

Where to now for the Pere David hybrids?

Progress in the 'synthesizing' of a breed new to New Zealand

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IT HAS now been three years since the birth of the first Pere David Red deer hybrids in New Zealand. Since then more have been born, after artificial insemination of Red hinds with Pere David semen at Ruakura and Invermay.

The success rate of the artificial insemination has not been spectacular (10 per cent), possibly because of immunological problems associated with gestation of the hybrid foetus.

But the good news is that the hybrids are fertile and the production of quarter cross hybrids has been achieved with relative ease by back-crossing F1 stags over Red hinds.

What now is the future of the Pere David programme in New Zealand?

The Pere David (*Elaphurus davidianus*) is an interesting animal. The species is closely affiliated to Red deer and originates from northern China. However, in 1865, when the species was 'discovered' by the French missionary and explorer Armand David, the sole remnants of the species existed within the 72 km wall of the Imperial Hunting Park of Nan-Hai-Tze just south of Peking.

The Pere David or Mi-lu may have become extinct in the wild up to 3000 years ago. Following their discovery, a number of animals were taken to various zoos in Europe — and, towards the end of the nineteenth century, a pair of Pere Davids reached Woburn from a zoo in Paris.

Unfortunately those Pere Davids remaining in China disappeared during the Boxer Rebellion; presumably they were killed or captured by troops marching to the relief of the foreign legions in Peking. A few were shipped to Europe.

About this time the eleventh Duke of Bedford managed to persuade the European zoos to ship remaining

Pere Davids to his park at Woburn. Eighteen deer were assembled; they represented the sole remnants of their species. It is from these few individuals that the world's entire population of 1,000-1,500 Pere Davids is now derived.

While the Pere David is closely related to Red deer, its physical appearance is unique. It is a large, powerfully built species, with mature stags weighing about 300-400 kg before the rut. Pere Davids have remarkably long tails, large hooves and facial features not unlike those of a donkey.

The antlers characteristically appear to be worn back-to-front and are multi-pointed. The alternative Chinese names for the species, *Ssu-pu-hsiang*, sums up their appearance: "Not like four — like, yet unlike the horse; like, yet unlike the ox; like, yet unlike the deer; like, yet unlike the goat."

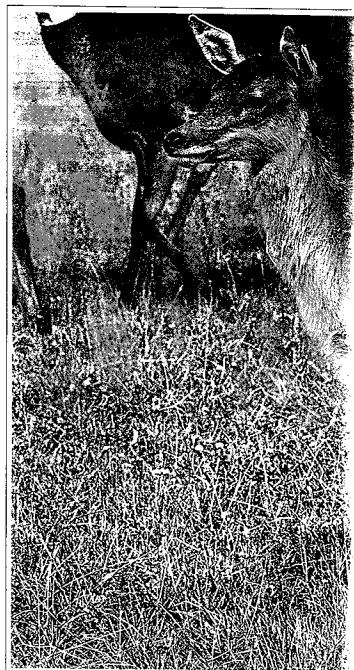
So why all the interest in Pere Davids in New Zealand?

Firstly, the world's total population of Pere Davids is small and vulnerable to extinction. Spreading the species over a wider geographic base could safeguard against extinction through epidemics.

As New Zealand is free of many dangerous livestock diseases (especially foot and mouth virus) and has an equable climate, it appeared an ideal place to establish a viable colony of Pere Davids.

Secondly, these deer have a different reproductive seasonality to Red deer. They rut in summer, in response to increasing day length, and calve earlier than Reds even though the gestation length is longer (234 vs 280 days).

If we could succeed in hybridising the species, and if the hybrids



proved fertile, it would be possible theoretically to eventually produce a synthetic breed of deer with reproductive patterns more aligned to the natural pasture growth patterns encountered on NZ deer farms.

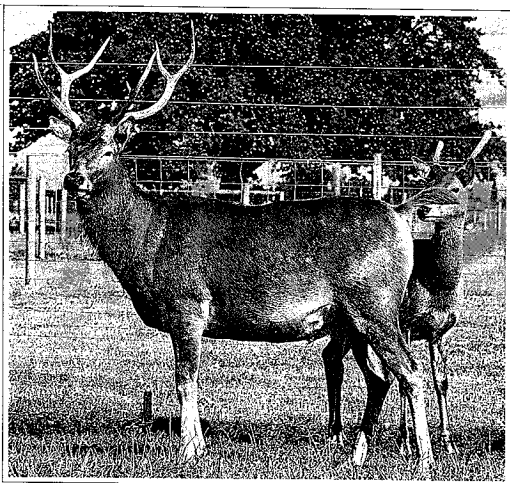
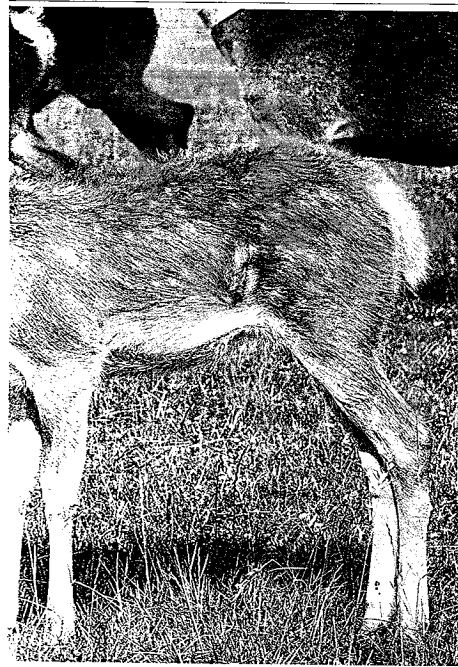
The Pere David programme in New Zealand has not been without its heartbreaks. Of the original 77 Pere Davids imported since 1984, more than two thirds died of MCF within the first year.

Nobody had predicted such a marked susceptibility to the viral disease, and for a while the future of the pure Pere Davids looked bleak. The whole programme was in jeopardy.

However, the surviving purebreds, based largely at Invermay, appear to be holding their own against the disease and recent calvings have increased their numbers.

On the hybridisation front, attempts to mate Pere David stags with Red hinds met with complete failure. Oestrous hinds showed absolutely no interest in Pere David stags, and vice versa.

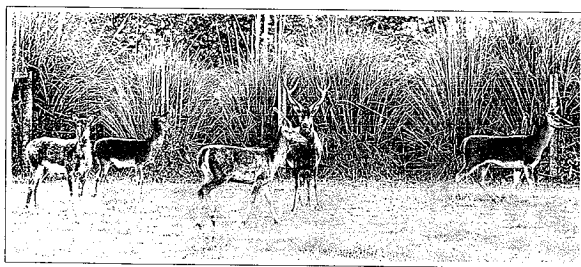
This necessitated a programme in which Pere David semen, collected



Above left: A 2-month-old quarter cross hybrid, a product of Ruakura's mating of an F1 stag with a Red hind

Above: The father of the quarter cross hybrid, a 3-year-old F1 Pere David/Red stag weighing in at about 350 kg

Below left: Four F1 Pere David/Red hybrids, and a purebred Pere David hind (right)



by electro-ejaculation, was inseminated by laparoscopy into Red deer hinds.

The result was the birth of the first five F1 hybrids in January 1987: Two at Ruakura, two at Peter Bowmars' (Balfour) and one at Whitley Otway's (Kaukapakapa). All of these hybrids are still alive and the three males have sired quarter cross offspring when backcrossed (natural mating) to Red hinds.

The F1 hybrids, as would be expected in the first cross, are uniform in their appearance and display char-

acteristics of the two parental species. They are easily distinguished from Red deer by their size, facial features, body conformation and pelage colour.

But most importantly, their reproductive seasonality is intermediate between the two parental species. At Ruakura, the F1 hybrid stag born in 1987 ruts each February. This in itself poses a few problems when scientists attempt to backcross with Red deer hinds, which do not initiate ovulatory cycles until March/April.

Melatonin (Regulin) treatment of

Red hinds overcame this problem at Ruakura last year by aligning the stag's rut with earlier induced ovulation of the hinds.

Quarter-cross hybrids born at Whitley Otway's last year and at Ruakura this year appear to display considerably more physical variability than F1 hybrids, but are distinctly hybrids in appearance. As most quarter cross hybrids that were conceived appeared to have been carried to full term by the Red hinds (Ruakura ultrasound data), the production of such animals shows considerably more promise than further attempts to produce F1 hybrids.

Plans are underway to collect copious quantities of semen from existing F1 stags. This will form the basis of a large AI programme in Red deer hinds, aimed at generating a large pool of quarter cross hybrids.

The next step is to evaluate the reproductive seasonal of quarter cross hybrids and select breeding individuals based on the desired calving date. Rome wasn't built in a day — nor is a new breed 'synthesized' overnight. □