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Biology of Hunting Game



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Introduction

Hunting game is part of the natural wealth of the Slovak Republic. A relatively small area of 49,035 km² is home to a wide variety of species that are incorporated into the Hunting Act. They inhabit various types of habitats, from lowlands to the highest peaks of our country. As a developed country in Europe, Slovakia is also characterized by strong anthropic pressure on the natural environment. Changes in living conditions are also gradually affecting wildlife populations, which are forced to adapt to these conditions. Habitats are most affected by forestry and agriculture. The presented scripts describe individual hunting species of birds and mammals, which we refer to as feathered and furred game. At the beginning of each section, the characteristics of birds and mammals are described. We are talking about body structure, body cover, developmental peculiarities, reproduction, nutrition, migrations. For each species, a Latin name is given for better orientation of foreign students. Each species is illustrated with a photo. In the scripts, the reader will find information about the distribution in Europe and in our country, about abundance, reproduction, and food for each species. The bags of individual species or their degree of conservation are also indicated. The evolution of population numbers in our conditions is also assessed. The social value of individual species expresses mainly biological, ecological, and cultural value, considering their rarity and endangerment. International students can compare biological and population data with the data from their countries. Scripts are also a suitable comparative document for foreign scientific studies.

Contents

Introduction	3
1 Game birds.....	8
1.1 Characteristics of birds.....	8
1.1.1 Body covering	8
1.1.2 Senses.....	8
1.1.3 Respiratory system	9
1.1.4 The ability to fly.....	9
1.1.5 Reproduction	9
1.1.6 Migration.....	10
1.1.7 Flocks and colonies	11
1.2 Systematics of game bird species.....	12
1.3 Galliform (<i>Galliformes</i>)	14
Hazel grouse (<i>Bonasa bonasia</i>).....	14
Western capercaillie (<i>Tetrao urogallus</i>)	15
Black grouse (<i>Lyrurus tetrrix</i>)	16
Grey partridge (<i>Perdix perdix</i>).....	17
Reeves's pheasant (<i>Syrnaticus reevesii</i>)	18
Common pheasant (<i>Phasianus colchicus</i>).....	19
Rock partridge (<i>Alectoris graeca</i>).....	20
Wild turkey (<i>Meleagris gallopavo</i>)	21
1.4 Waterfowl (<i>Anseriformes</i>).....	22
Greylag goose (<i>Anser anser</i>)	22
Bean goose (<i>Anser fabalis</i>)	24
Greater white-fronted goose (<i>Anser albifrons</i>).....	25
Lesser white-fronted goose (<i>Anser erythropus</i>)	26
Garganey (<i>Spatula querquedula</i>)	27
Northern shoveler (<i>Spatula clypeata</i>)	28
Gadwall (<i>Mareca strepera</i>)	29
Eurasian wigeon (<i>Mareca penelope</i>)	30
Mallard (<i>Anas platyrhynchos</i>).....	31
Northern pintail (<i>Anas acuta</i>)	32
Eurasian teal (<i>Anas crecca</i>)	33
Common pochard (<i>Aythya ferina</i>).....	34
Tufted duck (<i>Aythya fuligula</i>)	35
1.5 Bustards (<i>Otidiformes</i>).....	36
Great bustard (<i>Otis tarda</i>).....	36

1.6	Pigeon and Doves (<i>Columbiformes</i>)	37
	Stock dove (<i>Columba oenas</i>).....	37
	Wood pigeon (<i>Columba palumbus</i>).....	38
	European turtle dove (<i>Streptopelia turtur</i>).....	39
	Eurasian collared dove (<i>Streptopelia decaocto</i>).....	41
1.7	Gruiform (<i>Gruiformes</i>)	42
	Eurasian coot (<i>Fulica atra</i>).....	42
1.8	Grebes (<i>Podicipediformes</i>)	43
	Great crested grebe (<i>Podiceps cristatus</i>).....	43
1.9	Charadriiform (<i>Charadriiformes</i>)	44
	Eurasian woodcock (<i>Scolopax rusticola</i>).....	44
	Common snipe (<i>Gallinago gallinago</i>).....	45
	Black headed gull (<i>Larus ridibundus</i>).....	46
1.10	<i>Suliformes</i> / <i>Phalacrocoraciformes</i>	48
	Great cormorant (<i>Phalacrocorax carbo</i>).....	48
1.11	Pelecaniform (<i>Pelecaniformes</i>)	49
	Grey heron (<i>Ardea cinerea</i>).....	49
1.12	Diurnal birds of prey (<i>Accipitriformes</i>)	50
	Northern goshawk (<i>Accipiter gentilis</i>).....	50
	Rough-legged hawk (<i>Buteo lagopus</i>).....	52
	Common buzzard (<i>Buteo buteo</i>).....	53
1.13	Passerines (<i>Passeriformes</i>)	55
	Eurasian jay (<i>Garrulus glandarius</i>).....	55
	Eurasian magpie (<i>Pica pica</i>).....	56
	Eurasian jackdaw (<i>Corvus monedula</i>).....	57
	Rook (<i>Corvus frugilegus</i>).....	58
	Carrion crow (<i>Corvus corone</i>).....	59
	Hooded crow (<i>Corvus cornix</i>).....	61
	Common raven (<i>Corvus corax</i>).....	62
	Fieldfare (<i>Turdus pilaris</i>).....	63
2	Game mammals	65
2.1	Characteristics of mammals	65
2.1.1	Dentition	65
2.1.2	Respiratory system	66
2.1.3	Specificities of mammals	66
2.1.4	The appearance of game mammals	66
2.1.5	Horns and antlers	67
2.1.6	Reproduction, development of the individual and population dynamics	69

2.1.7	Ethology	71
2.2	Systematics of game mammal species	72
2.3	Lagomorphs (<i>Lagomorpha</i>)	73
	European brown hare (<i>Lepus europaeus</i>)	73
	Wild rabbit (<i>Oryctolagus cuniculus</i>)	76
2.4	Rodents (<i>Rodentia</i>)	77
	Alpine marmot (<i>Marmota marmota</i>)	77
	Eurasian beaver (<i>Castor fiber</i>)	79
	Muskrat (<i>Ondatra zibethicus</i>)	80
	Nutria (Coypu) (<i>Myocastor coypus</i>)	81
2.5	Carnivores (<i>Carnivora</i>)	83
	Eurasian ermine (stoat) (<i>Mustela erminea</i>), least weasel (<i>Mustela nivalis</i>)	83
	European polecat (<i>Mustela putorius</i>)	84
	Steppe polecat (<i>Mustela eversmannii</i>)	85
	American mink (<i>Neogale (Mustela) vison</i>)	86
	European pine marten (<i>Martes martes</i>)	87
	Stone marten (<i>Martes foina</i>)	89
	European badger (<i>Meles meles</i>)	90
	Eurasian otter (<i>Lutra lutra</i>)	91
	Brown bear (<i>Ursus arctos</i>)	92
	Raccoon (<i>Procyon lotor</i>)	93
	Wolf (<i>Canis lupus</i>)	94
	Golden jackal (<i>Canis aureus</i>)	96
	Common racoon dog (<i>Nyctereutes procyonoides</i>)	97
	European wildcat (<i>Felis silvestris</i>)	99
	Eurasian lynx (<i>Lynx lynx</i>)	101
2.6	Even-toed ungulates (<i>Artiodactyla</i>)	102
2.6.1	Nonruminants (<i>Nonruminantia</i>)	102
	Wild boar (<i>Sus scrofa</i>)	102
2.6.2	Ruminants (<i>Ruminantia</i>)	104
	Elk (<i>Alces alces</i>)	104
	White tailed deer (<i>Odocoileus virginianus</i>)	105
	Red deer (<i>Cervus elaphus</i>)	106
	Sika deer (<i>Cervus nippon</i>)	107
	Fallow deer (<i>Dama dama</i>)	109
	Roe deer (<i>Capreolus capreolus</i>)	110
	Alpine chamois, Tatra chamois (<i>Rupicapra rupicapra</i>)	112

European mouflon (<i>Ovis musimon</i>).....	113
European bison (<i>Bison bonasus</i>)	114
References	116

1 Game birds

1.1 Characteristics of birds

Birds evolved from reptiles, they already have endothermic regulation and the ability to fly with the help of feathers. During development, the limb was transformed into a wing, fusion of 2nd-4th metatarsal bone formatted the tarsometatarsus of the hind limb. The skeleton is made of tubular bones, the lungs are at a higher stage of development and the lung sacs that help in flying have been formed. Beak jaws with a horn-like covering appeared. From reptiles, birds inherited the same type of skin, and the way they reproduce has basically not changed either.

The skin of birds is dry and thin, with a single developed coccyx gland (*glandula uropygii*) located on the coccyx, which birds use to protect their feathers from moisture. The skin of birds has three basic components: skin (*epidermis*), suede (*dermis*), subcutaneous tissue (*subcutis*), which are divided into next layers.

1.1.1 Body covering

A finished feather is an inanimate structure that no longer grows but is regularly replaced (shedding). Bird plumage is divided into cover feathers and down. The covering feathers of birds grow only in regularly arranged in symmetrical tracts (*pterylae*) with areas of bare skin (apteria) between. The latter may contain the small soft feathers called down. Water birds have denser feathers with a larger surface area of *pterylae*. The cover feathers are divided into cover feathers (tectrices), which grow on the head and body, flight feathers (remiges), which grow on the wings, and tail feathers (rectrices) The down has a short quill and a fan of loose branches and rays. They grow between the cover feathers, where they create a soft and dense layer for thermal insulation. Simple down (*neoptile*) is also the plumage of the young. Before they acquire the ability to fly, the plumage is changed several times.

1.1.2 Senses

The peripheral nervous system of birds has not undergone significant changes compared to reptiles, but their brain has undergone important transformations. The main sense of most birds is sight. They also have a well-developed sense of hearing. Owls, for example, can locate prey by hearing even in complete darkness. The eyes of birds are relatively the largest of all

vertebrates and have a complicated structure. In addition to both eyelids, they also have a transparent eyelid, which stretches across the eye from the inner corner. The acuity of vision is considerable, the predators are simply excellent. The eyes of owls can detect even the smallest intensity of light. Many species of birds have a large field of vision (up to 300 degrees), see at a great distance and often in colour. Birds have less developed hearing.

1.1.3 Respiratory system

The internal structure of the lungs is also unique, where lung alveoli are completely absent. Gas exchange takes place during the passage of air in the finest branches of an extensive network of bronchioles (*thrombochioles*). It is especially convenient during the flight. In addition, birds have a system of four pairs of air sacs (neck, anterior thoracic, posterior thoracic and abdominal), one unpaired (interclavicular), which ensure effective ventilation during flight, supply air to tubular bones, lighten the body, participate in thermoregulation or act as air resonators.

1.1.4 The ability to fly

The ability to fly was enabled by more morphological adaptations. Above all, the frame is built to be as light and strong as possible. Its weight is only about 4 percent of the body weight due to the hollow bones of birds. The strength of the skeleton is caused by a high content of mineral substances and numerous fusions of individual bones. Because the forelimbs were transformed into wings, their function in food gathering, defence, and nest building had to be completely taken over by the head. The mobility of the head is primarily determined by the connection of the first cervical vertebra (carrier). Unlike mammals, birds can turn their heads up to 180 degrees.

The largest muscles on the body of birds are the pectoral muscles, because in flight it is necessary that the largest mass is concentrated in the centre of gravity under the wing surfaces.

1.1.5 Reproduction

Bird reproduction is based on the developmentally very old laying of eggs and a new way of caring for the offspring. Mature eggs are usually produced only in the left ovary. They are caught in the funnel-shaped entry of the oviduct and are gradually covered with albumen,

egg membranes and shell before laying. Males have developed two small testicles, which enlarge several times during the breeding season (up to 360 times). Ripe sperm move through the vas deferens to the cloaca, from where they enter the oviduct of the female during copulation. Copulation usually takes place only by pressing the edges of the cloaca of both partners, only some species have a developed penis (for example, ducks and geese). The egg is fertilized in the upper part of the oviduct until the yolk is covered by any membranes.

Care of offspring consists of nest building, active hatching (incubation) of eggs, feeding and rearing of young. The whole process is usually referred to as nesting. The actual nesting is preceded by the formation of pairs and the associated often attractive lekking (for example, in grouse). Sometimes pairs are formed for whole life (geese, eagles, ravens), other times only for one nesting season, or partners meet only during copulation (for example, pheasants, grouse). Both partners are usually involved in building the nest, and the nest is usually only used for one nesting season. However, raptors or storks can use the nest for years. Some species (for example, the Eurasian eagle owl) do not build a nest and lay eggs freely on the ground. Most birds build their nest in the middle of a defended nesting area, but many species have adapted to living in colonies (for example, great cormorant, grey heron, rook, black-headed gull).

Birds nest once or twice a year. More frequent nesting is an exception. The first nesting occurs in the spring when there is enough food. Maturation of gametes and the whole process of nesting is mainly influenced by the length of the day. Other factors also apply – air temperature, food supply, hormonal regulation, social situation, etc. The young in the nest hatch either all at once (in most non-feeding birds) or in sequence as the eggs are laid (feeding birds – for example in raptors, passerines, pigeons).

The incubation time is the shortest for small birds (12 to 18 days), for gallinaceous birds, geese and ducks it is 25 – 35 days. The young hatch by breaking through the eggshell with a baby tooth that forms at the end of their beak and disappears immediately after hatching. They hatch either naked, blind and unable to feed themselves (nidicolous), or feathered, sighted, self-feeding and equipped with protective instincts (nidifugous). Newly hatched chicks can lower their body temperature in adverse weather but lose this feature after development. Smaller birds reach sexual maturity already in the first year of life, but large eagles only after four years.

1.1.6 Migration

Thanks to active flying, birds are much more mobile than other vertebrates. Some have even developed regular long-distance movements (migrations). Birds that make long, well-

directed movements between the nesting ground and the wintering grounds twice a year are called migratory (for example, greylag goose, woodcock, rook, wood pigeon...). Birds that can move limited distances in different directions during the season are referred to as short distance migrants (for example, peregrine falcon, black headed gull, common raven). Birds that do not move too far from their nest during their life are called permanent residents (for example, northern goshawk, grey partridge, common pheasant, Eurasian magpie).

Migration poses certain risks to birds. The most serious is their hunting both on the move and in wintering grounds, regardless of whether they are small passerines, woodcocks, or large predators. Birds that are protected in their nesting places or whose hunting is regulated there, for example in southern Europe or North Africa, shoot uncontrollably, harvest in nets or otherwise kill. Various behavioural patterns are typical for birds. One of them is the so-called imprinting. For example, chicks of ducks and geese, immediately after hatching, remember all the characteristic features of the mother, and then follow her everywhere. Imprinting to the mother occurs in a sensitive period, which lasts, for example, in a mallard from 8 to 20 hours of the duckling's life, in a tufted duck from 26 to 38 hours.

1.1.7 Flocks and colonies

Like mammals, most birds live in spatially limited territories. The size and type of territory differ in bird species. In colony nesting birds, the territories are very small, on the contrary, predators and owls have their territory (predominantly for hunting) much larger. Some birds are territorial all year round, others only at the time of nesting or lekking. Defending the best territory on collective lekking grounds guarantees successful involvement in reproduction. For example, the rooster of western capercaillie, which by aggressive behaviour fights out the territory in the centre of the lekking ground, mates with up to 80 percent of all hens that visit this place.

For better protection or safer collection of food, birds are grouped into flocks. For example, the larger the flock of wood pigeons when collecting food in the field, the less chance a goshawk has of harvesting any of them. Even a peregrine falcon is not able to pick prey from a large flock of starlings, moreover, it would risk injury in contact with birds. However, the alone pigeon is caught by the goshawk in 80 percent of attacks. Sometimes, the social formations of birds make it easier to collect food (for example, in cormorants).

1.2 Systematics of game bird species

Class: **Birds** (*Aves*)

Clade: (*Ornithurae*)

Subclass: (*Carinatae*)

Order: **Galliform** (*Galliformes*)

Family: **Phasianids** (*Phasianidae*): **hazel grouse** (*Bonasa bonasia*), **western capercaillie** (*Tetrao urogallus*), **black grouse** (*Lyrurus tetrix*), **grey partridge** (*Perdix perdix*), **Reeves's pheasant** (*Syrnaticus reevesii*), **common pheasant** (*Phasianus colchicus*), **rock partridge** (*Alectoris graeca*),

Family: **Meleagrids** (*Meleagridae*): **wild turkey** (*Meleagris gallopavo*)

Order: **Waterfowl** (*Anseriformes*)

Family: **Anatids** (*Anatidae*): **greylag goose** (*Anser anser*), **bean goose** (*Anser fabalis*), **greater white-fronted goose** (*Anser albifrons*), **lessre white-fronted goose** (*Anser erythropus*), **garganey** (*Spatula querquedula*), **northern shoveler** (*Spatula clypeata*), **gadwall** (*Mareca strepera*), **Eurasian wigeon** (*Mareca penelope*), **mallard** (*Anas platyrhynchos*), **northern pintail** (*Anas acuta*), **Eurasian teal** (*Anas crecca*), **common pochard** (*Aythya ferina*), **tufted duck** (*Aythya fuligula*),

Order: **Bustards** (*Otidiformes*)

Family: **Bustards** (*Otididae*): **great bustard** (*Otis tarda*)

Order: **Pigeon and Doves** (*Columbiformes*)

Family: **Pigeon and Doves** (*Columbidae*): **stock dove** (*Columba oenans*), **wood pigeon** (*Columba palumbus*), **European turtle dove** (*Streptopelia turtur*), **Eurasian collared dove** (*Streptopelia decaocto*)

Order: **Gruiform** (*Gruiformes*)

Family: **Rails** (*Rallidae*): **Eurasian coot** (*Fulica atra*)

Order: **Grebes** (*Podicipediformes*)

Family: **Grebes** (*Podicipedidae*): **great crested grebe** (*Podiceps cristatus*)

Order: **Charadriiform** (*Charadriiformes*)

Family: **Sandpipers** (*Scolopacidae*): **Eurasian woodcock** (*Scolopax rusticola*), **common snipe** (*Gallinago gallinago*)

Family: (*Laridae*): **black headed gull** (*Larus ridibundus*)

Order: (*Suliformes* / *Phalacrocoraciformes*)

Family: **Phalacrocoracids** (*Phalacrocoracidae*): **great cormorant** (*Phalacrocorax carbo*)

Order: **Pelecaniform** (*Pelecaniformes*)

Family: **Hérons, Egrets, and Bitterns** (*Ardeidae*): **grey heron** (*Ardea cinerea*),

Order: **Diurnal birds of prey** (*Accipitriformes*)

Family: **Accipitrids** (*Accipitridae*): **northern goshawk** (*Accipiter gentilis*), **rough-legged hawk** (*Buteo lagopus*), **common buzzard** (*Buteo buteo*)

Order: **Passerines** (*Passeriformes*)

Family: **Corvids** (*Corvidae*): **Eurasian jay** (*Garrulus glandarius*), **Eurasian magpie** (*Pica pica*), **Eurasian jackdaw** (*Corvus monedula*), **rook** (*Corvus frugileus*), **carrion crow** (*Corvus corone*), **hooded crow** (*Corvus cornix*), **common raven** (*Corvus corax*)

Family: **Trushes** (*Turdidae*): **fieldfare** (*Turdus pilaris*)

1.3 Galliform (*Galliformes*)

Hazel grouse (*Bonasa bonasia*)



wikimedia.org

Both sexes are approximately the same size, the weight up to 0.5 kg. Occurrence in Slovakia in the area of mountain ranges throughout the territory. It is estimated that between 9,000 and 15,000 pairs nest in Slovakia. He lives in dense forests with undergrowth of grass and berry bushes. The annual harvest is low, only about 5 individuals. The population trend is slightly increasing in the EU, a slight decrease in registered in the Slovak Republic.

They form pairs that break up for the winter. In mid-March, the spring lekking takes place. The nest is built by the hen mostly at the heel of the tree, at large stones or at uprooted trees. The female lays 6 – 10 light brown eggs with tiny dark spots. After 22 – 25 days of incubation, chicks hatch. The hen takes them out of the nest immediately after drying, and

already for four days they try to fly. At the age of 10 days, they are perching on the branches not high above the ground. At that time, a rooster also joins the family, so the chickens are accompanied by both parents. The food are buds of deciduous trees in winter, catkins, shoots and insects in spring, insects and forest fruits in summer and autumn. A greater proportion of insects are in the diet of chickens.

According to Slovak legislation, as a species of European importance, it has a social value of 1840 €. Hazel grouse is classified as a hunting game, and the rooster can be hunted from October 1 to November 15. Although the hazel grouse hen is also included among the hunting game, it is protected all year round. No harvest was reported in 2019.

Western capercaillie (*Tetrao urogallus*)



Jaroslav Červený

The weight of an adult male is over 5 kg, females 2.5 kg. Species requires extensive, age-diverse coniferous and mixed forests with peat bogs, moorland areas with a rich undergrowth of berries. About 760,000 – 1,000,000 pairs nest in Europe. At present, local capercaillie populations survive in the High and Low Tatras, in the Great and Small Fatra, the Kremnica Hills and the Slovak Ore Mountains. It is estimated that there are currently 300 – 420 lekking roosters and the same number of hens in Slovakia. Hunting statistics reported an abundance of 899 heads in 2021. Despite efforts to stabilise residual populations, western capercaillie is declining in most places. The population trend in the EU is stable, with

a significant decline in the Slovak Republic. A permanent resident, only rarely migrate over shorter distances. Both sexes meet only in the lekking period from March to April. Roosters lekking already in the early morning with singing, which usually consists of four very typical lyrics. During 2 – 3 seconds it ceases to hear. The lekking begins on a tree, then the males fly to the ground and meet in fierce fights. Females follow the lekking and quietly lure the male. They mate on the ground. The nest near the lekking ground is just a shallow dimple (e.g., near a tree trunk) lined with moss, feathers, etc. In April, the hen lays 5 – 10 yellow-brown eggs with tiny dark brown spots. After 26 – 28 days, the chicks hatch, and the hen very soon takes them out of the nest. Already at the age of 8 – 10 days, they try to fly. Until autumn, they stay with the hen, they are sexually mature in the second year of life.

Adult birds feed almost exclusively on needles and buds and summer growths of deciduous trees and shrubs. In the summer, they collect pulpy fruits. The digestion is improved by tiny pebbles - gastroliths. They also eat various insects, terrestrial snails, earthworms, etc.

According to Slovak legislation, as a species of European importance, it has a social value of 4610 €. Although it is classified as a hunting game, it is protected all year round. Its abundance is negatively affected by predators, therefore, in the localities of its occurrence, it is possible to hunt the Eurasian jay, Eurasian magpie, hooded crow, stone marten and pine marten all year round.

Black grouse (*Lyrurus tetrix*)



Pierre-Marie Epiney, wikimedia.org

Adult males weigh up to 1.5 kg, females 1.1 kg. In Slovakia, it nests in the mountains and basins of northern and north-eastern Slovakia. Live in the deciduous and mixed forests with a higher proportion of young trees and pastures, meadows and peat bogs with rich shrub and herbaceous undergrowth. It is estimated that the number of lekking roosters in Slovakia ranges from 300 to 500. The official statistics reports 622 heads in 2021. The population density is slightly declining EU, and a significantly declining in the Slovak Republic.

Lekking takes place at sunrise in April-May on open areas with lonely trees. It is accompanied by short flights, shaking of wings, jumps or short flights, and typical vocal expressions, especially loud bubbling. They mate with the hen directly on the lekking ground. The nest is hidden on the ground in dense vegetation, shallow and lined with dry plants and feathers. From May, the hen lays 6 – 12 light yellow-brown, dark-spotted eggs. In 24 – 27 days, chicks hatch, almost immediately leave the nest and look for food on their own. Until autumn, they stay with a hen, then they are divided by sex. In winter, they form common flocks. They mature sexually in the second year.

Adults are feeding by buds and annuals of deciduous shrubs, collect both pulpy and dry fruits, including seeds. Occasionally they collect insects and other invertebrates, the animal component prevails in the diet of chickens.

According to Slovak legislation, as a species of European importance, it has a social value of 3220 €. Although it is classified as a hunting species, it is protected all year round. Its abundance is negatively affected by predators, therefore, in the localities of its occurrence, it is possible to hunt the Eurasian jay, Eurasian magpie, hooded crow, stone marten and pine marten all year round.

Grey partridge (*Perdix perdix*)

Both sexes have almost no different in size, in adulthood they weigh 300 – 500 g.

It is widespread in low concentration practically in the whole territory of Slovakia, but especially in lowland areas. Its abundance is declining rapidly, even by 99.4% compared to its top density in 1973 (from 495959 to 2891 heads). The population trend declining in the EU and Slovakia as well. Around 3000 farmed individuals are harvested annually.

Permanent resident, monogamous species. Most often in March, flocks crumble and pairs are formed. Roosters intensively protect nesting territories. Lekking is quiet, a rooster with lowered wings circles around the hen and echoes with a typical sound. The nest is usually located on the edge of the stands of various field crops, on the field margins and other

overgrown areas. It's just a shallow dimple lined with blades of grass. From the beginning of April, the hen lays 12 – 20 greenish-grey, yellow-green or grey-green eggs without spots. The hen incubated the eggs alone for 23 – 25 days, the chicks leave the nest as soon as possible. The chicks are guided by both parents. In case of danger, the hen feigns injury, thus distracting from the chickens. They are sexually mature in the second year of life.



Jan Ševčík

In the first 3 weeks of life, up to 90% of the volume of food of chickens is made up of insects. Adult partridges collect vegetative parts of various plants, cereal grains, weed seeds and only about 10% of insects. The composition of food changes throughout the year.

According to Slovak legislation, as a species of national importance, it has a social value of 920 €. It is classified as a hunting game with a hunting time from September 16 to October 15. However, only artificially bred individuals could be hunted.

Reeves's pheasant (*Syrnaticus reevesii*)

The tail feathers of roosters measure up to 180 cm.

The non-native species comes from China. In Slovakia, the Reeves's pheasant was bred in the Cerovina pheasantry. However, despite successful acclimatization, stabilization of the wild population is not possible without the release of artificially bred chickens. The ideal habitat of the Reeves's pheasant is sparse deciduous or mixed forests with abundant shrubs in warm regions.

Nesting biology and food composition are similar to the common pheasant.

Due to its abundance, the Reeves's pheasant is not a significant hunting species. Its attractiveness lies primarily in the possibility of shooting long-tailed roosters, which is a valuable trophy. The Reeves's pheasant belongs to the hunting game. In the wild, it can be hunted from October 1 to December 31, in pheasantries from September 1 to the end of February. The harvest in 2021 was 95 individuals.



Moebius1, wikimedia.org

Common pheasant (*Phasianus colchicus*)

The weight of roosters varies around 2 kg, hens 1.5 kg.

The non-native species, to Europe was imported in ancient times by the Romans. It now lives throughout Europe and in other parts of the world. Almost everywhere he lives, he is the subject of intensive hunting. Pheasants are nesting in Slovakia similar to partridge up to an altitude of 300 – 400 m. It is estimated that 20,000 – 40,000 pairs nest in Slovakia and 30,000 to 60,000 individuals is wintering. The annual harvest is about 40,000 individuals, but mostly from farms.

A permanent resident, polygamous species. Since mid-March, the rooster has been defending its territory with a typical voice. The lekking is noticeable, with popping, shaking wings and rustling of the feathers. The nest is usually on the ground in denser vegetation, often covered from above. The nesting is shallow, lined with grass and foliage. From mid-April, the hen lays 8 – 16 eggs coloured from yellow grey to olive brown to bluish. After 24 – 26 days,

chicks hatch, they are sensitive to cold weather. After 45 days, they are able to fly, but they stay a hen, in winter the families cluster into flocks. They sexually mature in the second year of life.



Lukasz Lukasik, wikimedia.org

Food is related to season and age. Adults feed mainly on the vegetative parts of plants, seeds of cultivated plants and weeds, occasionally they pick out potatoes and beets. They also feed insects, gastropods, worms and small vertebrates and their carcasses. In the diet of chicks, insects and other invertebrates predominate.

The common pheasant is a hunting game with a specified hunting time. Pheasant rooster in the wild can be hunted from November 1 to January 15, in pheasantries both sexes can be hunted from October 1 to the end of February.

Rock partridge (*Alectoris graeca*)

The kind of size of a partridge. The weight of both sexes is about 0.5 kg.

The native species is in the Balkans, Italy, Sicily, in the north is spread to the southern slopes of the Bavarian Alps. Attempts to introduce rock partridge, but also other species – red-legged partridge (*A. rufa*) and chukar partridge (*A. chukar syn. kakelik*) in Slovakia were already in the 19th century. In the greatest quantity, the rock partridge was introduced to the Plešivecká planina (southern part of middle Slovakia). All attempts to acclimatize ended in failure. Most birds died during the winter due to exhaustion or become prey to predators. Even today, artificially bred mountain rock partridge chickens are released in some pheasantries. The

only point is to try to diversify the hunted species. In 2021, 560 individuals were harvested, individuals being exclusively from farms.



Fokus Natur, wikimedia.org

According to the Hunting Act, the rock partridge is included to the hunting game with a hunting period from September 16 to December 31.

Wild turkey (*Meleagris gallopavo*)

The rooster is much larger than the hen, the weight of adult males is 9 – 16 kg, females only 4.5 – 7 kg.

Non-native species. It originated in eastern North America, and since the end of the 19th century it has been introduced into Europe. Breeding is concentrated exclusively in pheasantries or game preserves, completely dependent on the release of artificially bred chickens (in nature, turkey chicks hatch in early spring and do not survive our cold weather). In Slovakia, several organizations are engaged in breeding wild turkeys and they also organize their hunting after release. However, the harvest is low, only about 20 individuals per year.



Frank Schulenburg, wikimedia.org

In the diet predominate plant components. In addition to weed seeds, cultural grasses and cereals, it also feeds berries and vegetative parts of plants. It feeds all available animal food, including lizards and small mammals. In the composition of the food of chicks of turkeys in the first weeks of life, the animal component prevails, mainly insects and their stages of development.

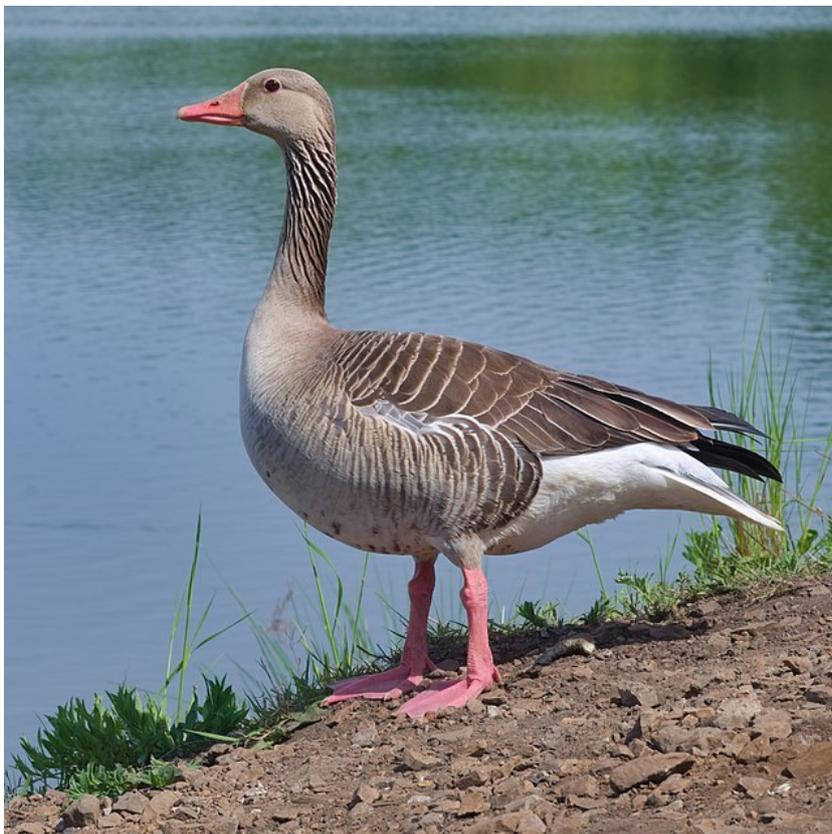
According to the Hunting Act, a wild turkey is a wild game with a hunting period from October 1 to December 31 for both sexes, the rooster also from March 16 to May 15.

1.4 Waterfowl (*Anseriformes*)

Greylag goose (*Anser anser*)

Smaller than the domestic goose. The weight of the gander is up to 4.3 kg, goose 3.8 kg. In our country, about 15 – 80 pairs nest near the ponds in Záhorie (western Slovakia) and in the south of the East Slovak lowland, 1000 – 8000 individuals winter here. They prefer undisturbed bodies of water with large reeds, adjacent to meadows and fields. In the Nordic regions, it also nests on peat bogs, moorland, seaside rocks and others.

Geese are permanently monogamous. At the beginning of March, couples defend nesting grounds. A nest on a different ground near the water builds a goose from dry plants and covers the clutch with down. It lays 4 – 8 dirty white eggs and incubate them after last egg is laying. Goslings hatch after 27 – 29 days and are immediately independent. After 1 – 2 days, both parents take them to the water, after 8 weeks they can fly. Young individuals from previous nesting are then also associated with the family. When destroying the nest, the goose can sit on a substitute clutch. The vocal repertoire is similar to a domestic goose. They swim excellently and fly easily in rows or wedge-shaped clusters. In the fall, they cluster in flocks of several thousand, and in October-November they fly to wintering grounds: part to Spain, but most of them to North Africa. The number of wintering individuals in Slovakia is estimated from 2000 to 3000.



Adrian Tync, [wikimedia.org](https://commons.wikimedia.org/wiki/File:Greylag_Goose.jpg)

The food is exclusively plant and very diverse, collected on land, but also from the water surface or slightly under the surface. They fly tens of kilometres for food. In autumn, they graze both in harvested corn fields and in winter crops.

According to Slovak legislation, as a species of national importance, it has a social value of 3220 €. According to hunting legislation, the wild goose is included into the hunting species with a hunting period from October 1 to January 20. The current harvest is up to 300 geese (all permitted species).

Bean goose (*Anser fabalis*)



Dr. Raju Kasambe, wikimedia.org

Species is slightly smaller than the wild goose, in behaviour and habits it resembles her. An adult gander weighs up to 4.1 kg, a goose 3.9 kg.

In the Slovak Republic, it occurs during migration and wintering, in the number of 500 – 1500 individuals near water bodies and large agricultural areas (fields, meadows, pastures), where it flies for food. On our wintering grounds, the first bean geese appear in October.

In the north, they nest only in May, primarily in open places near lakes, rivers and in marshland. The nest is usually located on mossy knolls. It is just a dimple in the ground lined with down, mosses, lichens and grass. On the clutch of 4 – 6 dirty white eggs, only the female sits for 28 – 29 days, the male guards and participates only in the raising of the goslings. They can fly after about 6 weeks. In September, together with their parents, they leave the nesting sites. They sexually mature in the 3rd, sometimes already in the 2nd year of life.

At the time of nesting feeds mainly grasses and aquatic plants, mosses and lichens were also detected. During migration and in wintering grounds, the main food is grass, clover, winter

crops, seeds and roots of plants. Grain, unlike other species of geese, is not so favourable. It grazes in free open areas. According to Slovak legislation, as a species of national importance, it has a social value of 1150 €, at the same time it is classified as a hunting species, the hunting period is from October 1 to January 20.

Greater white-fronted goose (*Anser albifrons*)



Frank Schulenburg, wikimedia.org

Both sexes are almost the same size. The gander weighs up to 3.4 kg, and the goose up to 3.1 kg.

In Slovakia, this species is a migrant and occurs here in winter, so it does not rot in our territory. We winter between 2,000 and 15,000 individuals. The autumn migration begins at the end of September, continues in October and November, and is transferring into wintering. The spring migration culminates in March, but also ends in this month. In the Danube region, flocks of 100 – 150 specimens were monitored. Tens of thousands of geese migrate through the East Slovak lowland, about 10 percent of which are this species. The population trend in the EU is significant increasing.

They nest in marshy tundra sites, above the forest border, on riverbanks and lake islands, and tend to collective nesting. The nest is built only by the female. It is built only from grass or lichens, lined with down. The laying consists of 4 – 6 dirty-white eggs. In 27 – 28 days, goslings hatch, which are cared for by both parents. As in all waterfowl species, all remiges fall out

during summer moulting at once, which will inhibit of the ability to fly for up to 3 weeks. White-fronted geese fly to our region in October-November. If climatic conditions allow, they are wintering here, otherwise, during frosts they move to more southern wintering grounds. They are resting and grazing together with other species of geese. They return to the nesting sites in March.

They feed exclusively plant food. On wintering grounds in our region, white-fronted geese are especially looking for fields with winter crops, where they harvest sown grains or pluck out young plants.

According to Slovak legislation, as a species of national importance, it has a social value of 1380 €. It is included to the hunting species; the hunting time is from October 1 to January 20.

Lesser white-fronted goose (*Anser erythropus*)



Ken Billington, wikimedia.org

It is similar to the greater white-fronted gee, but it is smaller. An adult gander weighs up to 2.5 kg, a goose 2.2 kg.

In Slovakia, lesser white-fronted geese were recorded only infrequently during the migration and winter period (0 – 5 individuals) and only in western Slovakia. At the time of nesting, it searches for the surroundings of rivers and lakes, nests even in higher positions and in rocky places.

It nests in dry elevated places. The nest is built of twigs, grass and foliage and lined with down. In May, the goose lays 4 – 5 yellowish-white eggs, on which it sits for 25 – 28 days. Cover feathers grow in goslings at the fifth week of life. Young geese fly to our region in

October and November and, together with other species of geese, search for quiet bodies of water and places for peaceful grazing.

Food is exclusively from plant components.

According to Slovak legislation, it is classified as a species of European significance with a social value of 3220 €. It is also included among the hunting game with year-round protection.

Garganey (*Spatula querquedula*)



Dr. Raju Kasambe, wikimedia.org

Both sexes are equally large weighing up to 0.5 kg. About 390,000 – 590,000 pairs nest in Europe. In Slovakia, 50 – 100 pairs nest, but only about 30 individuals winter. It searches for shallow and swampy, natural and artificial water reservoirs with both stagnant and running water. The population trend in the Slovak Republic is slight decreasing, in the EU moderate decreasing.

Migrate to nesting sites in March – April already in pairs. In April, they build a nest near the water, most often in a dense growth of grasses or shrubs. Both the nest and the building material used are the same as for other species of ducks. The laying is most often made up of 8 – 11 creamy yellow to light brown eggs. After 23 days, chicks hatch, and in the age of 1 a month, they begin to fly. During July, families merge into smaller flocks, and already in August they fly to wintering grounds.

The food is plant-based and animal. Most often it collects crustaceans, small molluscs, worms, larvae of aquatic insects, but also amphibian larvae and fish roes. It eats vegetative parts and mainly seeds of aquatic plants. Compared to the Eurasian teal, it prefers seeds to vegetative parts of plants.

According to Slovak legislation, as a species of national importance, it has a social value of 920 €. It is included among the hunting game with year-round protection.

Northern shoveler (*Spatula clypeata*)



U.S. Fish and Wildlife Service Headquarters, [wikimedia.org](https://www.fishbase.org/species/spatula)

Characteristic beak shape, flared at the end. Both sexes are almost the same size (0.7 kg).

It nests almost all over Europe in the number of 170,000 – 210,000 pairs. The skier duck seeks out shallow reservoirs with wide strips of flooded areas, overgrown with abundant aquatic vegetation. It also searches for temporarily flooded areas. In Slovakia, nesting has been found only in its western and eastern parts. Currently, 10 – 40 pairs nest in our country and winter up to 15 individuals. The population trend in the Slovak Republic registers a slight decrease, in the EU a moderate decrease.

The formation of pairs and the lekking are similar to a mallard. The nest is near the water, well masked in a bunch of taller, denser grasses. It is built and modified only by the female, and in early April she lays the first of 7 – 12 eggs. The eggs are greenish-grey or creamy.

Incubation lasts 23 – 25 days. Ducklings can fly after six weeks. In September-November, the shovelers migrate to the wintering grounds.

The food is mainly animal, it collects from tiny plankton through insect larvae, worms and molluscs. It also collects food on the water surface, on the shallows, where filters the food through wide beak. Juveniles feed almost exclusively on animal food, mainly plankton and crustaceans.

According to Slovak legislation as a species of national importance, it has a social value of 1840 €. It is included to the hunting game with year-round protection.

Gadwall (*Mareca strepera*)



Andreas Trepte, wikimedia.org

Both sexes are almost the same size, the weight reaches up to 0.8 kg.

In the Slovak Republic, they nest in pond areas, mainly on eutrophicated waters with a sufficient resources of soft aquatic plants, in the number of 100 – 200 pairs. It winters in our country up to 340 individuals. It searches for shallow water reservoirs with large water surfaces up to 650 m above sea level. In addition to a slight increase in abundance, there has also been an increase of home range of this species in recent years.

They fly to the nesting regions already in pairs. The lekking is similar to a mallard, it nests since April. The nest of foliage and plant debris is always on the ground, well hidden, compared with other species of ducks it is more carefully built. The incubation of 6 – 14 cream-yellow or grey-green eggs lasts 26 – 28 days, the duck takes care of the chicks on its own, and

they fly out after 7 – 8 weeks. European populations winter in the Mediterranean and mainly in North Africa. To these places migrate from October – November, returning in March-April.

The food is predominantly plant-based, young shoots, roots and leaves of plants. In winter they collect mostly seeds. Only occasionally, and especially in the summer months, it collects the larvae of aquatic insects, amphibians and other small animals.

According to Slovak legislation, as a species of national importance, it has a social value of 920 €. It is included to the hunting game with year-round protection.

Eurasian wigeon (*Mareca penelope*)



Hyppolyte de Saint-Rambert, wikimedia.org

Both sexes are the same size. An adult drake weighs up to 1.1 kg, a duck 0.9 kg.

There is no registered nesting in Slovakia. The species regularly migrates through our territory and occurs to a low density also in winter. The main wintering region in this area Devínske lake and part of Moravia River (western Slovakia). Currently, a maximum of 30 individuals winter in our country. This species of ducks seeks out larger watercourses and adequately overgrown stagnant waters. Overgrown lakes, as well as large bodies of water, are avoided. The population trend in the EU is stable.

A nest made of foliage and grass by the water is always very well hidden. The nesting dimple is lined with down. The female lays 7 – 10 cream-yellow eggs in the second half of May. Incubation lasts 22 – 23 days. Chicks soon after hatching follow the female to the water. After six weeks, they can fly. They sexually mature at the age of one year.

Food is created by vegetative parts of various species of aquatic and moisture-loving plants. They also collect seeds of sedge, grains and lichens. They also eat molluscs and insects.

According to Slovak legislation, as a species of national importance, it has a social value of 920 €. It is included among the hunting game with year-round protection.

Mallard (*Anas platyrhynchos*)



Richard Bartz, wikimedia.org

The drake is slightly larger than the duck. An adult drake weighs up to 1.3 kg, a duck 1.1 kg.

In our country common throughout the territory. The population fluctuates between 12 – 20 thousand nesting pairs. It prefers all the waters, especially shallow, rich in animals and vegetation of aquatic plants.

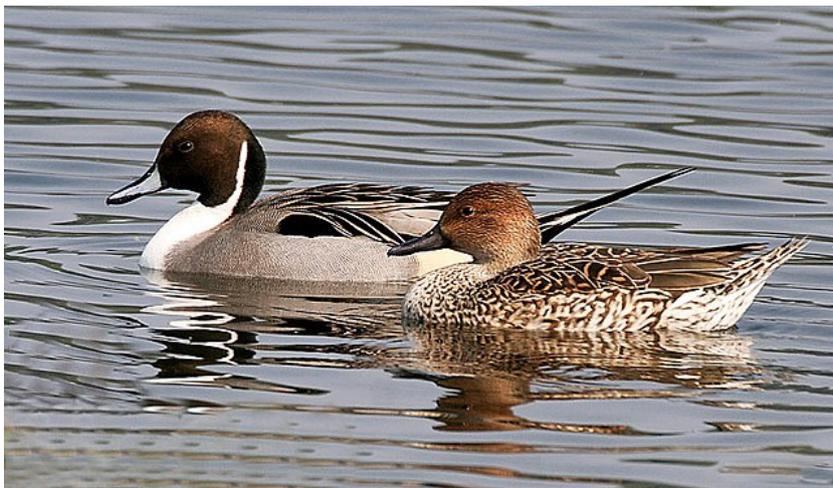
Pairs are formed already in wintering grounds, and already in the autumn there is both lekking and mating, which takes place on the water. Nesting begins in March, only the female builds a nest in the most diverse places; It blends perfectly with the surroundings, often covered with a bunch of grass and lined with down. From 6 – 12 monochromatic greenish or yellowish eggs, completely independent ducklings hatch after 22 – 28 days. Our ducks are permanent,

migratory or fly to shorter distances (they winter in the western Mediterranean). In turn, populations from the northeast come to our region. Birds mate on wintering grounds, regardless of their origin, and so the population mixes.

The food is very varied – plants from algae to grasses, seeds and fruits, they also graze in the fields, from animals feeds aquatic insects, crustaceans, leeches, molluscs and amphibian larvae. On the shallows, he immerses only his beak and head with a neck in the water, filtering the food sources.

It is classified as a species of national importance with a social value of 230 € and is included to the hunting species with a hunting period from September 1 to January 31 . The annual harvest is less than 10,000 individuals.

Northern pintail (*Anas acuta*)



J.M.Garg, wikimedia.org

Both sexes are almost the same size, drake up to 1.1 kg, duck up to 0.9 kg.

In Slovakia, nesting has been found only rarely in southern locations. Quite regularly, although infrequently, nesting has been found in eastern Slovakia. Currently, 0 – 5 pairs nest in our country and 5 – 30 individuals winter. The population trend in the Slovak Republic is fluctuating, with a medium decline in the EU.

It arrives at the nesting sites already in pairs. The lekking is similar to that of a mallard with the characteristic flight of a group of birds low above the surface, the birds have a neck s-shaped. A nest is made of dry material is always on the ground, in the grass or in the bunches of sedge. It is placed far from the water and is not very hidden. Both sexes are involved in the choice of place, but only the female builds the nest. The nesting dimple is lined with dry material

and down. The first egg is laid by the female in early April. In full laying, there are usually 8 – 9 brownish-greenish eggs. After 22 – 23 days, ducklings hatch, they fly very well, swim and dive. After 6 weeks, they are able to fly. In September-November, whole families fly to wintering grounds.

The plant and animal components are evenly represented in the diet. It collects vegetative parts and seeds of aquatic and coastal plants, larvae and adult individuals of insects, eggs, amphibian larvae, tiny frogs, occasionally even fish roe. When collecting food, it does not sink, but only immerse the head.

According to Slovak legislation, as a species of national importance, it has a social value of 2300 €. It is included to the hunting game with year-round protection.

Eurasian teal (*Anas crecca*)



Gailhampshire from Cradley, Malvern, U.K, [wikimedia.org](https://commons.wikimedia.org/wiki/File:Gailhampshire.jpg)

Out of reproduction season, plumage in both sexes resembles the plumage of a female. Both sexes are the same size, weighing up to 0.4 kg.

It is estimated that only 0 – 5 pairs nest in Slovakia. About 500 – 1,000 individuals winter in our country. They search for areas with ponds, but also waterlogged and swampy meadows. The population trend in the Slovak Republic is slight decreasing.

In March-April, they fly to their nesting sites. The lekking is similar to that of other ducks. The nest is built by females in dense coastal vegetation, from plant debris from the surrounding area and lined with dark down. In mid-April, she lays the first of 8 – 10 eggs.

These are creamy greyish with a green tinge. After 22 – 25 days, chicks hatch, and already on the first day after hatching follow the mother to the water, dive excellently and run on the ground much better than ducklings of other species. In the age of 1 month, they begin to fly, they are sexually mature at the age of 1 year. Our population is predominantly migratory.

Plant food prevails – seeds of various aquatic and moisture-loving plants. First of all, chicks seek animal food, most often are larvae and imagoes of various species of aquatic insects, small molluscs, crustaceans and tadpoles. They collect food in shallow waters, where they reach the bottom without diving. In deep water, they collect food only from the surface.

According to Slovak legislation, as a species of national importance, it has a social value of 920 €. It is included among the hunting game with year-round protection.

Common pochard (*Aythya ferina*)



Tony Hisgett from Birmingham, UK, [wikimedia.org](https://commons.wikimedia.org/wiki/File:Aythya_ferina.jpg)

Both sexes are almost the same size (up to 1.3 kg).

The current nesting area is limited to lowlands or valleys of large rivers in the southern part of Slovakia. The main nesting habitat are both small and larger ponds and small bodies of water. The numbers of nesting pairs range from individual pairs in small locations to larger concentrations on pond systems. During migration, it occurs throughout Slovakia, in basins and river valleys. In total, 300 – 500 pairs nest in our country and 9,000 – 10,000 individuals winter. The population trend in the Slovak Republic is slight increasing, in the EU slight decreasing.

Common pochard flies to the nesting sites in pairs. The lekking is accompanied by a series of typical rituals and vocal expressions. He builds his nest in dense coastal vegetation right next to the water, usually from fresh plant parts. Nests are often close to each other. In the second third of April, the female lays 5 – 12 large greyish to greenish eggs with a very fragile, like oily shell. At a high nesting density, common pochard, like other species of pochards, lay eggs even in foreign nests. The duck sits on eggs for 24 – 26 days. Ducklings fly after 7 – 8 weeks.

At the time of nesting, in the diet the plant component predominates, mainly young shoots, buds and seeds of aquatic plants. Of the animals, it most often collects molluscs, larvae of aquatic insects, larvae of amphibians or small fish. It feeds on the food of domestic ducks kept on ponds. At the time of migration and in wintering grounds, the animal component prevails in the diet. For food, it usually dives to a depth of 1 m.

According to Slovak legislation, as a species of national importance, it has a social value of 460 €. As a hunting game, it has hunting period from October 1 to January 15. No harvest was reported in 2021.

Tufted duck (*Aythya fuligula*)



Alexis Lours, [wikimedia.org](https://commons.wikimedia.org/wiki/File:Tufted_duck.jpg)

The female is more mat in colour. Both sexes are almost the same size, up to 1 kg.

In Slovakia, nesting of the tufted duck was first registered in 1957 near Trnava (western Slovakia). Since then, it has started nesting occasionally in Liptovská Mara (water basin in middle Slovakia) and on several water reservoirs and pond systems. The population trend shows

an increase, the nesting area is expanding. The course of migration is very similar to that of the common pochard, both in abundance and in the choice of sites where it stops. In Slovakia, 250 – 500 pairs nest and 23,000 individuals winter. It nests in all areas with ponds, up to 900 m above sea level. It prefers standing or slow-flowing waters with abundant coastal vegetation. For nesting, he also searches for small, but overgrown bodies of water. Although the population trend in the Slovak Republic is experiencing a significant increase, a medium decline is registered in the EU.

They migrate to the nesting site in flocks, in April individual pairs separate and occupy nesting sites. They build a nest from the remains of reeds (sometimes with a shelter of bent plants) directly on the water or in close proximity to it, they also use old nests of other waterfowl. The nesting dimple is filled with down. From mid-May, the female lays 5 – 12 greenish-grey eggs. After 23 – 25 days, chicks hatch, in the age of seven weeks they are already flying. As a rule, they fly to the wintering ground in October-November. Food is mainly animal, especially molluscs, larvae of aquatic insects, crustaceans and small fish. For food, dives to a depth of 14 m.

According to Slovak legislation, as a species of national importance, it has a social value of 460 €. As a hunting game, it can be hunted in the hunting period from October 1 to January 15. No harvest was reported in 2021.

1.5 Bustards (*Otidiformes*)

Great bustard (*Otis tarda*)



Patrick Hacker, wikimedia.org

A large bird with a long neck and a powerful beak, the weight of roosters is 6.5 – 18 kg, hens 3.2 – 5.2 kg. Belongs to the heaviest European flying birds. This is a very vigilant bird living in flocks.

Almost everywhere there has been a strong decline, the European population consists of only about 36,000 individuals. In Slovakia, it inhabits the cultural steppe in lowlands and uplands up to an altitude of 300 m. According to current data, there are 0 – 5 individuals in the Slovak Republic, the number may increase in winter. The ideal habitat for nesting is extensive stands of clover, young grain, and root crops. The population trend in the EU is stable, with a significant decline in the Slovak Republic.

Predominantly a permanent resident, polygamous species. A very noticeable lekking has been going on since March. The nesting dimple without lining is modified by the hen, and from April it lays 2 – 3 brown – green to greenish eggs with darker spots. After 23 – 27 days of incubation, chicks hatch, which the hen probably feeds initially, later guides to food. At 6 – 7 weeks, they begin to fly. Roosters mature sexually at 5, hens at 4 years old.

Food is both plant and animal, seeds, fruits and green parts of cultivated plants and weeds, insects, lizards, young of on the ground nesting birds and small mammals.

According to Slovak legislation, as a species of European importance, it has a social value of 5990 €. Although it is classified as a hunting game, it is protected all year round.

1.6 Pigeon and Doves (*Columbiformes*)

Stock dove (*Columba oenas*)

It is smaller than the wood pigeon. The weight of adult birds is 250 – 310 g.

It nests in our country almost continuously in central and eastern Slovakia, 3,500 – 5,500 pairs are registered, in western Slovakia it is widespread mainly in the forests of the Small Carpathians. A typical nesting habitat is old deciduous forests. Population in the EU is moderate declining, in the Slovak Republic it is stable.

Predominantly migratory species. In September and October, it flies to winter in southwestern Europe and North Africa, returns from mid-February and March. It nests in the hollows of various species of trees, also in special boxes, more rarely in rock hollows. It has 2 – 3 clutches per year, consisting of 2 round to oval, pure white eggs. In the incubation, both partners take part. After 16 – 17 days the young hatch, they are fed initially with "pigeon milk" created in the crop, after 10 days with partially digested food. Nesting care, depending on the

weather, lasts about 18 – 30 days. Sexual maturity is reached by doves in the following year. They can cross with both domestic and wood pigeons. In the diet predominate seeds and flower buds of various weeds. It rarely also collects spikes of cereals and grains of corn and vegetative parts of plants, exceptionally also land snails.



MPF, wikimedia.org

According to Slovak legislation, as a species of national importance, it has a social value of 1380 €. Although it belongs to hunting game, it is protected all year round.

Wood pigeon (*Columba palumbus*)

Adult birds weigh up to 700 g.

In Slovakia common and widely distributed species that nests in forest stands of all types up to their upper limit, due to synanthropization in parks, gardens and cemeteries practically throughout the territory. It is estimated that 100,000 – 200,000 pairs nest in Slovakia. The population trend in the EU and Slovakia is increasing.

As a rule, a migratory species, winters in the Mediterranean and southwestern Europe. It migrates at the end of September, returns at the end of February and in March. The nest is built by both partners on trees, rarely on rocks or on the ledges of buildings. It is very simple and sparsely built from twigs. From the end of March, the female regularly lays 2 oval to round,

pure white eggs. Both birds take part in incubation for 15 – 17 days. The youngs initially feed on secretions of the mucous membrane of the crop (the so-called pigeon's milk), later they feed digested plant food from the crop. Youngs are able to fly at 3 – 4 weeks, parents feed them certain time after leaving the nest. They mature sexually in the following year. Pairs are nesting 2 – 3 times a year.



Don Loarie, [wikimedia.org](https://commons.wikimedia.org/wiki/File:Wood_pigeon.jpg)

The food is mostly vegetable – in the spring, germinated leaves of herbs and buds of woody plants, or seeds. Earthworms, tiny terrestrial snails and insects were also recorded. After migration to the wintering grounds, they group into numerous flocks and together feed on the fields after harvesting cereals and perennial forage crops.

The wood pigeon is a species of national significance and has social value of 690 €. Included to the hunting game with a hunting period from 1 August to 31 October. The annual harvest in 2021 was 5560 individuals.

European turtle dove (*Streptopelia turtur*)

It is smaller than the wood pigeon, the weight of adult birds is 125 – 185 g.

In Slovakia, it lives in lower regions, but in open areas it also lives in the mountains, for nesting it seeks a park type of landscape with alleys, windbreaks and solitary trees, margins of

various forests, often stays near the water. In our country, 10 – 20 thousand pairs nest. The population trend is a medium decline in the EU and Slovakia.



Tisha Mukherjee, wikimedia.org

A migratory species with a main wintering ground in tropical Africa. It flies to wintering grounds in September and returns to the nesting sites only in the second half of April. The nest is usually located on the tree branches and in shrubs at a height of 1 – 15 m. It has a very poor construction made of a small number of dry twigs, blades of grass and roots, so it is shallow and almost transparent. The nest is built by both sexes, and both sit on eggs. As a rule, a clutch contains 2 oval, pure white and smooth eggs. After 13 – 16 days, young hatch, which are cared for by parents for 18 – 23 days. Initially, they feed them with secretions from the crop, later with digested food. They can fly at the age of 25 – 30 days, and they mature sexually in the following year. The food consists mostly of seeds of cultural plants, mainly wheat, corn, barley, but also rye, sunflower and poppy. It also collects weed seeds, exceptionally terrestrial snails or insects. It collects food primarily on the ground, mainly in fields and grassy areas.

According to Slovak legislation, as a species of national importance, it has a social value of 920 €. Although it is classified as a hunting game, it is protected all year round.

Eurasian collared dove (*Streptopelia decaocto*)



Zeynel Cebeci, wikimedia.org

In Slovakia, it was first detected in 1936 in Komárno. By 1954, it had settled practically the whole of Slovakia. It is nesting in urban and suburban habitats. It is a numerous and widely distributed species in our country. It is estimated that 40,000 – 80,000 pairs nest in our here. The population trend is a medium increase in the EU. In the Slovak Republic is the population trend stable.

A permanent resident species (exceptionally flying on short distances). It nests several times a year. Couples are formed mainly in winter, together they build a nest on horizontal branches of various trees at a height of 1 – 32 m, but also on the cornices of houses, windows, balconies, and others. The female lays 2 oval, pure white eggs. Both parents incubate them for 13 – 14 days, they feed the hatched youngs with "pigeon milk", and then with digested food from the crop. At the age of 16-19 days, the chicks leave the nest, but the parents feed them for another few days. They mature sexually at the end of the first year of life.

In the diet predominate the plant component, mainly seeds of cultural plants – grain, peas, sunflower, weed seeds, black elderberry berries and vegetative parts of various herbs. Exceptionally it feeds terrestrial snails and earthworms, in winter – garbage. The food collects exclusively on the ground. In large flocks, it searches for easily accessible food sources around livestock farms or grain stores, around containers and garbage bins in housing estates, and also feeds on bird feeders.

The collared dove is a species of national significance with a social value of 50 €. It is a hunting game with a hunting period from August 1 to December 31. The annual harvest is about 2,000 individuals.

1.7 Gruiform (*Gruiformes*)

Eurasian coot (*Fulica atra*)



Alexis Lours, [wikimedia.org](https://commons.wikimedia.org/wiki/File:Fulica atra (1).jpg)

Weight almost 1 kg.

The nesting habitat of coot is in the lowlands and basins of the whole of Slovakia. It prefers stagnant and flowing water overgrown with coastal vegetation; even small solitary ponds are enough. Part of the population can winter on unfrozen waters, but most of our coots migrate to the Mediterranean and Western Europe since October. They return to the nesting site already at the end of February. More couples nest together on ponds, water reservoirs, river branches and swamps. About 4,000 – 8,000 pairs are nesting and 4,000 – 10,000 individuals wintering. The population trend in the EU is a moderate decline, in the Slovak Republic it is stable.

The couples are quite constant. Adult birds usually return to the same nesting sites. During the lekking, various rituals occur on the water, where the birds also mate. The nest is built by both birds almost always on the water on old reeds or bats of fragments of reeds and aquatic plants, the dimple is lined with finer material. In April, the female lays 5 – 10 light yellow to greyish eggs with tiny black-brown or violet-black spots covering the entire area of the egg. Both birds alternate on the incubation of the eggs. After 21 – 24 days, chicks hatch.

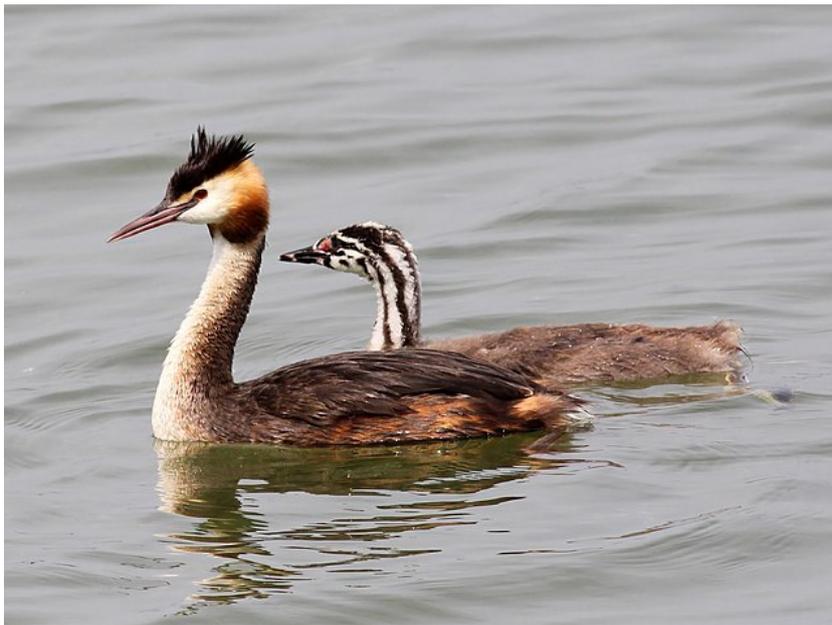
These remain in the nest for 2 – 3 days, then they are followed by parents who take care of them. They reach the ability to fly at the 8 – 9th week. After that, the couples can nest a second time.

The food is plant-based, seeds and green parts of the aquatic plants. In animal food predominate various aquatic molluscs, larvae of aquatic insects, worms, less tadpoles or small fish. They collect food both on the surface and below the water surface at a depth of up to 8 m, only exceptionally on land.

The species of national significance with a social value of about 460 €, is included to the hunting game with a hunting period from October 1 to January 15. In 2021, 14 individuals were caught.

1.8 Grebes (*Podicipediformes*)

Great crested grebe (*Podiceps cristatus*)



Ken Billington, wikimedia.org

A bird has the size of a duck. Both sexes do not differ much in size, weighing up to 1.4 kg.

In our country, they nest in all pond areas and other larger water reservoirs with rich coastal vegetation up to 725 m.a.s.l. During non-nesting period, it prefers calm streams and sea coastline. In the Slovak Republic, 500 – 1000 pairs are nesting and 100 – 500 individuals wintering. The number of grebes is still due to intensive fishpond management.

A migratory species wintering in the Mediterranean. It nests singly, rarely in a smaller colony. Birds arrive from the wintering region already paired and occupy the nesting territory. They mate always on the nest. This is a pile of plant material with a shallow basin. In mid-April, the female lays the first of 2 – 6 eggs, which are white or bluish. In the incubation, both birds alternate for 25 – 29 days. Hatched chicks are able to swim and dive immediately, but the first days they hide in feathers on the back of the parents, who provide them with food. Chicks are able to fly in about 2.5 months, and then the family breaks up.

The food consists predominantly of fish up to 15 cm in size, roe, various insects, exceptionally plant particles, seeds and algae. They always hunt by diving under the water surface, where they last up to 1 minute and can sink to a depth of up to 40 m. Grebe is included to the hunting game with year-round protection. According to Slovak legislation, it is a species of national significance with a social value of 460 €.

1.9 Charadriiform (*Charadriiformes*)

Eurasian woodcock (*Scolopax rusticola*)



Ronald Slabke, wikimedia.org

Stocky body with short legs and a long straight beak. An adult woodcock weighs 320 – 440 g.

In Slovakia, it regularly nests, the number of lekking roosters ranges from 1500 to 2500. Inhabits most of the territory from the lowlands in about 150 m above sea level to the upper limit of the forest and has also been observed in the subalpine region. It prefers moist deciduous, coniferous, or mixed forests with loose soil rich on earthworms and other suitable food. The population trend in the EU is a moderate decline, in the Slovak Republic it is stable.

A predominantly migratory species, it winters in southwestern Europe and North Africa. It returns in March, and in the evenings, there is a mass lekking, after which, apparently, more males with one hen (polyandry) are gradually mating. The nest lives in waterlogged places near tree trunks, in a bunch of grass, etc. From the end of March, the hen lays 4 yellowish to brownish, greenish-brown, or reddish-spotted eggs. It incubates them for 20 – 21 days. She leads the hatched chicks out of the nest immediately after drying and takes care of them for 5 – 6 weeks. They mature sexually at the end of the first year.

In the diet, worms predominate, but it often hunts insect larvae and small aquatic molluscs and crustaceans. Along with them, it also feeds herb seeds and pebbles, which help crush the chitinous parts of the insects' bodies. They collect the food in damp places with the help of tactile bodies at the end of the upper part of the beak and pull the prey out of the soil as if with tweezers.

According to Slovak legislation, as a species of national significance, it has a social value of 1380 €. According to the Hunting Act, the woodcock is a hunting game with a hunting period from September 1 to November 30. During the spring period of hunting in the past, about 500 individuals were hunted per year, at the autumn period in the present 20 – 30 individuals are harvested.

Common snipe (*Gallinago gallinago*)

Body size like a blackbird with a markedly long beak, both sexes weigh 91 – 115 g.

In our country, it nests regularly, but sparsely, currently about 30 – 100 nesting pairs, mostly in foothill and mountainous areas up to 1400 m above sea level. It inhabits various types of grassy wetlands from sedge wet meadows and pastures, through slatted and transitional peat bogs to swampy steep banks of stagnant waters.

Migratory species, birds fly in September and October to the Mediterranean and southwestern Europe. In March, they return to the nesting sites and immediately after returning

lekking begins. The nest is always on the ground in dense vegetation, it is just a dimple modestly lined with plant material. At the end of March, the female lays 4 eggs of very variable colour, ranging in grey, to reddish-brown with sharply delineated brown spots, often in a spiral. She sits on them alone for 19 – 21 days. The hatched chicks are taken away by the female immediately from the nest. Both parents take care of them, at three weeks the chicks are able to fly, and at five weeks they are fully mature.



Alpsdake, wikimedia.org

The food consists of earthworms and leeches, larvae and imago of various insects, and small aquatic and terrestrial molluscs. Seeds and parts of moisture-loving plants also rarely appear in the diet. It collects food on land, and also in shallow water.

According to Slovak legislation, as a species of national significance, it has a social value of 920 €. Although it is classified as a hunting game, it is protected all year round.

Black headed gull (*Larus ridibundus*)

It is a bird the size of a pigeon, with narrow, long and pointed wings. The weight of adult birds is 205 – 390 g.

For nesting, it prefers larger water reservoirs and ponds with extensive reeds and overgrown islets, river branches and extensive wetlands. During migration and in winter, it lingers on rivers, often in cities, it also occurs in the fields. It is estimated that 10,000 – 11,000 pairs nest in Slovakia. The population trend is declining in both the EU and the Slovak Republic.



Andreas Trepte, wikimedia.org

The migratory species, mild winter can also stay in our country. Wintering on the coast from the Baltic to the Black Sea, returning in early spring. Nests colonial. Nest is built both on solid ground and on floating islands made of the most available material (reed, bat, nettle, etc.). The most attractive places are in the middle of the colony. From mid-April female lays three greenish-brown, grey to brown-spotted eggs. Both parents sit on eggs for 23 – 26 days. The chicks are fed, and food is brought to them for 4 weeks by both parents. They mature sexually at 2 years old.

Food is seasonally variable, predominantly animal: insects (shrews, two-winged midges, caterpillars) and earthworms, ploughed voles, fish and amphibians, as well as carcasses and garbage. In summer, it eats, for example, cherries and post-harvest grain rests. Collects food on land, from water, and also hunts in the air. At the time of nesting, it flies for food up to 15 km.

Species of national significance, with a social value of 230 €. Although it is classified as a hunting game, it is protected all year round. However, on fishponds and ponds with hatching fish, it is possible to harvest the gull all year round, and on other ponds from August

1 to November 30. It is also possible to hunt gulls all year round in pheasantries. However, in recent years the harvest is very low.

1.10 *Suliformes / Phalacrocoraciformes*

Great cormorant (*Phalacrocorax carbo*)



JJ Harrison, [wikimedia.org](https://commons.wikimedia.org/wiki/File:Phalacrocorax_carbo.jpg)

Medium-sized bird. The male weighs up to 2.8 kg, the female 2.6 kg.

In the Slovak Republic nests in the number of 50 – 250 pairs. The number of wintering individuals is from 6000 to 9000.

Our birds winter in the Eastern Mediterranean, cormorants from the north and east winter in our country. Since March, they nest in colonies, sometimes with other species of birds, on little-visited islets. Nests of branches, reeds and grass are in the crowns of trees, have an outer diameter of up to 60 cm and are built by both partners. From March, the female lays 2 – 3 light blue or blue-green eggs with a strong calcareous coating. Both parents sit for 23 – 24 days. Chicks hatch blind and almost bare, both parents feed them directly from the crop. At 2 months, the chicks are able to fly, they mature sexually at the age of 2 – 3 years.

The food consists mainly of fish 20 – 25 cm in size (about 400 g per day), rarer insects, molluscs, amphibians and plant residues. It sinks to a depth of 9 m.

According to Slovak legislation, as a species of national significance, it has a social value of 460 €. Its abundance is increasing, which provokes efforts to reduce it. The great cormorant does not belong to the game, it is protected all year round. Possible shooting or trapping is carried out by hunters upon request and on the basis of the permission of the Ministry of Environment of the Slovak Republic.

1.11 Pelecaniform (*Pelecaniformes*)

Grey heron (*Ardea cinerea*)

Large slender birds with a long wedge-shaped beak and long legs, differ in weight (male up to 2 kg, female 1.1 kg).

They nest throughout the Slovak Republic, mostly in pond areas; a total of about 500 – 1 000 pairs. They hunt in swamps, on the banks of reservoirs and in the fields, even in higher positions (nesting up to 730 m above sea level).

A predominantly migratory species, it winters from the Mediterranean to West Africa, increasingly wintering also in our country. It arrives in February, nests in colonies high in the crowns of trees (exceptionally in reeds), nest from branches and with a diameter up to 1 m. The female lays 3 – 4 light blue-green eggs from March at a 2 – 4 daily interval. The incubation period is 25 – 28 days, chicks hatch gradually. Both parents take turns sitting and feeding. At the age of 8 – 9 weeks, the chicks already fly well, they mature sexually at 2 years.



JJ Harrison, wikimedia.org

The food consists only of animals – fish, also small vertebrates (in the fields voles), crustaceans, molluscs and insects. He searches for carp species of fish floating near the water surface, with a length of 14 – 16 cm, preferring dead rather than alive. An adult bird consumes about 330 g of food per day, flying for food up to 20 km away.

According to Slovak legislation, it is a species of national significance, with a social value of 920 € despite the strong increase in population size. It is included among the hunting game with year-round protection.

1.12 Diurnal birds of prey (*Accipitriformes*)

Northern goshawk (*Accipiter gentilis*)

It is a medium-sized bird of prey, a female about the size of a buzzard, a male a third smaller. The weight in adulthood – 760 g male, 1,200 g female.

It inhabits both lowland and mountain forests of all types, nesting in overgrown vegetation; about 900 – 1,200 pairs nest in Slovakia. The population trend is slightly increasing in the EU, while in the Slovak Republic there is a slight decrease.

They form permanent pairs that have a permanent hunting ground about 5 km² (according to the food offer). Since March, but also much earlier, begin the wedding flights. They choose together a place for the nest at a height of 7 – 25 m, the male build it, and the female finish it with lining. It is always a big nest on a tree, built from branches, lined with dry grass, stems and bark. In its area, the pair has several nests, which irregularly alternate and modify. From the end of March, the female, with an interval of 2 – 4 days, lays 3 – 4 light greenish or bluish eggs without spots, sits already on the first (sometimes the male sits), incubation lasts 35 – 40 days, and the chicks hatch gradually. The female first week of the offspring warms up on the nest, the male brings food. Youngs fly at 6 weeks. After 50 days of life, parents give the youngs food in the flight, taking care of them until the age of 70 days.



Norbert Kenntner, [wikimedia.org](https://commons.wikimedia.org/wiki/File:Buteo_buteo_20140401.jpg)

It is one of our most powerful hunters. He chooses prey (rodents, hares, rabbits, pigeons, crow-like and land fowl birds, including poultry) when flying not far above the stand, attacking

it with a sharp flight and knocking it down with its claws. Exceptionally feeds lizards, insects and carcasses. The proportion of birds in the diet increases in winter.

According to Slovak legislation, as a species of national significance, it has a social value of 3220 €. It belongs to hunting game, but it is protected all year round. His possible hunting by trapping in hawk baskets is subject to the permission of the Ministry of Environment of the Slovak Republic.

Rough-legged hawk (*Buteo lagopus*)



Walter Siegmund, [wikimedia.org](https://commons.wikimedia.org/wiki/File:Buteo_lagopus.jpg)

In size and appearance, it resembles a buzzard.

In Slovakia, the Rough-legged hawk does not nest, but winters regularly, most often in fields with a high population density of field vole in lowland areas, where it is very often found

with the buzzard. The estimated number of wintering individuals is 800 – 2,500 specimens. On the nesting sites populates the open terrain of the Arctic tundra and forest tundra.

Pairs are permanent, together they return to the nesting sites. They nest on the ground, on rocks, on low trees, in places with good views. The nest consists of various branches, and also herbs of blueberries, dry grass, moss and lichens. At the end of April, the female lays 3 – 4 eggs similar to those of a forest mouse. Only the female sits on the eggs. Incubation lasts 31 days. Chicks hatch gradually. They are fed by the female; the male brings prey. Nesting care lasts 40 days.

The Dominant component of food is small mammals. At the nesting sites, it mainly hunts lumberjacks and other mammals up to the size of a hare and smaller species of birds. On wintering grounds, field vole predominates in the diet, in addition, the remains of insectivores and hares have been identified. Mammals account for up to 97 percent of the total volume of food. The rest were birds (field partridge, black raven, pheasant hunting, mallard), amphibians and reptiles.

According to Slovak legislation, as a species of national importance, it has a social value of 920,- €. It belongs to hunting game, but it is protected all year round.

Common buzzard (*Buteo buteo*)

In body size, both sexes are almost no different. The weight of an adult male is up to 1 kg, the female 1.1 kg.

Throughout our territory and in all types of environments, they belong to the most numerous species of birds of prey. It nests in forests of all kinds and sizes, including small field forests in the number of 10,000 – 15,000 pairs. The population trend in the EU is a small increase, in the Slovak Republic it is stable.

The lekking takes place from the end of February. Couples are usually together for 1 year. They use the nest for more years, it is on trees at a height of 2 – 28 m, but also power line poles or on low bushes. It consists primarily of branches, the lining is made of grass, moss, hairs, sometimes completely absent. The female lays 3 – 4 bluish or greenish eggs with rusty-brown spots with an interval of 2 – 3 days. Incubation lasts 33 – 35 days (mainly the female sits), chicks hatch every second day. The male brings food and, perhaps, also helps in warming them. Nesting care lasts about 50 days, just as long after that, parents still feed them nearby.



Charles J. Sharp, wikimedia.org

The food consists mainly of mammals (rodents, common shrew, weasels, rarely young hares), occasionally birds (songbirds, galliforms and poultry only insignificantly) and insects. The Buzzards often and feeds on cadavers and animals killed on the road. They hunt from a circular or trembling flight on the spot and rush headlong at prey. They also use unusual food sources, e.g., reptiles, fish, amphibians and some species of abundant insects.

According to Slovak legislation, as a species of national importance, it has a social value of 920, - €. It belongs to hunting game, but it is protected all year round. Its possible hunting by trapping in hawk-baskets is subject to the permission of the Ministry of Environment of the Slovak Republic.

1.13 Passerines (*Passeriformes*)

Eurasian jay (*Garrulus glandarius*)



Luc Viatour, wikimedia.org

A bird the size of a collared dove. Adult birds weigh 120 – 220 g, the female is slightly smaller than the male.

The species nests almost all over Slovakia in forested areas, it is absent only in the southwest. It is estimated that 12,500 – 25,000 pairs nest in Slovakia. For nesting, he searches for smaller forest complexes with abundant shrubby undergrowth. It is also increasingly penetrating cities. The population trend is declining.

Permanent resident, occasionally flying to the short distances, only some young birds migrate even more than 100 km away. Since the beginning of March, nesting pairs are formed. The nest in the crowns of coniferous and deciduous trees 7 – 25 m high is built by both birds from dry twigs, they line it with roots and fine plant fragments. Once a year, the female lays 5 – 7 grey-green, olive-densely dotted eggs at one-day intervals. She sits on them alone; the male feeds her. After 16 – 19 days, chicks hatch, both parents feed them on the nest for about 20 days, and then still some time outside the nest. They mature in the second year of life.

Food is variable and seasonally different. In autumn, and in winter it is dominated by a plant component, in the vegetation period by an animal component. Feeds dry and pulpy fruits (acorns, beechmasts, fruits, rose hips) seeds of cereals, legumes and weeds. Collects various

insects, earthworms, small forest rodents, frogs, lizards, plunder the nests of songbirds. He collects food both on the ground and in the crowns of trees.

Eurasian jay is a species of national importance with a social value of 140 €. It is classified as hunting game with a hunting period me from 1 June to the end of February in hunting regions for small game, in other hunting grounds from 20 September to the end of February. The annual harvest is about 1700 individuals.

Eurasian magpie (*Pica pica*)



Amélie Tsaag Valren, wikimedia.org

A bird the size of a collared dove. Adult individuals weigh 160 – 250 g.

It inhabits almost the entire territory of Slovakia from the lowlands to the mountainous areas at 1,000 m above sea level. In Slovakia nest 30,000 – 60,000 pairs and winter 70,000 – 140,000 individuals. Prefers open country with small forests, alleys, windbreaks, or solitary growing trees, increasingly it occurs and more successfully nests in cities. The population trend is a medium decline in the EU, and a slight increase in the Slovak Republic.

A permanent resident bird only rarely flies over greater distances. Already at the end of February, magpies are grouped into smaller flocks. The nest is usually built of dry branches, which also form a canopy, both high on the trees in the thin end parts of the branches, and low above the ground in inaccessible blackthorn bushes. The nest is built by both partners, and often several of them are built. The female lays 5 – 8 greenish, densely olive-spotted eggs. As a rule,

she sits on them alone, the male feeds her. After 17 – 18 days, the chicks hatch, fed by both parents. After four weeks, they leave the nest and with their parents stay on the nesting site until spring.

The food is very diverse, especially insects, small rodents (mainly field voles), eggs and chicks of birds, lizards and frogs. In the plant component, cereals, corn, cherry fruits, plums, rose hips, various berries and weed seeds predominate. It also feeds on carcasses and animals killed on roads. It collects food mainly on the ground, but insects can also hunt in trees.

Species of national significance with a social value of 140 €. In Slovakia, it is classified as a hunting game and can be hunted from June 1 to the end of February in hunting areas with small game and in other hunting grounds from September 10 to the end of February. The annual harvest is about 4,000 individuals.

Eurasian jackdaw (*Corvus monedula*)



Jaroslav Slamečka

A bird the size of a collared dove. Adult birds weigh from 175 to 325 g.

Inhabits the greater part of the territory of Slovakia from lowlands to mountainous areas up to about 1,000 m above sea level. Most often, nests in the East and Danube lowlands, and in northern Slovakia in the number of 3,000 – 5,000 pairs. Prefers the habitats with plenty of hollow trees, but also human settlements, churches, castle ruins, old quarries and rock walls, it also inhabits the human settlements. The population trend in the EU is stable, with a decrease in the Slovak Republic.

A partially migratory species, only males from northeastern Europe completely leave their nesting sites. They usually spend the winter months in the company of ravens. Young birds create the couples already in the autumn, and their relationship is probably permanent. They return to the nesting sites at the end of February and almost immediately begin to occupy and modify the nests. This is most often located in the hollows of various trees, holes in rocks or in niches of buildings. They also occupy artificial boxes or old nests of predators. They can use the same nest for several years in a row. The nest is built by both partners. The female lays 3 – 6 light green eggs with a bluish tinge, evenly covered with greenish-brown spots. Mainly the female sits on them, the chicks hatch after 15 – 20 days. Nesting care lasts about 5 weeks, the chicks are fed by both parents. They mature sexually in the first year of life.

Adults feed on about 60% of the plant species all year round – the seeds of plants, mainly cereals, larvae of various species of beetles and other insects. In the diet of chicks, insects predominate, mainly beetles, butterflies and their stages of development. Jackdaws collect food on the ground, in all possible habitats except for the forest environment. Often, especially in winter, various kitchen residues appear in the diet, which the jackdaws collect in garbage cans and near human settlements.

According to Slovak legislation, as a species of national importance, it has a social value of 920 €. The jackdaw is classified as a hunting game with year-round protection in Slovakia.

Rook (*Corvus frugilegus*)



Brian Snelson, wikimedia.org

Slightly smaller than a crow, with a slimmer beak. It is a social species often residing in large flocks. Adult birds weigh about 0.5 kg.

In Slovakia, about 7,000 – 10,000 pairs nest on plains and hills, especially in the Pannonian Region. It builds nests in alleys, windbreaks, field forests, as well as in urban agglomerations. They form colonies in the nesting sites, only rarely nesting in small groups. It searches for agriculturally managed plains or hills with islets of forest that serve as nesting or overnight staying. It also lives in city parks and near human settlements. The population trend is experiencing a slight decrease in the Slovak Republic.

Pairs are formed already at a time when young birds are not sexually mature. They arrive to the nesting sites at the end of February and begin to repair the nests. When there is a lack of them in the colony, they build new nests. With a repaired nest, a lekking occurs. As a rule, the nest is located in tree branches 7 – 30 m high above the ground. Most often they build nests on various deciduous trees. There can be several dozens of them on one tree. The base of the nest is formed by dry branches, the outer part of the nesting dimple is covered with clay, the basin is lined with dry grass and foliage. The nest is built by both birds, before finishing, one of the pair still guards it. After all, ravens often steal building material. The female lays 3 – 5 blue-green eggs with grey or violet-grey spots. She sits alone on the eggs. After 17 – 20 days, chicks hatch. Initially, the male feeds both the chicks and the female, the female begins to feed the chicks later. Nesting care lasts about 30 days. If the chicks are able to fly, they leave the nest, but remain with their parents in one flock. They mature sexually in the third year of life.

Food depends on the season and local offer. They often focus on specific food sources, especially in winter, when they spend whole days picking up germinated cereals or visiting urban garbage dumps in big flocks. In summer, they also collect various insects, in the autumn they search for freshly ploughed fields and hunt small rodents, or they select various seeds and plant residues from piles of livestock manure. They collect food while walking on the ground up to 4 km from the home colony.

Raven is a species of national importance with a social value of 230 €. It is classified as a hunting game with a hunting period from August 1 to the end of January 20. The annual harvest is up to 200 individuals.

Carrion crow (*Corvus corone*)

The black crow is slightly larger than the rook, with a flatter head with a stronger beak. It weighs about 0.5 kg.

Black crow lives in Western and Central Europe. In the border zone of their distribution, they can interbreed with the hooded crow. The offspring from crossbreeding has different range

of grey colour and is also fertile. The carrion crow is widespread mainly in the western part and gradually penetrates more and more to the east, as far as eastern Moravia. It is rarely found in Slovakia.



Alexis Lours, wikimedia.org

It nests singly, once a year, pairs re lifelong stable. The nest is built by both parents from mid-March to early May, usually on a tall tree. It is made of branches, clay, many times also from various garbage, the dimple is lined with dry grass, fur and feathers. In the clutch, there are usually 4 – 6 eggs, on a greenish to bluish base olive to black-brown spotted. They are incubated only by the female for 18 – 21 days, the male feeds her for the period of incubation. Nesting care for chicks takes 30 – 35 days. After leaving the nest, families live together until winter. Individuals mature sexually in the 3rd-4th year of life.

Food is very diverse, seasonally variable. It hunts small to medium-sized mammals and birds, often feeds their eggs, also collects frogs, invertebrates e.g. earthworms, terrestrial and aquatic gastropods and insects, feeds on carcasses. Cereals, weed seeds, fruits and other fruits also appear in the diet. It gets food primarily by harvesting or hunting on the ground.

According to Slovak legislation, as a species of national significance, it has a social value of 370 €.

Hooded crow (*Corvus cornix*)



Petar Milošević, wikimedia.org

The hooded crow is slightly more robust than the black crow, therefore the head may seem slightly smaller. Adult birds weigh 400 – 600 g.

The hooded crow is a permanent resident, but it has a significantly greater tendency to wander after the nesting season and fly over different distances in the winter season compared with carrion crow. The abundance of hooded crows in the Slovak Republic varies between 8,000 and 15,000 pairs. The hooded crow is a species that prefers the open country, mosaic-like environment with fields and meadows, with field forests, linear vegetation along roads and railway tracks and other types of structural vegetation. It also nests on the margins of forests. It lives higher into the mountains than the carrion crow. In some countries, urban populations are common, nesting not only on the margins of cities, but also directly in their centres.

It nests singly, the couples are permanent and change only with the death of one individual from the pair. The lekking is similar to that of the carrion crow, it takes place on warmer days already in late February and early March. The nest is usually built near to a trunk on tall trees. Built by both partners. Complete clutch consists of 4-6 greenish-blue, olive to black-brown spotted eggs. Only the female, whose male carries food, incubates them. The incubation period varies between 18 – 21 days. The duration of nesting care is 30-35 days. Families live together until winter, sometimes they join other individuals and create large flocks. Young are sexually mature at the age of 3 – 4 years.

It belongs to omnivores. Of the animals, it feeds small to medium-sized mammals, birds and their eggs, frogs, crustaceans, molluscs, earthworms, insects, etc. It also feeds carcasses, including animals killed on the roads. It can hunt even small fish. The plant component consists of seeds of weeds and cultural plants and fruits of forest and fruit trees.

According to Slovak legislation, as a species of national significance, it has a social value of 180 €. The hooded crow is a game with a hunting period from August 1 to February 10 (in hunting regions with small game from June 1 to the end of February).

Common raven (*Corvus corax*)



Diliff, wikimedia.org

Our largest representative of corvids with a body size like buzzard with strong long black beak. Adult birds weigh up to 1.5 kg.

The black raven inhabits almost the entire territory of Slovakia from lowlands to mountainous areas, up to the upper the forest line in the altitude of 2,000 m above sea level. In Slovakia nest 2,000 – 4,000 pairs.

A permanent resident species. It nests singly, the couples are permanent and occupy the nesting site already in mid-January. The nest is built high by both partners on trees (up to 30 m), preferably on beech, spruce, on rock ledges or even high-voltage masts. For construction, they use dry branches, strengthen them with clay and tufts of grasses. With repeated use, it can take on considerable dimensions. The clutch contains of 4 – 6 -greenish to bluish, black-brown spotted eggs, which the female lays at two-day intervals and sits on them alone for 19 – 21 days.

The chicks are fed by both parents. After 40 – 50 days, they leave the nest, although they are not yet fully capable of flight, and the parents continue to feed them. The family keeps together until the end of winter, the young ones probably start to nest for the first time in 2 – 4 years.

Food is both plant and animal based, from seeds and fruits to a wide variety of animals. He actively hunts small rodents, amphibians, larger insects or molluscs, feeds eggs and young from bird nests. An essential component of food can be carcasses, both fresh and in a considerable degree of decomposition. Excellent eyesight, hearing and orientation in the field allow the raven to find the remains of shot game animal.

The raven is a species of national significance with a social value of 370 €. It is included to the hunting game with year-round protection.

Fieldfare (*Turdus pilaris*)



Frankie Fouganthin, wikimedia.org

It is as big as a blackbird. Adult birds weigh 75 – 140 g.

It nests practically throughout Slovakia, numbering 12,000 – 25,000 pairs. It occurs in the middle and higher positions up to the upper forest line. He prefers landscapes of park character with numerous forests. The population trend is increasing.

Mostly migratory species, wintering grounds from Central Europe to the Mediterranean. Nests most often in colonies. Nests is built high on a tree near a trunk. Only the female builds zhe nest and sits on the eggs. From 4 – 6 blue-green eggs, densely dotted with tiny rusty-brown spots, chicks hatch after 12 – 14 days. They are fed by both parents for 2 weeks after leaving the nest. They mature sexually in the first to second year of life. Fieldfare nests twice a year.

The food is seasonally variable: insects, gastropods, earthworms, fruits of juniper, blackthorn and other trees.

According to Slovak legislation, as a species of national significance, it has a social value of 230 €. Fieldfare is classified as a hunting game with year-round protection in Slovakia.

2 Game mammals

2.1 Characteristics of mammals

Game mammals is a zoologically diverse group of those mammalian species that are included in Hunting Act. The mammals are the most developed class of vertebrates, as well as all animals. Its evolutionary success is determined primarily by the development of the following three abilities and adaptations:

1. The ability to maintain a constant body temperature by internal mechanisms.
2. Rebuilding the brain and increasing its capabilities.
3. The embryonic phase of ontogenetic development in the mother's body and further nutrition of the cubs with a special product of modified skin glands (milk).

All other morphological and physiological adaptations that characterize the evolutionary level of mammals are also related to these main adaptations. Only mammals have a body covered with skin with a special thermal insulation layer, a fur that consists of individual hairs. The main types of hair are long and firm guard hairs, which are crucial for the overall character and coloring of the coat. Shorter and finer fur or wool hairs primarily have an insulating function and form the so-called underfur. In some parts of the body there are modified hairs, e.g. tactile hairs, vibrissae, called whiskers provide sensory function, special purpose hair, mane, barbs, bristles, eyelashes, etc. Depending on the season, there is a regular seasonal change of coat, which is called molt.

2.1.1 Dentition

The development of specialized teeth of mammals, the development of the lower jaw, the junction of the lower jaw with the neurocranium, the development of the maxillary muscles is associated with a more efficient obtaining of food. This is enabled also by the complete separation of the respiratory and digestive tracts. The teeth of mammals are heterodont, they are distinguished in shape into incisors, canines, premolars and molars. By the cubs first grow deciduous teeth (also primary teeth or milk teeth), which later replace the permanent (or secondary) teeth. During the development of permanent teeth, various differences by animal species developed due to food specialization. For example, the absence of some types of teeth

in the dentition (rodents, most species of cloven-hoofed game, etc.) or a functional change in the shape of some teeth (weapons in a wild boar).

2.1.2 Respiratory system

In mammals, a more effective alveolar type of lung has also been developed, creating a muscular diaphragm that participates in respiratory movements and at the same time divides the thoracic and abdominal cavities.

2.1.3 Specificities of mammals

The blood circulation system was also developed and improved, it was developed more powerful four-part heart, The development of the psychic abilities of mammals was made possible by several adaptations. Both morphological and functional adaptations of the sense organs, mainly the improvement of the olfactory organ or the creation of special taste buds or sensory bodies in the skin that react to touch. However, the highest degree of development reached the vestibular system that helps the body to maintain its postural equilibrium The information furnished by the vestibular system is also essential for coordinating the position of the head and the movement of the eyes. A unique morphological adaptation is the three bones in the middle ear – the hammer (*malleus*), anvil (*incus*) and stirrup (*stapes*) – and the outer ear, which is mostly protected by the auricle. The inner ear performs the function of the auditory, as well as vestibular organ.

The development of the skin glands enabled better thermoregulation (sweat glands), better social communication (odor glands), but the biggest advance lies in the nutrition of young with breast milk (mammary glands).

The emergence of the placenta, viviparousness, and further development of intensive care of offspring created closer relationships between parents and cubs, the resulting effect is developed social relations in all mammal species.

2.1.4 The appearance of game mammals

The appearance of game mammals is diverse according to the way of life and adaptation to different environments The axis of the body and the entire skeleton is formed by the spine, composed of vertebrae. The cervical part of the spine is formed mostly by seven vertebrae. The

first two of them (the carrier and the suppository) have a peculiar shape and provide a movable connection of the skull. Ribs are connected with the thoracic vertebrae, forming a sternum as protection of the heart and lungs. The limbs are attached to the skeleton with a shoulder girdles (forelimb) and hip joints (hindlimb). Initially, the mammals had five fingers, but in the course of development, in some groups of mammals was registered a reduction in individual fingers, or the transformation of the horn claws into hooves.

The skeleton, as the basic building block of the body, is clamped with skeletal muscle, which forms a crucial part of the mass of mammals, and in game it is referred to as game meat (venison). The muscles are divided into certain sets (chewing musculature, chest musculature, pelvic area, etc.) that provide vital functions (for example, food intake, breathing, movement) and at the same time together create the overall typical appearance of individual mammalian species. This appearance is also complemented in detail by the morphological deposition and the current physiological state of the internal organs, or, for example, the psychic mood. However, the most striking changes in the appearance of the animal are associated with the physiological aging of the organism.

2.1.5 Horns and antlers

All species of our cloven-hoofed game, with the exception of wild boars, are characterized by the existence of special bone formations and skin derivatives – horns and antlers. The horns grow on the bone base of the protrusions of the forehead bone, into which the forehead cavity interferes in adult individuals. The surface of the corner protrusions is broken by numerous holes through which the vessels supplying blood and nutrients to the suede. Suede covers the entire corner protrusions, fuses with the occiput, and produces a horn substance on the surface. The horn is gradually layered and envelops the corner protrusions of the forehead bone. The horns still grow unevenly, so more or less noticeable annual rings form on them, by which the age of the animal can be determined. Antlers are bone formations growing annually from the suckers of the forehead bone, which are called pedicles. The development of antlers is a very complex physiological process related to the hormonal activity of the genital organs of males, respectively, the production of the hormone testosterone and hormones produced by the pituitary gland. On the buds, an antler trunk enveloped in skin (the so-called bast) grows, under which the vessels supply calcium salts to the antler mass. When the antler gradually hardens with the deposition of calcium, the blood supply of building

substances stops, the skin on the antler dies, and the animals remove it by hammering it against shrubs and trees.

At the end of seasonal sexual activity, the supply of nutrients also stops, and the bone antler is disrupted to such an extent at the interface between the bud and the antler rosette that the antler breaks off. This phenomenon is called antler shedding. At the site of the break, a fold of soft tissue from the occiput forms on the bud, which heals the wound and forms the basis of a new antler. The shape of the antlers and their branching is characteristic of individual species of ruminants and is given genetically. By a certain age, the overall massiveness of the antler – i.e. its dimensions, weight and, where appropriate, the number of branches – increases; However, after reaching the maximum (trophy culmination), the massiveness decreases (from this moment on, individuals are called reactionary). With a hormonal disorder of testosterone production caused by insufficient functioning or complete dysfunction of the testicles, there is no cyclical shedding of the antler, but, on the contrary, its constant growth and growth. Such antlers, which are referred to as a wig, are not even hammered by the males, so it is still wrapped with bast. Among the anomalies associated with imperfect hormonal activity, one should also include the existence of the so-called double antler (the growth of a new antler, although the old one has not been dropped), the existence of males without antlers and the existence of antlers. However, the last two cases also seem to be related to genetic disorders. However, anomalous antlers can also arise due to mechanical damage to the buds.

The main and distinct differences between the horns and antlers are: the horns are from the horn (skin derivative), the antlers are boned; the horns are hollow, the antlers are full; horns are without branches, antlers have them; horns mostly grow even females (only mouflons have horns exceptionally), antlers grow only males, with the exception of reindeer; The horns are permanent, the antlers change every year.

Hunters not only in our country, but also elsewhere, especially in Central Europe, are attracted to hunting various types of game, especially for the sake of winning a trophy. Some hunters simply wish to recall pleasant and exciting moments spent in nature, for others, winning a trophy is almost a cult necessity of life. It is no wonder, then, that the horns and antlers of game have become not only popular trophies, but also, due to their biological uniqueness, an object of intense hunting and natural science importance. The horns and antlers of trophy ruminants have acquired a specific meaning during development and have an important function in the life of this game. First of all, males use both horns and antlers during estrus in fights between males (or females), but also in fights to maintain social status in the group. For example, with deer, an individual who has just dropped his antlers, the social status and classification in the

herd hierarchy decreases significantly. Horns and antlers also play an important role in clashes with individuals of other species, especially in the defense against beasts. Antlers and horns also serve their carriers as an impressive element of the ritual behavior of socs in various intraspecific conflicts, as a distinguishing feature between individuals and, last but not least, they are used in the playful behavior of young individuals. Horns and antlers also have their importance when caring for the coat (for example, scraping) or when procuring food (snow removal).

2.1.6 **Reproduction, development of the individual and population dynamics**

Furry game (mammals) reproduce in a special way that has allowed the emergence of a specific genitourinary system and which is unparalleled in other vertebrates. The development of an individual itself is divided into two periods – prenatal (i.e., before birth in the mother's womb) and postnatal (after birth). The connection between the developing embryo and the mother's uterus is provided by the placenta. The period when mammals mate is called rut (*oestrus*). In most species, the rut takes place only once a year (so-called monoestric species), but there are also cases when the rut occurs twice or even more times a year (so-called polyestric species). The time of estrus is related to the period of ovulation in females and is synchronized so that the cubs are born in a food-friendly period. Most furry game in Central Europe belongs to monoestric species, polyestric ones include, for example, muskrat, squirrel, hare and rabbit. In some cases, mating occurs at such a time of year that after the normal gestation has passed, the cubs would be born in an unfavourable period. To prevent this from happening, some game species have developed a special mechanism (the so-called prolonged or latent pregnancy) that prolongs the gestation period by stopping embryonic development at the blastocyst stage. The egg cut in this way remains at rest for several months in the womb, and only with the onset of a more favourable period does implantation occur, and then intrauterine development. In our game, this way of embryonic development of an individual occurs in some weasel-like beasts, in a bear and a roe deer. A unique method of reproduction is known in the hare, where there is a possibility of re-fertilization of the pregnant bunny. We call such a phenomenon superfetation.

Born cubs of mammals are divided into nidicolous and nidifugous. Cubs from the first group are born blind, deaf, without fur and with a very limited ability to move (for example, a hedgehog, beasts, a rabbit). Nidifugous cubs, on the contrary, see and hear right from birth,

are haired and move independently. Typical representatives of this group include hare and rattlesnakes.

Postnatal growth can be terminated with the onset of sexual maturity, but often the beginning of sexual maturity overtakes the end of physical growth (for example, in ratites). The reproductive capacity of the population (so-called natality) is constantly regulated by mortality (so-called mortality). In general, mortality reaches its highest values in cubs during the period of the beginning of their independence. After overcoming this critical period, the probability of survival increases, resulting in the formation of an optimal age structure for the population. The maximum age reached is very different for furry game in individual species (up to several decades). In general, however, the average age reached is much lower, also thanks to the hunting management of the population. Individuals with uncharacteristic colouring (for example, albinos) or atypical behaviour also live to a significantly younger age. The abundance of the population (abundance) of individual species of furry game in a given area is not constant but fluctuates both during the season and in multi-year cycles. Such changes in population abundance are called population dynamics. In general, it can be concluded that the greater the reproductive capacity of a certain species, which is conditioned by high natality, rapid growth of chicks and myopia, the higher the population dynamics. In species with high population dynamics, population overgrowth (so-called gradation) may occur. This phenomenon can occur more or less regularly in cycles of several years. The most typical representatives of "gradation" species are, first of all, small species of rodents that do not belong to game (for example, field vole). With overgrowth, there is such an inflating of individuals of one species in a certain territory that their number exceeds the capacity of the environment (food, shelter and other resources necessary for the long-term maintenance of the population), and excessive contacts occur between animals, leading to stress of the entire population and outbreaks of infectious diseases. This condition results in the extinction of the majority of the population (so-called population depression). In hunting, these syndromes can be noted mainly in some areas with a high population density of feral pigs or wild rabbits. For most species of furry game, fluctuations in population density can be noted at longer time intervals (for example, in the case of a hare in Slovakia, in the past it was 4 – 7 years). However, these changes never have the character of a classic overgrowth. Fluctuations in the population dynamics of carnivores are always directly dependent on the abundance of prey, while the peak of the abundance of a predator can be delayed beyond the gradation of prey even by several years.

2.1.7 Ethology

Mammals, and therefore furry game, are characterized by highly specialized manifestations of adaptive behaviour. The basis of these manifestations are instinctive mechanisms, which, of all vertebrates, have developed the most precisely in mammals. The disaggregation of the secondary cerebral cortex is crucial for the level and diversity of life manifestations. Thus, depending on the development of the brain of individual species of game, very noticeable differences in behaviour can also be found. Furry animals can communicate with each other using visual, sound and olfactory signals, on the basis of which they form hierarchically organized groups (societies), mark territories, inform other animals about danger, current activity or mood, etc.

Social relations in the population lead to the formation of home precincts (areas) of individuals, families or herds (flocks), which provide the animals primarily with basic existential possibilities, such as safe shelters, food, etc. However, territorial behaviour is often limited to the period of oestrus.

The alternation of an active way of life with a period of rest during a certain period of time is called the rhythm of activity. The main one is the daily rhythm (circadian), the basis of which is the alternation of light and darkness. For different species of furry game, this rhythm of activity takes place differently. There are species that have several peaks of activity during the cycle – the so-called polyphasic species (for example, marmot, chamois, mouflon). Species with two peaks of activity (biphasic) are most active in the morning and evening, respectively, before sunrise and after sunset (for example, squirrel, hare, roe deer). There are quite a few monophasic species with one peak of activity, rather, we encounter this type in the period of unfavourable food conditions, when the activity of the animal is practically continuous (for example, a fox). However, the daily rhythm of furry animals is also influenced by other factors, for example, in the breeding season, males are much more active than females, and even typically nocturnal species such as foxes or lynxes are active even during the day. One of the most significant life adaptations for some species of furry game is winter sleep (hibernation). This evolutionary adaptation has its origins in ice ages, when it was a precondition for survival for many species. In general, in mammals there are several types of winter hibernation. All mammalian species falling into hibernation accumulate subcutaneous fat reserves or food reserves at the end of the growing season to cover energy consumption during the unfavourable winter period. The mildest form of hibernation is the so-called false, optional sleep, when there is only partial measurement and a slight decrease in body temperature (for example, in a bear

to 31.5 °C). Similarly, the badger survives the winter, which, when warming, comes out of the den even in the winter months. With actual hibernation, which can also be intermittent either for food intake (for example, a marmot), or when moving to another shelter, possibly even for mating (for example, bats), the following physiological processes are significantly reduced. Body temperature often drops to the level of environmental temperature (for example, a minimum body temperature of 0.2 °C was measured for the grassland hiss, 3 °C for the highland marmot and 5 °C for the eastern hedgehog). Oxygen consumption is sometimes reduced to 2% – 5% of basal (basic) metabolism, breathing rate is reduced to up to two breaths per minute at full measurability, and heart rate similarly decreases to up to 4 beats per minute.

Migrations of the magnitude seen in mammalian birds are absent. Migration can be described, for example, movements of savannah ungulates for food, or even movements of deer living in the mountains during the summer, for the winter to more climatically favorable and nutritious valleys.

2.2 Systematics of game mammal species

Class: **Mammals** (*Mammalia*)

Subclass: **Live-bearing mammals** (*Theria*)

Clade: **Placental mammals** (*Placentalia*)

Order: **Lagomorphs** (*Lagomorpha*)

Family: **Leporids** (*Leporidae*): **European brown hare** (*Lepus europaeus*), **European wild rabbit** (*Oryctolagus cuniculus*)

Order: **Rodents** (*Rodentia*)

Family: **Sciurids** (*Sciuridae*): **Alpine marmot** (*Marmota marmota*)

Family: **Beavers** (*Castoridae*): **Eurasian beaver** (*Castor fiber*)

Family: **Arvicolids** (*Arvicolidae*): **muskrat** (*Ondatra zibethicus*)

Family: **Nutrias** (*Myocastoridae*): **nutria (coypu)** (*Myocastor coypus*)

Order: **Carnivores** (*Carnivora*)

Family: **Canids** (*Canidae*): **golden jackal** (*Canis aureus*), **wolf** (*Canis lupus*), **red fox** (*Vulpes vulpes*), **common raccoon dog** (*Nyctereutes procyonoides*)

Family: **Ursids** (*Ursidae*): **brown bear** (*Ursus arctos*)

Family: **Procyonids** (*Procyonidae*): **raccoon** (*Procyon lotor*)

Family: **Mustelids** (*Mustelidae*): **least weasel** (*Mustela nivalis*), **Eurasian ermine (stoat)** (*Mustela erminea*), **European polecat** (*Mustela putorius*), **steppe polecat** (*Mustela eversmannii*), **American mink** (*Neogale vison*), **European pine marten** (*Martes martes*), **stone marten** (*Martes foina*), **European badger** (*Meles meles*), **Eurasian otter** (*Lutra lutra*)

Family: **Felids** (*Felidae*): **European wildcat** (*Felis silvestris*), **Eurasian lynx** (*Lynx lynx*)

Order: **Even-toed ungulates** (*Artiodactyla*)

Suborder: **Nonruminants** (*Nonruminantia*)

Family: **Suids** (*Suidae*): **wild boar** (*Sus scrofa*)

Suborder: **Ruminants** (*Ruminantia*)

Family: **Cervids** (*Cervidae*): **elk** (*Alces alces*), **roe deer** (*Capreolus capreolus*), **white-tailed deer** (*Odocoileus virginianus*), **red deer** (*Cervus elaphus*), **sika deer** (*Cervus nippon*), **European fallow deer** (*Dama dama*)

Family: **Bovids** (*Bovidae*): **Alpine chamois** (*Rupicapra rupicapra rupicapra*), **Tatra chamois** (*Rupicapra rupicapra tatica*), **European mouflon** (*Ovis musimon*), **European bison** (*Bison bonasus*)

2.3 Lagomorphs (*Lagomorpha*)

European brown hare (*Lepus europaeus*)

Until recently, lagomorphs (*Lagomorpha*) were classified as rodents (*Rodentia*), although they are fundamentally different from them by some features. Their phylogenetic development was quite different, and their teeth are also different. In hares, the incisors are transformed into ever-growing teeth, behind which there is another pair of tiny teeth in the upper jaw. In the milk dentition of the leverets, even another, third pair is formed. The jaws of a hare when processing food, unlike rodents, move both vertically and horizontally. From a developmental point of view, the external similarity of hares and rodents is an example of the so-called convergence induced by a similar way of life of both groups.



Ján Chobot

The paws are overgrown from below with peculiar hairs, which allow it to move quickly and safely even on smooth ground or in deep snow. The hind legs are much longer than the front ones.

In our country, it lives almost everywhere. It is most abundant in agrarian landscapes on lowlands and in hills, but it also rises above the upper forest line, and sometimes occurs even in vast forest complexes.

Number of leverets (1 – 7, most often 2 – 4) are born after 42 – 44 days of gestation. They are fully haired and able to move and see. During one reproductive season, the doe can

birth together 7 – 10 leverets in 3 – 5 litters. Leverets are born directly on the untreated ground, and they are soon able to move. They stay near the mother for only 2 – 3 days. They suckle for three weeks, but already at the age of 8 – 10 days they begin to receive plant food. By the age of 5 months, they grow intensively and mature sexually at the age of 4 – 6 months. However, early spring hares enter reproduction in the year of their birth only quite exceptionally. The exceptional feature of hare reproduction is the so-called superfetation, i.e., the possibility of repeated fertilization during the ongoing pregnancy. Except for the period from October to December, it can reproduce all year round. Litters from early spring are always few in number (1 – 2 leverets in the litter). Hares most often move along their more or less permanent paths within a radius of 1 – 3 km. Larger temporary groups form only at the time of mating. At that time, more males also stay near the female in heat, they fight among themselves and are often active even during the day. The anatomical structure of the body allows hares to reach a speed of 56 km per hour. High speed, together with sudden changes of direction, is used by the hare as the most common strategy for escaping from the predator (for example, lynx, wolf, fox, dog). In front of an enemy attacking from the air (for example, a hawk, an eagle, an outburst), on the contrary, he usually crouches in his lairage to the ground to blend in with his surroundings. However, this strategy of making oneself "invisible" is also used by the hare against land enemies. Hares can live to be 10 – 12 years old, but only about 6% of the population in our country is in their third year of life. The abundance of hares in our country, but also in the whole of Central Europe is enormous declining since in the mid-seventies of the last century. The decrease was mainly due to negative changes in the landscape, mainly agrarian, and thus the loss of suitable habitats, as well as a significant increase in the contamination of the natural environment with various agrochemicals and other substances, which is also associated with a deterioration in the health of the hare population. This has also resulted in a significant decrease in hare harvest. The current harvest of a hares is around 15,000 individuals and has a downward trend. For hares, very humid years with excessive precipitation are quite unfavourable, but most recently also excessively hot and dry years with a lack of water.

In the summer period, the hare feeds mainly on the green parts of plants, less on various tubers and roots. With a winter shortage of juicy food, hares also feed dry parts of herbs or gnaw the bark of woody plants and gnaw off their shoots. At that time, it can cause noticeable damage to forest plantation, orchards, and vineyards. Hares have an exceptional way of digesting food, the so-called caecotrophy. In the appendix, mushy faeces with a high content of vitamin B1 and protein are formed from the cellulose contained in the diet with the help of the necessary enzymes produced by symbiotic bacteria. Directly from the anus, the hare consumes

this "vitamin porridge", or so-called caecotrophs, so that it passes through the digestive organs again, and only then its droppings are formed in the form of characteristic hare poop. Droppings are left in clusters of little, round, hard balls. They are usually yellow-brown or green in colour, and full of grass.

The European brown hare is a hunting game in our country with a permitted hunting period from November 1 to December 31. Hunting by falconry birds of prey is allowed from September 1 to December 31.

Wild rabbit (*Oryctolagus cuniculus*)



Robert Taylor, wikimedia.org

The wild rabbit is almost half the size of the field hare. Compared to a hare, a rabbit has stronger forelimbs, which serve it for raking.

Wild rabbit is originally a Westmediteran species that occurred only in the Iberian Peninsula and in the adjacent part of North Africa. Only later was it introduced to various places around the world, and today it inhabits practically all Western and Central Europe. The rabbit was then found in our country mainly in the warmer lower positions of western Slovakia up to 450 m, where there are not too harsh winters. However, at present, the wild rabbit is almost no longer found in our country, decimated first by myxomatosis and then by RVHD (rabbit viral haemorrhagic disease). The rabbit prefers warm, dry, sunny locations in sandpits, surface quarries, railway embankments, in vineyards, on mine heaps and overgrown slopes. However,

it also appears in warmer forests, especially in thinner pine forests, but it is also abundant in city parks, gardens and cemeteries.

Unlike a brown hare, a rabbit is pregnant for only 30 days, and in the safety of dens, rabbit doe gives birth 4 – 5 times a year to 3 – 8 kits. Even before giving birth, the female prepares a nest in the den from dry grass and fur plucked from the chest. Cubs are born blind and hairless. Their eyes open on the tenth day, and their coat grows by the end of the second week of life. They suckle for 3 – 4 weeks, after which they become independent and leave the mother's den. They mature sexually at the age of 5 – 8 months, so the first spring kits can reproduce already in the year of birth. Although a rabbit can live up to 10 years, on average, it lives only about 18 months in nature. Like the hare, the rabbit is especially active in the twilight and at night. However, unlike the hare, the rabbit lives socially in groups (colonies) in underground dens. The latter are not very deep, but they are interconnected with each other and have several exits and ventilation shafts. Each group (clan) forms a closed social unit that defends its territory within a radius of about 300 – 600 m against individuals from neighbouring colonies. In the colony of rabbits, there is a certain hierarchy that affects, for example, the sexual activity of individuals and their spatial inclusion, since the highest-ranking individuals inhabit the safest dens in the middle of the colony. When a rabbit female leaves the mother's den with kits, it clogs the hole with grass, foliage, or earth, thus protecting them from enemies and cold. On the surface, rabbits are very shy and vigilant. Due to the extremely high reproduction rate of rabbits, overpopulation in some regions was reported in the past. The rabbit harvest in Slovakia has been zero since 2009.

The wild rabbit, like the hare, feeds primarily on green parts of a wide variety of herbs, grasses and bark of woody plants. In the past, it posed a greater danger to agriculture and forestry locally than a hare, as it greatly damages and sometimes destroys the plant communities around its colonies.

It is a hunting game with a hunting period from September 1 to December 31.

2.4 Rodents (*Rodentia*)

Alpine marmot (*Marmota marmota*)

Alpine marmot is a relatively large rodent. Short legs are provided with strong claws and adapted for raking.

In Slovakia, it lives in both the High Tatras and the Low Tatras. The total abundance of marmots in Slovakia is reported to be around 800 individuals. The Alpine marmot inhabits mainly stony slopes above the bog pine limit, and subalpine meadows at altitudes from 1,000 to 2,500 m.



H. Zell, wikimedia.org

Soon after the end of hibernation in April and May, marmots mate, and after 33 – 45 days of gestation, the female gives birth to 2 – 6 not very developed cubs. They suckle for 4 – 6 weeks, mature physically only after the first overwintering, and reach sexual maturity only in the third year of life. Marmots are very sociable animals. They live in colonies usually formed by related individuals, most often it is the mother with grown-up cubs. These colonies consist of 3 – 18 individuals and reside in an area of only a few hectares. Marmots dig up several types of dens. The longest of them can be up to 30 m long and 1 m deep. These dens serve primarily for wintering and always have at least two exits, several dead-end corridors for storing droppings and a main chamber in which marmots build a nest from the brought hay. Marmots sleep together in various large groups for the winter. They clog the entrances to the dens with stones, clay and grass. During wintering, their body temperature drops to 4 °C, their weight decreases by up to a quarter, and other metabolic processes are significantly reduced. The winter sleep of marmots is very long and sometimes lasts from August to April. When register a danger, they are standing on hind legs and whistle sharply, which is a warning signal to which even other species of mountain animals react.

The Alpine marmot feeds exclusively on plant food, various mountain grasses and herbs, shoots of woody plants. It grazes only near the dens. At the end of summer, he lays grass in his den, probably not only to line the nest, but also as a supply of food at the time of spring awakening.

In hunting legislation, the marmot is listed as a game with year-round protection. It is a species of European significance with a social value of 3,319.39 €.

Eurasian beaver (*Castor fiber*)

Two species of beavers are known, namely the Eurasian beaver (*Castor fiber*) and the Canadian beaver (*Castor canadensis*).

The Eurasian beaver is Europe's largest rodent. The Canadian beaver differs from the European one by a slightly darker coloration and a wider tail, but the main difference is in the different number of chromosomes and in some skeletal features.



Per Harald Olsen, [wikimedia.org](https://commons.wikimedia.org/wiki/File:Castor_fiber.jpg)

A beaver settled Slovakia along the Danube from Austria and possibly along the Morava River from the Czech Republic, so there are now many them in southwestern Slovakia. The beaver population also lives in northeastern Slovakia, where they probably migrated from Poland. The population is growing, the estimate is about 800 individuals. Beavers inhabit

primarily the shores of the flowing and stagnant waters of forest ecosystems, but they also do not avoid the melioration and drainage channels in the agrarian landscape.

Beavers mate in January-March, they copulate in water. The female is pregnant for 102 – 111 days, and most often in May she gives birth to 2 – 5 haired cubs that are able to see. Young beavers leave from the den for food in the age of 4 – 5 weeks. They mature sexually at the age of 3 – 4 years, and in nature they live 5 – 20 years. Beavers inhabit most often underground dens all year round, digging up in the shores of slow-flowing waters. The dens are sometimes up to several tens of meters long, have a main chamber with a nest of twigs, and usually also have ventilation shafts leading to the surface, or even an escape exit. On stagnant waters, beavers from branches and soil build so-called beaver castles. On the faster-flowing waters of smaller streams they build dams. They are monogamous animals, living in family communities made up of parents, two-year-old and first-year cubs. Each such group, counting usually 8 – 12 individuals, inhabits a territory of several kilometres of aquatic environment. Beavers swim very well and last up to 15 minutes under water. For swimming, they mainly use their tail, which they use both as an oar and as a rudder. Beavers are quite shy animals with year-round evening and especially nocturnal activity.

Beaver is a herbivore feeding mainly on the bark of trees and shrubs. It likes soft woods the most, such as willow, birch, aspen or alder. But it also feeds on reeds, grass and various herbs. In an agrarian land, clover, sugar beet, maize and other crops are also commonly grazed. For the winter, he prepares supplies, under water he sticks leafy tree branches into the bottom.

The Eurasian beaver is hunting game with the year-round protection in Slovakia and a species of European importance with a social value of € 995.81.

Muskrat (*Ondatra zibethicus*)

Muskrat is our largest vole; its body length reaches up to 40 cm and weight up to 1.6 kg. Males have large odour glands near the anus.

Muskrat is native species in North America. Muskrats have also acclimatized in Europe after their releasing and are now quite a common member of the European fauna. In our country, the muskrat inhabits mainly the shores of stagnant and slow-flowing waters in lower and middle positions up to 700 m above sea level. The current status is estimated at less than 2,500 individuals, and in 2021 were 5 individuals harvested.



Mikroskops, wikimedia.org

Musk rats reproduce from April to September and can have 3 – 4 litters in a year. The female is pregnant for 28 days and has 5 – 9 cubs in the litter. Their eyes open at the age of 9 – 11 days, at three weeks they can already swim perfectly, and a few days later they become independent. They mature sexually at the age of 5 – 8 months, so the cubs from the first litter can reproduce already in the year of their birth. They can live to be 5 – 10 years old. Musk rats usually live in pairs. They dig up to 10 m long dens with a nesting cavity, which they line with dry material, or in shallow water they build high stacks, the so-called muskrat castles, from reeds, spurs and other plants. The abundance of muskrats is influenced by various ecological factors, such as technical modifications of water streams, water pollution or even overfishing.

Musk rats feed mainly on plant food, especially bat, reeds, and other aquatic plants. In winter, they also feed roots and creeps, which they often must gnaw even from under the ice. Sometimes they also eat aquatic animals, especially scabbards. Among aquatic vegetation, muskrats make – like other species of voles – feeding tables.

Musk rat is a game with year-round hunting allowed, while it is only allowed to be hunted by trapping. From the point of view of nature and landscape protection legislation, muskrat is not a protected species.

Nutria (Coypu) (*Myocastor coypus*)

A species similar to a muskrat or beaver. However, it is much larger than the muskrat and significantly smaller than the beaver.

Females have 4 – 5 pairs of milk nipples located high on the sides in the front of the body, so the cubs can breastfeed even in water.



Philippe Amelant [wikimedia.org](https://commons.wikimedia.org/wiki/File:Myocastor_coarctatus.jpg)

Nutria is originally a South American species of rodent, which, like a fur animal, has also been acclimatized in Europe. Nutria populations in Slovakia come from the farms, from where they got into nature either through releasing or escaping. Most of the animals were released in our country on river Hron near Želiezovce (S-W Slovakia). Soon after releasing, nutria acquired considerable shyness and vigilance and were able to find enough food, were able to overcome the winter and reproduced successfully, as it was also possible to observe the cubs.

Females are pregnant for 117 – 138 days and give birth to 1 – 14 perfectly developed cubs that can swim. In our country, nutria reproduces mainly in summer, but under suitable climatic conditions, reproduction can occur at any time. Cubs mature sexually after 4 – 5 months, and in nature they live up to 4 years (in captivity 12).

They mostly form communities led by a dominant female on a territory of 2 – 5 ha.

Nutria feed mainly on aquatic plants, grass, roots, in winter it eats up tree branches. Quite exceptionally, it also receives animal food (e.g., mussels, crayfish, earthworms).

Species belongs to introduced, undesirable species in nature, therefore, its year-round hunting is allowed. In 2021, more than 10,000 individuals were registered in Slovakia and 4665 individuals were harvested.

2.5 Carnivores (*Carnivora*)

Eurasian ermine (stoat) (*Mustela erminea*), least weasel (*Mustela nivalis*)



Marton Brendsen, wikimedia.org

The body is elongated and slender with short limbs, the coat in summer on the back is brown, on the abdomen is white, the tail is brown. In winter, the coat is denser and pure white throughout the body, only the tip of the tail always remains black. The male is larger than the female. The weasel is significantly smaller and does not have a black tail tip. Our weasels have a coat that is brown all year round, but Nordic and mountain populations can recolour into a winter dress like an ermine.

In our country, both species are abundant throughout the territory up to the highest mountains – the weasel in all environments, the ermine avoids only large forests. They also live near a human settlement.

The gestation of the ermine lasts different periods: when mating in late winter, about 10 weeks, however, it can also mate in summer, followed by pregnancy of 223 – 378 days. Females give birth in April-May 4 – 7 bare and blind cubs, which begin to see on 34 – 42 day. They suck up for 2 months, but already after 30 days they begin to feed animal food and mature sexually after wintering.

The weasel is pregnant for 33 – 35 days (a latent pregnancy is unknown, but it can also have 2 litters per year), in case of sufficient food, they give birth to 10 – 12 cubs, they can see after 22 – 25 days, and breastfeed them for 4 weeks. The cubs become independent after 3

months and mature sexually in the same year. Both species can live no more than 6 – 7 years, however, in nature, most of the population lives only 1 – 1.5 years.

They are active mainly in the dark, in quiet places and at the time of raising cubs, but also during the day. They hide in rodent dens, in stumps, under tree roots or in straw stacks. The territory, which in the case of the ermine can have an area of 7 – 50 ha, is marked by secretions of the anal glands.

The food consists of small mammals – the ermine can also catch a hare, a weasel can catch a hamster or a rat, but the main prey are voles. They also catch frogs, lizards, snails and insects, and feed also sweet forest fruits. Occasionally, they plunder the nests of birds in the hollows. The weasel, when overgrowing voles, makes stocks.

Both the ermine and the weasel are hunting game with year-round protection in Slovakia. They belong to the species of national importance with a social value of 230,- EUR.

European polecat (*Mustela putorius*)

Weight varies from 0.5 to 2 kg. Polecats are characterized by well-developed glands, the smelly exudate of which they splash out when in danger.



Malene Thyssen, wikimedia.org

The European polecat inhabits most of Europe. In our country, it is a common carnivore, the most abundant is in southwestern Slovakia. Although it prefers medium altitudes, where there are no continuous forests, it also occurs in forested mountainous areas. It avoids

exclusively field habitats but prefers to populate wet habitats near water bodies and around rural settlements.

Polecats mate in March-May, and after 40 – 43 days of gestation, the female gives birth to 3 – 8 cubs, whose eyes open on the fifth day. They suckle for 4 – 5 weeks. After three months, they become independent, but they mature sexually only at the age of 9 – 10 months. They can live up to ten years, but their average age is much shorter. During the day, the polecat usually sleeps in piles of stones, under the roots of trees, in the dens of other animals, but also in human buildings. It marks the surroundings of its shelters and its territory, which can reach up to 20 km², with droppings and urine. He moves on the ground, but he can also swim and climb well. Although we do not have precise knowledge of the abundance of the population in our country, it has been significantly decreasing in recent years. About 50 individuals are harvested annually.

The polecat feeds on a variety of food, but mostly animal. It eats mainly smaller vertebrates up to the size of a hare or pheasant, eggs of birds, molluscs, and insects. He often specializes in domestic poultry and rabbits, but he also feeds carcasses or sweet fruits. Sometimes he builds up food reserves mainly from frogs, but also from stolen eggs.

The polecat is hunting game species with hunting period from September 1 to the end of February. In pheasantries and habitats with capercaillies and grouses, hunting is year-round.

Steppe polecat (*Mustela eversmannii*)



Andrey Giljov, wikimedia.org

Very similar to a European polecat but has a different yellowish coloration. However, in nature, both differently coloured hybrids of both species and domesticated ferrets can also be found. Therefore, determining polecats is very difficult.

In our country, it mainly inhabits field habitats with alleys.

The way of life is almost identical to that of the European polecat. In the litter there are usually 3 – 6 cubs, weighing 6 – 7 g, seeing begin at the fifth week of life and suckling lasts six weeks, but already after three weeks they suckle blood from the brought catch. They mature sexually at the age of ten months.

The main prey is field rodents and rabbits. Occasionally, hedgehogs, small birds, amphibians, reptiles, and invertebrates are also found in its food.

In Slovakia, it is a hunting game with year-round protection. Is included among the species of European importance with a social value of 230,- EUR.

American mink (*Neogale (Mustela) vison*)



Anna Wójtowicz, [wikimedia.org](https://commons.wikimedia.org/wiki/File:Mustela_vison.jpg)

Mink is related to polecats, which it resembles in size and body shape. However, unlike polecats, mink has tiny swimming membranes between the fingers of the limbs.

Mink is native to North America. European populations of mink were created by introductions and their escape into nature from fur farms. The most numerous is this species in

northern Europe. It has already penetrated Slovakia, statistics record 23 individuals, but no harvest.

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American mink reproduces once a year in Central Europe. It has a rut in late winter or early spring. The female give birth after 33 – 80 days of pregnancy, 4 – 12 blind cubs most often in May, whose eyes are opened on the 30th day. They mature at the age of ten months. Minks hide in shallow dens, which they dig up, but more often use the shelters of other aquatic animals.

Minks feed almost exclusively on animal food, which they find near the waters. These are primarily small mammals up to the size of muskrat, birds, eggs, shrews, amphibians, fish, molluscs, crayfish, and insects. In some areas, American mink in the Czech Republic has significantly reduced the abundance of muskrat, crayfish, shrews and green lizards.

American mink in Slovakia belongs to the hunting game and as nonnative invasive species, can be hunted throughout the year.

European pine marten (*Martes martes*)

On the front throat there is an irregular yellowish spot, which does not reach the forelimbs as by the stone marten. The pine marten has a longer and more bushy tail than the rock marten.

Lives throughout the forest territory. It prefers extensive forest complexes, deciduous, mixed and coniferous, regardless of altitude. However, it also rarely lives in a cultural agrarian landscape.

Martens mate in July and August, 2 – 6 cubs are born in April and May. About seven months of this long pregnancy is a latent stage. However, unfertilized females can mate again in January and February. Cubs are born hairy, but their eyes open only after five weeks and suckle for 7 – 8 weeks. They become independent already in the autumn but mature sexually in the second to third year of life. Martens live solitary, pairs are formed only at the time of reproduction. They are active at night, during the day they hide in the hollows of trees, in the

old nests of birds of prey and squirrels. When hunting, martens move several kilometres per night. They hunt equally well on the ground and in the treetops. The annual harvest decreases slightly, now it is 300 – 400 individuals.



Dani Kropivnik, wikimedia.org

The composition of the food is seasonally different. However, its main food is small rodents and birds. In spring, it feeds even the eggs of birds, in summer and autumn it also feeds a lot of insects and sweet pulpy fruits. Martens frequently hunt the squirrels, but sometimes also larger prey, for example, a hare, a capercaillie or grouse. Exceptionally, it also catches a small roe deer. Martens also sometimes swallow needles and pieces of wood, which seem to help them in their digestion.

The pine marten is a hunting game that can be hunted from September 1 to the end of February. In pheasantries and regions with capercaillie and grouse, year-round hunting is allowed.

Stone marten (*Martes foina*)



Bohuš Čičel, wikimedia.org

The stone marten is about the same size as its relative pine marten but has a shorter tail. On the front throat there is an irregular yellowish spot, extending to the forelimbs, is always lighter compared with pine marten, most often almost white.

It is a typical species of open country, it is found almost everywhere, except for large contiguous forest complexes. It especially prefers forest regions with rocky terrain and abandoned quarry. It also commonly resides in human settlements, including large cities. In the mountains, it also rises above the upper forest line.

The main period of mating, as with the pine marten, are July and August, the additional month is January and February. The length of pregnancy and the development of cubs are similar. Unlike the pine marten, the stone marten seeks rock shelters around human settlements. Although it leaves shelters mainly at night, it is quite active during the day, unlike the pine marten. It is excellent at climbing rocks and walls of buildings. In the last ten years, the number of stone martens harvest has been slightly declining, and therefore the population is probably gradually declining. The average annual harvest is about 250 individuals.

The stone marten cannot hunt in the crowns of trees, and therefore animals living only on the ground, such as small insectivores, rodents, etc., are mainly more represented in its food.

Its food also contains a high proportion of synanthropic animals (i.e. animals that live near human settlements) such as house mice and rats. Unfortunately, the adaptation of the stone marten to life near human settlements is also manifested by the significant damage to domestic animals, especially poultry and domestic rabbits. Stone marten feeds also eggs on the ground-nesting birds, including domestic ones, and sweet fruits. Sometimes it also catches insects and digs nests of bumblebees and wasps.

The stone marten is a hunting game that can be hunted from September 1 to the end of February. In pheasantries and regions with capercaillie and grouse, year-round hunting is allowed.

European badger (*Meles meles*)

The weight of the badger is 5 – 20 kg. His body is stocky, on short legs, his feet are wide and bald, he has long claws on his fingers. A white head with two dark bands creates a characteristic mask on the face.

In our country, it is common, it is absent only in forestless areas of lowlands with intensive agricultural production, in habitats with high groundwater levels and above the forest line. It searches for habitats with rocky terrain and plenty of natural shelters. It is most numerous in deciduous forests.



caroline legg, wikimedia.org

Badgers mate from spring to autumn. However, according to the mating time, they have different long latent pregnancies, so all females give birth to cubs in late winter and early spring. In the litter there are most often 2 – 5 blind, sparsely haired cubs, which begin to see at about one month of age. At about three months of age, they begin to consume solid food, but even then, for some time the mother breastfeeds them. The cubs spend the winter mostly with the mother and become independent only the following spring. They mature sexually at the age of 1.5 years. The badger, as the only one of our mustelids, survives the winter in a kind of hibernation, a state known as winter lethargy. In addition to this period, it is a typical nocturnal animal that emerges from the dens only at dusk. Badgers are social animals; they live in pairs or in families with cubs. They dig up large systems of underground dens (so-called badger castles), which they have inhabited together often for several generations. The droppings store the badger in special chambers, dug up near the den.

The badger is an omnivore, and its food changes seasonally. It consists mainly of insects, molluscs, small ground mammals, eggs and chicks on the ground nesting birds, earthworms and carcasses. From plant food, it feeds mainly tuberous roots and fruits, but also corn.

The badger is a hunting game and can be hunted from September 1 to November 30. The harvest of the badger is growing sharply, in 2021 more than 2600 individuals were harvested.

Eurasian otter (*Lutra lutra*)



Bernard Landgraf, [wikimedia.org](https://commons.wikimedia.org/wiki/File:Lutra_lutra.jpg)

Eurasian otter has a jet-like shape body, which is an excellent ecological and morphological adaptation to life in water. Between the fingers of both pairs of limbs has

swimming membranes, and the ear and nasal openings can be closed under water with a special fold of skin.

At present, it is found mainly in forested, mountainous areas of central and eastern, but also northwestern Slovakia, where it inhabits flowing and stagnant waters.

Otters mate from February to July. Although the development of embryos itself takes only 61 – 63 days, the cubs are born from April to June, so the total duration of pregnancy can last up to 12 months. There are 2 – 4 blind cubs in the litter, whose eyes open after 28 – 35 days and suckle up to two months of age. At about ten weeks of age, they enter the water for the first time. They stay with their mother until the age of 8 – 9 months and mature sexually at two years. They can live to be 10 – 15 years old. Besides the time of mating and rearing cubs, otters live solitary. As the main shelter, they dig up dens. The otter is not only a good swimmer, but also a diver. It lasts more than five minutes under water and can reach speed of more than 15 km.h⁻¹ when attacking a fish.

Although the main food of the otter is smaller fish, it is also able to catch large trout or carp. It also hunts small mammals and birds living around the waters, amphibians, crayfish, shrews and insects. Daily consumes about 0.5 – 0.7 kg of food. It feeds the prey in elevated places above the water, where the remains of scales, uneaten fish and rattlesnakes remain after it.

It is a year-round protected hunting game and at the same time a species of European significance with a social value of € 1,327.75.

Brown bear (*Ursus arctos*)



Frank Vassen, wikimedia.org

The bear is our largest predator. The body length of males can also reach more than 2 m, the withers height 135 cm and weight 350 kg. Females are much smaller. Young bears have a white spot around their neck, which disappears with age. Only about twenty bears survived in Slovakia in the early thirties of the 20th century, but its year-round protection saved it. Currently, its population, according to genetic analyses, is estimated at 1250 individuals.

Bears mate from late spring to early summer. Cubs are born, as a rule, in January. Latent pregnancy lasts 7 – 9 months. The development of embryo takes only 8 – 10 weeks. There are 1 – 4 bears in the litter. They are born very underdeveloped, and even their postnatal development is slow. Their eyes open only after a month. They suckle for half a year and stay with their mother until the third year of life, when they mature sexually. Females reproduce in a two- to three-year period. In nature, bears can live to be 30 – 40 years old. The bear lives solitary on a territory of 15 – 30 km². It marks the boundaries on the trees with bites and tearing off the bark. It is active at dusk and at night, during the day it usually rests in a safe shelter. At the end of summer, bears begin to build up fat reserves, which they use metabolically during a winter hibernation. It lasts up to four months according to climatic conditions, and bears spend it in dens in rocky hollows, under tree uproots, and so on.

The bear is an omnivore, so its food is very diverse. It eats green parts of plants, fruits, roots, various invertebrates, and also hunts vertebrates, but occasionally also cloven-hoofed game. It also attacks livestock, especially sheep in our country, but also young cattle. The bear likes to feed honey and often destroys apiaries. Sometimes it also does damage to oats, corn, wheat and breaks the branches of fruit trees. It is often synanthropized and feeds on human wastes. The damage caused by bears exceeds € 320,000 per year. Every year bears also injure several people, often with permanent consequences.

The bear is a year-round protected game, but by way of exception, strictly controlled hunting was allowed at the level of about 10% of the population. About 20 individuals were harvested annually, but this was much less than allowed. Currently, the regulation of the bear is provided by the so-called intervention team. It is a species of European significance with a social value of € 2,655.51.

Raccoon (*Procyon lotor*)

Typical is its black and white mask on the head and a thick, transversely striped tail. These traits are important in recognizing it from the common raccoon dog and from the badger that resemble it.



Quartl, wikimedia.org

Currently, this species is already widely distributed in many European states. The raccoon prefers deciduous and mixed forests with abundant undergrowth around the waters. However, it can also occur in other humid habitats.

Racoons mate from January to March. After 63 days of gestation, the female usually gives birth to 4 cubs, whose eyes open after three weeks and become independent at the sixth month. They live on average 6 – 8 years. The racoon is active at dusk and at night. During the day, it hides in tree and rock hollows. It climbs and swims excellently. In winter, although it reduces the activity, it does not hibernate.

In search of food, the racoon uses its forelimbs, with which it thoroughly touches all objects. It is omnivorous, but it cannot catch larger or faster animals.

In Slovakia, it is one of the animals with year-round shooting. It is not a protected nonnative species. Hunting statistics record the spring status of 66 individuals and the harvest of 4 individuals.

Wolf (*Canis lupus*)

The withers height is up to 90 cm and weight up to 70 kg. It resembles a German Shepherd, but has a wider, pointed head and shorter triangular auricles. The wolf is the ancestor of the domestic dog. In Slovakia, in the second half of the 20th century, the abundance of the wolf increased and its home range expanded. There is no exact data on its abundance. The highest frequency is reported in the Prešov, Žilina, Košice and Banská Bystrica regions.



Mikkel Houmøller, wikimedia.org

Wolves mate in January-February, and after 9 – 10 weeks, the she-wolf gives birth in a hidden den under the rocks or under the uprooting of a tree, most often 4 – 8 pups. The wolves' eyes open after 10 – 13 days and suckle for about 6 weeks. At first, the she-wolf stays with the pups, and the wolf hunts for them, later the she-wolf also hunts, and both parents feed the pups with fleshy digested food, coming back from the stomach. Later, they are already beginning to learn how to hunt, and in the autumn, they are already hunting together with their parents and siblings in a pack. They mature sexually at the age of 2 – 3 years and can live to be 12 – 16 years old. The wolf is a social animal. Besides of a short rut period, it lives in family packs with a strong social organization and hierarchy. As a result of living together in packs, wolves have developed specific behavioural manifestations that serve mainly to communicate with each other. The most well-known communicative manifestation is howling and marking the territory with urine. The territory of wolves is large, overnight they move sometimes up to 60 km. The parent pair hunts while the wolves are small, only within a radius of 10 – 15 km. After raising of pups they hunt in the region with 100 km diameter, where it hunts with a well-organized system. In winter, larger packs can also be formed by uniting related families. Most often, only the parent pair and their this year's and last year's offspring are in the pack.

The wolf's food is wild ungulates, especially deer, wild boars and roe deer in our country, but it also smaller vertebrates, larger insects and forest fruits. She also likes to feed carcasses. He often attacks livestock, especially sheep. An adequate number of wolves has an important selection and sanitation function in nature.

Slovakia had an exception EU legislation for wolf hunting. Hunting (except for the listed territories) took place from 1 November to 15 January on the basis of quotas established by the Ministry of Agriculture and Rural Development of the Slovak Republic. The average annual catch was 36 individuals (over 5 years). Since 2021, it has been protected all year round.

Golden jackal (*Canis aureus*)

The jackal has a similar body shape to the wolf, but it is smaller, looks like a high-legged fox and weighs about 15 kg. The coloration of the coat is similar to that of a wolf, but a rusty tinge prevails.

Until recently, the jackal in Europe was found only in its southeastern part, but now it is also spreading intensively to other areas, for example from the Balkans to Hungary, Austria, Eastern Germany and Slovakia. It inhabits mainly steppe and forest-steppe areas, pastures and agrarian landscapes with field forests and shrubs.



Vych Pychmann, wikimedia.org

Jackals mate in January-March, and the female gives birth to 3 – 9 pups after 60 – 63 days of a pregnancy in an underground den. Their eyes open within two weeks, suckle for about two months, mature sexually at the age of one year and live to a maximum of 12 – 14 years. They have a similar way of life to wolves. They live in pairs or in small packs. They have similar behavioural manifestations to wolves, although their social manifestations are less developed. They also take care of the pups; they go hunting at dusk.

They feed on rodents, amphibians, molluscs, insects, carcasses, as well as fruits and other plant food. They also hunt small game, especially young individuals, roe deer and, exceptionally, sheep, goats and poultry.

The golden jackal is a hunting game in the Slovak Republic with a hunting period from August 1 to the end of February. The harvest is growing rapidly, in 2021 it was 91 individuals.

Common racoon dog (*Nyctereutes procyonoides*)



Jaroslav Červený

It is about the size of a fox but has much shorter legs and tail. At first look, it resembles a badger or racoon rather than a canine beast. On the head is a black and white pattern.

The racoon dog is native to Southeast Asia. Today it already inhabits a large part of Central and Northern Europe. Its number is also increasing in Slovakia and its area is expanding. Currently, about 2100 individuals are registered with a harvest of 281 individuals (year 2021).

Racoons mate gnaw at the end of winter. The female gives birth after 59 – 64 days of gestation in April and May, most often 5 – 9 cubs. Their eyes open after 9 – 10 days, suckle for two months and mature sexually at 9 – 11 months. The dog is active at dusk and especially at night, during the day it hides in dens that it has dug up itself, or in the dens of foxes and badgers. In damp habitats, it also makes shelters from grass and reeds. In harsh winters, it can, as the only one of the canine beasts, fall into a winter sleep.

It is an omnivore, so its food is very diverse –from tiny mammals to the size of a hare, birds and their eggs, frogs, snakes, lizards, fish, insects and molluscs to various fruits. He also often feeds carcasses, or human garbage.

The dog is the non-native hunting species that can be hunted all year round. It is an introduced and undesirable animal in nature. It is not a protected species.

Red fox (*Vulpes vulpes*)



Jaroslav Červený

The coat is mostly rusty, only the bottom of the body and the tip of the tail are white.

In our country, it is abundant in all habitats, from lowlands to the highest mountains. It has even occupied human dwellings (parks, villa districts, housing estates), industrial agglomerations (various landfills) and agricultural monocultures.

The mating is accompanied by a loud voice from January to March. Copulation takes place most often in a den and ends with the tying of partners. After 52 – 53 days of gestation, the female give birth to 3 – 10 cubs in the den. Foxes open their eyes after 2 weeks and suckle for about 6 weeks, and after 4 weeks they are fed with fleshy food. In danger, the mother foxes transfer them to another shelter. Often, the male also helps in raising cubs. Foxes become independent at the age of five months, but for some time they still stay near their parents. They mature sexually at the end of winter and can live up to 12 years. The fox is especially active at dusk and at night. He orients himself mainly by smell and hearing, but he also has good eyesight. The fox digs its dens either on its own, or uses complex underground systems of badgers, with which it sometimes inhabits them together. The territory of the fox occupies, depending on the food sources, up to several km². When communicating with each other, foxes use, in addition to various sound signals, odour marks. They make them mainly by secreting an odour gland deposited at the root of the tail (violet gland or supracaudal gland). In addition to chasing and rearing pups, foxes live mostly solitary. The abundance of foxes depends primarily on the availability of food. In recent years, their number has been gradually increasing, which was also caused by the oral vaccination of foxes against rabies. Nowadays, they often suffer from scabies.

Although small rodents dominate in the food, the fox feeds also other smaller vertebrates, insects, molluscs or various plant foods. A very important sanitation function is performed by the fox in nature by consuming of carcasses. At the time of rearing the pups, but also during the winter, it increasingly hunts hares, pheasants, wild ducks, roe deer, and domestic poultry.

The fox is a hunting game with a year-round hunting period. It is not a protected animal. The annual harvest in the Slovak Republic is currently about 20,000 individuals.

European wildcat (*Felis silvestris*)

It is distinguished from the domestic cat primarily by a more robust body, a larger head, a shorter and more bushy tail with a black end, smaller auricles, a longer coat and a longer

tactiles. However, a fairly frequent crossing with a domestic cat can be distinguished only by cranial features.

In Slovakia, its number has been increasing in recent decades. The abundance is estimated at 2000 individuals. The best living conditions are found by the wild cat in deciduous forests of warmer locations, where there is no high snow cover in winter.



Leonemanuel, wikimedia.org

Wild cats mate at the end of winter with a loud meowing, which is accompanied by a fight of tomcats for a cat. Pregnancy lasts nine weeks, 3 – 5 kittens are born in April-May. Their eyes open after 10 days, suckle for 4 months, and they begin to consume fleshy food from 6 – 7 weeks. They leave the mother after half a year and mature sexually by the end of the first year of life. They can live to be 12 – 14 years old. In addition to the time of mating and rearing kittens, the wild cat lives solitary. It is active at dusk and at night. He has very good eyesight and hearing, but a less perfect sense of smell, which he uses primarily in intraspecific social communication. A territory of several tens of hectares in size is marked in visible places with droppings, urine and secretions of the interdigital glands during the so-called claw grinding. It can very skilfully climb trees and also swim well.

The wild cat hunts primarily small mammals, which are a crucial component of its food. The rest are larger mammals up to the size of a hare, birds up to the size of a pheasant, lizards, amphibians and insects.

Since 2000, the wild cat has been a year-round protected game and a species of European importance with a social value of € 1,327.75.

Eurasian lynx (*Lynx lynx*)



Martin Mecnarowski, wikimedia.org

It is Europe's largest feline. The weight of males can be up to 35 kg, but females are smaller. At the end of the auricle there are dark brushes of elongated hairs, and most individuals, especially in the winter coat, have long sideburns on their cheeks.

In Slovakia, the lynx inhabits forests in the northern half of the territory from the state border with Ukraine to the border with the Czech Republic. Its abundance in recent years has been stable. The lynx prefers forests in middle and higher positions with rich undergrowth and numerous rock formations. However, it is adaptable, and therefore does not avoid the agrarian landscapes with larger forest complexes.

Lynxes mate in February and March. After a 10-week gestation, the lynx gives birth in a bush, rock cavity or under a roots, most often in May, 2 – 4 kits. Lynxes open their eyes after 16 – 17 days and suckle for 2 – 3 months. They are dependent on the mother until her next mating, when the lynx drives them away. Females mature sexually after the 21st, and males after the 33rd month. They can live to be 14 – 17 years old. Males live solitary all year round and meet the female only at the time of mating. During this period, fights also occur between males. The female, on the contrary, takes care of the kits all year round and teaches them to hunt. Each adult individual has its own territory with an area of up to several tens of km², which it marks with urine. The lynx is active primarily at dusk and at night. When hunting, it uses sight and hearing. The abundance of lynxes in Slovakia is currently estimated at 300 – 400 individuals.

The most important component of the lynx's diet is cloven-hoofed game, especially roe deer, weak deer individuals, mouflon, chamois, fallow deer, less wild boar (only small individuals). One lynx catches about 60 – 70 individuals of various game species per year. In areas where the lynx begins to settle again, these losses (especially on roe deer) can be very high. However, the food also consists of hares, cats, various birds, amphibians, foxes and livestock up to the size of a sheep or goat. Small rodents are also a significant component of the diet, but they provide it with little biomass.

The lynx is one of the year-round protected animals. It is classified as a species of European importance with a basic social value of € 2,655.51.

2.6 Even-toed ungulates (*Artiodactyla*)

2.6.1 Nonruminants (*Nonruminantia*)

Wild boar (*Sus scrofa*)



Valentin Panzirsch, wikimedia.org

The weight up to 200 kg (in Eastern Europe up to 350 kg). Females are much smaller. The body is bulky, on low legs, with a wide neck and a deep chest. The elongated head has cartilaginous disk on the front side called snout, that allow the boars to gain a food from the earth. A characteristic of the wild boar dentition is the presence of large, rootless and

continuously growing permanent canines (tusks) in males. Piglets are rusty with light longitudinal stripes.

At the moment, this species is very abundant with signs of overgrowth. It prefers to populate deciduous forests, but inhabits almost all types of habitats, including agrarian landscapes. Only in the highest mountainous positions is it rare.

The rut is accompanied by the struggle of males for females, and takes place from November to January, but sometimes in other months of the year. Wild boars are pregnant for 114 – 118 days and give birth in a simply prepared place in the shelter 3 – 12 sighted and very active wild boars. They suckle for about two months, but already at the age of two weeks they accompany the mother, trying to collect food. Some females can mature sexually as early as 8 months of age and engage in reproduction already in the first year of life. In nature, wild boar lives from 8 to 10 years, exceptionally up to 20 years. Except the adult male wild boars, other wild boars live in the mother flocks. It consists of a wild boar female with piglets and last year's offspring, the so-called young adults. Individual flocks are very mobile and can travel many kilometres per night. However, in principle, they are loyal to their home precinct. They like to look for places near the water and mudflats. They have an excellent sense of smell and hearing. The abundance of wild boars continues to grow, despite intensive hunting. Occasional reductions in abundance have caused the occurrence of classical swine fever, the current threat is gradual spreading of African swine fever.

The wild boar is a typical omnivore, it feeds on very diverse, but predominantly plant food. It eats various forest fruits, roots, tubers, cultural crops, small vertebrates, insects, molluscs, earthworms, but also even the carcasses of larger animals. It prefers acorns, beech trees, corn, oats.

Hunting of wild boars is allowed from July 1 to January 15. The hunting of piglets and young adults is allowed all year round. Due to the population density, year-round shooting of all categories is currently allowed. The current harvest in Slovakia is around 75,000 individuals. The wild boar is not a protected animal.

2.6.2 Ruminants (*Ruminantia*)

Elk (*Alces alces*)

It is our largest mammal with the size of a horse. The male has a weight of up to 600 kg. Female is smaller. Regarding high limbs, the body is relatively short. Males have massive shovel-shaped antlers with pointed ends.

The natural habitats of elk are waterlogged mixed forests of lowlands and uplands, but the most suitable are large wetlands with forests containing alder, birch and pine trees. At present, its occurrence in Slovakia is only sporadic.



Ryan Hagerty, Wikimedia.org

The rut lasts from August to September, sometimes longer. The males intensively mark their habitat with urine and fight for the female, echoing in a moaning voice. Unlike our deer, the elk never forms a harem of females in rut, but mates more times with only one female, which even during the rut lives alone. After 35 – 38 weeks of gestation, female gives birth in May to 1 – 3 elk calves, which it breastfeeds for almost four months. Born elk have very long limbs, they are immediately active, and already from the second week they begin to receive plant food. They leave the mother only after her new calves are born. They mature sexually at the age of 2.5 years and can live up to 20 years. In summer, elks live solitary, only in winter, under unfavourable conditions, they merge into smaller groups. Then they stay in a small area, but in the autumn, they already move in the radius of a hundred kilometres.

The food of elk consists primarily of foliage, shoots, buds and the bark of soft leafworms, such as willow, birch, aspen or alder. They often graze aquatic plants from shallow water. They also feed on various agricultural crops, buds and young shoots of pines or fir trees.

Elk is protected species all year round in our country. It is species of national significance with a social value of 1,659.69 €.

White tailed deer (*Odocoileus virginianus*)

The weight of males is about 70 kg. Females are slightly smaller. Especially characteristic is a 30 cm long, from lower side white tail. The antlers of males have is basket shaped.



Scott Bauer, wikimedia.org

The white-tailed deer is a North American species. It was imported into Europe in the 19th century, and at first it was bred only in game farms. Today it is found in several states in the wild, the most abundant in southern Finland. Several individuals live in our country. White tailed deer prefers the cultural landscape, where forests are combined with meadows and fields.

The rut runs from late October to early December. During it, males are fighting for females. After a 26- to 30-week gestation, the female most often gives birth to 1-2 spotted calves in May-June. They follow the mother only after three weeks, when they begin to receive plant food. They suckle for two months, mature sexually at the age of 1.5 years and live to be

about 10 years. Males live solitary and only in winter temporarily join the maternal flocks. Females with calves are quite faithful to their habitat, however, males often move to the long distances. They have good hearing and smell.

The diet, like roe deer, is very variable and prefers plants of high quality. It feeds especially the buds and twigs of trees, forest fruits, various types of grasses and agricultural cultures.

The white-tailed deer belongs to the hunting game with a year-round hunting period as non-native species. It is not a protected animal.

Red deer (*Cervus elaphus*)

The deer weighs up to 250 kg. Females are a third smaller.

Our populations are referred to as a subspecies of the Central European red deer (*C. e. hippelaphus*), but in the east, the subspecies of the Carpathian deer (*C. e. montanus*) also extends to us. In the past, our native deer were almost extinct, so current populations are largely hybrid offspring of several subspecies, including maral and wapiti deer, which have been used for restocking. The current distribution of deer in our country has been concentrated mainly in mountainous areas. Red deer prefers deciduous and mixed forests with open areas. However, they are also commonly found in less nutritious coniferous forests, but also in agrarian landscapes, when crops provide them with the necessary food and shelter.



Lviatour, wikimedia.org

Deer rut is from mid-September to mid-October. Red deer then create harems of females in rut and fight among themselves for their favour. From evening to morning, they echo with a deep throat roaring. During the rut males receive almost no food and lose a proportion of their body weight. Red deer is pregnant for almost 8 months, and most often in early June they give birth, as a rule, to one deer. Red deer calves are very active immediately after birth and suckle for 4 months. Although they mature sexually in the second year, young deer males are usually included into the reproduction only at the age of four, females in the second or third year. They live a maximum of 20 years. Red deer lives, except of the oldest males, and except of the rut period, in tightly organized herds. The largest ones consist of females with calves and subadult individuals of both sexes. Young males form separate herds, old ones live solitary. Red deer can communicate with a variety of smell, visual and vocal signals. During the day, they hide in bush, in tall grass or in field cultures, and only in the evening they go out to the pasture. Overnight, they walk a few kilometres slowly. The abundance of our population is very high, spring stocks are approaching 70,000 individuals, and the population has doubled since 2001.

The food of deer consists mainly of various types of grasses and herbs, buds, shoots, foliage and bark of woody plants, various fruits and field cultures. With a high number, their food specialization causes great damage to forestry by biting off trees and peeling bark, but they are also harmful in agriculture.

Red deer is hunting game with a hunting period from August 1 to January 15, including calves, females from August 1 to December 31. It is not a protected animal. In recent years, almost 50 thousand individuals have been harvested.

Sika deer (*Cervus nippon*)

In Slovakia, sika deer is found mainly in game preserves or farms, it is undesirable in nature as non-native species. In body shape, the sika is quite similar to a red deer. Males have simple antlers, and at the time of rut a short mane.

Sika is native to Southeast Asia and Japan. From there, it was exported many times to different continents. Originally, in the new environment, it was bred only in game preserves or farms, but now in Europe it is also found in the wild nature in several states. Today it occurs mainly in western Bohemia and northern Moravia, from where it expands intensively and causes damage. Sika deer is able to adapt to different conditions. It prefers the deciduous and

mixed forests of lower and middle positions, combined with agricultural land. However, it also commonly inhabits foothill coniferous forests.

The way of life is similar to the red deer. However, the rut begins only in the second half of October, and its course is not so aggressive. Males do not roar during oestrus, but whistle. As a rule, females have only one calve. To other cloven hoofed game species, the sika deer is aggressive and drives it out of its habitats. Although rut time of red and sika deer overlaps only minimally, hybridization occurs in areas where both species live together. Crossbreeds are fertile and have features of both species of deer.



Jaroslav Červený

Like other deer species, sika feeds exclusively on plant food. However, it digests fibre slightly worse than, for example, red deer. Like red deer, it causes significant damage by biting annual growths peeling the bark of trees, and agricultural crops. In winter, it uses food from feeders.

The sika deer in Slovakia belongs to the game with a year-round hunting period, it is not a protected animal.

Fallow deer (*Dama dama*)



Jaroslav Slamečka

It weighs up to 90 kg. Females are smaller than males. In body shape, it resembles a smaller deer. The antlers of adult males form characteristic shovels.

Although the fallow deer is native to the Mediterranean and southwest Asia, his current area in big part of Europe was created mainly due to game farming and hunting management of artificially created populations. It is commonly bred in many hunting grounds, game preserves and also on farms. It prefers bright, deciduous and mixed forests in warmer positions up to 500 m above sea level with rich undergrowth.

The rut of fallow deer runs from October to November, and with a greater population density, it is quite aggressive. The fallow deer bucks mating call is named groaning. Females are pregnant for 32 – 33 weeks. One, exceptionally, two calves are born most often in early June. They suckle for about 4 months, mature sexually in two years and can live up to 20 years. They live even more sociable than deer. Fallow deer lives in family herds of females and separate flocks of males, but old males live alone. Unlike deer, they are often active even during the day. Of all the deer species, they have the best eyesight. The population in our country is growing rapidly and is currently estimated at about 23,000 individuals (excluding farms).

Food contains a greater proportion of herbs and grasses than deer, but also includes shoots and leaves of woody plants, pulpy fruits, forest seeds, agricultural crops and, in winter, tree bark.

Fallow deer is a game with a hunting time from September 1 to January 15, female and calf from August 1 to December 31. It is not a protected animal. The harvest is gradually increasing, in 2021 were harvested more than 23,000 individuals.

Roe deer (*Capreolus capreolus*)



Jaroslav Slamečka

The roe deer is our most common cloven-hoofed game and at the same time the smallest representative of the native European cervids, weighing up to 35 kg. Roe deer doe is slightly smaller than roe deer buck. Roe deer fawns have spotted coating up to two months of age. The antlers of roe deer have a simple shape.

This game originally inhabited the edges of the steppes and forest-steppes, and today it is found in our country in the greatest number in open country with smaller forests, shrubs and fields. However, due to its adaptability, it lives in a variety of habitats, from intensively managed agricultural landscapes in the lowlands to continuous forests in mountainous areas throughout the territory of our state.

The roe deer rut is from mid-July to mid-August, and the roe deer buck mates with only one roe deer doe. Only when the rut of doe ends after 4 – 5 days, buck is looking for another doe. The roe deer doe calls that time with a thin whistle. The development of the embryo takes about five months, but due to a latent pregnancy lasting 40 – 41 weeks, roe deer doe give birth to 1 – 2 (3) fawns in late May and early June. However, sometimes the rut takes place even in the autumn or early winter, and then the time of latent pregnancy is shortened or does not occur at all. After birth, roe deer fawns remain at first hidden (postponed) in the forest or in tall grass, and meet their mother only when breastfeeding. They follow it only after two weeks. They switch to a green diet from the third week, but they suck for about another three months.

They mature sexually at about 16 months of age and can live to be 12 years old or more. Roe deer live in the summer mostly singly in a relatively small area. The individual territory, marked by the secretion of odour glands, is only 2 – 3 ha in size, and most individuals do not move too far away from it. In winter, roe deer are grouped into various large herds, especially in agrarian land. However, roe deer live there in smaller, loose herds even all year round.

Although the activity of roe deer is divided over 10 – 11 grazing cycles, the most intense is in the morning and evening. Roe deer rest most of their time and ruminate. The most common call is similar to a short barking of a dog. The abundance of the roe deer population in our country is currently on a slightly upward trend. Population dynamics in the regions of occurrence is also influenced by lynx and wolf.

Compared to other deer, roe deer are quite demanding on quality of food. According to the season, graze mainly herbs, various types of grasses, leaves, buds, shoots, fruits and bark of woody plants, forest seeds and various agricultural crops. It is sensitive to food change and often suffers from digestive problems. In winter, like other species, it uses food from feeders.

Roe deer buck can currently be hunted in our country from May 16 to September 30, doe, and fawn from September 1 to December 31. The roe deer is not a protected animal. The harvest rises slightly, more than 25,000 individuals are harvested.

Alpine chamois, Tatra chamois (*Rupicapra rupicapra*)

The chamois is a typical ungulate, ecologically bound and morphologically adapted to life in high mountains. The figure resembles a goat with erect, hooked horns. Weighs up to 50 kg. On the back, the hairs are especially long and form the so-called chamois moustache, which the chamois can bristle and, in the form of a massive brush, serves as a trophy on a hunting hat. The yellowish-white coloration of the head with dark bands over the eyes creates a typical mask. Chamois doe has also horns, but smaller compared with buck.



Jaroslav Slamečka

Chamois populations inhabit the Nordic regions and most of the high mountains in Europe. Chamois were artificially introduced into many other localities, including lower-lying, forested ones. However, the true habitat of chamois is subalpine meadows and steep rocky terrains above the upper forest line. In our country, the chamois is endemic in the High Tatras and we consider it to be a separate subspecies Tatra chamois (*R. r. tatrica*). Its substitute population was artificially created in the Low Tatras. A nominative subspecies of the alpine chamois (*R. r. rupicapra*) was also introduced into two localities, namely the Veľká Fatra Mountains and the Slovak Paradise, but these are only very small populations (184 individuals in total). According to the census, there live about 1200 Tatra chamois in the High and Low Tatras, the number is increasing.

The chamois rut is in November – December and is accompanied by chases and fights of rams, which do not receive food this time and quickly lose weight. Chamois doe is pregnant for 26 weeks, and in late May and early June gives birth to 1 – 2 kids, which after only two

hours are able to follow the mother. They suckle up to half a year and begin to receive green food at the age of two months. They mature sexually at the age of two years but they are usually not included into reproduction until the age of 3 – 4 years. They live to be around 15 years old. Chamois animals live in herds. Only old males are loners, and only at the time of the rut do they join flocks of chamois does and subadult individuals. Young adult males form smaller separate groups. Chamois are active during the day, as they rely mainly on sight. In danger, it calls with a characteristic whistle.

Chamois feeds primarily on various mountain herbs and grasses. Sometimes it also grazes the leaves and shoots of woody plants, and in the absence of it the needles and bark of trees. In the Alps, it does damage to protective forests.

Chamois is a year-round protected game, and exceptional shooting of individuals of Alpine provenance (about 10 individuals per year) is possible only with the permission of the Ministry in the period September 1 – December 31. At the same time, the Tatra chamois is one of the animals of European significance with a social value of € 4,979.08.

European mouflon (*Ovis musimon*)



Jozef Gíbl

In body shape and physique, the mouflon resembles a domestic sheep, with which it can also very easily interbreed. Weighs up to 60 kg. Ewes are significantly smaller than rams, which have ribbed horns, which are absent or very small by ewes.

New zoological research proves that the mouflon is most likely a form of primitive domestic sheep from Asia, which reached the Mediterranean region in ancient times. In Slovakia, it was imported in 1868 to game preserve in Jelenec near Nitra. At present, it already lives not only in game preserves and farms, but also in the nature, especially in the southern regions of western and central Slovakia, in the number of about 14 thousand individuals. It inhabits mainly rocky terrains of deciduous and mixed forests of uplands, but it can also adapt to other environments.

The rut runs from October to November, and during it the rams fight together to control a herd of females. After a 22-week gestation, the ewe is separated from the flock for some time and somewhere in the shelter gives birth to 1 – 2 lambs, which immediately after drying follow the mother. They suckle for about half a year, but they begin to receive green food as early as two weeks old. They mature sexually in the following year, but young rams are actively involved in reproduction only in the third year. They can live up to 15 years, but their average age is much lower. Mouflons live all year round in mixed herds, but older rams form smaller groups or live solitary. The herd is usually led by an older ewe, which is very vigilant and, in case of danger, warns the other members of the herd with a kind of whistle. However, the normal communicative voice is bleating. Mouflons is most active in the twilight, but often grazes even during the day. The territory of the herds occupies only a few square kilometres. Mouflons have excellent eyesight, run and jump well, but water is a big barrier for them. Thanks to targeted restocking and the establishment of new populations, the abundance of the mouflon population has increased greatly over the past 30 years.

The food of mouflons includes a wide variety of types of herbs and grasses, agricultural crops, leaves, shoots, fruits, forest seeds and forest tree bark. The vegetation is grazed by mouflons close to the ground.

Mouflons can be hunted in our country from August 1 to January 15, ewe and lamb from August 1 to December 31, male mouflon in game preserves all year round. It is not a protected animal. The harvest is increasing year-on-year, in 2021 it was 6855 individuals.

European bison (*Bison bonasus*)

In the past, bison lived mainly in the large deciduous and mixed forests of Eurasia. In Slovakia, a small flock is bred in a game preserve in Topoľčianky, and several individuals have also been released in eastern Slovakia in the region of the Starina reservoir, where individuals

from Poland regularly come. In total, around 3 000 bison are already living in Europe again. There are 19 individuals living freely in Slovakia.



Michael Gäbler, wikimedia.org

The rut takes place in August-October, and the bulls then fight among themselves for a temporary leading position in the herd. Pregnancy lasts about 9 months, and a cow, as a rule, gives birth to only one calf, which can follow the cow very quickly. It sucks for half a year, but already at the age of three weeks it also begins to graze. It matures sexually at three years of age, physically only at the age of 6 – 7 years. It can live up to 25 years. Bison are grouped into herds led by experienced cows; only old bulls are loners. They are active both day and night. They gnaw twigs, collect forest fruits, graze various types of herbs, grasses and agricultural cultures.

The bison is one of the year-round protected animals in our country and at the same time one of the species of European significance with a basic social value of € 3,319.39.

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