Working for Wildlife

The home of Britain's working conservationists

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Buzzing endorsement for wildlife mix

A new mix proving successful for insects and grey partridges

Fallow the leader

We shine the spotlight on fallow deer


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In focus

Yellowhammers were one of the red-listed species spotted by farmers taking part in the count. © Steve Round

Farmers flock together to take part in the ninth Big Farmland Bird Count

More than 1,900 farmers and gamekeepers across the UK and Europe helped our Advisory team compile a vital snapshot of the health of farmland birds by taking part in the ninth GWCT's Big Farmland Bird Count in February.

Despite two named storms during the survey period, land managers counted more than 420,000 individual birds; spotting 130 species across more than 1.5 million acres. Encouragingly, 26 red-listed species were recorded, with seven among the 25 most frequently seen species.

Roger Draycott, our director of advisory and education, co-ordinates the survey and said: "The count highlights the commitment of land managers not only to undertake farmland wildlife conservation measures, but also to record and evaluate the benefits of this vital conservation work."

Farmers the length and breadth of the country joined in, with every county in England represented, and there were responses from across Northern Ireland, Scotland and Wales. This year's count also saw land managers in Austria, Germany and the Czech Republic enthusiastically adopt this British initiative and return an impressive 300 counts between them.

Thank you to all those who took part – find out more at **bfbc.org.uk**.

Redshank returns

A STUDY OF BREEDING PAIRS OF REDSHANK – a threatened native wading bird species – whose population is recovering in the Avon Valley in Hampshire, has shown one intrepid individual travel more than 100km to Wales for the winter. Its epic journey is helping scientists from the Game & Wildlife Conservation Trust to understand more about the movement and habits of this 'amber-listed' bird species, to help better protect it in future.

The bird was spotted in Wales after being colour ringed in Hampshire as part of research by the GWCT's Wetlands research team. Across the UK, redshank breeding pairs and breeding success has been steeply declining since around 2000. But this key breeding ground in Hampshire is bucking the trend with an increasing population of breeding redshank, highlighting the benefits of targeted management, and suggesting there is a chance to reduce the decline of redshank elsewhere in the UK.

"We need better knowledge of redshank habitat use and site fidelity within the breeding season and between seasons," said Lizzie Grayshon, Wetlands Ecologist with the GWCT. "We also need to know about the movement of birds in the valley – where they feed and where they go to in winter. This information helps us to improve land management recommendations for redshank, by understanding the specific habitats they need for nest and chick-rearing, and the areas of habitat required by each pair."

In the summer of 2021, Lizzie fitted 12 individual redshank with colour rings. Highly unusually, all 12 of these colour-ringed individuals have since been resighted: nine of them outside of the Avon Valley and one as far away as Newport, Wales.

Of the 12 birds successfully ringed, one family in particular showed some interesting results. Lizzie colour-ringed an adult female and her four chicks in late April 2021. Since then, the adult female has been resighted five times, mostly at Stanpit Marsh near the mouth of the Avon. One of her fledged chicks was also spotted there. Two of the other fledged chicks were resighted in Hampshire: at Langstone near Chichester Harbour, and Keyhaven near Lymington. The fourth, by contrast, turned up over 100km away at the Gwent Levels Wetland Reserve in Wales. Lizzie said: "We were not expecting any of the birds to travel this far, and it will be particularly interesting to see if this bird comes back to breed in the Avon Valley in the future.

"By colour-ringing just a small number of redshank in 2021, we have learnt a huge amount about their movements post-fledging and breeding. We have now resighted 6 out of the 12 birds breeding back in the Avon Valley this spring"

The GWCT Wetlands team carries out colour-ringing under licence as part of monitoring the redshank population in the Avon Valley, between Salisbury and Christchurch, following the successful LIFE Waders for Real project. Between 2015 and 2019, GWCT ecologists worked with over 40 local land managers to protect threatened bird species from predators and restore habitats in the valley, which is a key breeding ground for redshank, lapwing and other wet meadow bird species. The project succeeded in reversing the decline of lapwing and redshank; redshank pairs went from 19 pairs when the project began in 2015, to 35 pairs in 2019, and this has been maintained since the project ended.

"The success of redshank breeding in the Valley really reflects the effort of the farmers and gamekeepers who have made positive changes to create ideal habitat for breeding waders with reduced predation pressure," commented Lizzie.

Bird ringing involves fitting a bird with a lightweight, uniquely numbered metal ring, which allows the bird to be identified when recaptured by another ringer or found dead. Ringing can provide data on a species' survival and movements. Colour ringing involves fitting a unique combination of coloured rings to a bird's leg, enabling identification of an individual bird in the field, without the need to recapture it to read the metal ring number. Ringing of all kinds is only performed under strict licence. "The farmers and keepers in the Avon Valley have been fully engaged with the colour-ringing project and enjoy hearing the reports of where the birds are travelling, especially when they return to the valley to breed in the spring," concluded Lizzie.

Curlew research in the New Forest

According to the Curlew Recovery Partnership, around two-thirds of all curlew pairs breeding in the English lowlands occupy agricultural grassland habitats affected by seasonal grass-cutting. © Jason Thompson

With multiple layers of conservation 'protection' in place, why is it that the New Forest's breeding curlew population is in such dire straits? Each year, most curlew breeding attempts end in failure, and as a result, this population is failing to replenish itself. Unless this tragic situation changes very soon, the soothing sound of curlew bubbling over the Forest's heaths, is likely to become but a distant memory.

Building on previous New Forest breeding wader studies conducted by Hampshire Ornithological Society and Wild New Forest, the GWCT's curlew work began here in 2020 as a PhD project jointly-funded by Bournemouth University in collaboration with Forestry England. Since that time, our programme of breeding wader and predation research in the forest has grown considerably. Our intention is to use the power of science to help drive a strategic and focused wildlife management plan aimed at recovering this increasingly fragile population of curlew.

In 2020, close monitoring of 40-45 curlew pairs revealed very high nest losses with approximately two-thirds of 31 observed nesting attempts failing, and only three chicks surviving until fledging age. To maintain a stable population, each curlew pair must fledge approximately 0.5 chicks/pair per annum, so they fell well short of that.

Understanding the root cause of nest failure is paramount to knowing which predators to target with management, so in 2021 we used trail cameras to monitor curlew nests. From late April until July we found 18 active nests; other fresh nest-cups were located too, but by the time we'd discovered them, the eggs were lost, presumably to predators. Of the 18 nests monitored with cameras, 14 were predated, mainly by foxes and carrion crows.

In 2021, on one forest area important for breeding curlew, the new wildlife manager responsible for the beat carried out intensive fox and carrion crow control during the nesting season, and six curlew chicks from seven pairs fledged from his beat alone: so more than twice the number of chicks that fledged from the entire New Forest area in 2020.

This year, we will repeat our nest monitoring work, and the first nugget of 'green gold' – a fresh curlew egg – was discovered over the Easter Bank Holiday weekend. From now until mid-July, we will spend many hours searching for curlew nests across the New Forest, and this year our PhD candidate Elli Rivers hopes to radio-tag a sample of day-old curlew chicks to determine their fate. We know from observing the behaviour of adult curlew that chicks are typically lost quickly, and it maybe that we discover different predatory species are more problematic for chicks.

Camera traps have shown the impact of carrion crows and foxes on curlew nests, with 14 out of 18 nests predated.

Successes

© Steve Round

GREY partridge autumn densities at Balgonie, a PARTRIDGE demonstration site, have increased by 187% since 2014.

SPRING cereals tend to have higher levels of chick-food insects than other cereal crops.

© David Mason

REDSHANK pairs in the Avon Valley increased from 19 in 2015 to 35 in 2019.

Setback

THE estimated smolt output on the River Frome in 2021 was down nearly 30% on the 10-year average, largely owing to recruitment failure from the 2019 spawning.

New project gives South Downs curlew a much-needed head start

© David Kjaer

The GWCT is assisting with an exciting new project initiated by the Norfolk Estate, Sussex, to establish a breeding curlew population on the South Downs. The project involves a technique called headstarting, whereby eggs are taken from the wild (under licence), incubated artificially, and then chicks are reared to fledging age in enclosures before release into the wild. The technique has been used previously by Curlew Country, WWT, Pensthorpe Conservation Trust, BTO and Natural England (NE) to reinforce curlew numbers in Shropshire, the Severn and Avon Vales, Dartmoor and Norfolk.

In this research project, a limited number of eggs will be collected from the Arkengarthdale and Castle Bolton areas, incubated, and then transported to the South Downs for further incubation, hatching and release. The GWCT has worked closely with NE to ensure this can be achieved without impacts on the donor population.

The aim of the South Downs project is to determine whether headstarting is an effective technique for reintroducing curlew to southern England. The Norfolk Estate, where birds will be released, has a proven track record of restoring farmland wildlife since 2003, with grey partridge numbers increasing from just 11 in 2003 to more than 2,000 by 2014, and numbers of other ground-nesting birds, such as lapwing and skylark, undergoing dramatic population increases. The GWCT's role is to obtain data on the survival rate, winter dispersal and site selection at breeding age of headstarted curlews through radio-tracking and GPS tracking of released birds.

Andrew Hoodless, our director of research, commented: "We have documented the Norfolk Estate's success with grey partridges and, more recently, the high productivity of their lapwings, so the estate is an obvious place to trial curlew headstarting. However, the extent to which birds will disperse and the proportion likely to return to the South Downs to breed is unknown, hence scientific monitoring of the outcome is essential."

Dave Slater, director of operations delivery at NE, said: "Reversing the decline in curlew numbers is one of England's most pressing conservation issues. Natural England strongly welcomes approaches from partners wanting to respond. We've worked closely with GWCT and the Norfolk Estate on this innovative proposal to learn more about the potential for headstarting techniques used in conjunction with habitat management to re-establish breeding populations in lowland England. NE has issued a research licence with strict conditions to ensure that curlew populations are not put at risk by the project."

Choughs

Lee Oliver is part of our advisory team in Wales. He is keen to engage with partners across Wales on conservation/environmental projects.

Focusing on choughs

Choughs prefer to forage on short, grazed areas for invertebrates. © Ben Porter Photography

Choughs are a mystical bird that are now restricted to the western coastal fringe of Britain, making them a truly Celtic crow and Britain's rarest corvid. They were once widespread throughout Britain and it is unclear why they have declined but the change in farming practices, and in particular grazing regimes, may have contributed to them being restricted to the Celtic fringe.

Adult birds have glossy black plumage and bright red legs and beak. They prefer to forage for invertebrates on short, grazed areas and are particularly partial to dung beetles, craneflies, and leatherjackets. Research using coloured leg rings has suggested that they take their fledged young to other areas which form diverse social groups, in consequence ensuring genetic diversity.

© Peter Thompson

1 Grazed coastal areas without high levels of fertilizer, would welcome the addition of natural manure especially from organic stock which may produce more dung beetles.

2 Earthen banks (cloddiau) have many benefits and produce feeding areas for all birds that forage for invertebrates. Choughs are no exception and use these extensively.

3 Rabbit grazing can positively help chough habitats by keeping grasses down enabling them to probe for invertebrates.

DID YOU KNOW?

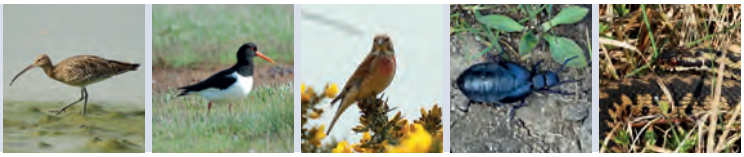
It is said King Arthur did not die but turned into a chough. Living happily in Wales and returning to Tintagel, Cornwall in 2012.

4 Rotational burning of gorse and heather stands on coastal areas can benefit choughs by restoring grazing and in turn provide more feeding areas.

5 Get involved. More than 6,000 choughs have been colour-ringed in Wales and combinations of coloured rings can be observed and recorded with binoculars. Send reports to adriennestratford@btinternet.com who has been conducting this research for more than 30 years.

(L-R) Curlew, oystercatcher, linnet, oil beetle, adder. (© Peter Thompson).

THIS WORK ALSO BENEFITS:



BFBC

© Laurie Campbell

Song thrush

Habitat: The song thrush is found in areas of woodland, trees, bushes and scrub, adjacent to grassland. They prefer areas where there is leaf litter and moist ground with large numbers of invertebrates. In arable areas, song thrushes prefer game crops and oilseed rape, as where these crops are ground tends to be damper and therefore attracts plenty of insects.

Food: Adults eat a wide range of invertebrates, especially snails and earthworms, along with berries. Their chicks have a similar diet but eat many insect larvae before fledging.

Nesting: Song thrushes breed between mid-March to the end of August. Nests are made in trees, shrubs, climbing vegetation and occasionally on the ground. They will have up to three broods in a good season when the weather stays warm and dry, and food sources aren't limited. They can lay up to three to five eggs per clutch.

Song/call: Strongly varied song, sounds 'dogmatic', often very squeaky and shrill, with cascading notes and repetitions.

Beneficial management

- Aim to cut hedges on rotation to boost berry production and protect nest sites.
- Establish areas of wild bird crops. Kale is particularly favoured for foraging.
- Aim to create extended field margins in arable and grassland fields to increase feeding opportunities. Try to leave damp areas in field corners to maintain insect populations.
- Song thrushes are vulnerable to molluscicides. A consultation with your agronomist is advised for best practice for slug control to prevent poisoning.

MORE INFORMATION

Farmers and gamekeepers are vital in helping to ensure the future survival of many of our most cherished farmland bird species, but frequently their efforts to reverse bird declines are largely unrecorded. We believe our Big Farmland Bird Count will help remedy this. bfbc.org.uk

BFBC is sponsored by NFU

Buzzing endorsement for wildlife mix

NATIONAL INSECT WEEK

takes place from the 20-26 June and encourages people of all ages to learn more about insects.

insectweek.co.uk

An exciting new mix is proving successful for insects and grey partridges. Francis Buner and Julie Ewald explain

By now many *Gamewise* readers will have heard of the NSR PARTRIDGE project. This international partnership brings together grey partridge researchers with dedicated stakeholders who are providing best-quality habitat for grey partridges. On the 10 demonstration sites – across the North Sea Region of Europe – farmers, shoot managers and other stakeholders are demonstrating practical conservation designed with grey partridges in mind.

The PARTRIDGE flower mix (PARTRIDGE Mix), provided through Wildlife Plots, is the project's main habitat measure to help turn around the dismal fate of our beloved greys. The measure is comparable in some ways to the UK's Wildbird Seed Mix (WBM), but it can provide much more. I can imagine you think that is a bold statement, but we have very good reasons for it. WBM is brilliant at providing cover and food over winter for greys and other farmland wildlife, and of course it helps hold gamebirds for shooting drives. Other than that? Not much really. The mixes used consist almost exclusively of non-native species that die after a hard frost in the first winter, often leaving a monoculture of kale, or when the kale has failed (which happens a lot), virtually nothing. And perhaps more importantly, WBM does not deliver maximum potential for nesting and brood-rearing, particularly because of how it is currently managed. At what is the most critical time of the year for grey partridges across Europe, during nesting and chick-rearing, WBMs are often bare wastelands. These mixes are often planted too late in the spring to produce useful cover for nesting partridges or insect-rich habitat for chicks. Not convinced of the need to do better? Look at the summary of the most relevant evidence published about this subject in our partridge conservation booklet *Farming with Nature* (download for free at **northsearegion.eu/media**).

> "the PARTRIDGE flower mix is comparable in some ways to the UK's Wildbird Seed Mix, but just better"

The secret is to invest in better and more diverse seed mixes and then manage this investment to maximise its ability to provide habitat for grey partridges year-round. Planting a PARTRIDGE Mix into a sterile seedbed is essential for it to develop to its full potential which may last up to 10 years. Here at the Rotherfield demonstration site we work with Oakbank, with whom we have developed our advanced mix (Kings Crops also offer a similar one, see page 39). The basic idea of a Wildlife Plot is to provide annual and perennial cover from year two after establishment, achieved by rotational management of cut

The advanced PARTRIDGE Mix used at Rotherfield consists of almost 30 species of plants, 19 of which are native to Britain.

Francis Buner is head of the PARTRIDGE project and is keen to encourage farmers to try the PARTRIDGE-mix to benefit insects and grey partridges.

Maps showing habitat at the Rotherfield demonstration site in 2010 and the increased habitat in 2020. This, in conjunction with legal predator control, has recovered grey partridges to a sustainable level and increased farmland songbirds of conservation concern by 93% during the 10-year period. By 2020 all WBMs were re-sown with the advanced PARTRIDGE Mix.

Julie Ewald is head of GIS and urges farmers to improve habitats using options such as the PARTRIDGE mix, conservation headlands and beetle banks.

and cultivate, without any need for re-sowing because the native plants re-seed themselves. The advanced PARTRIDGE Mix used at Rotherfield, consists of almost 30 species of plants, 19 of which are native to Britain. The non-natives are included to provide first-winter cover (ideal for those with a keen shooting interest) and first-winter seed food (such as sunflowers, millet and perennial rye). The mix doesn't provide the large number of seeds over winter that a WBM does. Nor is a PARTRIDGE Mix the ultimate in terms of what species are included. Ideally all species should be native and sourced locally (or at minimum be of British origin) to achieve maximum benefit, especially for our native insects. The trouble is that these seeds are rather hard to come by in large

The PARTRIDGE Mix provides the best possible year-round habitat for grey partridges and contains high insect numbers.

quantities and worse, they are very expensive. A mix consisting of entirely native home-grown seeds could easily cost £1,000 or more for a one-hectare plot.

A compromise, such as the advanced PARTRIDGE Mix, provides the best possible year-round suitable habitat for greys and other farmland wildlife at this moment. The mix is very pleasing to the eye, but is it also attractive to chick-food insects? Our scientists had a closer look at our Rotherfield demonstration site.

D-vac sampling started in 2018 and we also took the opportunity to look at arable margins (cultivated uncropped margins) and extended overwintered stubbles, comparing the number of insects in these habitats to those in winter wheat. In line with the results from other farms sampled across the UK, winter wheat at Rotherfield contained very low insect numbers, far below the required Chick Food Index (CFI) of 0.7.

Similar low insect numbers were found in WBM across 10 other English sites. In contrast, all three non-crop Agri-environment scheme (AES) measures at Rotherfield, including the PARTRIDGE Mix, arable margins and extended overwintered stubbles, delivered average CFIs above 0.7.

Conclusion

The PARTRIDGE Mix appears to contain considerably higher insect numbers than standard WBM, indicating its usefulness for grey partridge chicks. If established and managed well, the structure of the mix also allows chicks to forage freely. Based on these results, Defra has included the PARTRIDGE Mix in their ELMs trial scheme under the name 'Wildlife Plot'. Find out more at **gwct.org.uk/govplots**.

We encourage everyone to test this new promising mix and request it as an AES option in their new contract when it is available. We recommend requesting a derogation from Natural England to establish and manage your current WBM like a 'Wildlife Plot' and you will be on to a real winner for your partridges, wildlife and your wallet.

MORE INFORMATION

To find out more about the NSR PARTRIDGE project please see northsearegion.eu/partridge.

GWCT PARTRIDGE PROJECT MIXES - OAKBANK

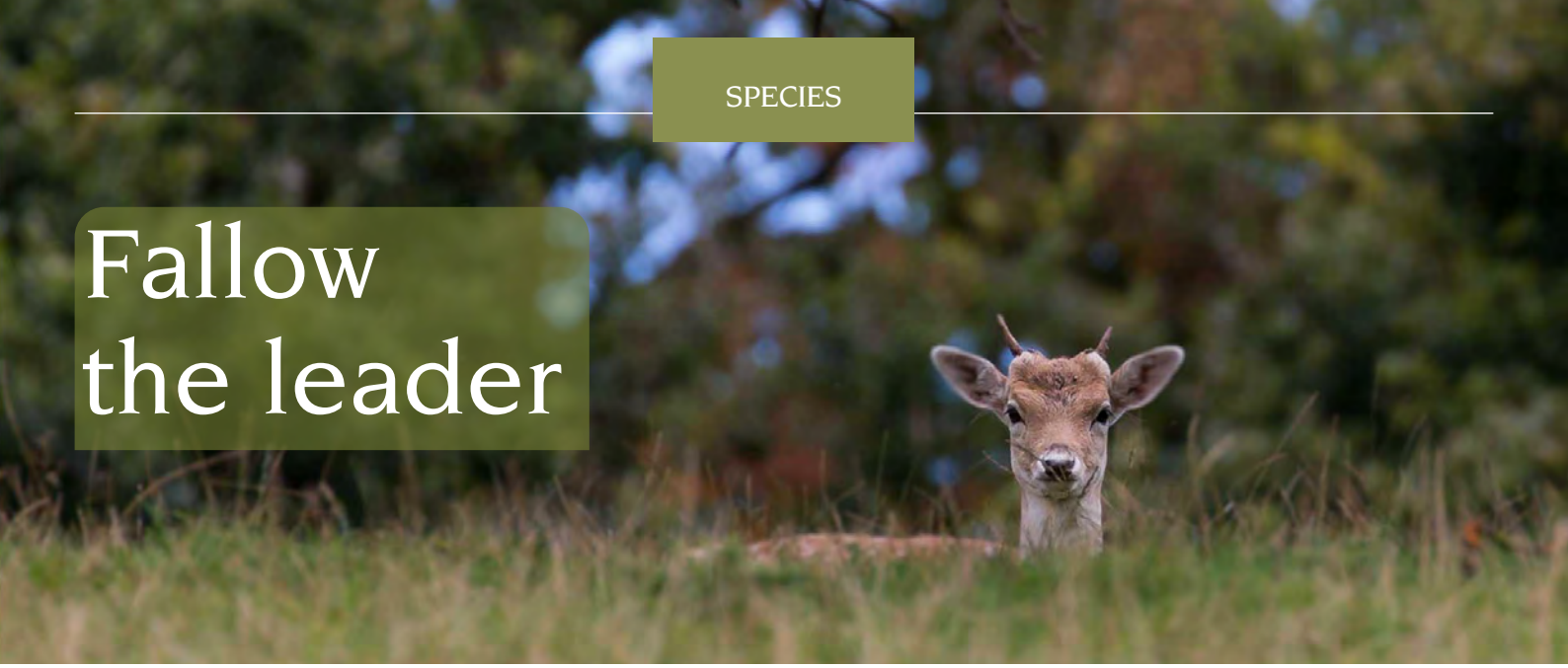
These mixes have been developed in conjunction with the GWCT and European partners to help the grey partridge recover its range across Europe. All of the mixes are suitable for the Countryside Stewardship scheme. The margin mix uses robust and tall native flowers and grasses to create an insect-rich margin ideal for nesting and brood-rearing as well as providing some winter cover. The nectar mix uses agricultural legumes and native flowers to deliver winter food and cover as well as brood-rearing cover for two to three years. The new Advanced Partridge Mix is a longer-term, dual purpose mix delivering winter food, structural integrity and an insect-rich environment for several years. For every hectare pack of the GWCT PARTRIDGE project mixes that you purchase, Oakbank will donate £20 to the project.

Tim Furbank, director of Oakbank, said: "We are delighted to continue to support the GWCT and donated £7,600 last year through the sale of our project mixes." See oakbankgc.co.uk for more information.

DID YOU KNOW?

Insects are important to the ecosystem, pollinating plants and dispersing seeds, which are vital for agriculture and food production and, in turn, have an economic impact. They control populations of insect pests while also providing a food source for reptiles, birds and fish.

Fallow the leader



Over the last few weeks, I have been undertaking breeding bird surveys on the Martin Down Farmer Cluster, just after dawn, walking transects across the farmland recording what I see and hear. But I didn't just hear and see birds; I also saw lots of fallow deer (Dama dama) too.

Within properly functioning ecosystems, deer play an important role by maintaining open areas, which can enhance the biodiversity and habitat quality of a woodland. However, without numbers being correctly controlled, large deer populations can have a devastating effect on their environment. It is widely known that fallow numbers are increasing, and they are moving around in large herds covering vast tracts of land – this has become quite an issue for farmers and landowners. But where did they come from?

In the UK there are six species of deer. These include red deer and roe deer, which are native, and four introduced species: fallow, muntjac, sika and Chinese water deer. Whilst fallow deer are non-native, they are now considered naturalised and are locally abundant.

According to the British Deer Society, fallow deer were first brought to Britain from the western Mediterranean during the Roman period, where they were kept within enclosures known as 'vivaria'. Following the collapse of the Roman Empire, genetic analysis has shown that these Roman fallow deer went extinct in Britain. It was not until the 11th Century that fallow deer were reintroduced by the Normans, this time from the eastern Mediterranean.

Originally, fallow deer were kept in parks as rare exotica, but as their populations increased, they became an important source of venison for aristocratic tables. In the 15th Century, the fashion for deer parks declined and many parks fell into disrepair, and these medieval escapee deer are the foundation of the free-living population in Britain today. You can see fallow deer across most of England and Wales (patchy in Scotland), inhabiting mature broadleaf woodland with under-storey, open coniferous woodland, and open agricultural land. They prefer to graze grasses although they will take trees and dwarf shrub shoots in autumn and winter.

I would be surprised if you haven't seen a fallow deer, as even today they are kept in parkland in famous places like Richmond Park in London and Woburn Abbey, as well as being abundant in numbers naturally in places like the New Forest, agricultural land and even in the middle of an urban areas. But if you haven't seen one, they are quite unmistakeable. Fallow typically have light chestnut brown coats with white spots in the summer and duller brown in the winters. However, they have four main colour variations – common (tan/fawn with white spotting on flanks and white rump patch outlined with a black horseshoe shape border); menil, which is paler with a chestnut horseshoe; melanistic, which is black or chocolate-coloured; and white, which is a true white rather than albino.

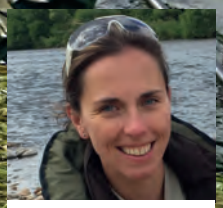
They are medium-sized deer, growing to about 90cm tall. The bucks (male deer) are the only deer species in the UK to have palmate antlers, meaning the antlers have a similar shape to that of a hand with fingers extended, which become full-sized after the deer is three to four years old, and can reach a size up to 0.7m in length. The antlers are shed and regrown every year, becoming increasingly elaborate over the deer's life.

Outside of the rutting season, which takes place in October, bucks form separate herds away from does (female deer) and young (fawns). But during the rutting season the bucks establish 'rutting stands'; they thrash foliage and call loudly with grunts and bellows, marking their stand with both scent and slots marks. The rut is a magical time of year, one that reminds me of my childhood. My grandfather used to take me to a special part of the New Forest to go "deer watching" every year. We would get nestled down in the bracken at a distance not to disturb natural behaviour and watch the bucks chasing the does about with our binoculars, listening to them grunting and fighting with other males. I still go to that place every year, but now with my husband and daughter to pass on the tradition.

After the all the chaos of the rutting season is over, the does give birth to a single fawn after a 230-day gestation in June/July, which will be able to breed after a year. So, keep an eye out for a fawn from now – you might be lucky enough to catch a glimpse of one while you are out and about. And if you do, remember to look, but don't touch!

Megan Lock is our farmland biodiversity advisor, southern England. Megan facilitates the Allenford and Martin Down Farmer Clusters alongside providing farmland ecology advice to the wider farming community.

Training the environmental guardians of the future



Sarah Bayley Slater our fisheries communications officer is keen to highlight the key role students play in our fisheries research.

Sarah Bayley Slater looks at the students and scientists working together to protect wild salmonids

The GWCT has been monitoring Atlantic salmon numbers in the River Frome, at our Salmon & Trout Research Centre since 2009. This has created one of the most comprehensive records of salmon movement and survival in England and Wales.

In 2017 we launched the seven-year 'Salmonid Management Round the Channel' (SAMARCH) project which is part-funded by the EU's Interreg VA Channel Programme. Led by the GWCT, it involves 10 project partners in the UK and France who are working together to provide new scientific evidence to inform the management of salmon and sea trout in the rivers, estuaries and coastal waters on the French and English sides of the Channel.

In addition to the collection of scientific information, an important element of the project is to engage with stakeholders. This includes providing opportunities for undergraduate, MSc and PhD students to gain experience in salmon and sea trout conservation work, research and fisheries management. The training delivered through the project aims to highlight the importance of managing and safeguarding the aquatic environments required to sustain populations of wild salmon and sea trout.

These training opportunities have been hugely successful with students. Since the project started it has provided training opportunities for over 60 undergraduate, 20 MSc and two PhD students in England and France.

> "The training aims to highlight the importance of managing and safeguarding the aquatic environments"

Fifty-five students from Bournemouth University, and a further 25 students from academic institutions in England and France, have worked alongside our fisheries scientists to assist with electric-fishing and PIT-tag salmon and trout

Fifty-five students from Bournemouth University, and a further 25 students from academic institution in England and France, have worked alongside our fisheries scientists to assist with electrofishing and parr tagging.

Interreg France (Channel Manche) England
SAMARCH
SAlmonid MAnagement Round the CHannel
European Regional Development Fund

DID YOU KNOW?

The SAMARCH Project partners are: GWCT, Bournemouth University, University of Exeter, Salmon & Trout Conservation, Environment Agency, INRAE – French National Research Institute for Agriculture, Food and Environment, 'L'Institut Agrocampus Ouest, Office français de la Biodiversité, Sein Normande Grands Migrateurs and Bretagne Grands Migrateurs.

VIEWS FROM THE RIVER

"Salmon populations are facing huge difficulties and in many areas, they are at risk. Monitoring the number of juvenile salmon, smolts and adults in our rivers is crucial to establish how well salmon are doing, and understanding the intricacies of why they are declining. Throughout August and September, we run two teams of seven people to undertake the monitoring work and without the hands-on help of the students we couldn't do it. The added conservation benefit is that these students are leaving us with a greater understanding of salmon and the problems they face, which they can take forward in their careers."

Dylan Roberts, GWCT head of fisheries

"Being able to take part in SAMARCH's salmon and trout par tagging research project was an amazing experience and one I would definitely recommend. I enjoyed it so much last year that I came back to do it all again. I spent four days this year gaining experience taking scale samples and inputting data, and I hope to be able to return again next year too. My time with them was brief, but I was still able to gain good knowledge and receive excellent training from the research team. I recommend this placement to anyone interested in working in ecology."

Caitlin McQuillan, Bournemouth University Student

parr, helping to collect scientific information about the salmonid populations in River Frome and their migration patterns in the English Channel.

This chance to gain real-life scientific experience has been particularly important to students during the Covid-19 pandemic, when face-to-face teaching and opportunities for work experience were severely limited. Implementing covid-safe measures and working outdoors has meant that the students involved in SAMARCH have been gaining valuable work experience while helping to collect new evidence to inform the management and conservation of salmonids. It has been a 'win-win' situation for both the students and the scientists.

MORE INFORMATION

Bournemouth University produced a short film to document its involvement in the project available to view on YouTube: youtube/o-PaZlOXiWY. For more information about the SAMARCH project please see samarch.org

NEW RESEARCH - PINK SALMON

Pink salmon are the smallest, most abundant and most adaptable of the Pacific salmonid species. Between 1956 and 1999 they were deliberately stocked in rivers in the White Sea region by the USSR/ Russia to establish a commercial fishery. The species expanded their range, and in 2017, 2019 and 2021 pink salmon were observed in rivers across the British Isles. Mature pink salmon were seen spawning in Scottish rivers and captured by net fisheries between the Scottish border and East Yorkshire coast.

This has raised concerns among scientists, conservationists, and anglers about the potential impact of this non-native species on native Atlantic salmon.

The marine feeding grounds and extent to which pink salmon compete with native European fish at sea is unknown. Moreover, their ecological impact during the freshwater phases of their life cycle remains unknown.

In 2021, a comprehensive study was launched with the aim of assessing the present and future impacts of pink salmon at sea and in recently invaded rivers. This study will include mapping the distribution of pink salmon feeding grounds in the NE Atlantic, and determination of the potential competition between pink and Atlantic salmon.

These activities are being carried out under the 'PinkSIES' (Pink Salmon Invasion of the North Atlantic: Evaluation of Stable isotopes as a method to detect potential impacts) project at Queen Mary University of London (QMUL) and the Centre for Environment, Fisheries and Aquaculture Science Centre (Cefas). We are supporting the project and we will be providing more information to our members, concerning the findings of the PinkSIES project on the impact of pink salmon in the next edition of *Gamewise* and in the *2021 Fisheries Research Review*.

Mature pink salmon have been seen spawning in Scottish rivers raising concerns among conservationists.

FUNDING

This project has received funding from the EU Horizon 2020 research and innovation programme under the Marie Skłodowska-Curie grant agreement No. 101026030.

Seeing the bigger picture

Henrietta Appleton looks in-depth at the issues surrounding neonicotinoids and the implications for sugar beet production

The Government's approval for the emergency use of insecticidal seed-treatment Cruiser SB on sugar beet crops caused the usual furore over the use of 'bee-killing' pesticides being allowed. But what is the bigger picture and what are the implications for domestic sugar beet production?

Let me be clear, we do not disagree that neonicotinoids are a risk to bees; hence the need for the annual derogation process and the restrictions on their use, which were introduced in 2018. But as was made clear in an excellent Westminster Hall debate on 2 February (definitely worth a listen if you have a couple of hours), while concerns about impacts on pollinators should not be ignored, the Government has to consider the issue from a broad viewpoint such as the potential impacts on food security from a declining home grown source of sugar and the consequences of exporting our environmental footprint to other countries through importing sugar beet or sugar cane. Having listened to this debate, I feel that it is important our commentary on this highly charged debate looks to the future and considers the bigger picture of the dual demands of supporting domestic sugar beet production and protecting on-farm biodiversity.

The debate set the framework: all agreed that pollinators are vital to food production and sustainability and that it is imperative that we find alternatives to neonics and pesticide use. The Government has drawn a line in the sand for the sugar beet industry by setting a target of 2023 to end reliance on neonicotinoids through developing alternative production strategies. While this may involve developing resistant strains of sugar beet, it will also require greater use of Integrated Pest Management, a key focus for future UK pesticides policy, and this is where the GWCT can play a vital role.

> "all agreed that pollinators are vital to food production and sustainability and that it is imperative that we find alternatives to neonics and pesticide use"

GWCT work enhancing pest predator numbers could be used to create measures to aid farmers in combating virus yellows. For example, our work at the Allerton Project has shown that predatory invertebrates can reduce the number of aphids if a long stubble is left when harvesting cereal crops, as this provides spiders with the necessary structure to weave webs and collect their prey of aphids. This one example demonstrates that it is likely to be a suite of measures that we will need to replace the use of pesticides and seed-treatments.

There is also the bigger picture of climate change and its effects on pollinators, with changes in flowering times

(Top) Virus yellows can cause yield reductions of up to 50% in sugar beet crops; (inset) internationally important birds such as meadow pipit benefit from farmers growing sugar beet. © Andrew Linscott, Laurie Campbell

Henrietta Appleton is our policy officer (England) and is keen that people are aware of the bigger picture regarding neonicotinoids not just sensational headlines.

WHAT ARE YOUR VIEWS?

How else can we reduce our reliance on pesticides and seed treatments. Email us at editor@gwct.org.uk

There are environmental benefits to growing sugar beet as it is a valuable break crop in arable rotations aiding soil health and, ironically, reducing the need for pesticides.
© Jamie Hall

(see **gwct.org.uk/ccplants**), and air pollutants affecting pollinators. Given that declines in some pollinators are still occurring we need to understand how we can mitigate against these and support pollination services. Our BEESPOKE project may have some answers to this (see page 24). In addition, climate change may not be impacting the 'global' population of pollinators in this country; what is more likely is that it is changing the suite of pollinators that inhabit our ecosystems. Analysis of invertebrate data from our long-term Sussex Study has shown that increasing pollinator and some predator numbers are associated with increases in temperature, while other plant-feeding insects show negative relationships with increasing temperature.

Luke Pollard MP, who led the Westminster Hall debate, acknowledged that banning neonics would not, on its own, reverse pollinator decline and so when considering pollinator health and diversity it is important not to just focus on neonics.

Until we do know the answers to the reasons for bee (and other insect) decline, their relative importance and how to encourage recovery, stakeholders need to accept that few policy decisions are binary and that banning products or processes may have far-reaching unintended consequences. The Government's approach to neonics seeks to mitigate the downsides while alternative methods are developed to help support domestic production.

Although we need to reduce our sugar intake, sugar derived from domestic sugar beet only accounts for c.50% of our demand. If we were to reduce domestic production this would have impacts on our processing capability and so we would need to replace that with imported sugar. These effects were considered on Countryfile in February (**gwct.org.uk/cfholkham**) and are very real as this is what has happened in Eire; they have lost their national processing capacity entirely and now rely wholly on imported refined product.

> "Neonics use on sugar beet is therefore a good example of a single concern (bee-killing pesticides) clouding a much broader picture"

EMERGENCY AUTHORISATION

"The decision to grant an emergency authorisation has not been taken lightly and is based on robust scientific evidence. Sixty-three percent of the UK's sugar comes from the domestic production of sugar beet, and the threat from yellows viruses this year is significant. Very strict conditions will minimise the risk to pollinators. Similar action has been taken by 12 other countries across Europe in recent years."

Victoria Prentis Minister of State (Defra)

As Countryfile demonstrated farmers are turning away from sugar beet production – not solely due to crop losses from virus yellows, but also due to the impacts of free trade deals with Brazil and Australia and the price British Sugar is prepared to pay. This decline should concern us as the environmental footprint of importing sugar is greater not only due to production systems and indirect land use change, but also transporting it half way round the world.

There are also environmental benefits to growing sugar beet – like supporting internationally important populations of pink-footed geese as well as other species like stone curlew, skylark, golden plover, pied wagtail, meadow pipit, house martin and various species of swan. Furthermore, sugar beet is a valuable break crop in arable rotations aiding soil health and, ironically, reducing the need for pesticides. A fact not necessarily widely known is the value of the co-products from sugar beet production. For example, the pulp is used to feed livestock; the lime in soil conditioning; the waste heat and CO_2 in horticultural glasshouses; and the aggregates and topsoil collected for landscaping and construction. Biogas and bioethanol are also co-products from the sugar making process (see **gwct.org.uk/sugar**).

Neonics use on sugar beet is therefore a good example of a single concern (bee-killing pesticides) clouding a much broader picture. While the impact on bees and other pollinators should not be ignored, we implore those opposed to their use to appreciate the broader implications of a total ban and to work with the industry and Government to develop suitable strategies for mitigating the impacts of virus yellows and support our domestic producers.

What are solitary bees?

LEAFCUTTER BEES

cut out neat circles from leaves and petals, which are glued together with saliva to build their nests.

Ninety percent of the UK's 270 bee species are solitary bees. (L-R) Leafcutter bee, patchwork leafcutter bee and (below) ashy mining bee. © Peter Thompson

When somebody says the word 'bee', your mind probably springs to an image of a big fuzzy bumblebee, clumsily flying between flowers or bumping into your kitchen window. Or maybe you think of a hive of honeybees, dancing across an array of wax and honey. Both bumblebees and honeybees are eusocial meaning that they live in highly co-operative colonies with many worker bees serving a queen by caring for her young. But did you know that 90% of the UK's 270 bee species are actually solitary bees?

Unlike social bee species, solitary bees build individual nests and work alone. Once an adult female has emerged from her pupae and has mated with a male (who dies soon after), she builds an individual cell for each egg she lays, along with a small ball of pollen and nectar which the larvae eat once they hatch. The adult female's job is now complete and like the male, she dies, leaving her offspring to fend for themselves. However, much of this independent life consists of hibernation, where the larvae stay in their cocoon all through the year and over winter until they pupate into adult bees in the spring. At this point they emerge to start the cycle all over again, living in their adult stage for as little as four to six weeks.

Due to there being such a wide variety of solitary bee species, they can be relatively hard to identify, with some species easily being mistaken for wasps, hoverflies, or honeybees. Some of the more common species you might be likely to stumble across include the red mason bee, patchwork leafcutter bee (both of which may inhabit a bee hotel in your garden), and the ashy mining bee which gets its name from its distinctive ash-grey bands on its thorax. These bee species can be found in the new BEESPOKE identification guide for solitary bees of the UK, which includes high quality photos of 34 more commonly seen species, along with descriptions of many others.

So next time somebody says the word 'bee', maybe your mind will instead spring to an image of a solitary bee, carefully building her nest and collecting pollen for her young, playing an incredibly important role in pollination in the process. Better yet, get outdoors and bring that image to reality, using the BEESPOKE solitary bee guide to help with identification to find out more about the pollinator population that surrounds you.

Ruby Woollard

MORE INFORMATION

The BEESPOKE project (Benefiting Ecosystems through Evaluation of food Supplies for Pollination to Open up Knowledge for End users) aims to increase levels of pollinators and crop pollination at local and landscape scales by providing land managers and policymakers with new expertise, tools and financial knowledge to create more sustainable and resilient agroecosystems.
For further information and free guides visit: northsearegion/beespoke.eu

DID YOU KNOW?

Most UK solitary bee species are ground-nesting, although some will nest in cracks and crevices in walls and wood, and three species even nest in empty snail shells. Find out more in the BEESPOKE solitary bee guide gwct.org.uk/beespoke.

Honeysuckle cordial

Mike Short shares his passion for wild and home-grown food

The flowers of our native honeysuckle make a delicious cordial as well as being a magnet for bumblebees, butterflies and moths. © Ppfoto13

Mike Short is our senior field ecologist specialising in mammal research. He is passionate about wild and home-grown food, and here shares his enthusiasm for tasty ingredients.

A decrepit wooden fence in our garden is virtually held together by the twisted vines of several scrambling honeysuckles, not the native species *Lonicera periclymenum*, also known as Woodbine, but the popular garden variety *Lonicera japonica*, a common and well-naturalised plant that runs rampant once its roots have taken hold. Both honeysuckle species have the most delicious scent and on warm evenings from June into summer, it wafts from their tubular flowers, which are a magnet for bumblebees and butterflies during the day, and night-flying moths who love to feast on the sugary nectar.

The berries of honeysuckles are said to be toxic, but their exotic-smelling blooms are edible; indeed, the very name 'honeysuckle' is said to come from the long-established practice of sucking the honey-flavoured nectar from the flowers. If you'll excuse the pun, I'm an absolute sucker for them, and aside from grazing on the flowers during the day, I like to harvest the flowers at night, when their scent is strongest, to make honeysuckle cordial. It makes a wonderful ingredient for a soda; a spritzer or a boozy cocktail, and it's great simply poured over citrus sorbets and ice creams.

> "I like to harvest the flowers at night, when their scent is strongest"

So, for this recipe, I advise donning a head torch for a nocturnal forage for your honeysuckle flowers, either in a garden or along a hedgerow if you're sure it hasn't been contaminated by spray drift. Using a pair of scissors, harvest the youngest looking flower trumpets, or those just about to open, as they will have the strongest perfume.

Ingredients

About a pint of young honeysuckle flowers
Caster sugar
1 large lemon

Method

1. Put the honeysuckle flowers into a bowl and pour over just enough warm water to cover them. Leave to infuse overnight at room temperature.
2. Using a muslin or a very fine sieve, strain the flowers and squeeze them to extract every drop of sweetened water into a measuring jug. Take note of the volume of liquid and pour into a saucepan. Add an equal volume of caster sugar.
3. Bring the liquid to the boil, turn down the heat, give everything a good stir and simmer gently for five minutes until the sugar has dissolved. Allow it to cool slightly, adding enough freshly squeezed lemon juice to suit your taste.
4. Pour the cordial into a sterilised glass bottle and keep it in the fridge. Enjoy it on a warm summer's day.

DID YOU KNOW?

- The caterpillars of the white admiral butterfly (a nationally fast-declining species) are solely reliant on wild honeysuckle.
- Japanese honeysuckle *(Lonicera japonica)* can be a bit of a thug, and in North America this non-native is managed as a high-priority invasive species.
- If you'd like to help wildlife and grow a wild honeysuckle in your garden, they like moist but well drained soil, with their roots in the shade and their stalks in the sun. Give them something to climb and scramble over too.

Contact us

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