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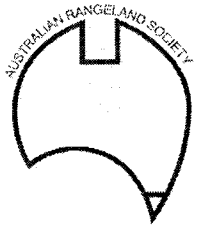

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DEALING WITH AN EPIDEMIC IN MACROPODS

J. Gilroy[1], G. Curran[2] and E. Gay[3]

1NSW NPWS, 183 Argent Street Broken Hill, NSW, 2880
2NSW Agriculture, Government Offices Broken Hill, NSW, 2880
3French National Veterinary School, Toulouse

BACKGROUND

A large-scale mortality of macropods occurred in northwestern NSW in spring 1998. Initially, NSW National Parks and Wildlife Service (NPWS) and NSW Agriculture collaborated to determine the cause of the mortality. It is suspected that an insect borne disease is responsible. Studies of its epidemiology used aerial survey of macropod densities, combined with field observations and anecdotal information from NPWS staff, graziers and kangaroo shooters. The French National Veterinary School offered assistance in the form of a visiting student.

Red and grey kangaroos and euros were reported affected. The epidemic had a sudden onset, a short duration (~2 weeks), and high mortality rates. Most animals were found dead. Some animals were observed to have difficulty rising and moved awkwardly. More mature and large animals were reported affected than younger, smaller animals. The area affected included Sturt National Park, in and around the Bulloo River overflow, and areas south to White Cliffs. There were variations in the proportions of populations affected over this range. The epidemic appeared to centre on the Bulloo River overflow. Pastures in the affected area were generally good after substantial September and earlier rains. Most affected animals were in good condition. Insect populations were reported to be high before the epidemic.

NPWS aerial survey data was used to estimate the effects of the epidemic. Between 1998 and 1999 in the affected area there was a decline in kangaroos of approximately 40% (~400,000 kangaroos).

POSTMORTEM FINDINGS

A female red and a male euro were examined towards the end of the epidemic in 1998. Both had difficulty rising and appeared to have some hindlimb disorder. Both had patchy haemorrhage and congestion within their hindlimbs and lower abdomen. Both had damage around at least one joint. Both had lost body condition. No significant microscopic damage was seen, apart from evidence of migrating parasite larvae in the hindlimbs.

The postmortems and analysis of samples provided no conclusive results.

FURTHER STUDIES

During 1999 further work was conducted collecting samples, including bloods, to compare available evidence of arboviruses and parasites between severely affected, mildly affected and unaffected populations of red and grey kangaroos in western NSW and northern South Australia. Analysis of these samples is not yet complete.

These further studies will test whether a known arbovirus may be the cause of the epidemic, and whether parasites contributed to the clinical presentation of the disease. Samples will be stored to enable comparisons to be made between future epidemics and the 1998 epidemic.

RESPONSE TO FUTURE EPIDEMICS

Interstate and inter-agency cooperation in a rapid response to a future epidemic is essential. However, currently there is no Australian native animal health and emergency disease plan. There is a major functional gap between people working with and monitoring macropods, and people dealing with diseases of native animals.

An effective disease response plan or health plan must consider monitoring, surveillance, investigation, response and intervention methods. Establishing response plans without monitoring and surveillance work will be ineffective.

Given that the epidemics move through a macropod population in very short period (2-3 weeks), a response plan that at short notice commits the expertise and resources of various agencies and individuals is essential. All State and Commonwealth agencies currently managing macropods recognise the need for a national disease response plan.

The establishment of a health plan for macropods would have a strong foundation primarily because macropod populations have a series of networks already established. These networks, including NPWS staff, landholders and the kangaroo industry, are actively monitoring and working with these animals. There are already strong interstate linkages in these networks and a clear commitment and recognition of the need for a macropod health program within those networks.

REVIEW OF OTHER MORTALITIES

Three reports of other epidemic mortalities were available from southwest and central Queensland. All epidemics had similar or the same characteristics as the 1998 NSW epidemic. Examination of recently dead animals early in the Queensland epidemics demonstrated similar microscopic changes in 1990 and 1999 including meningitis, encephalitis, and an interstitial pneumonia. Animals affected later in the 1999 epidemic had similarities to those examined at Tibooburra in 1998. The Queensland epidemics were associated with very good rainfall events, inland river systems and high insect populations.

SUMMARY

- the epidemic in northwestern NSW was caused by the same or similar disease as that seen in Queensland in 1990 and 1999
- the disease was likely to have be caused by an unidentified insect-borne virus
- the epidemic appears to have been associated with high densities of macropods, flooding rains and high insect populations
- gross pathology of affected animals at Tibooburra showed certain similarities to that seen in sheep with Paroo Staggers
- the clinical condition of survivors may reflect more chronic effects of this virus, and/or the effects of migrating parasites
- epidemics of this disease occur periodically
- in future it may be possible to manage to reduce the severity of this disease

Understanding this disease is important for:

- current and future management of harvested macropod populations
- assessing the likelihood of any public health risk from macropod product
- understanding and managing the health of livestock that are in contact with macropod populations
- planning a response to future epidemics
- to gauge whether the causal agent is capable of harming rare or endangered marsupials