> I think most biologists, perhaps all biologists, would agree that one of the first signs that an animal population is suffering some damage is when it begins to disappear from its ordinary habitat. When it is not seen there it is an indication that something is going wrong. Again, both from our shooter records and also from our own research observations, and also from the observations of our wildlife rangers, we have a constant record of the distribution of those species that are harvested and whether they are in fact disappearing from their normal ranges. We are not talking about numbers, we are just talking about their presence or absence.[4]

2.24 In its second Supplementary Submission dated May 1986, the ANPWS commented on the use of direct (e.g. surveys) as opposed to indirect (e.g. harvest data) population monitoring techniques:

> There is general agreement amongst wildlife biologists that direct techniques are the most desirable means of monitoring populations. Direct techniques tend to rely on fewer assumptions than indirect techniques, and usually return additional information about the population being monitored that is of use in management (such as distribution and habitat preference). Indirect methods, on the other hand, often rely on assumptions whose validity is uncertain and return little or no additional information that may be of use to management.
>
> Direct methods, however, are not without their own disadvantages. Direct methods are usually very labour intensive, time-consuming and expensive to operate. This is particularly so when the population is to be monitored over a large area. Indirect methods do not suffer from this disadvantage, the necessary data essentially having been collected by the hunter.[5]

2.25 The Queensland harvest data have still to be published and subjected to validation by peer review.

Discussion of Survey Methods

2.26 Each survey method has its advantages and disadvantages. The direct survey methods are more expensive to use over large areas than the indirect methods. Direct methods also depend largely on the correction factors applied to the raw data to compensate for the percentage of kangaroos missed by the observers. These have to take into account many factors including time of day, weather and vegetation. Research is continuing to refine the factors. There are also problems with sampling

methodology as revealed in the change from monitor blocks to long line surveys in New South Wales.

2.27 In a statement prepared for a hearing of the Administrative Appeals Tribunal, Dr C. Southwell of the ANPWS wrote:

> Like direct monitoring, indirect monitoring relies on certain assumptions to be able to effectively follow population trends, and in practice these assumptions are rarely tested. The Applicant has outlined some ways in which a number of assumptions of the "catch per unit effort" (CPUE) method generally and the Nance-Kirkpatrick population simulation model specifically could be violated for kangaroo populations. At present there is little data available to test whether the assumptions are in fact violated, and if so, how sensitive the techniques are to assumption violation. Assumption violation does not necessarily invalidate a method; violation may be insignificant and/or the method may be robust (or insensitive) to violations. Field validation of the Nance-Kirkpatrick population model, which is currently occurring, should provide a test of assumptions. Similarly the alternative model advanced by Dr de la Mare requires field validation. The advantage of indirect techniques is that monitoring can occur almost continuously and does not require the large commitment of resources that is necessary for broad-scale monitoring.
>
> Until the assumptions of both approaches are further investigated in the field, it is not possible to conclude with certainty that one approach is better than the other. A monitoring system that utilises both is likely to be more effective than a system using only one, as this would allow for both periodic abundance estimation and continuous assessment of the take, and would provide a cross-check between methods.[6]

2.28 The large-scale surveys are more accurate in calculating indices of abundance than absolute populations of particular species. Population estimates derived from survey data can only be indicative rather than actual and should be treated accordingly. It should be remembered that the survey intensity is designed for large areas and there are problems in the extrapolation of estimates to small areas. Local factors might have resulted in an increase or decrease of kangaroo populations against the trend for the region. This has obvious ramifications for management programmes.

Aerial Surveys Conducted in Australia

2.29 Aerial surveys commenced in New South Wales in 1975-76, and in South Australia in 1978, and have been conducted annually in those two States since then. Few surveys have been conducted in the other States. Table 2.1 shows all the surveys that have been performed and the organisations that conducted them.

2.30 From the results of a series of surveys in which 1981 was the median year, it was estimated that there were about 19 million red and grey kangaroos in Australia. Further surveys in New South Wales, South Australia and Queensland in 1982-83 indicated a decline in the population of these species of about 40 per cent owing to the prolonged drought in much of eastern Australia, reaching up to a line drawn through Quilpie, Charleville and Roma.[7]

2.31 The annual winter survey in New South Wales in 1984 showed a further decline in population numbers of red and grey kangaroos resulting in action being taken by the NSW NPWS to ban the commercial killing of kangaroos in specific areas where the

population density had declined to below one kangaroo per square kilometre. This ban remained in force until population levels rose to at least one kangaroo per square kilometre in those areas.

Table 2.1: Aerial Surveys of Kangaroo Populations

	AREA	YEAR	FREQUENCY	ORGANISATION
NSW	Sheep zone	1975-76	Annual	CSIRO initially then NSW NPWS
	Commercial harvest zones	August 1984	-	NSW NPWS
SA	Sheep zone	1978	Annual	CSIRO initially then SA NPWS and Sydney University
	Beyond sheep and arable zone	1981 and 1982	-	CSIRO and Sydney University
	Areas of significant grey kangaroo habitat not covered earlier in 1984	September 1984	-	ANPWS
	Pastoral area	October 1984	-	Sydney University
QLD	South of sheep zone	1979	-	Queensland University
	Sheep zone	1980	-	CSIRO and Sydney University
	Beyond sheep and arable zone	1981 and 1982	-	CSIRO and Sydney University
	Southern part of sheep zone	1983	-	CSIRO and Sydney University
	Pastoral zone	May 1984	-	CSIRO
	West and north QLD, areas of red kangaroo habitat not covered in May 1984	July 1984	-	ANPWS
	Areas of significant grey kangaroo habitat not covered in May/July 1984	September 1984	-	ANPWS

WA	Sheep and arable zone, 61% of WA	1981	-	CSIRO
	Deserts	1982	-	Sydney University
	Red kangaroo habitat	May/June 1984	-	ANPWS
	Areas of significant grey kangaroo habitat not covered in May/June 1984	September 1984	-	ANPWS
NT	Most of NT	1981 and 1982	-	CSIRO and Sydney University
VIC	Western Victoria	1980	-	Sydney University
	National Parks in Western Victoria	1981	Annual	Sydney University

Source: Evidence p. 1070, 1898, 1916, 2061, ANPWS letter 13/9/84 and ANPWS Submission 324 - Appendix K14, p. 5.

2.32 The results of the national aerial surveys of red and grey kangaroos in 1980-82 and 1984 are shown in Tables 2.2 and 2.3. Although the 1984 surveys only covered about 55 per cent of the area surveyed during 1980-82, the areas not surveyed were areas in which there was a low density of kangaroos.

2.33 The correction factor which was applied to eastern grey kangaroo data in the 1984 surveys was the same as that applied to the 1980-82 data for that species, even though between the two sets of surveys research had shown that the correction factor for eastern grey kangaroos was too low. The 1980-82 correction factor was used again to enable a direct comparison of the relative abundance of that species. The use of that correction factor meant that the total population of eastern grey kangaroos was actually higher than that estimated.

2.34 An estimate of 4 000 000 eastern grey kangaroos in the eastern highlands was included in the total population for 1980-82 and an estimate of 2 300 000 for 1984 (Table 2.3).

Table 2.2 Trend in Indices of Kangaroo Abundance between 1980-82 and 1984 within the Areas Covered by both Surveys

Species	Red		Western Grey		Eastern Grey	
	1980-82	1984	1980-82	1984	1980-82	1984
Queensland	2 156 000	1 760 000	104 000	55 000	3 028 000	2 317 000
New South Wales	3 836 000	1 663 000	876 000	241 000	1 936 000	887 000
South Australia	1 085 000	710 000	256 000	126 000	-	-
Western Australia	1 010 000	2 001 000	426 000	666 000	-	-
	8 087 000	6 134 000	1 662 000	1 088 000	4 964 000	3 204 000

Table 2.3 Comparable Estimates for the Total Populations of Red, Western Grey and Eastern Grey Kangaroos in 1980-82 and 1984

	Red	Western	Eastern	Total
Total Population 1980-82	8 351 000	1 774 000	8 978 000	19 103 000
Total Population 1984	6 330 000	1 162 000	5 791 000	13 283 000
Percentage change, 1980-82 to 1984	-24.2%	-34.5%	-35.5%	-30.5%

Source: G.C. Grigg, L.A. Beard, G. Caughley, D. Grice, J.A. Caughley, N. Shepherd, M. Fletcher and C. Southwell: 'The Australian Kangaroo Populations, 1984', 'Search', Vol. 16 No. 9-12, Oct/Dec 1985, p. 278, with a few modifications.

2.35 Despite the considerable limitations inherent in aerial surveys of kangaroos, as mentioned earlier in this chapter, they are regarded by Federal and most State authorities as the best survey method currently available for measuring population trends.

> Other factors taken into consideration in setting quotas include seasonal conditions, previous harvest levels, land use trends and known distribution of species.[8]

2.36 In an address to a public meeting at Charleville, Queensland, on 18 June 1985, the Minister for Arts, Heritage and Environment commented on the request of the Queensland Government for an increase in the commercial quota for 1985:

> The only way the Government will increase the quotas is when it is provided with the scientifically supported evidence that the kangaroo population has increased by such numbers that it is posing a threat to our rural properties ...
>
> It (scientific evidence) means that proper aerial and ground surveys conducted by authoritative bodies such as the Kangaroo Monitoring Unit, the CSIRO etc, provides evidence of significant increase warranting additional culling.

Later in his speech the Minister said:

> ... I can tell you that in the arenas in which we have to defend and justify kangaroo harvesting estimates of population numbers are absolutely critical.

2.37 Because of the important role played by population estimates in kangaroo management and the controversial and emotional nature of kangaroo killing as a topic of public debate, government spokesmen, representatives of animal welfare organisations and other interested groups have a responsibility to provide accurate population estimates in public pronouncements in so far as population estimates can be accurate. This includes

giving the year to which the estimates refer because of the wide fluctuations in population levels in recent years.

2.38 Regrettably, too often attention has not been paid to the need for accuracy. This point is illustrated by the conflicting estimates quoted by government spokesmen as set out in a list presented to the Committee in a public hearing and reproduced at Appendix 3. Government spokesmen have not been alone in this regard. Representatives of other organisations have also been inaccurate in some of their public utterances.

Population Estimates

New South Wales

2.39 Aerial surveys were conducted in New South Wales in 1975 and have been repeated annually since 1977. The results of those surveys are shown in Table 2.4.

Table 2.4 Populations of Red Kangaroos and Grey Kangaroos in NSW 1975-1985

Estimates from Monitor Block Aerial Surveys

Year	Estimated Populations		Total
	Reds	Greys	
1975	2 073 000	1 580 000	3 653 000
1976	No estimate	No estimate	No estimate
1977	2 669 000	2 030 000	4 699 000
1978	2 069 000	2 314 000	4 383 000
1979	2 355 000	1 933 000	4 288 000
1980	3 377 000	2 797 000	6 174 000
1981	4 626 000	2 420 000	7 046 000
1982	5 700 000	3 700 000	9 400 000
1983	3 400 000	2 100 000	5 500 000
1984	2 690 000	1 540 000	4 230 000
1985	2 280 000	2 430 000	4 710 000

2.40 In 1984, the NSW NPWS decided to change the structure of the aerial survey from monitor blocks to a long line method. Dr J. Giles of the NSW NPWS explained:

> ... although they (the monitor blocks) were selected at random, they were clumped. We used them for a number of years and became progressively concerned that, because the blocks were clumped - they tended to occur in two blocks, if you like, broadly in the western division - they could be giving us misleading results. Therefore, we decided to change the survey design to one whereby we flew lines across the full length of the commercial harvesting area and compared those, as is stated here, with the monitor blocks surveyed at a slightly reduced intensity.[9]

A comparison of the results of both aerial survey methods conducted in 1984 and 1985 are shown in Table 2.5.

Table 2.5 Comparison of Population Estimates of Red and Grey Kangaroos in NSW between Monitor Block (MB) and Long Line (LL) Surveys

	Year	Estimated Populations		Total
		Reds	Greys	
MB	1984	2 690 000	1 540 000	4 230 000
LL	1984	1 650 000	1 088 000	2 738 000
MB	1985	2 280 000	2 430 000	4 710 000
LL	1985	2 377 000	1 899 000	4 276 000

2.41 Dr Giles told the Committee:

> I would suggest, and bear in mind we are conducting experimentation, that the long line figure gives the more accurate figure - accurate meaning most closely approximating to the real value. The other figure, I believe, has a fair likelihood of being biased because the position of the points of survey is by its nature biased.[10]

2.42 The NSW NPWS conducted aerial surveys in 1986 again using both methods. In 1987, only the long line method was used to estimate kangaroo populations.

2.43 Dr Giles said that the quotas for 1985 and 1986 prepared by the NSW NPWS for submission to the ANPWS were based on the lower figures of the long line surveys.

Queensland

2.44 The Qeensland NPWS has not placed the same reliance on aerial surveys for estimating Queensland's populations of red and grey kangaroos as have the fauna authorities of the Commonwealth and of the other mainland States in which there is a commercial kangaroo industry. It has steadfastly maintained that the aerial survey results of surveys done in Queensland grossly under-estimate the number of these species of kangaroo.

2.45 In an open letter that was circulated to all members of the United States Congress in support of the delisting of kangaroos from the United States Endangered Species List, Dr G. W. Saunders, Director of the Queensland NPWS, stated:

> Professional culling of the most populous species is seen as a vital Service management tool. Populations of these species in Queensland are estimated from 15 to 30 million, depending mainly on natural factors.

2.46 In response to a question about the derivation of these figures, Dr Saunders told the Committee:

> I am basing mine (my estimate) on the experience which I have had with the industry - managing the legislation, conserving kangaroos, living in the bush, working with my officers, et cetera. I do not think there is any doubt about that. I was probably being very conservative in saying that.[11]

2.47 Subsequently, Dr Saunders mentioned that aerial survey data from the 1984 survey had been analysed within the Queensland NPWS and a figure of 17 million arrived at. He went on to say:

> ... because our estimate based on those aerial counts is, say, 17 million, and then it has to be at least double that; it has got to be double.[12]

2.48 The Queensland NPWS has eschewed using population estimates obtained from aerial surveys as a basis for its kangaroo management programme. Although it has done some studies to try to validate the results of aerial surveys, it has preferred to rely on commercial data in drawing up its management programmes. The Queensland NPWS population model has not yet been published and subjected to independent verification.

2.49 The ANPWS provided the Committee with a feasibility study of broad-scale monitoring of whiptail wallaby populations in Queensland, which had been prepared by the National Kangaroo Monitoring Unit for the Queensland NPWS. In the report of the study, Southwell and Fletcher recommended:

> that an initial broad-scale survey be undertaken with the aim of obtaining an accurate and precise estimate of whiptail abundance over a broad portion of the species' range where harvesting occurs.
>
> ... The monitoring strategy thereafter would depend on the magnitude of the broad-scale estimate in relation to the current and expected harvest level in the area.

2.50 The broader study is currently being done and should be completed early in 1988.

South Australia

2.51 Since 1978 The University of Sydney has been contracted to carry out aerial surveys of kangaroos in South Australia. The annual survey figures shown in Table 2.6 are the results of surveys for 207 000 square kilometres of pastoral country whereas

the total quota is obtained from estimates for the total 282 300 square kilometres of the Commercial Utilization Area.

Table 2.6 Population Estimates for Surveyed Area of South Australia

Year	Number of Kangaroos*
1978	1 202 600
1979	1 216 700
1980	1 236 900
1981	2 275 600
1982	1 496 300
1983	907 300
1984	836 000

* There is no breakdown between red kangaroos and western grey kangaroos.

Sources: (1) Information extracted from Appendix 6 of 'The Macropod Conservation Programme in South Australia Part A (To Apply from 1 January 1986)'.

(2) G. C. Grigg, L. A. Bear, G. Caughley, D. Grice, J.A. Caughley, N. Shepherd, M. Fletcher, C.Southwell 'The Australian Kangaroo Populations 1984', "Search" Vol. 16, No. 9-12, Oct/Dec 1985, pp. 277-279.

2.52 The Committee noted the 84 per cent increase in the population between 1980 and 1981 and questioned Professor Grigg on this extraordinary increase; one which is biologically impossible. He advanced three contributing factors:

(a) that in 1980 there were many advanced pouch young which were visible in 1981 along with the next group just out of the pouch;

(b) a migration of kangaroos into the surveyed areas between the two surveys; and

(c) a higher ratio of females in the population.

2.53 If the explanation for the extraordinary increase in 1981 given by Professor Grigg is correct, it raises questions about the interpretation of results of aerial surveys with potentially significant ramifications for the State's kangaroo management programme and quota.

Western Australia

2.54 In Western Australia, the red kangaroos mainly inhabit the rangelands while the western grey kangaroos are concentrated in the south-western agricultural areas.

Rangelands

2.55 In 1981, an aerial survey was conducted by CSIRO over 61 per cent of the State. Another was done by the ANPWS in 1984 covering 47 per cent of the State. Comparing the results of the 101 common blocks, there was an increase of 93 per cent in the number of red kangaroos over the three years, from 954,774 in 1981 to 1,845,934 in 1984. This 'represents a yearly finite rate of increase of 24.5%'.[13] After extrapolation to obtain total populations for the whole State, the figures were increased to 1,027,000 in 1981 and 2,018,000 in 1984, which represented a 98 per cent increase.[14]

2.56 Fletcher and Southwell of ANPWS reported that:

> The 1981 survey occurred at the end of a drought and was followed by three years of good to average seasons. The estimated yearly finite rate of increase is in accord with observed rates of increase in NSW red kangaroo populations (Bayliss 1980) and with J. Caughley's (pers. comm.) model for NSW red kangaroo populations (this model predicts an increase in excess of 25% per annum in good to average seasons, even when subject to culling pressures of 5-15% of the previous year's population).[15]

2.57 The 1987 Management Program recorded that Western Australia continued to have average to good seasons in 1985 and 1986.

2.58 Apart from periodic aerial surveys the Department of Conservation and Land Management has used other methods to monitor population trends, such as analysis of harvest data, ground surveys and patrols, transect dung sampling and consultations with landholders.[16]

South-western Agricultural Areas

2.59 From the results of the aerial survey conducted by the CSIRO in 1981 it was estimated that there were in excess of 436,000 western grey kangaroos in Western Australia. The 1984 aerial survey resulted in an estimate in excess of 683,000 western grey kangaroos.

2.60 Apart from the two aerial surveys, the Department of Conservation and Land Management has used other methods to monitor population trends of western grey kangaroos, similar to those mentioned above for red kangaroos.

Tasmania

2.61 In the Tasmanian kangaroo management plan for 1986, it is stated:

> No accurate estimate of wallaby abundance in Tasmania is currently available. However, an approximate figure can be derived from available information on population density and areas of potential habitat.
>
> Thus, transect counts conducted by the Service in general areas in the Midlands and north-east of the State give wallaby densities of 0.5/ha to over 5.0/ha, with both species being represented in approximately equal numbers. Given that approximately 75% of Tasmania is suitable as wallaby habitat and taking an average density of 1.5 wallaby/ha, gives what is considered to be a conservative estimate of over 6 million wallabies of both species combined.[17]

Conclusions

2.62 The Committee believes that, despite its limitations, the aerial survey method is the most appropriate method for estimating indices of abundance of red and grey kangaroos on a state or national basis. Such surveys should be conducted at least annually in Queensland, New South Wales, South Australia and Western Australia. In the opinion of the Committee, surveys conducted at intervals of three or more years do not provide enough information on trends in the population levels of those species. It is also more difficult to determine whether a significant variation between two widely-spaced surveys is the result of a significant increase or decline in populations or due to some other reason, such as climatic variations or differences in the conduct of the survey or in the analysis of the data.

2.63 Because of the limitations in the aerial survey method, it should be used in conjuction with other forms of survey, such

as harvest data or ground counts of one form or another. Significant variations between the results of two different methods should be investigated.

2.64 The Committee is satisfied that, on the basis of the results of population surveys and on the other evidence given to the Committee, red and grey kangaroos are not presently threatened with extinction. The evidence before the Committee does not support the suggestion that populations of those species are nearing a critical point after which they would crash and become endangered. If, however, there is a significant change in the habitat or the pattern or extent of killing of these species, further consideration will have to be given to their long-term viability.

2.65 Although the Committee does not find that total populations of red and grey kangaroos are presently in danger, some areas may become denuded of kangaroos through the destruction of habitat for agriculture or other human land uses.

2.66 The Committee **RECOMMENDS** that aerial surveys of red and grey kangaroos be conducted in New South Wales, Queensland, South Australia and Western Australia at least annually but preferably twice a year.

2.67 The Committee also **RECOMMENDS** that the ANPWS undertake or commission more research into either the further refinement of the aerial survey method or into alternative survey methods or combinations of survey methods to arrive at more reliable indices of abundance and estimates of total population size of kangaroo species.

2.68 There is also a need to obtain information in smaller areas where a population of a species has declined. These population variations might run counter to broad trends as determined by aerial surveys. Ground or faecal counts could be

employed to survey the species, not only to establish numbers but also to gather more detailed information about the species in those areas.

2.69 Few surveys have been carried out on populations of species of kangaroos other than the red and grey kangaroos. Further surveys and research should be undertaken to provide a more accurate picture of the population size and other population characteristics of these species.

2.70 The Committee **RECOMMENDS** that the ANPWS commission or conduct regular surveys by appropriate methods of all species other than red and grey kangaroos which are subject to legal killing.

CHAPTER 3

KANGAROO DAMAGE

Introduction

3.1 On 30 May 1985, the Council of Nature Conservation Ministers approved the 'National Plan of Management for Kangaroos'. This replaced the earlier 'National Kangaroo Management Plan'. The aims of the Plan are:

A. - to maintain populations of kangaroos over their natural range; and

B. - to contain the deleterious effects of kangaroos on other land management practices.

3.2 Four States have kangaroo management programmes approved by the Federal Government. There was one approved for Tasmania up to and including 1986 but not in 1987. The kangaroo management programme of Western Australia has aims identical to those of CONCOM while the programmes of the other three States have similar aims. As will be discussed later in this report, a kangaroo management programme is only required if kangaroo products are to be exported. Products derived from kangaroos killed in Victoria, Tasmania or the two Territories may not be exported because none of them has an approved kangaroo management programme.

3.3 Kangaroos are protected animals in all States and Territories except where permission has been obtained from the relevant fauna authority to kill a number of a specified species 'to contain the deleterious effects ... on other land management practices', mainly pasture, crops, fences and water.

3.4 Some animal welfare organisations have argued that, although kangaroos do cause some damage to rural properties, there has been little documentation or quantification of those deleterious effects. They are sceptical that the amount of damage done by kangaroos justifies the killing of millions of kangaroos each year.

3.5 It should be said at the outset that, until recently, there has been little attempt by government authorities to document the deleterious effects of kangaroos on other land management practices. In 1984 and 1985, three literature reviews were done by government bodies primarily for this Committee. In addition, the BAE prepared a paper on kangaroo damage based on data collected ten years previously. The ANPWS commissioned the CSIRO to do a study, based on farmer perceptions of kangaroo damage, the results of which were published recently. Given the uncertainty of the evidence of damage done by kangaroos, it is understandable that people concerned about the killing of kangaroos have some scepticism about the justification for a kill of such proportions.

3.6 In this chapter, the Committee outlines the information available to it on the nature and extent of the deleterious effects of kangaroos on other land management practices.

Perceptions of Kangaroo Damage

3.7 Before the Committee examines the evidence on the damage done by kangaroos to properties and other land management practices, it is desirable to note the distinction between 'perceptions' and 'reality'.

3.8 Greenpeace argued that although the issue of damage to agriculture as a justification for kangaroo culling was of

'critical' importance, the alleged damage could not be quantified:

> It seems that a lot of farmers cannot really quantify the damage being done. A lot do not know although they think they do know. I believe they are telling the truth, that they think they know how many kangaroos are on their property; they are not lying. But it is not a true assessment.[1]

3.9 Dr N. Shepherd of the NSW NPWS, in a paper on the impact of kangaroos on agriculture, wrote:

> The perception of agricultural managers is important; they perceive kangaroos as pests - not only because of dietary intake and crop damage, but also because of competition for water, damage to fences, and as a common cause of motor vehicle accidents. A recent survey in the Western Division of New South Wales found that 68% of graziers regarded kangaroos as their major problem after variability in weather... Because of this, agricultural managers will kill kangaroos whether they are authorised to do so by the wildlife agency or not.[2]

3.10 Sixty-seven per cent of landholders who were surveyed in Victoria claimed they did not want kangaroos on their property.[2A]

3.11 Dr Giles of the NSW NPWS told the Committee:

> I read a very succinct statement by some people from the US Fish and Wildlife Service recently that said that if the rationale of culling animals is that they compete with domestic stock, it does not matter whether the competition occurs or does not so long as the landholders perceive that it does.[3]

3.12 Sometimes damage is attributed to kangaroos but the real perpetrator is another animal or even insects. In addition, one species of kangaroo may be blamed for damage which is actually done by another species.

3.13 In the Kinchega area of New South Wales, the NSW NPWS first thought that damage to vegetation during the 1982-83 drought was caused by kangaroos, but further investigation indicated that pasture insects were responsible.[4] The Queensland NPWS has also drawn attention to the role of native insects, particularly termites, in pasture losses.[5] Other animals such as pigs, mice, rabbits, hares, donkeys, goats, wombats and emus may also be responsible for damage to pasture. The damage caused by other animals is variable. It is also often difficult to attribute any particular damage to a specific animal. For example, the Victorian Fisheries and Wildlife Service commented that in national parks other than within the Mournpoul block:

> we cannot be certain what proportion of the grazing effect is due to rabbits, what proportion is due to kangaroos and what proportion may be due to some other grazing animal.[6]

3.14 In 1986, the CSIRO told the Committee that research had been in progress for three or four years to try to separate the effects of rabbits and kangaroos on pasture.[7]

3.15 It is not always easy to decide which species of kangaroo is responsible for pasture damage. In the 1950s and early 1960s in north-western Western Australia, graziers observed grey kangaroos during the day and presumed that they were responsible for damage to pasture. In reality, at night a large number of euros came down from the hills to feed on those pastures.[8]

Competition between Kangaroos and Livestock for Food

3.16 As mentioned above, the Committee received three reviews of the scientific literature on the effects of kangaroos on properties and discussion of the subject.

3.17 The Australian Bureau of Animal Health submitted a short paper to the Committee in July 1984.[9] The Bureau drew upon a number of research studies and argued that there was minimal competition between kangaroos and livestock except during droughts. Both the NSW NPWS[10] and the ANPWS[11] criticised the Bureau's review for not reflecting more fully the results of research done in this area which, in their view, pointed to greater competition than that which the Bureau had mentioned.

3.18 Dr Shepherd of the NSW NPWS commented in a discussion paper [12] that herbivores that have co-evolved in a particular environment have learnt to co-exist without direct competition. However, herbivores which have not co-evolved , such as kangaroos and domestic livestock, are likely to compete for available resources. This competition is tempered by some degree of temporal and spatial separation.

3.19 Spatial separation may arise from the need to be close to a watering point by one species and not by another. A requirement to keep near to cover may deter one herbivore from grazing beyond a certain distance from cover.

> Species show temporal separation by eating the same plant species at different times or at different vegetative stages. Sequential use will be directly competitive only if one herbivore affects the ability of the other to make full use of the total resource (either by modification or removal).[13]

3.20 Dr Shepherd went on to discuss plant selection:

> Herbivores show dietary specialisation by selecting particular species of plants and/or portions of individual plants. As a general rule specialisation is most apparent when vegetation is abundant and decreases as this resource declines. However, in some plant communities species that are usually left ungrazed may be eaten by a particular

> herbivore as pastoral conditions decline. When this occurs there will be an apparent decrease in competition between herbivores, but this needs to be examined in relation to the effects of each herbivore on reserves of preferred plant groups.
>
> Overlap in diet preferences is only one aspect of competition between herbivores - only if the resource is limiting can a qualitative overlap in diet lead to competition.
>
> Another aspect is duration of direct competition. In the context of domestic livestock and kangaroos it is usually irrelevant that competition may be of short duration: decisions by the landholder will be made in response to observed competition or in anticipation of it. An example is the attitude of rangeland graziers to spelling of paddocks to store feed. Many view this as a waste of time because of the ability of kangaroos to move freely between paddocks and thus utilise the "stored" resource.[14]

3.21 The ANPWS submitted a paper entitled 'The Impact of Kangaroos on Agricultural, Pastoral and Forestry Activities'.[15] It supported the views expressed in Dr Shepherd's discussion paper and went on to say:

> .... it is considered that there is adequate evidence that the impact of kangaroos on agricultural and pastoral production is real, though variable in time and space.[16]

3.22 Apart from the research referred to in the earlier reviews, the ANPWS also drew attention to other relevant papers and commented that the findings contained in these papers did not alter the conclusions of the ANPWS.[17]

3.23 The ANPWS also drew attention to a number of studies which showed that some of the smaller macropods caused damage to crops and pasture.[18]

3.24 The Committee received evidence in Western Australia that kangaroos have a detrimental effect on rangelands because they slow the rate of recovery of degraded rangeland and may even lead to the continued decline of rangeland plant species.[19] It was pointed out that rangeland recovery required the removal of livestock and control of kangaroos as uninhibited grazing by kangaroos would not allow adequate regeneration of desirable plant species to occur.[20]

3.25 The adverse impact of the kangaroos on the environment may have been exacerbated by the provision of artificial water supplies. One witness stated that in an area of Western Australia, which now contains 1000 watering points, there were originally only 26 permanent natural watering points.[21] The increased provision of water has enabled a higher density of kangaroos to inhabit such areas. Dr G. Arnold of the CSIRO in Western Australia stated that the evidence gathered from the rangelands of Western Australia tends to support the argument that the provision of water particularly assists the red kangaroos in the low rainfall regions.[22]

3.26 With regard to New South Wales, Dr Shepherd commented:

> The extension of watering points into the far west of New South Wales and into the arid zone has probably seen a fairly substantial increase in the kangaroo populations on rangelands. If that is the case, then those kangaroos may in fact be having a detrimental effect of their own on the rangelands. They eat the flora and they probably interfere to some extent with the remaining native fauna. It would be desirable under those circumstances to bring those populations back to a level which was more compatible with the rangeland environment. And that is irrespective of whether we have sheep on those rangelands or not.[23]

3.27 Dr Robertson of the University of Melbourne, who did a

study of the dietary habits of eastern grey kangaroos, noted that a 'major failing' of available research on macropod grazing was the lack of differentiation between the effects of different species of macropod. He recommended that future studies:

> ... should be more clearly designed to more clearly evaluate the effects of different species of macropods on specific plant communities.[24]

3.28 Dr Caughley acknowledged that different species had different diets but upon close examination 'the thing that impresses you is the similarity rather than the difference'.[25]

3.29 Dr Robertson found that diet preferences varied among macropod species but the diet of the eastern grey kangaroo, for example, consisted almost exclusively of grasses and 'it has been shown to preferentially graze grasses even when potentially nutritious herbs are available.' They also prefer certain low fibre species of grasses and select new green leaves in preference to old material.[26] Dr Robertson's research revealed that eastern grey kangaroos did not eat trees and shrub seedlings.

3.30 Similar findings were obtained by R.J Taylor[27] who concluded that clovers and other similar herbs were not readily eaten by eastern grey kangaroos and euros.

3.31 Dr Robertson hypothesised that kangaroos may be deterred from eating clovers and other legumes because of the possibility of the absorption of toxic chemicals from these dicots. He argued that kangaroos rely heavily upon the breakdown of the cell walls of grasses by the symbiotic bacteria in their forestomach and were particularly sensitive to the toxins from dicots which inhibit these bacteria. He added that black wallabies prefer dicots and avoid grasses because of a totally different nutritional mechanism.[28]

3.32 Dr Shepherd noted that no available study had run the full gamut from good season to drought and that this may explain why there has been difficulty in assessing when competition occurs and its magnitude.[29]

3.33 The NSW NPWS argued further that although there was sufficient evidence already available to indicate the existence of a broad dietary overlap, competition is determined by a number of factors of which dietary overlap is only one, such as season, population and amount of food available. It argued that the complexity of the relationship would necessitate several lengthy research projects and would make extrapolation hazardous.

3.34 Mr Poole of the CSIRO commented that a wide range of research projects have been undertaken but because they have been limited to specific species and habitats, cross-comparisons have been difficult to make. In addition, little attempt has been made to examine the economics of competition.[30]

3.35 The Australian Agricultural Health and Quarantine Service (AAHQS) took the view that properly conducted experiments could provide the data to establish a basis for extrapolation.[31] Dr P. Rawlinson of the Australian and New Zealand Federation of Animal Societies (ANZFAS) argued that State fauna authorities should have done research on competition between kangaroos and livestock long ago. He went on to say that if the States were unwilling to do this research, it should be done by the Commonwealth.[32]

3.36 ANPWS commented that:

> Shepherd's conclusion that meaningful research in this area is difficult and expensive also is supported but this does not mean that further research should not be undertaken.[33]

3.37 The Agriculture Protection Board of Western Australia submitted that:

> Currently used techniques of diet estimation in herbivores are best regarded as being qualitative or only approximately quantitative. Although it may be possible, in some circumstances, to establish a quantitative procedure, a considerable expenditure of time and resources will be necessary to do so.[34]

Crop Damage

3.38 Steele Rudd sketched an early perception of kangaroo damage:

> We took it in turns to watch the barley. ... It was terrible going out, half awake, to tramp round that paddock from fire to fire, from hour to hour, shouting and yelling. And how we used to long for daybreak! Whenever we sat down quietly together for a few minutes we would hear the dull thud! thud! thud! - the kangaroo's footstep.
>
> At last we each carried a kerosene tin, slung like a kettledrum, and belted it with a waddy - Dad's idea. He himself manipulated an old bell that he had found on a bullock's grave, and made a splendid noise with it. It was a hard struggle, but we succeeded in saving the bulk of the barley ...[35]

3.39 In areas of intensive cropping where most of the woodland has been cleared, there are few kangaroos and, consequently, little damage to crops. However, on the edge of the wheat belt, kangaroo damage can be serious, particularly in areas where the expanding wheat belt has extended into woodland and paddocks are surrounded by scrub.[36] Kangaroos cause damage to crops not only by eating them but also by trampling.

3.40 The fact that crops in some areas suffer from the depradations of kangaroos is not in question - even the animal welfare organisations accept that such damage occurs. The extent of the damage and the means used to protect those crops are, however, subject to disputation.

3.41 The AAHQS told the Committee that there is little quantitative information available on the extent of damage.[37] Further, perceptions of kangaroo damage to crops can be influenced by ignorance of other causes of damage. Such things as weather damage to crops can distort assessment of kangaroo damage. Sometimes, the results of a minor hailstorm on a crop can be very similar in appearance to that of kangaroo damage.

3.42 The AAQHS, NSW NPWS and ANPWS all agreed that kangaroos were perimeter feeders because of their preference for remaining close to cover.[38] The impact of perimeter grazing is dependent upon the shape of the crop paddock. Large square paddocks with little available cover usually suffer less damage than long, narrow paddocks adjacent to scrub.[39]

3.43 Another consideration is the availability of other feed. It is significant that many crops have their early growing phase during winter when there is little pasture growth.[40] A winter wheat crop provides attractive and nutritive food for kangaroos.[41] Damage to the crop during its early growing stage leads to a retardation of growth of that part of the crop, which is then still green when the rest is ripe. When the crop is harvested, the grain is either rejected or discounted at the grain terminal, depending upon the extent of the damage.

3.44 Most species of macropod are capable of inflicting damage upon crops. There is evidence that grain and lucerne crops are eaten by not only eastern grey and western grey kangaroos but also by the red-necked, whiptail, black-striped and swamp wallabies and the wallaroo. The rufous rat kangaroo can make a

significant impact on the tubers of a potato crop and even the uncommon Lumholtz's tree kangaroo of north-eastern Australia causes damage to maize crops.[42] The range of the red kangaroo is too far west to have much impact on crops, except where they have been grown in marginal rainfall areas.

3.45 Representatives of the National Farmers Federation (NFF) stated that kangaroos do spoil and trample crops, especially grazing oats.[43] However, Dr Arnold commented that kangaroos have 'very regular' habits, as kangaroos usually make only one or two entry points to the crop and once having made a path they will stick to that path. He considered that the amount of damage done by trampling is 'usually quite small'.[44] Dr Robertson found that although kangaroos follow fixed pathways he concluded that in a wheat or annual crop paddock they may be responsible for considerable trampling damage.[45]

Impact on Livestock Watering Points

3.46 A number of witnesses stated that kangaroos competed with livestock for water. A representative of the Agriculture Protection Board of Western Australia said that in the pastoral areas of Western Australia, kangaroos compete for artesian water supplies.[46] AAHQS observed that there was 'little doubt that large numbers of kangaroos can reduce reserves of valuable water'.[47] The Director of AAHQS told the Committee that little scientific information had been assembled and added that further research was required.[48]

3.47 The NSW NPWS pointed out that evaporation from dams far exceeds consumption by kangaroos. Research indicates that red kangaroos drink less frequently than sheep, once every five days as compared to twice a day, and a smaller volume of water, 39.5 ml/kg/day as compared to 173.4 ml/kg/day.[49] Under normal circumstances, there is enough water for livestock and kangaroos.

However, when water reserves are low, competition does occur. The NFF stressed the cost of pumping and transporting water in droughts and the extra costs imposed on landholders when some of that water is drunk by kangaroos.[50]

3.48 Respondents to a survey of 122 pastoral members of the United Farmers and Stockowners of South Australia Incorporated found it difficult to estimate costs associated with the impact of kangaroos on watering points. Some responses indicated that landholders were forced to use motor-driven pumps rather than windmills more often during calm periods because of the presence of the large numbers of kangaroos. Pumping water for livestock which was drunk by kangaroos cost 'hundreds of dollars' in diesel fuel during summer months. However, 44 respondents (36 per cent) said that kangaroos were not a problem around watering points.[51]

3.49 Some witnesses suggested that the fouling of water supplies by kangaroos was sometimes a problem.[52]

Damage to Fences

3.50 Several witnesses stated that kangaroos caused damage to fences but there was a lack of quantitative information.[53] Dr Caughley confirmed that kangaroos damaged fences but the extent of that damage was subject to the perceptions of landholders.[54]

3.51 Representatives of farmer organisations stated that if one categorised the types of damage done by kangaroos, kangaroo damage to fences ranked second to grazing damage to pasture.[55] The material and labour costs for repairing fences were extra costs borne by farmers. In addition, valuable livestock, such as fat lambs, could be lost through holes in fences[56] or, conversely, straying livestock, with serious parasitic infestations such as sheep lice or infections such as footrot,

could gain entry through holes in fences and so contaminate other livestock.

3.52 Kangaroos appear to cause minimal damage to conventional, stockproof, wire-strand fences and the fences are no obstacle to their progress. Occasionally, in a state of excitement, they knock over, or otherwise damage, old or defective fence posts.[57] Plain wire fences, which are largely located in the pastoral areas, are also exposed to damage when large kangaroos attempt to jump over them. If their legs fail to clear the top wires, the resulting entanglement could damage the fence and fatally entrap the kangaroo.

3.53 Kangaroos force holes in rabbit netting. Netting fences need to be constantly maintained and even small macropods such as pademelons are able to tear holes in wire netting. Once an entry hole is made, repairs are demolished or bypassed as soon as they are completed.[58]

3.54 Kangaroos also use holes that other animals, such as wombats and emus, make in fences.

Damage to Forestry

3.55 The Director of the ANPWS stated that one aim of the kangaroo management was to prevent the deleterious effects of kangaroos or wallabies on forestry production.[59] In particular, the Tasmanian NPWS listed as a specific aim of its wallaby management programme the containment of the deleterious effects of wallabies on forestry.[60] It has become apparent to the Committee that the exact nature of macropod damage to forestry is again related to the impact of different species of kangaroo. Dr Arnold of the CSIRO studied western grey kangaroos in pine plantations and reported that there was no damage to the plantation, or at least far less damage than that inflicted by

sheep and cattle.[61] The ANPWS reported that there was a paucity of information on kangaroo damage to forestry for mainland Australia.[62] However, in a review of the literature, it was clearly established that, at least in Tasmania, wallabies heavily browsed native and exotic seedlings and at times the damage was extensive and severe.[63]

3.56 A survey by the NSW Forestry Commission reported damage by both kangaroos and wallabies in the browsing of seedlings and saplings of both native and exotic trees and the trampling of saplings and damage to rabbit proof fences. The species responsible for the damage were identified as red and grey kangaroos, swamp wallabies, red-necked wallabies, black-striped wallabies and red-necked pademelons. It concluded that although there was wide damage throughout the State it varied much in frequency, extent and season. It further concluded that kangaroos and wallabies were capable of doing serious damage to forests.[64]

Road Accidents and Motor Vehicle Damage

3.57 The NSW NPWS submitted that kangaroos are a common cause of motor accidents.[65] These accidents can result in fatalities and serious injuries.[66] However, it is difficult to determine the extent of this damage, as all of the available information is anecdotal. There are no statistics kept of the number or cost of accidents caused by kangaroos.

Economic Estimates of Damage

3.58 Until the commencement of the Committee's inquiry, few studies had been done quantifying the damage caused by kangaroos. Those done were all limited in scope. Since then, both the BAE and the CSIRO have published the results of surveys of the costs attributed to kangaroo damage. Before examining the BAE and CSIRO

surveys, it is worthwhile examining the earlier estimates of kangaroo damage.

3.59 Ms S. Arnold, Co-ordinator of Australians for Animals, was aware of two very limited studies of damage, one in Victoria on marginal and semi-marginal lands which gave an annual maximum damage per property of $4500 and another, compiled in the Darling Downs, which gave an annual total of $2000 to $3000.[67] The Tasmanian Department of Agriculture calculated that on Flinders Island wallabies grazing newly sown pasture intended for sheep were consuming feed that would earn the landholders $140 per hectare per year. A similar study was done for dairy pastures grazed by wallabies and concluded that the pasture feed that was consumed deprived landholders of income of approximately $400 per hectare per year.[68]

3.60 In the survey conducted by the United Farmers and Stockholders of South Australia, 81 of the 122 operators surveyed responded that kangaroos had affected their stocking rates from five to 50 per cent, with the majority estimating a 20 per cent livestock reduction factor. This meant that if the average pastoral lease carried 6000 sheep, the landholder could, on average, have gained an extra $12 000 in income per annum if kangaroos were removed. In addition the operators reported an amount of $403 860 for total damage to fencing or $3310 per property, which included both material and labour costs.[69]

3.61 Mr M. Lloyd of the Primary Industry Association of Western Australia told the Committee that he had an annual crop loss of between one and two per cent. Another four to five per cent of his crop was partially damaged. This amounted to a $5000 loss per year to his property.[70] A survey of approximately 1000 grain farmers in 1979 in the South West Downs of Queensland indicated an average crop loss of $10 000 over a period of two months. Damage to coastal sugar cane crops in Queensland in 1982 was estimated at $128 400 for the industry.[71]

3.62 In 1985 the BAE analysed data which were obtained in a supplementary questionnaire to the 1973-74 BAE Grazing Industry survey.[72] This questionnaire asked landholders to estimate agricultural and pastoral damage caused by kangaroos. Approximately 500 landholders responded to the questionnaire and the financial data were indexed to 1983-84 values using BAE indices.

3.63 The BAE estimated the total cost of kangaroo damage to the agricultural sector in 1983-84 as $148 million although it acknowledged that the amount of $148 million may be inaccurate by as much as 50 per cent either way. The largest component of the cost was that attributed to lost livestock carrying capacity (51 per cent), followed by crop losses (27 per cent) and fences and materials (10 per cent). The average agricultural cost per kangaroo was estimated to be $3.72 with an average cost per property of $1364. Table 3.1 shows the carrying capacity forgone per kangaroo and Table 3.2 shows the average costs to agriculture caused by kangaroos.

Table 3.1 Average Costs to Agriculture Caused by Kangaroos, by Zone (1973-74 Indexed to 1983-1984 dollars)

Zone	Average cost per property of kangaroos	Average cost per kangaroo
	$	$
Wheat-Sheep	1 441	11.26
High Rainfall	1 124	2.87
Pastoral	2 073	1.47
All zones	1 364	3.72

Source: BAE, 'An Economic Perspective on the Population Management of Commercially Harvested Kangaroos'.

Table 3.2 Carrying Capacity Forgone per Kangaroo

Zone	Physical carrying capacity forgone per kangaroo (1973-74)	Value of carrying capacity forgone per kangaroo (Indexed to 1983-84)
	sheep equivalent	$
Wheat-Sheep	0.90	4.68
High Rainfall	0.31	1.81
Pastoral	0.20	0.41
All zones	0.36	1.76

Source: BAE, 'An Economic Perspective on the Population Management of Commercially Harvested Kangaroos'.

3.64 Although there was a normal season in 1973-74, there was an export ban on kangaroo products from 1973 to 1975. The fall in demand for kangaroo products may have led to an increase in the population of kangaroos because of reduced shooting by the industry. In addition, Mr Rawlinson of ANZFAS commented that, as the export industry had just been abolished by the Federal Government, 'many people were in fact intent on trying to show that kangaroos were causing them immense problems'.[73] The BAE itself acknowledged the subjective nature of the landholders data.[74] It also acknowledged that the reliability of farmers' perceptions was not known but it was reasonable to assume that a bias operated because of vested interests.[75]

3.65 The ANPWS engaged the CSIRO as a consultant to undertake research into the economic effects of kangaroos on pastoral and agricultural production. Ms L. Gibson and Mr M. Young of CSIRO obtained data for a computer model by means of a questionnaire sent to:

> 906 landholders in five pastoral regions, two marginal cropping regions and three established cropping regions.... The response rate in each of these regions ranged from 56% to 81% with an average response rate of 66%. No non-response bias was detected.[76]

3.66 The ten regions were all situated in the commercial shooting areas of the four mainland States which have approved kangaroo management programmes.

3.67 The CSIRO team concluded:

> Landholders perceptions and estimates of the damage and losses incurred from kangaroos were used to produce a first estimate of losses to agriculture from kangaroos under the current Kangaroo Management Program. The estimate of losses which could be quantified for the commercial shooting areas of mainland Australia totalled $113 million for the

1984/85, financial year. The gross value of agricultural production for the area was $3,533 million in 1984/85, the estimate of net losses therefore represents 3% of the gross value for that year. Unquantified losses include those due to foregone management opportunities and changes in management practices induced by the presence of kangaroos. The estimate of losses, derived using landholders perceptions of the damage and losses caused by kangaroos was larger in the areas of the wheat/sheep zone ($85 million) where commercial kangaroo shooting takes place, than in the pastoral areas ($27 million) of Australia, reflecting the greater productivity of the wheat/sheep zone compared with the pastoral zone.

The opportunity cost of fodder consumed by kangaroos accounts for 51% of the estimated losses due to kangaroos, lost crop production for 27%; the opportunity cost of water consumed by kangaroos accounts for 8% of the losses whilst the cost of fence repairs represents 14%.[77]

3.68 Animal welfare organisations and the NSW NPWS[78] (Correspondence, April 1985) have drawn attention to the limitations of estimates of economic loss attributed to kangaroos which have been derived largely from landholder perceptions rather than from empirical information. Notwithstanding these limitations, it is obvious from the CSIRO study that significant damage has been caused by kangaroos.

Conclusions

3.69 The fact that kangaroos cause damage to properties is irrefutable. The extent of that damage is subject to serious disagreement among the various parties to the debate. There is no scientific study or other information which, with any sufficient degree of reliability, establishes the extent or cost of kangaroo damage.

3.70 Kangaroo damage appears to be, from the evidence given the Committee, not inconsiderable. The nature and extent of that damage varies considerably in both time and space. There are many factors which contribute to the extent of the damage and the cost of it to landholders.

3.71 The evidence points to a need for landholders to protect crops in some areas and pastures in others. The total damage, even without reliable estimates, seems to be enough for government to operate a management programme for kangaroos, which could include compensation. Management programmes are discussed later in this report.

CHAPTER 4

HISTORY OF KANGAROO KILLING AND THE ESTABLISHMENT OF KANGAROO MANAGEMENT PROGRAMMES

Introduction

4.1 In this chapter, the Committee recounts the history of kangaroo killing and the establishment of management programmes to conserve the kangaroo.

4.2 Under the Constitution of the Commonwealth, the management of wildlife is a responsibility of the States, except in the Territories which are under the control of the Federal Government. The export and import of wildlife and wildlife products are, however, administered by the Federal Government under its constitutional power over overseas trade and commerce.

History of Kangaroo Killing

4.3 During the early colonial period, kangaroos were killed primarily as a source of meat and hides. With the spread of the pastoral industries into the hinterland, landholder tolerance of kangaroos waned as they caused damage to fences and competed with livestock for pasture and water. They became regarded as pests and various measures, including the use of the battue, were taken by landholders to rid themselves of this nuisance. Little or no concern was shown for the cruelty perpetrated against kangaroos in attempts to reduce their numbers or to exterminate them.

4.4 Landholders were also indiscriminate in killing the various species of kangaroo. For some species, the killing and loss of habitat from the clearing of land for agriculture

resulted in either extinction or depletion of numbers to the point that only a few pockets now survive.

4.5 The general perception of kangaroos as pests was reflected in legislation enacted in some States proscribing kangaroos as vermin and placing bounties on their scalps.

> In Queensland alone, over a period of 40 years prior to 1917 some 2 million dollars were paid in bounties and government subsidies for 26 million scalps. During the subsequent 40 years a stable kangaroo harvesting industry evolved and processed 3-400 000 skins annually. During 1950-1960, 450 000 skins were harvested annually, worth at least $300 000 per year to the shooters.[1]

4.6 Until the 1950s, only the skins of kangaroos were taken by commercial shooters. When myxomatosis reduced the rabbit population, butchers and pet food processors turned to kangaroo meat. This new demand for kangaroo meat lured many people into the industry in search of quick money. The State Government responded by introducing restrictive legislation to regulate the shooting of kangaroos and this brought stability back to the industry.

4.7 By 1970 there was enough public pressure against the commercial killing of kangaroos for the appointment of the House of Representatives Select Committee on Wildlife Conservation. The Committee's terms of reference were wider than kangaroos but, because of the interest in kangaroos, the Committee presented an interim report entitled 'Conservation and Exploitation of Kangaroos' to the House of Representatives in November 1971. The Committee concluded that kangaroos were not in danger of extinction and it did not recommend a total ban on killing kangaroos.

4.8 Despite the report of the Select Committee, public criticism of kangaroo killing continued. In January 1973, the

Minister for Customs and Excise announced that he would not consent to the export of kangaroo products as from 1 April 1973 until he was assured by the Minister for Environment and Conservation that kangaroo killing would not endanger the species. The export of kangaroo products was prohibited under item 1 and item 8 of the Second Schedule of the Customs (Prohibited Exports) Regulation without the prior consent of the Minister for Customs and Excise.

4.9 On 9 March 1973, at a meeting of Federal and State Ministers responsible for nature conservation, it was decided to set up a working party. The report of that working party was considered by the Minister for Environment and Conservation who indicated that he would advise the Minister for Customs and Excise to allow the export of kangaroo products when he had:

i) received from each State wishing to export kangaroo products, an adequate program for the management of the kangaroo species involved,

ii) become satisfied that the program was being effectively implemented, and had

iii) agreement from each State that an upper limit to harvesting would be fixed annually following consultation between relevant State and Commonwealth authorities and recommended to the Minister for Customs and Excise by the Minister for Environment and Conservation.[2]

4.10 Kangaroo management programmes for five States were approved and exports permitted progressively between February 1975 and June 1976. Quotas which set upper limits on the numbers of each species killed under the programmes were introduced and reviewed annually.

Export of Kangaroo Products to the USA

4.11 Since the early 1970s, the killing of kangaroos as an issue of public concern has not been confined to Australia. In the last few years, the international debate has centred on the European Parliament. Animal welfare organisations have focussed their attention on the Environment Committee of the European Parliament in an effort to have that Committee recommend a ban on the importation of kangaroo products into Europe. This would stultify trade in kangaroo skins as Europe is the major market for kangaroo skins. The high tensile strength of the kangaroo skin makes it desirable for use in the manufacture of high quality leather footwear and accessories.

4.12 Until a few years ago, the main overseas market for kangaroo skins was the United States of America. It was there that animal welfare organisations, both American and Australian, sought to stop the trade.

4.13 A ban on the commercial importation of products derived from red, eastern grey and western grey kangaroos was imposed by the Fish and Wildlife Service of the United States Department of the Interior from 30 December 1974, because the Service believed that continued killing would endanger those species. The three species were also listed as 'threatened species' under the United States Endangered Species Act 1973.

4.14 The Australian Government objected to the United States' action arguing that the three species of kangaroo were not in any danger of extinction from commerial shooting. After two officers of the United States Fish and Wildlife Service visited Australia in 1975, the United States Government agreed to lift the bans provided that the Australian Government certified that management programmes for the three species were approved and operating. After the approval of the management programmes prepared by the five States, as mentioned above, the United States lifted its

import bans on products derived from kangaroos killed in those States.

4.15 The United States Government did not, however, remove the three species from the 'threatened list' under the Endangered Species Act. A requirement of that Act was the review of the status of listed animals every five years. In March 1980, Dr Anderson, a biologist with the USFWS visited Australia to obtain information on kangaroo populations and the management programmes. Population figures were given to him by the State fauna authorities and not from the Australian National Parks and Wildlife Service. Figures supplied for New South Wales and South Australia were based on aerial surveys, but those for Queensland and Western Australia were not. The Queensland NPWS estimated a total population of 30 million for the three main species in that State. Dr Anderson arrived at an estimate of 32 650 000 including 25 million in Queensland. The USFWS endorsed Dr Anderson's figure in the Federal Register on 16 June 1980.[3] On 29 April 1981 the USFWS published in the Federal Register a notice permitting the importation of kangaroo products.[4]

4.16 Between April 1981 and June 1983 various population estimates were published in Australia and in the United States of America. Some of these were based partly on the increasing number of aerial survey results which were then available. The aerial survey results were providing a better scientific basis for estimating kangaroo populations.

4.17 On 10 November 1982, the Australian Government petitioned the Director of the USFWS to permit the continued importation of kangaroo products into the United States of America. In the Government's submission, which was prepared by the ANPWS, details of kangaroo populations based on various surveys were included. The surveys showed an estimated population of 18 135 600 red and grey kangaroos for approximately 48 per cent of the continent. However, there was no warning by the ANPWS

against extrapolating on a pro rata basis to derive an estimate for the whole of Australia, which the USFWS did do in a notice published in the Federal Register of 8 April 1983. It was understandable that the USFWS should have made such an extrapolation, particularly in light of its earlier estimate of 32 million which was based on Queensland's estimate of 30 million. The ANPWS only slightly qualified the Queensland estimate in its submission of 10 November 1982.

4.18 In an Australian Information Service Fact Sheet on Commercial Harvesting of Kangaroos, published by the Australian Embassy in Washington in April 1983, the following information was given:

> Aerial and other surveys by government agencies show there is a maximum of 21 million red, eastern grey and western grey kangaroos. Their numbers could be much higher. Some estimates put the population at about 60 million.[5]

4.19 The ANPWS submitted to the Committee that it was not consulted about the compilation of the Fact Sheet. The publication by a Government authority of possible population estimates of 60 million kangaroos, particularly when official estimates were available, without reference to the relevant authority, was irresponsible. As the question of kangaroo killing had been a sensitive issue for some time, more care should have been taken by the Australian Information Service to ensure that the information it provided was accurate.

4.20 The estimate of 19.1 million kangaroos for the whole of Australia was published in a press release by the University of Sydney on 12 May 1983. The ANPWS, in a further submission dated 1 June 1983 to the USFWS, used this figure as the estimated total number of red and grey kangaroos in Australia. The figure was reiterated by the Australian Government representative at the

public hearing on 6 June 1983 in the United States of America at which the status of red and grey kangaroos was reviewed. It was used by the USFWS in its publication on 1 August 1983 in the Federal Register of a rule permitting the continued importation of kangaroo products.

4.21 Animal welfare organisations have criticised Australian authorities for either publishing wrong information or allowing the United States' authorities to arrive at a wrong estimate of total population from extrapolations of estimates for those parts of Australia covered by surveys, which were provided by Australian authorities. It was not explained to American authorities that the density of kangaroos in areas not covered by the surveys was very much lower than the areas surveyed. As a result of additional information supplied by ANPWS to the Committee and incorporated in the Hansard transcript of evidence of 24 April 1985, the Committee is satisfied with the response of the ANPWS to the criticisms.

4.22 However, it is one thing to act cautiously and use only 'scientifically' derived population estimates but it is another not to sound some warning to the USFWS not to extrapolate estimates for 48 per cent of Australia to the whole of Australia, which the USFWS actually did.

4.23 Although attention has turned towards developments in Europe in the last three years, there has been a continuing campaign in the United States to reimpose the ban on products derived from red and grey kangaroos. Congressman Mrazek has proposed a Bill to ban such imports, and even though it has not progressed far, the Bill had 116 co-sponsors in September 1987.[6] This level of support, if not enough to enact legislation to ban the importation of kangaroo products, does demonstrate more than a little concern in that country about the commercial killing of kangaroos.

Export of Kangaroo Products to Europe

4.24 During the 1980s, the emphasis in the export trade of kangaroo products transferred from the United States to Europe. With it, the focus of attention by animal welfare organisations moved to the European Parliament. Some members of the Environment Committee of the European Parliament took up an interest in the subject.

4.25 In March 1984, a member of the Environment Committee, Dr D. Eisme, visited Australia to investigate kangaroo killing at first hand. He had discussions with the Committee but, at that stage, the Committee had not yet begun its hearings and inspections.

4.26 A Delegation of the European Parliament visited Australia in November 1985 as part of the normal inter-parliamentary exchange programme between the Australian and European Parliaments. Although kangaroo killing was only one of many issues that it wished to discuss in Australia, it spent more time on that issue than any other. Some members of the Delegation visited Roma in southern Queensland to have discussions with the Queensland National Parks and Wildlife Service and to see kangaroos on properties. The Committee met with the Delegation in Canberra and joined the members of the Delegation in Roma.

4.27 Mr H. Muntingh, the Rapporteur for Kangaroos on the Environment Committee of the European Parliament, visited Australia in April 1986. Towards the end of his visit, which took in three States, he had a long session with the Committee. At that stage of the inquiry, with some major hearings still to be held, members of the Committee were only able to give individual general impressions of the complicated issues involved in this inquiry. Those impressions were subject to change by evidence taken later and by detailed discussions of the issues in private, deliberative sessions of the Committee.

4.28 Mr Muntingh made a report and sponsored a resolution which was adopted by the European Parliament. This resolution urged the Commission and the Council to ban the importation of products derived from all kangaroo species other than those of the red kangaroo, the eastern grey kangaroo and the western grey kangaroo. Under the terms of the resolution, importers of products of these last three kangaroos would also be required to obtain import permits. The effect of the resolution, if it is acted upon by the Commission and the Council, is to maintain 90 per cent of the current trade, as that is the proportion of the trade of products derived from red and grey kangaroos.

Wildlife Protection (Regulation of Exports and Imports) Act 1982

4.29 Australia is a signatory to the Convention on International Trade in Endangered Species of Wild Fauna and Flora (1973) and its obligations under the Convention have been given effect in the Wildlife Protection (Regulation of Exports and Imports) Act 1982. Under the Act, native wildlife or products derived from them may only be exported with the permission of the Minister (presently the Minister for the Arts, Sport, the Environment, Tourism and Territories) provided that the animals were taken under a management programme for the protection, conservation and management of those species of animals, which has been approved by the Minister. This means that kangaroo skins and meat which are exported must have been obtained from kangaroos which were killed as part of an approved management programme.

4.30 Since the Act came into force in 1984, the relevant Minister has approved management programmes for Queensland, New South Wales, South Australia, Western Australia and Tasmania. However, no management programme was approved for Tasmania for 1987. There is no commercial shooting of kangaroos in Victoria.

4.31 Although not a formal part of the kangaroo management programme (KMP), but associated with it, is a quota which limits the number of each species which may be killed and processed by the commercial kangaroo industry under the programme. The limits set by the quota are not intended to be targets but the maximum safe number of kangaroos which can be killed so as not to affect the long-term viability of those species.

4.32 Constitutionally, a State Government can do what it likes in relation to kangaroos. The only sanction available to the Federal Government is the banning of exports of kangaroo products from that State.

4.33 In 1981, CONCOM endorsed the National Kangaroo Management Program which had the following objectives:

> *to maintain populations of all species of macropod over their natural range,
>
> *to contain their deleterious effects on pastoral and agricultural production,
>
> *to ensure that the best possible use is made of kangaroos taken in terms of the above.

4.34 These objectives were changed when CONCOM endorsed the National Plan of Management for Kangaroos on 30 May 1985. The new objectives, which are still current, are:

> *to maintain populations of kangaroos over their natural ranges; and
>
> *to contain the deleterious effects of kangaroos on other land management practices.

4.35 With the endorsement of the 1985 objectives, the earlier objective, 'to ensure that the best possible use is made of kangaroos taken in terms of the above' was deleted. Although this deletion did not change the attitude of CONCOM towards the use of

kangaroo products, it probably reflected prevailing public attitudes towards kangaroo killing.

4.36 The objectives of the 1986 KMP of Western Australia are the same as those of CONCOM. Each of the other States has a variation of the CONCOM objectives.

4.37 In the New South Wales KMP in a note under the principal aims, it is stated:

> The commercial kangaroo industry thus has no prima facie right to kill kangaroos independent of the need to protect property.

4.38 The aims of kangaroo management in the 1986 Queensland KMP were:

> 1. To ensure the survival of populations of all harvested species over their natural ranges; (achieved through a program of controlled harvesting, land acquisition and a Rural Nature Conservation Program providing for the integration of wildlife and rural industries ...)
>
> 2. To contain the deleterious effects of kangaroos on the legitimate rural enterprises of agricultural and pastoral production (achieved through the management and control of the kangaroo industry ...)[7]

4.39 In the following paragraph, it was stated:

> It is important to recognise that the kangaroo industry developed in response to the pest problem caused by these animals, and continues to fill that role. It does not, however, exist solely for this purpose. The kangaroo industry has existed in its own right for more than a century as the user of a valuable renewable resource, and thus serves not only the needs of the farmer but also its own interests. In this latter role the industry is constrained to act conservatively towards the kangaroos to

ensure its own survival, and thus to co-operate with the conservation Authority.

4.40 Mr W. E. Poole, in a paper published by ANPWS in 1984, wrote:

> The commercial utilisation of kangaroos is regarded by the State authorities only as a tool for controlling numbers of kangaroos on private lands and is aimed at keeping numbers of kangaroos within limits that are tolerable to landholders.

4.41 The above passage was quoted in the Supplementary Submission dated April 1985 of the ANPWS to the Committee.[8] It can be inferred, therefore, that the view of the ANPWS coincided with that of Mr Poole as the ANPWS did not make any comment to the contrary. That passage contradicts that which is contained in the Queensland KMP and quoted above. The Queensland Government made it quite clear that the kangaroo industry was not just a management tool to mitigate the deleterious effects of kangaroos on properties. At a time when CONCOM, which included the Queensland Minister for Tourism, National Parks, Sport and the Arts, had deleted the specific reference to the commercial use of kangaroo carcases in the objectives of the Plan of Management, the Queensland Government had maintained its qualification of the objectives in its KMP so that they were not in keeping with the spirit of the Plan of Management. Despite the implied contrary views of ANPWS, the Queensland KMP had been approved several times by the responsible Federal Minister. The Committee noted, however, that the qualifying paragraph was not included in the 1987 Queensland KMP.

4.42 Although there are differences in State KMPs which reflect the different circumstances in each State, there is no reason for the objectives of the five KMPs to differ from that approved by CONCOM.

4.43 Kangaroo management programmes have been aproved by the Federal Government since 1975. Their establishment had been made a prerequisite by the United States for the rescinding of the ban on the importation of kangaroo products which had been imposed on 30 December 1974.

4.44 When the Wildlife Protection (Regulation of Exports and Imports) Act 1982 was proclaimed in 1984, it was a requirement under section 10 that all animal products exported had to be derived from animals killed under a management programme. Consequently, new management programmes were approved by the Minister for the five States involved in the commercial killing of kangaroos.

4.45 Regulations under the Wildlife Protection (Regulation of Exports and Imports) Act 1982 stipulate that the Minister shall not approve a management programme unless he is satisfied:

> that there is available to the Designated Authority (the Director of the ANPWS) sufficient information concerning the biology of each species subject to the management program, and the role of that species in the ecosystem in which it occurs, to enable the Designated Authority to evaluate a management program for that species. (Regulation 5, sub-regulation (1)(a)).

4.46 Sub-regulation (c) of regulation 5 requires that a management programme:

> contains measures to ensure that the taking in the wild, under that management program, of any specimen:
>
> (i) will not be detrimental to the survival of the species or sub-species to which that specimen belongs; and
>
> (ii) will be carried out at minimal risk to the continuing role of that species or sub-species in the ecosystems in which it

> occurs and so as to maintain the species or sub-species in a manner that is not likely to cause irreversible changes to, or long term deleterious effects on, the species, sub-species or its habitat.

4.47 Sub-regulation (d) of regulation 5 requires that the management programme:

> ... provides for adequate periodic monitoring and assessment of the effects of the taking of specimens under that management program on the species or sub-species to which those specimens belong, their habitat and such other species or sub-species as are specified in writing by the Designated Authority as likely to be affected by that taking.

4.48 Kangaroo management programmes are now approved annually by the Minister for Environment and the Arts and cover one calendar year.

CHAPTER 5

CURRENT KANGAROO MANAGEMENT

Introduction

5.1 An outline of each of the kangaroo management programmes (KMP) is set out below. Particular aspects of the programmes are dealt with in more detail. The programmes are published by the ANPWS.

Queensland

5.2 In Queensland, the conservation and killing of kangaroos is controlled under the Fauna Conservation Act 1974. Section 29(i) of the Act states:

> Upon being satisfied at any time that a particular species of protected fauna is present in a district in numbers in excess of sufficient numbers to ensure its satisfactory survival, the Governor in Council may from time to time by Order in Council declare with reference to that district an open season in respect of that species of protected fauna for such period as he thinks fit.

In 1986, open seasons were declared for red kangaroos, eastern grey kangaroos, western grey kangaroos and whiptail wallabies in specific Fauna Districts of Queensland.

5.3 A permit is required by a person who wishes to kill open season species of kangaroo for commercial or other purposes. A shooter must declare the areas in which he intends to work and

have the written permission of the relevant landholders. Shooters must submit monthly to the Queensland NPWS details of the kangaroos they shot for commercial purposes.

5.4 Fauna dealers have to be licensed and their premises registered, both by site and purpose (skins, carcases or both). They, too, have to provide monthly details of all consignments handled at each premise. No more than 150 dealers may be licensed at one time and restrictions may be placed on the number operating in any local government area at one time.

5.5 Shooters are issued with self-locking, numbered plastic tags which must be affixed to each carcase or skin. Tags are non-transferable, non-refundable and may only be used in the year of issue. Dealers are prohibited from accepting skins or carcases which do not have tags affixed. Shooters must have made arrangements with a fauna dealer to accept kangaroo carcases before they shoot the animals.

5.6 Once the annual quota is approved by the responsible Federal Minister, the total quota is divided among the dealers in accordance with a formula based on dealings over the previous three years and the current location and use of buying sites. Initially, each dealer is allocated part of his or her annual quota and the balance is issued after July provided that the composition of the kill handled by the dealer meets certain criteria which reflect sound management of kangaroos in that area. These criteria are set out in the KMP.

5.7 The Queensland NPWS issues more tags than the number of kangaroos provided for in the quota. It defends this practice by arguing that the point of control is at the dealer and dealers who exceed their quotas are liable to have the balance of their quotas withheld or their licences suspended or cancelled.

New South Wales

5.8 Under the National Parks and Wildlife Act 1974, kangaroos are protected except where a licence has been issued to a landholder under section 121 by the NSW NPWS. According to the KMP for 1987, only red kangaroos and eastern and western grey kangaroos may be killed. The KMP states:

> The process of licence issue begins with a landholder approaching the Service about the number of kangaroos on his/her property and the damage these kangaroos are causing or may cause. This application is submitted to the appropriate District Office of the National Parks and Wildlife Service (the Service). It must indicate the type and seriousness of the damage caused or anticipated, the species involved, the estimated number of that species present, and the number proposed to be killed.
>
> An authorised Service Officer must then consider whether to issue a licence or not and, if yes, the number of each species allowed to be killed under that licence. The licence is issued under s.121 and is called an Occupier's Licence. This licence will state the number of further conditions the Service Officer considers warranted. The Occupier's Licence is specific to a property and is not transferable. A batch of serially numbered cloth tags must be issued with the Occupier's Licence. The serial numbers of these tags are recorded against the licence in the District Office records. The total number issued with the licence must correspond exactly with the number of kangaroos allowed to be killed under the licence.[1]

5.9 Once a landholder has permission to kill a number of kangaroos, he decides whether to shoot them himself or to use an agent, in which case the carcases do not enter the commercial trade, unless the landholder holds a trapper's (professional shooter's) licence, or he arranges for a trapper to take them. A trapper who is licensed under section 123 of the Act may take kangaroos for commercial purposes.

5.10 If the landholder or his agent shoots the kangaroos, he has to affix a cloth tag to the carcase of each animal. A professional shooter affixes to the carcase both the cloth tag and a serially numbered plastic royalty tag, for which he has to pay a royalty, currently 50 cents a tag, to the NSW NPWS.

> The Licensed Trapper then delivers the carcass to a chiller. This is controlled by a Fauna Dealer (Wholesaler) who must be licensed under s.124. All premises where kangaroo carcasses are held by a Fauna Dealer (Wholesaler) must be registered in accordance with the Regulations. The location of the chiller is specified in the registration. Records of carcass numbers, skin numbers, species, weights, dates and the Licensed Trapper delivering them, are maintained by the Fauna Dealer (Wholesaler) for each chiller. These records must be lodged with the relevant Service District Office within 10 days of the end of each month.
>
> ... The Fauna Dealer (Wholesaler) then transfers the carcass to a boning-out works where the skin is removed and the meat is prepared for subsequent sale. The boning-out works must be registered as for a chiller, and similar records are required to be kept and lodged with the Service District Office. The tags stay with the skin, which is usually sent to a tannery for initial treatment (pickling) or full tanning. The tags are removed at this point. The tannery must be licensed (Skin Dealer's Licence; s.125), as must any Skin Dealer operating in this chain. Skin Dealers must also keep records and lodge returns.
>
> The meat eventually winds up with a retailer. Retailers operating in N.S.W. must also be licensed (s.124).
>
> ... Where the Service permits shooting for skins only, the Licensed Trapper must still comply with the records requirements. He may only sell the skins to a Fauna Dealer (Wholesaler) or to an interstate dealer.[2]

Western Australia

5.11 Kangaroo management in Western Australia is administered by the Department of Conservation and Land Management. Under the Wildlife Conservation Act 1950, kangaroos are protected except where the Minister responsible for the Act declares otherwise.

> Four species may be taken for the purpose of containing their effects on other land management practices (i.e. for the purpose of damage mitigation), by virtue of the provisions of Section 14(2)(a) (open seasons) or Section 15(1) and Regulation (5) (damage licences) of the State's Wildlife Conservation Act and Regulations.[3]

5.12 The product derived from three species - red kangaroos, western grey kangaroos and the euro - may be exported but the products from a fourth species, the agile wallaby, although subject to commercial use, may not be exported. Consequently, the agile wallaby is not included in the KMP for Western Australia.

5.13 The Department told the Committee that:

> In large numbers, the agile wallaby was exploited in the 1920s. In recent times our Department has permitted commercial carcass exploitation of agile wallabies in the order of 10 000 or 20 000 in a couple of years.[4]

5.14 Professional shooters are licensed by the Department to shoot kangaroos on specific properties. A shooter operating in the pastoral areas is issued with a licence from the Department in Perth, after a report from the district wildlife officer has been considered. A shooter operating in the agricultural areas in the south-west of the State may be licensed by the district wildlife officer or the Perth office of the Department. The shooter must have an appropriate firearms licence and the written permission of the landholders on whose properties he intends to

shoot. A shooter is asked on his application form for details of the calibre of the rifles that he owns. A licence is not issued to a shooter without an appropriate rifle. There is no test of his marksmanship.

5.15 In March 1986, there were 88 shooters licensed to shoot red kangaroos in pastoral areas and 34 to shoot grey kangaroos in agricultural areas.[5] The number of licences issued in the pastoral areas is fairly static and there is an upper limit. There is no limit placed on the number of licences issued in the agricultural areas but it seemed from the evidence that no great fluctuation occurs.

5.16 Shooters are issued with numbered royalty tags for which they pay 20 cents each to the Department. A tag must be attached to each carcase if the shooter intends to sell it to a dealer. There are three different coloured tags; one for each species, that is, the red and grey kangaroos and the euro. Although tags are generally issued to shooters, the landholder has ultimate responsibility for them.

5.17 Tags issued in one year may be used in the next year but the kangaroos killed in the second year are included in the quota for that year and not the preceding one. Each shooter is required to forward to the Department regular returns containing details of kangaroos shot and tags used.

South Australia

5.18 All kangaroos are protected in South Australia except as provided for under section 53(d) of the National Parks and Wildlife Act 1972. Under that section, kangaroos may be taken for, among other things, 'the destruction of animals that are causing damage or likely to cause damage to the environment or to crops, stock and other property'.[5A]

5.19 Three species of kangaroo are covered in the KMP for South Australia - red kangaroo, western grey kangaroo and euro.

5.20 The State is divided into two areas for management purposes - the 'Commercial Utilization Area' (CUA) and the 'Restricted Area'. Within these two areas, there are 4.5 million hectares devoted to national parks which are managed in a separate way.

Commercial Utilization Area

5.21 The CUA covers an area of 282 300 square kilometres and is divided into ten Kangaroo Management Zones (KMZ), which are based on biophysical characteristics. Each zone is an 'independent management unit within which kangaroo populations are monitored' and management strategies are worked out annually. The commercial quota submitted to the Commonwealth is the sum of the quotas calculated for each of the ten Zones. These are based on previous trends in population density obtained from shooters' records, expected climatic conditions and the results of annual aerial surveys.

5.22 Management strategies adopted by the SA NPWS are based on the following criteria:

> A. In KMZs where the "average density" of a species of kangaroo is less than one per square kilometre there will be no release of quota unless the zone is listed in B.
>
> B. In KMZs where the distribution of the kangaroos' habitat is disjunct and concentrations of animals do occur under low average densities. Commercial quota can be released if these concentrations of kangaroos are at a density to cause deleterious effects to the accepted land-use.

C. In KMZs where the average density of kangaroos is greater than one per square kilometre but less than a "warning density" commercial quota is released at the Ranger-in-Charge's discretion.

D. In KMZs where the average density is greater than the warning density, commercial quota is released via a general issue of permits to the owners of properties who apply (for) them. This release is not dependent upon a property inspection, until the total quota released within a KMZ reaches 90% of that quota allocated to that zone for the calendar year.

(1. AVERAGE DENSITY: The density of kangaroos by species over a Kangaroo Management Zone as determined by the annual aerial survey, or in exceptional circumstances, by widespread surveys (either aerial or ground) within the KMZ.

2. WARNING DENSITY: A mutually agreed upon density above which the population of kangaroos are perceived to have a widespread and deleterious effect upon the accepted land-use. This density does not pretend to relate to ecological carrying capacity or guaranteed maximum or minimum stocking rates. It is a density determined solely on social value judgements arrived at by discussion between groups with varying interests related to kangaroo management.)[6]

5.23 A permit, specific to a property, is required under section 53 of the Act to kill kangaroos for damage mitigation purposes. If kangaroos killed under that permit are used commercially, a self-locking plastic tag must be attached either to the carcase or the skin 'in the approved manner'. No tags are required if the kangaroos do not leave the property.

5.24 If kangaroos which are killed on a property are to be used commercially, the property owner, when applying for a permit, must nominate a registered processing firm to which those kangaroos will be sent. Only one firm may be nominated to take kangaroos from any particular property.

5.25 Property owners are required to submit a return to the SA NPWS within 14 days of expiry of the permit.

5.26 Shooters may be licensed to shoot either on a particular property or to shoot in any part of the State for which a commercial permit is valid. They receive the tags from the processor and furnish quarterly returns to the SA NPWS.

5.27 Processors are issued with permits 'to Keep and Sell Protected Animals (Carcasses and Skins)'.[7] They also have to satisfy the South Australian Central Board of Health 'as to their work's cleanliness and suitability'.

5.28 A permit may be issued for the import of kangaroo meat or carcases into the State, provided that prescribed conditions are met.

> This permit will not be issued until the applicant has established that the kangaroo products were obtained from kangaroos acquired from a legal source. Imp(or)t permits will be valid for multiple shipments of up to declared maximum amount for a maximum of period of three months. The import(e)r is required to advise the National Parks and Wildlife Service at least 48 hours before a consignment enters South Australia, and to provide monthly summaries of the amount of products imported.
>
> Kangaroo meat imported into South Australia in appropriately labelled packages of 2kg or less with the total consignments less than 100kg per month will be considered a processed article and will not require an import permit. Kangaroo meat imported in packages greater than 2kg weight or where the total consignments exceed 100kg per month will require an import permit.
>
> Kangaroo meat or carcasses imported for use as pets meat must also be accompanied by a certificate stating source of origin and destination. A duplicate copy must be lodged with the Meat Hygiene Authority, Department of Agriculture. Kangaroo meat or carcasses

> imported for human consumptive use must also comply with standards dictated by the South Australian Health Commission.[8]

5.29 Processed kangaroo meat in packages weighing two kilograms or less within a total consignment of less than 100 kilograms may be imported without a permit provided that health regulations are observed. The import of larger packages or consignments needs a permit which 'will not be issued until the applicant has established that the meat is being obtained from an approved source where the kangaroos are taken under a conservation programme and where the processing works, chillers and other facilities have been approved by an acceptable Health Authority'.

5.30 A permit will be granted for the export of kangaroo meat or carcases to another State provided that the kangaroos have been legally acquired. An import permit may be needed from the State to which the consignment is being sent.

Restricted Area

5.31 The restricted area is located mostly north of the CUA in the dominantly cattle grazing area and south of the CUA in the cropping-improved pasture area.

5.32 A property owner may apply to the SA NPWS for a permit to kill kangaroos which are causing damage to his property. A permit may be issued for 12 months but all permits expire on 31 December. A return must be submitted by the property owner within 14 days of the expiry of the permit. A property owner may purchase up to ten tags a year to allow for the personal use of ten carcases. All other carcases must be left on the property.

Tasmania

5.33 Five species of kangaroo are found in Tasmania, three of which - the eastern grey kangaroo (known locally as the 'forester'), the Bennetts wallaby and the rufous wallaby - are subject to killing to contain their deleterious effects on properties. The Tasmanian NPWS oversees the management of kangaroos under the National Parks and Wildlife Act 1970.

5.34 Few eastern grey kangaroos are killed each year under special permits to mitigate damage to agricultural crops. Products derived from them may not be exported and, therefore, they are not covered by the KMP approved by the Federal Government.

5.35 Unlike the other four States where most kangaroos shot in accordance with the respective KMP are used in the commercial trade, a minority of Bennetts and rufous wallabies have been used commercially. A local market for kangaroo meat for pet food has developed in recent years. The skins are, however, a more important commodity and most of these have been exported. Since the beginning of 1987, exports of skins have not been permitted because a KMP for Tasmania has not been approved by the Federal Government.

5.36 An open season is gazetted for ten months each year from 1 April to the end of February in the following year. On Flinders Island, the open season is extended to all of the year. The length of the season can be varied or it can even be closed.

5.37 A person who wishes to shoot wallabies and sell the carcases or skins must obtain a commercial wallaby hunter's licence. The licence is valid during the open season on both Crown and private land. The holder of a commercial licence must shoot wallabies in daylight hours, except where the licence holder is operating under a crop protection permit. He may then

shoot them from a vehicle at night using a spotlight. There is no restriction on the age, sex or reproductive condition of wallabies which are subject to killing.

5.38 Details of the sale of kangaroo meat and skins must be recorded on the hunter's licence and the licence returned to the Tasmanian NPWS within 14 days of the end of the open season. All sales of meat or skins must be made to licensed fauna dealers. The fauna dealer is required to make monthly returns to the NPWS.

> Each skin traded must be stamped by a Service officer and a royalty paid. Royalties must be paid within 14 days of the closure of the season. No unstamped skins are permitted to be exported from the state.[9]

5.39 The Tasmanian NPWS has three sources of information from which to compile estimates of the numbers of Bennetts and rufous wallabies commercially killed: royalty payments, hunters' returns and questionnaire responses. There is no distinction made between royalty payments for Bennetts and rufous wallabies.

> Since 1972/73 the number of royalty payments made annually has fluctuated markedly in response to economic factors, in particular, the market for skins.[10]

With regard to licence returns, the small percentage returned 'makes these estimates of little value'.[11]

5.40 The Tasmanian NPWS resorted to a questionnaire in 1983 to get more reliable statistics of the number of wallabies shot. In 1984-85, the NPWS succeeded in getting a 75 per cent return from the questionnaires sent by post to 240 of the 304 licencees.[12]

5.41 Table 5.1 shows details of commercial wallaby harvest statistics 1981-82 to 1984-85.

Table 5.1 Tasmanian Commercial Wallaby Harvest Statistics 1972-1985

Open Season	Licences Sold	Royalties Paid	Wallabies Killed* Bennett's	Rufous
1972-73	210	34 247	-	-
1973-74	142	29 442	-	-
1974-75	144	7 620	-	-
1975-76	153	6 601	-	-
1976-77	181	21 426	-	-
1977-78	224	45 471	-	-
1978-79	563	100 803	-	-
1979-80	1216	244 918	-	-
1980-81	2024	220 226	-	-
1981-82	1008	36 259	77 000	31 000
1982-83	577	24 019	49 000	28 000
1983-84	384	2 967	64 000	46 000
1984-85	304	39 931	71 000	47 000

* estimate only

Source: A modified version of a table in the Tasmanian KMP, p. 13.

5.42 Recreational hunters may obtain a non-commercial hunter's licence to shoot Bennetts and rufous wallabies in the open season. Although a majority shoot for recreational purposes over 35 per cent shoot under crop protection permits. The same restrictions apply to non-commercial licences as apply to commercial licences. However, although the carcases or skins may not be sold, they may be used by the hunter or given away. Responses to questionnaires sent to non-commercial hunters indicate that between 50 and 60 per cent of wallabies killed were used for meat, either for human consumption or for pet meat. The skins of less than 20 per cent of wallabies killed were used.

5.43 A random sample of 200 licence holders is selected at the end of every second month to receive a questionnaire. The average rate of return is 60 per cent. The results show that non-commercial shooters kill the great majority of all wallabies taken under licence. In 1984-85, non-commercial shooters took 87 per cent of the total kill. Table 5.2 shows details of the estimated non-commercial kill from 1979-1985.

Table 5.2 Estimates of the Non-commercial Wallaby Harvest in Tasmania

Season	1979-80	1980-81	1981-82	1982-83	1983-84	1984-85
No. of licences	5 283	5 185	4 742	4 947	5 817	6 001
Estimated take:						
Bennetts wallaby	389 000	353 000	271 000	407 000	369 000	426 000
Rufous wallaby	304 000	246 000	263 000	254 000	411 000	380 000
TOTAL	693 000	599 000	534 000	661 000	780 000	806 000

Source: A modified version of a table in the Tasmanian KMP, p. 14.

5.44 Crop protection permits, which are issued without charge, specify the period, property and method of control. A landholder who has a permit which specifies shooting as the method of control may shoot the wallabies himself or arrange for a commercial or non-commercial shooter to act as his agent. Special permits may be issued during the closed season but the wallaby products may not be sold into the commercial trade.

5.45 Apart from shooting, 1080 poison may be specified as the method of control. The number of permits issued to permit the poisoning of wallabies increased fourfold between 1979-80 and 1984-85. Details of permits issued for shooting and poisoning are shown in Table 5.3.

Table 5.3 Crop Protection Permits Issued for Control of Wallabies

SEASON	1979-80	1980-81	1981-82	1982-83	1983-84	1984-85
Shooting	749	661	623	638	716	629
Poisoning	102	72	171	301	357	400
Total	851	733	794	939	1 073	1 029

Source: A modified version of a table in the Tasmanian KMP, p. 16.

5.46 Although wildlife regulations were changed in 1984 to prohibit snaring in the open season on wallabies, the Director of the Tasmanian NPWS may still issue special permits for snaring. The Committee was told by the Tasmanian NPWS:

> As a matter of policy we have decided generally that crop protection permits will not be issued specifying snaring as a method, but that in some cases where the people who wish to carry out the snaring have been doing it for many years and are experienced at it, where the likelihood of catching non-target

> animals is small, and where the farmer has some sort of investment to protect - such as a crop or an area of new pasture - they may issue a crop protection permit allowing snaring. So far we have had two applications this year.[13]

Quotas

5.47 A quota is set annually for each State, from which products derived from kangaroos killed in that State may be exported, specifying the maximum number of each species of kangaroo which may be killed and entered into the commercial kangaroo industry. It excludes kangaroos shot by landholders and not used commercially. The quota is the maximum number permitted to be killed and not a target to be reached by the industry.

5.48 Each State which permits the commercial killing of kangaroos submits a quota to the Minister for Arts, Sport, the Environment, Tourism and Territories. After it is examined by the ANPWS and the Advisory Committee on Kangaroos, it is approved by the Minister. The Minister has, on several occasions, approved a quota lower than that which was submitted by the State Government.

5.49 The quota is not part of the management programme provided for in section 10 of the Wildlife Protection (Regulation of Exports and Imports) Act 1982. Consequently, as pointed out by the Administrative Appeals Tribunal, quotas have no legal significance.[14]

5.50 The quota only includes kangaroos shot commercially. In Tasmania (until the end of 1986 when the last approved KMP expired), the quota was meaningless because most wallabies that were killed did not enter the commercial industry. In Queensland, hundreds of thousands of kangaroos were killed non-commercially in 1986 because the quota was reached before the end of the year. In addition, a short suspension of exports following the handing

down of the AAT decision in the case brought by Fund for Animals over the 1985 Kangaroo Management Program for Queensland exacerbated the situation. In short, the quota became a farce because the State Government allowed, as it was constitutionally able to do, the non-commercial killing of kangaroos in large numbers in excess of the quota. The only restriction on this action was that they could not be exported.

5.51 The quota has also been exceeded on a number of occasions in recent years in a number of States. Details of overshooting between 1980 and 1985 are shown in Table 5.4.

Table 5.4 Overshoot of Kangaroo Quotas 1980-85

	QLD	N.S.W.	W.A.	S.A.
1980				
Western grey			8 000	
1984				
Eastern grey	43 430			
Euro	17 595		27 000	
1985				
Red	47 496	23 297	1 057	
Eastern and Western grey	24 966	1 968		
Euro	2 927			43

Sources: 1980-84 ANPWS, Evidence, p. S3172, S3185 and S3818.
1985 Senate Hansard, 11 February 1986, p.93

5.52 Table 5.4 shows that in Queensland and in Western Australia the quota for one or more species has been exceeded in three of the six years. It appears that the Queensland NPWS has not exerted enough control over the system to contain the number of kangaroos taken to that stipulated in the quota. It reflects the inadequacy of both the State controls and the Federal oversight of the system by the ANPWS.

5.53 If the quota is the maximum safe limit to preserve the viability of the species of kangaroo subject to killing to contain their deleterious effects on rural industries, then that quota should include all kangaroo killing, commercial and non-commercial. The quota becomes irrelevant as a conservation tool when it is side-stepped by States which permit additional killing above the quota by landholders.

5.54 The quota has presently no legal status as it does not form part of a management programme as prescribed in section 10 of the Wildlife Protection (Regulation of Exports and Imports) Act 1982. It is inconceivable that the quota is not part of a management programme because the two are inextricably linked. How, for example, can a species of kangaroo be conserved when the management programme designed to conserve that species does not impose some limit on the killing of that species?

5.55 The Committee **RECOMMENDS** that the quota include both the commercial and non-commercial kill and that it be incorporated into the kangaroo management programme.

Commercial Kill Statistics

5.56 Details of the total commercial kill in each State from 1975 to 1984 are shown in Table 5.5.

Table 5.5 State Kangaroo and Wallaby Quotas and Provisional Commercial Kill Statistics

STATE		1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
QLD	Quota	600,000	800,000	800,000	800,000	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000	845,000
	Commercial Kill	496,413	605,987	574,754	596,052	1,296,979	938,252	679,051	1,136,79c	877,131	859,944
NSW	Quota	205,000	300,000	365,000	365,000	645,000	645,000	694,500	843,000	843,000	500,000
	Commercial Kill	123,000	96,700	167,200	220,000	520,000	691,023	488,647	644,342	400,477	222,015
TAS*	Quota	-	120,000	120,000	250,000	300,000	300,000	300,000	300,000	300,000	300,000
	Commercial Kill	6,601	21,426	45,471	100,803	244,918	220,226	108,000	77,000	110,000	118,000
SA**	Quota	80,000	80,000	80,000	80,000	104,000	200,000	250,000	400,000	300,000	143,000
	Commercial Kill	43,677 (74–75)	34,524 75–76)	60,698 (76–77)	88,473 (77–78)	93,234	148,329	193,326	229,453	155,785	99,274
WA	Quota	142,250 to 31/1/76	167,190	168,000	152,000	220,000	240,000	258,000	240,000	200,000	200,000
	Commercial Kill	122,000	162,000	166,000	157,500	195,500	162,930	175,000	177,536	202,402	178,500
Total Commercial Kill		791,691	920,800	1,014,273	1,163,252	2,350,849	2,089,585	1,644,423	2,265,129	1,745,795	1,477,733

* Tasmania statistics for 1976 through 1980 from royalty payments; 1981 through 1984 statistics based on licence returns.

** South Australia cull statistics changed in 1978 to calendar year. July to December cull for 1978 was 47,523.

SOURCE: ANPWS, modified by Committee (Evidence, p.S3169).

Male Kangaroo Bias

5.57 In some States, professional shooters have a strong bias towards the killing of male kangaroos. Bucks can grow up to twice the size of does and there is a financial incentive for shooters to kill large animals. In Queensland, more than 80 per cent of red and grey kangaroos and euros killed commercially are males.

5.58 Many shooters also dislike the killing of does as this often requires the additional killing of young in pouch or at foot.

5.59 The Australian Federation of Animal Societies in its submission on kangaroo killing stated:

> The male bias in commercial shooting has very serious implications for the whole kangaroo management program. This is because kangaroos are polygamous and the actual number of females in a population determines population growth rates as they produce the offspring.
>
> In commercial shooting the highly selective and continuous removal of mature males increases the proportion of mature females and as a consequence the reproductive capacity of the population must also increase ...
>
> In simple terms, commercial shooting ultimately leads to more rapid growth (and hence more kangaroos), because it selectively removes mature males but leaves mature females which are much less economic to shoot.
>
> The commercial shooting of kangaroos and the kangaroo industry therefore cannot be shown to be achieving their stated aims of limiting or reducing kangaroo populations.[15] (AFAS emphasis)

5.60 Generally speaking, commercial shooting does keep the kangaroo populations down to manageable levels. The real concern is whether the greater productivity arising from a

disproportionate number of does increases the number of kangaroos that have to be killed to achieve those levels. If the answer is yes, then more damage to properties and more suffering by kangaroos occurs than necessary. The only beneficiary is the industry because it has a 'renewable resource'.

5.61 It is not clear what are the male/female ratios of kangaroos species subject to killing and to what extent those ratios vary among species, in different areas and under different climatic conditions. Therefore, it is impossible to calculate the cost of an increased rate of breeding or of the ramifications of restoring the balance in the sex ratio of kangaroos killed commercially. By shooting more does, will this affect the conservation of those species in some areas and will there be increased cruelty in the despatch of more young kangaroos?

5.62 This is an area which requires research and the Committee **RECOMMENDS** that the ANPWS commission or arrange research into the effects of a male sex bias in the commercial shooting of kangaroos.

5.63 There is no scientific evidence available of any long-term effects on the genetics of kangaroos from the male sex bias in commercial shooting. That does not necessarily mean that there is no long-term effect; just that there is a lack of information.

Enforcement of Wildlife Regulations

5.64 The animal welfare organisations raised the questions of landholders' perception of kangaroo numbers and damage done by them and the lack of effective supervision of both commercial and non-commercial shooting. Ms. L. Stacker of Greenpeace told the Committee:

> The lack of enforcement is a major problem. If we are going to have the industry it should at least be spending some money on doing exactly that. The national kangaroo management program says that you must have a legitimate complaint. I do not think it is a matter of just saying that there are too many kangaroos, because to some farmers it might be 10 but to others it might be 1000. The program still states that it has to be legitimate, so that claim will have to be assessed and it has not been done.[16]

5.65 Few resources are devoted by fauna authorities to the enforcement of wildlife legislation. That is more a reflection of priorities of State Governments rather than a lack of interest of fauna authorities. Those authorities have to spread their resources thinly to cover their many responsibilities in fauna and flora conservation.

5.66 The Queensland NPWS submitted that:

> 1. The total number of rangers employed by the service is 61 and a total number of 42 people are involved in the kangaroo industry.
>
> 2. A total of fourteen wildlife rangers are located in eight locations. The area covered by each location ranges from 53,580 km2 to 427,316 km2.[17]

5.67 In evidence to the Committee, Dr G.W. Saunders, Director of the Queensland NPWS, said:

> I would have to say that in some areas a better job would be done if we had more rangers - quite obviously. In any situation you never have enough staff. But you have to be sensible about it. I am convinced that if we put on another 10 rangers not another single kangaroo would be conserved; it would not make any difference to the conservation of kangaroos. You have this gap between the surveillance level that we have at the moment and having, say, a ranger with every kangaroo

> shooter or every dealer. The level that we have at the moment is quite adequate.[18]

5.68 Dr J. Giles, Assistant Director (Wildlife) of the NSW NPWS, told the Committee that inspections of properties on receipt of applications from landholders for tags were not done in 'each and every case'. He went on to say:

> When kangaroo populations were very, very large - and they were until recently - and our resources were finite as a matter of priority, it was not practicable to do that because there were so many applications and we had many jobs to do. At the present time though, with populations down, it is much more important that there is specific local knowledge of the issues around kangaroos and ...[19]

5.69 This evidence was confirmed by a NSW NPWS memorandum which was submitted to the Committee by Australians for Animals. In the memorandum dated December 1982 issued by the Regional Director, Central Region, NSW NPWS, it is stated, in part, that:

> Throughout the region I feel compelled to rank law enforcement and licensing as low in productivity and wildlife management worth. Furthermore, it is a responsibility where little real support can be called upon from a comprehensive information system.
>
> While not wishing to blame the system, or the people concerned, it is apparent to me that a great deal of work is needed to rationalize the system itself. I consider that regional and district staff are hard pressed to cope at a reasonable level.
>
> As the present system is unwieldy and of questionable value in wildlife management I now propose to:
>
> 1. Have districts direct their attention and responses to licensing enquiries to endangered fauna/flora ...

3. Inspections will not be made before licence issue unless it is suspected that endangered species or special local species may be involved.

4. Random inspections will be made in an effort to keep the trade as honest as possible.[20]

5.70 Mr A. Howard, Acting Regional Director (Western Region) of the NSW NPWS added, referring to the inspection of properties for future licence applications:

> ... we will but I do not think we will be capable of doing each and every one. We will have to rely on our general knowledge of certain areas. You will appreciate that we are administering an area which takes in about 70 per cent of New South Wales and the eastern boundary would be Goondiwindi and in the south it would be Albury, and that is administered by a regional office at Broken Hill, with 29 people in the field involved in this sort of work plus all their other duties. So we will be relying heavily on local knowledge but on an increased incidence of inspections.[21]

5.71 In Western Australia, after the Committee had been told that there were 32 wildlife officers in the State, Mr K. McNamara of the Department of Conservation and Land Management, told the Committee:

> It is always easy, of course, for us to say that greater inspection resources would be desirable. The resources available to us for inspection are not adequate to ensure that there is absolutely no illegal activity, but we believe that they are adequate for us to be confident that, when taken together with other elements of the program, such as monitoring, the kangaroos are not in any way threatened.[22]

5.72 Mr L. Best of the SA NPWS told the Committee:

> If you ask people within the Service I think they would all say that the Service does not

> have enough staff to carry out all its functions. But that is a reality of life, I think, in terms of staffing constraints and funding levels.[23]

5.73 Public servants have constraints imposed on them when they give formal evidence to the Committee. The comments quoted above reflect the attitude that officers of fauna authorities are coping at a level commensurate with the resources available. The relatively few wildlife rangers who often have to cover vast areas cannot be expected to do much to assess applications to kill kangaroos or about the illegal shooting of or trade in kangaroos. Although other State employees, such as members of the police force, may be authorised to carry out some of the functions of wildlife rangers, they do not have the time, knowledge of fauna matters or even inclination to perform such a role, except at the specific request of a fauna authority.

5.74 In many areas, properties are inspected when an application for a permit is for a larger than expected number of kangaroos or the application is in some way unusual. Applications received each year for a similar number of kangaroos will usually be granted as a matter of course. This procedure allows for some control over serious abuse but not for the general operation of kangaroo killing. It facilitates the regular killing of kangaroos irrespective of the damage being done. It does not provide the level of control over the killing of a protected species for, ostensibly, damage mitigation. It does, however, keep the landholder happy and provides the shooter and fauna dealer with a living.

Over-issue of Tags

5.75 Evidence given by Dr T. Kirkpatrick of the Queensland NPWS to the Administrative Appeals Tribunal indicated that the number of tags issued in Queensland in 1985 'could have been as

many as 1 400 000 in total'[24] which was about 320 000 more than the quota. The Queensland NPWS has explained that, for logistic reasons, it is necessary to issue more tags than the quota if the total kill is near the quota limit. Some shooters will not use all their tags which might deprive other shooters from reducing kangaroo populations in areas where there is a serious damage problem. In any event, the Queensland NPWS told the Administrative Appeals Tribunal (AAT) that the point of control is at the processor. Processors' returns are monitored and action is taken when the quota is reached.

5.76 The Committee is of the opinion that the issue of a small number of tags in excess of the quota does not necessarily lead to the overshooting of the quota, provided that adequate controls operate at the point of processing to regulate the total kill of each species. However, the fact that the quotas in Queensland and New South Wales have been exceeded is evidence of the inadequacy of those controls.

5.77 In addition, the number of tags issued above the quota is also of some concern to the Committee. In 1985 the over-issue in Queensland was almost one-third of the quota. In New South Wales, the number of property tags issued above the quota in the commercial region for commercial purposes was almost one-half of the quota. It is inconceivable that such numbers had to be issued for logistic reasons. It is little wonder that the quotas were exceeded in those States that year.

5.78 It was suggested to the Committee that the over-issue of tags is evidence of an illegal trade in kangaroo products. It is conceivable that the over-issue of tags could facilitate an illegal trade although, by its very nature, such a trade would probably operate independently of the legal trade. However, the Committee received no evidence to connect the over-issue of tags with an illegal trade in kangaroo products.

Code of Practice

Introduction

5.79 The Council of Nature Conservation Ministers endorsed in principle the Code of Practice for the Humane Shooting of Kangaroos on 30 May 1985. The Code is reproduced in Appendix 5.

5.80 In the Introduction to the Code, it is stated:

> This Code of Practice has been produced to ensure that all persons intending to shoot a free-living kangaroo are aware of the welfare aspects pertinent to that activity. In this Code the term 'kangaroo' means all species of the family Macropodidae within the superfamily Macropodoidea and so applies to kangaroos, wallaroos or euros, wallabies and pademelons.

5.81 It goes on to say:

> When shooting a kangaroo the primary objective must be to achieve instantaneous loss of consciousness and rapid death without regaining consciousness. For the purposes of this Code, this is regarded as a sudden and painless death. Commonsense is required to assess the prevailing conditions. Where the conditions are such as to raise doubts about achieving a sudden and painless kill, shooting must not be attempted.

The Code is intended for both professional kangaroo shooters and landholders or their agents who shoot kangaroos non-commercially to lessen damage done to their properties. The Committee comments below on various provisions of the Code of Practice.

Type of Firearm

5.82 The Code specifies that for macropods in Group 1 (red and grey kangaroos, euros or wallaroos, and agile and whiptail wallabies) a centrefire rifle with a nominal bore size 0.5969 centimetres (0.224 inches) and centrefire case capacity of at least .222 Remington must be used. The minimum muzzle energy and type of ammunition is also specified.

5.83 It is clear to the Committee, from evidence and private discussions, that many landholders, who have been licensed to shoot kangaroos on their properties, do not use appropriate firearms. Rimfire rifles, centrefire rifles of smaller calibre and less muzzle energy, and shotguns are commonly used by landholders to kill kangaroos in Group 1. Many landholders are deterred from buying appropriate rifles because of their cost. Although these firearms may kill a kangaroo cleanly under some conditions they add to the likelihood of suffering.

5.84 The Code permits the shooting with a shotgun of 'members of the family Macropodidae' not listed in Group 1. Shooters may shoot these animals in the head, neck or chest. The Queensland Fauna Dealers Association told the Committee that it opposed the use of shotguns for any reason because they did not make a quick kill and they damaged the product.[25]

5.85 RSPCA Australia recommended in its Tasmanian study the banning of rimfire rifles and shotguns to kill kangaroos or wallabies. It argued from field studies, that these firearms caused too much suffering among wallabies. The Tasmanian NPWS is not convinced that the field studies were broad enough to enable those conclusions to be drawn. The Code of Practice does not permit the use of rimfire rifles but does allow the use of shotguns against the smaller wallabies.

5.86 The Committee supports the use of centrefire rifles to kill kangaroos or wallabies. The Committee **RECOMMENDS** that before any licence or permit is issued to kill kangaroos or wallabies, the applicant must demonstrate that he is the owner of an appropriate firearm as specified in the Code of Practice.

5.87 In view of the RSPCA's recommendation on shotguns and their widespread use against wallabies, the Committee **RECOMMENDS** that the ANPWS commission as a matter of urgency an independent research project to establish conclusively whether or not shotguns or rimfire rifles are appropriate to kill any species of wallaby humanely.

Point of Aim

5.88 The Code specifies that, when shooting a kangaroo in Group 1, the point of aim shall be the brain. It does not specify the neck, heart or any other point of the body, except when shooting a wounded kangaroo.

5.89 The RSPCA Australia considered at some length the humaneness of shooting kangaroos at particular points of the body. It reported:

> All available literature examined clearly indicates that a bullet placed in the brain of an animal will cause the animal a humane death. "Death" is defined as brain death which automatically ensures the death of the whole animal.[26]

5.90 Apart from doing a literature search, it also x-rayed 15 heads of kangaroos which had been shot in the head to determine the effect of a bullet in the brain. As a result of this examination, it reported:

> From observations on kangaroos being shot, it was concluded that kangaroos shot just below the base of the ear (the preferred point of aim for professional shooters) are literally dead on their feet before they hit the ground. Wound damage is horrific, the cranium containing the brain is literally completely destroyed.[27]

5.91 The RSPCA also investigated the humaneness of chest shots. It concluded:

> ... it would appear that a bullet placed in the heart of an animal so that it causes massive damage to the organ will result in the death of the animal that could be called "humane" using the criteria established by the European Parliament. However, it is probable that chest artery rupture which will cause the death of the animal does not meet the "humane" criteria.[28]

5.92 RSPCA Australia conservatively estimated that at least 15 per cent of kangaroos shot by professional shooters are not killed humanely (that is, not shot in the head). The number not killed humanely by landholders must be considerably higher, as few landholders would be able to match the marksmanship of professional shooters.

Adherence to the Code

5.93 The Code of Practice is just that: a code. It has no legal standing until it is incorporated into State or Territory legislation or regulations. It has only a moral authority to keep the suffering of kangaroos to a minimum if they are shot.

5.94 Most professional shooters adhere to the Code. Where shooters are supplying a carcase trade, there is often a financial incentive to shoot kangaroos in the head. The same incentive does not necessarily apply for shooters killing

kangaroos for their skins only. A bullet hole does not downgrade a skin which will be used for leather. In the fleshing process, small holes, similar to bullet holes, will appear in the skins as a result of burrs and other things caught in the fur. Some skin-only shooters are less discriminating in the point of aim; their main concern is killing kangaroos, not the method of doing it. The RSPCA concluded that there was a greater level of inhumane killing among skin-only shooters.

5.95 Some landholders, armed with inappropriate firearms, combined with poor marksmanship or, in some cases, through a disrespect for kangaroos, cause untold suffering to kangaroos.

5.96 There is no doubt that landholders will kill kangaroos they perceive as a problem, some even without a licence and a permit from the fauna authority. Some do not realise that permission is necessary. There is little chance, under the present system, that they will be apprehended for killing kangaroos illegally or even less for killing them inhumanely. Most of these people are probably unaware of the Code of Practice, but even if they did know of its provisions, they would not adhere closely to them.

5.97 The initial task of fauna authorities is to ensure that all people, who are licensed to kill kangaroos, have a copy of the Code of Practice. The fauna authoritites should stress to licensees that they have a responsibility to adhere to the Code and that licences are issued on the basis of such adherence.

5.98 The Committee **RECOMMENDS** that adherence to the Code of Practice should be a requirement of any licence or permit and failure to adhere should be grounds to suspend, withdraw or refuse to renew a licence or permit.

CHAPTER 6

KANGAROO INDUSTRIES

Introduction

6.1 In this chapter, the Committee outlines the structure and nature of the commercial kangaroo industry. It examines shooters, chiller operators and fauna dealers who comprise the three main areas of the industry. Some attention is also given to the trade in kangaroo products both within Australia and overseas. The management system within which the industry works in four States is discussed in Chapter 5. As pointed out in that chapter and elsewhere in the report, there are both similarities and differences among the four kangaroo management programmes. These are reflected in the way the industry operates in each of those States.

6.2 The NSW NPWS commissioned the CSIRO to do a study of the kangaroo industry which resulted in a four volume report. Detailed information about the operation of the industry in that State is therefore publicly available. Some of that information is reproduced in this report. The Committee has also gathered information from evidence given and documents provided to the Committee about the industry in all five States.

6.3 Although the report of the CSIRO consultants deals only with New South Wales, it is the only detailed survey of the kangaroo industry in any State. It does provide an insight into the way the industry works and the relationships among the various parts of the industry.

6.4 In New South Wales all operators in the industry have to be licensed by the NSW NPWS. Licensees are required to submit

regular returns to the Service detailing their operations. Table 6.1 shows the number of licensed operators in the kangaroo industry in New South Wales from 1980 to 1984. Because some licensed operators were inactive, these statistics are only indicative of the size of the industry.

Table 6.1 Number of Licensed Operators in the NSW Kangaroo Industry 1980-84

Type of Operator/Licence	1980	1981	1982	1983	1984
Fauna dealer processor	8	9	10	8	9
Chiller operator	n.a.	n.a.	n.a.	73	64
Skin wholesaler	n.a.	21	27	29	19
Skin dealers	120	103	120	131	88
Retailers	120	126	140	143	149
Trappers (shooters)	1184	720	571	349	234

Source: Information derived from NSW NPWS Annual Reports and Records cited in G.J. Morris and M.D. Young: 'Second Report on the Economic and Administrative Influences on Kangaroo Management in NSW - The Fauna Dealers', October 1985, p.33.

6.5 Morris and Young commented:

> The number of skin wholesalers remained fairly steady until 1984. The late 1983 management decisions to remove almost all skin endorsements from most trappers' licences virtually eliminated the supply of skins from N.S.W. with the consequence that 34% (10) skin wholesalers did not renew their licences. This situation also applies to the skin dealers with a similar drop in the number of licensed skin dealers from 131 in 1983 to 88 in 1984, a

drop of 33%. The number of 'non-active' skin dealers was 13 in 1984, with another 27 submitting 'nil-returns' for part of the year. The number of licensed retailers has also remained steady.[1]

Number of Kangaroo Shooters in Australia

6.6 All professional kangaroo shooters have to be licensed under State legislation by the respective State fauna authority.

6.7 There are two types of licence in New South Wales: a resident licence, which restricts a shooter to a particular property, and a general licence. There are no limits on the number of resident licences issued but there are for general licences.

6.8 In 1983, there were 349 licensed shooters in New South Wales. In August 1984, 375 were licensed. On the basis that shooters who killed more than 2500 kangaroos a year were full-time shooters and those who killed fewer were part-time, in 1983 there were 59 full-time and 290 part-time shooters. The remaining 73 shooters shot no kangaroos.[2]

6.9 Young and Delforce published details of the number of licensed shooters in New South Wales between 1976 and 1983. These details are shown in Table 6.2.

Table 6.2 Number of Licensed Kangaroo Shooters in New South Wales as at 31 December, 1976-1983

Year	Number of Licensed Shooters
1976	222
1977	225
1978	320
1979	1501
1980	1184
1981	720
1982	571
1983	313

Note: In 1983, the total comprised 111 resident licences and 202 general licences.

Source: M.D. Young and R.J. Delforce: 'An Economic and Social Survey of Licensed Kangaroo Trappers and Chiller Operations', July 1984, Table 2.4, modified by Committee.

6.10 In Queensland, there were 1431 licensed shooters in 1983 of whom ten per cent were full-time shooters. No definition of a full-time shooter in Queensland was given.[3]

6.11 In Western Australia, there were 136 licensed shooters in August 1984, made up of 90 within the red kangaroo management programme and 46 within the grey kangaroo management programme. All grey kangaroo shooters were part-time and most red kangaroo shooters had supplementary income, usually station work.[4]

6.12 In South Australia, there were 188 licensed shooters in 1983-84, of whom 30 'could be considered full-time in 1984'.[5]

6.13 In Tasmania, 384 shooters were licensed for the commercial killing of wallabies in 1983, all of whom were 'considered to be part-time operators, most being either

landowners or their employees who hunt, on average, only four days each month'.[6]

6.14 The Committee took evidence from kangaroo shooters in Western Australia and spoke at informal meetings with shooters in New South Wales and Queensland. Their basic conditions, working arrangements, problems and aspirations were generally similar, even though management programmes, environment and other factors varied from State to State, and among regions within a State.

Kangaroo Shooters in New South Wales

6.15 One of the reports of the CSIRO consultants dealt with shooters and chiller operators. The study gives a detailed profile of kangaroo shooters (referred to as trappers in legislation in New South Wales), not only of their socio-economic circumstances but also of their attitude to and operation of kangaroo killing.

6.16 Young and Delforce, who undertook the study, described their sampling techniques as follows:

> NPWS records indicate that within the entire commercial harvesting area there were 313 trappers licensed on December 30th, 1983. Of these, 79 were active and delivering kangaroo carcasses to the 24 registered chiller sites included in the survey. Thus, assuming that the survey is representative of the entire population, it is estimated that in the quarter ending December 1983 approximately 133 trappers of the 313 licensed trappers in N.S.W. were active. As Table 3.1 implies, a significant proportion of the estimated 180 inactive trappers are most likely to be resident trappers who only hold a licence to take kangaroos from a specific property.
>
> A better guide to the sample proportion for licensed trappers seems to be the percentage of the total N.S.W. commercial harvest of

> kangaroos for the financial year ending 30th June 1983 represented by the 52 of the 60 licensed trappers surveyed who provided estimates of their harvest in that year. NPWS records suggest that 607,023 kangaroos were harvested in that period. The combined harvest of the respondents is estimated to be 258,587 kangaroos. Thus, the licensed trappers interviewed accounted for 43% of the total number of kangaroos taken during that financial year.[7]

6.17 Of the 60 shooters (all male) included in the survey, 58.3 per cent were raised within 100 kilometres of their base. A majority was aged between 30 and 39 years (53.3 per cent) with another 28.3 per cent aged between 20 and 29 years. About two-thirds (68.30 per cent) were married or lived in defacto relationships while 26.7 per cent had never married. Most (97.6 per cent) of those living in permanent relationships had at least one child and 87.8 per cent of spouses did not have a job.

6.18 Within the survey sample, 46.3 per cent of shooters left school between the ages of 13 and 15 years and 46.3 per cent between 16 and 18 years of age. This was 'not significantly different from comparable male workers'. Most shooters combined kangaroo shooting with either the shooting of other animals or another job or both. Details are shown in Table 6.3.

Table 6.3 Kangaroo Shooters - Combined Employment

Type of Employment	Percentage
Only shoots kangaroos	1.8
Also shoots other animals	26.8
Also has a non-shooting job	10.7
Also shoots other animals and has a non-shooting job	60.7
	100.0

Source: M.D. Young and R.J. Delforce: 'An Economic and Social Survey of Licensed Kangaroo trappers and Chiller Operators', July 1984. (Part of Table 5.3).

6.19 In their Final Report, Young and Morris commented:

> Most of the kangaroo shooters considered it important to have an alternative source of income and 69% gave these alternate sources higher priority. Diversification in income source is essential for the financial well being of kangaroo shooters as it appears to enable them to modify their shooting effort in response to variations in kangaroo populations, seasonal and market conditions. These characteristics suggest that professional kangaroo shooters are able to withstand periodic quota reductions, etc. without undue hardship. This is particularly important for them as short-term climatic conditions such as heavy rain can make it impossible to shoot for several weeks.[7A]

6.20 Most shooters had spent at least four years as a kangaroo shooter. Details are shown in Table 6.4.

Table 6.4 Licensed Shooters' Shooting Experience

Years of Experience	Percentage
1 to 3	25.0
4 to 8	51.7
10 to 27	23.3
	100.0

Source: M.D. Young and R.J. Delforce: 'An Economic and Social Survey of Licensed Kangaroo trappers and Chiller Operators', July 1984. (Part of Table 5.6).

6.21 Shooting accuracy of licensed shooters improved with experience in the industry. The shooters were asked the number of clean hits from 100 shots. They provided information reproduced in Table 6.5.

Table 6.5 Stated Accuracy of Licensed Shooters

Number of clean hits from 100 shots	Years of Experience		
	1 - 3	4 or more	Total
70-79	33.3	9.5	14.8
80-89	33.3	19.0	22.2
90+	33.3	71.4	63.0
	99.9	99.9	100.0

Source: M.D. Young and R.J. Delforce: 'An Economic and Social Survey of Licensed Kangaroo trappers and Chiller Operators', July 1984. (Part of Table 6.8).

6.22 Apart from being better marksmen, the more experienced shooters also had a higher net average income from kangaroo

shooting. Shooters with three years or less experience obtained a net average income of $6261 compared with $10 413 earned by shooters with four or more years experience.

6.23 With regard to sex and size preferences, 53.8 per cent of the shooters replied that they shot bucks first, irrespective of weight between bucks and does. A few shooters said that they did not shoot any does or not does with visible young. The heaviest kangaroo, irrespective of sex, was the choice of 46.2 per cent of shooters as the first target.[8]

6.24 Most shooters (87.9 per cent) did not share properties with other shooters and of those, 68.6 per cent gave the reason for not sharing as 'not practical' and a further 13.7 per cent replied that the landholder wanted them only.

6.25 The shooters were questioned about their willingness to move, either permanently or temporarily, to another area if kangaroo densities in their own areas were too low to sustain commercial shooting. The answers are contained in Table 6.6.

Table 6.6 Willingness of Shooters to Move to Another Area with Kangaroos 200 km away if Local Kangaroo Densities Temporarily Too Low

Shooter mobility	Percentage
Move there permanently	21.1
Go temporarily until local numbers build up again	19.3
Stop shooting until local numbers build up again	17.5
Give up kangaroo shooting	33.3
Other	3.5
Don't know	5.3
	100.0

Cross-tabulations of Shooter mobility

East/West division *	East (%)	West (%)
Move permanently or temporarily	28.6	56.3
Would not move	71.4	43.7
	100.0	100.0

Town/property division **	Town (%)	Property (%)
Move permanently or temporarily	39.0	66.7
Would not move	61.0	33.3
	100.0	100.0

* An arbitrary division by Young and Delforce of the commercial kangaroo shooting area of New South Wales into east and west divisions.

** Shooters based in towns or on properties.

Source: M.D. Young and R.J. Delforce: 'An Economic and Social Survey of Licensed Kangaroo Trappers and Chiller Operators', July 1984 (Table 5.11).

6.26 Young and Delforce explored the direct and indirect influences which chiller operators and fauna dealers had on shooters.

6.27 Twenty-one shooters in the sample were also chiller operators. Of the remaining 39 shooters, 53.8 per cent (20 shooters) said that chiller operators did influence the operations of shooters. Fifteen of the 20 shooters said that chiller operators influenced their operations by imposing delivery quotas, three said 'no more kangaroos for a while', one said he had carcases rejected at the chiller and the last said that kangaroos were not collected when the chiller was full.

6.28 In a separate study of chiller operators, 70.8 per cent of 23 chiller operators believed that they did not influence shooters. However, 16.7 per cent said they imposed quotas on shooters, 8.3 per cent said that they pressured shooters to kill kangaroos at times when they would not normally have operated.

6.29 Fauna dealers influenced shooters' operations through the prices offered for carcases or by imposition of quotas on chiller operators who in turn imposed quotas on shooters. A majority of shooters (56.9 per cent) thought that prices at the time of the survey were unfair and most of those shooters (87.9 per cent) thought so because the prices were too low for the costs that the shooters faced in shooting kangaroos.

6.30 A majority of shooters (63.3 per cent) operated in an area where there was only one shooter while 36.7 per cent of shooters operated where there were two shooters. A majority of shooters (55 per cent) had a desire for more licensed fauna dealers but there was no correlation with the number of fauna dealers in their areas. Although it is reasonable to assume that most of the shooters desiring more competition were probably in areas with only one dealer, that was not made clear in the study. Asked why they wanted more fauna dealers, the most common replies

were to get a better price (43.8 per cent), 'more competition is a good thing' (25.0 per cent) and a 'new dealer may take carcases when present ones do not want them' (15.6 per cent).

6.31 In private discussions with shooters in New South Wales and Queensland, the Committee was told of dissatisfaction with prices offered by dealers resulting from the lack of competition in a zone where there was a single fauna dealer. Lack of competition also allowed fauna dealers to impose quotas on chiller operators and to delay collections of carcases from chillers.

6.32 The Committee was impressed with the professionalism of the shooters with whom they talked and accompanied on shoots. Their marksmanship and efficiency were very good. The Committee is aware that not all shooters would reach their standards and this is borne out in the reports of Young, Morris and Delforce and of RSPCA Australia. Nevertheless, professional shooters overall are regarded by the Committee as the best-equipped people to shoot kangaroos if shooting has to be done.

6.33 The difference between full-time and part-time shooters is blurred. Young and Delforce in their study found that only one shooter in their sample derived all his income from kangaroo shooting. The other shooters had varying proportions of income obtained from various sources. The Committee decided to regard full-time shooters as those whose main source of income is obtained from kangaroo shooting and who shoot kangaroos on a regular basis.

6.34 In some areas, there are not enough kangaroos to warrant a full-time shooter operating either for meat or skins. A part-time shooter will probably operate more effectively and humanely than a landholder licensed to kill kangaroos.

6.35 Although there were slight differences among the States, fauna authorities generally only checked whether an applicant for a kangaroo shooter's licence had a current firearm licence and had any criminal record. For applicants renewing a licence, a State NPWS might also check the previous year's shooting record. In New South Wales, for example, a shooter with a general licence has to take 500 kangaroos in a year before his licence is renewed.

6.36 The then Australian Bureau of Animal Health recommended to the Committee that an applicant for renewal of his licence should be required to obtain from a registered medical practitioner a statement that he had satisfactory eyesight and did not suffer 'any obvious physical or psychological disorders which could affect his ability to cull kangaroos in a professional manner'.[9]

6.37 Other prerequisites for issue of a kangaroo shooter's licence were suggested to the Committee, namely, that an applicant pass tests of marksmanship, species identification and detailed knowledge of the Code of Practice, as well as own an appropriate firearm.

6.38 The Kangaroo Industries Association of Australia, which represents fauna dealers but not shooters, had no objection to such prerequisites being implemented.[10] However, fauna authorities and shooters argued that such prerequisites were not necessary. In their view, any shooter who did not shoot accurately would never survive in the industry, particularly in States where the carcase trade predominated. Fauna dealers would only tolerate a small percentage of carcases which were not shot in the head. Fauna dealers would also not accept carcases of species which were protected from commercial shooting.

6.39 The Committee does not wish to impose an unnecessary administrative burden on fauna authorities or on shooters. There

is a necessity, however, to protect kangaroos from inexperienced shooters or those who do not have an acceptable degree of marksmanship. Although poor marksmanship might result in the economic demise of a shooter, avoidable suffering by kangaroos might have occurred in the interim period. In addition, in States where there is a significant amount of skin-only shooting, often accompanied by no financial disincentive for body shooting, poor marksmen might opt to aim at the larger target of chest, spine or hip. This often does not necessarily result in instantaneous loss of consciousness as required by the Code of Practice. RSPCA Australia found, in its study on cruelty to kangaroos, that conservatively, 19 per cent of kangaroos were not head shot in one State. For these reasons the Committee **RECOMMENDS** that all new applicants for a kangaroo shooter's licence pass a test of marksmanship before being issued with a licence. In addition, the Committee **RECOMMENDS** that commercial shooters applying for a renewal of a licence, and who did not kill at least five hundred kangaroos under the kangaroo management programme in the preceding year, pass a test of marksmanship before being issued with a licence.

6.40 These recommendations should not add much to the workload of fauna authorities because regular licensed shooters would not be affected. There are precedents for successful completion of a test before issue of a licence. For example, every person who is licensed to drive a motor vehicle on a public road is required to have passed a driver's test before being issued with a licence.

6.41 Although one expects a professional shooter to own an appropriate firearm when applying for a kangaroo shooter's licence, it is possible that a part-time shooter, who opportunistically seeks to enter the industry in a period of high skin prices, might not own an appropriate firearm. In Chapter 5, the Committee recommended that an applicant for a kangaroo shooter's licence provide proof to the fauna authority that he is

the owner of an appropriate firearm before he is issued with a licence. This additional procedure is unlikely to cause any undue inconvenience to the authority or the shooter.

6.42 In some areas of some States it is not practicable to shoot kangaroos for meat. There is also a limitation on the size of the market for kangaroo meat. Consequently, some shooters are licensed to kill kangaroos for their skins alone.

6.43 Young and Morris commented on skin-only shooting:

> Skin shooters need little capital to enter the industry and tend to do this largely when skin prices are high. They leave as soon as prices fall and when the quality of the available skins declines. The variability of prices paid for carcass shot kangaroos is much less than those paid to skin shooters. Skin shooting is frequently an opportunistic operation, which works against the interests of professional shooters and others whose future depends upon the maintenance of an abundant kangaroo population. By precluding skin shooting from most areas, profits to those who have permanent investments and commitments to the industry will be higher and consequently their demands for permission to take additional kangaroos during periods of low population less.[11]

They also stated:

> If short term entry to the industry is permitted during periods of high skin prices and easy shooting then the industry must be expected to take a short term exploitive attitude and the kangaroo population suffer accordingly. The prohibition of skin shooting makes all the industry's activities much easier to predict.
>
> As noted in the Market Report many of the Industry's present supply problems have been caused by the expansion of skin shooting in Queensland. But more importantly, skin

> shooting is extremely difficult to monitor and is open to abuse.[12]

The two authors recommended against skin-only shooting in all areas except where it is impossible to shoot kangaroos for their carcases.

6.44 In South Australia there is little skin-only shooting. The SA NPWS told the Committee that skin-only shooting was virtually only allowed in the west of the State where there were no processors. In 1984 only 600 out of 99,274 kangaroos were killed for their skins only.

6.45 RSPCA Australia found that New South Wales, with the highest percentage of head shot kangaroos (95 per cent), had virtually no skin-only shooting.

6.46 The Committee **RECOMMENDS** that commercial shooters kill kangaroos for the carcases and not for their skins only, except where the relevant fauna authority considers a carcase trade is impracticable and authorises skin-only killing.

Chiller Operators

6.47 Young and Delforce did an economic study of chiller operators in New South Wales. In their sample of 24 operators, 23 were male. Most of the operators (70.8 per cent) were under forty years of age and a majority (54.2 per cent) originated in the area of their operations. Another 12.5 per cent originated elsewhere in New South Wales. With regard to family structure:

> Most are either married (70.8%) or living in a defacto relationship (4.2%) of these, most (87.8%) had been married for five years or more and all have children.[13]

6.48 Twenty of the operators responded to questions on educational background. Of these, 71.5 per cent had left school by the age of 15 years.

6.49 Incomes and costs of the chiller operators in the 1982-83 financial year are set out in Table 6.7.

Table 6.7 Chiller Operators' Incomes from all Sources and Costs Incurred in Earning Income

Income from chiller operation	Average ($)	Range ($)
Gross income from chiller operation	4,443	0 - 20,533
Less total costs of chiller operation	1,463	0 - 8,020
Net income from chiller operation	2,980	-1,580 - 12,513
Net income from shooting*	8,491	0 - 27,207
Net income from other non-shooting occupations	5,423	0 - 34,615
TOTAL NET INCOME 1982/83	16,894	4,026 - 34,615

* Sixteen of the chiller operators who could provide financial information were also licensed shooters.

Source: M.D. Young and R.J. Delforce: 'An Economic and Social Survey of Licensed Kangaroo Trappers and Chiller Operators', July 1984. (Table 4.10, modified slightly)

6.50 The two authors examined the other sources of income received by the operators. They wrote:

> Most (83.3%) chiller operators are also licensed kangaroo trappers. With few exceptions, these respondents started off as licensed trappers and later took over the operation of the relevant chiller(s) after several years of trapping experience. In addition, many said they have trapped other animals for commercial gain in the last three years (or less) - namely foxes (for 66.7% of respondents), rabbits (20.8%), feral pigs (8.0%), feral cats (8.0 %) and feral goats (8.0%). The majority (75.0%) said that they had had a non-trapping job in the last three years or less. A considerable diversity in the type of other job(s) was reported, with no more than three respondents having the same non-trapping job. Overall, only one respondent (4.2%) was a full-time chiller operator in that he had no other job or trapping activity; 20.8% also trapped kangaroos or other animals, 12.5% also had a non-trapping job(s) and 62.5% also both trapped kangaroos or other animals and had a non-trapping job.[14]

6.51 Young and Delforce examined the mobility of operators by asking whether they would be prepared to move 200 kilometres away to an area where there would be enough kangaroos to sustain their chiller operations. It was implied in the question that the existing area would not be viable for a chiller at least for the time being.

> As this was a rather hypothetical question qualified responses were expected, and were given, in many cases. Nearly 30% would move there permanently, while most others would either give up operating their chiller(s) (25.0%), stop operating until numbers locally built up again (25.0%) or go there until numbers built up again locally (12.5%). The reasons stated by those who would not move were mainly that they either had personal ties to the local area and did not want to move, or it would be hard to secure enough properties or trappers in the new area in order to operate their chiller(s), or that current licensed trappers would be unwilling to move there.[15]

6.52 Both from the answers to the question on mobility and from the other information obtained from chiller operators, it is clear that most of them would not leave their local areas permanently and more than half would not go elsewhere even temporarily to operate a chiller.

Fauna Dealers

6.53 In New South Wales, a fauna dealer may be licensed by the NSW NPWS to deal in either skins or carcases. The former has to buy most of his skins from another State as few shooters have had their licences endorsed for skins only.

6.54 The fauna dealer processor buys carcases from a chiller operator and transports them to his processing works. In times of short supply, a fauna dealer may buy carcases from other fauna dealers or from interstate.

6.55 Table 6.8 shows the importation of kangaroo products into New South Wales from 1980 to 1984.

Table 6.8 Import of Kangaroo Products into N.S.W. 1980-1984

Product	Year				
	1980	1981	1982	1983	1984
Skins - Grey	406,193	250,300	713,635	439,910	420,880
Skins - Red	329,013	157,200	351,915	251,202	374,030
Skins - Other	95,492	20,000	60,978	27,000	29,703
Skins - Total	830,698	427,500	1,126,528	708,112	824,613
Whole Carcases	25,000	47,000	0	-	212,000(b)
Meat (kg)	767,200	900,000	330,000	512,000(a)	923,000

Footnotes: (a) Meat and carcase figure not separated

(b) 1984 whole carcase figure given in kg and number of carcases assuming average carcase weight 20 kg.

Source: G.J. Morris and M.D. Young: 'Second Report on the Economic and Administrative Influences on Kangaroo Management in NSW - The Fauna Dealers', October 1985, p. 53 (compiled from NSW NPWS records).

6.56 The carcases are dissected, boned and packaged and the meat is then generally despatched to the pet food market. Some meat is sent to South Australia or overseas for human consumption. Health regulations prohibit the sale of kangaroo meat for human comsumption in New South Wales.

6.57 The skins from the carcases are sold to skin wholesalers, skin dealers or to the skin market. A majority of the skins are exported in either a pickled or a salted form.

6.58 There were nine fauna dealer processors in New South Wales in 1984. The industry was, however, dominated by three, who accounted for between 81 and 88 per cent of the kangaroos killed in New South Wales over the preceding five years. Those percentages would have been higher if kangaroos bought from interstate had been added.

6.59 At the time of the study by Morris and Young, there were no cross-company links by directors or by shareholders among the fauna dealers. There were, however, links between two New South Wales fauna dealers and two in Queensland. Stock was moved between the two States to take up supply and market opportunities. These fauna dealers developed a much broader approach to the industry than their competitors.

6.60 In May 1985 the operating level of the processing works ranged from 100 to 4500 carcases per week. The annual capacity varied from 24 000 kangaroos to 52 000 kangaroos. This gave the industry in the State a total capacity of approximately 1 280 000 carcases per annum. This is 1.5 times the maximum quota ever allocated to New South Wales.

6.61 In New South Wales, where most kangaroos shot commercially are intended for the carcase trade, there is a need to maintain supplies of kangaroo meat to the pet food trade. Morris and Young reported:

> All the fauna dealers, and in particular the bigger dealers, stressed the importance of maintaining supplies of meat to the pet food market. The fauna dealers considered that the overall competitiveness of the pet food market and the ready availability of substitutes made it extremely important to maintain supplies to

> the market to maintain customer loyalty. This perception has influenced their activities in many ways including their placement and operation of chillers, the amount of meat purchased from interstate and other fauna dealers, and the amount of meat kept in storage.[16]

Markets for Kangaroo Products

6.62 There are two main products derived from kangaroos shot commercially: meat and skins. Most of the meat is sold to the pet food market in Australia. A small amount is sold for human consumption in South Australia, Tasmania and Western Australia. The sale for human consumption is prohibited in the other States.

Kangaroo Meat Market

6.63 Some kangaroo meat is exported, either for human consumption or for pet food. Virtually no kangaroo meat is now included in canned pet food because of campaigns against such use by animal welfare organisations. Kangaroo meat is sold either fresh, which is preferred, or frozen to the pet food market.

6.64 Kangaroo skins are sold mainly as leather, rather than as fur. There is both an Australian market and an overseas market. Morris and Young examined the markets for kangaroo products in their study of economic and administrative influences on kangaroo management in New South Wales. This study gave some important insights into the kangaroo industry and the factors which influence the annual commercial kill in that State.

6.65 Morris and Young investigated the factors which affected the demand and supply of kangaroo products. They set out the following factors which affected the supply of kangaroo meat to the pet food trade:

- the price of kangaroo meat;
- long-term environmental conditions over the year, such as seasonal conditions which affect numbers in the population;
- comparative environmental conditions in Queensland and N.S.W. both in the long and short term;
- short-term environmental conditions within any one year such as localized wet weather which disperses the kangaroo population and creates accessibility problems for shooters;
- the impact of NPWS regulatory mechanisms and ANPWS export restrictions; and
- availability of shooters.17

6.66 The factors which affect demand for kangaroo meat for the pet food trade are:

- the price of kangaroo meat;
- the price of substitutes; and
- consumer preferences.[18]

6.67 Morris and Young considered that environmental factors were the main determinant of the area from which kangaroos are killed to satisfy the pet food market. In wet conditions, kangaroos are not dependent on particular water supplies or feed and disperse, making it difficult for a shooter to find them. In dry periods, kangaroos are more visible and, additionally, there is greater pressure from landholders to keep kangaroo populations under control to minimise damage done to properties. All of eastern Australia is unlikely to experience the same conditions for any length of time, and the fauna dealers will buy carcases from dealers in areas where kangaroos are plentiful, either within the State or interstate, to meet contractual requirements with the pet food industry.

6.68 Because the price of kangaroo meat had been relatively stable for some years, Morris and Young indicated that increased supply would probably deflate prices. This would provide a disincentive to increase supply, unless new markets were found for additional kangaroo meat.

6.69 Until recently, the quota in New South Wales had not been reached. However, the quota has since been exceeded and in 1984, the NSW NPWS took steps to limit the kill in some areas because, according to the results of aerial surveys, the density of kangaroos had fallen below one per square kilometre. In this way, the supply of kangaroo meat has been affected by government action.

6.70 The setting of a quota is not the only government action which can affect supply. The number of licensed shooters in an area is restricted. Chiller sites also have to be approved by the NSW NPWS. The Service can therefore restrict shooting in particular areas and encourage it in others.

6.71 With regard to demand factors, kangaroo meat competes with substitutes in the pet food market. Morris and Young argued that demand for kangaroo meat is price elastic. In other words, kangaroo meat is competing with substitutes on the basis of price.

6.72 Morris and Young estimated that between 68 and 77 per cent of the 'total potentially available pet meat taken within the State is consumed in N.S.W., primarily in Sydney'. They also estimated that consumption of kangaroo meat in the State ranged between 4388 and 10 756 tonnes a year, which is between 84 and 124 tonnes a week.

6.73 Morris and Young reported that, based on information received from fauna dealers, Sydney was the largest market for kangaroo meat in Australia (three fauna dealers estimated 30

tonnes a week for Sydney while one fauna dealer estimated the consumption to be about 120 tonnes a week). The Melbourne market was estimated at between 30 and 40 tonnes a week and the Brisbane market at between 10 and 15 tonnes a week. Morris and Young were not able to obtain data to substantiate these figures.

6.74 As there has been no commercial shooting in Victoria for some years, kangaroo meat is imported into the State mainly from New South Wales, Queensland and South Australia.

6.75 The four largest fauna dealers indicated that there was not the demand to increase supply of kangaroo meat. The four small dealers believed that there was scope to expand present markets and there was potential for new markets. Three of these dealers had established new local markets of about 10 tonnes a month.

6.76 In New South Wales the annual number of kangaroos killed commercially depends largely on economic and climatic factors, except when government restrictions are imposed on the industry. The fauna dealers are dependent on demand from the pet food market for kangaroo meat and, from the dealers' point of view, it is essential to maintain continuity of supply of meat to that market. Some of the larger dealers keep up to two weeks supply frozen in case the supply of carcases runs short.

6.77 Any significant reduction in the market would force the fauna dealers to impose restrictions on chiller operators and, in turn, on kangaroo shooters.

6.78 Under normal conditions, the number of kangaroos shot commercially in New South Wales depends on market factors, not on the level of damage done to properties by kangaroos. Despite pressures from landholders, kangaroo shooters will only kill kangaroos if they can sell them to chiller operators and fauna

dealers. It is pointless to kill kangaroos if demand for their skins or meat is non-existent.

6.79 The Queensland Fauna Dealers Association, in its written submission to the Committee, commented along similar lines:

> To date the major difficulty has been that the industry has been unable to market enough kangaroo products to enable it to provide service to all who would legally kill kangaroos.[19]

6.80 Because the fauna dealers have not been able to respond at times to requests from the Queensland NPWS to increase the kill, as a result of a lack of markets for kangaroo meat or kangaroo skins, the Service has taken other action. The Queensland Fauna Dealers Association submitted to the Committee:

> The industry is also subjected to sometimes damaging policies aimed at satisfying the more significant rural pressure groups. When kangaroos pester farmers and/or graziers the industry has been called upon to buy more kangaroos and new licenses have been issued. These policies have never achieved the objectives intended but they have given temporary relief to politicians from the landholders' complaints. Those in the industry always suffer losses at these times, and most of the new operators quickly disappear.[20]

6.81 The Committee asked the Director of the Queensland NPWS about putting pressure on the industry at times in response to complaints from landholders about kangaroo damage. The Director told the Committee:

> Yes, there could be instances where, because the market price for skins or meat is low, the industry is not buying skins or carcasses from shooters and yet we are having complaints from landholders about kangaroo populations. Having investigated the matter and having responsibility for the welfare of kangaroos

> and not the industry, we have no hesitation in leaning on the industry.[21]

Kangaroo Skin Market

6.82 Most kangaroo skins are used for leather rather than for fur. The kangaroo skin has a high tensile strength and is light in weight. It is used for footwear, particularly sporting footwear, and for specialty leather goods. Between 1980 and 1984, an average of about 68 per cent of skins from kangaroos killed in New South Wales or imported into that State from another State were exported to various countries.[22] The number of skins exported annually during that period went from a low of 507,504 skins in 1980 to a high of 1,185,351 in 1982.[23] This indicates the volatility of the overseas skin market. Kangaroo skin is competing with a number of substitutes despite its inherent qualities.

6.83 Morris and Young commented, in relation to the market in New South Wales, that:

> From the figures available it appears that N.S.W. consumption of kangaroo skins has varied dramatically over the past five years but on average only 30% of the total number of potentially available skins appear to have been utilized in N.S.W.
>
> From discussions with fauna dealers, skin wholesalers and skin dealers it is estimated that current demand for kangaroo skins from local manufacturers is in the order of 250,000 per year and that they have the capacity to use up to 500,000 per year.[24]

6.84 The export of kangaroo skins to the United States of America had been declining from 1964-65 until the imposition of a ban on exports in 1973. The imposition of the ban, according to Morris and Young, might not have had quite the impact that has been attributed to it.

6.85 Morris and Young asked the fauna dealers about the effects of the ban on their operations. Only three of the eight fauna dealers were in business at that time. Morris and Young commented:

> At the time only a few fauna dealers had significant contracts to supply the U.S.A. market and these dealers were obviously affected by its closure. For the industry as a whole it appears that in the short term skin prices dropped in response to an increase in the availability of skins previously exported to U.S.A. In the longer term, however, the closure of the U.S.A. market appears to have had no significant effects as the market has shifted to Europe.[25]

6.86 They also commented on the effect of a closure of the European market to kangaroo skins.

> Six of the eight fauna dealers interviewed considered that the closure of the European markets would have a devastating impact on the industry as a whole in particular on the market for skins. Two of the dealers were of the opinion that the effect on the industry would be irreversible while the other four dealers were more optimistic and considered that new markets could be developed.[26]

6.87 From the information supplied by the CSIRO consultants, and in evidence to the Committee, there are four main factors determining the size of the annual commercial kill in the mainland States - the weather, the demand for kangaroo products, pressure from landholders and government restrictions.

6.88 Under 'normal' conditions, the size of the commercial kill is largely governed by the market within quotas imposed by government. Until recently, the size of the kill was well below the level of the quota. In dry seasons, with less food available, competition between kangaroos and livestock increases and

kangaroos also become more visible. Consequently, there is more pressure from landholders on the fauna authority and directly on shooters to kill more kangaroos. This pressure from landholders is exemplified in the political row which arose out of the level of the Queensland quota for 1986 and 1987 when the Queensland Government's proposed quota was reduced by the Federal Government. At one stage, landholders threatened to have a concerted and massive kill of kangaroos to support their State Government's proposed quota.

6.89 Regular killing reduces the number of kangaroos that there would otherwise be. This reduces the pressure on farmers, particularly in times of drought. On the other hand, if kangaroos are killed solely because of their numbers rather than to mitigate actual or potential damage, it is probable that some of them will be killed unnecessarily.

CHAPTER 7

ILLEGAL ACTIVITIES

Introduction

7.1 It should be made clear at the outset that the Committee is primarily concerned with the welfare of kangaroos, rather than with illegal activities relating to kangaroos. The Committee's interest in the area of illegal activities relates to the effects of such activities on the welfare of kangaroos. It should be added that the Committee does not have the resources necessary to delve into illegal activities to any great extent.

7.2 Throughout the Committee's inquiry into kangaroos there have been allegations made about the illegal killing of kangaroos and an illegal trade in kangaroo products. Some of these allegations were given to the Committee in evidence, while others surfaced in the media.

7.3 The response by some authorities to allegations of illegal activity has been to demand proof, upon receipt of which, action would be taken against the perpetrators. Such a response is wrong. It is not the responsibility of animal welfare organisations or members of the public to investigate possible illegal activities to obtain evidence for subsequent legal action. That is the express responsibility of fauna authorities, the police and other appropriate law enforcement agencies. In fact, apart from it not being their responsibility, it is quite undesirable for unauthorised people to conduct such investigations. They may not only endanger their own lives by investigating illegal activities but also make it more difficult for the appropriate authorities to carry out inquiries afterwards.

7.4 Members of the public have a responsibility to pasall information about possible illegal or suspicious activities to law enforcement agencies. It is then the responsibility of those agencies to investigate those activities.

7.5 Even though authorities have a duty to investigate allegations of illegal activities, it is incumbent on members of the public to act responsibly with information they receive about possible illegal activities. Specious allegations waste both time and money. Some allegations, when aired by the media, can do significant damage even if they are proved later to have been unfounded. The Committee therefore wishes to make its position quite clear. It believes that the authorities and the public both have a responsibility to deal with information about possible illegal activities in a proper way.

Illegal Killing of Kangaroos

7.6 There has been mention in other parts of the report of illegal killing of kangaroos. There are basically three types of illegal killing: by landholders, by those people who kill for the thrill of it and by shooters involved in an illegal trade in kangaroo products.

Illegal Killing by Landholders

7.7 Illegal killing of kangaroos by landholders comes in various forms. Some landholders either do not bother to get a permit or do not know that a permit is necessary to shoot kangaroos. Some simply shoot kangaroos for dog food rather than for pasture or crop protection purposes. According to anecdotal evidence, such illegal killing is fairly widespread, particularly in areas where professional shooters do not operate.

7.8 In areas such as parts of the tablelands of New South Wales, which are outside the commercial zone, landholders often use drives to reduce kangaroo populations which they claim are causing damage to their properties. These landholders may hold permits to kill kangaroos but it is the use of the drive which is illegal. They consider the use of the drive as a more effective way of killing kangaroos than landholders individually killing them.

7.9 Some landholders use illegal methods, such as poison, snares, traps or dogs to kill kangaroos. As far as the Committee can determine, use of these illegal methods is limited. It should be pointed out here that the use of poison and, on a very limited basis, snares may be permitted by the Tasmanian NPWS in that State. In other States, these methods are illegal.

Illegal Killing by Thrill Seekers/Hunters

7.10 Some people, often under the influence of alcohol, go out to shoot kangaroos and other animals, including domestic stock, with no thought given to the cruelty and suffering which they cause. Some are deliberately cruel and seem to get pleasure from committing atrocious acts against animals. Most of this type of cruelty occurs within a radius of a few hours drive of towns and cities.

7.11 Most people in this category use small calibre rifles, such as .22s, or shotguns which are inappropriate firearms to use to shoot kangaroos. This adds to the likelihood of inhumane shooting occurring.

7.12 Most landholders discourage illegal shooters because of the damage they do to property and to domestic stock. However, RSPCA Australia reported that:

> ... it was pointed out by a property owner that illegal shooters do him a favour because they reduce kangaroo numbers in his area. It costs him $4-$5 to kill a kangaroo and this is a cost he would rather not have to incur.[1]

7.13 RSPCA Australia drew attention to the number of firearms licensed in some States. It quoted the Secretary of the Sporting Shooters Association of Australia (S.A. section):

> He pointed out that in S.A. there are 120,000 firearm owners and only 10,000 hunting licences issued and he wondered what do the other 110,000 people do with their firearms?[2]

7.14 The Committee is concerned about the large number of firearms which are licensed in Australia and the ease in some States with which people can acquire a licence to own them. This is a matter that will be investigated in more detail later in the inquiry when the Committee examines the question of hunting of wildlife.

7.15 The Committee supports the tightening of gun laws. As much of the illegal shooting is carried out with small calibre firearms, there should be no distinction made in gun laws between high-powered and other firearms.

Illegal Killing for the Kangaroo Trade

7.16 There is some illegal killing of kangaroos for the illegal trade in kangaroo products. This killing is probably carried out by part-time shooters. The illegal nature of the killing and of the trade makes it difficult to get evidence or reliable information about the extent to which it occurs.

7.17 There is also some illegal shooting of kangaroos for the legal trade. For example, there have been incursions into New South Wales by Queensland shooters and the carcases or skins

would probably have had Queensland tags attached to them. They would then have entered the Queensland trade.

7.18 In New South Wales, because of the time taken, which has been up to two weeks, to get occupiers' tags from the NSW NPWS, kangaroos have moved to another propety. Consequently, tags for the approved property have been attached to carcases taken from a nearby property. This gave rise in the reports of Young, Morris and Delforce to a suggestion that area tags, rather than specific property tags, be issued by the NSW NPWS.

7.19 From a welfare point of view, there is probably little difference between the various forms of illegal shooting by professional shooters and legal shooting by professional shooters. However, kangaroos are protected animals and may only be killed when permission has been given by a fauna authority. Illegal killing, for whatever reason, cannot be condoned in any circumstance. The fact that kangaroos may be perceived as pests by some landholders is not an excuse to kill them without permission or to kill them in a way which is likely to cause suffering. Fauna authorities are denuded of resources making enforcement of wildlife regulations virtually impossible. This exacerbates the problem because those people who resort to illegal killing realise that they can carry out such activities with virtual impunity from prosecution.

7.20 The number of illegal kills also distorts the total number of kangaroos killed each year. Although State fauna authorities make an allowance for such a number, there is no means of confirming whether their calculation is reasonably accurate or hopelessly wrong. The Committee has no way of telling the number of kangaroos killed illegally but suspects, based on information supplied from a wide range of sources, that it is not insignificant.

Illegal Trade in Kangaroo Products

7.21 The illegal trade in kangaroo products falls into two categories: the Australian trade and the overseas trade.

Australian Trade

7.22 As far as the Committee can determine, an illegal trade in kangaroo products within Australia, to the extent that it does exist, is mainly in kangaroo meat. There is almost certainly some small illegal operations where meat is supplied to pet shops for sale as pet meat. This was confirmed privately by one State NPWS.

7.23 Australians for Animals alleged to the Committee that there was a more substantial illegal trade in kangaroo meat with a possibility that some of that meat was being used in a meat substitution racket. Australians for Animals was unable to provide any satisfactory evidence of such a racket and the Committee also has no evidence from other sources. Because of the damaging nature of such allegations about a substitution racket, the Committee cannot give any credence to them until such time as satisfactory evidence of a substitution is produced.

7.24 As a result of the evidence given to the Committee by representatives of Australians for Animals on 22 January 1987, the Minister for Primary Industry wrote to the Committee:

> The investigation of the totality of material presented by Australians for Animals has to date not shown up any illegal activity insofar as the areas that are the responsibility of the Australian Quarantine and Inspection Service (AQIS) are concerned. However we recognise that the issue of substitution is not one which we can afford any complacency about and have given further consideration to the adequacy of controls in this area which include:

- routine random species testing of edible export product since 1981, with over 130,000 samples tested in the two year period 1985/86 and no irregular test results involving Australian fauna

  - with a higher incidence of testing on product from premises placed in the high risk category

- sealing of containers

- intensified on-site inspection and out-of-hours surveillance

- monitoring persons who manage and control those premises

- detailed record keeping relating to the export of game and animal food

Strict certification requirements exist for the export of edible as well as inedible meat. In addition most potential countries to which meat can be exported have their own requirements.

These controls are supplemented as appropriate with investigations such as the recent action which AQIS co-ordinated involving authorities in two States where species tests were conducted of certain cooked meat products. This particular investigation detected no anomalies.[3]

7.25 In a letter dated 16 March 1987 to the Committee, Mr D.S. Saunders, the Director of the National Parks and Wildlife Division of the Department of Conservation and Lands, Victoria, stated:

> There is no evidence at this time that beef substitution is operating in Victoria, using Kangaroo or any other illegal meat. Meat Inspection Branch monitoring procedures can identify incorporation of kangaroo, horse, or other illegal species, into mixed meats and smallgoods, in very small amounts. The continuous, random sampling of minced and comminuted meats, smallgoods, and frozen meats

in storage has not demonstrated any illegal substitution since the time of the Royal Commission into the Australian Meat Industry.

7.26 Australians should be concerned about the effects of another meat substitution racket on the country's meat exports. It is a matter which the Department of Primary Industries and Energy must monitor closely. This subject is, however, on the periphery of the Committee's inquiry and the Committee does no more than record the allegations, which have already received considerable publicity in the media, and the responses of the responsible authorities.

Overseas Trade

7.27 Although the bulk of the meat of kangaroos killed by commercial shooters is used in Australia, most of the skins are exported. Details of exports of both meat and skins are shown in Table 7.1.

Table 7.1 Exports of Kangaroo Skins and Meat

Raw Kangaroo and Wallaby Skins

YEAR	QUANTITY (No.)	VALUE($)	GROSS WEIGHT (000 Kg)
80-81	282,294	1,404,000	235
81-82	214,682	1,161,000	276
82-83	205,865	1,328,000	286
83-84	68,917	475,000	67
84-85	129,767	1,005,000	131
85-86	90,730	818,000	198
86-87	82,135	674,909	116

Kangaroo and Wallaby Meat: Unfit for Human Consumption

YEAR	QUANTITY (Kg)	VALUE($)	GROSS WEIGHT (000 Kg)
81-82	356,317	206,000	361
82-83	678,124	456,000	691
83-84	261,658	145,000	262
84-85	333,667	211,000	341
85-86	380,706	252,000	387
86-87	481,251	374,180	486

Kangaroo Leather

YEAR	QUANTITY (M^2)	VALUE($)	GROSS WEIGHT (000 Kg)
80-81	-	168,000	-
81-82	-	459,000	-
82-83	-	1,288,000	-
83-84	-	842,000	-
84-85	26,270	878,000	19
85-86	72,108	1,584,000	56
86-87	122,566	2,587,873	59

Kangaroo Meat: Fresh, Chilled or Frozen

YEAR	QUANTITY (Kg)	VALUE($)	GROSS WEIGHT (000 Kg)
80-81	1,671,445	3,247,000	1,869
81-82	1,520,837	2,081,000	1,563
82-83	597,043	942,000	606
83-84	225,201	348,000	227
84-85	183,088	226,000	185
85-86	291,528	394,000	298
86-87	209,967	309,420	213

Pickled Kangaroo Hides and Skins

YEAR	QUANTITY (No.)	VALUE($)	GROSS WEIGHT (000 Kg)
80-81	843,896	3,334,000	871
81-82	1,352,925	6,703,000	1,312
82-83	1,554,398	8,344,000	1,314
83-84	993,598	5,687,000	781
84-85	1,199,883	10,911,000	895
85-86	929,540	8,998,000	774
86-87	1,056,976	7,926,654	920

Source: ABS Statistics, Codes 2120901, 2919507, 6116901, 0118901, 2119905.

7.28 There have been a number of allegations of illegal exports of kangaroo skins, all of which have been based on circumstantial evidence. In a report prepared by Ms A.M. Dixon, Wildlife Trade Monitoring Unit, it was suggested that the number of kangaroo skins imported into Europe was double that included in export statistics published by the Australian Bureau of Statistics (ABS). It was admitted that it was difficult to correlate European import statistics with Australian export statistics. In addition, information from leather manufacturers could not be taken as 'hard' evidence. In a response to the report, the ANPWS suggested that the re-exporting of skins from the original destination to another country might have accounted for the possible higher number of skins in one country than that recorded by the ABS.

7.29 It is almost impossible to prove that there is an illegal export trade in kangaroo skins, unless there is a concerted effort by government authorities in Australia and overseas to monitor consignments of skins.

7.30 The Committee pursued the question of controls over exports with ANPWS, the Australians Customs Service (ACS) and the Customs Officers Association of Australia. The ACS told the Committee that consignments of kangaroo products, for which export permits had already been issued by the ANPWS, were not inspected.[4] It was admitted by the ACS that the export of kangaroo skins was not a high priority and that unless there was information about a consignment of illegal skins, containers holding skins were not checked. In other words, there is no control over possible illegal exports of skins at the customs barrier.

7.31 Provided that there was no obvious discrepancy on the application form, the ANPWS would issue an export permit for a consignment of kangaroo products. There was no evidence that State fauna authorities checked consignments being transported

overseas or transferred interstate. In other words, although there has been a permit system for the export of kangaroo products, there have been no checks, or at best very few checks, as to whether the documentation accurately described the actual goods being exported.

7.32 Until some effort is made by the ACS, the ANPWS and the State fauna authorities to make some random inspections of consignments of kangaroo products, there will continue to be allegations of an illegal trade in such products. Were such an illegal trade to exist, it would be difficult to know whether the skins involved were derived from species subjected to commercial killing or from protected species. The effects on kangaroo populations of such an illegal trade are also unknown.

7.33 The Committee agrees that the illegal export of kangaroo products is not as high a priority as drugs and firearms, but it should not be relegated to a level where no checks are done at all. Some random checks must be done to provide a deterrent to exporters illegally exporting skins. Therefore, the Committee **RECOMMENDS** that the Australian Customs Service, the Australian National Parks and Wildlife Service and the State fauna authorities establish arrangements for the random inspection of consignments of kangaroo products which are to be exported.

7.34 In its Second Supplementary Submission dated May 1986, the ANPWS submitted that under the Wildlife Protection (Regulation of Exports and Imports) Act 1984:

> The Administrative Arrangements between the Australian Customs Service and the ANPWS provide that information received by ANPWS is passed to ACS (Intelligence) in Canberra. ACS is then responsible for appropriate dissemination to Customs areas. In cases where information is received by ANPWS, and that information requires immediate operational response, ANPWS passes the information direct

to operational areas of Customs, and to ACS Intelligence Canberra.[5]

7.35 In August 1986, the ANPWS was questioned about resources devoted to the area of wildlife enforcement. The Committee was told:

> The current position is that we have one person whose task is to maintain liaison, both within Australia and outside Australia, on enforcement matters, ranging between the Australian Quarantine Service, the Australian Federal Police, the Australian Customs Service, the State parks and wildlife services and international wildlife agencies. About half of the time of another person is now devoted to assisting.[6]

A little later, it was explained that:

> We tend to be a recipient of information on wildlife offences. We are identified with overseas wildlife agencies as being the agency not with enforcement responsibility but with a substantial interest in knowing about activities that may result in illegal import or export. We tend to be a clearing-house of information.[7]

7.36 State Governments have jurisdiction in wildlife matters unless there is evidence or suspicion that wildlife or wildlife products are to be exported. It then becomes the responsibility of the ANPWS or other Commonwealth authorities. Until the present administrative arrangements came into force following the enactment of the Wildlife Protection (Regulation of Exports and Imports) Act 1984, the ACS had a wider investigative role in wildlife enforcement. It is now restricted to enforcement of legislation within the barrier.

7.37 In its submission and in oral evidence the ANPWS floated the idea of the establishment of a fauna squad, either within an existing authority or formed by a group of authorities to

investigate the illegal trade in fauna. The Committee supports the establishment of such a squad, not only to investigate a possible illegal trade in kangaroo products but also the lucrative trade in birds and other protected species.

7.38 The Committee **RECOMMENDS** that the Australian National Parks and Wildlife Service establish a fauna squad to investigate the illegal export of fauna.

7.39 The random inspection of containers of skins by Customs' officials and the establishment of a fauna squad by the ANPWS would introduce an element of risk, now virtually non-existent, in the illegal export of kangaroo skins. The Committee believes, however, that more measures are needed to reduce the potential for such activity.

7.40 The Committee considered measures to tighten controls over the export of skins. The first measure is the tattooing of skins. At present, once the royalty tags are removed from the skins at the fleshing works, there is no ready means of identification to show that skins have been legally obtained under approved management programmes. The tattooing of skins would provide identification after fleshing, not only in Australia but also overseas.

7.41 It would be possible for illegally obtained skins to be tattooed. Other measures are therefore needed to tighten controls over the exports of skins. As skins are fleshed prior to export, it appears that this is a point in the export process at which controls can be introduced. If an inspector were present at the fleshing works when skins were processed and packaged, he could ensure that skins had royalty tags and tattoos. He could also officially seal containers to prevent the possible addition of extra illegal skins at some further point in the export process. This proposed system is similar to the export meat inspection service but on a more limited scale. A small levy on exporters

should be able to fund the direct costs of such an inspection service.

7.42 With the introduction of these controls as well as those mentioned earlier, it would make the illegal export of kangaroo skins much more difficult. No system is foolproof, but such a system should keep illegal exports to a minimum and provide authorities in Australia and overseas with a greater chance of apprehending illegal consignments of skins.

7.43 The Federal Government has a responsibility to establish and maintain adequate controls to prevent the illegal exports of goods. At present, controls are minimal and provide virtually no disincentive to potential illegal exporters of kangaroo skins. Such a position is untenable and action must be taken quickly to redress it.

7.44 The Committee **RECOMMENDS** that the Australian National Parks and Wildlife Service establish controls over the export of kangaroo skins by appointing inspectors to check kangaroo skins at fleshing works and to seal containers containing skins for export at those works. Only skins sealed in containers should be exported.

7.45 The Committee **RECOMMENDS** that skins taken under approved management programmes be tattooed or be able to be identified in some other way after being fleshed when the royalty tag has been detached.

7.46 The Committee **RECOMMENDS** that fleshing works which treat kangaroo skins for export be licensed by the Australian National Parks and Wildlife Service.

CHAPTER 8

CRUELTY TO KANGAROOS

Introduction

8.1 Incidences of cruelty to animals normally evince an emotional response in people in our community. The level of response does depend to some extent on the species of animal involved; cruelty to a kitten will create a greater emotional response than cruelty to a rat. The physical characteristics and national symbolism of kangaroos tends to create a high emotional reaction to incidences of cruelty perpetrated against them.

8.2 The level of cruelty to kangaroos is an essential element in this inquiry. To some extent, cruelty to kangaroos has been institutionalised through the system of kangaroo management. However, the worst examples of cruelty can be seen in the actions of illegal hunters or people, often drunk, who have no respect for animals. The actual extent of cruelty is very difficult to determine. The illegal killing of kangaroos is difficult to detect and prosecutions have been few. This position has been exacerbated by the lack of resources available to fauna authorities throughout Australia. The extent of cruelty within the system of the legal killing of kangaroos is also hard to uncover.

8.3 In 1984, the ANPWS commissioned RSPCA Australia to carry out a study of cruelty to kangaroos. Three executive members of RSPCA Australia and two consultants produced a report entitled 'The Incidence of Cruelty to Kangaroos' in May 1985. Because of the short time available to the RSPCA to conduct the inquiry, it was decided to examine cruelty to the eastern and western grey kangaroos, red kangaroos and the common wallaroo during

commercial, non-commercial and illegal hunting. The killing of wallabies in several States, particularly Tasmania and Queensland, was excluded.

8.4 In January 1986, the ANPWS commissioned RSPCA Australia to do a study of cruelty to wallabies in Tasmania. The RSPCA presented its report entitled 'Incidence of Cruelty to Wallabies in Commercial and Non-Commercial Operations in Tasmania' in May 1987.

8.5 The two reports of RSPCA Australia on cruelty to kangaroos and wallabies go some way to filling the large gap in knowledge in this area. Whereas beforehand much of the debate centred on anecdotal information, the work of the RSPCA has now put discussion on a firmer and more rational basis. The RSPCA would be the first to agree that there are inadequacies in its studies. However, it would take considerably more time and resources than those available to the RSPCA to accomplish results which would significantly improve on its work.

Definition of Cruelty

8.6 The Committee adopted, for the purposes of this report, the definition of cruelty which was used by RSPCA Australia in its study, namely:

> Cruelty means the infliction upon an animal of pain that in its kind or in its degree or its object or its circumstances is unreasonable.[1]

In the above definition 'pain' should be taken to mean 'suffering or distress of body or mind'.

8.7 Although it can be argued that deprivation of life is itself an act of cruelty, the Committee has agreed that in this report it should not be treated as an act of cruelty.

Consequently, when instantaneous death or loss of consciousness without recovery occurs, there is no cruelty involved. When there is not instantaneous loss of consciousness, and the kangaroo suffers pain (in the common usage of the word) or distress, there is, in the opinion of the Committee, some degree of cruelty. That degree depends on the intensity and duration of suffering. It is important, therefore, when a kangaroo is wounded rather than killed, that it be killed as soon as possible, to avoid unnecessary suffering. In other words, the shooter must despatch the wounded kangaroo before shooting any other kangaroo.

8.8 If a doe is killed and a young at foot escapes, the young may suffer some distress. If distress is caused this, too, is cruel. Such cruelty is, however, often difficult to prevent.

Methods of Killing Kangaroos and Wallabies

8.9 Various methods are used to kill kangaroos and wallabies. Each is examined below to determine its humaneness.

Rifle Shooting

8.10 The RSPCA examined the effect of the impact of a bullet in the brain, neck and chest of a kangaroo.

8.11 The RSPCA found that a bullet which penetrates the brain will cause instantaneous death and it regarded this method as humane. Sometimes a bullet, which is fired by a shooter facing the front of the head, 'enters the frontal sinuses and fragments without entering the cranium and often two shots are required to kill the kangaroo'. The kangaroo is in a comatose state after being struck by the first bullet.

8.12 With regard to chest shots, the RSPCA study concluded that:

1. A direct shot to the heart which ensures massive rupture of one or more heart chambers should induce unconsciousness in the kangaroo within 5 to 20 seconds depending upon the severity of heart rupture. Death will follow rapidly.

2. Unconsciousness following rupture of a thoracic artery is much less predictable, and depends upon the artery ruptured, and the state of activity of the kangaroo both before and following being shot. Kangaroo shooters and observers regularly report kangaroos traversing up to 100 metres following a "chest" shot before falling unconscious. Death will occur.

3. The problem of chest shots which traverse the thoracic cavity without doing vital damage is more frequent than jaw/nose shattering in "missed" head shots according to veterinarians experienced in shooting kangaroos.

From the above information it is concluded that it would appear that a bullet placed in the heart of an animal so that it causes massive damage to the organ will result in the death of the animal that could be called "humane" using the criteria established by the European Parliament. However, it is probable that chest artery rupture which will cause the death of the animal does not meet the "humane" criteria.[2]

8.13 The Code of Practice specifies the use of centrefire rifles to shoot kangaroos or wallabies. However, many non-commercial shooters and illegal shooters use rimfire rifles. The RSPCA commented in its first report 'that these arms do not usually kill humanely'.[3] In its second report, the RSPCA again found that rimfire rifles were not satisfactory to kill wallabies. It stated:

Considering the high degree of wounding with 0.22 rimfire it is recommended that the use of rimfire be banned.[4]

Shotgun Shooting

8.14 The 'Code of Practice for the Humane Shooting of Kangaroos' provides for the use of 12 gauge or larger shotguns for shooting the smaller wallabies within a range of 30 metres. The first RSPCA study excluded the incidence of cruelty to wallabies but the use of shotguns was briefly addressed. No literature or data were found to determine whether the use of shotguns to kill wallabies is humane. Witnesses from fauna authorities of Tasmania, Victoria and New South Wales believed that shotguns used in accordance with the Code of Practice resulted in the humane killing of wallabies.

8.15 In its second study, the RSPCA recommended the banning of shotguns for shooting wallabies. It found that in its survey less than 50 per cent of animals shot with shotguns were killed cleanly. Although changing the point of aim from the chest to the head would probably have increased that percentage, there would still have been an unacceptable level of inhumane deaths.

Kangaroo Drives

8.16 The RSPCA concluded that kangaroo drives are inhumane, based on observations of a government-controlled drive in the Hattah-Kulkyne National Park in Victoria in July 1984 and on work done by Dr N. Shepherd of the NSW NPWS.

8.17 The RSPCA had difficulty in obtaining information on the incidence of kangaroo drives. Although it was told that drives occur, it could form no judgement on their frequency.

8.18 The Committee received private information from a number of sources, including landholders and shooters, that landholders often resort to drives in areas where professional shooters are not operating. Many landholders believe that drives are a more

effective method of reducing kangaroo population levels in those areas than landholders shooting alone.

Snares

8.19 The use of snares to kill kangaroos or wallabies is banned in all States other than Tasmania, where the Director of the Tasmanian NPWS may give permission for snares to be used to kill wallabies, provided that:

> (i) A primary producer has a crop or improved pasture to protect and shooting is not practical.
>
> (ii) The person or persons who are to undertake the snaring are experienced and efficient snarers.
>
> (iii) The chances of catching species other than wallaby are small.[5]

8.20 An officer of the Tasmanian NPWS told the Committee that only about three or four permits are issued a year. However, interviews conducted by the RSPCA indicated that considerably more people were using snares without permission. The Tasmanian NPWS had tried some years ago to ban snaring in Tasmania but the regulation was rejected in the Legislative Council.[6]

8.21 The illegal use of snares also occurs on the mainland and there has been a conviction in Victoria for illegal use of snares against kangaroos.

8.22 In its first report, the RSPCA reported the findings of its consultant during a visit to Western Australia.

> He observed snares being used along fences in this state and found that the kangaroos caught in this fashion suffered a slow death due to starvation etc. Many of the snares were not found around the kangaroos neck but around a

> leg or a part of the body e.g., chest and torso ...[7]

In its second report, the RSPCA stated:

> This form of killing is mainly by neck snares, which can kill by strangulation. Foot snares are also used and these snares cause leg injuries and a slow death to a trapped wallaby. Not all snares are checked daily, as requested by the NPWS.[8]

The RSPCA went on to recommend a complete ban on snaring.

8.23 In 1985, a representative of the ANPWS expressed that Service's 'quite overt opposition' to snaring.[9]

Poison

8.24 Tasmania is the only State that permits the poisoning of wallabies. Landholders may obtain a permit from the Tasmanian NPWS to use 1080 poison to protect crops or pastures, usually in areas where shooting is ineffective. The Forestry Commission also uses 1080 poison to kill wallabies which browse on seedlings.

8.25 The RSPCA quoted from work done by McIlroy on the effects of 1080 poison on native herbivores as follows:

> The most common signs of poisoning amongst herbivores are either hypersensitivity to stimuli or, more frequently, lethargy, respiratory distress and finally respiratory or cardiac failure. Some species experience convulsions, particularly before death.[10]

As a result of the above effects, the RSPCA concluded that the use of 1080 poison to kill wallabies was cruel. It recommended the banning of poison to kill wallabies.

8.26 A representative of the ANPWS told the Committee that:

> ... it is not a practice we in any way condone. It is something that I guess we reluctantly accept.[11]

Killing to Reduce Potential Suffering

8.27 During the course of the inquiry, landholders, in particular, expressed the view that it is preferable to shoot kangaroos on a regular basis rather than let populations build up. This would reduce competition between kangaroos and livestock in bad conditions when little feed is available and would help to prevent a slow and lingering death of a large number of kangaroos from thirst and starvation.

8.28 Animal welfare representatives pointed out that nature should be allowed to take its course without unnecessary intervention by humans. Inevitably, some kangaroos will die because of droughts or other natural disasters. In 1982-83, aerial survey results showed a decline in populations of about 40 per cent, attributed largely to the severe drought in south-eastern Australia. These losses occurred despite the programme of killing under the National Kangaroo Management Plan.

8.29 This is a question to which there is no easy answer. The Committee noted, however, that the kangaroo is a protected animal except where permission is given by fauna authorities to kill a number of them. The NPMK provides for the killing of kangaroos to contain the deleterious effects of kangaroos. There is no reference in the Plan to the killing of kangaroos to prevent suffering in droughts.

8.30 If kangaroos did not cause damage to properties, landholders would not try to kill them. Landholders do not normally kill other wildlife unless there is a threat to property, human life or stock, except perhaps moribund animals for individual altruistic reasons.

8.31 As mentioned elsewhere in this report, the Committee does not condone the killing of kangaroos except to contain their deleterious effects or, in very limited numbers, for scientific purposes.

8.32 The Committee therefore does not accept the possible prevention of suffering during drought as a reason for killing kangaroos even though regular killing may have that effect, in varying degrees. It should not be forgotten that shooting, particularly by non-professional shooters, also causes suffering.

8.33 The principle of not killing kangaroos to avert possible future suffering from natural disasters should not be confused with the killing of kangaroos in anticipation of damage to property.

RSPCA Australia's Mainland Study

8.34 In its first study, the RSPCA examined cruelty during commercial killing, non-commercial killing and illegal killing in the mainland States. The findings of the RSPCA in each of the three areas are summarised below.

Commercial Killing

8.35 A consultant to the RSPCA did field surveys in the four mainland States where there is commercial shooting to observe the shooting of kangaroos by professional shooters and to inspect the carcases held in chillers to find out in which part of the body they were shot. He found that the percentage of head shots varied from State to State reflecting the different requirements of the industry. In New South Wales, where there is a high demand for full carcases, 95 per cent of carcases inspected were head shot. Some processors paid lower rates for kangaroos which were shot in the chest rather than in the head.

8.36 In South Australia, the proportion of head shots was 84 per cent, reflecting the demand for 'trade butts' as well as full carcases.

8.37 In Queensland there is both full carcase and skin shooting. Of the carcases inspected, 85 per cent were head shot. Apart from head and chest shots, there were also some hip shots detected during examination. However, it is stated in the study that:

> It would appear that most shooters use chest shooting for skins and head shots for meat carcasses.[12]

If that were correct, the percentage of head shots in Queensland would be much lower because of the substantial skin shooting in that State.

8.38 In Western Australia, only 81 per cent of the carcases inspected were head shot.

8.39 The consultant accompanied shooters in the four States on kangaroo shoots. The general standard of marksmanship of those shooters was good with few misses and hits which were not clean kills. The Committee members accompanied four full-time shooters in the Broken Hill and Menindee areas of western New South Wales in January 1986. Those shooters displayed a high standard of marksmanship. All the kangaroos killed by them were head shot.

8.40 In its general conclusions, the RSPCA stated:

> It should be noted that the survey could not be considered fully adequate to establish definite figures for the proportion of head shot kangaroos, as time was limited. Also, it was apparent that most shooters and chillers volunteering information were those considered "the cleanest" in the industry. There were several indications that not all shooters were

> as competent as those observed. Also, there were reports of processors willing to accept hip shot kangaroos, yet evidence for this, as well as other inhumane practices, were difficult to obtain.[13]

Non-commercial Killing

8.41 The RSPCA found it difficult to obtain information on the incidence of cruelty to kangaroos by landholders or their agents who had permission to reduce kangaroo numbers on their properties. Most of the information obtained was derived from interviews with landholders and from a mail survey of veterinarians in rural areas.

8.42 From interviews with landholders and fauna authorities it was elicited that a range of firearms of different calibres, including those which were not allowed under the Code of Practice, were used to kill kangaroos. In addition, some landholders used shotguns.

8.43 Responses from veterinarians indicated that 86 per cent of landholders used rifles, 11 per cent used shotguns, one per cent used poison and two per cent used dogs to kill kangaroos. The veterinarians also said that 38 per cent of kangaroos were head shot, five per cent were neck shot, 52 per cent were chest shot, two per cent were hip shot and three per cent were shot elsewhere.

8.44 In its general conclusions, the RSPCA stated:

> From the information obtained during the survey it would appear that many of those people involved in non-commercial culling do not always use humane methods and that there are incidences of illegal (and cruel) culling techniques e.g. kangaroo drives, poison. The use of shotguns was common as was the use of the chest as a preferred point of aim. Small calibre rifles were used by people that had not spent time ensuring that their equipment

and techniques were good enough to humanely cull kangaroos.

> The problems associated with non-commercial culling appear to be neglected by the relevant authorities in each state visited. The supposed off-take from this method is relatively low compared with that from commercial harvesting. However, there are no realistic figures for the number of kangaroos killed non-commercially as the official figures for culling numbers issued by each state come from the number allowed to be culled on each licence issued, not from the actual numbers killed. There appears to be no inspection of a licence holders operation, at least in Victoria, South Australia or Western Australia, nor any check on the actual numbers destroyed or on the methods used. Commercial shooters have some form of control upon their methods, either from the wildlife authorities or from the demands from the industry. This does not occur with non-commercial shooters. Although no actual figures can be placed upon the number of kangaroos that may be killed inhumanely by non-commercial hunters it is felt that the proportion would be far higher than that obtained from professional shooters.[14]

Illegal Killing

8.45 The RSPCA divided illegal shooting into three categories, based on the purpose of killing kangaroos. It concluded that the incidence of cruelty to kangaroos shot for the illegal commercial trade would be similar to that for commercial shooting. Kangaroos shot for dog food or for illegal population reduction purposes would be similar to that for legal non-commercial purposes, except that poison would not be used if kangaroos were being killed for food. The RSPCA went on to say:

> "Fun" shooting appears to be a different matter. In this case, there appears to be a relatively high incidence of cruelty to kangaroos by this method of culling. The number of reports of wounded kangaroos and dead kangaroos with wounds from shotguns,

knives etc. in areas of the body other than the head would indicate that inhumane practices have been used.

Although illegal commercial culling can be considered relatively humane, the high rate of cruelty inflicted on kangaroos by "fun" shooters would give an overall high level of cruelty to illegal culling.[15]

Discussion

8.46 The RSPCA Australia in its study concluded that there was cruelty in all areas of kangaroo killing but that the incidence of cruelty was least in commercial killing and greatest in illegal killing with the non-commercial killing falling between the two. All the information received by the Committee confirms that conclusion.

8.47 Some of the cruelty has become institutionalised through the system of kangaroo management. Even the best marksman cannot maintain a perfect record of clean kills. There will always be some kangaroos which suffer wounds from ill-placed shots.

8.48 Under the present non-commercial system, there is considerably more cruelty than in the commercial operation. While some landholders shoot kangaroos with small calibre rifles or shotguns, and most without the marksmanship of professional shooters, there will be no diminution in the incidence of cruelty.

8.49 The Committee **RECOMMENDS** that the Australian National Parks and Wildlife Service conduct or commission research to determine the nature and level of suffering of wallabies and non-target species which ingest 1080 poison or any other poison used to kill wallabies. Depending on the results of that research, a decision should be made by the Australian National

Parks and Wildlife Service and the Tasmanian National Parks and Wildlife Service on the future use of poison to kill wallabies in Tasmania.

8.50 The Committee **RECOMMENDS** that all methods of killing kangaroos other than by shooting be banned in mainland Australia. The Committee further **RECOMMENDS** that in Tasmania the use of poison to kill kangaroos be permitted only until such time as the research recommended by the Committee has been completed, provided that the research is carried out expeditiously.

8.51 Suggestions by the RSPCA to reduce cruelty in non-commercial shooting are discussed in Chapter 9.

RSPCA Australia's Tasmanian Study

8.52 The findings and conclusions of RSPCA Australia in relation to commercial and non-commercial killing of wallabies in Tasmania are set out below.

Commercial Shooting

8.53 The RSPCA concluded that:

> The incidence of humane kills by commercial hunters was relatively high, but slightly less than that found in the survey on kangaroo killing on the mainland.[16]

At the four commercial shoots which the consultant to the RSPCA observed, 72 per cent of rufous wallabies and 82 per cent of Bennetts wallabies were killed cleanly.[17]

8.54 In those shoots, the percentage of observed instantaneous kills (related to ammunition type) was as follows:

- rimfire (0.22 Magnum) 72 per cent; and
- centrefire (0.22 Hornet) 95 per cent.[18]

8.55 As mentioned elsewhere, the RSPCA recommended against the use of rimfire rifles to shoot wallabies. A number of commercial shooters use rimfire rather than centrefire rifles.

Non-commercial Shooting

8.56 The RSPCA reported that most non-commercial shooters in Tasmania use shotguns and ammunition as specified in the Code of Practice. A few shooters use rifles to shoot wallabies.

8.57 The RSPCA consultant attended six shoots with non-commercial shooters, with the number of participants ranging from one to 17. The latter had a permit from the Tasmanian NPWS to hold a shoot with more than fifteen shooters. Dogs were used in most shoots to flush out wallabies from the scrub in which they were hiding. Dogs sometimes killed wounded wallabies, particularly those which were still mobile. At those shoots, which the RSPCA believed would have been among the best, less than 50 per cent of kills were considered to be humane.

8.58 The level of cruelty and the use of dogs moved the RSPCA to recommend the banning of shotguns to shoot wallabies. The RSPCA made favourable comments about the attitudes and behaviour of the participants in the shoots.

8.59 At present, the Director of the Tasmanian NPWS may permit a shooter, who is shooting under a crop protection permit, to shoot at night, use lights and shoot from a vehicle. Without that permission, shooting must be in daylight, without lights and be not within ten metres of a vehicle.

8.60 On the mainland, all commercial shooting is done at night with a spotlight. This allows the shooter to get well

within range and have a stationary target to maximise accuracy and minimise suffering. The RSPCA concluded that restrictions on this method of shooting in Tasmania leads to a higher level of cruelty.

CHAPTER 9

KANGAROO MANAGEMENT - A SUMMING UP

Introduction

9.1 In this chapter, the Committee draws together and considers the issues which have been raised in evidence and in the public debate dealing with the management of kangaroos. The long public debate has been marked by emotional and sometimes acrimonious outbursts from both sides. Inevitably, the claims and counter-claims have caused the public to become concerned and confused.

9.2 It should be remembered that the kangaroo occupies an important place in our cultural heritage. The kangaroo, with its special physical characteristics, evokes considerable interest and affection in Australia and overseas. It is, however, more than just an attractive animal. It is used as a symbol to identify Australia and Australians. It is included in Australia's Crest. It adorns Qantas aircraft and a pugilistic version captured the spirit of Australia II's successful challenge for the America's Cup in 1983. With millions of kangaroos being killed every year, it is no wonder that the public has become concerned.

9.3 Given the nature and tenor of the debate on kangaroos, it has not always been clear where there is agreement and where there are differences of opinion. Areas of agreement are identified by the Committee and the issues on which there is disagreement discussed, conclusions drawn and recommendations made.

Kangaroo Populations

9.4 It has often been alleged in the public debate that the National Plan of Management for Kangaroos will deplete the species being killed to a point where one or more of those species will become endangered. The long-term viability of the species was also a subject about which both the United States' Fish and Wildlife Service and the Environment Committee of the European Parliament were concerned in their respective inquiries.

9.5 In Chapter 2, the Committee, after careful consideration of the evidence, concluded that none of the species subject to killing is threatened with extinction at present and there is no indication that any will become extinct. There is no evidence at present, using current methods of estimating population size and dynamics, that provides grounds for the Committee to reach any other conclusion.

9.6 The Committee warned against complacency and argued that continual monitoring is essential to ensure that populations are kept at safe levels over all of their present ranges. Monitoring should not be restricted to aerial surveys of red and grey kangaroos. Despite greater difficulties, surveys of other species, which are legally killed, should also be conducted regularly. Some of these species may be more at risk than either red or grey kangaroos both from killing and habitat destruction in the long term.

Habitat Loss

9.7 The National Plan of Management for Kangaroos, which was endorsed by CONCOM on 30 May 1985, included as one of its objectives: 'to maintain populations of kangaroos over their natural ranges'.

9.8 Throughout the history of Australia, there has been a continuous extension of urban and rural development which has destroyed or adversely affected large areas of kangaroo habitat. Without adequate cover, the kangaroo cannot exist. In areas which have been given over to intensive agriculture, few kangaroos now survive because their habitat has been cleared.

9.9 The extension of agriculture into areas that either have not been developed or have been used for extensive grazing, has resulted in the further destruction of the habitat of kangaroos and other wildlife. This extension of human land use places more pressure on the remaining habitat. The newly created agricultural areas also suffer from the predation of kangaroos from the surrounding woodlands, resulting in the need to kill more kangaroos.

9.10 The Committee is not advocating a policy of no further development. Such a policy is untenable and contrary to the interests of the nation. The Committee is, however, concerned about unfettered development which, in this case, may have significant adverse effects on the existence of wildlife in some areas.

9.11 There are many examples of land degradation resulting from overstocking of livestock. The Western Australian Department of Agriculture and the Agriculture Protection Board of Western Australia explained the difficulties faced by the Western Australian Government in coping with severe land degradation in the pastoral lease area of the State. Similarly, the clearing of land for agriculture in areas unsuited to that activity has resulted in severe erosion. There are now restrictions placed on agricultural development in some areas for environmental reasons, such as in the Western Division of New South Wales. Fauna conservation is no less important than land conservation and it should also be taken into account in developmental proposals. Although the killing of native wildlife is prominent in the

debate on animal welfare, the real threat to wildlife is the destruction of habitat. Without safe habitat, wildlife species cannot survive. The extent of the habitat largely determines the size of the population of wildlife species. The Federal and State Governments, in their endorsement of the objectives of the National Plan of Management for Kangaroos, agreed to conserve kangaroos across their natural range. Although fauna authorities are often excluded from land use considerations, they should, in fact, be allowed to play a more active role in this area. It is difficult for fauna authorities to manage and conserve kangaroos when factors which impinge heavily on their ultimate survival are completely outside the control of those authorities.

9.12 Land management is often regarded with emotional fervour as 'creeping socialism' or as something which should be avoided at any cost. Critics who vigorously espouse such notions would realise, after some thought, that land development is largely controlled now by one or another level of government. It is not a new concept for restrictions to be placed on the way in which land is used. The Committee wishes to add fauna welfare and conservation as factors in such land management and to ensure that government authorities with responsibility for fauna conservation and management take part in the decision-making process.

Kangaroo Damage

9.13 Having established to its satisfaction that kangaroos subject to legal killing are not endangered at present, the Committee examined the evidence that kangaroos did cause enough damage to properties to justify the issue of permits for their destruction. Animal welfare organisations had repeatedly pointed out that there was little or no documented evidence of damage to properties to support the killing of millions of kangaroos every year. It should be emphasised though, that they acknowledged

there was some damage done to properties. They contended, however, that the amount of damage was far less than that which would justify the level of killing carried out.

9.14 Before the Committee began its inquiry, there was little information available on the extent and nature of kangaroo damage. During the course of the inquiry, some information has been released or has been brought together in literature surveys. This information was examined in Chapter 3.

9.15 The Committee concluded in Chapter 3 that kangaroos do cause various forms of damage to rural properties, principally to crops and pastures, but also to fences and water holes. No estimate was considered reliable enough by the Committee to stand as an accurate financial assessment of the total cost of that damage. It is fair to say, however, that that cost is not inconsiderable. The Committee also concluded that the level of damage being caused by kangaroos to some properties is enough to justify action being taken to contain that damage, including the killing of kangaroos.

9.16 The then Australian Bureau of Animal Health advocated the establishment of a detailed study of the nature and extent of kangaroo damage to reconcile the level of killing of kangaroos with the level of damage actually done to properties. The NSW NPWS argued that such a study would have to reflect geographical and climatic differences as well as many other factors. Such a study would be difficult, lengthy and very expensive.

9.17 The Committee agrees that it would be both difficult and expensive to conduct a study which would provide more detailed information on the subject. The data would also have to be collected over a long period of time to reflect the good and bad seasons of Australia's harsh and variable climate. However, the results of such a study would be invaluable to scientists and fauna authorities. Although the Committee is not persuaded that

such a study is essential in determining the future of the National Plan of Management for Kangaroos, the Committee believes that a long-term study on the damage to properties by kangaroos should be undertaken.

Principles of Kangaroo Management

9.18 In Chapter 4 the Committee examined the basis of kangaroo management in Australia. Throughout Australia, the kangaroo is a protected native animal except as provided by State or Territory law.

9.19 The Committee strongly supports the retention of the kangaroo's fundamental protected status. This status was never seriously questioned throughout the inquiry. It is the premise on which the Committee has based its conclusions and recommendations.

9.20 As a protected animal, the kangaroo has the right to be left alone except in certain legally defined circumstances. In the opinion of the Committee, there are only two grounds for allowing the killing of kangaroos: property protection and research. The question of research has not been considered in this study. It falls within the scope of the animal experimentation inquiry. Therefore, for the purposes of the kangaroo inquiry, the only reason for killing kangaroos is to contain their deleterious effects on properties and other human land use.

9.21 The National Plan of Management for Kangaroos requires the maintenance of populations of kangaroos over their natural ranges. The ranges of all the species subject to legal killing cover wide areas of pastoral and agricultural lands. The Plan in effect requires some form of co-existence between landholders and kangaroos. Many landholders enjoy having kangaroos on their

properties while others simply regard them as pests. A point is reached, however, where the effects of kangaroo grazing on pastures or crops affect the viability of those properties. Either the size of the populations or the nature of their depredations upsets the equilibrium of co-existence and it is then that the landholder has a right to protect his property.

9.22 Landholders should not simply resort to killing kangaroos when they perceive that the balance between kangaroos and human land use has been upset. At times, there are other ways of dealing with the deleterious effects of kangaroos. These will be dealt with later. As a principle, shooting should be a last resort and not the first option.

9.23 It should also not be left to the perceptions of the landholders to determine the effects or potential effects of kangaroos on their properties. Officers of fauna authorities should, in most cases, assess the level of damage and offer advice before issuing licences and permits to kill kangaroos on those properties. Because of a lack of resources, this is not being done in many instances.

9.24 The Committee believes that kangaroos should only be killed to contain damage to properties. The Committee repudiates the notion contained in the 1986 Queensland KMP (but since deleted) that a commercial kangaroo industry exists in its own right and not just as a tool of kangaroo management.

9.25 The Committee also believes that the killing of kangaroos for sport, as occurs in Tasmania with respect to the Bennetts and rufous wallabies, is anathema to the kangaroo's status as a protected animal. If such shooting is necessary to contain the adverse effects of grazing on pastures, crops or other land uses, permits should be issued accordingly to landholders of affected properties or their agents.

9.26 The use of open seasons in some States is also not countenanced by the Committee. This system is too open-ended for effective control to be exercised by the fauna authority.

9.27 The Committee **RECOMMENDS** that, as a fundamental principle, the kangaroo remain a protected animal. However, its deleterious effects on human land use must be taken into account.

Kangaroo Management a National Issue

9.28 The management of kangaroos, with its welfare implications, is a national issue. As such, it should be treated in a national way. Although responsibility for kangaroo management resides with the States, that should not preclude co-operation among the Commonwealth and the States to pursue a national approach to kangaroo management.

9.29 There is a National Plan of Management for Kangaroos approved by CONCOM. However, a more comprehensive plan is needed to cover all species and all aspects of kangaroo management. It should cover kangaroo population size and dynamics, ecology, protection of habitat, programmes to curb kangaroo damage to properties and commercial and non-commercial kill quotas. The plan would reflect the different environments and circumstances occurring in the different regions of Australia and take into account local as well as national needs. There would be, however, one set of objectives and a uniform approach to kangaroo management even if there are different practices to reflect the diversity of species and environments.

9.30 Ideally, a comprehensive national kangaroo management plan should be administered federally rather than by the States and Territories individually. There are, of course, enormous constitutional and political problems associated with the transfer of State responsibilities to the Commonwealth. Although

it has been suggested to the Committee that the Commonwealth should take over responsibility for wildlife, the Committee does not believe that such an approach is available. The Committee suggests a co-operative approach being taken over time whereby arrangements for national management of kangaroos would be worked out between the Commonwealth and the States and Territories. Therefore, the Committee **RECOMMENDS** that the Commonwealth and the States and Territories work out on a co-operative basis over time a system for national management of kangaroos.

Approach to Kangaroo Management

9.31 Under the National Plan of Management for Kangaroos, fauna authorities depend mainly on shooting to keep kangaroo damage under control. Fauna authorities have asserted that shooting is the most effective method available to them for this purpose. It is also the most cost effective method, particularly as fauna authorities have to manage all their operations with very restricted resources.

9.32 Although shooting is effective in some areas, it is not in others. The Committee received evidence from landholders that in some wheat growing areas, especially in southern Queensland, some farms suffer badly from the depredations of kangaroos and wallabies. Similarly, in areas of Tasmania, such as around Avoca, improved pastures have been ravaged by wallabies. Shooting does not appear to be the answer to these problems. However, fauna authorities have offered no other solution for the problems other than, in the case of Tasmania, the use of cruel methods such as poison and snares.

9.33 In some areas where kangaroos have been numerous and perceived to be destructive, shooting or poisoning (in Tasmania) on a large scale only relieved the pressure for a short time. The only way to control the populations by killing is to kill all the kangaroos in a district or region, something which would be

difficult to do and which, in any event, would be contrary to the NPMK. That Plan requires the conservation of the kangaroo across all of its natural range.

9.34 Dr P. Jarman in evidence to the Committee outlined a different approach to kangaroo management. He believed that each property that had a kangaroo problem should be assessed by officers of the fauna authority as to the most effective method of combating the problem. Shooting would still be an option but it would not be resorted to as a reflex action as it has been. He related his experience in the northern tablelands of New South Wales where shooting had often been ineffective in protecting crops or pastures from kangaroos or wallabies, particularly in areas in which professional shooters were not operating.

9.35 Dr Jarman suggested that in some areas, electric or special non-electric fences might be more effective in protecting crops. Other methods included buffer zones, differently shaped fields of crops or even capture and transfer of wallabies, although the last method would only be used for endangered or uncommon species.

9.36 Fauna authorities will need more resources to reduce their reliance on shooting as virtually the sole method of kangaroo management. More staff will be needed to make the extra inspections to assess and advise on the most suitable form of kangaroo control. It is time that both landholders and governments reassess their approach to kangaroo management. Government authorities have managed to placate landholders' criticisms by handing out shooters' permits and tags rather than by addressing the more difficult and expensive topic of adequate protection of crops or pasture from the ravages of kangaroos or wallabies. Some landholders are suffering because of this single-minded approach to kangaroo management by fauna authorities. The palliative of shooting has not been the cure for

their complaints. More shooting would probably be not much more effective.

9.37 The Committee also took an interest in an electronic device that emits a high-pitched sound to scare kangaroos away from crops or pasture. The device works on the dual basis of sound and pain. Animals suffer pain from the noise after a short time within range of the device. At the time of a demonstration for the Committee early in 1987, the device had not then been perfected. However, the Committee understands that the device has undergone further development and if such a device could be perfected and tested over a period of time to ensure that kangaroos did not become used to the noise and pain, it has the potential to solve some problems of kangaroo management. Although its use would be most effective in small areas, it could be used on the large pastoral properties, for example, to keep kangaroos away from water holes. This device can also be fitted to motor vehicles to help avoid collisions with kangaroos.

9.38 The Committee **RECOMMENDS** that fauna authorities conduct inspections of properties where kangaroos are allegedly causing an unacceptable level of damage to assess the extent of the problem and to advise landholders on methods of coping with the problem. The Committee also **RECOMMENDS** that the killing of kangaroos be permitted by fauna authorities only where non-lethal methods of containing kangaroo damage are impracticable.

9.39 The Committee notes that fencing may be the most feasible method of containing kangaroo damage in some circumstances. The Committee **RECOMMENDS** that funds be made available by the Commonwealth for research into kangaroo proof fences.

Shooting of Kangaroos

9.40 Despite the many differences of opinion between animal welfare organisations on the one hand and government authorities, landholders and the kangaroo industry on the other, there was one fundamental point on which there was almost unanimity of opinion; that, with the permission of the fauna authorities, landholders can resort to the destruction of kangaroos where those kangaroos cause unjustifiable levels of damage and no feasible alternative method is available to contain that damage. Most animal welfare representatives conceded that kangaroos were not inviolable and that there were circumstances which precluded the use of other methods of controlling them. Those representatives emphasised that this did not constitute an endorsement of the present system of kangaroo management.

9.41 There is no doubt that the shooting of kangaroos by professional shooters is the most humane way of killing kangaroos. The RSPCA found much higher incidences of cruelty in shooting by non-professionals, most of whom do not have the marksmanship of a professional shooter. In addition, many licensed landholders use inappropriate firearms to kill kangaroos - mainly rimfire rifles or shotguns. It is therefore desirable for the shooting of kangaroos to be conducted by professional shooters.

9.42 Representatives of animal welfare organisations have acknowledged the relative skills of professional and non-professional shooters. It is the commercial aspects of the kangaroo industry which the animal welfare movement abhors, where they believe decisions are made on the basis of commerce and not on animal welfare or conservation grounds.

Commercial Killing of Kangaroos

9.43 The animal welfare movement has suggested that the government should employ professional shooters to kill kangaroos rather than allow an industry to carry out that work.

9.44 In a statement to the House of Representatives on 7 June 1984, the then Minister for Home Affairs and Environment stated that such a proposal was impractical and too expensive. He indicated that such an arrangement would cost about $50,000,000.

9.45 The ANPWS provided further information on this figure. An officer of the ANPWS told the Committee that:

> The costs per full time shooter, which we suggested were derived to give an indication of the amounts involved in such an exercise, and the data presented could also be used to give pro rata estimates of costs for other forms of shooting, such as part time, government or contract shooting, noting that vehicles and equipment will still need to be maintained by the Government or the contractors. I think the figure we got, which you may have thought on the low side, was something like $47,000 per full time person, when one took into account support requirements, vehicles, administrative support and so on. What we were trying to suggest was that that formulation could be adjusted depending on the assumptions that you made about the kinds of people whom you needed, how busy you would expect them to be and how many kangaroos you would want them to remove.[1]

9.46 The Committee is not convinced that the costs allocated to a full-time shooter would amount to the $47,000 mentioned above. According to Young and Delforce, average net income of professional shooters in New South Wales from 'trapping' of kangaroos and feral animals in 1982-83 was $9,361.14 after deducting costs of $9,891.28. Shooters also obtained on average an extra net income from non-shooting occupations of

$5,931.61. Average gross income was therefore about half of the cost suggested by the ANPWS. It would be unreasonable to attribute an amount similar to gross income for administrative support.

9.47 If government shooters were engaged at any time, the Committee envisages that professional shooters would be offered contracts and not employed as public servants with their normal conditions of service which would be quite inappropriate for the task of shooting kangaroos.

9.48 It was pointed out to the Committee that commercial shooters have an incentive to kill kangaroos efficiently and humanely. Every bullet wasted is a cost which the shooter has to bear himself. The time taken to despatch wounded kangaroos is itself a cost. If a professional shooter were paid by the government, there would be less incentive to contain costs and maintain maximum efficiency. This would lead to fewer clean kills. The shooter would also not be constrained by normal commercial considerations such as the size of the animal. This might lead to the killing of more does and young animals.

9.49 It has been argued that governments have paid for many services to the rural community, such as soil conservation and predator control (the dingo fences and locust management) and that kangaroo management is a similar service. Protected wildlife is the property of the government and although landholders have some obligation to allow wildlife to live on their properties, many, if not all, believe that the government has a responsibility to keep the adverse effects of wildlife within tolerable proportions. Governments largely do this now except that they have used the commercial kangaroo industry to keep government costs to a minimum. There will be, however, some cost to government in whatever system of management of kangaroos is used.

9.50 An alternative to government funding of non-commercial professional shooters would be a system of charges levied against landholders for the service of reducing kangaroo populations that are causing damage to their properties. There are many examples of landholders paying for services rendered by government authorities, including levies for inspection services, research and marketing.

9.51 Whereas it is relatively easy to implement a system of levies for various other services carried out by government, it is likely that landholders would opt to kill kangaroos themselves by a variety of methods, most of which would be cruel, rather than pay for the service to be done by someone else. There is enough anecdotal information available to indicate that many landholders already illegally kill kangaroos inhumanely. There would be a strong temptation to sidestep additional costs, especially in hard economic times.

9.52 Shooting is probably the only method of containing kangaroo damage in many of the pastoral areas, when that damage is actually a problem. The size of properties in these areas usually precludes fencing as a practical option. Other methods, which might offer solutions in areas of higher density of livestock, would not work in these wide, open spaces.

9.53 The important question to be addressed is the manner and extent of shooting. The commercial kangaroo industry requires a certain number of kangaroos to be taken to satisfy its markets. The shooters, chiller operators and processors will therefore operate to fulfil their commercial needs within maximum quotas set by the Federal Government. The only other constraint on shooters is the density of kangaroos in the operational area. The shooter needs to kill a certain minimum number to meet his operational costs for the night. A low density of kangaroos would preclude the shooter from achieving that minimum number. It is therefore argued that the commercial shooting of kangaroos

depends upon density and not on actual damage or competition with livestock.

9.54 Landholders argued that it is preferable to keep kangaroo populations at reasonable levels even when competition and damage are negligible. This strategy prevents a build-up of kangaroos which might cause severe problems in drier periods, both for the landholder, by competing with livestock for scarce food and water and also for themselves, with greater numbers dying lingering deaths from starvation and dehydration.

9.55 Non-endangered species of native wildlife are normally left to fend for themselves in nature. In this way, natural selection helps to create a strong and viable species able to withstand the rigours of the environment. Inevitably some of the species will succumb in natural disasters, including prolonged droughts. To some extent, the environment has been changed by human development. Some areas are now denuded of cover and carry no kangaroos while in others, extra water has increased the kangaroo populations. In addition, the dingo fence has kept that predator away from kangaroos in sheep country. The density of kangaroos is far lower on the other side of the dingo fence. However, except perhaps in some cases where kangaroos are confined in relatively small areas, kangaroos should not be killed to reduce potential suffering in droughts. Kangaroos should only be killed to protect human land use.

9.56 At present, there is minimal supervision of commercial kangaroo killing. New or unusually high requests for tags might prompt the fauna authority to inspect the areas to assess the perceived kangaroo problem but there is little inspection beyond this. The fauna authorities lack the resources to extend its supervisory operations. There is little doubt that some kangaroos are killed when there is no need to kill them. Within the quota, the number of kangaroos killed depends largely upon commercial and climatic factors. The demand for kangaroo products will

dampen or increase incentive to kill fewer or more kangaroos. Bad weather will also affect the ability of shooters to operate. Prolonged wet weather will result in few kangaroos shot during that period.

9.57 Young and Morris in their final Report to the NSW NPWS advocated a more deregulated and commercial basis for the industry in that State but at the same time providing for the conservation of kangaroo species across their respective ranges. An essential element of their management scheme was the retention of commercial shooting of kangaroos.

9.58 Although ideally all kangaroos should only be shot by professional shooters who do not have a commercial interest in the killing, the Committee does not believe that such a proposal, if recommended, would be practicable at the present time. Any scheme involving the use of professional shooters engaged under contract to government would be prohibitively expensive.

9.59 The Federal Government's involvement in kangaroo management depends on its constitutional power over exports. By legislating under this power, the Federal Government has managed to gain some control over the management of kangaroos and the total number killed commercially in those States where there is commercial shooting. Without commercial killing and hence exports of kangaroo skins and meat, the Federal Government has no basis for any authority over the killing of kangaroos.

9.60 If the Committee recommended a ban on commercial killing, and the Federal Government accepted that recommendation, exports would cease and the Federal Government would lose any control it has over kangaroo management. It would be left to each State Government to deal with kangaroo management in its own way. The example of Queensland in 1986 following the temporary export ban is indicative of the reaction to such a recommendation. The

moderating influence of the Federal Government would be gone, which would be to the detriment of animal welfare.

9.61 The Committee **RECOMMENDS** that commercial shooting of kangaroos continue to be permitted in areas where there is a need to reduce populations of kangaroo for damage mitigation purposes.

9.62 Although the Committee recommends the continuation of commercial shooting of kangaroos, it does so provided that there is more supervision of kangaroos killing by fauna authorities. At present, there is minimal supervision exercised because of scant resources available for the task. More resources must be devoted to inspections to assess damage or potential damage by kangaroos before tags are issued. The Committee does not press for inspections of properties for all applications for tags, but for a much greater proportion of inspections overall.

9.63 Young and Morris recommended various measures which would deregulate to some degree kangaroo management in New South Wales. The Committee does not wish to debate the details of those recommendations but comment on their thrust. It seems that Young and Morris have taken an economic and conservation approach rather than one based on animal welfare. The Committee strongly opposes any measures to increase the size of the commercial kill for economic reasons instead of for the necessary control of damage to human land use. The concern of this Committee and of many people in the community is that too many kangaroos are killed unnecessarily each year simply for commercial purposes. Both the size and the manner of the kill are important.

9.64 Red and grey kangaroos are surveyed extensively and regularly but not much has been done to establish the size and population trends of other species subjected to killing in one or more States. The Committee notes that research into these species is increasing. There is no evidence that these species are likely to be threatened across their respective ranges from shooting or

land use developments, but a lack of information hampers long-term planning. It should be a prerequisite for the killing of species that population studies be done to establish their long-term status. Although there are anecdotal reports of their proliferation in some areas, this is not enough on which to base a management programme that includes killing a number of them.

9.65 The kangaroo industry deals in carcases (or sometimes butts) or skins only. The RSPCA found a higher degree of cruelty associated with skin-only shooting as there was not the same financial incentive to head shoot as there was for the carcase trade. In some States, chiller operators and processors penalised shooters who offered carcases bruised by bullet wounds to the chest or other parts of the body. Sometimes carcases with bruising from bullet wounds were rejected outright.

9.66 Young and Morris in their study found that there was more scope for opportunistic shooters entering the market in times when prices for skins were high and then moving out again as prices declined. This affected the livelihood of long-term professional shooters who had to take the good seasons with the bad. It must be assumed that these opportunistic shooters would not have the same marksmanship skills of long-term professional shooters and nor would they be likely to act as responsibly, either in cruelty or conservation terms.

9.67 There also are more difficulties in policing skin-only shooting. There are no chillers that can be inspected to ensure that the species killed are among those allowed to be killed and that tags have been attached. The anecdotal information on an illegal skin trade probably refers mainly to skin-only shooting because of the few controls over its operation. It would be fairly easy to conceal untagged skins in a large consignment of skins or to mix kangaroo skins with those of livestock. There are practical and constitutional difficulties in apprehending people

involved in the illegal interstate transportation and export of skins.

9.68 There are obvious difficulties in maintaining a carcase trade in remote areas from which it would be difficult to market the meat. In those circumstances, skin-only shooting should be allowed. However, where it is possible to maintain or establish a carcase trade, skin-only shooting should be banned.

Non-commercial Shooting

9.69 The RSPCA highlighted the cruelty involved in the non-commercial shooting of kangaroos on the mainland and in Tasmania. It provided evidence of inappropriate firearms used to kill kangaroos and of poor marksmanship. It also uncovered a level of illegal killing of kangaroos by use of cruel methods such as poison, snares, dogs and drives for damage mitigation purposes. Such acts of cruelty should not be associated with wanton acts of cruelty perpetrated by drunken or sadistic people who shoot animals for the devilment of it.

9.70 The Standing Committee of CONCOM noted the comments of RSPCA Australia on non-commercial killing of kangaroos. In its response to the RSPCA, it went on to say:

> Farmer organisations state that most farmers make every effort to operate humanely.

Few landholders are deliberately cruel in their efforts to reduce kangaroo populations on their properties. The fact remains that there is an unacceptable level of cruelty that takes place. This needs to be addressed and something done about it. Simply offering a bland statement such as the one quoted above, is quite unacceptable. The fault mainly lies in the system of management

by fauna authorities and, particularly, by governments and not in the efforts of landholders to protect their livelihood.

9.71 The RSPCA in its conclusions stated:

> Cruelty associated with non-commercial kangaroo culling is neglected by the authorities and there is no control over the number of kangaroos killed and the methods used.

The Standing Committee of CONCOM in its response to RSPCA stated:

> Not true. States have the capacity to control the taking of kangaroos for damage mitigation as they are protected by law. Destruction of kangaroos can only take place legally under permits to which regulatory conditions apply. The issue of cruelty is of concern to all States and they are addressing it through progressive implementation of the Code and other means as appropriate.

9.72 Although there are laws in place, fauna authorities do little to police the killing of kangaroos in the non-commercial areas mainly because they have not been given the resources by government to carry out such functions, other than in the most cursory way. No States have demonstrated satisfactory programmes of control or of 'implementation' of the Code. Codes of Practice have been distributed but that is not, in the opinion of the Committee, effective enough in reducing the level of cruelty. The RSPCA would probably have been more correct in saying 'little control' rather than 'no control'.

9.73 The Code of Practice seems to be set upon a pedestal by fauna authorities as the panacea of all evil associated with the killing of kangaroos. The Code, by itself, will do little to bring about the humane killing of kangaroos. Changes will only occur when government and industry back the Code with educational programmes and with some form of penalty to ensure adherence to

it. There are many people who do kill kangaroos humanely but there are others who, through ignorance, inexperience or inhumanity, wreak far more suffering than is tolerable.

9.74 This level of unintentional cruelty is of concern to the Committee. Hundreds of thousands of wallabies are shot in this way in Tasmania each year. A large number of kangaroos and wallabies were shot in Queensland in 1986 during and after a short-term ban on commercial shooting, following the release of an adverse report by the Administrative Appeals Tribunal against the 1985 Queensland KMP.

9.75 Fauna authorities have no reliable estimates of kangaroos shot non-commercially by landholders on the mainland (some sampling is done in Tasmania). Although the number of kangaroos permitted to be shot is recorded, there are few records of the numbers actually shot. Each landholder may happen to shoot more or fewer kangaroos than his permit entitles him to shoot. If he perceives a threat to his livelihood, he is likely to keep shooting until the threat disappears or is under control. It is unlikely in most of such cases that the landholder will adhere strictly to the terms of his permit. The landholder is probably aware that there are no checks by fauna authorities to ensure adherence by landholders to their permits and that securing evidence for a conviction in a court is difficult.

9.76 A major part of RSPCA Australia's solution to the problem of cruelty in the non-commercial killing of kangaroos was to recommend the appointment of 'Wildlife Controllers' who would be paid by the government from revenues collected from royalty tag fees. It is stated in the report of RSPCA that:

> Each state and territory will appoint its own Wildlife Controller who should be an officer with adequate policing powers. This officer would keep a "register of professional shooters" and have a 008 telephone number

> which would allow farmers and those affected by large numbers of kangaroos to contact his state Wildlife Controller for the price of a local call. The officer after checking that a permit has been issued would then arrange for a professional shooter or shooters to carry out the necessary culling. He would receive payment for his time at an appropriate level including allowances and expenses under the same terms as that provided to a State or Territorial Public Servant.
>
> The funding of the "Wildlife Controllers" would come via the current royalty tag arrangement at 10 cents a carcass, which was originally implemented to be used for the Conservation of Wildlife but appears to be simply fed into consolidated revenue in each State.[2]

9.77 The intention of the RSPCA was to introduce a system of killing kangaroos in non-commercial areas that was less cruel than the current system of allowing landholders or their agents to shoot kangaroos on their properties. Many of these people use inappropriate firearms and lack the marksmanship of professional shooters. The RSPCA had concluded that shooting by professional shooters was the least cruel method of killing kangaroos. However, there was no incentive for professional shooters to operate in non-commercial areas.

9.78 If kangaroos are to be killed in non-commercial areas, there is a responsibility on the government to ensure that such killing is done with the least possible cruelty. It is not enough for the government to make arrangements for such killing that are the least expensive to it without adequate provisions to minimise cruelty. A balance has to be reached between practicality and the minimisation of cruelty. The present system is too heavily weighted towards cruelty and, from an animal welfare point of view, needs to be redressed. Either the level of cruelty by non-commercial shooters must be decreased or a system similar to that suggested by the RSPCA be introduced, or both.

9.79 The Code of Practice specifies the use of centrefire rifles to kill kangaroos other than the smaller wallabies. The RSPCA in its first report found that many non-commercial shooters used inappropriate firearms, such as rimfire rifles or shotguns, to shoot red or grey kangaroos or euros. There is little point in having the Code of Practice if its provisions are ignored and no action is taken by fauna authorities to encourage landholders or their agents to adhere to the Code. It should be a requirement of any permit or licence that the shooting of kangaroos be carried out with a firearm specified in the Code of Practice.

9.80 Some landholders or their agents have an adequate standard of marksmanship to minimise cruelty while shooting kangaroos. However, many do not. Landholders who apply for a permit to shoot kangaroos should undergo a test of marksmanship before permits are issued to them. If an agent is nominated by a landholder, that agent should undertake the test. Fauna authorities should arrange the tests or perhaps arrangements could be made with firearm clubs to give tests. A person who passes the test need not undergo another test for three years.

9.81 Some people might object to having to pass a test of marksmanship in order to obtain a permit to shoot kangaroos. Yet the same people would probably not complain about taking driving tests prior to the issue of driving licences. Both cars and firearms can be lethal in the wrong hands. Although kangaroos may be perceived as pests by some landholders, they are protected species except where a permit is obtained from the relevant authority to kill a specific number for damage mitigation purposes. It is incumbent on that authority to ensure that in permitting kangaroos to be killed, it also ensures that they suffer as little as possible. It is therefore not unreasonable for the fauna authority to insist on certain requirements to be met to protect the welfare of the animals.

9.82 Where a landholder does not own an appropriate firearm or does not pass a test of marksmanship, the fauna authority should arrange for a professional shooter to reduce the kangaroo population on the landholder's property, provided that the authority is satisfied there is a bona fide problem of kangaroo damage. The professional shooter should be remunerated for his travelling expenses and be allowed to keep the skins for sale to the industry. In addition, the landholder should pay a nominal charge, say one dollar for each skin, to the shooter. The landholder would have incurred some costs had he done the job himself, apart from the time saved by handing the task to a professional shooter.

9.83 This scheme does not involve 'government shooters'. It is extending the commercial operation to areas where there is presently no commercial shooting. However, because a full commercial operation would not be viable in those areas, a government assisted operation is recommended instead. It should be emphasised that this scheme would only apply where a landholder or his agent is not equipped to do the task himself.

9.84 By using a professional shooter, animal welfare will be improved. There is no doubt that of all shooters, professional shooters kill kangaroos the most humanely.

9.85 The scheme would not be an unfettered extension of commercial shooting because in each case the professional shooter would be asked to do the job by the fauna authority after the authority was satisfied that the problem warranted a reduction in the kangaroo population. There is, therefore, control over the operation by the authority.

9.86 The landholder would have the kangaroo problem dealt with at a minimal cost to himself. Although a nominal fee would be paid to the shooter per kangaroo shot, in any event that fee would have been put to expenses, such as ammunition. In addition,

the landholder would not have to spend valuable time shooting kangaroos. By paying a fee per kangaroo shot, the landholder would have a record of the number shot (the shooter would have to show evidence of the number shot) and there would be an incentive for him to keep a balance between the number shot and the perceived damage.

9.87 The shooter, by selling the skins and receiving both the fee from the landholder and some assistance from the authority, would be making his normal income. In addition, it would give him greater security of employment in his trade which, in normal circumstances, through the vagaries of the weather and other factors, makes professional shooting an uncertain job.

9.88 This scheme would increase skin-only shooting, something about which the Committee had expressed concern elsewhere in the report. However, on balance, the benefits of replacing poor shooters with professional shooters overrides that concern.

9.89 The Committee does not suggest that special 'wildlife controllers' be appointed to administer this new function. The Committee envisages that it would be done through the central or district offices of the fauna authorities.

9.90 The funding of the scheme would be by normal allocation of funds to fauna authorities by governments. There is no particular need to set aside royalty payments from commercial shooters to fund this new function.

9.91 The Committee **RECOMMENDS** that in a non-commercial area, where a landholder does not possess an appropriate firearm or does not pass a test of marksmanship, the fauna authority arrange and subsidise the use of a commercial shooter to contain kangaroo damage, provided that no non-lethal method is practicable.

9.92 The Committee **RECOMMENDS** that fauna authorities be allocated more resources to enable them to fulfil their responsibilities for the management and protection of kangaroos and other wildlife.

9.93 The fact that this scheme or a variation of it will cost more money is not a reason for governments to reject it out of hand. Governments have to come to terms with the need to improve animal welfare in this and other areas. For too long animal welfare has been relegated to a position of low priority but changing community expectations are requiring governments to give it more attention.

CHAPTER 10

ENDANGERED SPECIES OF KANGAROOS

Introduction

10.1 In a report published in 1984, the Working Group on Endangered Fauna of the Standing Committee of CONCOM considered six of the 48 species of kangaroo to be extinct, although it did not exclude the existence of pockets of one or more of those species. Another seven species were regarded as endangered. In all, 38 species are fully protected by law throughout Australia.

10.2 The National Plan of Management for Kangaroos, which was approved by CONCOM on 30 May 1985, has as its first aim the maintenance of populations of kangaroos over their natural range. Some species of kangaroo are widely spread over the continent while others exist in one or more regions or in small pockets. In maintaining populations over their natural range, species can be regarded as being endangered locally or nationally. For example, a species may be regarded as endangered in one State where there is a small population but not nationally because it is quite prevalent in other States.

Causes of Endangerment

10.3 With the exception of the toolache wallaby and perhaps of the bridled nail-tailed wallaby, habitat destruction rather than shooting contributed mainly to the demise of those species now thought extinct or endangered.[1] The destruction of habitat was caused by the development of human land use, such as agriculture, as well as the release of exotic animals, such as

the rabbit. Exotic predators, such as the fox, have wreaked havoc among small native animals in some areas. Mr Best of the SA NPWS told the Committee he thought that in the early part of the century, when the rabbit population suffered a decline in South Australia, the high fox population turned on the smaller native animals instead.[2]

Conservation of Endangered Species

10.4 In its submission, the NSW NPWS addressed the issue of the conservation of kangaroo habitat:

> Protection of habitat is a complex matter. First we need a general understanding of what "habitat" means; for a species it can conveniently be defined as an area with characteristics that will support the natural dynamics of a population of that species. The area can be considered adequate if it will maintain a viable population of the species (i.e. one that can withstand a full range of natural events). Only for a few species are habitat requirements sufficiently well identified to set aside reserves that will adequately cater for the species' needs; these are usually rare species or species of high public interest. For other wildlife the knowledge is simply not available; in the interim efforts are made to preserve large samples of each natural system in the hope that the suite of species dependent on that system will survive. Knowledge is at a premium and the research resource is the most limited compared to the task in hand.
>
> Adequate size is not the only criterion for an area of habitat; it must be of adequate quality, and potential impacts on that quality must be assessed and understood.[3]

10.5 Because of the specificity of the habitat of certain species, purchase of habitat as reserves may be appropriate in particular cases. The bridled nail-tailed wallaby in Queensland

was cited as an example where this approach had been employed.[4] The yellow-footed rock wallaby in New South Wales also falls into this category:

> Nearly all of the habitat in New South Wales is now in a reserve or is in reserves. There is another part of the population within that area contiguous to the reserve which is not yet reserved but we are working on that.[5]

10.6 Re-establishment of kangaroos has been undertaken with success with the forester kangaroo (eastern grey) in Tasmania by the Tasmanian NPWS.[6]

10.7 There may be difficulties, however, in such operations. Discussing this possibility with respect to the yellow-footed rock wallaby, Dr Giles noted:

> ... we may, when we are satisfied about the genetics of the animal, seek to re-establish it in some areas where we knew it was ... But we are cautious because we know that this species has a distinct distribution and maybe the population in South Australia is genetically different from the population in New South Wales.[7]

10.8 The importance of predator control in the management of reserves was underlined by the officers of the Western Australian Department of Conservation and Land Management. Although it is reasonably easy to keep islands with small populations of wallabies free from predators, it is difficult to control predators on the mainland. Some predator control programmes are undertaken at specific localities where there are populations of rock wallabies, tammar wallabies, woylies or brush-tailed bettong, numbats and other species.[8]

Research

10.9 The National Kangaroo Monitoring Unit has interpreted its brief as going beyond the management of species harvested under approved management programmes. It has consulted with State and Territory wildlife authorities to consider 'conservation status of other species including rare and endangered macropodoids'.[9] The areas of research interest identified by the Unit include:

> ... ecological studies to determine factors affecting distribution and abundance and to identify management needs, especially for rare and endangered macropodids' and the 'recolonization and range extension of rare species'[10]

10.10 The Advisory Committee on Kangaroos also includes among its terms of reference the responsibility for advising the Federal Minister on 'national programs to assist the conservation of endangered species and the protection of their habitats'.[11]

10.11 The need for a substantial increase in research into endangered species was made by a number of witnesses. Speaking of endangered species, Mr McNamara of the Western Australian Department of Conservation and Land Management, emphasised that:

> Our basic research knowledge, our knowledge of the fundamental biology and ecology of those species and their distribution and abundance, is in most cases lacking. In all cases there is a need for that sort of fundamental information.[12]

Focussing Resources on Endangered Species

10.12 The viewpoint was expressed by the National Farmers Federation that the concentration of the resources of wildlife

authorities on the commercially harvested species was to the detriment of the more endangered species.

10.13 It was argued in other submissions, however, that this position is fundamentally misconceived.

> All macropod species are granted the status of protected wildlife under State and Territory legislation, not just the rare and endangered species. Basically this elitist argument, most often used by the government wildlife authorities themselves, simply states that Australian authorities are not prepared to adequately fund or support all wildlife conservation programs.[13]

10.14 Professor Ovington, Director of the ANPWS, commented:

> Much of the limited financial and staff resources of wildlife authorities is being concentrated on the commercially harvested kangaroo species which are demonstrably widespread and abundant. Regrettably, resources are not available for the whole range of more critical nature conservation problems, including endangered species and habitat conservation. However, the argument has tended to suggest that if more money became available to wildlife authorities, it should go upon those species which are endangered. But you also must appreciate that wildlife authorities have an even broader context and may well also have to look at other priorities.[14]

10.15 If this is in fact the case then a reduction in funds devoted to the management of commercial kangaroo killing would not necessarily lead to an increased focus on research and management of endangered species of kangaroo.

10.16 Fauna authorities have a responsibility to conserve endangered species of kangaroo. This responsibility involves protecting the habitat from human development; keeping predators,

especially introduced species, under control in the habitat of the endangered species; and conducting research into the ecology of those species to assist in their conservation.

10.17 The degree to which the fauna authorities have been able to undertake programmes to conserve endangered species has been a function of the human and financial resources available for such tasks, among the plethora of other responsibilities those authorities have had. The authorities have had limited resources and, consequently, not as much has been done to conserve endangered species as those authorities would have liked to have done.

10.18 It is not simply a question of transferring funds from, say, the management of species of kangaroo subjected to killing to the management of endangered species. Both areas require a certain level of funding, as do the many other areas administered by fauna authorities. The allocation of additional funds rather than a re-allocation of current funds is required if those authorities are to effectively carry out their mandate.

10.19 The conservation of endangered species is vital as is the management of kangaroos generally throughout Australia.

John Morris
Chairman

MINORITY REPORT

Senator Norm Sanders

Most of the Committee members have agreed on recommendations which essentially maintain the status quo in the kangaroo management program. This is in spite of the fact that major doubts remain about the present system.

The majority took pains to frame recommendations which were politically inoffensive. I feel that the recommendations should not have been based on pragmatism, but instead should spell out what is needed to best benefit the welfare of kangaroos.

This is, after all, the Animal Welfare Committee. As such it has a duty to place the welfare of kangaroos first. Numerous other committees look after the interests of industry and farmers.

Any wildlife management program should be organized to err on the side of conservatism. Such is not the case with the kangaroo program. During the entire hearing procedure, not one witness was able to give a firm number for kangaroo populations. In addition, no firm numbers were presented for the illegal kill of kangaroos. Some witnesses estimated that illegal slaughter could equal the legal kill.

It was revealed in evidence that Section 92 of the Constitution effectively renders the task of ascertaining the extent of domestic trade in kangaroos an impossibility. Victoria's action in abandoning her import/export permit system

in 1985 has allowed a free flow of kangaroo products into that State without any monitoring.

At least 32 State and Federal Government bureaucracies are involved in the kangaroo industry. The task of compiling proper domestic statistics has not been addressed. Evidence of alleged illegal activities within the industry has not been investigated with any diligence.

Kill statistics do not provide proper biological data on the population dynamics of the species included in the National Kangaroo Management Program.

Faced with these uncertainties, it would seem logical to curtail or cease the legal kill until data were available. The excuse for not doing so was generally the following: "Since legal kill numbers can be maintained every year, the population must be stable or increasing." In other wildlife management situations, experience has shown that this attitude has led to drastic population crashes. It could happen with kangaroos.

The major driving force behind kangaroo killing at present is the kangaroo meat and hide industry. The industry was originally conceived as a clever means of providing a self-financing method of kangaroo management. Such management was supposedly for the benefit of farmers and the kangaroos themselves.

Many witnesses from bureaucracies and farmers' groups have testified that the kangaroo is killed to prevent damage to crops. If this is the case, it is difficult to understand why kill quotas are set in advance of perceived damage. In any event, the Committee has not received any data on crop damage which would justify a kill of more than 26 million kangaroos and wallabies over the last seven years. The industry is the obvious beneficiary of such high quotas.

Queensland has stated that the kangaroo industry exists in its own right. Kangaroo killing has become a means of providing income for bankrupt rural communities rather than operating as a wildlife management exercise.

There has been a massive push this year to legalize kangaroo meat for human consumption, a dangerous threat to any wildlife population.

The tail is now wagging the dog and the industry has developed its own political clout. Management considerations have become secondary to the maintenance of a viable meat and hide trade.

For the welfare of kangaroos, the industry should be closed. Kangaroos should be left unmolested whenever possible. If farmers can demonstrate crop damage to a responsible wildlife management official, subsidies should be paid for loss or for the installation of electric fencing. Farmers should be discouraged from clearing marginal areas, now kangaroo habitat, for cropping.

If any kangaroos must be killed for crop protection or population management, professional shooters should be employed by the government.

It should be noted that proposals such as the above have prompted farmers to threaten a "Bloodbath" of kangaroo shooting and poisoning. Some management personnel have used this threat as a justification for the continuation of present practices. This is a mistake. We should not be blackmailed into inaction by threats of terrorism.

Kangaroo management should be the responsibility of a national body with access to all relevant statistics, including both domestic and export data. Information on all aspects of the operation of the national body should be publicly available.

Conservation representatives should have regular input into the body and its management program.

The kangaroo debate must be removed from the province of experts defending special interest groups and opened up to the broader community.

Many of the States have actively fought any public criticism or close examination of their activities. Queensland was taken before the Administrative Appeals Tribunal by private citizens concerned by breaches of that State's own lax regulations.

The failure of the States to draw up uniform wildlife legislation is another compelling reason for a national body.

Such a body should also be involved in educating the public on the role of wildlife in the eco-system. Farmers and bureaucrats should be taught the merits of protecting indigenous wildlife rather than adopting wholesale slaughter options which have long-term effects on the human and animal populations.

The rest of the world views the massive killing of our unique macropods with disgust. The European Parliament has taken steps to ban the import of all wallaby species and will place the Red, Eastern, and Western Grey kangaroos on Appendix 2 of the EEC/CITES listing. The U.S. has long maintained the same three species on the threatened list in spite of pressure by the Australian Government.

Australia is regarded in most respects as an advanced and technologically adept nation. However, the continuing decimation of our unique wildlife demonstrates to the world that we are unwilling to address our international responsibilities.

The welfare of the kangaroo, our national animal, must be placed ahead of commercial interests and inept bureaucrats. The present slaughter must cease.

REFERENCES

Chapter Two

1. Evidence, p. S2920.

2. G.J. Morris and M.D. Young, 'Second Report on the Economic and Administrative Influences on Kangaroo Management in NSW - The Fauna Dealers', CSIRO, October 1985, pp. 77-78.

3. Evidence, p. 6145.

4. Evidence, p. 2158.

5. Evidence, p. S3450-1.

6. Dr. C. Southwell, 'Proof of Evidence for Administrative Appeals Tribunal hearing of an appeal by Fund for Animals against the 1987 Queensland Kangaroo Management Program', p. 7.

7. Evidence pp. 1070, 2054.

8. The Hon. B. Cohen, MP, Minister for Arts, Heritage and Environment, public address at Charleville, 18 June 1985.

9. Evidence, p. 4951.

10. Evidence, p. 4954.

11. Evidence, p. 2161.

12. Evidence p. 2163.

13. Evidence, p. S3561.

14. Department of Conservation and Land Management, '1987 Management Program for the Red Kangaroo in Western Australia', p. 9.

15. Evidence, p. S3561.

16. Department of Conservation and Land Management, 1987, op. cit., p. 7.

17. Tasmanian NPWS: 'The Status and Management of Bennetts wallaby [Macropus rufogriseus] and Rufous wallaby [Thylogale billardierii] in Tasmania', November 1985, p. 7.

Chapter Three

1. Evidence, p. 579.

2. Evidence, pp. S3044-5.

2A. M.D. Young and L.M. Gibson, 'Economic Effects of Kangaroos and Kangaroo Culling on Agricultural Production, First Interim Report', CSIRO, 17 April 1985.

3. Evidence, p. 1855.

4. Evidence, pp. 366, 2881, 2957.

5. H.J. Lavery (Ed.), 'The Kangaroo Keepers', University of Queensland Press, 1985, p. 121.

6. Evidence, p. 2078.

7. Evidence p. 4566.

8. Evidence, pp. 1427-8.

9. Evidence, p. S3416.

10. Evidence, p. S3424.

11. Evidence, p. S2869.

12. Evidence, p. S3026.

13. Evidence, p. S3028.

14. Evidence, p. S3028.

15. Evidence, p. S2869.

16. Evidence, p. S2883.

17. Evidence, p. S2883.

18. Evidence, p. S2883.

19. Evidence, pp. 4197, S3299.

20. Evidence, pp. 4198 and S3299 and M.D. Young & L.M. Gibson, op. cit., p. 10.

21. Evidence, p. 4215.

22. Evidence, p. 4124.

23. Evidence, p. 1849.

24. Thesis, pp. 14-15.

25. Evidence, p. 4568.

26. Thesis, p. 123; Evidence, p. 4787, p. S2641.

27. 'The Diet of the Eastern Grey Kangaroo and Wallabies in areas of Improved and Native Pasture in the New England Tablelands', Australian Wildlife Research 10 (2): 203-13.

28. Evidence, p. 4794.

29. Evidence, p. S3042.

30. Evidence, p. 4569.

31. Evidence, p. S3129.

32. Evidence, p. 2881.

33. Evidence, p. S2883.

34. Evidence, p. S3293.

35. Steele Rudd, 'Before We Got the Deeds' in Dad and Dave.

36. Evidence, p. 1087.

37. Evidence, p. 3680.

38. Evidence, p. S3031. p. S3419, p. S2883.

39. Evidence, p. S3031.

40. Evidence, p. S3031.

41. Evidence, p. 778.

42. H.J. Lavery (Ed.)., op. cit., p. 117.

43. Evidence, p. 4049.

44. Evidence, p. 4113.

45. Evidence, p. 4847.

46. Evidence, p. 4205.

47. Evidence, p. S3419.

48. Evidence, p. 3696.

49. M.D. Young & L.M. Gibson, op. cit., pp. 7-8.

50. Evidence, pp. S2999.

51. Evidence, p. S2880.

52. Evidence, p. S2999.

53. Evidence, p. 3680.

54. Evidence, p. 1087.

55. Evidence, p. 4359.

56. Evidence, p. 4119.

57. Evidence, p. 4375.

58. H.J. Lavery (Ed.), op. cit., p. 111.

59. Evidence, p. 3033.

60. Evidence, p. S2885.

61. Evidence, p. 4121.

62. Evidence, p. S2886.

63. Evidence, pp. S2885-6

64. Evidence, p. S2886.

65. Evidence, p. S3044.

66. Evidence, p. 4063.

67. Evidence, p. 141.

68. Evidence, p. 3849.

69. M. McBride: 'Kangaroo Harvesting and Conservation' in 'Kangaroo Management', SA NPWS June 1983.

70. Evidence, p. 4367.

71. Evidence, p. S2999.

72. D. Collins and K. Menz: 'An Economic Perspective on the Population Management of Commercially Harvested Kangaroos', Canberra, 1986.

73. Evidence, p. 4733.

74. D. Collins and K. Menz, op. cit., p. 8.

75. Evidence, pp. 4667, 4671.

76. L.M. Gibson and M.D. Young, 'Kangaroos: counting the cost', CSIRO, 1987, p. 64.

77. ibid., p. 64.

78. NSW NPWS letter of April 1985.

Chapter Four

1. W.E. Poole, 'Management of Kangaroo Harvesting in Australia (1984), p. 3.

2. Evidence, p. S3437.

3. Evidence, p. S3135.

4. Evidence, p. S3136.

5. Evidence, p. S3137.

6. Senate Hansard of 24 September 1987, p. 667.

7. Queensland NPWS: 'Kangaroo Conservation and Management in Queensland, 1986'.

8. Evidence, p. S2870.

Chapter Five

1. NSW NPWS, 'Kangaroo Management in N.S.W. (To Apply from 1 January 1987)', p. 3.

2. ibid., p. 4.

3. K.J. McNamara and R.I.T. Prince, 'Kangaroo Management in Western Australia (To Apply from 1 January 1986)', p. 7.

4. Evidence, p. 4441.

5. Evidence pp. 4429-30.

5A. SA NPWS, 'The Macropod Conservation Programme in South Australia, Part A, Management of the Large Kangaroos (To Apply from 1 January 1986)', p. 7.

6. SA NPWS, 'The Macropod Conservation Programme in South Australia, Part A, Management of the Large Kangaroos (To Apply from 1 January 1987)', p. 12.

7. ibid., p. 16.

8. ibid., p. 17.

9. Tasmanian NPWS, 'The Status and Management of Bennett's Wallaby (Macropus rufogriseus) and Rufous wallaby (Thylogale billardierii) in Tasmania', November 1985, p. 11.

10. ibid., p. 12.

11. ibid., p. 12.

12. ibid., p. 12.

13. Evidence, p. 3855.

14. Administrative Appeals Tribunal, Decision & Reasons, 6 June 1986, p. 44.

15. Evidence, pp. S2662 and S2665.

16. Evidence, p. 3949.

17. Queensland NPWS letter dated 15 March 1985.

18. ibid.

19. Evidence, p. 1867.

20. Evidence, p. S4944.

21. Evidence, p. 1867.

22. Evidence, p. 4422.

23. Evidence, p. 2545.

24. Administrative Appeals Tribunal, op. cit., p. 65.

25. Evidence, pp. 2239-40.

26. RSPCA Australia, 'Incidence of Cruelty to Kangaroos', May 1985, p. 34.

27. ibid., p. 35.

28. ibid., p. 40.

Chapter Six

1. G.J. Morris and M.D. Young, 'Second Report on the Economic and Administrative Influences on Kangaroo Management in NSW - The Fauna Dealers', October 1985, p. 33.

2. Senate Hansard, 21 August 1984, pp. 68-69.

3. Senate Hansard, 21 August 1984, pp. 68-69.

4. Senate Hansard, 21 August 1984, p. 68.

5. Senate Hansard, 21 August 1984, p. 68

6. Senate Hansard, 21 August 1984, pp. 68-69.

7. M.D. Young and R.J. Delforce, 'An Economic and Social Survey of Licensed Kangaroo Trappers and Chiller Operators' Volume 1, July 1984, Chapter 3, pp. 9-10.

7A. M.D. Young and G.J. Morris, 'Economic and Administrative Influences on Kangaroo Management in NSW, Final Report, December 1985, p. 18.

8. Young and Delforce, op. cit., Table 6.6.

9. Letter dated 2 December 1983 from the Director of ABAH to the Director of ANPWS.

10. Evidence, p. 1118.

11. M.D. Young and G.J. Morris, Final Report, op. cit., p. 27.

12. ibid., p. 27.

13. M.D. Young and R.J. Delforce, op. cit., Chapter 4, p. 2.

14. ibid., Chapter 4, p. 3.

15. ibid., Chapter 4, p. 7.

16. G.J. Morris and M.D. Young, Second Report, op. cit., p. 56.

17. G.J. Morris and M.D. Young, 'Third Report on the Economic and Administrative Influences on Kangaroo Management in NSW - The Market for Kangaroo Products', July 1986, p. 10.

18. ibid., p. 14.

19. Evidence, p. S2324.

20. Evidence, p. S2326.

21. Evidence, pp. 2210-11

22. G.J. Morris and M.D. Young, Third Report, op. cit., p. 38.

23. ibid., p. 38.

24. ibid., p. 35.

25. ibid., p. 41.

26. ibid., p. 43.

Chapter Seven

1. RSPCA Australia, op. cit., p. 76.
2. ibid., p. 76.
3. Letter dated 19 February 1987.
4. Evidence, p. 4654.
5. Evidence, p. S3477.
6. Evidence, p. 5194.
7. Evidence, p. 5195.

Chapter Eight

1. RSPCA Australia, op. cit., p. 8.
2. ibid. p. 39.
3. ibid. p. 88.
4. RSPCA Australia, 'Incidence of Cruelty to Wallabies in Commercial and Non-commercial Operations in Tasmania', May 1987, p. 69.
5. ibid., p. 28.
6. Evidence, p. 5420.
7. RSPCA Australia, May 1985, op. cit., p. 43.
8. RSPCA Australia, May 1987, op. cit., p. 115.
9. Evidence , p. 3730.
10. RSPCA Australia, May 1987, op. cit., p. 89.
11. Evidence, p. 3731.
12. RSPCA Australia, May 1985, op. cit., p. 55.
13. ibid., p. 58.
14. ibid., pp. 67-68.
15. ibid., p. 80.
16. RSPCA Australia, May 1987, op. cit., p. 69.
17. ibid., p. 66.
18. ibid., p. 67.

Chapter Nine

1. Evidence, p. 5174.
2. RSPCA Australia, May 1985, op. cit., pp. 85-86.

Chapter Ten

1. Evidence, pp. S2832-3 and S1556.
2. Evidence, p. 2505.
3. Evidence, p. S2064.
4. Evidence, p. 2153.
5. Evidence, p. 1817.
6. Evidence, p. 3857-3858, p. 3871.
7. Evidence, p. 1817.
8. Evidence, p. 4475.
9. Evidence, p. S2860.
10. Evidence, p. S2864.
11. Evidence, p. S2868.
12. Evidence, p. 4476.
13. Evidence, p. S2676.
14. Evidence, p. 3044.

APPENDIX 1

LIST OF WITNESSES WHO APPEARED BEFORE THE COMMITTEE TO GIVE EVIDENCE ON KANGAROOS

Alexander, Mr P.J., Wildlife Officer, South Australian National Parks and Wildlife Service, Adelaide, South Australia
Arnold, Dr G., Senior Principal Research Scientist, CSIRO, Midland, Western Australia
Arnold, Ms S., Co-ordinator, Australians for Animals, Sydney, New South Wales
Auty, Mr J.H., Assistant Director, Australian Agricultural Health and Quarantine Service, Canberra, Australian Capital Territory
Bailey, Dr J., President, Conservation Council of Western Australia Inc., Perth, Western Australia
Barber, Mr P.J., State Director, RSPCA Victoria, Burwood East, Victoria
Bates, Mr V.W., Vice-President, Kangaroo Industries Association of Australia, Canberra, Australian Capital Territory
Bennett, Mr P., General Vice-President, Customs Officers Association of Australia, Sydney, New South Wales
Best, Mr L.W., Senior Wildlife Management Officer, South Australian National Parks and Wildlife Service, Adelaide, South Australia
Bock, Mr M.A., Chairman, The Professional Shooters Association of Western Australia Inc., Perth, Western Australia
Brinsley, Mr P.J., Executive Officer (Wildlife), New South Wales National Parks and Wildlife Service, Sydney, New South Wales
Burston, Mr G., Benambra, Victoria
Cairns, Dr J.F., Narre Warren East, Victoria
Caughley, Dr G.J., Senior Principal Research Scientist, CSIRO, Lyneham, Australian Capital Territory
Cheal, Mr D.C., Research Botanist, Victorian Department of Conservation, Forests and Lands, Heidelberg, Victoria
Churchwood, Ms B., Delegate, Conservation Council of Western Australia, Perth
Clarke, Mr I.G., Principal Fisheries and Wildlife Officer, Victorian Department of Conservation, Forests and Lands, East Melbourne, Victoria
Cremen, Mr K.J., Executive Director, Kangaroo Industries Association of Australia, Canberra, Australian Capital Territory
Crook, Dr I.G., Assistant Director of Wildlife, Western Australian Department of Fisheries and Wildlife, Perth, Western Australia
Cyster, Mr R.T., President, Meat Section, Primary Industry Association of Western Australia, Perth, Western Australia
Daly, Mr T., Kangaroo Project Co-ordinator, Greenpeace Australia Sydney, New South Wales

Dempster, Mr J.K., Chief Wildlife Conservation Officer, Victorian Department of Conservation, Forests and Lands, Heidelberg, Victoria

Denny, Dr M.J.S., Consultant, RSPCA Australia Inc., Fyshwick, Australian Capital Territory

Douglas, Mr J.G., Councillor and Executive Member, National Farmers Federation, Barton, Australian Capital Territory

Ellery, Mr G.N., Member, Kangaroo Processors Association of Western Australia,West Perth, Western Australia

Errington, Mr A., Divisional Manager, Administration and Finance, Department of Conservation and Land Management, Crawley, Western Australia

Fennessy, Mr B.V., Scientific Assistant to Chief of Division of Wildlife and Rangelands Research, CSIRO, Lyneham, Australian Capital Territory

Forbes, Mr M.A., Project Co-ordinator, Australian National Parks and Wildlife Service, Turner, Australian Capital Territory

Gee, Mr R.W., Director, Australian Agricultural Health and Quarantine Service, Canberra, Australian Capital Territory

Gibson, Ms L.M., Experimental Scientist, Division of Wildlife and Rangelands Research, CSIRO, Deniliquin, New South Wales

Giles, Dr J., Assistant Director (Wildlife), NSW National Parks and Wildlife Service, Sydney, New South Wales

Gleeson, Mr J.E., Australian Game Meat Producers Association, Eagle Farm, Queensland

Grigg, Associate Professor G.C., Head, School of Biological Sciences, The University of Sydney, Sydney, New South Wales

Harries, Lt-Col. M.J., Secretary, RSPCA South Australia Inc., Adelaide, South Australia

Hocking, Mr G.J., Research Officer, Tasmanian National Parks and Wildlife Service, Sandy Bay, Tasmania

Houen, Mr G.T., General Manager, Queensland Grain Growers Association, Queensland

Howard, Mr A., Executive Officer (Wildlife), New South Wales National Parks and Wildlife Service, Sydney, New South Wales

Jarman, Dr P.J., Armidale, New South Wales

Jennings, Mr K.P., Ranger-in-Charge, Lower North-Eastern Pastoral District, South Australian National Parks and Wildlife Service, Adelaide, South Australia

Jones, Mr R., Director, Fund for Animals Ltd Australia, Manly, New South Wales

Jones, Mr W., Inspector, RSPCA Tasmania, Mornington, Tasmania

Kirkpatrick, Dr T.H., Chief Research Officer, Queensland National Parks and Wildlife Service, Brisbane, Queensland

Koppensteiner, Mr E., Management Committee Member, The Professional Shooters Association of Western Australia Inc., Perth, Western Australia

Lee, Mr P.J., Senior Vice-President, Meat Section, Primary Industry Association of Western Australia, Perth, Western Australia

Lefroy, Mr P.B., President, Pastoral Section, Primary Industry Association of Western Australia, Perth, Western Australia

Levy, Mr L.N., Representative, Australian Wildlife Protection Council, South Melbourne, Victoria

Livanes, Mr T., Member, Kangaroo Industries Association of Australia, and Member, Queensland Fauna Dealers Association, Yowie Bay, New South Wales

Llewellyn, Dr L.C., Principal Wildlife Management Officer, New South Wales National Parks and Wildlife Service, Sydney, New South Wales

Lloyd, Mr M.J., President, Wool Section, Primary Industry Association of Western Australia, Perth, Western Australia

Madden, Mr W.J., Acting Director, Cargo, Barrier Enforcement Branch, Australian Customs Service, Barton, Australian Capital Territory

May, Dr R.A., RSPCA Australia Inc., Fyshwick, Australian Capital Territory

McBride, Mr M.P., National Farmers' Federation, Barton, Australian Capital Territory

McCutchan, Mr J.C., Lower Plenty, Victoria

McEvoy, Mr J.S., Director of Field Operations, Queensland National Parks and Wildife Service, Brisbane North Quay Queensland

McGrath, Mr M., Director, Conservation Council of Western Australia Inc., Perth, Western Australia

McLachlan, Mr. I.M., President, National Farmers, Federation, Barton, Australian Capital Territory

McNamara, Mr K.J., Senior Project Officer, Australian National Parks and Wildlife Service, Turner, Australian Capital Territory and Scientific Adviser to Director of Nature Conservation, Department of Conservation and Land Management, Crawley, Western Australia

Meischke, Dr H.R.C., Acting Principal Veterinary Officer, Australian Agricultural Health and Quarantine Service, Canberra, Australian Capital Territory

Mell, Mr D., Chief Wildlife Officer, Department of Conservation and Land Management Western Australia, Crawley, Western Australia

Menz, Dr K., Head, Rural Resources, Economics Section, Bureau of Agricultural Economics, Lyneham, Australian Capital Territory

Miller, Mr D.J., Head, Wildlife Protection Section, Australian National Parks and Wildlife Service, Canberra, Australian Capital Territory

Moore, Mr B.L., Acting Senior Veterinary Officer, Australian Agricultural Health and Quarantine Service, Canberra, Austalian Capital Territory

Morris, Mr G.J., CSIRO, Lyneham, Australian Capital Territory

Mugambi, Mrs S., Director, Conservation Council of Western Australia Inc., Perth, Western Australia

Murrell, Mr P., Director, Tasmanian National Parks and Wildlife Service, Sandy Bay, Tasmania

Newman, Dr G., Director, Victorian Department of Conservation, Forests and Lands, East Melbourne, Victoria

Officer, Mr E.A, Primary Industry Association of Western Australia, Perth, Western Australia

Oliver, Mr A.J., Principal Research Officer, Agriculture Protection Board of Western Australia, South Perth, Western Australia

Ovington, Professor J.D., Director, Australian National Parks and Wildlife Service, Turner, Australian Capital Territory
Pearse, Mr R.J., Chief Wildlife Officer, Tasmanian National Parks and Wildlife Service, Sandy Bay, Tasmania
Poole, Mr W.E., Principal Research Scientist, Division of Wildlife and Rangelands Research, CSIRO, Canberra, Australian Capital Territory
Powys, Mr J., Department of Foreign Affairs, Canberra, Australian Capital Territory
Price, Mr J., Executive Committee Member, Pastoralists and Graziers Association of Western Australia Inc., Cue, Western Australia
Prince, Dr R.I.T., Wildlife Management Research Officer, Research and Planning Branch, Department of Conservation and Land Management, Crawley, Western Australia
Rawlinson, Mr P.A., Spokesperson on Kangaroos, Australian and New Zealand Federation of Animal Societies, Greensborough, Victoria
Reeves, Dr G.W., Chief Commodity Analyst and Acting Deputy Director, Bureau of Agricultural Economics, Lyneham, Australian Capital Territory
Richmond, Mr T., Assistant Director, Australian National Parks and Wildlife Service, Turner, Australian Capital Territory
Robertson, Dr D., Blackburn, Victoria
Saunders, Dr G.W., Director, Queensland National Parks and Wildlife Service, Brisbane, Queensland
Saunders, Mr D.S., Director of National Parks, Victorian Department of Conservation, Forests and Lands, East Melbourne, Victoria
Saunders, Mr J.R., Chairman, Kangaroo Processors Association of Western Australia, West Perth, Western Australia
Savell, Mr G.A., Secretary, The Professional Shooters Association of Western Australia Inc., Perth, Western Australia and Deputy Executive Director, Pastoralists and Graziers Association of Western Australia Inc, Perth, Western Australia
Shaughnessy, Dr P.D., Scientific Services Officer, CSIRO, Dickson, Australian Capital Territory
Shepherd, Dr N.C., Special Veterinary Research Officer, New South Wales National Parks and Wildlife Service, Sydney, New South Wales
Smith, Ms A.A., Wildlife Co-ordinator, Australians for Animals, Sydney, New South Wales
Spanswick, Mr R.G., General Secretary, Customs Officers Association of Australia, Sydney, New South Wales
Stacey, Mr A.H., Honorary State President, RSPCA Tasmania, Launceston, Tasmania
Stacker, Ms L., Wildlife Co-ordinator, Greenpeace Australia, Sydney, New South Wales
Stelmasiak, Dr T., Senior Veterinary Research Officer, Department of Agriculture, Westmeadows, Victoria
Thomas, Mr C.F., President, Queensland Fauna Dealers Association, Bulimba, Queensland

Trotter, Dr A.J., Assistant Secretary, Europe Branch, Department of Foreign Affairs, Canberra, Australian Capital Territory
Van Mourik, Dr Simone, Research Fellow, University of Melbourne, Parkville, Victoria
Wallett, Mr B.J., Consultant, RSPCA Australia Inc., Fyshwick, Australian Capital Territory
Wallis, Mr J.D., Acting Section Head, West Europe Section, Department of Foreign Affairs, Canberra, Australian Capital Territory
Warneke, Mr R.M., Senior Research Officer, Victorian Department of Conservation, Forests and Lands, East Melbourne, Victoria
Wilson, Dr G.R., Deakin, Australian Capital Territory
Wilson, Mr A.V., Assistant Controller-General, Barrier Enforcement Branch, Australian Customs Service, Barton, Australian Capital Territory
Wirth, Dr H.J., Vice-President, RSPCA Australia Inc, Fyshwick, Australian Capital Territory and President, RSPCA Victoria, Burwood East, Victoria
Wright, Mr C.M., Executive Director, RSPCA Australia Inc, Fyshwick, Australian Capital Territory

APPENDIX II

SUMMARY OF POPULATION FIGURES GIVEN SINCE 1981 FROM OR QUOTING OFFICIAL SOURCES

DATE	FIGURE	SOURCE
May, 1981	32 million	Australian Information Service Fact Sheet.
29/3/1983	21 million	News Release, The Hon. B. Cohen, MP.
3/5/1983	21 million	Australian High Commission, London.
9/7/1983	19 million	'Manly Daily', quoting Dr G. Caughley, Professor G. Grigg, Mr J. Short.
23/9/1983	19 million	'Brisbane Courier Mail', quoting The Hon. B. Cohen, MP.
4/10/1983	19 million	Australia House, London, Press Conference of The Hon. B. Cohen, MP.
1984 FIGURES		
1/2/1984	19 million	'Northern Miner' Queensland, quoting The Hon. B. Cohen, MP.
16/2/1984	13-14 million	ABC's AM programme, quoting The Hon. B. Cohen, MP.
16/2/1984	21 million	'The Age', Melbourne, quoting The Hon. B. Cohen, MP.
17/2/1984	21 million	'The Australian', Editorial, quoting The Hon. B.Cohen, MP.
17/2/1984	12/14 million	Radio 2GB, The Hon. B. Cohen, MP.

22/2/1984	21 million	'Queensland Graingrower', quoting The Hon. B. Cohen, MP.
23/2/1984	21 million	'New Scientist', quoting The Hon. B. Cohen, MP.
26/2/1984	12/14 million	Dept. of Home Affairs & Environment Minute, Minister's notation, 21.
28/2/1984	19 million	The Hon. B. Cohen, MP, Question 469, House of Representatives.
5/4/1984	12/14 million	'The Australian', letter by The Hon. B. Cohen, MP.
25/4/1984	10/12 million	'The Canberra Times', quoting Alan Levitt, US Fish & Wildlife spokesman.
26/4/1984	10/12 million	'The Age'.
3/5/1984	12 million	'Queensland Country Life' quoting Professor D. Ovington, Director ANPWS.
3/5/1984	14 million or more	'Daily Sun', Brisbane, quoting The Hon. B. Cohen, MP.
23/5/1984	19 million	Letter from The Hon. B. Cohen, MP, to AFA member.
9/6/1984	19 million	'Melbourne Herald'.
27/6/1984	19 million	Letter from The Hon. B. Cohen to member of Australians for Animals.
Sept., 1984	12/14 million	The Hon. B. Cohen, MP, Statement to House of Representatives.

<u>1985 FIGURES</u>

6/3/1985	17 million in Qld.	Press clipping quoting The Hon. P.R. McKechnie, MLA.
13/3/1985	21 million in Qld.	'South Burnett Times', quoting The Hon. P.R. McKechnie, MLA.

17/4/1985	12 million	Department of Foreign Affairs, Telex MCH 217392
20/6/1985	17-30 million in Qld.	'Queensland Country Life', quoting The Hon. P.R. McKechnie, MLA.
25/6/1985	17 million in Qld.	'Brisbane Sun', quoting The Hon. P.R. McKechnie, MLA.
31/7/1985	in excess of 10.7 million	The Hon. B. Cohen, MP, in response to House of Representatives question 1351.
1/8/1985	in excess of 10.7 million	Professor D. Ovington, Director ANPWS in response to FOI Act.
13/9/1985	19 million	Department Foreign Affairs, Telex O.BS22501 1430.
18/9/1985	16 million	The Hon. B. Cohen, MP.
19/9/1985	16 million	'West Australian' quoting The Hon. B. Cohen, MP.
19/9/1985	16 million	'Launceston Examiner', quoting The Hon. B. Cohen, MP.

Source: Evidence, p.S3263-5.

APPENDIX III

May 1985

CODE OF PRACTICE FOR THE SHOOTING OF KANGAROOS

Issued by the Council of Nature Conservation Ministers

PREFACE

The Council of Nature Conservation Ministers (CONCOM) is composed of all Commonwealth, State and Territory Ministers having responsibility for national parks and wildlife. CONCOM is advised by a Standing Committee consisting of the heads of Commonwealth, State and Territory Authorities responsible for national parks and wildlife matters.

This Code of Practice for the Humane Shooting of Kangaroos has been prepared by the CONCOM Special Working Group on Cruelty Aspects of the Taking and Holding of Native Fauna. During the course of its preparation, drafts of the Code were circulated widely for public comment.

The Code sets an achievable standard of humane conduct and is the minimum required of persons shooting kangaroos.

Endorsed in principle by Council on 30 May 1985, the Code is intended to be implemented through education and State and Territory legislation as appropriate. This Code is based on the knowledge and technology available at the time of publication and may need to be varied in the light of new knowledge.

INTRODUCTION

This Code of Practice has been produced to ensure that all persons intending to shoot a free-living kangaroo are aware of the welfare aspects pertinent to that activity. In this Code the term 'kangaroo' means all species of the family Macropodidae within the superfamily Macropodoidea and so applies to kangaroos, wallaroos or euros, wallabies and pademelons.

All shooting of kangaroos, whether on public or private land, is subject to law. The laws may differ between localities and the Government Wildlife Authority in the Stte or Territory in which the shooting will occur can advise on the relevant provisions. Except where specifically exempted by law, States and Territories will require the shooter to have a licence or permit issued by the Government Wildlife Authority and this Authority will specify any conditions or restrictions applying to that licence or permit.

When shooting a kangaroo the primary objective must be to achieve instantaneous loss of consciousness and rapid death without regaining consciousness. For the purposes of this Code, this is regarded as a sudden and painless death. Commonsense is required to assess the prevailing conditions. Where the conditions are such as to raise doubts about achieving a sudden and painless kill, shooting must not be attempted.

The Code is divided into three sections covering the method of shooting, despatch of injured kangaroos and pouch young and shooting for scientific purposes, and has three schedules specifying firearms, ammunition and points of aim. In each section an introduction provides background to the Conditions which must be adhered to by all persons shooting kangaroos.

METHOD OF SHOOTING

The species of kangaroos which are shot differ in size and there is enormous variation in the terrain and prevailing weather conditions at the time of shooting. The combinations of firearms and ammunition are considered adequate to ensure a sudden and painless death for the target animal under most environmental conditions, provided that the shooting is done in accordance with the other Conditions set out in this Code. However, it is the shooter's responsibility to ensure a sudden and painless death for target animals, and under unusual conditions firearms and ammunition that exceed the minimum requirements may have to be used.

With a centrefire rifle a sudden and painless death is consistently achieved by the projectile striking the brain of the target animal. Thus the brain is the required point of aim for this class of weapon. Centrefire rifles are specified for all kangaroo shooting except where the smaller wallabies are to be shot in or adjacent to forest or scrub. Such shooting is often carried out in daylight; the animals are flushed at close quarters and are unlikely to be stationary. In these cases the licence or permit issued by the Government Wildlife Authority may authorise the use of shotguns. At ranges up to the maximum specified in Schedule 1 a shotgun will cause a sudden and painless death if the pattern is centred on the head, neck or chest of the target animal. The shooter must be able to place a clear shot into one of these target areas whether the animal is moving or stationary.

FIREARMS

Conditions

(i) The minimum specifications for firearms and ammunition are set out in Schedule 1. Kangaroos shall

only be shot with a combination of firearm and annunition that complies with or exceeds those minimum specfications.

(ii) In the environmental conditions in which the shooter operates the combination of firearm and ammunition selected must ensure the sudden and painless death of each target animal. Evidence of compliance with the minimum specifications in Schedule 1 is no defence in administrative and/or legal proceedings concerning a breach of this Code if the combination used by the shooter has not achieved a consistently sudden and painless kill.

(iii) Kangaroos must be shot using a centrefire rifle unless use of a shotgun is specifically allowed by the licensing authority.

(iv) A rifle must be sighted in against an inanimate target before commencing each day's shooting.

SHOOTING PLATFORM

Conditions

(i) Kangaroos must not be shot from a moving vehicle or other moving platform.

TARGET ANIMAL

Conditions

(i) The target kangaroo must be clearly visible.

(ii) When a rifle is used the target kangaroo must be stationary and within a range that permits accurate placement of the shot.

(iii) When a shotgun is used the target kangaroo must be within the range specified in Schedule 1 and in a position where a clear shot can be fired at the head, neck or chest.

POINT OF AIM

Conditions

(i) A shooter using a rifle must aim so as to hit the target kangaroo in the brain (see diagram in Schedule 2), except in the case of an injured or wounded animal where a brain shot might be impractical.

(ii) A shooter using a shotgun must aim so that, whether the target kangaroo is stationary or mobile, it will be hit in the head, neck or chest by the centre of the pattern.

INJURED KANGAROOS AND POUCH YOUNG

No matter how skilled the shooter, some kangaroos will not be killed outright. Wounded kangaroos must be despatched as quickly and humanely as possible.

When killing a wounded animal a brain shot may be impractical. For example, the accurate placement of a shot in the brain may require capture and restraint of the animal; this would increase suffering and be inconsistent with the objective of sudden and painless death. In such circumstances a heart shot may

be the most humane means of despatch. In some special circumstances, where a wounded kangaroo is encountered, it may not be practicable to shoot the animal, as at a practical range the acceptable points of aim may be obscured, and at a close range the use of a high powered rifle may be unsafe. In these special circumstances a heavy blow to the skull to destroy the brain may be the most appropriate and humane means of despatch.

A skilled kangaroo shooter often shoots more than one kangaroo out of a group before driving to the carcases to retrieve them. When a high standard of marksmanship prevails, this is acceptable provided that where an individual kangaroo is wounded no further kangaroos are shot until all reasonable efforts have been made to despatch the wounded animal.

Shot females must be examined for pouch young and if one is present it must also be killed. Decaptitation with a sharp instrument in very small hairless young or a properly executed heavy blow to destroy the brain in larger young are effective means of causing sudden and painless death.

Conditions

(i) If a kangaroo is thought to be alive after being shot, every reasonable effort shall be made immediately to locate and kill it before any attempt is made to shoot another animal.

(ii) When located, wounded animals must be killed by a method that will achieve a rapid and humane death, where practicable by a shot to the brain.

(iii) Under circumstances where a shot to the brain of an injured animal is impracticable or unsafe, a shot to the heart is permissible (see Schedule 3).

(iv) In circumstances where, for despatch of a wounded kangaroo, a shot to either the brain or heart is impractical or unsafe, a very heavy blow to the rear of the skull to destroy the brain (see Schedule 2) is permissible. To ensure a humane kill, a suitably hard and heavy blunt instrument must be used (e.g., metal pipe, billet of wood etc., carried for this purpose).

(v) If a female has been killed, the pouch must be searched for young as soon as the shooter reaches the carcase.

(vi) The pouch young of a killed female must also be killed immediately, by decapitation or a heavy blow to the skull to destroy the brain.

SHOOTING FOR SCIENTIFIC PURPOSES

Permits to shoot kangaroos for scientific purposes are sometimes requested. Because of the circumstances and locations in which such shooting may take place, and because of specific research requirements (e.g. to obtain anatomical items such as intact skulls for diagnostic examination and museum reference collections), it may be necessary to allow exemptions from the general conditions such as point of aim and shooting platform. Such variations are not intended to detract from the primary responsibility of the shooter to provide a sudden and painless death for the target animals.

Conditions

(i) The provisions of this Code shall apply to the shooting of kangaroos for scientific purposes except where express provision to the contrary is included

in the permit/licence under which the animals are shot.

(ii) Before the licensing authority issues such a permit/licence it should be satisfied that;

(a) if there is an Animal Care and Ethics Committee at the applicant's institution, that Committee has examined and approved the proposal; and

(b) the method of shooting will result in sudden and painless deaths for the animals authorised to be killed.

(iii) The waiving of any requirements of this Code shall not relieve the shooter of the obligation to provide a sudden and painless death for the target kangaroos.

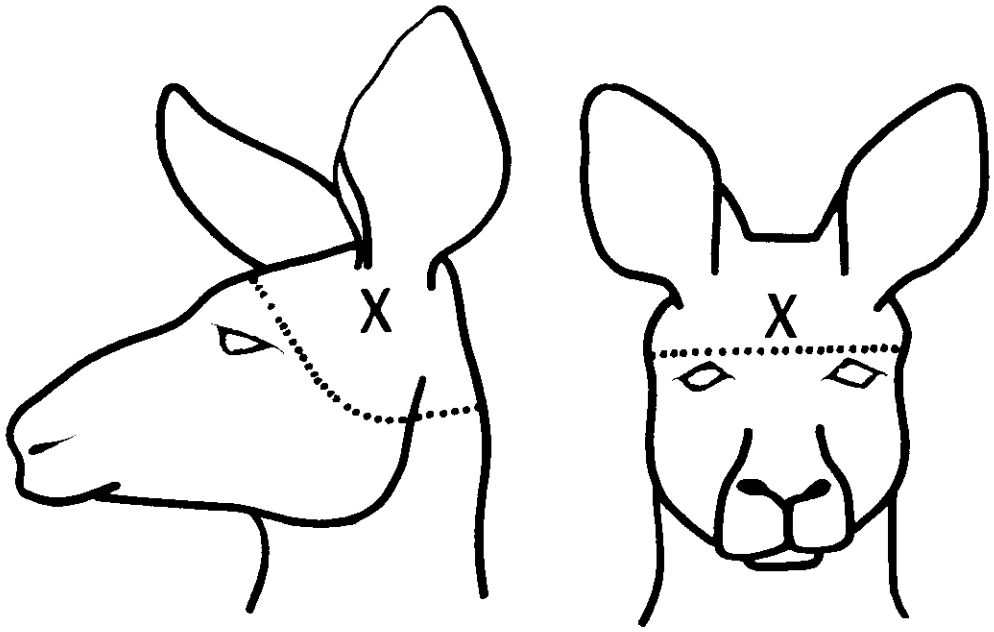
SCHEDULE 1: Minimum Specifications for Firearms and Ammunition

(Note: Ammunition must be loaded to at least the specifications shown to ensure a sudden and painless death for the target animals)

Species	Prescrived firearm and firearm/ammunition combinations
Group 1	
Red kangaroo (Macropus rufus), Eastern grey kangaroo (M. giganteus),	A centrefire rifle, fitted with a telescopic sight. Nominal bore size 0.569cm

Western grey kangaroo (*M. fuliginosus*),		(0.224") and centrefire case capacity of at least .222 Remington.
Euro or wallaroo (*M. robustus*), Agile wallaby (*M. agilis*), Whiptail wallaby (*M. parryi*).		Ammunition shall have an expanding projectile (soft or hollow point) of not less than 324 mg (50 grains) and and provide a minimum muzzle energy of 1542 Joules (1137 foot-pounds). [.222 Remington with 50 grain projectile must be loaded to achieve a muzzle velocity of 975 m/sec (3200 ft/sec) to achieve this minimum muzzle energy].
Group 2		
All members of the family Macropodidae other than those listed in Group 1.	a)	A centrefire rifle fitted with a telescopic sight. Calibre and ammunition sufficient to achieve at least a minimum muzzle energy of 975 Joules (720 foot-pounds) [e.g. .22 Hornet; 45 grain projectile and loaded to achieve muzzle velocity (m.v.) of at least 2690 ft/sec, or .17 Remington; 25 grain projectile loaded to achieve m.v. of at least 3610 ft/sec].
	or	
	b)	Shotguns of 12 gauge or larger, using No. 2, 1, BB or larger shot. Maximum range for shotguns of 30 metres. Shotgun cartridges must be loaded to provide a dense and even pattern [e.g. 12 gauge cartridge requires maximum weight of shot, 11/4 oz = 36g = 63 BB shot pellets].

SCHEDULE 2: Point of Aim (X) for a Shot to the Brain and Location of the Brain. (All Kangaroos)



SCHEDULE 3: Point of Aim (+) for a shot to the heart. (Applicable only as described for injured kangaroos and specified shotguns).