A future for brown hares

Hare conservation based in science

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Foreword

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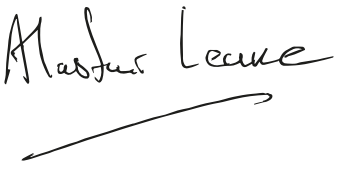
The brown hare is a Biodiversity Action Plan species. It was identified as such in 1995 because of falling numbers, yet their population in England still remains well below the level that was hoped for. The modern farmed landscape can be challenging for hares and other wildlife partly due to increased specialisation, with more livestock farming in the west and mixed farming giving way to arable in the east. These changes have affected the habitat available for hares as well as other species, but the science on hare conservation is clear. We know what hares need, and how to support them in a modern farmed environment.

This booklet explores brown hare ecology and conservation techniques, at a time when a good understanding of these topics is critical. The suggestion of a closed season for brown hares continues to be a subject of debate in Westminster, but the possible implications of this may be counter-intuitive. There is further nuance in the discussion because of the highly variable populations from place to place across the UK – in some areas a hare is an extremely rare sight, and in others, they are so numerous that they cause significant crop damage, as well as attracting illegal hare coursers. Considering overall numbers alone masks the enormous variations in densities and the contrasting situations faced by land managers at different locations across the country.

Although the debate around a closed season has gained interest of late, we must not lose sight of the fact that there are wider conservation approaches we can take to support brown hares, and these can be very effective. By far the most important factors for this iconic farmland species are good habitat combined with low levels of predation. Modern farming practices often do not provide enough cover in which leverets (and adults) can hide, or enough suitable food to eat in the summer months. In areas that lack these fundamental provisions, it is no surprise that hares cannot thrive. Couple this with the predation pressure coming from one of the highest fox populations in Europe, and the outcome is perhaps inevitable. Increased support through the new Environmental Land Management Scheme, as well as grouping conservation measures which complement each other into management bundles, would help hare numbers recover in many areas.

A thriving hare population, in balance with farming, is possible using the outcomes of GWCT research. The future does not reside in the implementation of a closed season due to the inevitable unintended consequences, but instead in a combination of habitat provision, predation control, better policing of illegal hare coursing and the ability to control hares when at pest proportions.



Introduction

The brown hare is a species which catches people's interest and affection. They carry an air of mystery in what can appear an otherwise fairly empty farmed environment and there is joy in seeing them loping across fields or, if you're lucky, bounding and boxing in the spring. They rely first on camouflage, crouching almost invisibly in a shallow depression called a form or taking cover in longer vegetation, then on speed to outrun any threat once they are disturbed or discovered. That is, if they are seen at all. As an elusive, mainly nocturnal creature many people who do not live or work in the countryside, or purposefully make an effort to see hares, will rarely come across them.

Hares crop up often in our expressions and folklore, probably linked in early times with the moon, goddesses, and female fertility and were revered in these roles. But these myths gradually gave way to associations with witches, trickery and shapeshifting – hares came to be viewed with an air of caution and unease in later times. Modern traditions and expressions still carry many references to hares, from the Easter bunny originally being a white hare, to their perceived 'madness' in March forever captured in the famous tea party of Alice in Wonderland. This behaviour in spring is part of the mating ritual that helps female hares choose both their partner and their mating time, rebutting males with the famous boxing display that is well-known but seldom witnessed. The widespread appearance of hares in British myth and legend suggests that they still hold a firm place in the national psyche.

Despite this common affectionate view of hares, their status in the countryside is more complex than many other species. In some areas they are scarce, declining or absent altogether, while in others they are so numerous that they can cause considerable damage to crops. This one species is simultaneously:

1. **A fondly thought of, nationally declining, conservation focus.**

2. **An agricultural pest, causing serious damage to certain crops and whose numbers need to be controlled locally when they rise too high.**

3. **A traditional quarry that can be the focus of shoot days, usually at the request of farmers whose crops are either already being damaged or are at risk, and a valued game meat.**

This unusual situation leads to the apparent conflict of a species which must be both conserved, yet also controlled, and makes developing appropriate policies

and legislation for hares very complex. Most species sit comfortably in a particular box, conveniently allowing Government to feel that they need either to protect the species or manage numbers where they reach pest proportions. However, nationally falling hare numbers, in a landscape which generally does not provide sufficient food nor cover, means that habitat provision and other management measures to help support hares are needed. Simultaneously, their ability to breed rapidly and thrive locally where an area suits their needs leads to the opposite scenario, with high numbers grazing off crops and sometimes becoming susceptible to disease if densities rise too high.

Many years of research, much of it by the GWCT, have helped us learn more about this elusive species – revealing more about hare ecology and the pressures they are under, as well as what can be done to help support and conserve them. We now understand what factors are driving hare declines, and what can mitigate these. Ensuring a secure future for hares in the UK is possible, if we listen to the science and act on what it tells us.

Despite the brown hare's ability to breed rapidly and thrive locally, in some areas they are scarce, declining or absent altogether. © David Mason

History of the brown hare

An animal of the open country

The brown hare is found mainly in the lowlands, on open arable or grassland where it relies first on camouflage, then speed to evade threats. They like to be either still and hiding in cover or, if out feeding, choose an open area where they can see danger approaching from hundreds of metres away. With large eyes and ears, hares can usually detect predators well before they are seen themselves. As the fastest land mammal in Britain as well as extremely agile in the chase, outrunning predators is an effective strategy. Although hares live predominantly in the open, they also need cover and shelter for resting and breeding. Young leverets do not have the protection of a burrow, nor yet the speed of an adult, so they rely on adequate cover and remain still to avoid detection by predators.

Hares can be very successful breeders, with several litters of up to four young possible each year, usually between February and September (sometimes the female even conceives the next litter before the current one is born). At birth the female leaves her young together in the open but over the following days they move apart, so they are usually found singly[1]. After sunset, the female returns to their birthplace and suckles them for a few minutes[2]. This daily feed is all the attention leverets receive.

However, despite the potential to produce very many young per year in ideal conditions, hare breeding success is dependent on, and vulnerable to, several factors. Wet weather, insufficient cover, lack of food and high levels of predation mean that breeding rarely reaches these levels. Leveret survival is very low. There is slight variation between studies, but between 70 and 80% of leverets die in their first month of life, with half not surviving the first two weeks[3,4]. Warm, dry springs and summers are key, and can allow females to have successive pregnancies with the potential for leverets to survive well if other factors are in their favour, such as good habitat and low predation. Under wet and cold conditions, however, leverets often succumb to the cold and diseases such as Coccidiosis[5].

Hares are mainly nocturnal, grazing on large areas of young grasses and cereals at night[6], then resting in the day – often in a form in the ground (see picture left). When flattened into the form, most of the hare's body is below ground level and it can be completely inconspicuous even in the shortest of arable crops. Although they use wide-open areas, the need for both year-round grazing as well as vegetation cover means that hare abundance is associated with a greater diversity of plant species, the presence of hedgerows and unfarmed habitat[6-8]. Simply put, more hares are found where there is more variety in the landscape, as the diversity of plants provides them with what they need – food and protection all year.

HARE HISTORY IN BRITAIN

The brown hare's origins in the British countryside are a little mysterious, but palaeontology suggests that it was not present at the end of the ice age, while the land bridge between Britain and the European mainland was still connected. At that time, our hares were mountain hares – a species now largely confined to the highlands of Scotland. The brown hare did not appear in Britain until Roman times or perhaps a little earlier (2,000 years ago)[9], by which time much of the lowlands were already being farmed. It is even possible that the Romans intentionally introduced hares, as sport-coursing was a popular form of hare hunting in Roman Europe at this time. Hares like the open country, and in western Europe arable farmland is their natural habitat. At the end of the last ice age, they are thought to have been found only on the grassland steppe of south-east Europe and south-west Asia, spreading west from there with the advent of farming as humans cleared larger areas of forest[10].

Hares can have several litters each year, but leveret survival is very low. They need a diverse landscape providing year-round food and protection. © Colin Seddon

The hare's changing fortunes

There are several different ways of estimating the size of the hare population, which we use together to understand where hares are found, how many there might be, and whether numbers are rising or falling. Are they thriving, or just struggling on? However, hares are predominantly nocturnal creatures, well camouflaged and, for much of the year, unobtrusive if you aren't actively looking for them (using effective techniques, see page 12), so these estimates are just that – the best assessment we have of hare numbers and trends.

How do we know? Where the numbers come from

National Gamebag Census

The place to turn for the longest-term data on hares is the National Gamebag Census (NGC), which has collated information from game books across the UK back to 1900. Although this gives us information on the number of hares that were shot, rather than the number that there were present, the NGC is an invaluable source of information about wildlife population trends because these two factors are inexorably linked. A recent analysis comparing bag data from the NGC with abundance count data from the British Trust for Ornithology's mammal counts found similar trends from the different sources, confirming that bag data is a useful indicator of population changes[11].

Overall, bag records tell us that hare numbers have been falling throughout the twentieth century, with hares approximately half as common now as in Edwardian times. The general downward trend was impacted by specific events, such as the two world wars when both gamekeeping and game shooting across the country dropped off dramatically, as well as the myxomatosis epidemic which severely affected rabbit populations – leading to an increase in hare numbers[12] (see Figure 1).

NGC data are given as an index, relative to the formal starting year in 1961. The data cannot give an estimation of overall population size because we don't know the size of the sample compared with the total, so we can't 'scale up' the numbers to estimate the national population. Instead, the trend of how hunting bags are changing over time is used. Since the 1960s, there has been a steady 30-year decline for hares, with shooting bags 70% lower in 2019 than in 1961. However, it is important to note that hares which are shot because they are causing crop damage or to prevent illegal hare coursing are not included in these gamebag figures (see Figure 2).

Because of this decline, the brown hare was chosen as a Biodiversity Action Plan (BAP) species in 1995 and various agri-environment scheme options were introduced in an attempt to support their numbers, which seemed to have an effect. The set-aside scheme

BAP SPECIES

The brown hare is a Biodiversity Action Plan (BAP) species, but what does this really mean?

The UK introduced its BAP in response to the Convention on Biological Diversity in Rio de Janeiro in 1992. In it, priority species and habitats were identified that were considered of particular importance to conservation.

Being identified as a BAP species was a formal recognition of a particular focus for conservation. BAP species have a Species Action Plan drawn up, a target for conservation, and a lead partner with particular expertise in the area to help drive progress. The GWCT was appointed lead partner for brown hare in 1995.

The brown hare was one of the first animals to be considered in the BAP programme. It was chosen not because it was rare, endangered or under any specific threat, but because it was once very common, was widespread and had declined significantly during the post-War period. The BAP proposed that measures should be taken to improve numbers so that our countryside should support at least two million animals in winter, approximately double what was thought to be present at the time.

was also introduced at a similar time which, despite having a different objective, may have been helpful to hares. A slight increase from the early 1990s until 2010 suggested that hare numbers were perhaps beginning to recover, however, since 2010 hare bags have dropped back to the lowest levels seen in the 1980s[13].

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Hares are approximately half as common now as in Edwardian times.

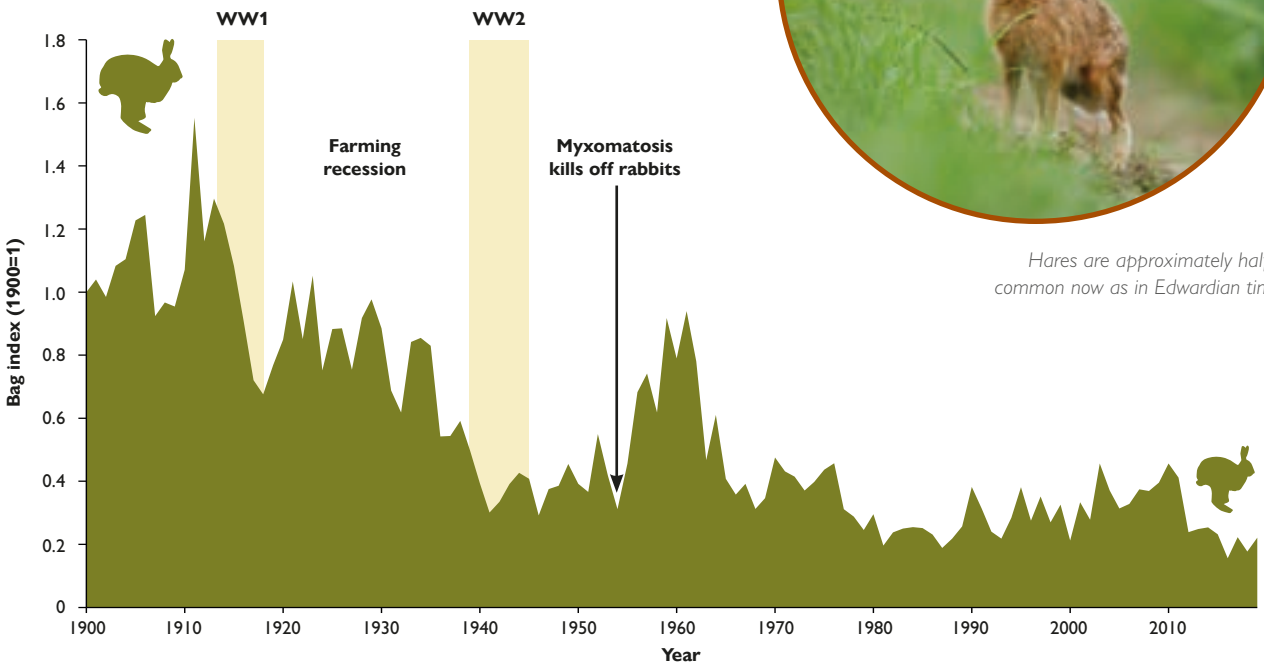


FIGURE 1

Bag records of hares from the NGC from 1900 to 2019.

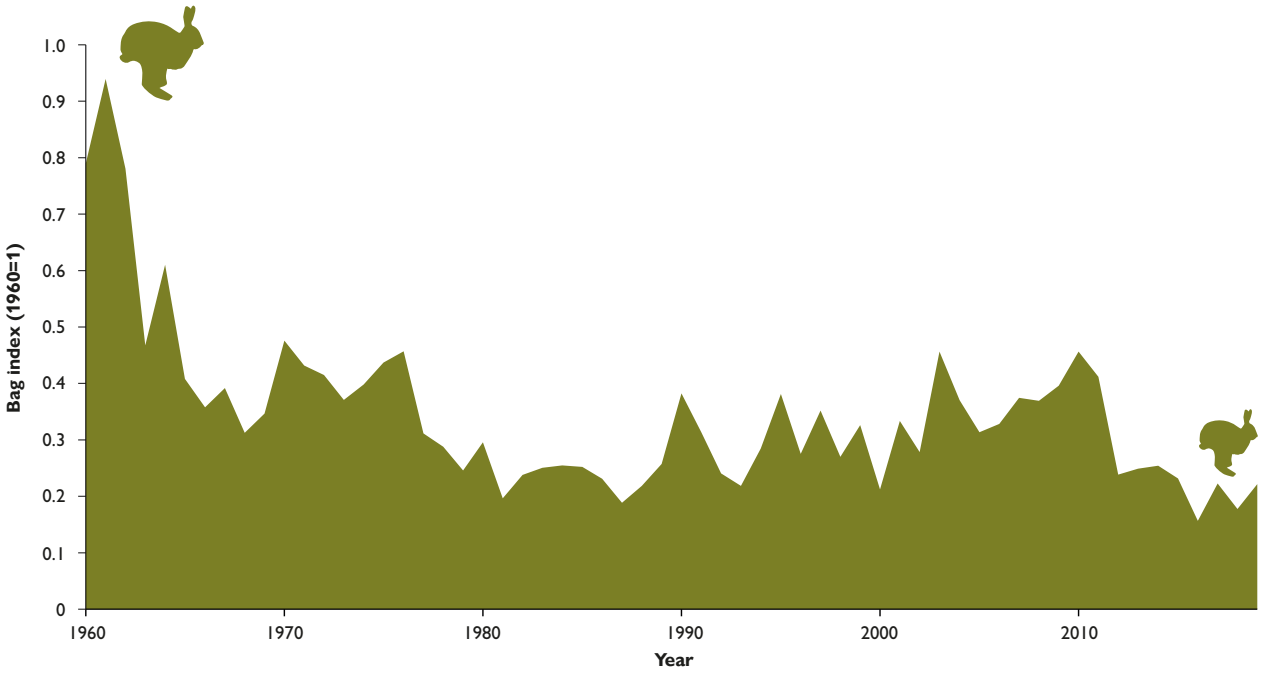


FIGURE 2

Brown hare index for England, from NGC bags 1960-2019.

The Breeding Bird Survey

The British Trust for Ornithology (BTO) runs its Breeding Bird Survey (BBS) each year in which volunteers count birds in designated areas across the UK. Since 1995, mammals that are also seen during the bird survey are counted. Similar to the NGC, the data they collect is expressed as an index (in this case relative to the first year of 1995), which helps give an indication of how populations are changing, rather than absolute numbers. This indicates that hare numbers have been relatively stable in England since 1995, fluctuating by only around 10% either side of the original counts[14] (see Figure 3).

National population estimate

The most recent population estimates we have are from a Natural England report which was published in 2018, assessing population numbers for many mammal species. It used hare counts from several scientific papers and came to a population estimate of 579,000 hares (within a likely range of 427,000–1,990,000)[15]. Estimating population size is complex, and the authors note that there are several potential weaknesses in the process – for example, the most recent density estimates available were more than 10 years old, the wide variability in hare abundance between different habitats and the unknown effect of hare population management. They concluded that the hare range is stable, but that there is not enough information about population size to estimate a trend. From these data, we can draw conclusions about where they are, but not how well they are doing.

HOW ARE HARES COUNTED?

As a nocturnal, well-camouflaged creature that remains still unless it is disturbed, hares can be extremely difficult to count accurately, and many hares pass unnoticed. On farms where they are present, many farmers may not realise just how many they have unless there is a particular effort to count them.

The most accurate way to assess numbers is with a spotlight count. When hares are active at night, their red eye-shine in a spotlight beam makes them visible. Using a pair of binoculars (7x50) aligned with the spotlight after dark in winter, each field can be scanned for hares. By knowing the area that can be seen with the spotlight in each field, it is straightforward to calculate the number of hares across the whole farm[16,17]. Anything above 40 hares per 100 hectares is a high density.

The BBS indicates that hare numbers have been relatively stable in England since 1995. © Laurie Campbell

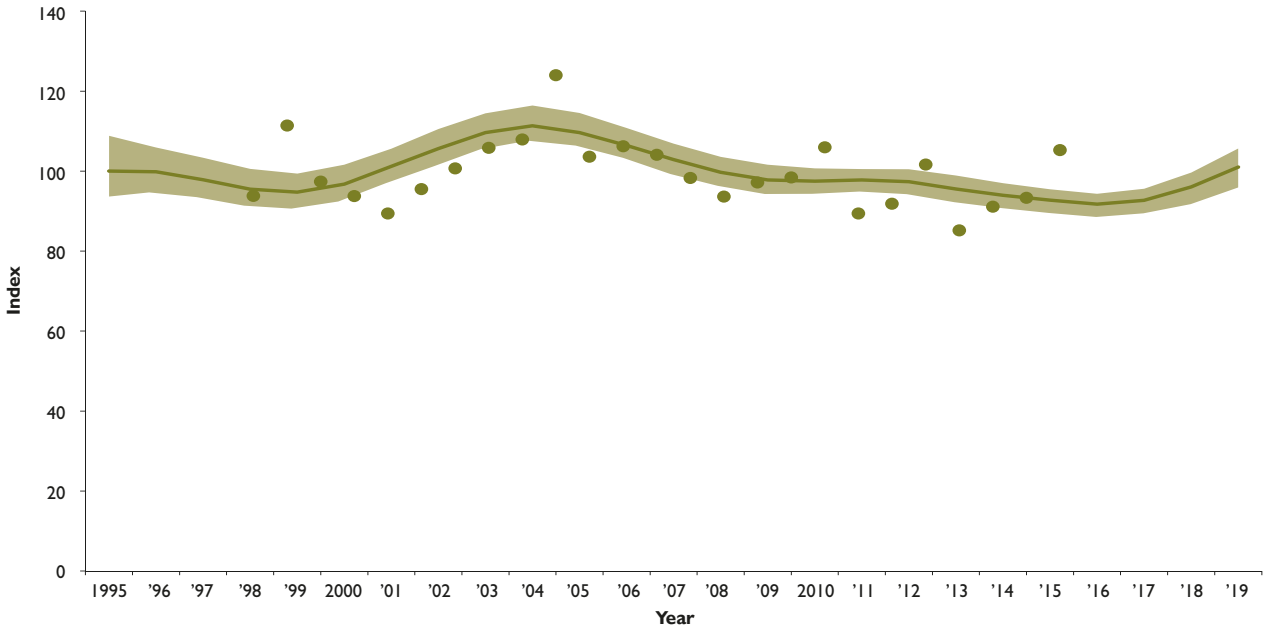


FIGURE 3

Breeding Bird Survey brown hare index 1995-2019.

As a nocturnal, well-camouflaged creature that remains still unless it is disturbed, hares can be extremely difficult to count accurately. © Charles Cooper

A divided nation

These various estimates suggest that hare numbers in England are low but relatively stable in recent decades, with the suggestion of a slight recovery from around the 1990s to 2010 not being borne out, and numbers falling back[13]. However, looking at national trends alone masks another very important part of the story: hares are not spread evenly across the country. In fact, they are very unevenly spread. Although we know that national hare numbers have been falling, and indeed dramatic losses have been reported recently in some regions such as the North West, where a 40% drop was seen between 1996 and 2018[14], in other areas hares are relatively abundant and numbers are climbing, with, for example, a 30% rise in the East Midlands over the same time period[14]. England is a divided country in terms of land use, and therefore also in terms of hare abundance (see Figure 4).

The open landscapes ideal for hares with plentiful grazing and places to hide are found in the UK lowlands, mainly in arable areas and some lowland pastures. The loss of mixed farming in the west of the UK, with a move towards specialist livestock only farming, has resulted in landscapes that are less suited to hares. Competition for grazing with domestic livestock, wetter weather and less open space to detect approaching predators means that in general, hares do not thrive in livestock farming areas[18]. This all means that the most suitable habitat for hares is found in the predominantly arable and horticultural east and centre of the country, with suitable areas further west being much more limited. Higher areas are the preserve of the closely-related mountain hare (the only native member of the rabbit family in Britain).

The open landscapes ideal for hares with plentiful grazing and places to hide are found in the UK lowlands, mainly in arable areas and some lowland pastures.

FIGURE 4

Brown hare habitat in Britain. The yellow area is optimal habitat with a high proportion of arable farmland. Green is less optimal ground where livestock rearing outweighs arable farming in importance. Grey areas are unsuited to brown hares for a variety of reasons. *(From CEH Land Cover Map 2000 and OS Geographic reference maps.)*

Mountain hares are found in the uplands whereas brown hares are more likely to be found in the open landscapes of the lowlands.

What is driving declines?

We know that hare numbers have been falling throughout the century, but what are the reasons for these declines? What pressures do hares face in the modern countryside that are causing their numbers to fall? To understand this, we need to look more closely at the farmland ecology of hares – how do they use the countryside, what do they need, and is this changing?

The GWCT has had an active research programme into hare ecology, behaviour[1], and the factors that influence them since the late 1970s, which has extensively added to the knowledge of the species. These studies cover an enormous breadth and depth of topics: from their relationship with tilled land, their use of pasture and whether it is stocked or unstocked and the most effective techniques for counting hares[16,17], to the effect of changing farm practices[6], growing oilseed rape[19], different hunting methods[20], fox predation[21], predator control[22], arable crop harvesting[23], created habitats[24], the rabbit population crash following myxomatosis[12] and many more.

This and other research has taught us a great deal about hares and, in combination, the evidence paints a clear picture. There are two main factors that have been driving hare declines, and these can be used to inform our conservation of hares today:

1. **Modern agriculture is much less favourable to hares than traditional mixed farming was.**

2. **Predation is a key limiting factor for hares, even in a suitable environment.**

These two factors are linked, with poor habitat exacerbating the effect of heavy predation – for example, a lack of cover in which to hide leaves leverets more vulnerable to predators. There are also other important considerations, including illegal hare coursing and the need for hare population control when numbers rise to pest proportions in arable areas.

Traditional mixed farming was more favourable to hares as it provided plenty of food and shelter. © Peter Thompson

In modern farming field enlargement and block cropping increases efficiency and productivity in farming operations, but reduces diversity in the landscape.

Diversity of plants and weeds provide plentiful food throughout the year, as well as cover and shelter, particularly for leverets. © Charles Cooper

The farmed landscape

The challenge

The typical patchwork quilt farmed landscape of the Victorian era was ideal for hares. A century ago, almost all farms were mixed; with cattle, sheep and horses kept alongside the growing of cereals like wheat and barley as well as oats. Consequently, there was a greater diversity of plants in a small area, both those sown rotationally in modestly sized fields, as well as the weeds that grew more readily in the fields and hedges of the time, interspersed with pasture. This provided plentiful food throughout the year as well as cover and shelter when needed. These last two points are especially important for leverets, which cannot evade predators using speed as adult hares do, so rely on hiding. Shelter from poor weather is also essential for leverets, whose survival is much poorer during wet summers than warm, dry ones.

However, as farming techniques have changed through the twentieth century, those adjustments which helped to increase yields, improve efficiency and feed our growing population made the farmed environment more uniform, and therefore more challenging for hares, along with many other wildlife species (see Figure 5). Specifically:

1. Farm specialisation: Most farms are specialised units, with large, all-arable farms typically found in the east and intensive livestock farming, especially of dairy cattle, in the west. This specialisation allows for efficient production but can considerably reduce the breadth of habitats across a farm.

2. Uniform cropping: Before the advent of nitrogen fertilisers, arable crops were rotated with grass and clover pastures to restore the soil fertility. This meant that there were always grass fields interspersed with arable areas, which provided good foraging habitat for hares. Since chemical fertilisers removed the need for traditional rotations and allowed constant cropping, grass on arable farmland can be scarce. We know that hares prefer to choose home areas that have easy access to a variety of crops, moving between fields that are at different stages of crop development – grazing on young crops in one area and, when those grow too high, moving to the next field where young shoots are still available[6]. Probably because of this, hare numbers in autumn are higher in areas where the landscape is more diverse – one of the key factors which has been lost in modern farming practices[6].

3. Field enlargement and block cropping: Both enable much-needed efficiency and productivity in farming operations, but also reduce diversity in the landscape even further. Such an environment, with large areas of a single crop, does not provide hares with the range of foods they need – leading to a lengthy period in summer from May through to September when the food supply for hares dries up. When arable crops have grown too long to be suitable for grazing, hares are left only with the limited forage and cover afforded by field margins, tracks and hedgerows[25]. At the GWCT's Allerton Project demonstration farm in Leicestershire, we radio-tracked hares to study their land usage. This showed that every individual included at least a small area of grass within their largely arable territories, another indicator that mixed farming is particularly good for hares.

4. Changes in crop choice: On modern farms, oilseed rape has increasingly been used as a break crop to interrupt the sequential use of fields for cereals, and rotate crops in a given area. This was previously the role of grass pasture, and although hares and other farmland wildlife such as deer do graze on oilseed rape, in contrast to pasture it only provides a good food supply in winter, becoming too long to be suitable by summer and contributing to the hare hungry gap[19].

5. Livestock farms: On livestock farms hares suffer from a lack of cover, competition with livestock for grazing and high mortality of leverets, both through predation and grass-cutting machinery. Hares are usually found either in fields without livestock, or where the stocking densities are very light[26]. Very often, as farmers move their animals from field-to-field hares move too, onto the unstocked pastures.

The solution

Increasing the diversity within landscapes may benefit hares, for example, with agri-environment schemes supporting fallow land, wildflower areas and grassy margins on arable farms; or woodland, improved grass or arable crops on livestock farms[8,18,27-29]. The potential to successfully increase hare numbers through these means has been shown in various European countries, when implemented at high enough levels. For example, one study in Denmark found that providing areas of permanent set-aside was the most effective technique to increase hare numbers, but that 5% of the landscape being in Ecological Focus Areas was not enough for hare populations to be viable[30]. A research programme in Switzerland found that hare numbers increased in areas with wildflower plots and arable crops where rows were sown more widely (so that hares can enter) covering only 3% of land area[27], but another paper suggests that at least 14% of land area needs to be covered with 'high-quality habitat' to support hares and birds[31]. There is still much to be learnt, but we do know that supporting farmers in their efforts to produce the food we need while simultaneously providing areas that are less intensively farmed can do much to help our farmland wildlife, including hares.

A lack of cover and competition for grazing are challenging for hares on livestock farms. © Peter Thompson

© Peter Thompson

Wildflower plots and arable crops where rows are sown more widely so that hares can enter are ideal high quality habitat for brown hares.

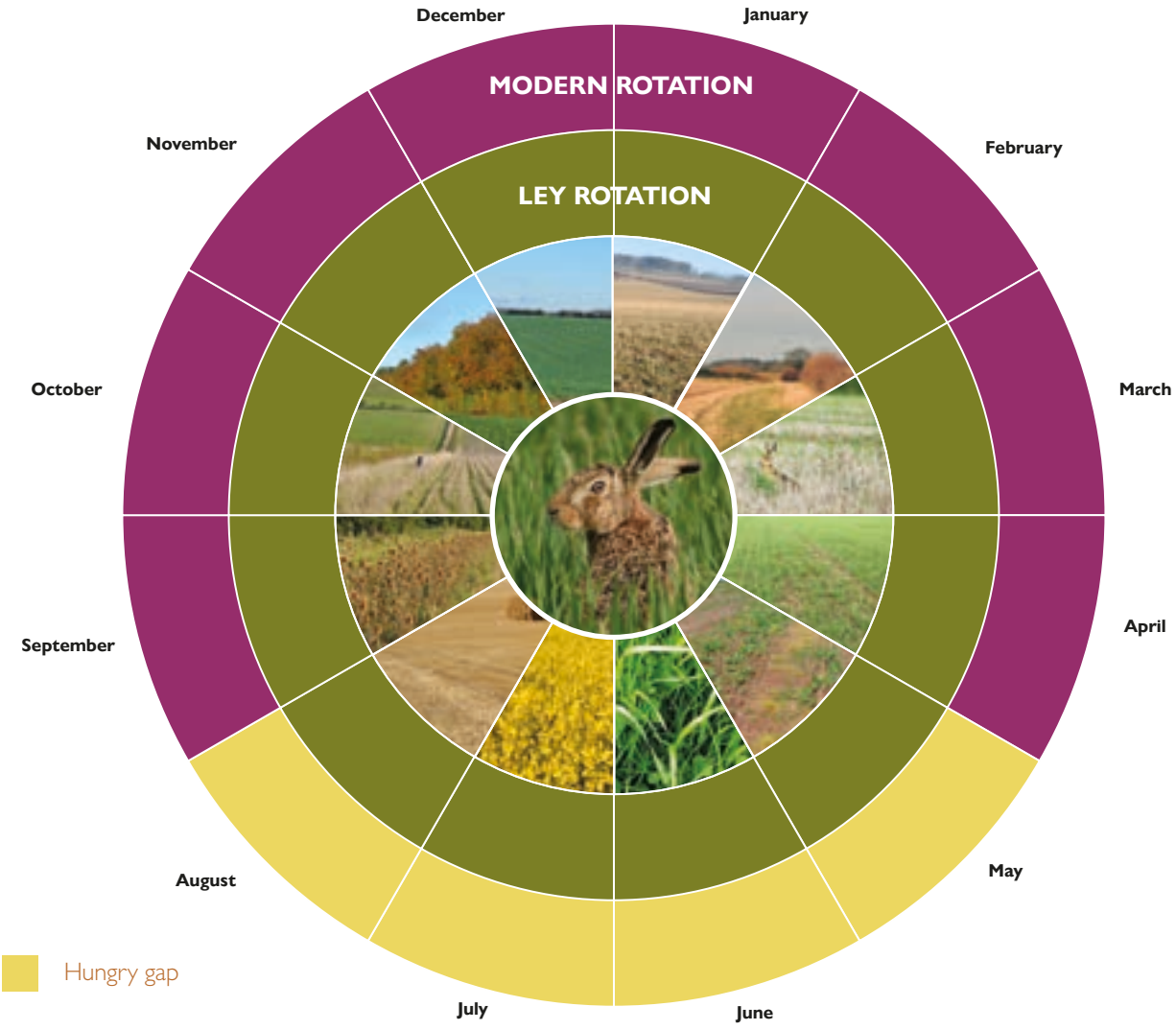
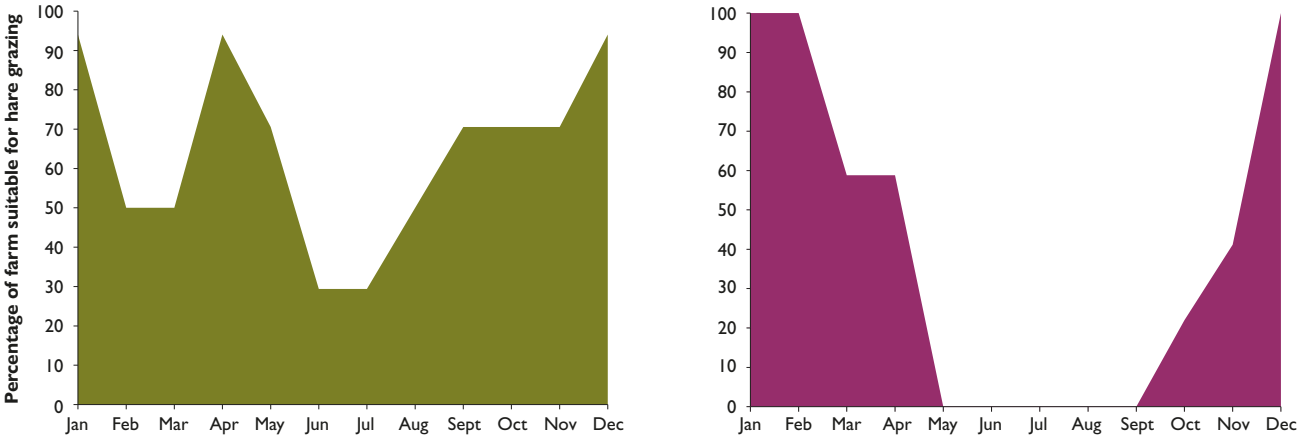


FIGURE 5

Food supply for hares on a traditional post-war ley farm compared with a modern one. Under the ley rotation the sequence of cereals was followed by grass, which produced a crop pattern with food for hares year round. A modern rotation with break crops instead of grass provides no grazing in summer.

Traditional cropping rotation: winter wheat, spring barley, spring barley, grass, grass.

Modern cropping rotation: winter wheat, winter wheat, winter barley, oilseed rape.



A study found that one fox family is capable of eating all the leverets produced by the local hare population. © Travelina

Hare predation

The challenge

Many predators are now more abundant than they were a century ago, including the main predator of brown hares – the fox. Overall, the UK fox population is thought to be higher than it was historically, but numbers have been stable over the past 25 years or so[32]. Data from the NGC about fox bags indicate two to three times as many foxes shot in recent times compared with the 1960s[32], with the UK having one of the highest fox densities in Europe[33].

Although foxes perhaps only rarely surprise and kill adult hares, they can systematically prey on and kill leverets. The recent changes to the farmed landscape (discussed on pages 19-21) magnify this problem; the lack of suitable cover which both leverets and adult hares need to conceal themselves can make hares more prone to fox predation than they may have been in a traditional ley farming environment.

It has been known for many years that fox predation is an important factor affecting hare populations[21,34]. A GWCT study from 1995 demonstrated the extent of this with computer modelling, using information on the hare population, fox density and diet from real-world scenarios, to assess the impact of fox predation on hares. The study found that one fox family is capable of eating all the leverets produced by the local hare population[21]. Under this level of predation pressure, hare numbers will be unable to rise, and it will take very little additional mortality for the population to shrink.

Another concern that has been expressed to the GWCT by a growing number of farmers and landowners is the potential impacts of protected predators like badgers and buzzards on leverets. There is no scientific evidence on the scale of this as a threat to hare populations, but practitioners on the ground perceive that abundant, protected predators may be impacting hare numbers.

The combination of higher predator numbers with poorer habitat in today's farmed environment means that the threat of predation is very high for hares, and this is one of the main factors limiting their population.

The solution

Predator removal experiments in the UK and Poland looked at the importance of fox predation on hare populations by reducing the number of foxes in a certain area and monitoring the effect this removal had on hare numbers. They found that the hare population does indeed respond well to the lowering of fox numbers. The Polish study found that fox control led to an immediate increase in hare density compared with a nearby reference area. This change reversed when fox control was stopped. In this study, hare densities were on average 70% higher in areas where fox densities were lower[35].

A series of GWCT studies in the UK between 1985 and 2006 looked at the impact of predator control on prey species at three sites. Over this 20-year period, a professional gamekeeper moved from one site to

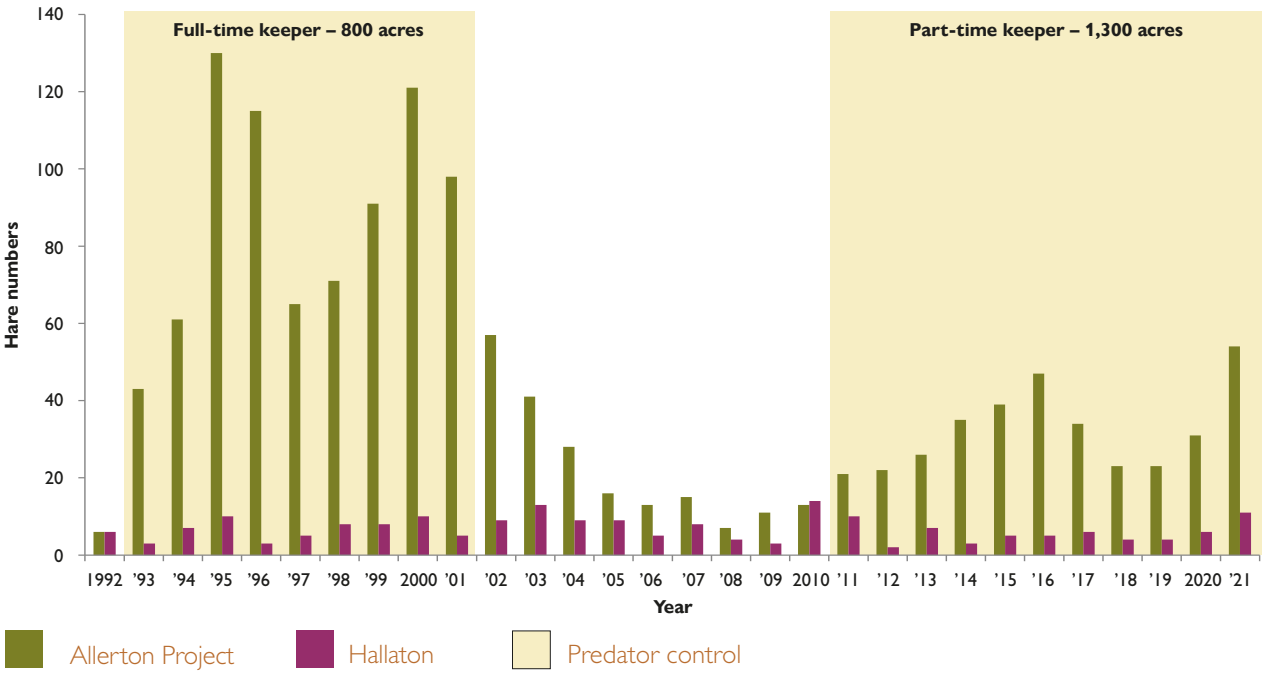


FIGURE 6

Changing hare numbers at the Allerton Project in Loddington.

Fox numbers were controlled from 1993 to 2001 on the Loddington site, no control was carried out between 2001 and 2011, but then it restarted with half the effort. Hare densities were very high during the first fox control period, fell when control ceased in 2001 and then began to rise again when control restarted from 2011. No fox control was carried out at nearby Hallaton, which acts as a reference site for comparison.

another conducting legal predator control in early spring for different scientific projects. The effect on local hare populations was marked, with numbers rising at all sites when fox numbers were controlled, and falling when predator control ceased[22]. Some areas of these studies also included habitat improvement measures, and in these cases hares reached autumn densities of between 50 and 70 hares per square kilometre – exceptionally high for the UK.

Comparing the previous average hare densities on the different sites to peak densities during study periods, the results showed that at two sites hare densities more than doubled during periods of predator control. At the third site, at the Allerton Project in Loddington, Leicestershire, hare densities rose more than 10-fold when predator control and habitat measures were introduced together. However, hare densities dropped again when predation control ceased, despite habitat measures remaining in place[22] (see Figure 6).

Hare densities increased more than 10-fold when predator control and habitat measures were implemented. © Wild Media/Charles Cooper

Land managed for gamebirds often supports far higher numbers of hares than are generally seen elsewhere. © David Mason

How to help hares

Where do hares do well?

In some places in the UK, hares are thriving, and we can look to these areas to understand how to best support them across the wider landscape. Scientific studies have shown us that improving habitat and reducing predation together can have the most marked impact on hares.

This is borne out in the real world in areas where these main drivers are both addressed, and the effectiveness can be dramatic – as evidenced by rapidly recovering hare numbers. In the UK currently, this is usually seen where there is a shooting interest because here predator management is needed to protect the gamebirds, which also benefits hares. Furthermore, the agri-environment options that are often taken up on shoots such as planting wild bird seed mixes, cover crops, beetle banks and hedgerows provide both a more reliable year-round food supply for hares as well as more areas in which they can find cover.

It is perhaps unsurprising that the mechanisms used to support gamebirds can also help provide a better environment for ground game such as hares. Breaking up the modern farmed environment to (re)introduce more diversity in the countryside benefits many species of game and wildlife, and hares are no exception. It follows then that areas managed with shooting in mind often support far higher numbers of hares than are generally seen elsewhere. Financial support for these habitat management options is available to all farmers in the form of agri-environment schemes; it is by no means necessary to run a shoot to access them and feel the benefits for wildlife. However, the additional income coming from shooting allows shoot managers to go over and above these measures, for example with the addition of predator control which is so vital to hare breeding success.

However, this raises the parallel issue that when hare numbers rise too high, they can rapidly become a problem. Hares are a grazing species that predominantly feed on the young shoots of growing crops, so when there are many animals, crops can fail under the grazing pressure. Some crops can and do recover from this – for example, cereals can often re-grow in time, so the impact on yield is lower – and so, at times, farms can tolerate higher densities without loss. But at other times when growing sugar beet or vining peas, crops cannot sustain such damage causing losses. A similar situation is seen in many areas where wild deer numbers have risen, as large herds of deer can cause untold damage to crops. Serious damage to some crops is a very real threat when hare density rises, as is the issue that high numbers of hares attract illegal hare coursing and the extensive damage that can be caused to both land and property by this activity (see page 26).

Where a species is so numerous as to become an agricultural pest[18], farmers need the ability to protect their crop either by reducing numbers or removing individuals that are causing damage. This is either carried out by the farmers themselves (or others acting on their behalf), shooting individual hares in a gradual manner, or by a hare shoot day being organised to reduce numbers, usually during February prior to the commencement of the breeding season[20]. In general, hares are not shot on gamebird shoot days.

This apparent seesaw of conservation and control may appear counterintuitive, with areas of scarcity and areas of abundance, and either too many hares or too few both being a problem.

HOW MANY IS TOO MANY?

Anything over 40 hares per 100 hectares is considered to be a high density. Once numbers rise higher than this, damage to vulnerable crops is a very real threat, but farmers may well still wait to see evidence of such a problem before taking action to lower hare numbers.

© Peter Thompson

Hare coursing is an increasing problem and can cause serious damage to property, land and crops. © Peter Thompson

Hare coursing

There are several other important factors in the conversation about hare conservation. These are not subjects on which there is scientific evidence, but which are nevertheless very real in the experience of farmers and landowners on the ground. Through working closely with practitioners in an advisory capacity, we gain an understanding of these issues and those working in the countryside often share their insights with GWCT staff.

One of these factors is hare coursing. Hare coursing is the pursuit of hares with specially bred sight-hunting dogs such as greyhounds to catch and kill the hare. Despite being illegal in all countries of the UK under the Hunting Act 2004, and a focus of rural policing, in some areas hare coursing is becoming a bigger and bigger problem. In the seven months from September 2019 to April 2020, there were almost 140 hare coursing incidents reported to the police in Suffolk alone. This suggests that hare coursing was occurring at least every other day in the county, presumably with an additional unknown number of events that were not reported.

Many in the countryside perceive this is now one of the greatest conservation threats hares face. Coursing events are often live-streamed, with organised betting on the outcomes. The large sums involved mean that those running hare coursing continue despite it being illegal. In addition to the impact on hare populations, enormous damage can be caused to property in the form of gates, hedges and fences, as well as to land and crops. Intimidation and physical threats to farmers, their homes and property are often recorded. Many farmers, especially in East Anglia but also in other parts of the UK, now feel their only choice is to keep hare numbers low enough that hare coursers are not attracted to their land.

Hare coursing with dogs is one of the conservation threats hares face. © Malomalot

Farmers enjoy seeing hares in the countryside and will support them as long as they can control numbers if they rise too high. © David Mason

A closed season?

Recently, it has been suggested that a closed season should be introduced to protect both hare numbers, and the welfare of leverets that might be orphaned if hares continue to be culled during the breeding season[36].

The scientific knowledge in this conservation document highlights several factors that are driving hare declines, with farmland modernisation and predation being the two main points. Addressing these at a wider scale would have by far the most impact on hare conservation across the UK.

Hare shooting can and does reduce hare numbers locally, with one study showing that organised hare shoots can reduce local populations by around 40-70%[20]. Shoots are only carried out when hares become a threat to crops or forestry, and this usually only happens where they are thriving because of good quality habitat. Such culls do reduce numbers in the local area as was the intention, however, the population remains robust.

The key in introducing a closed season is to achieve a balance between hare welfare and conservation, and protecting agriculture without leading to a loss of enthusiasm for hare conservation measures among farmers. The timing of restrictions will determine the success of any new legislation to achieve these objectives. Allowing focused hare control when it is needed will avoid the unintended consequences of pre-emptive action carried out early for fear of a problem later, that could have a negative effect on all these considerations; the dates need to allow for focused control, while minimising the orphaning of leverets. The GWCT believes that any closed season should begin at the end of February – a compromise that would protect the vast majority of leverets, while avoiding pre-emptive action on the part of land managers.

Pre-emptive action

With the prospect of a closed season for hares throughout much of the year when crops are vulnerable, many farmers have reported to GWCT staff that they would feel it necessary to cull hares legally in the early winter open season, to reduce the chance of damage later in the year when they would be unable to act. Fear of damage to their crops from the animals themselves, or to their land and property from hare coursers may drive such actions. Furthermore, a landowner who is concerned that high numbers in spring or summer would not be controllable is less likely to take up agri-environment options designed to benefit hares – potentially resulting in the double blow for hares of more severe, less focused winter culls along with fewer conservation features in the landscape.

Controlling hares in the winter open season, before crops may even be drilled and before any indication of whether hare numbers that year may be high enough to result in crop damage is inevitably extremely difficult. Any culling that is practised at this early stage will be much less focused than that carried out later in the year, when it can be done only when and where necessary. The majority of farmers enjoy seeing hares in the countryside and do all they can to support them, in the knowledge that if numbers rise to become problematic and the hares become an agricultural pest they are legally able to address the situation.

The value of existing law

The existing UK legislation that protects hares – The Ground Game Act 1880 and The Hare Preservation Act 1892 – work together in such a way that they remove the damaging effects of commercial pressure while allowing hare control for crop protection, food, sport and market value. In addition the code of good practice for hare shooting already recommends no shooting past the end of February to prevent orphaning leverets. This timing is chosen by both existing legislation on the sale of hare meat and the code of good practice because, although a small number of leverets are born year-round, the main breeding season occurs after those months. One study looking at this found that only three per cent of leverets are born in January and February combined[36], and as only a small proportion of nursing females would be culled, a smaller percentage of these again would be affected by February shoots.

Allowing shooting during February enables a focused cull in the areas where numbers are high, and where crops are known to be at risk. This avoids both the removal of individuals early in the winter which may not be present by spring, as well as unnecessary culling in an area where hare numbers would not have risen to become problematic. Many UK shoots occur in February at present, when hare meat can still be sold for consumption – selling their meat becomes illegal from March to July inclusive to avoid this driver for shooting during the main breeding season.

Studies show that approximately 70% of leverets die of natural causes before they are one month old[4], predominantly through predation or the effects of bad weather. Increasingly poor farmland habitat greatly exacerbates these natural causes, and we know the conservation measures that can help address this. Enormous welfare benefits for the greatest number of leverets would come from introducing such measures to improve survival throughout the year.

A closed season for hares could have negative unintended consequences. © David Mason

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