Ecology and Evidence

Winter newsletter 2017/18

DISCOVER wildlife, DATA gather, DELIVER conservation

Cover picture: Deptford pink *Dianthus armeria, by Peter Atherall*
The Deptford pink has declined rapidly in range and is now known to inhabit only about 15 sites in the UK, mainly in the south. It prefers light, sandy, acidic soils, and requires open conditions to grow well. It can be found on disturbed ground, such as tracks and field edges, along hedgerows and in dry pasture. In Kent it is found on Kent Wildlife Trust's Sandwich Bay National Nature Reserve and at Farnigham Woods.

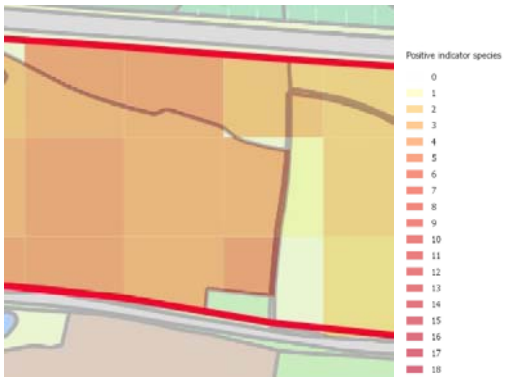
Kent Wildlife Trust
Ecology and Evidence
Winter newsletter 2017/18

Introduction
Welcome to the winter 2017/18 ecology and evidence newsletter, which this year is bigger than ever before. I have taken the decision this year to encompass not only Ecology Groups, but also to highlight the wealth of other work carried out by Kent Wildlife Trust and our volunteers in the vital areas of monitoring and evidence. Evidence is absolutely critical to what we do, and it is increasingly important that we are able to demonstrate the efficacy of our management of Kent's wildlife and habitats. Our capacity and expertise in this respect is increasing, and I hope this newsletter will reflect that.

The year in numbers
282 (up from 193) people are now on the Ecology Groups mailing list; **9** (up from 3 in 2016) Ecology Groups are now up and running; **70** people took part in Ecology Group surveys (up from 48 in 2016), contributed a massive **1,794 hours.** We completed **1056 quadrats** and generated **11,712 species records** which have been shared with the Kent and Medway Biological Records Centre. We completed reserves monitoring and evidence work in **9** (up from 3 in 2016) landscape areas on **28 reserves,** that's nearly half of all Kent Wildlife Trust reserves. We added sand dune, fen, wet grassland, heathland and bogs to the habitat types monitored, and our growing capacity to complete data analysis and reporting means we have already reported to reserves staff on most of our 2017 surveys.

Surveys
The surveys we carry out aim to 1) establish species presence and absence, population trends and habitat condition, 2) inform the management of reserves by reviewing the success of previous habitat management work and help plan for future management strategies, 3) evidence the success of our conservation work and 4) direct future surveying and monitoring programmes. For each Kent Wildlife Trust Living Landscape and reserve the key features for which the sites are important are identified in the management plans and are intrinsic in the types of habitat in which they occur. Features can be of nature conservation, landscape, community, visitor or educational interest. For example at our Queendown Warren reserve in the Medway Smile Living Landscape, chalk grassland, woodland and early spider orchids have been identified as key nature conservation features. Each feature will have a number of attributes which are its characteristics, qualities or properties. Attributes are the measurable performance indicators which together help to indicate the condition of the feature. Examples might be the size of an orchid colony, frequency and distribution of key grassland species and the structure of the vegetation.

Habitat condition
The condition of the habitats we manage is fundamental to their ability to support wildlife: get the habitat right and you are much of the way there in terms of species conservation. In 2017 our baseline habitat condition surveys expanded from chalk and acid grasslands to encompass wetland (fen and wet grassland), sand dunes, lowland dry heath and bogs, as well as surveying more chalk and neutral grassland reserves.



'Hotter' squares indicate more positive indicator species, and show where the richest parts of a reserve are.

Our habitat condition surveys are based on the JNCC Common Standards Monitoring guidance, a national standard for habitat monitoring. You may remember that we have adopted an approach developed by Gloucestershire Wildlife Trust that uses GIS (Geographic Information Systems) and the British National Grid to create a grid square overlay for each of our nature reserves. This is used to scale and structure our sampling and make it easily repeatable. Examples of these are found throughout this newsletter. To interpret them, remember that the squares are coloured with a *temperature scale,* according to the value of key attributes, such as numbers of positive indicator species. The map will get 'hotter' as the

number and distribution of indicators and 'hot' squares increases. It also demonstrates exactly where these areas are within a reserve. In addition to the presence of habitat specific positive indicator species, we also collect data on other key habitat attributes such as sward height, flower and sedge cover, presence of undesirable species that require management, dead plant litter (an indicator of grazing management) and bare ground cover.

Butterflies

2017 was a fantastic year for the red admiral, with numbers up by 75% on 2016 in Butterfly Conservation's Big Butterfly Count. Sadly though it was not a great year for butterflies overall. Much of the southern UK enjoyed a sunny May and June and it looked as if it might turn out to be a good year, but a wet July and August put a dampener on most species, which emerge midsummer. Heavy summer rains can wipe out whole generations of a species - 'not bad, but not great' sums up the year. British butterflies are well-adapted to the potential perils of our variable summer weather, but the long-term decline in two-thirds of our 59 native species shows they are less equipped to deal with rapid climatic changes or the use of broad spectrum insecticides. Milder winters appear to be disastrous for many butterfly species, though not the red admiral. Half a century ago it appeared unable to survive British winters and most individuals made the reverse migration to the continent. Now it is not only a successful hibernator, but the most commonly spotted butterfly throughout the winter months. Other species were less fortunate, however, with declines seen across the three common species of white butterflies. The green-veined white and both the large white and small white were down more than a third on last year, reflecting the difficult weather conditions. Butterflies and many other invertebrates have a fantastic ability to bounce back under favourable conditions however. Due to their short life cycles and multiple generations annually, they can quickly recover, and these characteristics make them particularly useful taxa to monitor on our reserves as they respond to management rapidly. Other invertebrates are far slower to recover – the length of development time for many invertebrates is very strongly correlated with the nutrient content of their food source. Species feeding on dead wood, for instance stag beetle larvae, take several years to reach the adult stage, while butterflies and moths that feed on nitrogen-rich living plant material can reach maturity far more quickly. Read on for details of some of Kent's specialist butterfly species throughout this newsletter.

Breeding birds

Data from the British Trust for Ornithology tells us that the 2017 breeding season was late to start and productivity was low. Great tit, chaffinch and blackcap were particularly affected by cool and damp weather in April, with many laying eggs a week later on average. My own ringing data mirrors the national trend for blue tits which had a poor season, with adult birds making up a greater proportion of totals than would be expected in a more productive year. Species nesting in June, such as reed warbler, were also affected by heavy rainfall. On a more positive note, there was a higher adult abundance of short and long-distance migrants at the start of the season. Chiffchaff in particular were noted in the greatest numbers since 1983. Survival rates may have been helped by warmer than average conditions in their wintering grounds. Similarly, the survival rate of cold sensitive species such as wren and Cetti's warbler was up on previous years, no doubt helped by the milder winter in 2015–16. (Photo: Cetti's warbler, *Barry Stewart*)

Dormice

Many Kent Wildlife Trust volunteers are involved in surveying dormice as part of the National Dormouse Monitoring Programme (NDMP) on our reserves and elsewhere in the county. 2017 saw the publication of some worrying evidence of declines in dormouse numbers in the UK. A paper in the journal Mammal Review entitled "Voluntary recording scheme reveals on-going decline in the United Kingdom hazel dormouse *Muscardinus avellanarius* population" (Goodwin *et al* 2017) presents analysis of count data from 400 NDMP sites from 1993 to 2014. It demonstrates that changes in counts are an index of abundance and allow the inference of a population reduction of 72% over the 22 years from 1993 to 2014, (equivalent to a mean annual rate of decline of 5.8%). The paper goes on to state that on-going decline in the hazel dormouse population is occurring despite a high level of species protection and widespread conservation measures. The hazel dormouse is a UK Biodiversity Action Plan Priority Species and a European Protected Species, and the causes of population reduction are not well understood and may not have ceased. An urgent appraisal of dormouse conservation is required to ensure the species favourable conservation status. (Photo: hazel dormouse, Burham Down, *Jude Shorter*).

Ecology Groups survey programme

Each year a list of surveys across all the reserves are planned to help Kent Wildlife Trust monitor the condition of reserves and status of species. The programme will be sent to all Ecology Group volunteers and published on our website and social media channels early in 2018.

Recorder 6 database update

We now have over a million wildlife records in our database! **1,055,877** records to be precise, up from 994,383 last year. The database contains records for all 68 of our

reserves and 467 Local Wildlife Sites (that's 1% and 7% of Kent respectively). This increase in records is comprised of survey data collected by staff and ecology group volunteers this year, individual recorders, and updates provided to us though our data sharing agreement with the Kent and Medway Biological Records Centre.

Funding for monitoring and evidence

Thanks to the sterling efforts of colleagues in the Bid Development Team we secured generous funding from the John Spedan Lewis Foundation and the Chapman Charitable Trust that has allowed us to purchase various items of equipment, including a number of high quality Leica microscopes to support wildlife study days.

JOHN SPEDAN LEWIS FOUNDATION

CHAPMAN CHARITABLE TRUST

Conservation Evidence

Providing evidence to improve practice

An exciting project for 2018 is our 'Conservation Evidence review'. Conservation Evidence is a free, authoritative information resource designed to support decisions about how to maintain and restore biodiversity, based at the University of Cambridge. It summarises evidence from the scientific literature about the effects of conservation interventions, such as methods of habitat or species management. It also publishes new evidence in the open access journal Conservation Evidence. Put simply, Conservation Evidence:

- Aims to break down the barriers between published scientific evidence and practitioners
- Summarises scientific data for different conservation actions
- Actions are scored by experts for effectiveness, certainty and harms
- Provides a tool to assist decision making

Kent Wildlife Trust is seeking to become an 'Evidence Champion'. These are organisations who agree to write the use of Conservation Evidence into their decision making systems – management planning, conservation advice, grant proposals etc. We may also be able to experimentally test and publish the results of the management we do. As an Evidence Champion, we will be able to demonstrate publically that our management actions are evidence-based.

Disability and Accessibility

Kent Wildlife Trust aims to be an inclusive organisation that seeks to give equality of opportunity to all. We are committed to developing a programme of improvements to make our buildings, information, educational facilities and activities more accessible. If you have any particular accessibility requirements relating to surveys, monitoring and Ecology Groups, please get in touch and we will do everything we can to accommodate them.

Ecology Group Leaders

We are seeking Ecology Group leaders, volunteers who would like to take an active role in the planning, organisation and leadership of surveys, as well as helping out with surveys. You may also like to get more involved in data analysis and reporting. If this sounds like something you may be interested in, please do get in touch.

Kent Wildlife Trust Ecology Groups on Facebook

Don't forget we are on Facebook, a great way to keep in touch, share photos, sightings, and identification tips. Search 'Kent Wildlife Trust Ecology Groups' and check out our webpages at http://www.kentwildlifetrust.org.uk/wildlife/ecology-groups and look out for the new Monitoring and Evidence content on Kent Wildlife Trust's new website coming soon.

Want to get involved?

For any queries or for further details about Ecology Group activities, or to let us know about wildlife you have seen please contact: paul.tinsley-marshall@kentwildlife.org.uk

Thank you

To all those of you who have been involved in surveys, collecting the data we need to assess our management and the success of our Living Landscape projects, I'd like to say a huge **thank you**. Kent Wildlife Trust both values and relies on your support. On a personal level I'd like to say a continued huge thank you for all the help and support I received from you in my role of Conservation Evidence Ecologist. I continue to meet lots of enthusiastic, knowledgeable and dedicated people, and it's you guys that help make this job so exciting and enjoyable. I'm really looking forward to working with you all in the coming year, and hope to meet many more Ecology Group volunteers in 2018

Paul

Dr Paul Tinsley-Marshall | **Conservation Evidence Ecologist**
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Medway Smile Living Landscape

Holborough Marshes, Stockbury Hill Wood, Peter's Pit, Burham Down, Wouldham Common, Nashenden, Queendown Warren, Westfield Wood, Blue Bell Hill, The Larches, Darland Banks

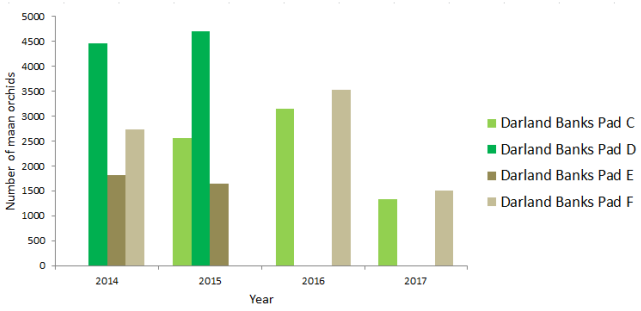
Habitat condition: chalk grassland

Reflecting on our second year of this surveying method, it all seemed to go quite smoothly. Species from last year were remembered and identified by many of the volunteers that last year claimed to 'know nothing'. Tried and tested logistics systems were redeployed to great effect, allowing us to cover large areas in good time. Species-wise, we spotted large amounts of eyebright in our quadrats and it felt like scabious and knapweed had a good year as well. By the time we were surveying in June/July the weird spring weather had sorted itself out and the structure of the quadrats felt consistent with previous years. The data entry has just been completed, and the results are on the way – we generated 3,784 plant records on Medway reserves in 2017!

Alison Ruyter, Medway and Mid Kent Downs Area Warden

Man Orchids at Darland Banks

The very cold, dry spring, followed by a very hot, dry beginning to the summer was not enjoyed by the man orchids. Numbers were comparable to previous years but they were late to flower due to the cold, meaning that we were having to count emerging spikes, rather than full flowers which made spotting them tricky. Within three weeks however, the weather had got so hot that many of the flowers towards the top of the spikes failed to flower at all, with whole plants drooping and shrivelling up. I've not seen it this hot and dry before at this time of year. Even in the hottest of summers there has been enough moisture in the ground that these early flowering plants haven't wilted! We will have to see how they recover next year.



Bar chart showing man orchid numbers by compartment at Darland Banks in 2014 -2017

Man orchid monitoring at Darland Banks is designed to test the impact of two grazing treatments applied in different compartments. Over much of the site (eg **paddock C** and **paddock D**), traditional winter grazing is sufficient to keep scrub and rank grasses under control and allow the man orchids and other key species to thrive. In some of the restoration compartments (eg **paddock F**), tall coarse grasses, invasive clematis and bramble are an issue, and winter grazing is not sufficient to keep them in check. A more intense grazing regime was considered necessary, however increasing grazing pressure is often met with resistance, with concerns raised over potentially detrimental consequences for man orchids. Monitoring was therefore instigated to keep an eye on this.

The pattern can most easily be interpreted by comparing numbers in **paddock C** (traditional winter grazing only) and **paddock F** (winter to late spring and late summer grazing). The variation in numbers is consistent between the two grazing treatments, mostly likely influenced by general climatic conditions equally between the two. If the more intense grazing was adversely affecting man orchid numbers, we would expect to see numbers fall in **paddock F** disproportionately to the trend in **paddock C.** So far this effect is not apparent, suggesting that the more intense grazing is not causing a decline in man orchid numbers. It is certainly having a beneficial effect on scrub and coarse grass control. On-going survey will continue to monitor the outcome of this management.

Alison Ruyter, Medway and Mid Kent Downs Area Warden.

Lepidoptera: Butterflies

This year felt rather poor, the wet start to summer may have hampered species but the weather recovered unlike the butterflies. Small copper were especially absent, I didn't record an individual until mid-August, and only counted four overall on my transects this year (I gather that they fared better on coastal sites, perhaps this little butterfly is going the way of the wall butterfly over time?). (Photo: Adonis blue male, Darland Banks, *Rob Pennington)*

A hoped for painted lady influx once again didn't materialise, with the wind blowing the wrong direction and holding them up on the other side of the channel, I only managed a handful of records of them this year, a similar story with clouded yellows, they were only around for a week or two in mid-September. (Photo: Small blue, Luton Rec, *Rob Pennington)*

It was a year where everything was present, even the rediscovered small colony of Adonis blue persisted at Lower Burham, but numbers all felt low. This isn't just the case in Kent, I travel quite a bit in the country to see butterfly species we don't get here and the story was much the same, all present but low on numbers. Fingers crossed that they'll bounce back in 2018. (Photo: *Large Skipper, Lower Burham, Rob Pennington).*

Rob Pennington, Medway Valley Assistant Warden

Clouded yellow, Peter's Pit (Photo: *Rob Pennington*)

At Queendown Warren, Selwyn Dennis completed 15 transect visits this year and recorded 20 different species. The most abundant (un-surprisingly) was meadow brown and at the other end of the scale a few painted ladies. Adonis blues and silver spotted skippers are still reliable and an improvement on last year's count. In fact the whole butterfly season at Queendown Warren was much better than last year's dismal count. Gatekeepers, in particular, have bounced back from last year's low. The lack of flowering vegetation on large parts of the main bank remains a concern and extensive rabbit fencing about to be erected must surely help flowers and therefore butterflies. Most of the recorded butterflies are seen around pockets of knapweed, marjoram and thyme, well away from the feeding rabbits/ burrows. Altogether a more productive recording year and hopefully the same or better next year.(Photo: White letter hairstreak, Peter's Pit, *Rob Pennington)*

Selwyn Dennis, Queendown Warren Honorary Warden

First Adonis blue found at The Larches. A single male was found by Paul Tinsley-Marshall on 25th May, and four males were found by David Chambers and Mike Easterbrook on 24th August. There are no previous records of this species at this site, and these records appear to represent a landscape scale movement. Interestingly, the food plant horseshoe vetch is not known from the site, but these sightings demonstrate the ability of this butterfly species to move to new and better managed areas of habitat. Adonis blue has also been recorded on the Bluebell Hill Roadside Nature Reserve, a sign they may be dispersing from core areas. (Photo: Adonis blue female, Darland Banks, *Rob Pennington)*

Lepidoptera: moths

Surveys were carried out at Queendown Warren and The Larches by Medway Smile staff and volunteers. The first month was literally freezing, with a grand total of one moth caught. It was a luxury to have the camper van parked close to the moth trap at The Larches where frequent rounds of hot chocolate kept away the worst of the frost bite. The dry start also seemed to delay some species with May and June being very quiet and then a comparatively huge rush in July when the rains came. Lots of new species were added to the list at The Larches and some new ones for Queendown as well. Intense rabbit grazing at Queendown has meant there has been a lack of nectar sources for moths. A project to protect a large core of the reserve with rabbit netting is now in place and we are very excited to see what changes this makes to the moth numbers over the next couple of years.

Alison Ruyter, Medway and Mid Kent Downs Area Warden.

Straw belle

The Straw Belle moth *Aspitates gilvaria* is listed on Section 41 of the National Environment Research Council (NERC) Act, 2006, and is a Red Data Book species. As a breeding species it still appears to be declining and is confined to parts of the North Downs, being found mainly in Kent (restricted to 9 sites, depending on the definition of a site) but also found in Surrey, where it is now confined to a single site; Box Hill. It is associated with areas of unimproved, longer turf chalk downland, typically preferring southerly facing slopes with a more open structure with plenty of bare ground. The larva is known to feed on a range of low-growing herbs. Although some of the details of its habitat requirements remain unclear, straw belle populations do appear to be closely dependent on the right sward conditions, which include long tussocky grass, a generally herb-rich sward and an open structure with bare ground present. As sward growth can vary greatly from year to year based on rainfall, mild winter conditions and rabbit numbers as well as grazing stock, flexibility in grazing and a clear idea of the target sward condition is likely to be the key to successful management for this species. (Photo: Straw belle, Darland Banks, Heather Furse)

In recent years an attempt has been made to gain a better understanding of this species' distribution (as well as its ecological requirements), with targeted surveys for adults being undertaken in late July/August. *Heather Furse* led a team of volunteers to undertake detailed monitoring at Darland Banks. The peak count of 27 moths was the highest of any of the ten sites in the survey (range 1-27, mean 6.2), although down on 2016. Other species of conservation concern recorded included: *Oncocera semirubella* - a Nationally Scarce micro-moth associated with calcareous downland and known locally as 'rhubarb and custard'; Lace Border *Scopula ornata* - a very local Nationally Scarce species of calcareous downland, and Chalk Carpet *Scotopteryx bipunctaria* - a Section 41 (NERC Act, 2006) and Nationally Scarce moth. Many thanks to *Heather Furse, Paul Brocklehurst, Mark Furse, Alison Ruyter, Brian Salter, Kevin Tolhurst, and Andrew Witts*

Kent Moth Group

Unfortunately the early part of the year was plagued with inconveniently bad weather, which prevented access to the Greater and Lower Culand Pits and Peter's Pit. However, we managed to get into all of those areas later in the year and they are all very rich in both species and numbers, which made the effort of getting in and out very worthwhile.

Greater Culand Pit was our first port of call and we set up in the topmost part of the pit. We were rewarded with a Nationally Scarce B (Nb) species – light feathered rustic *Agrotis cinerea*. When we revisited that site for a second visit we were also rewarded with a second Nb species - chalk carpet *Scotopteryx bipunctaria*. We also found two notable micro moth species, *Moitrella Obductella* (Rare) and *Evergestis extimalis* (Very Local). Some species with privet as larval food plants (Coronet, Waved Umber) were very common in this pit, but surprisingly privet hawk moths were not encountered

Lower Culand Pit was accessed courtesy of Steve Weeks (Kent Wildlife Trust) and again proved to be a very rich and rewarding site. Chalk carpet was there in good numbers and seems to thriving. Also of note was Annulet *Charissa obscurata*, which while not nationally rare is extremely uncommon in Kent, and then only in coastal areas. We found it in very good numbers and in all colour forms. Notable micro moth species included *Mompha lacteella* (Rare), *Moitrelia obductella* (Rare) and *Evergestis extimalis* (Very local). We only managed one trapping session there, but it has huge potential.

Kent black arches (Photo: Wikimedia Commons)

Peter's Pit was even richer than the other two pits. Kent black arches *Meganola albula* Nb was there in good numbers. Among the micro moth species were *Moitrelia obductella* (Rare), *Nephopterix angustella* (Very Local) and the stunning *Bisigna procerella* (Rare).

Bisigna procerella (Photo: Wikimedia Commons)

Barred toothed-striped moth *Trichopteryx polycommata*
Status: nationally scarce. Peter's Pit. A record of 10 individuals represents a new 10km square in the UK distribution for the species.

Barred toothed-striped moth *Trichopteryx polycommata,* *(Photo: Alan Stubbs)*

Queendown Warren had good numbers of light feathered rustic (Nb) but otherwise we did not turn up any rarities.

In conclusion the sites we visited were very rich, under recorded and full of potential for more surveys. We aim to get more people to come along and get involved

Kent Moth Group

Hymenoptera

At Burham Down the rare *Aporus unicolor* spider hunting wasp was found again at its only known Kent location. It is a particularly interesting wasp as it is a specialist hunter of the purse nest spider (a sort of trap door spider which itself has a restricted distribution). I also found the spider hunter *Arachnospila minutula* which is nationally notable and a species I had not seen before. Burham Down has a really interesting insect fauna - species turn up there which I don't see anywhere else in Kent. In my experience it has the most unique insect fauna of any of the downland sites.

Grant Hazlehurst

Queendown Warren's resident Harris hawk, an escaped falconry bird that has been successfully making a living on the reserve (Photo: Selwyn Dennis)

Water vole

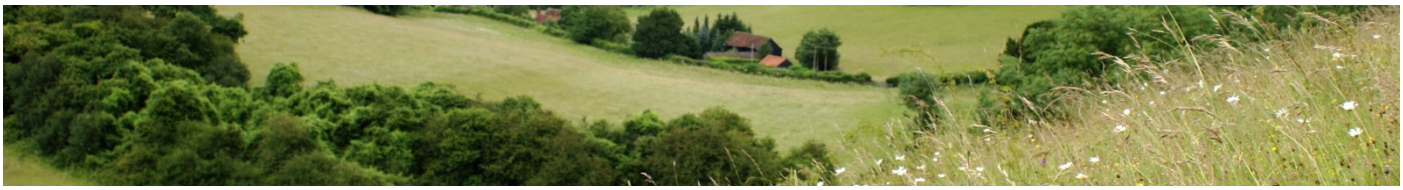
Holborough Marshes alongside the upper tidal River Medway is a stronghold for water vole. The species is fully protected under the Wildlife and Countryside Act 1981, and this protection extends to both the animal itself and its habitat which places considerable responsibility upon Kent Wildlife Trust to ensure its security. An annual survey of water vole signs in April/May has been carried out for several years and since 2013 the results have been analysed using a quantitative method to provide an estimate of population number. This is in the region of 150 breeding individuals. This number obviously fluctuates during the season due to breeding success and natural mortality.

Water vole (Photo: *Greg Hitchcock*)

The survey is vulnerable to the effects of heavy rain washing away latrine and feeding station signs that are key to successful recording. Fortunately this was not a problem in 2017 although the need to avoid disturbing breeding lapwings meant we were unable to survey the northern section of the reserve. Nevertheless, the 2017 survey allowed us to conclude with a high degree of confidence that the water vole population at Holborough Marshes has remained stable relative to previous years (2013-2015).

Nigel Jennings, Ecology Group volunteer

Darent Triangle Living Landscape



Fackenden Down, Magpie Bottom, Polhill Bank, Kemsing Down

Habitat condition: chalk grassland

Polhill Bank and meadows: The condition assessment surveys turned up the usual mix of positive (and negative) indicator species in typical abundance. There were some good patches of common dodder *Cuscuta epithymum* later on in the summer creeping over everything like the red weed from War of the Worlds. We expanded the survey down on to the farmers meadows below the bank this year as Kent Wildlife Trust may become more heavily involved in managing these fields in the future so I thought it pertinent to have baseline data. We had the usual scattering of orchids across the bank, but the real highlight for me this year was the number of common lizards basking on the log piles which we have be creating in suitable spots when we can. (Photo: common dodder, *Judith Shorter*)

Green Hill, Fackenden Down and meadows: Increasing the size of the survey grid squares this season meant that we managed to survey the whole of Greenhill for the first time. This is a good example of how our grid square survey method can be scaled to fit resource availability while maintaining complete coverage of a reserve. We've put a lot of effort into this site over the last five years to prevent scrub encroachment, so it will be nice to know if our efforts are paying off. Fackenden Down gave us its usual impressive display of orchids, but they always seemed to be just outside the quadrat whenever we put it down. In addition to the condition assessment survey of Fackenden Meadows (which was generally poor on this area of agriculturally improved grassland) we also conducted a belt transect along a strip where we carried out green hay strewing last summer; the result was a three-fold increase in the plant species diversity and a doubling of the number of positive indicator species. We have plug-planted one of the other fields in the meadows and GPS'd the locations of the 35 plots so that we can monitor how well the plants survive and spread.

Kemsing Down and Goss Bank: The surveys went well, although one did require the use of a golfing umbrella. In addition to condition assessment we again repeated the belt transect along the ride which we have been widening on Goss Bank to see how quickly the chalk grassland community re-establishes itself after many years under dense scrub. The highlight for me this year was the discovery of a previously unknown colony of 14 white helliborines *Cephalanthera damasonium* on Goss Bank, which is a real boost to the scattering which we get elsewhere on the site.

My thanks go to all the volunteers who braved the sun (and the rain) to help with the surveys this year, with special thanks to our trainee wardens Karen Toller and Karen Thorpe, Gareth Christian, and David Sperlinger for volunteering for every survey they were able to make.

Data entry is currently underway, and once complete we will start mapping and analysing the results.

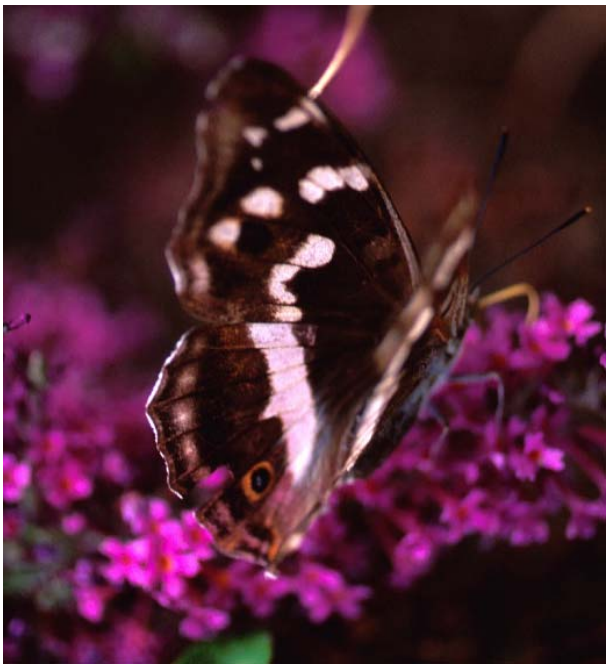
Paul Glanfield, Area Warden West Kent (Sevenoaks)

Butterflies

Dark green fritillary (Photo: Jim *Higham*)

Magpie Bottom: Ten transects were undertaken this year between April and September, yielding 1520 individual butterfly records of 27 species. The best day for species diversity was 18th July, when 21 species and 255 individuals were recorded. The most abundant day for individuals was 20th June, with 693 butterflies recorded, 451 of which were

meadow brown, however, their numbers for the year are down around 50% from 2016, as were numbers of ringlet.



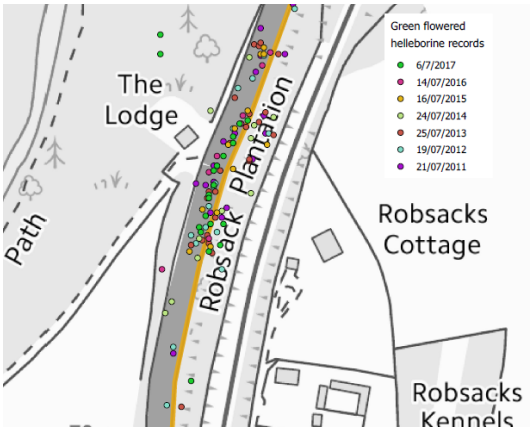
Purple emperor (Photo: *Bryony Chapman*)

2017 was a better year than 2016 for many species, including brimstone and comma. It was a particularly good year for the common blue, with a fourfold increase on last year's numbers. This species has suffered a decline in numbers due to the agricultural intensification destroying semi-natural herb-rich grassland, however its numbers have stabilised in the last decade. It has also been a good year for the silver washed fritillary and dark green fritillary, with 23 and four being recorded respectively. Eleven silver washed fritillary were recorded on 18th July alone. Perhaps the overall highlight though was a purple emperor landing on Ethna's knee during the chalk grassland quadrats!

Karen Toller, Volunteer Trainee Warden, Reserves West

Roadside Nature Reserves

RNR SE05 (Darent Valley triangle) Each year we carry out a count of the rare green flowered helleborine *Epipactis phyllanthes*, which flowers in July. This orchid has only been recorded in two other sites in Kent and one of these is no longer accessible and is likely to be built on in the future, so this RNR supports a vital population. (Photo: Wikimedia Commons)



Green flowered helleborine distribution at SE05 © Crown copyright and database rights 2018. Ordnance Survey 100030835.

We have managed to secure funding from the Darent Valley Triangle's Heritage Lottery Fund Project to improve access to the RNR site and carry out enhancement work to the area where the green flowered helleborine grows. Interestingly, we found the orchid in or close to one of our habitat condition survey quadrats in 2017 (about half a mile away from the main population), so it may be that this plant is spreading under our current management regime.

Gill Tysoe, Roadside Verge Officer

Hymenoptera and diptera

The highlight of the season was a rare hoverfly on Kemsing Down - *Cheilosia nigripes*. There are only six known sites in the UK post 1960. It is associated with woodland rides on chalk. *Andrena gravida*, a rare bee, was once again abundant on Fackenden Down, but I was unable to locate it on any of the nearby Kent Wildlife Trust reserves so it seems highly localised. I also found a couple of Red Data Book III bees on Polhill Bank: *Andrena florea* and *Andrena proxima*. Again I have not been able to locate them on any of the nearby Kent Wildlife Trust reserves. It looks like the Fackenden, Polhill, Kemsing triangle is a bit of a hot spot for rare bees and flies - presumably reflecting the quality of the grassland. The Red Data Book wasp *Symmorphus crassicornis* can still be found at Bough Beech. At Fackenden I unexpectedly found the Red Data Book wasp *Cerceris quinquefasciata* - surprising as it's a sand nester. I have found it previously at Fackenden, and I thought it might have been a lone example, but finding it again makes me think it is resident.

Cerceris quinquefasciata *(Photo: Wikimedia Commons)*

Grant Hazlehurst.

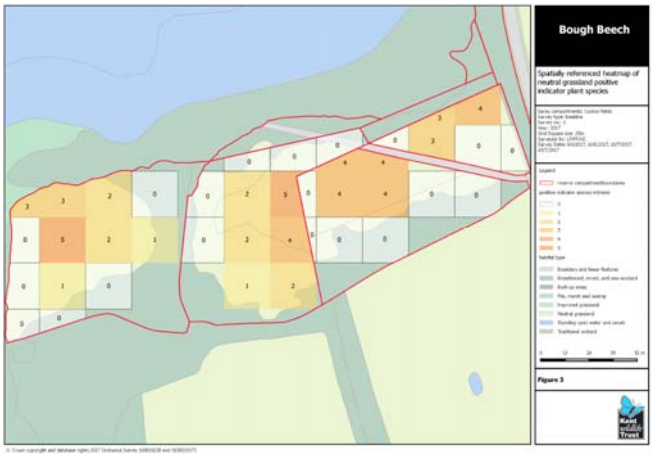
Sevenoaks Living Landscape

Sevenoaks Wildlife Reserve, Bough Beech, Cowden Pound

Habitat condition: neutral grassland

Bough Beech: Ecology Group volunteers surveyed the Cuckoo Fields, Rushy Field, Scrape Field, and for the first time Damson Meadow. Historically most of these fields have been surveyed using a rapid assessment method, and this was the first year using our more comprehensive grid square approach. We struggled a little trying to identify the grasses, until Mary Barnard arrived whilst surveying the Scrape Field. In the Cuckoo Fields, I counted 440 Common Spotted-orchids and although not on the reserve 70 Early Purple Orchids in the wood on the south side of the Cuckoo Fields.

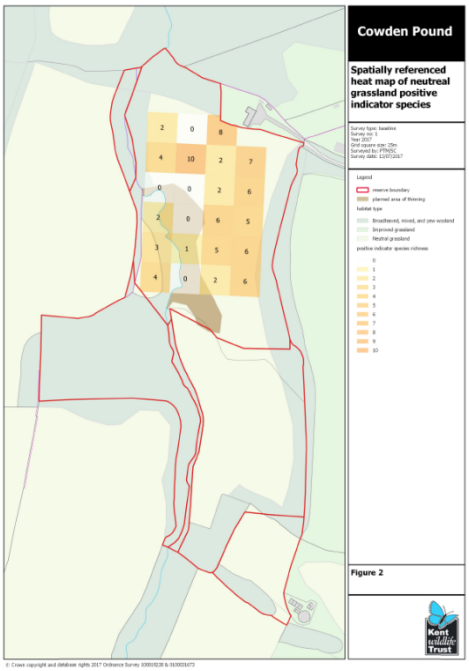
Gareth Christian, Ecology Group Volunteer



Heat maps of neutral grassland indicator species at Bough Beech.

As well as positive indicator species surveys record data on other key grassland attributes. Overall the results demonstrate that the grassland is in favourable condition in respect of positive indicator species, negative indicators of agricultural improvement, invasive coarse grass species and the amount of bare ground. On-going management is aimed at tackling scrub invasion.

Paul Tinsley-Marshall



Cowden Pound: In anticipation of planned works to extend the area of neutral grassland, a baseline survey of habitat specific positive indicator species and habitat attributes was conducted of the relevant compartment of Cowden Pound. Positive indicator richness is generally very low in the area targeted for management, indicated by the pale white squares on the map. A repeat survey in subsequent years will aim to demonstrate that thinning of secondary woodland encroachment in the area indicated in brown has allowed the re-colonisation of neutral grassland species. The survey also found the reserve to be in favourable condition in respect of agricultural weeds, negative indicators of agricultural improvement, invasive coarse grass species and the amount of litter cover – an indication of good grazing management.

Paul Tinsley-Marshall, Conservation Evidence Ecologist

Lepidoptera: butterflies

Silver washed fritillary (Photo: Jim Higham)

Sevenoaks Wildlife Reserve: Twelve transects visits were completed during 2017, between April and September. More butterflies were recorded this year than in previous years; 411 individuals were recorded, comprising of 21 species. The 15th July yielded the largest number of butterflies, with 88 being recorded. 25% of these were large white. The 22nd July and 5th August counts provided the most diversity, with 14 species being recorded each day. Three silver washed fritillary were also recorded on the reserve for the first time in recent years.

Karen Toller, Volunteer Trainee Warden, Reserves West

Amphibians

A definite highlight of the season was that we confirmed breeding great crested newts in one of the ponds which were excavated six years ago for the first time. (Photo: great crested newt, *David Kilbey*)

Gareth Christian, Ecology Group Volunteer

Reptiles

This year survey refugia were spread more evenly across the reserve, especially the corrugated metal tins. There was an increase in the number of sightings of grass snakes. Whilst surveying for the scrape work, Lee Brady (Kent Reptile and Amphibian Group) suggested Scrape Field as a good habitat for grass snakes. This did provide good numbers, as did a tin placed on the bund by the hide. Aside from this area, there was a general increase across the reserve, although a definite drop off in the New Orchard. The most noticeable improvement was in Stream Field, which had been allowed to go under bramble but in the last few years attempts have been made to knock this back. 2016 had produced no records, but there were regular sightings in the early part of the year, with a maximum of three seen on one day. Presumably as the refugia were shaded out by the regrowth, the grass snakes dispersed. As with last year, I didn't see any common lizards, although I did have a few "what was that?" sightings. There may be a lack of decent basking points, they used to sit on the post and rail fencing by the Orchard but that's now quite overgrown so I've suggested cutting it back. I did have a report of some being seen in the compost heap in 2016 from some bird watchers. (Photo: grass snake, *Jason Steel*).

Gareth Christian, Ecology Group Volunteer

Hymenoptera

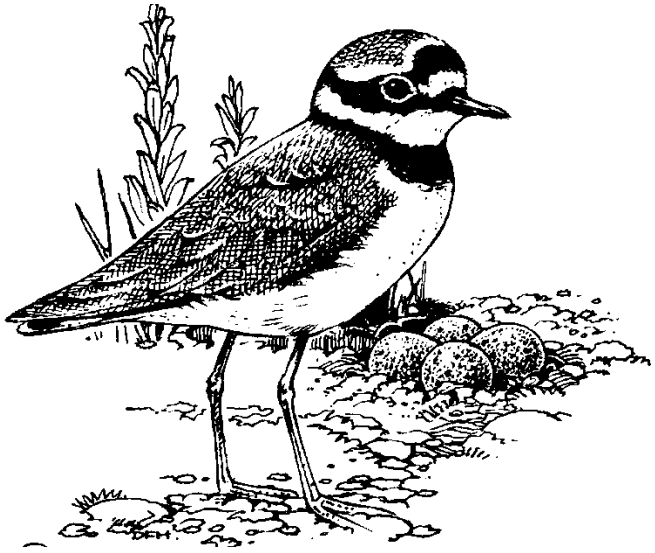
The hymenopteran highlight was probably the presence of the Red Data Book early vernal bee *Colletes cunicularius* at Sevenoaks Kent Wildlife Trust reserve. It is a sand nesting species that was only discovered in Kent last year (by me at Dungeness), and has probably recently arrived in the south east from the continent (but strangely, there is a long established population in the north east of England, though this might in fact be a different species). Photo: Wikimedia Commons.

At Bough Beech the rare wasp *Symmorphus crassicornis* is still present at its only Kent location (it is a specialist predator of the poplar leaf beetle). Also present was the Red Data Book wasp *Gorytes laticinctus* which I haven't recorded there before.

Grant Hazlehurst

Sevenoaks Common Bird Census

The Common Birds Census (CBC) is a British Trust for Ornithology survey, and was the precursor to the Breeding Bird Survey (BBS). The full 10 CBC visits were completed at Sevenoaks this year, and the methodology allows estimation of the numbers of territories of breeding species, providing an indication of the number of breeding pairs. Little ringed-plover is one of the key breeding species on the reserve, however despite two apparently occupied nests they don’t appear to have bred successfully in 2017.



Little ringed plover: a yellow-orange orbital ring is one of the distinguishing features from the ringed plover, in which it is absent

Nine sand martin nest holes were occupied (more details below), one pair of whitethroat, kingfisher and grey wagtail, two pairs of sparrowhawk, six of reed warbler, seven garden warbler, 30 chiffchaff and 52 pairs of blackcap bred on the reserve. Two pairs of lapwing managed to fledge a single chick, always a difficult task in the face of corvid predation.

Rose-ringed parakeet (Photo: Michael Harris)

Also breeding on the reserve were a pair of the invasive rose-ringed parakeet. Opinions on this pretty bird are varied, and there is no denying its attractive qualities, however the full potential of its impact on our native avifauna is not yet know. In Europe, it is known to compete for nesting cavities with native hole-nesting birds, and it is considered a pest species in Western Australia.

Sand martins

The sand martin bank compartment at Sevenoaks Wildlife Reserve is the largest of the few remaining quarry faces left on site, the others having been graded down for safety reasons once sand extraction ceased. Sand martins nest in holes in sandy banks such as those formed by quarry faces. Nests can be up to 1 m long and are excavated at a rate of 8-10 cm a day.

Sand martin young being fed at Sevenoaks (Photo: *Paul Glanfield*)

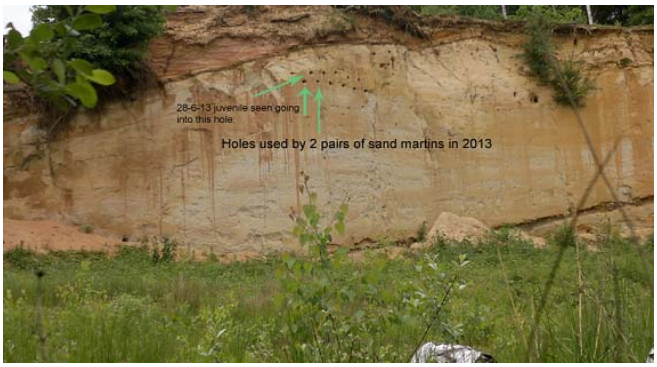
In 1968, 772 sand martin nests were recorded on the reserve, however by 2009 the area had become overgrown with trees and the sand face hardened over time, making it no longer suitable for the birds. In 2010 the trees at the top of the bank were felled by contractors and the easily accessible trees on the sloping side of the bank were coppiced by Kent Wildlife Trust volunteers. Tree removal was necessary as they interfere with the sand martin's access to the quarry face. The face was also re-profiled, and our contractor removed the outer hardened surface of cliff and made it vertical again; this prevents predators being able to climb and access the nest holes.

Re-profiling works

To help attract sand martins to return, 66 nest holes were drilled in 2011 in four groups on all sides of the quarry face. To further encourage sand martins to the nest holes, an outdoor sound system was constructed in 2013 by the Sevenoaks Tuesday volunteers using materials gathered from home and from Freecycle. This enabled us to play the calls of sand martins in the hope of attracting them to the area – an established technique. That year two pairs of sand martins occupied two of the pre-drilled south facing holes.

In 2014 we continued operating the sound system. Nesting holes

were investigated by sand martins but no breeding attempts were recorded. Little interest was show in the site by sand martins over the next few years, until 2017. The sound system had been in action only twice before many of the pre-drilled holes were occupied. A total of seven pre drilled nesting holes were used, and a further three newly excavated by the birds, one of which became occupied.



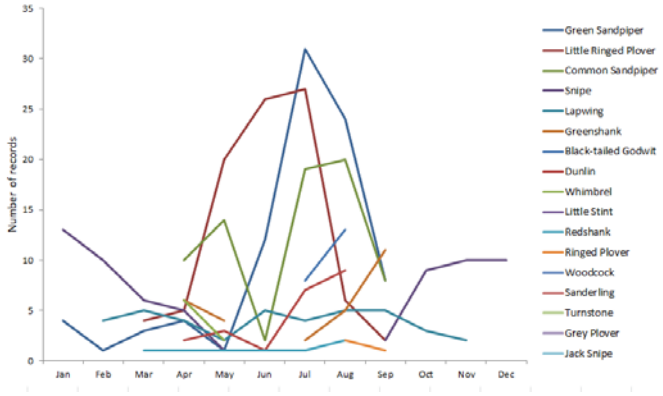
Occupied nest holes

Adults were observed feeding young in five of the occupied holes, an encouraging sign of the sand martins return to the reserve.

The last sand martin to fledge at Sevenoaks in 2017 (Photo: *Susanna Clerici*)

Bough Beech bird records

Bough Beech nature reserve is a well-known spot for bird watching, with over 150 species recorded on a regular basis. Resident species include kingfisher, great crested grebe and marsh tit. In summer and autumn particularly, there are exposed areas of sediment around the reservoir which provide feeding places for waders on passage, osprey are seen most years, and rarities have include spotted sandpiper, long-tailed duck and little crake. Thanks to the dedicated effort of Honorary Warden Alan Ford who collates records from the regular birders, we have a comprehensive record of the birds using the site. The chart below details the number of records of wader species seen each month in 2017, listed in descending order of number of records.



Numbers of recordsof species of waders recorded at Bough Beech in 2017 (Note number of records does not indicate numbers of individual birds, but provides some idea of frequncy of occurance of each species).

Sevenoaks Living Landscape barn owl project

In 2011 the Sevenoaks Living Landscapes (SOLL) project chose barn owls as a target species to focus conservation effort on. Barn owls are an amber listed species, iconic, easily recognized birds, much loved by most people. Managing habitat for barn owl foraging has a very healthy knock-on effect for a wide range of other wildlife. In 2011 barn owl numbers were low, although occasional sightings were reported. However, the only known locally nesting pair were at Mote Farm, Ightham, owned by the National Trust and farmed by a very wildlife-friendly farmer. The SOLL area runs from the Sevenoaks Kent Wildlife Trust Reserve in the north, dropping southwards to the Kent Wildlife Trust Reserve at Bough Beech, then back up north-east to the Ivy Hatch Reserve. The barn owl project has spread beyond this rough boundary, encompassing Hever, out to the Tonbridge area, and including Knockholt.

Pair of barn owls at Bough Beech (Photo: *J Hicks*).

We are grateful for initial help from Gaza Timber supplying ply at a discount, and cutting it to our nest box plan. Initially six boxes were made and erected in the Bough Beech area where a barn owl had been sighted. Some very wildlife-minded golfers at Hever joined the scheme and made three boxes to put up around the Hever Golf Course where a barn owl had been seen foraging. Soon more requests from landowners were coming in, asking us to help them erect barn owls boxes on their land. SOLL

bought the materials and with the help of a great band of volunteers the boxes were made. Landowners willingly paid to cover the costs, and we were able to erect the boxes and provide advice on management of surrounding habitats to help barn owls. By June 2017, 40 boxes had been erected. Special thanks to Peter Brook and Iain Nelson for enabling us to achieve this, and HSW Timber at Westerham who have also helped provide suitable plywood. 2016 ended on a high note: on the tray on the box that can be seen from the Bough Beech Visitor Centre, a pair of barn owls were photographed mating on 29th December. Great excitement!

2017 proved to be an exciting year – very successful but not without its dramas. The Bough Beech box received much attention from bird-watchers – the pair of owls was regularly seen, until mid-March, when they were rudely invaded by a pair of jackdaws determined to raise their family in this box. The barn owls backed off, and the jackdaws began to fill it with sticks, wool and grass. When we went to remove this debris four cold barn owl eggs were found buried beneath! But that is not the end of the story… on 23rd April we checked another box just a few fields away. This box had also been used by jackdaws, who had left a thick layer of twigs, but undaunted on top were four warm barn owl eggs. Was this the pair ejected from Bough Beech, or a separate pair?

On Sunday 18th June – a check of all the Bough Beech boxes provided some good news! Just half a mile away from Box 32, by the reservoir dam, we checked box one, to find five young barn owls. So then to box 32 to find the eggs hatched and four nestling owls. Box five, four hatched nestlings on top of the jackdaw debris – and finally back to box six to find seven warm eggs – the ousted pair had returned! They hatched four young.

Calamity was avoided on 4th July: the fishing bailiff reported that box one had fallen – there followed a manic morning calling volunteers, and Bob Francis (Dartford Ringers) and beyond our hopes, we effected a successful rescue of the five chicks , which were duly ringed and returned to a replacement box rapidly fixed in place. A trail camera showed that the adults continued to feed the chicks and they fledged happily! In early July the four chicks in box five and four in box 32 were ringed by the Dartford Ringers. So what about box six – four of the seven eggs hatched, and were raised successfully, watched evening after evening from the visitor centre, giving enormous pleasure. These were ringed on 31st July – making a total of four nesting pairs and 17 fledged barn owls in the Bough Beech area.

Other boxes in the SOLL area: A box near Shipbourne also hosted a nesting pair, but each of three nestlings died. The reason is uncertain, but from trail camera pictures it seems that one adult may have been lost, and a lone parent unable to provide enough food into the box alone. Did the habitat provide enough voles to provide the necessary food, or could rodenticides being used nearby be the problem? Many other boxes have been found to have roosting barn owls, and sightings have increased. Although at least half of the 17 fledglings ringed may die naturally through the winter (this is typical in many bird species), the remainder will hopefully continue to disperse and find mates – and as yet unoccupied boxes – and barn owls will become a more common sight for us all. As always with wildlife, now much depends on correct habitat management – a pair of barn owls and a nesting site are useless without food – barn owls require rough, mostly uncut, un-grazed grassland where short-tailed field voles, their main prey, live.

Barn owl with prey (Photo: *Anthony Drake*)

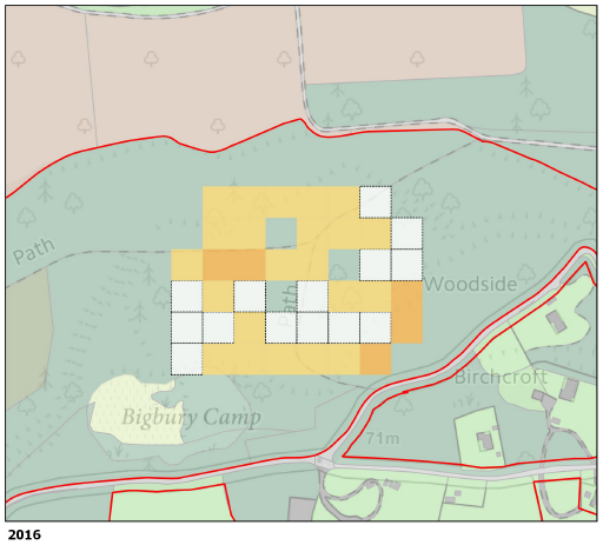
Lynne and Peter Flower, Honorary Wardens

Blean and Canterbury

Thornden Meadow, Childs Forstal, South Blean Woods, Bigbury Wood, East Blean Wood, West Blean and Thornden Woods, Reculver, Wraik Hill, Foxes Cross

Habitat condition: acid grassland

Bigbury Camp: In 2017 we completed the second year of baseline monitoring. In 2009 Kent Wildlife Trust started work on coppicing sweet chestnut on the site. Management aims to restore and maintain in a favourable condition semi-natural habitats, including wooded heath, acid and neutral grassland and wetland. At Bigbury this amounts to re-creation of 7.5ha of open acid grass and/or heathland on the Scheduled Ancient Monument by removing all but a few selected healthy feature trees and grazing/browsing the site with livestock. As yet there is little sign of heather regeneration, however the site is becoming good quality acid grassland.



2016

Heat maps of acid grassland indicator species at Bigbury Camp in 2016.
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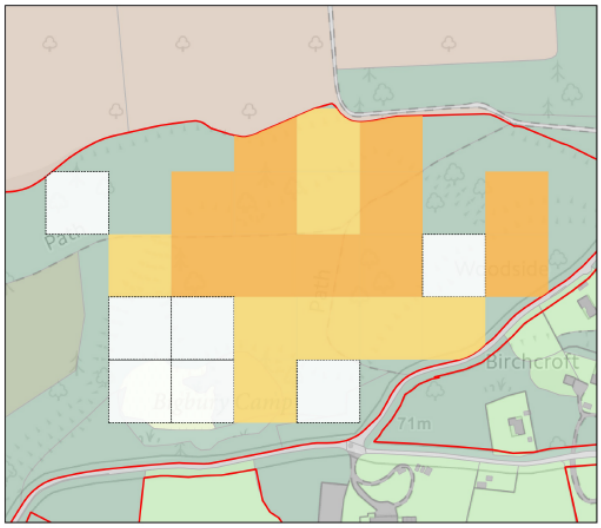

2017

Heat maps of acid grassland indicator species at Bigbury Camp in 2017.
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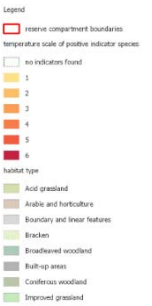


Four key acid grassland indicator species are now found on the reserve (wood anemone, sweet vernal grass, sheep's sorrel and heath milkwort). The heat maps indicate the combined numbers of these species across the reserve. Other key grassland attributes found to be in favourable condition include sward structure and cover of litter, which indicates good grazing management, and a complete lack of agricultural weeds and invasive coarse grass species.

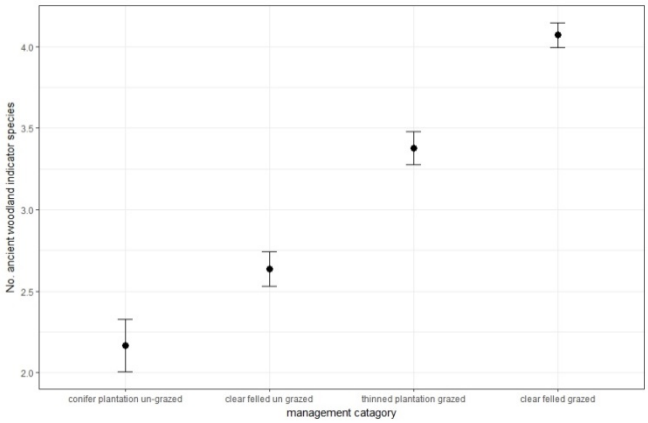
During the surveys at Bigbury Camp we encountered a probable Iberian chiffchaff. The Iberian chiffchaff is a species of leaf warbler endemic to Portugal, Spain and North Africa, west of a line stretching roughly from the western Pyrenees via the mountains of central Spain to the Mediterranean. It occurs as a vagrant in the UK, and is usually detected by its song, a noticeable variation on the song of our more familiar chiffchaff.

Paul Tinsley-Marshall, Conservation Evidence Ecologist

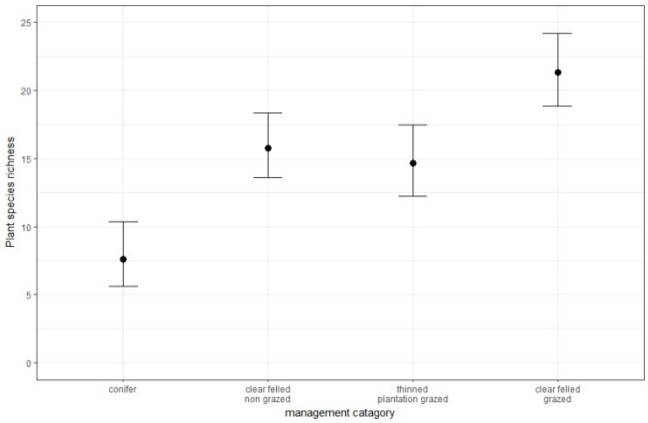
Habitat condition: woodland regeneration West Blean and Thornden

West Blean and Thornden Wood is managed to maintain and enhance mixed woodland, mainly oak and hornbeam, both as high forest and as coppice-with-standards. Where possible, native deciduous woodland and open areas of wooded heath are restored over planted sweet chestnut coppice and conifer plantations. Removal from the site of invasive alien species such as some of the sweet chestnut, all of the conifer, sycamore and Norway maple is considered desirable. Recent management works have involved both clear felling and thinning of conifer planation and the introduction of large grazing livestock to stimulate and drive the development of a diverse semi-natural vegetation community. Konic ponies are an 'analogue species' – species that are used in place of an extinct species to perform a missing ecological role. Monitoring started in 2009 and has focused on the effect of each management action on ancient woodland indicator plant species, overall plant species richness in the herb and understory layers, and richness of regenerating broad-leaved tree species. Ancient woodland indicators (AWI's) are species, most commonly vascular plants that are more common in ancient woods than in secondary woodland. The presence of a number of such species may therefore be used as evidence for the wood being ancient. We also looked at overall plant species richness in the herb layer, and the number of native deciduous tree species regenerating in each management category. The categories are displayed in the same positions in the figures from left to right: 1) intact conifer plantation un-grazed, 2) clear felled conifer un-grazed, 3) thinned conifer plantation grazed, 4) clear felled conifer plantation grazed. The data have been analysed using a statistical test called a 'Generalised Linear Model'.

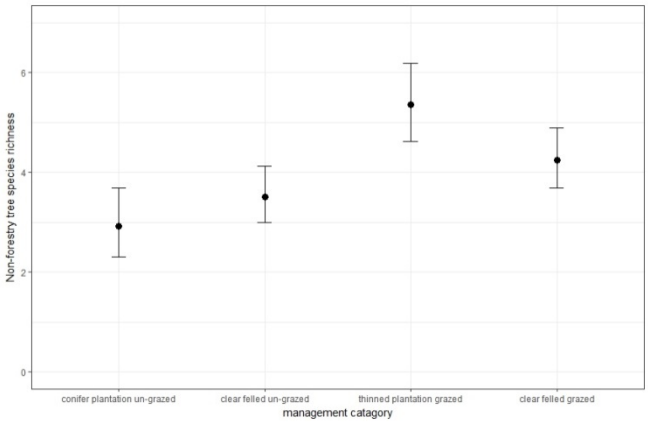
Konic ponies (Photo: Greg Hitchcock)



Plot of a generalised linear model of Ancient Woodland Indicator richness in West Blean and Thornden woods in response management treatment.



Plot of a generalised linear model of plant species richness in the herb layer in West Blean and Thornden woods in response to management treatment.



Plot of a generalised linear model of the number of regenerating deciduous tree species in West Blean and Thornden woods in response to management treatment.

The models all demonstrate a statistically significant effect of management treatment on the numbers of AWI's, herb layer species richness and regenerating deciduous trees species number (P = <0.001 in each case for any statistical buffs out there). For both AWI's and species richness, the greatest effect size was observed in cleared felled conifer plantation that is grazed. For regenerating deciduous trees, the largest effect is seen in thinned conifer plantation that

is grazed. In all cases grazing is a common factor. This was the anticipated outcome of this management strategy and this evidence supports Kent Wildlife Trust's preference for grazing with large herbivores in woodland to restore a native deciduous tree community.

Paul Tinsley-Marshall, Conservation Evidence Ecologist

Butterflies

Numbers of heath fritillary butterflies recorded on the three transects in West Blean woods this year were even lower than last year. Only 21 individuals were recorded in June compared to 160 in 2015. This is a difficult species to manage for. Coppicing stimulates the growth of the food plant common cow wheat, but we can never quite be sure where this will appear. Coppicing does not always equal cow wheat! We also carried out habitat condition monitoring for heath fritillary in 2017, and are now liaising with a specialist at Butterfly Conservation on how best to interpret and use this data. White admiral however appeared to have an excellent year with 59 recorded compared to 18 in 2015 and just four in 2016.

White admiral (Photo: *Jim Higham*)

Other species that appear to be increasing are brown argus and small heath. Other species recorded include green hairstreak and silver washed fritillary in West Blean. Further afield on the neutral grassland sites near the coast there were good numbers of common blue. Wall butterfly continues to appear at Reculver and small heath was recorded at both Wraik Hill and Foxes Cross reserves. Many thanks to the butterfly transect volunteers in the Canterbury area this year. (Photo: top, heath fritillary, *Jim Higham,* bottom, wall butterfly, *Jude Shorter*)

Mark Tuson. Canterbury Area Warden, Reserves East

Bats

Brown long-eared bat, *John Altringham*

Kent Bat Group are running a long term project in West Blean and Thornden woods, with the aim of monitoring woodland bat populations particularly in response to woodland management. They have attempted to replicate studies at Finemere Wood, North Bucks and Oxford University's Wytham Wood. Bats were caught and ringed to enable individuals to be identified by licenced bat workers. It now looks as if at least some of a known maternity colony of brown long-eared bats in the wood have discovered the bat boxes and should continue to use them in future. Box schemes in other woodlands have found that other bat species start to use boxes once brown long-eared bats move in - It seems brown long-eared bats are invariably the first to take up residence. We have our fingers crossed that we will find Natterer's next year and then start to get some idea about population sizes. It has taken five years for the bats to start occupying the boxes which is probably not unusual given that bats are long lived and have a very slow reproductive rate. The females tend to be faithful to natal roosts and in West Blean and Thornden have a good range of tree roosts available.

John Puckett, Kent Bat Group

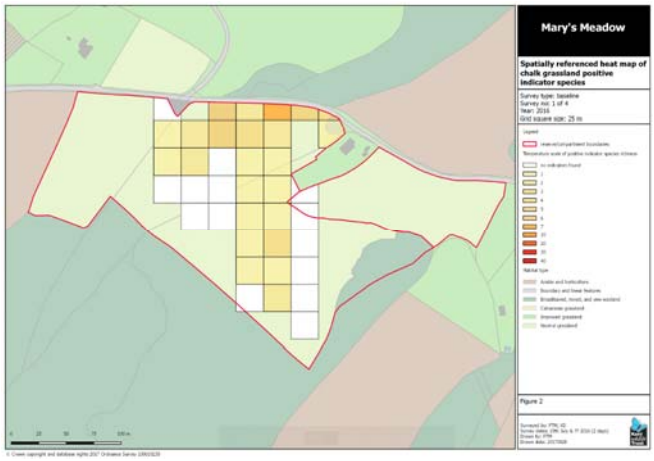
Wilderness Down & Swale

Mary's Meadow, Spuckles Wood, Holbeam, Oare Marshes, South Swale, Ospringe Down

Habitat condition: chalk grassland

Mary's Meadow lies within the 'Wilderness Down' project area, part of the North Downs AONB and the Living Landscape vision. Together with the nearby land parcels at Holbeam and Spuckles, Kennelling and Bowl woods, it provides wildlife linking corridors in a largely arable landscape. The site was gifted to Kent Wildlife Trust a number of years ago and has continued to be sheep grazed, generally between April and October each year. There is some uncertainty about whether the grassland had been improved in the years prior to our ownership. Kent Wildlife Trust's management aims to restore species richness and diversity to the calcareous grassland.

In 2017 we completed the second year of baseline monitoring at the site. Mary's Meadow has huge potential to become a species rich chalk grassland, though a history of agricultural use of the land prior to Kent Wildlife Trust taking on its management means there is some way to go. Our surveys show that the richest part of the reserve is on a steep south facing slope to the north, indicated by the darkest orange squares in the maps. It is here that key chalk grassland plants, including sheep's fescue, dwarf thistle, bird's foot trefoil, thyme, bulbous buttercup, cowslip, rock rose, salad burnet and mouse-eared hawkweed are most abundant. Other key grassland attributes found to be in favourable condition include sward structure and cover of litter, which indicates good grazing management, a complete lack of agricultural weeds and scrub, and bare ground cover.



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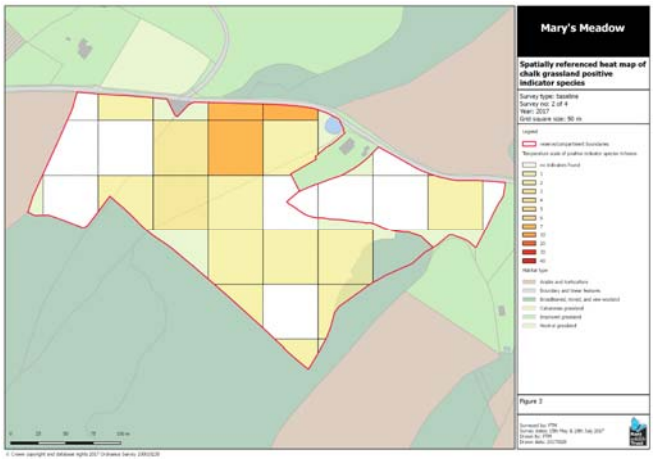


2017

Heat maps of chalk grassland indicator species at Mary's Meadow. Scaling up from 25m to 50m squares allowed us to cover the whole of the site in the same amount of time available in 2016. Whole site coverage is important in order to detect change anywhere it may occur.

Roman snail, Spuckles Wood. This is the largest species of snail in the UK and can grow up to a width of 45 mm. They are thought to have been introduced by the Romans (hence the name) but the population was probably significantly increased by Middle Age monasteries who cultivated them to eat. Roman snails

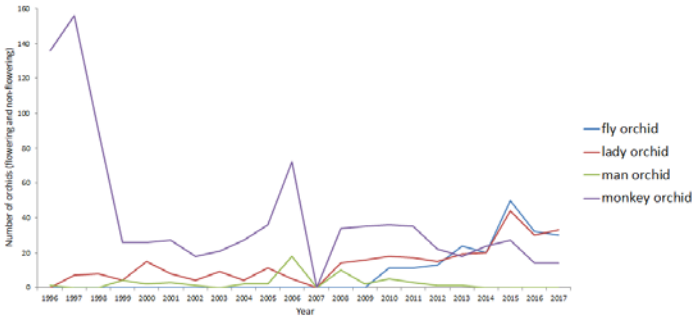
are a protected species and require habitat characterised by undisturbed grassy or scrubby ground with an abundance of loose, chalky soil to bury into for hibernation. They can live for up to 20 years! (Photo: *Paul Tinsley-Marshall*).

Orchids

Ospringe Down is an ancient chalk grassland with scattered scrub on a south-east facing slope surrounded by woodland and orchards. The chalk grassland supports a variety of flowers typical of the North Downs such as cowslip, horseshoe vetch, rock-rose, marjoram and salad burnet. Eleven species of orchid have been recorded including three that are nationally rare: man orchid, lady orchid and monkey orchid. The latter is restricted to only three sites in Britain. Man x monkey orchid hybrids have also been recorded. Bee orchid, bird's-nest orchid and autumn lady's tresses formerly occurred at the site and lizard orchid (a single spike in one year only) was recorded in the late 1960's/1970's. Kent Wildlife Trust have been monitoring orchid numbers at Ospringe since 1984. The counts are now undertaken by the warden Kevin Duvall, with help from volunteers. (Photo: pyramidal orchid, *Kevin Duvall*)

Lady Orchid (Photo: *Kevin Duvall*)

Fly, lady and monkey orchid all appear to have relatively stable populations and have increased over the long term. It is unclear why man orchids have diminished, but numbers have never been especially high. Until this summer the grassland has been grazed with either goats which were on site all year when we protected the plants with cages or more recently with Norfolk Horn sheep which were not put on site until after the flowering period.



Orchid counts at Ospringe Down 1984 - 2017

Monkey orchid (L) and greater butterfly orchid (Photos: Kevin Duvall)

Birds

Oare marshes: One of Kent's flagship ornithological sites,

and of international importance for migratory, overwintering and breeding wetland birds, the reserve consists of grazing marsh (one of very few left in Kent) with freshwater dykes, open water scrapes, reed bed, saltmarsh and seawall. Some of the more exceptional sightings in 2017 included green-winged teal, garganey, long-tailed duck, great northern diver, black-necked grebe, manx shearwater, great white egret, spoonbill, red kite, hen harrier, osprey, merlin, little stint, white-rumped sandpiper, pectoral sandpiper, curlew sandpiper, long-billed dowitcher, Wilson's phalarope, red-necked phalarope, arctic skua, great skua, little gull, Sabine's gull, Bonepatre's gull, black tern, puffin, short-eared owl, and water pipit, Other more regular species recorded on the reserve include black-tailed godwit, bar-tailed godwit, redshank, spotted redshank, avocet, ruff, ringed plover, turtle dove, barn owl, rock pipit, bearded tit, bittern, and winchat. (Photo: Bonepatre's gull, [centre, with a blacker head than black-headed gulls!] Vicky Aitkenhead).


Wilson's phalarope (L) and long-billed dowitcher (R), at Oare Marshes (Photos *Vicky Aitkenhead)*

South Swale: The reserve is part of the Swale Sea Channel, comprising inter-tidal mudflats, shell and shingle beach, saltmarsh, neutral grassland, marshland, reed bed freshwater and brackish dykes. It is an internationally important area for birds, particularly migratory and wintering wildfowl and waders.

Little tern, *David Dexter*

Little tern: One of the few remaining sites where little terns breed is on the North Kent coast at Castle Coote, part of the South Swale reserve near Seasalter, and under the management of Kent Wildlife Trust. Breeding attempts are usually annual, but breeding success has not been recorded for over 10 years. One pair was seen incubating in 2016, but the nest was subsequently abandoned, with human disturbance being the likely cause, which is typically the cause of nest failure. Protection measures such as electric fencing, trail cameras and clear signage, as well as attraction methods like decoys and audio devices, are known to be more effective when supported by the presence of seasonal wardens. Kent Wildlife Trust staff and volunteers made observations and carried out wardening throughout the breeding season, and the first little terns seen were three birds at Castle Coote on 24th April, with a maximum spring count of 15 recorded on 17th May. In June/July there were five breeding attempts in total, probably involving at least three pairs, but none were successful. The peak count of 17 birds was recorded on 11th July, and the last sighting in this month was of two on the 19th. The only other record was of one fishing east of Castle Coote on 6th September. Kent Wildlife Trust's work to improve the fortunes of this species is on-going.

Peak monthly little tern counts at Castle Coote in 2017

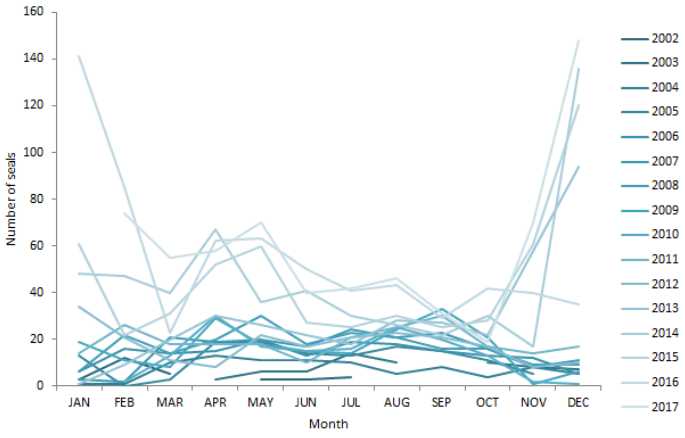
Jan	*Feb*	*Mar*	*Apr*	*May*	*Jun*	*Jul*	*Aug*	*Sep*	*Oct*	*Nov*	*Dec*
-	-	-	*3*	*15*	*7*	*17*	-	*1*	-	-	-

Kevin Duvall, Kent Wildlife Trust Swale Area Warden
Ian Shepard, South Swale Honorary Warden

Common seal

Common seal pup (Photo: *Willie McKnight)*

South swale: The inter-tidal mudflats known as Horse Sands support common seals that haul-up and can be viewed from South Swale. The seals have been counted monthly since 2002 by Honorary Warden Ian Shepard. The counts in March, May, July, August and November this year are the highest recorded in those months since regular monitoring began in 2002, whilst the December count is the highest of any month over this period. Several small pups were present in July.



Peak monthly seal counts on the Swale Estuary, 2002 to 2017

The Weald

Marden Meadow, Collingwood, The Gill, Quarry Wood, Brenchley Wood, Turner's Field, Parsonage Wood

Habitat condition: neutral grassland

Marden Meadow (Photo: Beth Hukins)

Coronation Meadows Project: Marden Meadow, Payne's Fields and Highwood Meadows: The Coronation Meadows Project is led by Plantlife, in partnership with The Wildlife Trusts and the Rare Breeds Survival Trust. This exciting initiative is celebrating our surviving meadows by identifying a flagship Coronation Meadow in each county in Britain. These "jewels in the crown" are places where people can enjoy a riot of colour and an abundance of wildlife in settings that have remained largely unchanged since the Coronation. Kent's Coronation Meadow is Marden Meadow. The project is also creating new meadows at 'recipient' sites in the same county, using the Coronation Meadow as source or 'donor' meadows to provide seed. In this way, new Coronation Meadows will be created, increasing the area of this valuable habitat, providing new habitat for bees, butterflies and other pollinators and helping to secure our wild flower heritage for the next 60 years and beyond. Two recipient sites close to Marden Meadow were identified; these are known as Highwood Meadows and Payne's Fields. Last year we began surveys at Marden Meadow, and this year expanded to include the two recipient meadows.

Buttercups at Marden (Photo: Beth Hukins)

Spatially referenced heat map of neutral grassland positive indicator richess at Marden Meadow in 2016 (© Crown copyright and database rights 2017 Ordnance Survey 2017 100019238)

Spatially referenced heat map of neutral grassland positive indicator richess at Marden, Highwood Meadows and Payne's Fields in 2017 (© Crown copyright and database rights 2017 Ordnance Survey 2017 100019238)

Legend:

Highwood Meadows: Kent Wildlife Trust has been working with the site owner for a number of years, giving advice on management and carrying out surveys. The owner has three fields with great potential for restoration. Two of the fields had a population of over 700 green winged orchids between them in 2016. Prior to the Coronation Meadows project the infrastructure required for favourable management (fences and a water supply to enable grazing)

were lacking. Historically the fields have been topped and the cut hay left on site, a practice that has a detrimental effect on plant communities through the build-up of a litter layer and nutrient recycling. The infrastructure has now been put in place to enable improved management.

Specific management objectives list the establishment of yellow rattle, common knapweed, Dyer's greenweed and sneezewort as desirable outcomes. Of these, so far common knapweed had established in 12 % of samples, and 23 positive indicator species were found in total. (Photo: common knapweed, *Howard Blackie*).

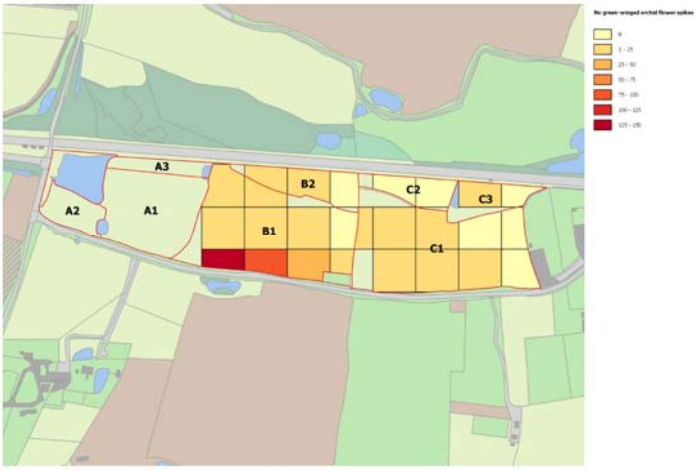
Payne's Fields: This site has been under grazed for a number of years. Improvements to management under the project include grazing and hay cutting. Herbicides are used for spot spraying/weed wiping of invasive creeping thistle. Fencing and water facilities have been improved, and the application of green hay aims to increase species diversity by establishing species from the donor site.

Specific management objectives list the establishment of yellow rattle, common knapweed, Dyer's greenweed, sneezewort and green winged orchid as desirable outcomes. Of these, common knapweed has so far established in 7 % of samples, and 11 positive indicator species were found in total.

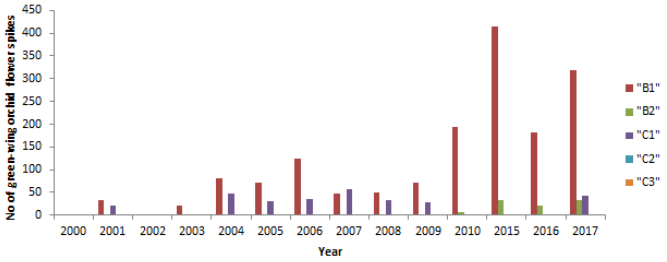
Paul Tinsley-Marshall, Conservation Evidence Ecologist

Orchids

Traditionally Kent Wildlife Trust has surveyed orchids by counting the absolute numbers of flowering spikes across a reserve or parcel, producing trends such as shown in the graph opposite. At Marden Meadow this year, the spatial distribution of orchid density in restoration parcels was also mapped using the grid square approach, so that we now have a picture of where the good and bad areas for orchids are, as well as an overall count. Note that orchid numbers in A are not included in the figures – they are far too numerous to count in this compartment. (Photo Green-winged orchid, *Paul Tinsley-Marshall*)



Heat map of green -winged orchid distribution at Marden Meadow in 2017. (© Crown copyright and database rights 2017 Ordnance Survey 2017 100019238)

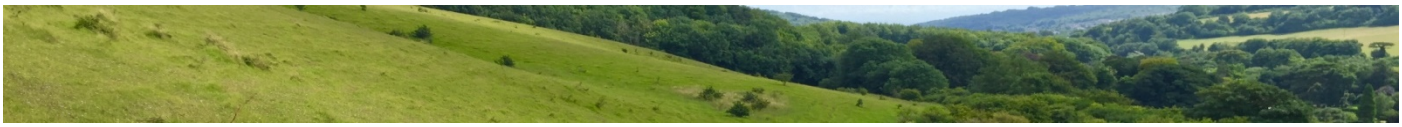


Numbers of green-winged orchids in the extension compartments B and C at Marden Meadow in 2017.

Clearly the orchids are most numerous in the south-west of compartment B. As we build up data on this pattern over the years, this information can be used to fine-tune management, allowing us to pinpoint areas for improvement and determine whether conditions in good areas can be replicated more widely. Is it perhaps that soil moisture conditions are more favourable for the orchid in this part of the reserve? If we were to demonstrate this, it would support the case for management works to the network of ditches on the reserve, for instance.

Paul Tinsley-Marshall, Conservation Evidence Ecologist

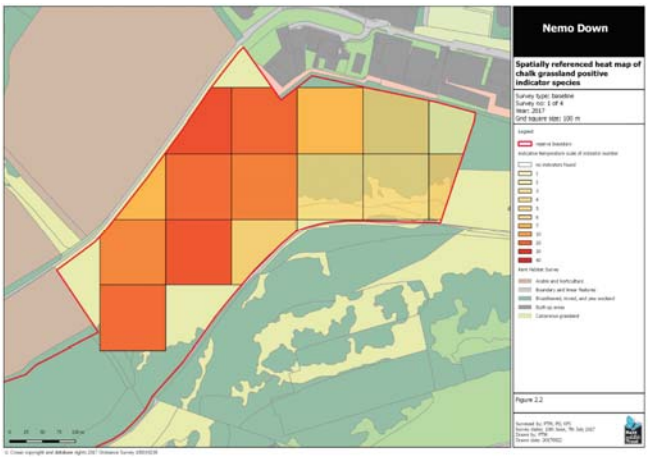
Dover Downlands Living Landscape



Lydden Temple Ewell, Sladden Wood, Nemo Down, Old Park Hill, Dover Castle

Habitat condition: chalk grassland

Nemo Down: Eight Kent Field Club members joined Paul Tinsley-Marshall and Karen Weeks of Kent Wildlife Trust at our Nemo Down reserve near Dover on a scorching summer day. While we waited for the group to assemble an errant reed warbler sang from scrub on the edge of the industrial hinterland. The meeting aimed to inform members of the Trust's approach to botanical habitat monitoring and provide them with an opportunity to contribute. Monitoring is focused on the grassland on the scarp slope in the east which had not been grazed for at least 30-40 years. Consequently this area had become dominated by dense scrub with 85-90% cover, with the decline and loss of many chalk grassland plant species. Kent Wildlife Trust took on the management of the site in 2014, beginning scrub clearance and reinstating grazing. The grassland is divided into fifteen 100m squares based on the British National Grid. We aim to visit each one of these fixed locations and record the presence of calcareous grassland indicator species and habitat attributes, returning to the same locations in successive years to monitor and quantify change.



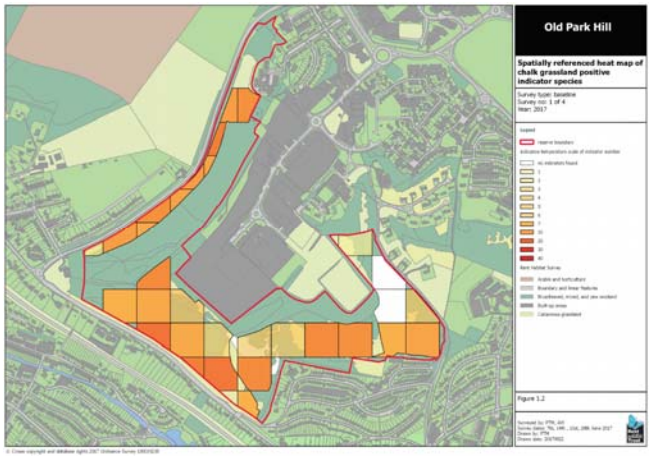
Heat map of chalk grassland indicator species at Nemo Down.

The field club meeting managed to complete half the survey, and the remainder was surveyed by Paul and a volunteer from the Kent Wildlife Trust Dover Ecology Group a few weeks later. A total of 36 indicator species were recorded from the site, including marjoram, bird's foot trefoil, rock rose, bulbous buttercup, yellow-wort, pyramidal orchid, common spotted orchid, thyme, and kidney vetch. By calculating the proportion of the 15 squares in which a defined number of species and levels of key habitat attributes occurred, an assessment against condition targets can be made, and change over time quantified. Despite a long history of management neglect prior to Kent Wildlife Trust taking on the site, it is very encouraging that so many key species are still present and distributed widely across the site. Unsurprisingly there are attributes that will take far longer than three years to improve, though the method clearly demonstrates how we can quantify changes brought about by management. Other notable sightings included marsh tit and fly-over raven, adding to a very enjoyable and successful meeting.

I'd like to thank all of the field club members who helped out on the day and hope these results may encourage more members to consider joining us on a survey. Kent Wildlife Trust Ecology Group volunteers may wish to consider joining the Kent Field Club, who run a programme of enjoyable and informative surveys throughout Kent each year: https://www.kentfieldclub.org.uk/

Kent Field Club
The natural history society of Kent

Old Park Hill: This site was originally designated as a Local Wildlife Site in 1985 for the quality of its chalk grassland. Since this time there has been a decline in the area and quality of the grassland through scrub encroachment and development of secondary non-native woodland (largely holm oak), though in 2004 it still supported at least 20 key chalk grassland plant species. Kent Wildlife Trust took on management of the site in 2012 beginning woody vegetation clearance and reinstating grazing. The newly established Dover Ecology Group volunteers completed the survey of the entire site, enduring some of the hottest weather of the year.



Heat map of chalk grassland indicator species at Old Park Hill.

Given the neglect of this site prior to Kent Wildlife Trust taking over management, it was highly encouraging that we recorded a total of 34 key chalk grassland plant species. These included rock rose, hoary plantain, pyramidal orchid, small scabious, yellow rattle, ox-eye daisy, yellow-wort, common knapweed, eyebrights. Wild marjoram was the commonest indicator species, found in almost every square.

Butterflies

Adonis blue: In August, it was fantastic to hear that four very fresh Adonis blue butterflies were seen at Old Park Hill by Emily Neighbour. (Photo: *Emily Neighbour*)

Marbled white were abundant during our habitat condition monitoring surveys. (Photo: *Paul Tinsley-Marshall*).
We are planning to begin a butterfly transect survey at Old Park Hill in 2018, if you would like to get involved, please get in touch with Andrew Wilkinson: Andrew.Wilkinson@kentwildlife.org.uk

Roadside Nature Reserves

Lydden Hill RNR: On our butterfly transect at Lydden Hill we have recorded 28 different butterfly species, including key chalk grassland species such as Adonis blue, dingy skipper (which had a brief second generation in 2017) and chalk hill blue. Sadly no small blue were recorded this year, though other species of interest included clouded yellow, small copper, small heath, and marbled white

Hymenoptera

Fringeless nomad bee *Nomada conjungens*. Status: Nationally rare, Lydden Temple Ewell. (a cleptoparasite of *A proxima*) and white-bellied mining bee *Andrena gravida*. Status: Nationally very rare, possibly only surviving at a handful of sites in Kent, Lydden Temple Ewell.

Pete Meiners.

At Lydden I found another Red Data Book bee *Andrena proxima* - this is only present at a few sites in the UK and is associated with high quality chalk downlands. (NB: I have also recorded this species at Polhill Bank in the past - but not at any of the other chalk sites in the vicinity).

Grant Hazlehurst

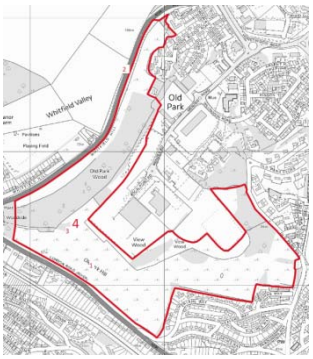
Spiders

The money spider *Diplocephalus graecus* was first recorded in Britain in 2008 from Fowlmead Country Park, having spread northwards from the Mediterranean over the previous 20 years or so. It now seems well established at Lydden-Temple Ewell and has been recorded from at least eight other sites in Kent.

Tony Russell-Smith

Reptiles

At Old Park Hill we have begun monitoring the adder population, which we hope will benefit from management works that have seen the removal of much encroaching secondary woodland from this valuable chalk grassland site. Engaging with local dog walkers proved very useful, and resulted in four records of adders in 2017.



Adder records at Old Park Hill in 2017 (© Crown Copyright and database rights 2017, OS licence no. 100004919)

This relatively low number is thought to be due to the particularly hot weather over the season; by the time the walkers were out the adders had finished basking and were off hunting. I believe the siting at the top of Whitfield Hill is the first record of an adder in this compartment, where our recent management has improved the grassland habitat. We are hoping to do a more comprehensive reptile survey in 2018, so if you would like to be involved please get in touch.

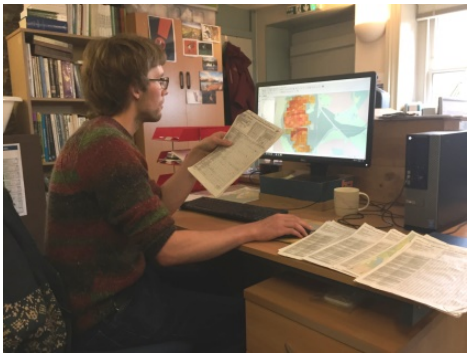
Andrew Wilkinson, Community Warden, Old Park Hill

Ashford area

Hothfield Heathlands, Ashford Warren, Hoads Wood, Conningbrook Lakes Country Park, Stone Wood

Habitat condition: heath and bog

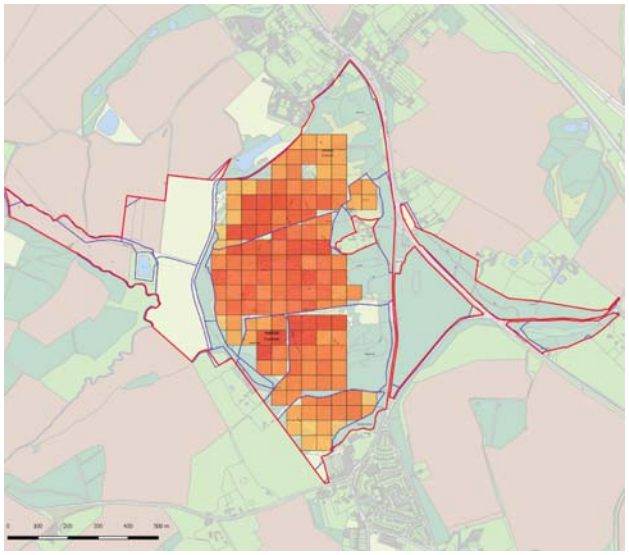
2017 saw the inception of a new Ecology Group within the Ashford area. The main objective for the group was to carry out a baseline botanical survey across the whole of the Hothfield Heathlands Site of Special Scientific Interest (SSSI). This consisted of determining the presence or absence of 55 key species in around 200 50x50m grid squares. We were fortunate to have the help of a great number of enthusiastic volunteers, with 76 days of volunteer help during the 8 week monitoring season.



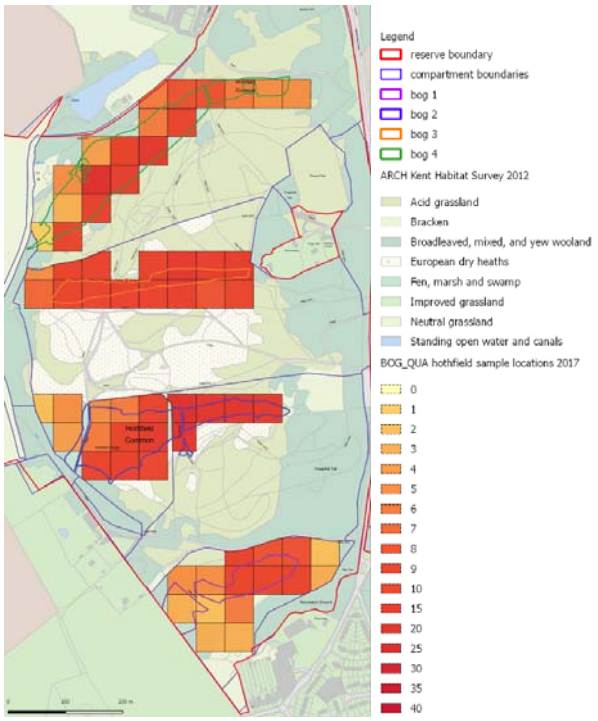
Credit must be given to the volunteer who worked harder than anyone on this project. James Rowland was with us on all of the monitoring days, and then proceeded to spend the next few weeks laboriously entering all of this data onto the Recorder 6 database. The maps he has created look amazing, and will be incredibly useful in formulating the on-going management of the reserve.

Ian Rickards, Ashford Area Warden

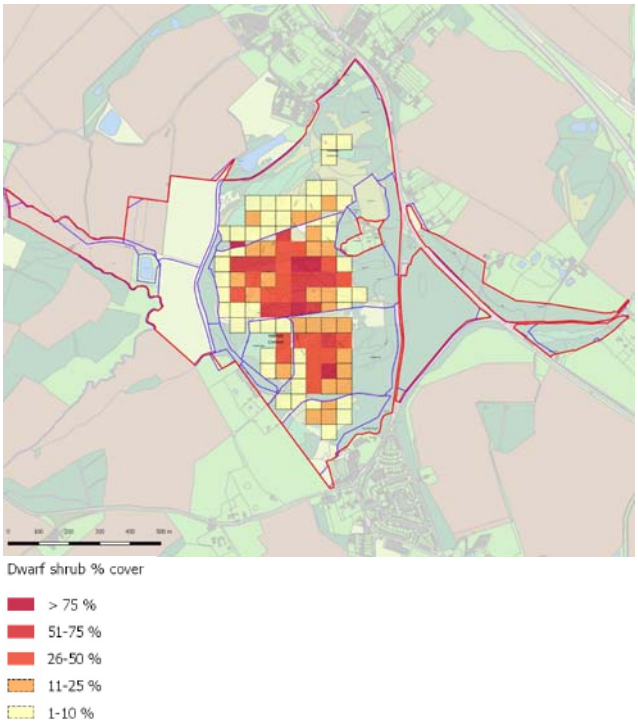
At the time of going to press, the Hothfield habitat condition report has just been completed. The cover, extent and structure of the characteristic dwarf shrub vegetation all show very positive signs of condition. Most other key attributes (positive indicator species, cover of European gorse, desirable grasses, undesirable herbs, coarse grasses, and disturbance) were found to be within a very small margin of specified targets, which is again very positive. The known issues with bracken, scrub and woody species encroachment were prevalent throughout the site however this was not unexpected and is a perennial target for management intervention, as many volunteers will know!



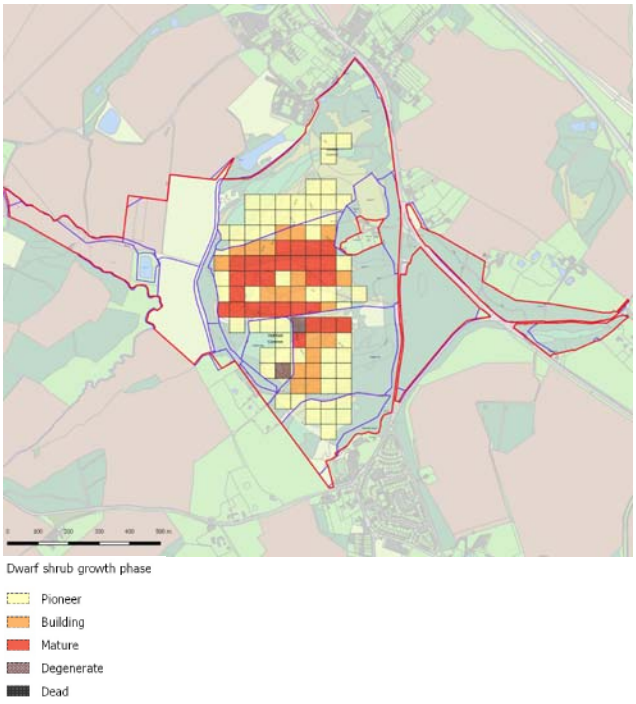
Spatially referenced heat map of heathland positive indicator richess at Hothfield in 2017 (© Crown copyright and database rights 2017 Ordnance Survey 2017 100019238)



Spatially referenced heat map of bog positive indicator richess at Hothfield in 2017 (© Crown copyright and database rights 2017 Ordnance Survey 2017 100019238)

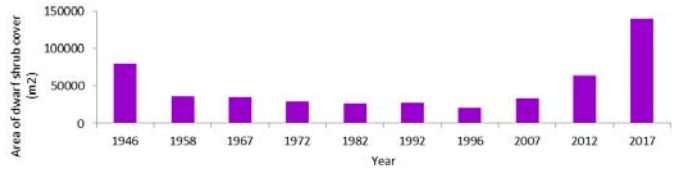


Spatially referenced heat map of dwarf shrub (heather) cover at Hothfield in 2017 (© Crown copyright and database rights 2017 Ordnance Survey 2017 100019238)



Spatially referenced heat map of dwarf shrub (heather) growth phase at Hothfield in 2017 (© Crown copyright and database rights 2017 Ordnance Survey 2017 100019238)

Heathland is a man-made habitat, nationally important and rare in Kent. It is maintained in an open state by grazing or other removal of woody vegetation, preventing succession to scrub and woodland. By 1974 it was 30 years since the heath at Hothfield had been grazed. Coupled with the impact of myxomatosis, this had a profound effect on the vegetation, and woodland had encroached a large part of the site. Kent Wildlife Trust's management aims to hold back this succession, controlling scrub, bracken and tree saplings, which threaten the unique assemblage of species adapted to open heathland habitat.



Extent of dwarf shrub (heather) cover at Hothfield.

Using survey data collected in 2017 to compare with historic aerial photography, a basic calculation demonstrates a successive increase in heather cover since 1996. Our calculation may be a little crude; area measurements for 1946-2012 are calculated from digitised polygons derived from aerial photography, and for 2017 are based on the area of the number of 50m survey grid squares assessed as having a dominant dwarf shrub cover of 'mature' growth phase heather. This may represent a small overestimate of cover in 2017 due to the difference in survey methodology, however the comparison is useful, and the area in which heather cover is present is certainly more extensive than in 2012.

Paul Tinsley-Marshall, Conservation Evidence Ecologist

A not-at-all-staged photo of some of the Hothfield survey team

Marsh speedwell (L) and round leaved sundew (R) found in the Hothfield bogs

Lepidoptera: Butterflies

The annual transect surveys across Hothfield always highlight interesting changes. These changes are often due to weather conditions, or recent changes in habitat management. However, over time, we can build up some idea of how populations are truly changing.
Across the grassland habitats, data collected by volunteer Lucy Carden, as part of her MSc thesis, reveals there has been a big increase in species such as small and large skippers, common blue and marbled white. These species seem to be increasing as the ex-arable fields become more established as permanent grassland. On the SSSI heathland areas, small copper had a good year. The small copper's food plant is the tiny dock, sheep sorrel, which is abundant across the dry sandy soil.

Ian Rickards, Ashford Area Warden
Lucy Carden, Ecology Groups Volunteer

Lepidoptera: moths

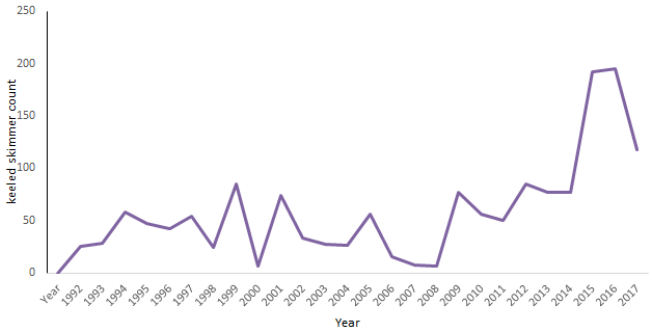
Nine moth trapping sessions were held at various positions on the heathlands during the period April to October. In total 1,551 moths were caught of 217 different species including 166 Macro and 51 Micro species. Moths identified included the festoon (Nationally Scarce B) and the beautiful yellow underwing (Heathland and Moorland specialist).

On most evenings we had three actinic light traps running (Robinson, Skinner and Heath). However at the moth trapping event on 15th July we had a total of five traps running including a Mercury Vapour light Robinson trap. In this session alone we caught a total of 448 moths of 97 species including 77 Macro and 20 Micro species. Weather-wise it was a perfect moth trapping evening as it was cloudy and warm with a very light breeze. We were joined by 15 people that evening who were keen to learn more about moth trapping and the important role that moths play in the environment.

Terry Dunk.

Dragonflies and damselflies

Dragonfly and damselfly numbers have dipped a little this year, with spring species like large red damselfly decreasing from 119 to 21 records, and the late summer species common darter decreasing from 236 to 163. Our acid bog specialist, the keeled skimmer has also dropped by 40%, but this follows two extraordinarily high years, so still holds up well against pre 2015 records. (Photo: keeled skimmer, *Grant Hazlehurst*)



Annual keeled skimmer counts at Hothfield

Hymenoptera

At Hothfield Common I found the wasp *Crabro peltarius* - this was the first Kent record for many years (I understand someone else also recorded it elsewhere in Kent in 2017). It is a heathland specialist. I haven't seen it here before and I suspect it is a recent arrival on the site. I also found *Dysmachus trigonus*, a robber fly more commonly found on sand dunes - a good indication of a quality sandy habitat. The site continues to hold a high diversity of wasps, including Red Data Book species *Crossocerus exiguus* and *Cerceris quinquefasciata*, reflecting the open sand and dead wood in sunlight. I had a look at the ants at the request of the warden and found two common species - the most common species appears to be *Lasius niger* which is the host of the caterpillar of the silver studded blue so good news for any introduction attempt.

Grant Hazlehurst

Pantaloon bee *Dasypoda hirtipes* (Photo: *Lucy Carden)*

Bee-wolf wasp *Philanthus triangulum* (Photo: *Lucy Carden)*

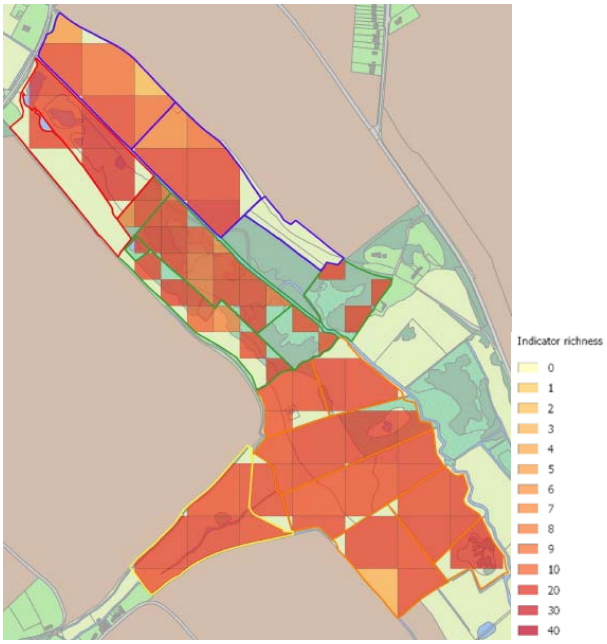
Lower Stour Wetlands Living Landscape

Ham Fen, Sandwich Bay, Pegwell Bay

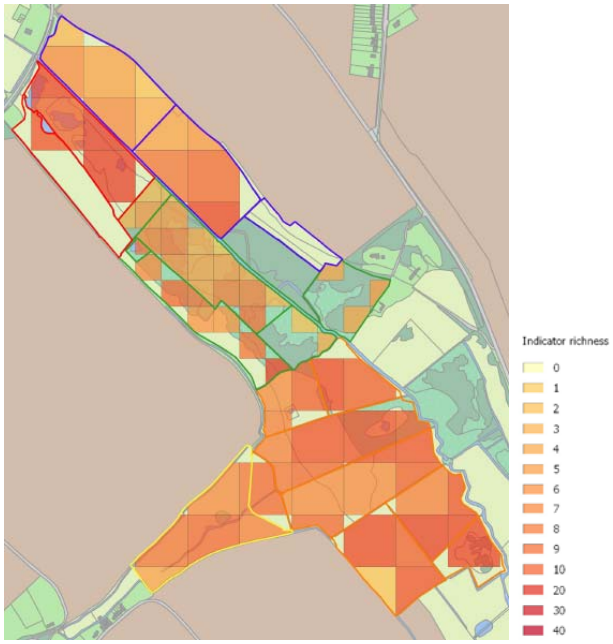
Habitat condition: fen and wet grassland

Ham Fen: A grand total of 1,451 records of key indicator species have been entered into the database from Kent Wildlife Trust's first systematic habitat condition survey of Ham Fen in 2017. We found a total of 62 key fen and wet grassland species on the reserve.

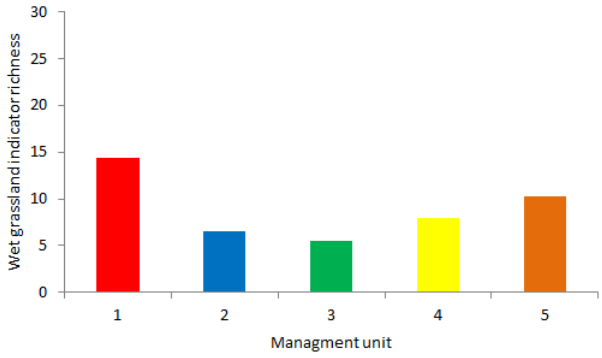
For the purpose of monitoring, the reserve was subdivided into 5 ecologically discreet groups of compartments, here termed 'units'. These differ in various characteristics of habitat, management history, hydrology and topography, such that the attributes by which each should be assessed, and the expectations of management outcomes between them are different. They are shown in the maps by different coloured boundaries.



Spatially referenced heat map of fen positive indicator richess at Ham Fen in 2017 (© Crown copyright and database rights 2017 Ordnance Survey 2017 100019238)



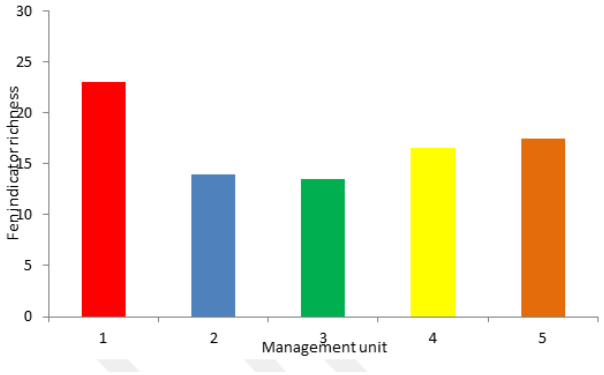
Spatially referenced heat map of wet grassland positive indicator richess at Ham Fen in 2017 (© Crown copyright and database rights 2017 Ordnance Survey 2017 100019238)



Comparison of average numbers of wet grassland positive indicator species across ecologically discrete management units at Ham Fen in 2017.

The most indicator species rich unit was 1 (red). Targeted management carried out by Kent Wildlife Trust in this area has involved excavation of the topsoil to a depth of 45cm, scarification, and the creation of scrapes and ponds, resulting in the water table now sitting closer to ground level and more prolonged or permanent periods of wetter conditions in the plant rooting zone. These actions result in the removal of agricultural fertilisers and succession toward

wetland plant communities, so it is very encouraging to see such positive results in this area.



Comparison of average numbers of fen grassland positive indicator species across ecologically discrete management units at Ham Fen in 2017.

It may seem counter intuitive that the fen area (unit 3, green) has the least number of indicator species, however this is simply the nature of the type of habitat in this location – tall swamp or reed bed. It is not appropriate to use indicator species to assess the condition of tall swamp habitats as they are often naturally species poor, usually with one species that is dominant (common reed at Ham Fen) and only a small number of associated species at much lower density. In swamps, the base of the dominant plant is usually submerged and there is often open water visible between the stems. Over all the site is very rich, and this monitoring provides a baseline against which we will be able to measure change in the future.

Few-flowered spike-rush *Eleocharis quinqueflora*: during a training session for our surveys, this species was 'rediscovered' at Ham Fen by Sue Buckingham and Steve Lemon after an absence of records for 178 years. Few-flowered spike-rush is widespread in the British Isles, at its most common in Scotland, north west England and Wales and more or less absent from central and south east England. Its conservation risk assessment in England and in Great Britain as a whole is one of 'Least Concern', but it has been lost from over half of its extant 10km square occurrences in lowland England since 1930-60, this assessment then glosses over what must at least be considered an element of concern for its future. There have been hardly any historic records in Kent and it was considered extinct since 1875 until, remarkably, it was rediscovered in 2017 at this site with no records since the 1830s. It must be considered extremely rare in the county. The last record from Kent was at Dungeness in 1875, but the first record was in 1800 at Ham Ponds and it was later recorded 'about the Ham Brooks' by Andrew Matthews. Ham Ponds may have been further north of the Ham Fen, but Ham Brooks is thought to be what is now Ham Fen. A very exciting re-discovery!

Geoffrey Kitchener, Kent Botanical Recording Group

Wildflower identification training day

Fifteen people attended a wild flower identification workshop on Wednesday 5th July at Ham Fen Nature Reserve. A grant awarded to Kent Wildlife Trust by The Wild Flower Society http://www.thewildflowersociety.com/ allowed us to engage Dr Ros Bennet to lead the day. The group of participants contained a varied mix of individuals, from recent graduates starting their conservation careers to retired professionals seeking to develop new interests. Several were existing Kent Wildlife Trust volunteers already engaged in monitoring at Ham Fen, for whom the day provided some real insight and training in the identification of the key wetland indicator species that we use to monitor restoration and management on the reserve. Of those not already engaged in monitoring, several have already expressed an interest in getting involved, a real benefit of being able to run this day.

Ros conveying the finer points of rush identifcation over a pond

Given the habitats present, getting to grips with the key distinctions between grasses, rushes and sedges was the initial focus, providing a basis for moving on to learning to distinguish hard rush from soft rush, blunt-flowered rush from jointed rush, and glaucous sedge from carnation sedge. Among the more crowd-pleasing species that participants were introduced to were bog pimpernel, purple and yellow loosestrife, ragged robin and brooklime. The species list for the day also included pink water speedwell, branched bur reed, lesser water plantain, lesser spearwort and greater bird's foot trefoil.




Top: bog pimpernel (l), yellow loosestrife, bottom: ragged robin (l), brooklime (r)

A wasp spider, many of which were spotted during our surveys

Beavers

The Ham Fen beaver project aims to use the natural 'ecosystem engineering' effect of beaver behaviour to manage and restore wetland habitats on the reserve. We are currently undergoing a process of trapping beavers in the fen in order to understand current population dynamics (numbers, age, sex), and also to scan their microchips to identify individuals. Kits born to individuals released into the reserve are yet to be trapped and will need microchips fitted by the project vet. The trapping also gives us the opportunity to undertake a health assessment. We also use camera traps to help us with all this. (Photo: beaver, Vicky Aitkenhead)

Vicky Aitkenhead, East Kent Coastal Warden


Beaver gnawing (l) and one of the specially designed beaver traps used to monitor the population (r)

Restoration of sand dune plant communities

Sandwich Bay National Nature Reserve (NRR) contains several internationally important sand dune communities that are threatened by the native shrub sea buckthorn that has become invasive on the reserve. Targeted control of sea buckthorn to stimulate re-establishment of key dune plant species is a desirable objective for Kent Wildlife Trust, and was conducted in accordance with nature conservation specifications and with the agreement of the relevant organisations.

Sea buckthorn, a little is good thing, too much threatens the dune ecosystem

We collected data on the presence and re-establishment of key dune plant species in response to sea buckthorn control, and made comparisons with areas of established (uncontrolled) buckthorn to assess the efficacy of Kent Wildlife Trust's management strategy.

The response of dune indicator species number to management treatment of sea buckthorn in quadrats at Sandwich Bay. There were significantly more dune indicator species in cut (left) than in un-cut (right) buckthorn stands.

The anticipated effect of control by cutting was associated with presence and re-establishment of key dune plant species in areas formally invaded by sea buckthorn in the first growing season after management. Significantly more species were found in samples from managed areas where buckthorn had been cut and removed. This suggests that in the short term at least, the management strategy is effective in allowing key species to recolonise.

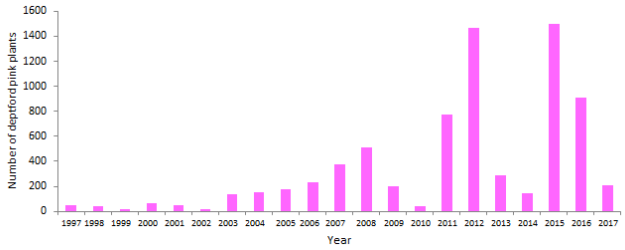
Sea bindweed, a positive indicator species for dunes (Photo: *Jude Shorter*)

Sea sandwort, a positive indicator species for dunes (Photo: *Jude Shorter*)

While conducting surveys Sue Buckingham showed us the wonderfully fragrant clove scented broomrape. It is a root parasite mainly of bedstraw species, probably perennial and sometimes long-lived. It occurs in stabilised dune grassland, and in scrub and hedge banks on chalk downs and under cliffs. (Photo: *Paul Tinsley-Marshall*)

Deptford pink

Peter Atherall has been monitoring the Deptford Pink *Dianthus armeria* population at Sandwich Bay since 2008. Deptford pink is a biennial species listed as 'Vulnerable' under Red Data criteria and is fully protected in wildlife law. It now occurs at only two well authenticated sites in Kent, at Farningham Woods Nature Reserve and at Sandwich Bay. It has declined dramatically over the last 60 years throughout Britain. Being an early succession stage species it is unable to compete when coarse grass and scrub encroaches at a site and needs open habitat conditions to establish new seedlings. It tends to die out as the availability of bare ground declines, so it needs regular disturbance of the ground nearby to maintain or expand its range. At Sandwich and Pegwell Bay National Nature reserve (NNR) plants are located in an area of ancient dune pasture/upper grey dunes on the seaward edge of the reserve. The number of flowering plants varies in peaks and troughs widely from year to year, being as low as 16 in 1999 and 1500+ in 2015. To safeguard the future of the population at Sandwich Bay a seed collection was deposited in the Millennium Seed Bank at Wakehurst in 2007.



Annual total counts of Deptford pink plants at Sandwich Bay

A total of 210 flowering plants were recorded this year, less than 25% than the 2016 figure and barely 15% of that in 2015. There appears to be a generally increasing trend in numbers however, with periodic crashes. Whether this is due to weather effects is difficult to say, but it is likely to have some influence. Management involves a winter cut to reduce the density and shading effect of the grass sward, and maintain areas of bare ground essential to seedling recruitment. This seems to be a species that fluctuates naturally, as might be expected given its dependence on disturbed open ground, and this monitoring allows us to target our management to maintain the population by providing the right conditions each year.

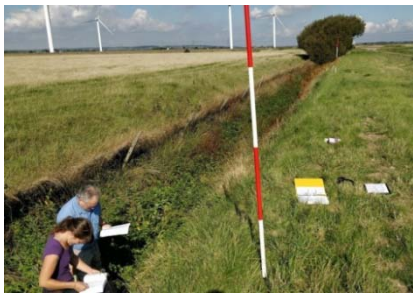
FIFTH CONTINENT LANDSCAPE PARTNERSHIP SCHEME

ROMNEY MARSH

Surveying the Fifth Continent

The Fifth Continent Landscape Partnership Scheme is now up and running down on Romney Marsh. It's a huge scheme made up of sixteen major projects which could fill this entire newsletter, covering subjects as diverse as film-making, restoring vegetated shingle and digging for archaeological remains. But rather than go wildly off topic this article covers two of our ecological projects.

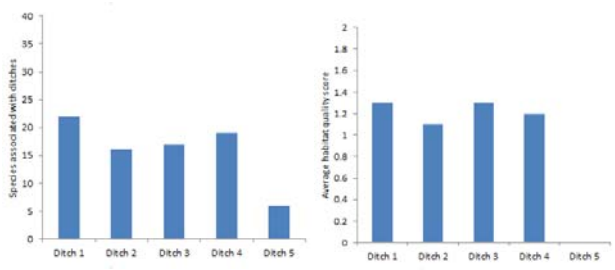
Blue lanes



The Blue Lanes project is concerned with restoring the ditches of Romney Marsh to a more bio-diverse state. This is being done by working with farmers and landowners to carry out physical works to ditches which may have suffered neglect or insensitive management in recent years, but as you all know it's no good bringing in heavy machinery and drastically changing the landscape in the false assumption that things will definitely improve. How would you know? What was it like before? How can improvements be measured? What we need is a solid evidence base to work from to target efforts (and limited funds) in the areas which require them most. That means surveys!

A thriving ditch full of water and aquatic life, which our project aims to restore in neglected ditches

We started very rapidly this summer, looking at a couple of potential sites which we were keen to improve this winter. The ditches here were, very straight, steep sided, not holding any water and appeared to be blocked at the ends. Definitely worth further investigation. With the help of a couple of willing volunteers we followed a method for assessing the quality of the ditches which was devised by BugLife in partnership with the Environment Agency in 2013 which involves choosing a 20m stretch of each ditch in question and recording various physical characteristics (slope angle, silt depth, width etc.) and then carrying out both full botanical surveys and timed invertebrate surveys. The issue we had was that none of the ditches were holding any water at all which makes dipping rather tricky. So we had to make do with just the vegetation survey which can still provide a good indication of habitat quality. Not being botanists the surveys took a great deal of time and a lot of referring to keys but with some persistence and a bit of outside help we got there in the end. Some of the results are summarised in the graphs below.



Comparative values of characteristic ditch species (l) and habitat quality score (r) in the surveyed ditches

The fact that there was no water being held in these ditches was probably evidence enough that they could be improved but now we have the baseline data against which we can measure changes in the future, hopefully by re-profiling these ditches we will see some large gains in these numbers, we'll report back in future years to see how things have changed!

Monitoring of the Marsh

The second project I'd like to flag up is entitled Monitoring of the Marsh and this is where I need your help!
This project is due to begin in the spring and is a partnership between Kent Wildlife Trust, and Kent and Sussex records centres. The aim is to survey key species and habitats across the whole of Romney Marsh. We are just about to put together a programme of study days and training courses which will cover important habitats and species found on Romney Marsh, subjects will include; surveying ditch habitats, vegetated shingle habitats, water vole's and many more! The idea being that if we can get as many people as possible trained up and confident in surveying, then we will be able to build a picture of how wildlife is faring across a huge landscape area. This is an ambitious project which has rarely if ever been attempted in the UK at this sort of scale, with such a wide range of species. We are still developing this project but as soon as I have more details and a programme of training I will let you all know. Watch this space! For more information on these or any of the projects under the Fifth Continent contact me via email: stan.smith@kentwildlife.org.uk

Stan Smith, Fifth Continent Biodiversity Officer

Local Wildlife Sites

Introduction

Local Wildlife Sites (LWS) are areas which are important for the conservation of wildlife in Kent. The majority are privately owned, and the designation highlights the importance of non-statutory designated sites for conservation in Kent. A register of site citations is maintained to support local planning and conservation decision making. In Kent there are over 460 Local Wildlife Sites, covering a total area of over 27,500 hectares, (roughly 7% of the county). They range from a 0.13 hectare churchyard important for its orchids, to grazing marsh sites of over 1,000 hectares.

Kent Wildlife Trust manages the LWS system in Kent, and the Kent Nature Partnership oversees the selection of LWS, using robust, scientifically-determined criteria, plus local knowledge and understanding of this area's natural environment. The Partnership is made up of a great variety of stakeholders including local authorities, public bodies, nature conservation NGOs and groups representing landowners and farmers.

Surveys

Kent Wildlife Trust runs a regular rolling programme of surveys of LWS to ensure they still meet the qualifying criteria, as well as considering new sites for inclusion. One of those surveyed in 2017 was Brenchley Wood, approximately 7km north east of Tunbridge Wells.

Experienced surveyor Joyce Pitt undertook this task in mid-August and was accompanied by myself in my role as Volunteer LWS Trainee. It was a great opportunity to gain more insight into the role of LWS in the county and the practicalities of surveying them. (Photo: a characteristic gill stream, Kent Wildlife Trust)

The site covers 96ha and consists of around eight blocks of land, the largest of which is dominated by Kent Wildlife Trust's own Brenchley Wood nature reserve and the adjacent Kent High Weald Partnership managed Cinderhill Woods. In fact, it is one of 35 LWS that encompass Kent Wildlife Trust reserves to some extent.

In common with many of the LWS in the county, and one of the additional complications of covering a large area, multiple landowners had to be approached for access permission; 12 in this case. Responses to request for survey permission are varied, though they can result in very positive engagement, with some owners keen to actively manage their land and receive feedback from the results of the survey.

Brenchley Wood LWS consists of small wooded gills, broadleaved woodland and pasture situated over a series of small sheltered valleys and is quiet and relatively unspoiled. Access, where it had been granted, was generally good with few physical obstacles to overcome aside from a couple of stiles. We concentrated on the pastures, surveying the wooded areas will wait until spring 2018 when conditions will be more suitable. A return visit at this time will also provide another opportunity to contact landowners that had not responded to the first request for access.

The site was found to be in relatively good condition with few amendments to the citation recommended. As well as some nice examples of oak standards amongst the broadleaved woodlands, nesting buzzard, and a familiar selection of grassland species, Joyce was particularly pleased to record good numbers of fungi including *Agaricus* spp, and Scotch bonnet *Marasmius oresdes* amongst the grasslands. (Photo: crimson waxcap *Hygrocybe punicea*, an indicator of good quality, unimproved grassland, *Joyce Pitt*)

In total, 28 sites were surveyed in 2017, accounting for six per cent of all LWSs in the county.

Sean Burns, Volunteer Trainee Local Wildlife Sites Assistant

(Banner photo: *Selwyn Dennis*)

Shoresearch

Kent Wildlife Trust organises a full programme of survey events throughout the year when we visit selected intertidal sites around the coast and record all the species and habitats we find. In addition to the now well-established Shoresearch recording of species distribution and diversity around our shores, at some sites we also undertake some more quantitative transect and quadrat surveys alongside the usual recording. This enables us to assess more accurately the relative richness of shores, and to provide a better measure of change over time.

Blue rayed limpets *Patella pellucida* were abundant at St Margaret's during the April Shoresearch) and a common lobster Homarus gammarus was recorded, which was an unusual find on the shore.

Once a month Shoresearchers visit a different intertidal site around the Kent coast and carry out a transect survey, recording all the species found and what habitats they are present in. If enough trained volunteers are present a quadrat survey is also carried out. Although chalk cliffs and reef are fairly common in Kent, nationally it is a scarce resource so it is vital that we have robust data to track any changes which climate change, pollution, or any other events may have on the species that live there.

The coasts around Kent are rich with a wide range of algae and animal life. From piddocks, which dig their way into the soft chalk for protection, to the fast growing sugar kelp only exposed at very low tides, there is always something fascinating to discover on a Shoresearch. Some of this year's highlights include striking blue-rayed limpets found in April at St. Margaret's Bay and finding *Elysia viridis* at several different sites around the coast, including Stone Bay and Walpole Tidal Pool. *Elysia viridis* is affectionately known as 'the solar powered sea slug' due to the presence

of chloroplasts it uses for photosynthesis, having ingested them from its prey! (Photo: Shoresearch at Shakespeare Cliff , *Leon Roskilly*)

Shoresearchers visited 13 coastal sites this year, participated in two intertidal techniques workshops, and while we don't yet have a total species count for the year, December's Shoresearch was specifically looking for shells at Sandwich Bay and uncovered 50 different species! On average 19 people attend Shoresearch each month, although this tends to be more when it's a bit sunnier…

Anyone is welcome to attend a Shoresearch, even if you have no prior knowledge of intertidal survey techniques or any marine wildlife. There's always someone on hand to show you the ropes and the best places to look for tiny animals. If you are interested in joining Shoresearch in 2018 please email fiona.white@kentwildlife.org.uk (Photo: Shanny, Pegwell Bay, *Leon Roskilly*)

(Photo: Sea slug *Elysia viridis,* Stone Bay, *Bryony Chapman*)

We hope to see you on a beach soon!

Zoë Stevenson, Guardians of the Deep Project Officer
(Banner photo: *Vicky Aitkenhead*)