**Food:**

Red deer (*Cervus elaphus*) are ruminants and therefore herbivorous. They have a wide food spectrum including grass, herbs, sedges, bark, buts, branches, needles, lichen and all kind of fruits. Depending on the quality of food, these animals eat between 8 and 20 kg a day and this mostly covers their daily water intake, too.

**Behavior:**

Red deer react to perturbation during the day by showing a different eating behavior. When there are disturbances, they use to have fewer but longer eating periods between dusk and dawn while they stay rather inactive during the day. Without being disturbed, red deer eat all day long in frequent and short periods and they alternate with rumination and rest. They live in sexually segregated herds for most of the year only mixing during mating season. The living in herds allows the animals to eat and rest while some members survey the herd. Red deer migrate seasonally in their mountainous habitats from higher alpine meadows in summer to the valley bottoms in winter. They always return to the same places, which can be far away from each other, e.g. in the Swiss National Park the distance is up to 40 km. Migrating routes and the whereabouts of the chosen places is taught from mother to offspring. Single males can migrate up to 100 km in order to colonize new habitat. Exchange of information functions via olfactory, visual and audible signals over long and short distances.

**Habitus:**

*Cervus elaphus* is a large ungulate. It is the second largest cervid species after the elk in Europe. Its body-length is between 170-235 cm in females and 170-250 cm in males and a height of 100-150 cm. Females weigh 90-150 kg, whereas males’ weight ranges between 180 and 200 kg. The weight depends highly on climatem conditions, nutrition and the population density. Their body is built for long running distances, they are long-legged, long-necked and have a linear spine.

Fur coloration underlies seasonal changes. The summer coat is typically reddish and is the reason for the species’ common name. The winter coat has longer hair and appears grayish to brown. The males’ characteristic mane is dark brown in winter and plays an important role in the mating season in terms of impressing females. Fawns have a bright brown fur with white spots and are perfectly camouflaged that way.

Males are well known for their huge antlers, which are newly produced every year. After shedding them between February and April they start regrowing right again. The antlers are fully grown in mid July, the velvet (a furry skin covering the growing antlers) is then peeled off. The species’ antlers are famous for being numerously branched, this fact reduces the risks of being seriously hurt in a males’ fight during rutting season. The antlers can be as long as 140 cm and weigh 5 to 8 kg, 15 kg at the maximum. The form is genetically inherited, whereas the antlers’ strength depends on the environmental conditions.

**Reproduction:**

Mature males start roaring in September to compete with each other and to attract the females’ attention. Rival males challenge opponents by bellowing and walking in parallel. This allows combatants to assess each other's antlers, body size and fighting prowess. If neither stag backs down a fight could start, the clashing of antlers in such a fight is not meant to hurt each other but rather to assess the opponents relative strength. The dominant male has access to a harem, which is composed of about 20 hinds and has to be protcted from competing males. Harem-holding stags rarely feed and lose up to 20% of their body weight.

It is only during mating season that females and males occur in the same herds, shortly after it the sexes segregate again. Females form large herds with up to 50 individuals. Gestation period lasts for 34 weeks with fawns being born in May/June. Females leave their herd for giving birth and return 1-2 weeks afterwards. The fawns are continuously kept close to the mothers and communication between the two is guaranteed by a series of vocalizations. Red deer can become 10 -13 years old in the wild, in some populations with less predation pressure the average age can reach 15 years.
Fact sheet Red deer

**Habitat:**
Red deer habitat originally expanded from 0 to 2800 m above sea level. Nowadays, their distribution is scattered in small and isolated populations. Only in the Alps and in Eastern Europe bigger populations have survived. Intensive agricultural landuse, forestry, settlements, traffic and pressure caused by hunting forced these animals to give up their original habitats (steppes and open forests) to live in places where the forest area is still big enough for them to retreat. As a matter of fact, these forests are often managed by humans and the claim that the damage done by red deer is too high arises immediately.

Red deer occupy alpine meadows in summer and

**Status**
Red deer population are growing in many part of Western Europe, where they cause damage to forest production. Referring to the IUCN, they are at Least Concern (LR/lc).

### Austria:
Red deer as a former inhabitant of steppes and open forests has become a pure forest dweller because of striking changes to its habitat conditions (traffic, human settlement, agriculture, tourism etc.). Due to the changed leisure-time activities of humans, suitable forest habitat for red deer has diminished dramatically. Still, their population size seems to be stable [Austrian hunting association].

### France:
Similarly to the neighboring countries, in France the red deer was over-hunted in the past. The population, menaced, was then reconstituted. Since then, the number has been increasing and reached about 65'500 animals in 1994 (38'500 individuals in 1985) [Mouron and Boisaubert, 1997 in Mattioli et al. 2001].

### Germany:
Considering that approximately 50'000 red deer are shot annually and that the growing rate approaches 34%, the number of red deer living in the whole of Germany could be estimated to be at least 150'000 animals strong. Red deer can only live freely in so called "Red deer areas" authorised by an official form of legal regulation. Accordingly, when moving outside these areas they are shot. Only Saarland abolished this regulation in April 2005 by cancelling the differentiation between "red deer area" and "not red deer area" [website Red Deer].

### Italy:
After reintroduction and restocking, the number of red deer augmented. From the estimated 32'000 individuals living in Italy, 75% are in the central and eastern Alps. In the central and eastern Alps the current population derives mainly from spontaneous recolonisation from neighboring countries. In the western Alps the contribution of reintroduction prevails. The number increased from 120 animals in the western Alps and from 3'025 in the central and eastern Alps in 1970 to 660 and 6'210 respectively in 1980 and to 3'500 and 22'200 respectively in 1998 [Mattioli et al. 2001].

### Slovenia:
Red deer population size and range has changed drastically in the last two centuries. The actual population is estimated to be at about 10’000 – 14’000 individuals [Jerina & Adamic]. Red deer was nearly extinct in the beginning of the 19th century, its number started to increase mainly thanks to reintroduction from Austria, Poland and Hungary [Duh et al 2005].

### Switzerland:
From the beginning of the 20th century, the population of red deer has started to grow again. A very rough indication can be given from the hunting statistics: between 1900 and 1925 only 100 red deer could be killed annually. In the 1930’s, the number rose from 200 to 300 animals and in 1949 it reached for the first time the 1’000 unit. From the end of the 1980’s, more than 4’000 red deer have been killed annually. In 2005, the population size was estimated at 26’000 animals [hunting statistics].

**Distribution**
**Austria:** Red deer can be found in the remaining and suitable forest habitats in Austria.

**France:** In France red deer numbers have increased in the last years. Moreover, the area occupied by red deer passed from 70'000 km² in 1985 to 90'000 km² in 1994 [Mouron and Boisaubert, 1997 in Mattioli et al. 2001].

**Germany:** As already mentioned under status for red deer in Germany, there is an official form of legal regulation. Due to that fact red deer is not allowed to move freely, hence, migration, an increase in their range and the development of a new population is not possible. Red deer occur in scattered populations. Estimations of Cervus elaphus' density were made according to the annual hunting bags in "red deer areas". In the Alpine region a number of more than four animals per 100 hectares was estimated, the same result applies to parts of Rhineland-Palatinate, Saxony and Thuringia. Central Germany holds 2-3,9 animals/100 ha, whereas the northwestern part with Mecklenburg-Western Pomerania, Brandenburg and Saxony-Anhalt have an estimated 1-1,9 animals/100ha [distribution map on the website of Rothirsch].

**Italy:** During 1925-35 red deer began to recolonize the central and eastern Alps, migrating from Engadina/Switzerland to the valley of Venosta in the province of Bolzano. In 1998 red deer had recolonized 13 Italian regions and 39 provinces, with 74% of the Italian population still concentrated in the central and eastern Alps. The western Alps and Apennines are populated mainly thanks to reintroduction. Differing from wild boar and roe deer, red deer has shown a distinctly more gradual pattern in spreading in Italy. The reasons are not only found in fewer restocking operations and in lower reproductive performances, but also in different spatial organization. In red deer, the centrifugal force of the dispersing young age class is slowed down by the strong ties of adults to the traditional rutting areas [Mattioli et al. 2001].

**Slovenia:** Red deer can be found almost everywhere in Slovenia, nowadays [Jerina & Adamic].

**Switzerland:** Originally red deer were present in all parts of Switzerland. Overhunting of red deer in eastern Switzerland led to its extinction in the second half of the 17th century [Kuehn et al. 2004]. But the area was recolonized. Nowadays, red deer occur in 19 cantons out of 26 and they are mostly abundant in the cantons of Grisons (13'000 animals), Valais (5686) and Ticino (3500) [hunting statistics on the website of Wildtier Schweiz].

**Management**

**Austria:** In an improved cooperation between forestry and the hunting party lies a hitherto unused potential for the solution finding for the forest-game-problems. According to current knowledge, it seems necessary from an ecological as well as economical point of view to integrate ungulates into future planning of silvicultural measures. For the habitats of the large herbivores forestry should include the prophylaxis of their damage as naturally as they do the factors wind, snow and insects. In the interest of a solution to the recent problems with game, which basically are a human dimension problem only, the active collaboration between the two parties involved is stressed and they are asked to bring forward efficient resolving suggestions [website of Fund for Environmental Studies]. The annual hunting bag of red deer amounted to 47'000 in 2003 [statistics given on the website of the Austrian hunting association].

**France:** Even though, red deer gets hunted in France, there is no data available on numbers.

**Germany:** In Germany, red deer encounter two major problems: their suitable habitats do not only shrink, but they are also less and less interconnected. Nowadays, programs try to create a better network between the areas and to maintain sustainable populations [Becker 2001].
Italy:

Because of the recent considerable increase in distribution and number in Italy, a radical adjustment of the present management practice and a more comprehensive planning are discussed [Mattioli et al. 2001]. Citing Mattioli [2001], an adequate planning of reintroduction has often been lacking in Italy and errors from the past have been repeated in the management practice such as the lack of feasibility studies or the use of incorrect schemes for release. Only a few Alpine districts have applied the proper procedure.

Slovenia:

Red deer is being hunted in Slovenia, during the hunting season of 2003/2004 the number of killed animals amounted to 4298.

Switzerland:

By the end of the 19th century, the introduction of federal hunting regulations favored a comeback of the species after its extirpation in the second half of the 17th century. The range is still expanding nowadays. In Switzerland, migration corridors are and will be created in order to allow game to exchange between different habitats. Even though these animals are popular large mammals, especially for hunters and conservationists, they have a considerable negative impact on forest structure and species diversity, both at a local and a landscape level.

Conservation

Many red deer populations got exterminated in the 19th century being considered pests by farmers because of their damage in the forests. They have no special conservation status, but depending on the area in where they live, habitat modification and hunting have lead to declines in their natural distribution and abundance.

References


Internet:

- http://www.iucnredlist.org
- http://www.wild.unizh.ch/
- www.wikipedia.org/
- www.fust.at