

= European hare =

The European hare (*Lepus europaeus*) , also known as the brown hare , is a species of hare native to Europe and parts of Western Asia and Central Asia . It is a mammal adapted to temperate , open country . It is related to and looks very similar to the European rabbit , which is in the same family but in a different genus . Hares are larger than the European rabbit , have longer ears and hind legs and breed on the ground rather than in a burrow . They rely on speed to escape from predators .

Generally nocturnal and shy in nature , hares change their behaviour in the spring , when they can be seen in broad daylight chasing one another around fields and meadows . During this spring frenzy , they can be seen striking one another with their paws (" boxing ") . For a long time , this had been thought to be competition between males , but closer observation has revealed it is usually a female hitting a male , either to show she is not yet ready to mate or as a test of his determination . This species has a fairly long breeding season which lasts from January to August . Hares are herbivorous and feed on grasses , herbs , twigs , buds , bark and field crops . Their natural predators include birds of prey , canids and felids .

The European hare is listed as being of Least Concern by the IUCN . However it is declining in mainland Europe because of changes in farming practices . The hare has been a traditional symbol of fertility and reproduction in some cultures , and its courtship behaviour in the spring inspired the English idiom mad as a March hare .

= Taxonomy and genetics =

The European hare was first described by German zoologist Peter Simon Pallas in 1778 . It shares the genus *Lepus* with other hares and jackrabbits . These animals are distinguished from other leporids by their longer legs , wider nostrils and precocial young . The former two are adaptations for long distance running . Historically , up to 30 subspecies of European hare have been classified , although their status has been variable . These subspecies have been distinguished by differences in pelage colouration , body size , external body measurements , and skull and tooth shape . The Corsican hare , Broom hare and Granada hare were at some points considered to be subspecies of the European hare , however DNA sequencing and morphological analysis has supported them as separate species .

There is some debate as to whether the European hare and Cape hare are the same species . A 2005 nuclear gene pool study supported this position . However , a 2006 study of the mtDNA of these same animals concluded they had diverged enough to be considered separate species . A 2008 study claims that in the case of *Lepus* hares , with their rapid evolution , species designation cannot be based solely on mtDNA but should also include an examination of the nuclear gene pool . It is possible that the genetic differences between the European and Cape hare is due to geographic distance rather than actual divergence . It has been speculated that in the Near East , hare populations are intergrading and experiencing gene flow . Another 2008 study suggests that more research is needed before a conclusion is reached as to whether there is a species complex . As of 2008 , the European hare remains classified as a single species until further data shows otherwise .

There appears to be genetic diversity in the European hare in the North Rhine @-@ Westphalia region of Germany . However , it is possible that restricted gene flow could change this within populations that become isolated . Based on molecular phylogenetic studies , the Cantabric population in Spain has unique mtDNA in relation to other European populations .

= Description =

The European hare is one of the largest living members of Lagomorpha . Its head and body length can range from 48 to 75 cm (19 to 30 in) with a tail length of 7 to 13 cm (2 @. 8 to 5 @. 1 in) . The body mass can range from 2 @. 5 to 7 kg (5 @. 5 to 15 @. 4 lb) . As with all leporids , the hare has elongated ears which , in this species , ranges from 9 @. 4 to 11 @. 0 cm (3 @. 0 to 4 @. 0 in) .

7 to 4 @. @ 3 in) from the notch . It also has long hind feet that have a length from 14 to 16 cm (5 @. @ 5 to 6 @. @ 3 in) . The fur colour is grizzled yellow @-@ brown on the back ; rufous on the shoulders , legs , neck and throat ; white on the underside and black on the tail and ear tips . The European hare ? s fur does not turn completely white in the winter , although the sides of the head and base of the ears do develop white areas . The limb musculature of hares is adapted for high @-@ speed endurance running in open areas . By contrast , cottontail rabbits are built for short bursts of speed in more covered habitats .

= = Range and habitat = =

European hares are native to much of continental Europe . Their range extends from northern Spain to southern Scandinavia , eastern Europe and northern parts of the Middle East and Central Asia . They have been extending their range into Siberia . They may have been introduced to Britain by the Romans . They have also been introduced , mostly as game animals , to North America (in Ontario and New York State , and unsuccessfully in Pennsylvania , Massachusetts , and Connecticut) , Brazil , Chile , Argentina , Uruguay , Paraguay , Bolivia , Peru , the Falkland Islands , Australia , both islands of New Zealand and the south Pacific coast of Russia .

Hares primarily live in open fields with scattered brush for shelter . They are very adaptable and thrive in mixed farmland . According to a study done in the Czech Republic , the mean hare densities were highest at altitudes below 200 metres (660 ft) , 40 to 60 days of annual snow cover , 450 to 700 millimetres (18 to 28 in) of annual precipitation , and a mean annual air temperature of around 10 ° C (50 ° F) . With regards to climate the study found that hare densities were highest in : " A warm and dry district with mild winter and longer duration of sunshine ; a warm and dry district with mild winter and shorter duration of sunshine ; a warm and moderately dry district with mild winter " .

In the United Kingdom , hares are seen most frequently on arable farms , especially those with fallow land , wheat and sugar beet crops . In mainly grass farms their numbers are raised when there are improved pastures , some arable crops and patches of woodland . They are seen less frequently where foxes are abundant or where there are many buzzards . They also seem to be fewer in number in areas with high rabbit populations . Although they are shot as game when they are plentiful , this is a self @-@ limiting activity and is less likely to occur in localities where they are scarce .

= = Behaviour and life history = =

Hares are primarily nocturnal and spend a third of their time foraging . During daytime , a hare will hide in a depression called a " form " where it is partially hidden . Hares can run at 70 km / h (43 mph) and when confronted by predators they rely on outrunning them in the open . Hares may be preyed on by canids , felids and birds of prey . They are generally thought of as asocial but can be seen in both large and small groups . They do not appear to be territorial , living in shared home ranges of around 300 ha (740 acres) . Hares communicate with each other by a variety of visual signals . To show interest they raise their ears , while lowering the ears warns others to keep away . When challenging a conspecific , a hare will thump its front feet ; the hind feet are used to warn others of a predator . A hare will squeal when hurt or scared and a female will make " guttural " calls to attract her young .

= = Food and foraging = =

European hares are primarily herbivorous . During the summer , they eat grasses , herbs and field crops . Their preference is for wild grasses and weeds but with the intensification of agriculture , they have taken to feeding on crops . During the winter , they eat herbage , twigs , buds and the bark of shrubs and young fruit trees . They have been known to eat their own green , pellet feces to recover proteins and vitamins . Two to three adult hares can eat more food than a single sheep .

European hares forage in groups . Group feeding is beneficial as individuals can spend more time feeding knowing that other hares are being vigilant . Nevertheless , the distribution of food affects these benefits . When food is well @-@ spaced , all hares are able to access it . When food is clumped together , only dominant hares can access it . In small gatherings , dominants are more successful in defending food , but as more individuals join in , they must spend more time driving off others . The larger the group , the less time dominant individuals have in which to eat . Meanwhile , the subordinates can access the food while the dominants are distracted . As such , when in groups , all individuals fare worse when food is clumped as opposed to when it is widely spaced .

= = Mating and reproduction = = =

European hares have a prolonged breeding season which lasts from January to August . Sexual maturity occurs at seven or eight months for females and six months for males . Females , or does , can be found pregnant in all breeding months and males , or bucks , are fertile all year round except during October and November . After autumn , the resting period for breeding activity , the size and activity of the males ' testes increase , signalling the start of a new reproductive cycle . This continues through December , January and February and the reproductive tract gains back its functionality . Matings start before ovulation with the first pregnancies containing one foetus and pregnancy failures being common . Full reproductive activity begins in March and April , when all the females may become pregnant , the majority with three or more foetuses .

Females have six @-@ weekly reproductive cycles and are receptive for only a few hours in one day . Thus competition among local bucks is intense . This phenomenon is known as " March madness " as it observed in March as the nights , the bucks ' preferred time for activity , are shorter and thus forces them to be active in the daytime . In addition to dominants subduing subordinates , the female will fight off her numerous suitors if she is not ready to mate . Fights can be vicious and can leave numerous scars on the ears . Hares will stand upright and attack each other with their paws , a practice known as " boxing " , and this activity is usually between a female and a male and not between males as previously believed . When a doe is ready to mate , she will run across the countryside , starting a chase that will test the fitness of the following males . When only the most dominant male remains , the female will stop and allow copulation .

Female fertility continues through May , June and July , however testosterone production decreases in males and sexual behaviour becomes less overt . Litter sizes decrease as the breeding season draws to a close with no pregnancies occurring after August . The testes of males begin to regress and sperm production ends in September . Does give birth in hollow depressions in the ground . An individual female may have three litters in a year with a 41 to 42 day gestation period . The young weigh about 100 grams (3 @. @ 5 oz) at birth . The leverets (young hares) are fully furred and are precocial , being ready to leave the nest as soon as they are born , an adaption to the lack of physical protection relative to that afforded by a burrow . A mother will visit the nest to nurse the leverets for five minutes a day . Young can eat solid food after two weeks and are weaned when they are four weeks old . Hares can live for as long as twelve years .

= = Status and human interactions = =

The European hare is listed as being of Least Concern by the IUCN as it is considered to be wide @-@ ranging and moderately abundant throughout its geographic distribution . However , population declines have occurred since the 1960s and have possibly been caused by the intensification of agricultural practices . In low population densities , hare are vulnerable to local extinctions . The Bern Convention lists the hare under Appendix III as a protected species . Several countries have placed the species on their Red List as " near threatened " or " threatened " . The hare is considered a pest in some areas and is known to damage crops . They are also hunted as game animals . Additional threats to the hare are the diseases European brown hare syndrome , pasteurellosis , yersiniosis (pseudo @-@ tuberculosis) , coccidiosis and tularemia , which are the principal sources of mortality .

= = = In culture = = =

In Anglo @-@ Saxon paganism , the hare is associated with reproduction and fertility and is a symbol for the spring goddess Eostre . Its connection with Easter eggs was based on a misconception by the Europeans that lapwings laid their eggs in the homes of hares . Germanic cultures noticed the high activity of hares during the spring and it was believed that their " mating dance " helped the earth grow . This observation would also lead to the popular English idiom mad as a March hare . The hare is a character in some fables , such as The Tortoise and the Hare of Aesop . It also appears in Alice in Wonderland by Lewis Carroll , in which Alice participates in a crazy tea party with the March Hare and the Mad Hatter .