

Genetic Variation, Parentage Testing, and Hybrid Identification in New Zealand Red Deer

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A total of 450 red deer (*Cervus elaphus*) from four New Zealand feral herds were tested for genetic variation at ten blood protein loci. The herds were chosen to be representative of the range of European stock acclimatized to New Zealand. Animals captured from these feral herds have provided the initial stock for many New Zealand deer farms. The genetic variation found in this study suggests a parentage test based on eight of the loci would detect about 80% of any mismatches in deer farm pedigree records ($P_E = 0.8$). The red deer in the study were compared electrophoretically at the ten loci with 20 wapiti (*Cervus elaphus manitobensis*), 20 sika deer (*Cervus nip-*

pon), and 20 Père David deer (*Elaphus davidianus*). The wapiti showed alleles that did not occur in the New Zealand red deer sample at four loci (in two cases the differences were fixed), the sika at three loci (one fixed difference) and the Père David deer showed fixed differences to red deer at five loci. In all the species other loci showed significant allele frequency differences to red deer. Identifying hybrids with these species has become necessary to maintain pure herds of farmed red deer in New Zealand. The presence of alleles that do not occur in New Zealand red deer provides the ability to screen biochemically for hybridization.

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