

PARAPOX - IS IT A THREAT?

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Introduction

Following the initial discovery of the parapox virus in November 1985 there was some sensational reporting of the disease in the popular press. It was stated that the disease was a major threat to New Zealand's deer industry.

Based on the knowledge gained from reported cases to date, particularly the epidemiology of the two major South Island outbreaks, this paper attempts to show that the threat of parapox is not as great as first thought. Simple management procedures should be able to limit the effect of this disease on deer production.

Summary of outbreaks

There have been 15 confirmed cases of parapox in farmed deer to date: ten in the North Island (NI) and 5 in the South Island (SI). Six of the NI outbreaks occurred during the summer of 1985-86 and two further outbreaks occurred in the summer of 1986-87.

All the NI outbreaks were on separate farms with no common source of stock or movement of stock between properties. Apart from two calves there were no deaths in the NI outbreaks. No outbreaks have occurred on affected farms since.

The first serious SI outbreak occurred in January 1986 within two months of those in the NI but traceback showed no evidence of contact with affected NI properties. The second major outbreak in the SI occurred in November 1986 and a direct link has been demonstrated between this and the previous outbreak. Three other cases of a minor nature have occurred in the SI involving only small numbers of animals.

The epidemiology of the two major outbreaks are reviewed here.

South Island outbreak I

This occurred on an extensive hill country property in the McKenzie basin which had farmed deer for many years (Property A). The outbreak occurred in a small mob of 55 recently captured red deer hinds. Morbidity was 100%.



Fig 1 - Lesions on the distal forelimb of a hind on property A. Scab removal left raw bleeding areas.



Fig 2 - Lesions on the shoulder of a hind on property A. Severe proliferative dermatitis with hair loss and scab formation.

All animals had a severe proliferative dermatitis with extensive hair loss and scab formation. Scab removal left raw bleeding areas. (Figs. 1 & 2)

Lesions were most severe on the legs but the face, neck and shoulders of some animals were affected.

All animals in the mob became anorexic and lost approximately one third of their body weight. Twenty one animals died over a 3 week period with death preceded by severe depression, dehydration and recumbency.

This first SI outbreak differed significantly from those reported in adult deer in the NI. The mortality rate was high (40%) and lesions were largely confined to the limbs.

The paddock which the animals were grazing was densely populated with thistles up to 1 metre in height to the extent that it was virtually impossible for deer to move about without contacting one. These thistles were probably the most important factor affecting the severity and distribution of lesions.

The fact that the mob was recovering from the stress of capture and transport may also have contributed to the severity of the disease in these animals.

The disease had not been reported on the property before although occasional scabby lesions had been noticed previously on the face and ears of red deer calves. Endemic scabby mouth existed in sheep on the property and annual vaccination was practised.

South Island outbreak II

This outbreak occurred in a mob of 50 adult red deer stags in velvet on a flat land farm in mid-Canterbury (Property B).

The clinical signs and lesions were similar to those reported on some farms in the NI.

There was severe oedematous swelling of the face extending from the base of the pedicle to beneath the jaw (Fig 3). This swelling disappeared within hours of velvet removal.

The lesions on the velvet consisted of multiple raised vesicopustules (Fig 4) which were present on all tines. All animals in the mob were affected but remained otherwise healthy.

The epidemiology of this outbreak is interesting. Property B was geographically distant from property A. In July 1986, five months before the second outbreak, nine hinds were introduced from property A to property B. They



Fig 3 - Oedematous swelling of the face and jaw of a stag on property B.



Fig 4 - Raised vesicopustules on the velvet of a stag on property B.

were placed in a paddock with 10 other recently acquired hinds and two stags. During the months leading up to the outbreak in November none of these animals came in contact with the main mob of 22 hinds and 48 stags.

As velveting approached the two stags with indirect contact with property A were put in with the main stag mob on November 7th.

Thirteen days later on November 20th the outbreak was detected in the main stag mob. The paddock containing the stags was bounded by a gorse hedge and contained numerous clumps of thistles. Stags were seen thrashing the thistles with their antlers and the disease spread quickly through the whole mob except the two introduced stags which had indirect contact with property A.

In the first week in December clinical parapox occurred in the main mob of hinds grazing a paddock adjacent to the stags. Only mild scabby lesions were noticed on the hinds with no other clinical signs. The disease was more severe in the calves (age 1-2 weeks), two of which died. Lesions in the calves consisted of vesicopustule formation around the nares and coronet with scattered areas of weeping dermatitis over the rest of the body.

Numerous clumps of thistles were present in the paddock which the calves lay amongst while the hinds were grazing.

Conclusions

Property A - It seems likely that the recently captured hinds became infected after arrival on the property. It is not known whether the virus had been already present on the property or had been brought in by an infected animal in the mob.

The severe nature of the disease on this property was probably due to the extensive skin trauma caused by vast numbers of thistles in the paddock. It is also possible that the animals had a lowered immune response due to stress.

Property B - It is probable that the outbreak which occurred in the main stag mob at velveting was due to the introduction of the two 'in contact' stags at that time.

These two stags may have been the primary carriers of the virus but it is most likely that they had themselves been infected in July when exposed to the nine hinds from property A.

Interestingly no clinical disease was seen in these two stags or the 10 other hinds in contact with animals from property A. Presumably they had had an inapparent

infection back in July.

These two cases illustrate some important points:

- a) The potential for prickly plants to exacerbate the disease.
- b) Three situations in which the outcome of the disease can result in significant financial loss are:
 - * Infection of recently transported or stressed animals.
 - * Infection of stags in velvet.
 - * Infection of hinds and calves close to calving.

The prevalence of the virus in both farmed and feral deer is still unknown, suggesting the need for a serological survey. The random nature of many of the outbreaks to date suggests that the virus may be widespread.

In healthy adult animals lesions may be mild or inapparent, which may explain the low incidence of overt disease.

Recommendations

Based on the apparent epidemiology of infection in these cases it seems likely that the effect of parapox on deer production can be minimized by the following management procedures:

- (i) Control of prickly plants such as thistles and gorse in deer paddocks. In particular, paddocks used for velveting stags and calving paddocks should be free of these plants. Recently captured or transported deer should also be put in such paddocks.
- (ii) To ensure that stock do not become infected at critical times, new stock should not be mixed with hinds or stags within one month of calving or velveting respectively.

Wherever possible recently imported stock should be allowed to recover fully from transport stress before mixing with the main herd.

If these simple management procedures are followed by farmers, parapox seems unlikely to be a major threat to the New Zealand deer industry.

References

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