



Deer Farming Species and Domestication *Introduction*

Deer farming is a relatively recent addition to the range of agricultural enterprises in New Zealand, and has enjoyed a considerable measure of success and rapid expansion.

It owes its origins to large, well established populations of feral deer and a flourishing export industry in feral game meat. With such resources and good market potential, farming was a logical step.

FERAL DEER — DISTRIBUTION AND DESCRIPTION

There are eight species of introduced feral deer in New Zealand. Red deer, *Cervus elaphus*, is by far the most numerous and widespread species. Others include fallow, sika, whitetail (or virginia), sambar, rusa, moose and wapiti. The latter is, strictly speaking, not a distinct species but another race of red deer. Red deer is the most important and popular species for farming purposes. Of the minor species, fallow deer and wapiti are used and there are a few rusa and sika deer on farms.

Red deer were the first to be liberated in New Zealand, in 1851. Over the next 70 years, there were some 220 recorded liberations of red deer. The first liberations of fallow deer were in 1864 and of wapiti in 1905.

Red deer

Red deer are found throughout Europe, North Africa and Asia Minor and have been introduced into a number of countries. In New Zealand they are found in most forested land and in the tussock high country from Stewart Island in the south to the Kaimai Range in the north. Their spread and increase after introduction was rapid, favoured by ample food, total protection and an absence of natural enemies.

Such was their success that by the early 1900s control operations became necessary to prevent damage by deer to young pine plantations. National surveys revealed widespread damage to vegetation and a need for drastic reduction of deer numbers. Protection was removed from deer in 1931 and since then more than a million deer have been shot by Government cullers and thousands are killed annually by sportsmen and commercial meat hunters.

Physical characteristics: A mature red stag is up to 1.2 m high at the shoulders, while the hind is somewhat smaller

and lighter built. Body weights vary with locality and feed availability. A typical, mature feral red stag weighs about 150–160 kg; higher liveweights are achieved by farmed animals with good nutrition.

The summer pelage (coat) of the mature animal is a glossy reddish brown; the winter coat, a drab grey-brown. Colour variation is not as great as in fallow deer. Mature animals of both sexes have a straw-coloured rump patch, and the underparts of the body and between the thighs are generally creamy.

Antlers are almost round in cross section. They have a lightly pearly main beam, from which branches a brow tine immediately above the coronet; a bez tine, which is usually shorter than the brow tine; and a trez tine roughly half way up the main beam. Above the trez tine is a fourth or top tine, sometimes called the royal or fighting tine. There can be several top tines (Fig. 1: pg. 2).

Behaviour: Red deer are essentially gregarious and live, for most of the year, in herds of females with the young of both sexes, and separate groups of stags. The social system is strictly matriarchal and stags never become leaders of a herd, keeping apart from the hinds except during the rut. An old and experienced hind is usually the leader of each group of hinds and maintains a constant vigilance for danger. Except when they attach themselves to a group of hinds and defend a harem during the rut, stags exist in loose-knit companies with no apparent leader.

Fallow deer

The world distribution of fallow deer is somewhat more restricted than red deer. In New Zealand they are found in a number of widely separated herds in the North and South Islands. Largely because of their more restricted distribution, New Zealand's fallow deer have reached pest numbers in only one or two locations. Control operations have been undertaken periodically, but in recent years, commercial meat hunting, deer stalking and live capture for farms have limited numbers to the extent that they are never again likely to increase to pest proportions.

Physical characteristics: Fallow bucks are about half the size of average mature red stags and seldom exceed 90 cm at the shoulder. Unlike most deer species, the fallow shows

wide colour variation in both sexes. The most common variety in New Zealand is the melanistic or black variety. In this variety, as in all others, the belly is of a lighter shade, with a well defined dividing line along each flank. The lighter coloured ("Spanish") variety also occurs. It has a deep, rich fawn summer coat with numerous prominent white spots on the flanks and a black stripe along the spine. The tail, which is longer than in most deer species, is black on top and white beneath and surrounded by a white rump patch. The winter pelage of this variety is a duller grey-brown and the white spots become less noticeable. Intermediate colour variations occur frequently.

Behaviour: Fallow deer are extremely timid and much more flighty than red deer — a significant factor when it comes to farming this species. They have a distinctive bouncy gait when alarmed, lifting all four legs together when running. They are extremely agile and, in spite of their smaller stature, can jump higher and more easily than red deer.

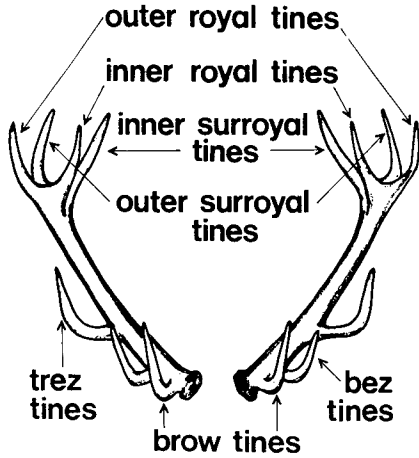


Fig. 1: Typical antler formation in red deer.

Mature bucks tend to live apart from the does until the start of the rut. During the rut they expend a great deal of energy in marking out their territories and rutting stands, but they neither fight each other nor herd their harems to anything like the same extent as red deer.

Wapiti

Wapiti are native to North America (where they are known as elk) and once had a wide distribution throughout that continent. Several varieties are also found in north-eastern and central Asia.

In New Zealand the wapiti has not extended its range greatly beyond the region where they were first introduced. The rugged terrain and almost impassable mountains of Fiordland west of Lake Te Anau and competition for forage with the numerically superior red deer are thought to have limited their spread beyond this area.

Physical characteristics: Wapiti are the largest species of round-horned deer in the world and, apart from the almost non-existent moose, are the largest of the game mammals introduced into New Zealand. A mature bull can stand about 1.5 m at the shoulder, with exceptional specimens weighing nearly 450 kg. An adult bull in New Zealand averages 270–320 kg. A cow seldom weighs more than 230 kg.

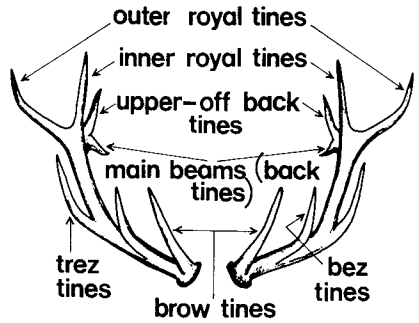


Fig. 2: Typical antler formation in wapiti.

Juvenile wapiti can sometimes be mistaken for red deer, but there are obvious and striking differences between mature animals of the two species.

In summer the head and neck of male wapiti are a dark chocolate colour and the back and sides are a lighter brownish grey. Legs and undersides are dark, except for a creamy patch between the hind legs which extends over the rump and base of the tail. Pelage becomes lighter overall in winter. Females are less strikingly coloured, tending towards a more uniform fawny grey. Calves, like those of red deer, are richly coloured and spotted at birth.

Wapiti antlers are larger than those of red deer and usually curve backwards at the top. The bez tine is always well developed, but the fourth tine is usually the largest — a characteristic feature of the species (Fig. 2).

Behaviour: The social behaviour patterns and reproductive cycle of wapiti are very similar to those of red deer. A significant result of the similarity between the races is that they interbreed quite freely in the wild. Deer farmers may be able, under carefully controlled conditions, to take advantage of this to obtain larger, wapiti-type calves from red hinds.

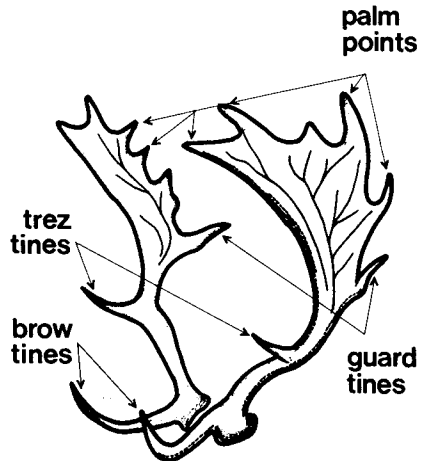


Fig. 3: Typical antler formation in fallow deer.

DOMESTICATION AND FARMING

The first deer farms probably evolved from the experiences of a few people who held small groups of deer in captivity. On some high country tussock properties where feral deer were plentiful it was a simple, though expensive matter to run a fence round them and create a deer 'farm'.

In the 1970s the slump in world beef prices, and dramatic increase in prices paid for feral venison, provided a real stimulus for the serious consideration of deer farming and, with the favourable experiences of those already in the business, together with management advances in handling deer in the field, the demand for breeding hinds intensified. Deer farms were established in many places within the feral range of the species concerned and stocked either with animals captured from the wild or by purchase from established deer farms.

Some of the earliest deer units were located on relatively low fertility native grassland, an environment similar to the summer habitat of the feral deer. However, fencing costs are high in relation to the carrying capacity of such land and, although the animals will survive quite well in these conditions, their natural potential productivity may not be realised. Subsequent experience has shown that deer adapt quite readily to a wide range of farming environments, including the best quality pasture on first-class land. In this situation fencing costs per stock unit are reduced and the maximum per animal and per ha performance exploited.

Research

The Invermay Agricultural Research Centre, near Mosgiel, is the main centre for research into deer farming in New Zealand.

Since its inception in 1973, the research programme has covered basic management, nutrition and reproduction in red deer and has expanded to include wapiti and fallow deer as well as more complex grazing management studies with red deer.

A small herd of fallow deer is kept at Ruakura Agricultural Research Centre, Hamilton, where the main research interest is in reproductive performance.

Massey University maintains some deer largely for teaching purposes for veterinary students, and Lincoln College is conducting research on antler production with pen-fed deer.

Information

Although some basic principles of deer farming have been established, it is still a very young industry in which the amount of theory and opinion outweighs the factual information. Anybody thinking of starting a deer farm would be well advised to review as much of the published information as possible, to canvass the opinion of experienced deer farmers and seek advice from MAF's Advisory Services Division.

Knowledge is expanding and opinion changing rapidly. Information relating to the economics of deer farming is particularly liable to date rapidly and little reliance can now be placed on some of the earlier analyses.

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The information on feral deer in this publication was drawn from:

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Glossary

Antlers	These are distinct from the permanent horns of species such as cattle, sheep and goats. They are composed of bone, not horn (keratin), and grow anew each year from pedicles, which are permanent outgrowths of the frontal bones of the skull. They are shed in September/October and new growth starts almost immediately.
Bow tine	The second tine, immediately above the brow tine on antlers of wapiti and red deer.
Brow tine	The first tine, branching forward from the main beam of wapiti, red and fallow deer antlers immediately above the coronet.
Buck	Adult male fallow deer.
Bull	Adult male wapiti.
Calf	Juvenile of red deer and wapiti.
Coronet	The ring or burr around the base of antlers.
Cow	Mature female wapiti.
Doe	Mature female fallow deer.
Fawn	Juvenile fallow deer.
Guard tine	A prominent tine projecting rearwards from the base of the palmated ends of fallow deer antlers.
Hind	Mature female red deer.
Mane	The increased growth of hair on the enlarged neck of male wapiti and red deer during the rut.
Palmation	By about their third or fourth season fallow deer develop a distinctive flattening or 'palmation' at the ends of their antlers (Fig. 3). The edges of the palms are marked by a series of points (c.f. spillers, snags).
Pearling	The knobbly or ridged texture of antlers of some deer species.
Pedicle	A permanent bony outgrowth from the frontal bone of the skull, from which antlers grow.
Pelage	The coat of deer.
Roar	The characteristic sound made by male deer of some species during the mating season, sometimes used to describe the mating season of deer (c.f. rut).
Royal tine	The tines on the branched ends of the main beam of wapiti and red deer antlers.
Rut	The mating season.
Snags	(See 'spillers').
Spillers	The palm points of fallow antlers.
Stag	Mature male red deer.
Survoyal tine	The rear points of the branched end of the main beam in red deer antlers.
Tine	The points or branches off the main beam of antlers.
Trez tine	The tine branching from the main beam of antlers immediately below the top tines.
Velvet	The early, vascular growth of antlers before they harden off, characterised by a soft velvet coating which dries and is rubbed off when the antlers are mature.



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