

Uplands Newsletter



Game & Wildlife
CONSERVATION TRUST

NOVEMBER 2021 | ISSUE 11 | THE GWCT UPLANDS AUTUMN UPDATE

Welcome to the 11th edition of our newsletter. This has been a difficult year for the Uplands team which has seen many changes among our staff. Since our last newsletter in Autumn 2020, our numbers have been significantly depleted by the departures of David Newborn, Michael Richardson, Maddie Benton, Sonja Ludwig and Sarah Grondowski. These losses, together with a Scottish reshuffle resulting in the management of Kathy Fletcher being withdrawn, collectively add to a reduction in the team totalling 93 man-years of experience. Coinciding with these staff losses, our offices were broken into, leaving us without vehicles, telescopes and some of our doors. I never realised how time-consuming insurance claims following theft can be.

Life, however, goes on and team regeneration through project planning, recruitment, staff development and training, alongside maintaining heavy amounts of data collection on key projects, have been the priority tasks consuming the time of remaining staff. There have been successes. A hopeful bid to Defra's Green Recovery Challenge Fund enabled a new project on merlin recovery to begin, allowing us to recruit some new staff (see page 8). Report writing and scientific paper submissions have been the casualties in the competition for staff time, so 2022 will be a busy year chained to the computer for several of us.

I hope you appreciate our updates. As ever, we welcome any feedback that you may have.

David Baines,
Director of Upland Research



PROJECT UPDATES

MERLIN PROJECT RECEIVES £247,900 GRANT



© Scott M Ward

The new project will look at how merlin use upland habitats in order to help their recovery.

Our Merlin Magic Project has been awarded a grant from the Government's £40 million second round of the Green Recovery Challenge Fund, a multi-million-pound boost for green jobs and nature recovery.

The project is focusing on the iconic merlin, a distinctive small falcon breeding on England's moorlands and red-listed as a bird of conservation concern. Gamekeepers managing moors proudly host them and raptor workers enthusiastically search for them, but there can be disagreement over their status and perceived causes of decline.

We will help reconcile opinions through promoting co-operative working, whereby gamekeepers under licence will help find nests for raptor workers, who then validate nests and ring and tag chicks. By measuring nesting vegetation, habitat quality and avian prey, this evidence-based approach will guide dialogue among grouse practitioners and upland ecologists. This will provide a

better understanding of landscape-scale improvements in priority bog and heath moorland management to benefit merlin, other ground-nesting birds and habitat condition. This vital funding will also help to promote public awareness of moorland conservation issues, inform conservation strategies and lay foundations for further grouse-raptor reconciliation projects.

Merlin are an often-overlooked part of the moorland bird community. This project will bring together different groups of people with a shared passion for the uplands, but with differing perspectives on how to drive their recovery. A better understanding of how merlin use upland habitats and what pressures are affecting their numbers will provide a common focus for future management.

Philip Warren has recently shifted emphasis from black grouse to merlin by becoming the Project Officer and has been joined by Project Assistant Georgia Isted. 🇬🇧



ARE THE GOLDEN YEARS OF GROUSE OVER?

Heather browning during the winter, severe frosts in May and delayed heather greening all reduced heather food and quality for red grouse. (Inset) Craneflies, the main chick-food insect for grouse chicks, emerged two weeks after the main grouse hatch.

by David Baines

In the summer issue of *Gamewise* (written in early-May), I predicted that this year was likely to be a difficult one for red grouse across the moors of northern England. The likely causative agents were poor quality heather as food, a paucity of protein-rich cotton grass flowers in early spring and unebbing levels of intestinal strongyle worm parasites. Writing this on 3 August, with the last grouse count completed only yesterday, I have reviewed our season's data to consider whether our prediction came true. In essence, yes, it most certainly did. For many, this year will go down as the worst since the last big strongyle-induced grouse population crash in 2005. So, what has gone so badly wrong? Put simply, grouse were in poor condition in spring. The factors underlying bird condition probably subtly varied between moors, but the principal cause was likely to be low food quality. In turn, poor heather food was attributable to widespread heather damage and resultant die-back following recent heather beetle attacks. Here, our research has shown that both lower grouse densities and breeding success occurred where damage by heather beetle was greatest. Further heather browning during the winter, severe frosts in May and delayed heather greening which didn't happen until June have added to the problem. Furthermore, cotton grass flower abundance, vital for good clutch production among hens, was three-quarters down on the previous spring, while on many moors high parasitic worm burdens appeared not to have been alleviated by the provision of flubendazole-based (medicated) grit. In effect, the balance of the grouse health equation

between the positive effect of good food quality and the negative one of parasite intensity had tipped towards the parasite.

Poor maternal condition was soon translated into low clutch sizes, with an average of only 6.3 eggs, compared with 8.5 in 2020. Even more astonishing were observations of colleagues working in Bowland that some radio-tagged hen grouse appeared not to breed at all, something strongly suspected by gamekeepers on some high-altitude Pennine moors. The next problem became apparent at chick hatch. Although hatch rates appeared reasonable, the already fewer chicks due to fewer eggs laid, soon experienced high mortality associated with a seasonal mismatch in the emergence of craneflies, their key insect food. This year we started a study of cranefly emergence and flight periods using yellow sticky fly papers on two Teesdale moors. These showed a peak insect emergence in the

“Facing an insect shortage and browned heather, chick mortality was generally high”

first week of June, an estimated two weeks after the main grouse hatch. It was evident that the cold weather had delayed cranefly emergence more than it had delayed grouse breeding. Facing an insect shortage and browned heather, chick mortality was generally high, especially so on higher-altitude peatland moors.

The eventual cranefly emergence and greening of the heather only came after



most chicks had died, leading to low grouse productivity on our July counts. This problem of few chicks has been exacerbated by apparently high mortality of adults between successive spring and July counts. While counting grouse, we found relatively high incidences of weakened birds struggling to fly, the typical symptoms of strongylosis. High worm counts conducted from sample birds confirmed this diagnosis. Small clutches, low chick survival and, in some cases, high adult mortality largely explain the lowest set of grouse counts since 2005 and prospects for the shooting season were very bleak indeed with most grouse managers having already cancelled shooting. The described situation leaves grouse moor managers in a dilemma and with key questions that need to be addressed.

- How can heather be successfully restored following beetle attacks?
- Can heather management be fine-tuned to mitigate against the likelihood of future outbreaks, the frequency of which may increase?
- Why didn't medicated grit deliver the expected reductions in strongyle worm burdens?
- Will climatic extremes of drought, downpours and ice become more commonplace making not only red grouse production less predictable,

but also the very persistence of rarer species like black grouse and grey partridge less likely in the English uplands? They fared poorly too.

Maybe this was just a bad year, quite like the previous one. Alternatively, a changing climate, together with its associated extremes, may herald conditions that favour grouse parasites and heather pathogens, and render insect emergence less predictable. Perhaps the golden years of grouse are over. 📉

Small clutches, low chick survival and, in some cases, high adult mortality largely explain the lowest set of grouse counts since 2005.



We counted 211 black grouse males, which was 19% down on last year, with numbers having halved since the peak count of 445 males in 2015.



We need to help boost black grouse breeding productivity through habitat management and predator control.

BLACK GROUSE IN ENGLAND: NUMBERS HALVED SINCE 2015 FOLLOWING RUN OF CONSECUTIVE POOR BREEDING YEARS

by Philip Warren

We completed our spring counts of black grouse males attending leks at a sample of 31 leks on six estates in Teesdale and Weardale which have been counted annually since 1989. We counted 211 males, which was 19% down on last year, with numbers having halved since the peak count of 445 males in 2015.

A further fall in the numbers of lekking males is predicted next spring following another poor breeding year, with females averaging only 0.7 chicks per hen on our sample counts. We have now had a run of six below average breeding years in the past seven, where females have produced less than the annual north of England (1989-2021) average of 1.5 chicks per female. This has corresponded with four of the wettest Junes in the past 30 years and conversely the drought in 2018. With predicted climate change, these weather extremes could be the new normal and we know that weather is a key part in determining better breeding productivity. It is important that we mitigate against these likely climate change impacts through habitat management to create insect rich swards and areas of short vegetation to create drying off areas for foraging chicks, combined with predator control to protect nesting females and chicks from predators. 📉



We need to maintain breeding productivity through continued habitat management and predator control.

HOW MANY CURLEWS' BREED IN UPPER TEESDALE?

by David Baines

Watching a 70-strong pre-breeding flock from the bedroom window feeding in our front field, it's hard to comprehend that curlew are classified as 'Globally Near Threatened'. The UK, with 58,000 pairs, holds a quarter of the global population, but breeding numbers have halved in the last 25 years, arguably making it the UK's bird of greatest conservation concern. Poor breeding success, often attributable to clutch and chick predation by foxes, stoats, crows and gulls, is accepted as the principal cause. About a quarter of the UK's pairs breed in the Northern Upland Chain Local Nature Partnership area

comprised of five protected landscapes, Northumberland National Park, Yorkshire Dales National Park, North Pennines AONB, Nidderdale AONB and the Forest of Bowland AONB, making it a stronghold for curlew.

Trust-held data suggest curlew decline rates are much lower in these parts of northern England than elsewhere in the UK and in four of these five protected landscapes driven grouse shooting has helped maintain habitats and manage generalist predators. The importance of the latter was experimentally demonstrated by our Upland Predation Experiment at Otterburn, where fox and crow control resulted in three-fold higher

curlew breeding success, followed in-turn by increased breeding numbers. Thus, it is evident that driven grouse moors have a pivotal role in conserving curlew in the UK and hence globally.

The moors and marginal farmland of Teesdale, in the North Pennines AONB, are renowned as a stronghold for several wader species. In the springs of 2020 and 2021, staff surveyed curlew in random one-kilometre (km) grid squares in the upper dale, defined as the area contained within the watershed of the River Tees and its tributaries upstream of Cotherstone Village.

All Upper Teesdale grid-squares were assigned to one of five main habitat types, blanket bog, shrub heath moorland, white grass heath, rough grazings and inbye fields. We surveyed 20 randomly selected squares from those that were predominantly white grass heath, rough grazings and inbye habitats and 30 of blanket peat and shrub moorland habitats, giving a total of 120 squares, ie. approximately 25% of those available. Surveys were conducted at or close after dawn in springs 2020 and 2021 by standard Breeding Bird Survey transect methods. Each square was surveyed twice, first in the period mid-April to mid-May and repeated in mid-May to mid-June.

So, what did we find? Overall, an impressive tally of 10 different species of waders were found by the survey. All data have been collected, entered and awaits analysis. The number crunching for curlew will happen this winter when we will make a habitat based extrapolation to an estimated curlew population size for Upper Teesdale. Provisional results will be included in our next newsletter, so watch this space. 📌

BREEDING WADERS- BOOK YOUR SURVEYS

In spring 2021, we were approached by several estates asking to fund us to conduct Breeding Bird Surveys, especially those of waders, on their moors. The intended purpose of the surveys varied from being able to,

- Demonstrate that grouse moors were good for waders.
- That heather management, especially by burning and cutting, was essential for nesting and chick-rearing.
- Establishment of baseline data from which to gauge future changes in numbers.

- Gather evidence that predators such as large gulls could impact wader breeding success.

The GWCT Upland team has a long and successfully history of conducting such work. However, given that we are a small and busy team, we need ample notice of such requirements. We would be pleased to work with you on such topics, but we ask those interested to contact David Baines to discuss your requirements this autumn/winter so that we can book the work in for April. 📌

MORE INFORMATION

If you would like our help to conduct Breeding Bird Surveys, especially waders, please contact David Baines this autumn/winter to discuss your requirements



dbaines@gwct.org.uk

REPEAT MOORLAND BIRD SURVEYS

by David Baines

In 2006, we agreed to broaden the scope of our annual red grouse and parasite measures to include a rolling programme of moorland bird surveys, together with associated vegetation assessments. These were conducted across 90 moors, 45 in northern England (North Pennines, South Pennines, Bowland, North York Moors), 42 in Scotland (Borders, Perthshire, Central Highlands, Eastern Highlands) and three in North Wales. The first round of surveys was conducted in the period 2007-12, with all surveys repeated in 2019-21.

At each moor in each period, three one-kilometre squares were surveyed at dawn using Breeding Bird Survey transect-based methods. Two survey visits were made, the first between mid-April and mid-May, and the second between mid-May and mid-June giving a total of 1,080 survey-visits. A third visit was made in the autumn of the year when birds were surveyed to measure vegetation composition and structure along the bird survey transects.

Repeat vegetation surveys have virtually been completed this autumn. This winter we will conduct analyses to consider changes in bird abundance between the first survey period (2007-12) and the second (2019-21) period, whether changes



Greylag geese have increased as a breeder on English moors but not in Scotland. © Peter Thompson

in bird abundance differ between driven grouse moors, walked-up moors and non-grouse moors, and if bird numbers change in relation to measured changes in vegetation. Interim results suggest:

Curlew: are almost five-fold more frequent on English moors than their Scottish counterparts and their numbers have remained largely stable between periods.

Golden plover: there is a suggestion of reduced densities across English regions. Relatively few golden plovers are found on Scottish moors.

Lapwing: are frequent breeders on margins of English grouse moors, where

numbers appear stable, but are seldom found on Scottish moors.

Meadow pipit and skylark: suggestions of declines across some English regions are not apparent in Scotland.

Red grouse: have increased across all regions.

Greylag goose: a large and recent increase as a breeder on English moors has not occurred in Scotland.

Results from further analyses conducted this winter will be reported in the next issue of this newsletter. 📌

There are suggestions of declines of meadow pipits across some English regions that are not apparent in Scotland. © Peter Thompson



HEATHER MANAGEMENT STUDIES

EFFECTS OF BURNING AND CUTTING OVER BLANKET BOG

by Siân Whitehead

Monthly monitoring of water table depth and water quality has continued for another year on our experimental treatment plots, with just one month of incomplete data last winter due to snow cover. Provisional analyses of the first year of water quality data have shown the expected late summer/autumn peak in dissolved organic carbon. This is due to greater microbial activity in the upper, aerobic peat layers during the warmer summer months producing carbon that is then washed out by the increased rainfall that autumn brings.

We have now completed two years of post-treatment invertebrate and vegetation surveys. Having only just finished the second year of vegetation data collection, we look forward to being able to report some initial findings as soon as these data have been analysed. Additional measurements, taken last spring, have shown differences in the number of cotton grass (*Eriophorum vaginatum*) flower heads between the treatments. Pooling all data from our five sites there were, on average, twice as many flower heads in our burn plots than in those that had been cut,



There were twice as many cotton grass flower heads (inset) in our burn plots (right) than those that had been cut (left).

and four times as many as those in the control plots. This highlights the value of burning, rather than cutting heather, for encouraging this important spring food resource for grouse.

We have also collected information on grouse roosting piles from each of the treatment plots. Again, it is the burn plots that are preferred by grouse. Although there was no difference in the number of roost piles on cut plots when compared with the 'no treatment' controls, there were approximately twice as many roost piles on burns. Why is this? We suggest



that while the grouse like the visibility afforded by the burns, the persistence of bare heather stems makes it difficult for predators to approach without being heard.

The study gained a further dimension this year as we have been fortunate to be able to engage the expertise of two local lichenologists. They are interested in exploring how our experimental management (particularly burning) may encourage colonisation of this fascinating but under-studied group of species. I look forward to working with them and learning more about this enigmatic group. 📌

© Runja

POST-BURNING RESPONSES OF VEGETATION ON LANGHOLM MOOR

by Siân Whitehead

In our last newsletter, we reported on the work by Hannah Weald, a previous placement student, who looked at vegetation on a series of known-age burn plots, on blanket bog at Langholm Moor. We are pleased to report that this research has now been published: Whitehead, S., Weald, H. & Baines, D (2021) Post-burning responses by vegetation on blanket bog peatland sites on a Scottish grouse moor. *Ecological Indicators* <https://doi.org/10.1016/j.ecolind.2021.107336>. We found that heather cover, vegetation height and biomass increased linearly over time since burning, whereas cotton grass decreased during the first eight years. *Sphagnum* cover

in plots burnt eight to 10 years earlier averaged five times higher than that in the no-burn control plots and was positively correlated with peat depth. These results support earlier studies in northern England, showing that prescribed burning at regular

intervals can increase *Sphagnum* cover by reducing heather cover and canopy vegetation biomass. We considered the repercussions of this for management of blanket peat habitat, including reducing wildfire risk across UK moorlands. 📌

Sphagnum cover in plots burnt eight to 10 years earlier averaged five times higher than the control plots.



HEATHER BEETLE DAMAGE: POST-OUTBREAK MANAGEMENT TO FACILITATE HEATHER RECOVERY

by David Baines & Siân Whitehead



(Above) Experimental plot post burning after heather beetle damage; (right) recording baseline vegetation data after heather beetle damage.



This year we started a new experiment to determine the effectiveness of different heather management methods in restoring a heather-dominated sward after a severe heather beetle outbreak, ie. does post-outbreak intervention management accelerate subsequent heather recovery? We have two study areas in Swaledale, one on deep peat (>40cm) and the other on shallow peat (<40cm). In each area we have replicate plots with three experimental treatments: burning, cutting and no treatment control. Pre-treatment baseline

measurements were taken to quantify vegetation composition and structure and the extent of heather beetle damage. We also collected heather samples, which have been sent to Forest Research for analyses of elemental content (nutritional value).

Cut and burn treatments were conducted in early April and these plots will now be measured annually to record heather recovery and other vegetation responses. 📌

HEATHER BEETLE - PLEA FOR INFORMATION

To help understand changes in the frequency of heather beetle outbreaks, if anyone has historic information (diary records etc) of years and severity of attacks, please contact Leah Cloonan by email: lcloonan@gwct.org.uk.

EFFECT OF HEATHER CUTTING ON MOSS DEPTH AND MICROTOPOGRAPHY

by Kimberley Holmes



Looking at the effect of heather on moss depth by taking moss depth measurements.

This spring I collected the data for my placement project, which investigated the effects of heather cutting on blanket bog vegetation. Recent changes in regulations on blanket bog vegetation management have led to an increase in heather cutting as an alternative to burning, but there remains a notable lack of research on the effects of this cutting on multiple aspects of the blanket bog ecosystem. Of particular interest for my project was how cutting may affect depth and microtopography

Close up of *Sphagnum* moss cover:



(hummockiness) of *Sphagnum* moss, a key component of blanket bog habitat.

Measurements of moss depth and vegetation percentage cover were taken from cut and uncut areas of two managed blanket bog sites in Teesdale. The results showed a 40% reduction in moss depth, and index of moss microtopography (hummockiness) was reduced by a quarter, in areas of heather cutting. Cover of feather mosses was reduced by just over 10% by cutting, but there was no effect on the amount of *Sphagnum* moss cover.

The study demonstrated how heather cutting can have a negative impact on the essential moss layer of the blanket bog through its partial removal. This should be an important consideration for land managers and policy makers when deciding land management practices. The data also provide a useful baseline for future work needed to explore vegetation response and recovery following cutting over longer timescales. 📌

UPLANDS STAFF

PLACEMENT STUDENTS



Lucy Marsden & Bethany Tilley

We have welcomed our new placement students for 2021/2022.

Lucy Marsden: I'm one of the new Upland team students at Eggleston. I am currently studying Countryside and Environmental Management at Harper Adams University. Originally I'm from Lancashire, although I'm often found walking the hills of Scotland or the Lake District. I love all aspects of the countryside and to be working in the uplands surrounded by an abundance of wildlife is idyllic.

Bethany Tilley: I am currently studying Ecology and Wildlife Conservation at the University of Reading, and have a background in lowland gamekeeping. During my placement year with the Uplands team, I hope to learn more about upland bird species and the management required to ensure their long-term success. I also wish to gain necessary fieldwork experience to help further my career in conservation. 🐾

GET THE RIGHT ADVICE

We offer a service for counting both parasitic worms and their eggs. For further information please contact our Eggleston Office:



01833 651936



uplands@gwct.org.uk

NEW RECRUITS

Recently there has been a lot of changes in staff within the Uplands team. Below, the three newest members introduce themselves and tell us what they bring to the team.

Georgia Isted – Merlin Project Assistant

I recently finished my Masters in Biology from Cardiff University where I spent time in the USA studying the movement ecology of North American raptors. I am looking forward to helping further our understanding of merlin populations in England as part of the Merlin Recovery Project.

Liam Thompson – Research Assistant

I completed a BSc in Animal Conservation at the University of Cumbria in 2015 and went on to complete an MSc in Ecology and Conservation at the University of

Aberdeen in 2018. A varied career path led to a job in ecological consultancy in 2019 until I joined the GWCT in October.

Leah Cloonan – Uplands Support Officer

I also joined the team in October coming from a background of Countryside Management having graduated from Scotland's Rural College in 2020. However, after graduating I went to work for the NHS due to the pandemic outbreak, having worked for the NHS on and off for the past 10 years in various roles. So far, I am enjoying working for the GWCT and I am looking forward to helping with fieldwork in the future.

Puppies

We have also welcomed two new pointer puppies to the team... Monty and Lairig. 🐾

Monty and Lairig are two new pointer puppies that have joined the team, seen here with Philip Warren and David Baines.



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