

SEASON OF PARTURITION AND FAWNING PERCENTAGES OF SIKA DEER (*CERVUS NIPPON*) IN NEW ZEALAND

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ABSTRACT

Median parturition (birth) date, spread of the season of parturition, and fawning percentages are given for a small sample from a wild population of sika deer in New Zealand. Results indicate that the reproductive cycles of sika and red deer are similar.

INTRODUCTION

Long term research on the reproduction of cervids has been feasible for animals in captivity (Zuckerman, 1953; Crandall, 1964), but information on populations in the wild is lacking. Results for a small sample of sika deer (*Cervus nippon*) were available from data collected for a larger study of the biology of the sika species in New Zealand (Davidson, 1973a; 1973b). Fifty-six female deer were shot during October-December, of the years 1964-66. In this note estimates are made of the season of parturition and the proportion of hinds breeding.

The sample was taken from an area of 100 km² surrounding the observation area in the Oamaru Valley, in the Kaimanawa/Ahimanawa/Kaweka highlands of the central North Island. Habitat ranged from tussock and shrub-covered river flats at about 656 m, up through beech (*Nothofagus* spp.) forest to 1394 m (McKelvey and Nicholls, 1957). A provisional annual rainfall figure of 1829 mm was proposed by Grant (1969). Dispersal and general biology of sika deer are described by Kiddie (1962) and Davidson (1973a).

SEASON OF PARTURITION

All female deer shot were classified as either non-breeding, pregnant, or lactating. The pre- and post-partum status of the 29 breeding animals collected between 10 November and 3 January (with samples for the 3 years pooled), are presented in Table 1.

TABLE 1—Numbers of pregnant and lactating sika deer, 2-year-old and older, for 5-day periods (commencing with each date given) spanning the season of parturition

month	November					December					
	10	15	20	25	30	5	10	15	20	25	30
day	10	15	20	25	30	5	10	15	20	25	30
pregnant	1	9	7	—	—	3	2	0	0	—	0
lactating	0	1	0	—	—	1	1	1	1	—	2

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The proportions of those deer which were post-partum (i.e. lactating) in each period were subjected to probit analysis to estimate the season of parturition (Finney, 1952; Caughley, 1971a). From the arithmetic probit equation $Y = 2.717 - 0.059X$, the median parturition date was calculated as 13 December with a 95% confidence limit of ± 18.8 days (see Sokal and Rohlf, 1969). The season of parturition, as described by the time interval in which 95% of the deer gave birth, extended from 10 November to 17 January. The data did not deviate from normality ($\chi^2_{4df} = 2.4$) and it is assumed that the sample was too small to show the positive skewness reported for cervid breeding (Zuckerman, 1953), and attributed to the general tendency for maximum production to occur early in the season, in animal populations subject to a changing environment.

Caughley (1971a) estimated the median parturition date of a population of red deer (*Cervus elaphus*) in New Zealand, as 9 December, with a standard error of ± 2.3 days, and a standard deviation of the "season of births" of 16.7 days. The equivalent results from the sika deer in this study are the median parturition date of 13 December ± 9.6 days, and a standard deviation of the "season of births" of 18.8 days. The greater value of the standard error in sika may be related merely to the smaller number in the sample, the standard error varying inversely with the square root of the sample. The timing and spread of the seasons of parturition for these populations of red and sika deer are similar, as is that described for wapiti (*Cervus canadensis*) in New Zealand.

Caughley (1971a) derived a southern hemisphere equivalent of 20 December (standard deviation 28 days) for captive red deer from the records of Zuckerman (1953), comprising 50 births over 70 years.

The closeness of the estimated parturition dates and the spread of the season of parturition for both sika and red deer, suggest that in New Zealand the whole reproductive cycle of the two species is similar.

FAWNING PERCENTAGES

Annual samples of 15, 12, and 22 deer older than fawns, during October-December, 1964, 65, and 66, gave fawning percentages of 73%, 92%, and 86%, respectively, with 84% for the 3 years combined. The proportions in each age class that were either pregnant or lactating during October-December were as follows:

Age class	1	2	3
Number of animals sampled	7	10	39
Number pregnant or lactating	0	8	33
Percentage breeding (with 95% C.L.)	0 (0-44)	80 (44-97)	85 (69-94).

No fawns had bred, but 8 of the 10 yearlings autopsied were breeding.

This proportion would earlier have seemed exceptional, but better ageing techniques have resulted in the knowledge that up to 100% of cervid yearlings may breed under optimum environmental conditions (Brna, 1969; Markgren, 1969; Flook, 1970). The fawning percentage of 85% for sika over 2 years is similar to results obtained for red deer by other workers (Fulton, 1964; Caughley, 1971b).

All deer were aged by counting the growth layers in the dental cementum of the first

molar (Mitchell, 1967; Douglas, 1970). Because of the period of sampling and the established median parturition date of 13 December, age class 1 represents female deer of 11-13 months; class 2, 23-25 months; and class 3, animals 35 months and older.

FOETAL SEX RATIO

Thirty-five foetuses were recovered from the 49 sika females older than fawns. Of these, 21 were males and 14 females giving a male:female ratio of 150:100 not significantly different from parity at the 5% level (Mainland, 1956).

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