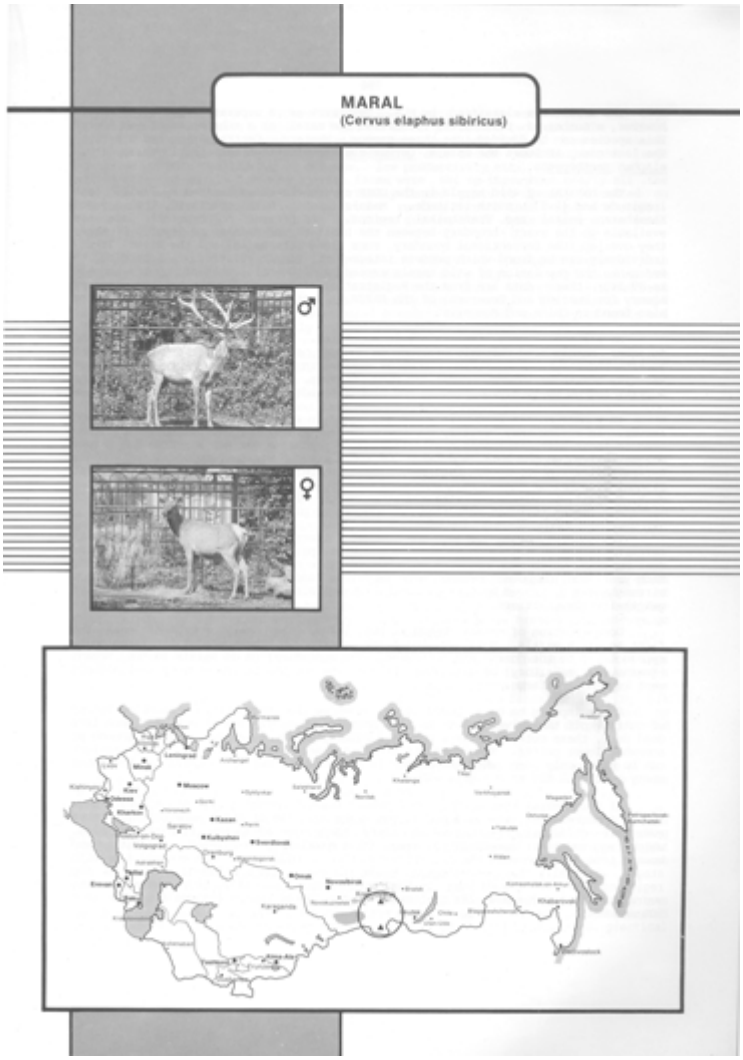

12.3 MARALS

Marals or Siberian red deer are the largest red deer of Eurasia. Their useful characteristics have long attracted man. Of the greatest value are their velvet antlers which are used to manufacture pantocrine, a substance used in medicine. Pantocrine regulates the functioning of the cardiovascular system and the gastroenteric tract, stimulates regeneration processes and is used as a tonic.

Preparations obtained from the velvet antlers of marals have long been used in Tibetan medicine and have met a ready market in China. As a result the maral population in the Altai and Siberia was drastically reduced by the end of the 19th century. These valuable animals have been saved from complete extermination by the ban on their hunting, introduced during the first years of Soviet rule.

The maral was classified by N.A. Severtzov as a separate species. Later, however, a number of taxonomists classified the maral as a subspecies of red deer. This species can be divided into three groups - Western, Central

Asian and Siberian. The last group includes the marals, Cervus elaphus sibiricus and the izyubrs, Cervus elaphus xanthopygos.
The habitat of wild marals in the USSR covers the area limited by 71-115° east longitude and 41-57° north latitude. Marals inhabit Altai territory, the Sayans, Kazakhstan, Baikal and Transbaikal regions. At present no accurate data are available on the exact boundary between the habitats of marals and izyubrs. Where they overlap (the conventional boundary runs along Lake Baikal and the River irkut) individuals can be found which possess intermediate characteristics. According to Fedosenko the population of wild marals exceeds 40 000 while that of izyubrs amounts to 99 340; these data are from the Registration Service of Glavokhota (the Central Agency for Hunting and Reserves) of the RSFSR. Besides the USSR, wild marals are also found in China and Mongolia.
Marals and izyubrs live mainly in mountains. They prefer broken country and forests. Marals find suitable biotopes in juniper, spruce, spruce and fir, and birch forests and shrubs on mountain slopes as well as in birch and aspen groves in river valleys, and in deciduous, cedar and pine forests. In summer the stags leave the forests and go up to alpine meadows and high-altitude tundra.
In summer marals feed mainly on grass and to some extent on willow browse and leaves. In autumn they eagerly browse on twigs. In winter the proprotion of tree feed in their diet increases considerably and reaches a maximum sometime in March. Marals thrive on the bark and twigs of rowan trees, willows, cotoneasters, black currants etc. Among green feed they prefer rhubarb, Astragalus, dandelion, great plantain, cocksfoot grass, the leaves of Eremurus altaicus, Pedicularis, Tyan Shan dock, foxtail, Corydalis, thistle and other herbs. The diet of marals and izyubrs in different places includes more than 100 species of plants.
The Chinese began to buy the velvet antlers of marals hunted by Russian settlers in the Altai region in the 1560s. High prices of velvet antlers stimulated deer hunting, which soon resulted in a considerable decrease in the maral population. Each year hunting deer became more laborious and less effective. Under such circumstances it proved better to catch live animals and keep them in captivity to get their velvet antlers.
Domestication of marals began in the 1840s. The Sharypov brothers were the first to catch marals. Maral keeping first occurred in the south of Altai region to spread later to the north and northwest. The domestication of marals in the Sayans (Krasnoyarsk territory) began in the 1890s and by the end of the century 3000 animals were kept on 200 farms.
A new impetus to maral breeding was given by the introduction of a novel method of cutting off the velvet antler in live animals. Like the velvet antlers taken from dead deer, these cut-off antlers not used before, soon met a ready market, though at somewhat lower prices. The benefits of the new method were obvious - while antlers can be taken only once when the animal is killed, the cut-off antlers can be taken every year till the animal gets old.
At first maral keeping developed mainly through catching wild stags, which soon led to a decrease in the wild population. The scarcity of stags made catching them ever more difficult. It became necessary to produce offspring from the females, which required their domestication also. Thus maral keeping entered a new stage and became true breeding with the extensive

catching of wild hinds and keeping them with stags. Gradually the percentage of hinds in the herds increased. Thus, in the region of the river Bukhtarma in the south Altai, in 1877, there were, on the average, 72% of males and 28% of females in the herds, while figures for 1928 were 50 % and 50%.

In the early stage of domestication marals were kept in enclosures. One cage 11 x 6.5 m in size with a fence 2.25-2.5 m in height housed two deer. The animals were kept on this small fenced area all the year round and did not graze on natural pasture. The negative effects of such housing soon became manifest in the large number of animals culled due to disease, low productivity etc. Therefore, in the second stage of maral breeding special farms were set up throughout nearly all the breeding area. These farms were virtually fenced pastures usually situated on mountain slopes with small rivers or brooks running through them to provide water. In winter the animals were given hay and stags growing their antlers were given small quantities of concentrated feed.

Maral breeding on private plots was not effective. Frequent contacts with domestic animals caused a high incidence of disease and a high rate of disposal. The driving of herds when the stags were chased to have their velvet antlers cut was particularly hazardous. Breeding was actually non-existent. The animals could hardly be called domesticated. Later maral breeding became an activity of state and collective farms which drastically changed the system.

The first state farm specializing in maral breeding, Katon-Karagaiski, was set up in 1924. Later, in 1929-30, a dozen similar farms were set up in Altai and Krasnoyarsk territories. These specialized farms crucially changed the management and feeding of marals as well as methods of cutting and processing antlers. The area of the farms grew considerably and land management was carried out everywhere. Many labour-consuming processes, feeding and transport in particular, were to a great extent mechanized and qualified personnel were trained.

At present the grazing areas for marals are divided into several sections inorder to keep stags, hinds and their young separately. The hazardous driving of herds to cut the antlers is eliminated. Partitioned corrals make it possible to manage rutting and fawning. Special facilities where the animals can be driven in and immobilized in stalls facilitate zootechnical and veterinary treatment.In winter the animals are divided into groups and kept on limited sites equipped for wintering with feeders and sheds. Differential feeding has been introduced.

Late spring and summer is the best time for marals since they get all the necessary nutrients from pastures. In autumn, winter and early spring they are given hay, silage or concentrates, according to age and sex. Since the organization of specialized state farms rutting has been a controlled process, managed by specialists. Only the best stags are used for mating. Large-scale breeding activities go in parallel with thorough studies of maral breeding.

Extensive work carried out over a comparatively short period has resulted in a complete reconstruction and rapid develpment of maral breeding. It has now become a highly profitable and promising branch of animal husbandry in the USSR. During the period from 1932 to 1939 alone the stock of marals on state farms increased by 51% while the output of their main commercial

product - velvet antlers - increased by 82%. The mortality rate dropped to 2-3% a year. The average weaner output per hind in the state farms of Altai territory was 55.1-59.9%.

These figures are much better than those characterizing the best private plots. In subsequent years the output of young stock increased on the majority of the farms while individual farms reached a figure of 72-74%.

It is important to note that since state farms were set up to breed marals these animals have become better domesticated which allows more effective breeding activity. This together with better feeding and management results in higher productivity. Successful farms have highly productive herds where the best specimens far surpass their wild kin in useful characteristics.

Stags of the elite class, whose live weight is 350-380 kg, give velvet antlers weighing over 15 kg. We are witnessing the evolution of a new breed of domesticated marals, which deserves the special attention of both scientists and practical breeders.

The maral herd on state farms now totals more than 30 000 animals. The live weight of adult males is 250-400 kg and that of females 150-250 kg; they measure 150-155 cm at the withers.

The head is relatively small and narrow in front. There is a slight depression in the forehead between the eyes. The lacrimal fossae are quite noticeable. The muzzle is hairless and the nostrils are wide and dark in colour. The ears are rather large and wide. The head is 44 cm long and 21 cm wide. The dental formula is:

$$i\frac{0}{3} \quad c\frac{0-1}{1} \quad pm\frac{3}{3} \quad m\frac{3}{3} = 32$$

There is a well-developed mane on the neck. The withers are high, the back nearly straight, the loin long and the rump short, rounded and drooping. The tail is short. The legs are strong, muscular, lean and slim. The hindlegs are cow-hocked. The hoofs are small and pointed in front.

In winter the coat of stags is greyish brown on the back and sides, while the head, mane, legs and the underline are darker. A more or less noticeable dark line runs down the neck and back. In summer the colour of the coat is darker and more uniform. The females are steel grey or smoky in winter and brown in summer. The coat is shed in spring and autumn.

The antlers are very large and have 6-7 tines. The stems grow wide apart. Marals shed their antlers from late March till early May. The clean shedding of the velvet begins in late August and ends in September. New antlers begin to grow in March-April and they become fully developed in summer. Mating begins in late August or early September and continues for 4-7 weeks. Hinds are in heat for 1-2 days and if they are not bred they come into heat again in 15-20 days. The. gestation period lasts for 242-248 days, i.e. 8-8.5 months. Fawning begins in May and ends in June. Newborn marals weigh 12-14 kg. Their coat is spotted. They remain lying down for some days and then get up to follow their mothers. Marals reach puberty at the age of 15-16 months. The length of life is up to 20 years. The diploid chromosome number is 68.

The main product of maral breeding is velvet antlers. These are considerably larger than the antlers of sika deer. Two-year-old marals have

velvet antlers that weigh about 3 kg and when the animals are ten years of age or older the weight of their antlers can amount to 16 kg. Some stags grow antlers exceeding 20 kg in weight. The velvet antlers of marals, however, are somewhat less valuable than those of sika deer. Besides the antlers, marals give high quality venison and skins. Their skin is used to make chamois leather.

As with sika deer, the breeding activities with marals have the aim of increasing the output of the main product i.e. of increasing the weight and improving the quality of velvet antlers. The serious breeding work at many maral breeding farms has resulted in high productivity. Often more than 30% of stags are graded as elite class with the antlers weighing more than 10 kg.

The ecological adaptability of deer is a great asset for further improvement of the breed. This can be easily seen in the successful acclimatization of the hybrid obtained by crossing the Altai maral with the Crimean red deer (with an infusion of blood of other forms) on the island of Biryuchy in the Azov-Sivash preserve. The hybrids can live in this area which is lacking in fresh water. The high adaptability of marals should be used to develop economically useful characteristics in new breeds, for which concerted effort is required in the near future.

To date such contagious and helminth diseases are registered in marals as tuberculosis, necrobacillosis, dictyocaulosis, elaphostrongylosis, setariosis and some others. Lower productivity and slower growth of the stock are brought about mainly by tuberculosis. As for sika deer, blood-sucking dipterous insects are a big hazard and nuisance for marals.

Deep snow, predators and stray dogs are all negative factors affecting the existence of both marals and sika deer. The human influence on their habitat is also hazardous for wild marals and results in a decrease of their population. Effective measures are needed to improve the protection of the indigenous maral populations and thus to preserve the basic gene pool of this valuable species.

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