

FALLOW DEER : BIOLOGY AND DISTRIBUTION

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Summary

- Fallow deer are a popular game species within temperate regions of the world. Although originally derived from the Mediterranean region, they have been naturalised in over 36 countries.
- There are two species, the European fallow deer (*Dama dama dama*) and the very rare Mesopotamian (Persian) fallow deer (*Dama dama mesopotamica*). While the subspecies freely hybridise to produce fertile offspring, there have been no verified reports of hybridisation of fallow deer with other cervid species.
- European fallow deer have antlers with distal palmations. Mesopotamian fallow deer antlers exhibit a slight degree of palmation throughout their entire length.

Introduction

European fallow deer (*Dama dama dama*) are a popular game species throughout temperate regions of the world. They have a long association with man, either as hunted prey or aesthetic ornaments and, as such, they have been distributed far wider than their natural range. The species has proven to have a wide tolerance of environmental conditions, as exemplified by their successful colonisation of new habitats in various regions of the world.

Fallow deer normally inhabit areas where forests interface with pastures. Within this fringe habitat, the forests provide shelter from climatic extremes and predators, while the pastures provide a diet the species is well adapted to harvest. It is not uncommon for fallow deer to form large herds based loosely on family groups. The species inclination towards non-selective grazing (as opposed to selective browsing) and their gregarious nature make them well suited to intensive pastoral farming systems. The fact that they can be removed completely from the forest environment and still thrive under intensive management indicates a marked degree of behavioural plasticity.

There have been attempts to farm intensively quite a number of deer species. However, relatively few of these species have proved suitable. Some species are highly selective in their browsing preferences and perform poorly in a pastoral environment (eg. white-tailed deer; *Odocoileus virginianus*) and require vast areas of forest habitat (eg. moose; *Alces alces*). Other species are non-social and highly territorial, precluding the establishment of high population densities necessary for economic viability (eg. roe deer; *Capreolus capreolus*). Yet other species have proven susceptible to debilitating diseases when husbanded within the agricultural environment, possibly as a consequence of chronic stress and/or close contact with other domestic animals (eg. Pere David's deer; *Elaphurus davidianus*; have exhibited extreme susceptibility to malignant catarrhal fever when grazed near sheep in New Zealand).

However, a few species have proven to be suitable candidates as farmed livestock. Indeed, reindeer (*Rangifer tarandus*) have been husbanded by the Lapps of Norway, Sweden and Finland for several thousand years. In more recent times, there have been successful developments in the pastoral farming of fallow deer (*Dama dama*), red deer/wapiti (*Cervus elaphus*), rusa deer (*Cervus*

timorensis) and, to a limited extent, sika deer (*Cervus nippon*) and axis deer (*Axis axis*). Of these species, the European fallow deer is undoubtedly the most popular farmed cervid around the world (see Chapter 2). However, this must be tempered with the fact that there are probably more farmed red deer in New Zealand alone (about 1 million) than the total world population of fallow deer, both farmed or wild (probably <500 000).

This chapter is by way of an introduction to the species *Dama dama*, particularly its taxonomic status and world distribution. This is provided to further foster interest, enthusiasm and respect for the species.

Taxonomic classification

The deer family *Cervidae*, is comprised of 4 sub-families, 17 genera, 40 species and about 200 subspecies (after Whitehead, 1972). The male members of most cervid species possess antlers, deciduous bony outgrowths from the skull. This is the main feature separating them from bovids (Bovidae).

The four sub-families are as follows:

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|-----|--------------|-----------------|---|----------|
| (1) | Muntiacinae | Muntjacs) | - | 2 genera |
| (2) | Moschinae | (Musk deer) | - | 2 genera |
| (3) | Odocoileinae | (American deer) | - | 9 genera |
| (4) | Cervinae | (Eurasian deer) | - | 4 genera |

Fallow deer (genus *Dama*) are within the Cervinae sub-family. Other genera include *Cervus* (red deer, wapiti, rusa deer, sambar deer, sika deer, Eld's deer), *Axis* (chital deer, hog deer) and *Elaphurus* (Pere David's deer).

The genus *Dama* comprises only one species, *Dama dama*, which is further subdivided taxonomically into two distinct subspecies:

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|-------------------------------|---------------------------------------|
| <i>Dama dama dama</i> | (European fallow deer) |
| <i>Dama dama mesopotamica</i> | (Mesopotamian or Persian fallow deer) |

Fallow deer are closely related to the *Cervus* genus (red deer, sika deer, etc), and were originally placed in the same genus. In several ways, however, fallow deer can be distinguished from members of *Cervus*. The most obvious difference is that mature male fallow deer have palmated antlers. Furthermore, as distinct from *Cervus*, they have no neck mane and no upper canine teeth. They do, however, have a similar karyotype to red deer (ie. $2n = 68$).

Formerly, the generic name *Dama* was also used for the American white-tailed deer (ie. *Dama virginiana*). However, the two species have sufficient genetic distance to be placed in different sub-families, let alone genera. White-tailed deer are now within the genus *Odocoileus*.

There have been no verified accounts of hybridisation between fallow deer and any other cervid species (one reference to a hybrid between fallow deer and chital deer is highly suspect). However, the two subspecies, European and Mesopotamian fallow deer, can hybridise freely and produce fully fertile offspring.

Subspecies characteristics

European fallow deer (*Dama dama dama*): Adult European fallow deer have peak annual liveweights of 100-110 kg (220-240 lb) for bucks and 45-60 kg (100-130 lb) for does, and stand about 90 cm (3 ft) high at the shoulder. The subspecies has a long tail (33 cm or 13 inches) and the male has a prominent larynx (Adam's apple). The wildtype pelage colour is light brown with a black dorsal line and white belly. Spotting is discernible in adults, particularly in summer. However, there are probably more pelage colour variations in European fallow deer than in any other mammal leading a wild existence. These colours include melanistic (black or brown), menil and white (see Chapter 8).

The typical antlers of mature bucks are palmated at the top. Both the brow tines and trez tines are well developed and widely spaced from each other. The bez tine is normally absent and a number of snags or spellers are present along the rear edge of the palmation (see Chapter 7).

Mesopotamian fallow deer (*Dama dama mesopotamica*): This rare subspecies is larger than the European fallow deer, with peak annual liveweights of 130-140 kg (285-310 lb) for bucks and 64-75 kb (140-165 lb) for does. The antlers are of a rather different pattern, with very short brow tines and long trez tines sprouting close to the brow. Where this tine emerges from the main beam, the antlers show distinct palmation. However, palmation towards the top of the antler is not as marked as for European fallow deer. All Mesopotamian fallow deer exhibit the same pelage pattern, which is similar to the wildtype European fallow deer pattern but with more pronounced spotting in summer.

Geographical distribution

European fallow deer: As mentioned previously, European fallow deer are distributed widely around the world. However, this is due mainly to man's influence, whereby the species has been naturalised in many countries. Chapman & Chapman (1980) document the presence of fallow deer in at least 36 separate countries, most of which are within the temperate zone (latitudes 30°-60°).

The original home of *Dama dama dama* is believed to be the Mediterranean region of southern Europe and Asia Minor. Its distribution beyond the Mediterranean has been mostly aided by man. However, its natural distribution prior to the last Glacial Period may have extended well into continental Europe and Britain and some biologists now believe that the species may have withdrawn to the Iberian Peninsula during the glaciation 10 000 years ago. Certainly, there is fossil evidence of the early presence of fallow deer in Britain. However, the present British populations were undoubtedly derived from deer introduced by the Romans.

Significant populations of wild fallow deer are presently found in Britain, Spain, Germany, Czechoslovakia, Austria, Hungary, Romania, Sweden, Australia and New Zealand. Smaller populations are also found in South Africa, Turkey, Greece, USA, Canada, Argentina, Chile and Peru (Chapman & Chapman 1980).

Mesopotamian fallow deer: The Mesopotamian fallow deer is one of the rarest cervids, with probably fewer than 200 individuals throughout the world. In its natural wild habitat, it is believed to survive in only one region, in south-west Iran.

By the 1940's the Mesopotamian fallow deer was thought to be extinct. However, in 1955 a small population was reported from where the Sirwan River crosses the border between Iraq and Iran. In 1957 and 1958, Mesopotamian fallow deer were also reported in dense forest along the three rivers, Dez, Karkheh and Karun, in Khuzistan province. A small number of animals were captured during the 1950's and 1960's. Some were sent to Georg von Opel's zoo at Kronberg, West Germany; and the others were taken to Dasht-e-Naz, a reserve created for them in northern Iran. The two populations have flourished, and now collectively represent the largest sources of the subspecies. Further smaller populations have been established in Iran and Israel. Mesopotamian fallow deer are classified by the IUCN as being "endangered" and protected under the CITES agreement from illicit international trade.

References

- Chapman, D. and Chapman, N. (1975). *Fallow deer: Their History, Distribution and Biology*. Terence Dalton Limited, Lavenham, UK.
- Chapman, N.G. and Chapman, D.I. (1980). The distribution of fallow deer: a review. *Mammal Review* 10 (2 & 3): 61-138.
- Whitehead, G.K. (1972) . *Deer of the World*. Constable, London, UK.

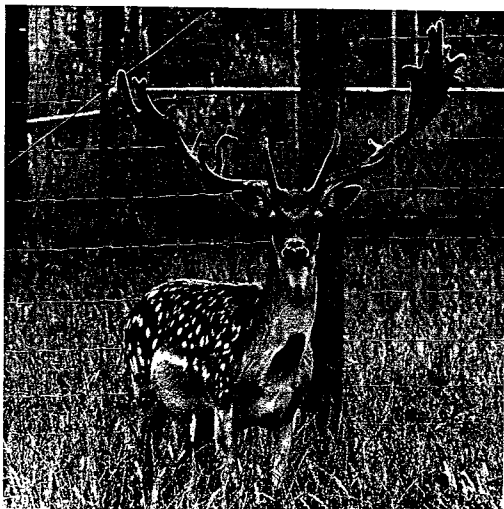


Plate 1.1: European fallow deer, *Dama dama dama*, of Hungarian origin. Six-year old buck. (Ruakura Artificial Breeding Centre, Hamilton, NZ)



Plate 1.2: Mesopotamian fallow deer, *Dama dama mesopotamica*. Six-year old buck with a melanistic European doe. (Ruakura Artificial Breeding Centre, Hamilton, NZ)