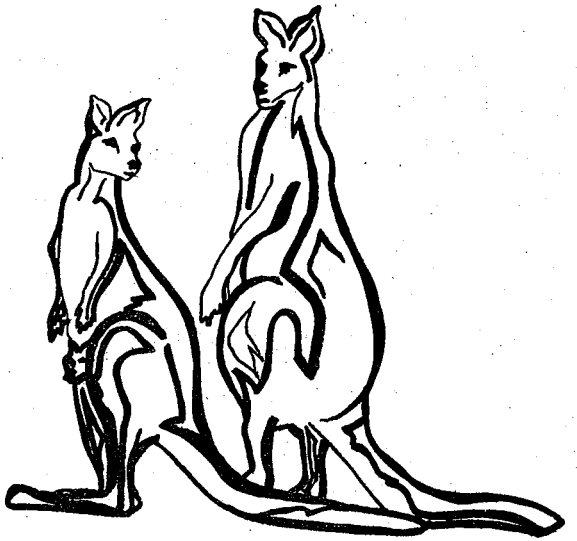
DEPARTMENT OF FISHERIES AND WILDLIFE,

Western Australia



# KANGAROOS

DEPARTMENT OF
FISHERIES AND WILDLIFE,
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# KANGAROOS

## A QUESTION AND ANSWER FEATURE ON SOME CONTENTIOUS ISSUES

Reprint of an article which appeared in State Wildlife Advisory News Service, Vol. 2, No. 1, 1971.

Q. Have the kangaroos benefited from increased food and water supplies through the development of the pastoral area?

A. The distribution of the animal population was governed by the availability of water although the native vegetation had a wider distribution than the kangaroo. With the extension of water supplies for pastoral use a greater range of distribution of the animals was possible because of the availability of additional food supplies.

Q. Are there many more kangaroos now than before the white man arrived?

A. It would appear that the population has increased but not in those areas where the animals previously occurred. Prior to the coming of the white man only a limited area was available with adequate water supplies. The development of a pastoral industry over a much greater area of the State has provided the necessary water supplies, and in doing so it has opened up additional areas for the kangaroo population to utilise.

Q. Are kangaroos competing with sheep and cattle for the same food?

A. From studies previously carried out it appears that some foods eaten by kangaroos are common to sheep and at some periods of the year certain foods are more common than others. In general there is not a great deal to suggest that a pastoralist would be any better off if there were no kangaroos on his property; because of the different diet of sheep and kangaroos there is only limited competition for food.

Q. Is it reasonable to expect co-existence of sheep and kangaroos in the pastoral areas?

A. Since the distribution of the red kangaroo population is coincident with the better pastoral areas of the State, eradication of the animals in that region would result

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in virtual extinction of the species. In present circumstances co-existence of "reds" and sheep must therefore be permitted if the species is to be maintained.

Q. Are kangaroos animals that may be farmed?

A. In general they would not be easily domesticated as cattle and sheep have been. If they were farmed on the same basis as other animals it would no doubt incorporate all the problems and undesirable features of other farming industries - particularly that of trying to carry more stock than was ecologically desirable. These animals have not had the benefit of selection for commercially desirable characteristics and the productivity would at this stage be very low. Selective breeding over an extensive period might be needed to increase the carcass weight and quality of fur, etc.

Q. How long does it take for a female kangaroo to reach sexual maturity?

A. In captive animals and animals enjoying excellent conditions in their natural state, some may reach sexual maturity at the age of 1½ years. However, under normal field conditions this maturity is not reached until an average of 20-22 months. Under adverse conditions, such as in time of drought maturity may be delayed until 3½-4 years of age. Depending upon conditions, the age of sexual maturity would therefore be somewhere between 2-4 years. Conditions prevailing in normal years might be termed "average" and maturity would then be reached around 2½-3 years of age.

Q. What is the expected life span of a female kangaroo?

A. In unexploited populations, the average age of adults is approximately 6½-7 years although the majority of animals of the adult section would be much younger than this. Under normal conditions the average reproductive life of a healthy female kangaroo attaining adulthood would be about 4 years. However, it is probably that only about 85% of the females would be capable of reproducing.

Q. Under ideal conditions how many joeys could a female produce in one year?

A. Under ideal conditions, assuming that each mating was successful, that the joey survived a full pouch life and that there was a successful post partum mating the female could theoretically produce about 1 3/4 joeys per year. Taking into account mortality, availability of food, disease and other influencing factors, a female might be expected to produce one joey per year. Since approximately 50% of all joeys born die before reaching one year of age the actual recruitment rate into the adult population is about 0.6. With a reproductive life of 3 years the female would only be producing 1.8 joeys which

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would reach adulthood and this is barely a replacement rate. If the productive life was 4 years the female would produce 2.4 joeys - a slight excess over replacement.

Q. What is the mortality rate of joeys in the pouch?

A. In the first month of pouch life the mortality rate is up to 5% (per month). The rate increases as the joey ages and by the last month the rate can be 50% or more. The higher rate at the latter stage of pouch life is due to the joey leaving the pouch for periods when it then becomes easy prey or can be abandoned by the mother in time of danger, etc.

In a case of extreme drought it was found in the Eastern Greys that no joeys survived for a period of twelve months.

Q. Is it true that the kangaroos can breed like flies when seasons are good again after a period of drought?

A. The reproductive success of kangaroos can change according to the conditions outlined in the above answers. It is obvious therefore that with one joey being produced each year the term "breeding like flies" is a fallacy. As pointed out earlier, in time of drought there can be practically no breeding and the mortality of adults during such a period is much higher too. Therefore, at the end of a drought there would be less adults to breed and less joeys entering the adult stage.

To illustrate this point let us take an example of a population of 100 adult kangaroos (50 males and 50 females) under "average" and extreme drought conditions. Allowing for normal mortality we could expect, at the end of the twelve months for there to be left an adult population of 40 males and 40 females. The females - at a maximum rate - could have produced approximately 30 joeys thereby making the total population 40 males and 40 females and 30 joeys = 110.

During a period of drought (with high mortality) the original population of 100 would have been reduced to probably about 30 males and 30 females or less and, even allowing for the birth of say 5 joeys the population could be reduced to only 65. Thus the breeding following a severe drought could only come from a reduced adult population with a period of two years when there would be very few joeys reaching adulthood - only those from pre-drought period - and even these latter animals may not have reached sexual maturity because of the drought conditions.

Q. Reports from pastoral areas in the North-West indicate that some pastoralists may have a continuing kangaroo problem, some a seasonal problem and others, no problem at all. Why is this so?





A. The pastoral leases are comprised of vastly different types of habitat. Those in marginal areas would support only small populations while those in good areas may carry large numbers of animals at all times. Other areas are more variable and therefore would sustain varying population levels from year to year.

Q. It is alleged that the kangaroo could never be shot out or become extinct. Is this likely to be true?

A. The possibility of a sole cause of extinction is most unlikely. Over-exploitation by professional shooters, following with further exploitation by itinerant shooters (if allowed) could reduce the population to such an extent that it would be more vulnerable to other mortality factors such as droughts or human interference. However, with controlled shooting by professional operators only - as now exists - there is no likelihood of the kangaroo population being "shot out".

Q. If shooters tend to operate from made tracks is it not likely that thousands of kangaroos could remain untouched in the more inaccessible and isolated country?

A. The professional shooters certainly use the made tracks in travelling to and from their various shooting areas but the actual shooting takes place beyond those tracks. Shooters of red kangaroos tend to favour the better pastoral areas which are more accessible but this in fact is the habitat of the "red".

There may be small, isolated pockets of pastoral country which are economically inaccessible but the population on the majority of these areas in the pastoral lands will still become exposed at some time.

Fugitive populations in these inaccessible areas would be very small and therefore more likely to become extinct by chance.

Q. Does there have to be a minimum number in a population for it to be viable?

A. There are certain biological criteria which suggest that kangaroo populations need to be of a minimum size to enable them to survive. The smaller the population the less chance there is of survival. Without Government intervention and the protection offered by the regulations it could have been possible for the red kangaroo population of the pastoral areas to have been depleted to a few isolated pockets, thereby endangering the chance of survival.

Q. It has been said that professional shooters tend to take only the bigger male kangaroos. Is this so?

A. Since less than 10% of the total kangaroo population is made up of older and bigger males it would be uneconomical

for a shooter to take these animals only.

Shooting does alter the age structure in that it crops off the older and larger animals but these are only a small fraction of the population. Some of the older animals may in any case be considered expendible since by virtue of their age they are not contributing greatly to the reproduction of the species.

If shooting is to be continued as an economic proposition the shooter must take all sizes offering. When the older animals have been taken the next age class becomes the prime target - probably with a preference for the males which offer the greater carcass weight.

Q. Some pastoralists and shooters say that females outnumber the males in the natural populations. How does this relate to the two previous questions?

A. The mortality rate of adult males is slightly higher than females (normal throughout the animal kingdom). The sex ratio at birth is 50:50 for kangaroos but over the life span the ratio changes slightly in favour of the female.

Because of a preference for the larger male animal shooting tends to increase the ratio of females in the adult population.

Q. Is the spelling of (a) overhunted regions and (b) the inspection of properties before issuing permits specifying the numbers of kangaroos that can be taken off them as outlined in the N.S.W. Management Programme (A.C.F. Occasional Publication No. 4 The Commercial Hunting of Kangaroos) a practical basis for conservation measures?

A. (a) Shooting generally removes the excess numbers of animals. If overshooting takes place and more than the excess is taken, some respite is necessary to allow the population to build up again. Some over-exploitation of populations must occur if the industry is to remain an economic proposition. However, from the returns submitted by shooters and processors, it will be possible to determine when a particular area is being exploited at an excessive rate and steps can be taken to curtail further shooting until the population has built up again.

(b) The inspection of properties to determine the numbers of kangaroos which may be taken is biologically unrealistic, costly and impractical. While it may be necessary to census populations in order to adjust cropping ratios to productivity, the management unit will comprise a local population. Local populations of red kangaroos in particular do not necessarily coincide with individual property boundaries and in this case it is both unnecessary and a waste of manpower to attempt to individually assess numbers within the confines of each property. The population will be monitored from a combination of the data supplied by

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shooters' returns and occasional aerial surveys of field populations.

Q. Is the present kangaroo management plan flexible enough to deal with drastic fluctuations in the total populations?

A. Previous answers have shown that there can be no dramatic upward fluctuations in the kangaroo population - it can only decrease dramatically as a result of drought, etc. The present management plan can however be modified to re-arrange quotas and curtail shooting if it is considered essential for the preservation or control of the kangaroo population.

Q. Is it true that the bulk of grey kangaroo populations are in the forests and that only a small proportion would be exposed to destruction on farms?

A. There are only some 4 million acres of forests in the South West of the State but the range of the grey kangaroo extends far beyond this.

Therefore, only a small proportion of the populations are found in the forest areas although the density of animals may be slightly higher in that region.

Q. What is the value of the provision of special reserves for kangaroos and the allowing of an "open go" by shooters on those outside reserves?

A. In the case of red kangaroos there are no suitable areas available large enough to sustain a reasonable population. Any areas which could be set aside and which could sustain red kangaroo populations are already committed as they are the better pastoral areas. In order to maintain the red kangaroo population it is necessary to compromise over the use of the land by pastoralists and kangaroos. In the case of the grey kangaroo it is a question of availability of suitable areas and size. Most reserves would not support a large enough population which would remain viable over the long term; only small populations could be supported in perpetuity and, in the majority of such reserves, the boundary area is high in proportion to the total area enclosed. Therefore, virtually all of the animals would become exposed off the reserve which would cease to be a sanctuary both from a biological and practical point of view.

With the movement of kangaroos off the reserve, they would be exposed to shooting pressure and the reserve populations would eventually become depleted to a level which could not sustain future populations.

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