MARSUPIALS VERSUS LIVESTOCK

Public interest in conservation and the welfare of our wildlife has probably never been greater. Consequently, it is timely to take a look at some of the ways in which domestic livestock have interacted with our native species of wildlife. Most of the changes have been slow (with their beginnings more than a century ago), making it very difficult for one research worker to observe them. But Dr. A .E. Newsome, of the C.S.I.R.O. Division of Wildlife Research, has pieced together the story for some species of marsupials, partly from his own observations of the biology and present distribution of each species, but also by taking account of reports from explorers and stockmen.

When two populations of animals share the same resource, such as grass, it doesn't follow automatically that they have to compete for it, since there may be a surplus of the resource. Competition does occur, though, when there is too little of the resource to go round. On the other hand, sometimes the presence of one species may improve the supply of resource for another. As sheep and cattle were introduced to the arid and semi-arid areas of Australia the large kangaroos prospered. But many species of inoffensive, harmless marsupial became rare, and some died out. This article examines some of the likely reasons for these changes.

Europeans aid euros

The euro *(Macropus robustus)* is a large kangaroo living mostly in hills and rocky outcrops in inland Australia, which became extremely abundant in the Pilbara district of north-western Australia about 50 years after sheep were introduced there in 1880. Throughout the rest of their habitat euros were, and have remained, relatively uncommon.

The Pilbara, perhaps better known today for its mineral resources, is a very hot, semi-arid sandplain with scattered low hills and granite outcrops. Soft spinifex dominates the pastures, but this was not always so. Originally, more nutritious pastures including grasses and saltbush grew along the river flats and valley floors, especially after monsoonal summer rains; spinefex grew mainly on the hills and rocky outcrops.

Euros were unable to feed extensively on the flats because of a lack of water there. During the day they were forced to shelter in cool caves in the hills. As sheep (and some cattle) were introduced, watering points were provided every three miles or so along the grassy flats. The euros drank from them too, and this eliminated their severe water shortage. With that restraint removed, they multipled greatly and were no longer restricted to the hills and outcrops; they came out onto the plains and, like red kangaroos, sheltered under the trees by day and grazed at night. By 1930 the numbers were so high that euros were regarded as ruinous pests and blamed for the decline in the country's ability to carry sheep. Certainly the land was carrying a great many euros—in 1959 one station running 6,500 sheep killed 12,800 euros in two months. It was not surprising that most people blamed the euros for the decline in carrying capacity.

However, some years ago Dr. E. H. M. Ealey, of the C.S.I.R.O. Division of Wildlife Research, together with Mr. H. Suijdendorp, of the Western Australian Department of Agriculture, studied the euro problem and came up with a more complex explanation. They suggested that pastures had deteriorated, and attributed this change to heavy grazing, initially by sheep and later by euros as well. The more nutritious grasses had largely been eaten out and spinifex had taken their place. For much of the year spinifex was the only feed available, and since it is only a poor maintenance diet for sheep this greatly favoured the euros, which have always relied on it for dry season and drought fodder.

So two factors seem to have been responsible for the amazing increase in euro population in the Pilbara: improved water supply, and a favourable change in the pasture composition.

Red kangaroo increased too

The red kangaroo *(Megaleia rufa)* also lives in the arid zone and complements the euro ecologically by living on the plains and needing green nutritious herbage to eat. This species, too, became much more abundant after livestock were introduced, and Dr. Newsome has suggested an explanation for the rise in numbers. He found that the stock keep the herbage closely grazed, forcing perennial grasses to produce a continuous supply of green shoots. This happens best between 1.5 and 3 miles out from watering points; pasture closer to the water becomes grazed out, and pasture more than 3 miles away is not grazed heavily enough by the stock. These "marsupial lawns" of green shoots keep the kangaroos alive during drought.

Much has been written on the controversial question of competition for food between red kangaroos and stock during drought. Dr. Newsome feels that as yet, despite three published studies on the subject, there is no conclusive evidence. Two of the studies were made when food was abundant, while in the third the diet of the kangaroos was not examined in the same localities as that of the stock.

However, Dr. Newsome does conclude that, even if kangaroos could be completely removed, few additional stock could be run. Nevertheless, he believes that during severe drought there may be

strong competition for the remaining grass. The best policy is probably to harvest both livestock and kangaroos, but the most profitable way to do so remains to be worked out.

Small marsupials—a different story

In marked contrast to the large kangaroos, the small marsupials have invariably suffered from the influences of livestock and Man's other agricultural activities. Three main types of ecological change appear to have been involved: competition for food, removal of shelter, and increased predation. An exact explanation of the effects on every species is impossible; the evidence is sparse and not always reliable and the environmental changes are exceedingly complex. For many species, such as the hare wallabies, the grazing of long grass by stock removed an essential shelter resource.

For instance, the spectacled hare-wallaby *(Lagorchestes conspicillatus)* lived in and around the mulga woodlands of central Australia and was once quite common there. It sheltered in long grass during the day and was at one time so common that stockmen used their dogs to course the wallaby for sport. Today the grassy plains are often grazed almost bare and the species is extinct.

A solution?

Over inland Australia, probably four species of marsupials are already extinct, several more may be very close to it, and perhaps andother 20 are in danger. Many harmless native rodents are probaby in a similar position. Wildlife has also disappeared from areas where the rainfall permits cropping and sown pastures. What can be done? There are no easy answers, partly because we don't yet know enough about the delicate relations between the animals and their environments. But certainly it is now clear that most species cannot co-exist with livestock. If we want to preserve the native animals it seems that more national parks must be provided, although proper management of parks is hampered by our lack of knowledge.

It is ironic that so much attention has been diverted from our small native animals by public concern for the welfare of a few species of kangaroo that only became abundant in recent times, and which are not in great danger of extinction.

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HONORARY FAUNA WARDENS APPOINTMENTS

MILLS, Phillip John, of "Meldakot", Lyon Road, Jandakot. (Gazetted 8/9/72.)

BROWN, Harold James, of Post Office, Jurien Bay. (Gazetted 8/9/72.)

HALSE, Norman James, of 156 Lockhart Street, Como. (Gazetted 8/9/72.)

WILLIAMS, Vivian Eldred, of P.O. Box 13, Moora. (Gazetted 8/9/72.)

VERSTEGEN, Peter Jan, of 7 Contour Road, Roleystone. (Gazetted 8/9/72.)

FAUNA WARDEN APPOINTMENT

SMITH, Raymond Leich. Notice of this appointment appeared in the *Government Gazette,* August 4, 1972.