



WELCOME AND INTRODUCTION



RACHEL MURPHY



Welcome to the 2022 NPMS Winter newsletter! As I type and the snow settles outside my window, it is almost astonishing to think back to the scorching temperatures experienced as we compiled our last digital dispatch, just 4 months ago. Indeed, we have witnessed our beloved landscapes being hit by extremes right through the last year and it will be interesting to explore what impacts these conditions may have had, as indicated by your all important NPMS survey data for the season.

With CoP15 (Conference Of Parties – Convention on Biological Diversity) currently underway in Montreal, with all nations gathering to negotiate the Global Biodiversity Framework – A new global biodiversity agreement that is essentially the world’s most important tool to protect nature - it is perhaps a real time of reflection and a reminder of the importance and value of our efforts in monitoring the health of our habitats here in the UK.

You can read in this edition how we have been using our survey data to investigate how habitats are likely to be impacted by environmental pressures in the coming years (p.2), along with further high-profile applications of the hard work carried out by our dedicated team of volunteers (p.10).

You certainly have been busy this season, with data received for near 3,000 surveys thus far and more incoming. As ever, thank you for all your time and hard work. We will be bringing you the highlights of the year’s findings in spring 2023, with the second of our NPMS Annual Reports. This is also an opportunity to say welcome to our new volunteers that have joined NPMS through 2022. We have seen over 650 new volunteers register in the last 12 months and processed 275 new square allocations. We hope you’ve enjoyed learning about the scheme and are looking forward getting out in the field in spring.

Even with a carpet of snow and frost making plant hunting a bit of a challenge, there are still plenty of ways to engage with the scheme over the winter months, from site reccys, to our winter training mini-series (p.6) and other warmer desk-based activities (p.12).

Lastly, we wish you a happy and healthy festive period, from all in the NPMS Team. Do stay in touch.

support@npms.org.uk



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NPMS as a resource for detecting climate change impacts

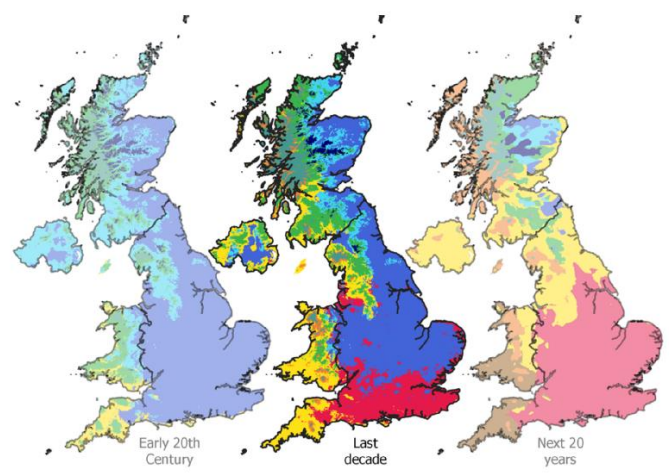
Dr Oli Pescott – UKCEH

Research investigating how NPMS data may help us to detect climate impacts on plant communities - out soon!

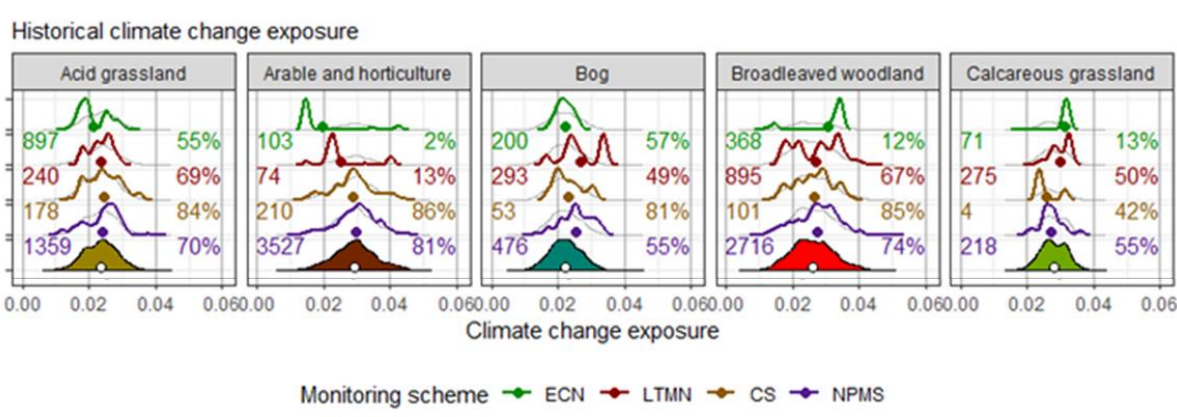
Work reported by Dr Oli Wilson in last winter’s newsletter is now ready to be submitted for publication to an academic journal, and a “pre-print” should be available online soon after this digital missive hits your inboxes. The central idea is that our ability to describe and understand the impact of climate change on habitats depends on our monitoring a representative spread of the expected shifts in climate over the next 50 years or so. For example, if we only monitor those parts of a habitat that are expected to have the smallest, or largest, shifts in things like summer maximum temperature, or annual rainfall, then we will likely be in error if we extrapolate these estimates to larger areas. Through this work we have sought to understand how a “climate change exposure” metric (i.e. the amount of expected change in local climate) varies across sampled NPMS habitat plots, and how this compares to other UK habitat monitoring schemes. Whilst our analysis has revealed a lot of variation in terms of how schemes (including the NPMS) currently cover the range of future climate change across habitats, the dense network of NPMS plots does show good coverage of this measure across many common types. The figure below gives a flavour of our results, with the NPMS habitat climate change exposure coverage shown in purple. We hope to make this information available in an “easy to query” format for surveyors’ 1 km squares soon!

Knowing how habitats are likely to be impacted by environmental pressures requires us to understand changes that have already happened. The NPMS has a nationally crucial role in capturing the effects of **climate change**.

UK habitat exposure to climate change



Past and future climate change in the UK. Each colour represents a cluster of similar climate conditions, tracked from: 1901-1930 (left), 2010-2019 (centre) and modelled for 2021-2040 (right). Data from HadUKgrid and UKCP18 (Met Office). Contains public sector information licensed under the open Government License v3.0



Dr Wilson demonstrates how we’re using surveyors’ data to discover how UK plant communities are being changed. Watch [HERE](#)



Figure 1. A comparison of historical (1901–2019) climate change exposure in UK terrestrial habitats (based on 2019 land cover). The “infilled” distributions show the overall climate change exposure of that habitat, as measured by 1,000 random sample points within each land cover type. Coloured lines show the distribution of exposure for each monitoring scheme’s unique surveyed locations overlaid on the 2019 UKCEH Land Cover Map. Faint grey lines show the random sample’s distribution on the same scale as each scheme’s, to aid visual comparisons. Numbers on the left of each pane indicate the number of locations included for each habitat-scheme combination; percentages show the overlap of scheme and randomly-sampled climate change exposure within each habitat. These last numbers can be interpreted as an index of the coverage of expected climate change by a particular monitoring scheme. ECN = Environmental Change Network; LTMN = Long Term Monitoring Network; CS = UKCEH Countryside Survey; NPMS = National Plant Monitoring Scheme.




Habitat Hotspot – Kevin Walker, BSBI

Freshwaters

Freshwaters are a Cinderella habitat for many botanists. This is because they are hard to survey properly; often, we literally 'dip our toes in the water' when it comes to identifying the species present, or just peer into the murky waters from the bank! To survey them properly, specialist equipment is required such as grapnels, bathoscopes, boats and if you're really keen a wetsuit and a snorkel. Consequently, we probably know less about freshwater communities than any other 'terrestrial' habitat. This is made worse by the difficulties in identifying some of the species present. Plants that grow in freshwaters face many challenges: strong currents, pollution and large differences in light, temperature and oxygen means that they have adaptations which make identification difficult, such as leaves that change shape depending on where they grow. Pondweeds and Water-starworts are good examples of species that are heavily influenced by local conditions and can be fiendish difficult to identify.

Having said that, Britain and Ireland have a range of distinct freshwater habitats that, once you have learned to recognise, greatly help with the identification of species. In this habitat hotspot I describe the main types. From an ecological perspective I've divided these into those with flowing and standing waters. Although in a few cases it can be quite hard to tell whether the water is flowing or not!

Flowing waters



Flowing waters are often shallower than standing waters and are characterised by a unidirectional flow, largely controlled by topography. We can divide flowing waters into fast or sluggish. Fast flowing streams and rivers occur primarily in upland regions, where the topography increases the speed at which they drain the surrounding catchments. Due to the high speed of the flow and shallow depth, few plant species can root within upland rivers and streams, although there are often the occasional plants that manage to colonise gravel bars, islands and areas of slower flow in the lee of meanders. By the time they reach the lowlands these streams have combined into much larger rivers where the flow is more sluggish – this allows many more species to find a home in the water column itself (submerged aquatics) or on the river edge where plants root in water but have the rest of the plant above the surface of the water (emergent). Chalk streams and rivers are the most species-rich; when undisturbed these can have exceptionally rich submerged and emergent floras. Sluggish rivers and streams too, can have high diversity including many plants that are adapted to slow or no flow and therefore also occur in standing waters (e.g. Water-lilies, pondweeds). Streams and rivers are obviously dominated by freshwater that falls as rain, but their lower reaches can be tidal and therefore heavily

influenced by saltwater which also influences the composition of the vegetation present. Here we also include large channels that effectively drain large areas lowland regions such as the Fens in East Anglia, but exclude smaller drainage ditches and canals which are effectively areas of standing water (below). We should also not forget the 'winterbournes' on the chalk in southern Britain that only flow during periods of high rainfall or when the water-table is higher during the winter months.



Image: The River Tees below Cronkley Scar in Upper Teesdale. This is a very shallow and fast-flowing river that supports virtually no aquatic vegetation.

© Kevin Walker



Freshwaters cont.



Above: The River Ure near to Boroughbridge. This is a relatively slow-flowing lowland river with a diverse aquatic flora including Small Pondweed *Potamogeton berchtoldii* (foreground) and Yellow Water-lily *Nuphar lutea* (far distance). © Kevin Walker

Standing waters

Standing waters include open waters that lack a unidirectional flow, and can be permanent or seasonal and have high or low nutrients (especially Calcium) or pH.

Lakes

The majority of natural lakes are confined to upland regions of northern and western Britain, where they have formed in depressions created by glaciers and are often dammed by their terminal moraines during the last glaciation. Such lakes are rare in the lowlands; here the majority of open waters have been created by humans either as a result of the extraction of raw materials, such as peat, sand, gravels, and rock, or by damming river valleys to create ornamental features or water supplies for urban areas. Most are recent in origin, although lakes such as the Norfolk Broads have been existence since at least the Roman occupation. Despite their human origins, many of these water-bodies provide very important habitats for plants and other wildlife.

Most water-bodies in the lowlands are nutrient-rich, largely because of the underlying geology but also because of high inputs from the surrounding land-uses. They often support a fringe of emergent vegetation. Where undisturbed these can form a natural succession from fen or wet woodland through reedbeds and other

emergent communities. Such transitions are known as hydroseres and where fully developed and active these can eventually take over the entire waterbody and ultimately create a wetland or woodland with no open water.

Right: Flooded gravel pit, Staveley Nature Reserve, North Yorkshire. This site was worked for sands and gravels but was abandoned in the 1970s. It is now an important site for many aquatic plants including Water Violet seen flowering here in the foreground. © Kevin Walker.



Lochs and tarns

In the uplands, most water-bodies are less nutrient-rich and the waters are more highly acid due to the greater leaching of nutrients from soils in the surrounding catchments. As a consequence, these lakes, often termed tarns, lochans or lochs, support a much smaller range of more specialist species. Unlike lowland lakes, they often lack a fringe of vegetation, due to higher turbidity and lack of nutrients, except in larger lochs in slower-flowing areas or near to where sediment is brought in by streams and rivers. There are obvious exceptions, usually where the underlying geology is more base-rich or where shell-sand provides a source of calcium carbonate.



© Kevin Walker

Above: Loch Fiachanis, on the Herbidean Island of Rum. Like many acid lochans this has a relatively species-poor aquatic flora and virtually no emergent vegetation.



Freshwaters cont.

Bog pools

Even more acidic are the bog pools found on blanket bogs and raised mires throughout the British Isles. These are most abundant in the north and west of Britain, where rainfall is highest but they also occur in lowland regions in valley mires where the water draining off the surrounding heathlands is highly acidic and the drainage is impeded. They support a very specialist flora including carnivorous plants such as sundews (*Drosera* spp.) and butterworts (*Pinguicula* spp.).



© Pete Stroh.

Above: Acidic bog pool on the Hebridean Island of Colonsay with Intermediate Sundew *Drosera intermedia* growing on *Sphagnum* moss.

Ponds

Ponds are standing waters that form where the water table reaches the surface and so they often form in depressions. Most are groundwater fed and so they can form almost anywhere a depression is made deep enough to expose the water-table. These include pingoes in East Anglia, areas where ice lenses collapsed in former permafrost regions, or in shell holes in military training areas. Some are natural, such as the those on heathlands in the New Forest, but the vast majority are artificial and have been created for a variety of reasons. Such as for water supply for livestock, farms and in case of fires, for fisheries or ornamental purposes. They were more important in the past when livestock were more central to the farming systems, so sadly 1000s have been filled-in and turned into productive agriculture in recent decades. Some ponds are more ephemeral, only appearing after heavy rains or during the winter months, when the water-table is higher. In limestone areas these ephemeral ponds or in some cases lakes are called Turloughs and have a highly specialised fen-like flora.

Right: Hatchet Pond in the New Forest. An exceptionally rich site for aquatic species such as Hampshire Purslane *Ludwigia reptans* and Pillwort *Pilularia globulifera*.
© Kevin Walker



Canals and ditches

Although we think of canals as flowing waters, they are essentially very long linear lakes and hence the need for locks to raise or lower boats. Since their disuse they have been colonised by a rich aquatic flora, often from rivers or standing waters to which they are connected, and as a result some are of national importance for the conservation of species that have disappeared from natural waterbodies. Likewise, ditches are linear standing waters that help to drain and hold water from the intervening land, with sluices controlling the amount of

water that drains away. Like canals they too can support very rich aquatic assemblages, although they are more likely to have been affected by pollution or runoff of nutrients from adjacent intensively managed land. Consequently, the most important sites are those in grazing marshes, where the nutrient inputs from agriculture are much lower.



© Pete Stroh



Safety first!

When surveying along waterways:

- Don't survey large body of water alone
- Ensure that you have safe footing
- Be clear where the water edge is
- Do not enter the water



Support and guidance

2022 has seen 16 live NPMS online training sessions delivered to ~250 participants - from survey methods and habitat specific ID, to data verification and uses. These sessions are available to view on our popular YouTube channel, along with short video guides. These videos have amassed 11,800 views this year alone! Not forgetting of course, 6 additional sessions delivered as part of Plantlife’s popular ‘Spring into Action’ and ‘Fall into Nature’ talks series, open to NPMS volunteers. Thanks to all that have provided feedback. Your comments help us to review needs and assist with planning future events.




But the fun isn’t over yet! See below dates and titles for our upcoming winter mini-series - focusing more on our field skills and other means of capturing our finds, including field sketches and photographs. Both for ID and pleasure, no previous experience or skills are necessary. To find out more detail about these fun sessions and how to book, visit our events page [here](#) for the interactive sessions, and our webinars page [here](#), for the webinar sessions. Please do not


hesitate to get in touch with NPMS support if you have any further questions or difficulty booking.


Upcoming winter mini-series...

19 th Jan. 12:30	The Key to using a botanical key - Interactive session with Sarah Shuttleworth
23 rd Jan. 12:30	Plant paparazzi: Botanical photography for beginners – Webinar session with Leif Bersweden
25 th Jan. 18:00	Bringing field notes to life with botanical sketches - Interactive session with Meg Griffiths
8 th Feb. 12:30	Introduction to NPMS and survey methods for newcomers – Webinar session

Frequently asked questions:

 **How can I tell if my square has previously been surveyed by another?**
 Always check if your recently allocated square has been surveyed before. Head to the View Square Details page. If plots already exist for your square, they will be listed here. Please continue to survey these where possible rather than selecting new plots, in order to gather continuous data for the same sites over time. The previous volunteer is likely to have left relocation tips and images, along with the coordinates.

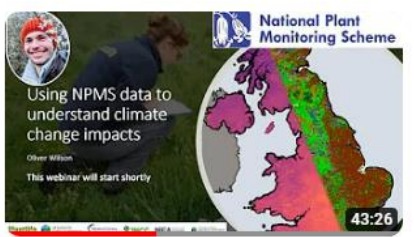
 **I can’t survey one of my plots anymore. Can I move it?**
 If you can no longer access one of your plots, please let us know and we’ll pop a note on the records. You cannot “move” a plot per se. Rather, just cease recording on it and if there is another suitable location that you would like to survey, by all means you can create a new plot in the same way you created your others.

 **There are no squares available closer to my home. Will more be released?**
 We do release randomly generated squares in tranches, each time 80% of our current squares become allocated. But don’t wait to get in touch if there isn’t currently a square available in your area. We’re happy to investigate if squares near you may look likely to be released soon, if for example a current volunteer can longer survey. Or there may be local Buddying-up opportunities.

Don’t forget... You can find recordings of our training webinars on the [NPMS YouTube channel](#), alongside additional handy guidance videos and “How to’s”.



Machair - secret sand meadows



Using NPMS data: Webinar recording

More added regularly!

Why not subscribe to our channel to be alerted to the latest video resources and recordings?



In-field training – Have your say!

We have seen reduced uptake in in-field events scheduled, owing in part to travel limitations and regional interest. As feedback suggests this is something many of our volunteers would benefit from, we are keen to work with you to plan the in-field opportunities you would like to see.



Take our in-field training survey... [HERE](#)



What's in your plot? - Kevin Walker, BSBI

Some helpful hints on common problems experienced in plot-based recording

Anyone involved in plot-based (quadrat) vegetation surveys such as NPMS has probably struggled with some of the issues listed below. In this short article we offer some practical advice on how best to deal with them.



Estimating vegetation cover






After identification, estimating cover-abundance is probably one of the most challenging aspects of plot-based recording. This is because plants don't form nice, neat blocks; in most types of vegetation the leaves and stems of plants intertwine and overlap to form distinct layers. This makes it hard to visualise cover and estimate abundance, especially if the plots are large. As a rule, the more diverse the plot is, the more challenging it will be to estimate cover. This is because there are more species to consider and therefore estimation errors quickly add up! Therefore, the Domin scale is easiest to use as it allows us to categorise species into broad ranges rather than agonising over exact percentages which are likely to be incorrect anyway.

Regardless of the estimation approach we use (pins, % cover, Domin), vegetation dominated by grasses and their allies can be the most challenging to record as anyone who has surveyed quadrats in calcareous grassland will attest. Take the quadrat below as an example. This is a 1 x 1 m quadrat with 18 species in a calcareous mire near to Malham Tarn, Yorkshire. Each cell is 10 x 10 cm so there are 100 in the plot as a whole – therefore each cell represents 1% cover.



The dominant plants in the example are all grasses and sedges; these account for 55% of the cover and in order of importance, they are Sheep's Fescue, Tawny Sedge, Blue-moor Grass, and Purple Moor-grass. Three herbs, a rush and a horsetail make up a further 9% and the remaining 9 species probably have a combined cover of less than 1%! The remaining 35% is made up of bryophytes (c.10%) and bare soil, litter and gravel (c.25%). And this is a relatively simple plot with virtually no layering!

Here's some useful tips when estimating cover:

-  Start by working out how big 1% cover is before you start. In a 1 x 1 m plot that is about the size of your hand (10 x 10 cm). In a 10 x 10 m it is a metre squared!
-  Work systematically across your plot, ideally in transects, identifying all the species present (or targets) making a mental note of abundance as you go. Try to avoid flattening the vegetation too much as this can make estimating cover more difficult.
-  Once you are confident you have found all the species present (you won't have!) then start to estimate cover. I do this by standing back from the plot and assessing the cover of the dominant species first. As the plot to the left illustrates, most species have negligible cover and so are not worth agonising over. The top few dominants (as well as bare soil etc. if it has high cover) are as these will heavily influence any attempts to assign vegetation to communities or assess changes over time. Once you are happy with these the rest should be easy.
-  Don't be afraid to change your decisions once you've made them. If you are using vertical cover in layers (as in NPMS) then the entire plot should sum to well over 100%.
-  Don't agonise – if you are working as a pair both make estimates; the truth will almost always be somewhere in between. And finally, don't be afraid to go back and change your estimates.



What's in your plot? Continued...

What to do about layers?

The calcareous mire plot previously demonstrated is relatively simple with a single layer but what about plots with multiple layers, such as the 10 x 10 m plot recorded in ash woodland as shown below?



This has a field layer dominated by Dog's Mercury and scattered Herb Paris with a layer of smaller herbs growing underneath (e.g. violets, wood avens, twayblade, etc.). In a few places the Dog's Mercury is overtopped by larger herbs such as Burdock and all these are overlapped by a shrub canopy of hazel, and a canopy of ash above that. Consequently, the % cover calculated using Domin classes will greatly exceed 100%. Also remember that plants not rooted in the plot but overlapping should always be calculated in the same way as other species. Steep or vertical slopes are a special case as the vegetation is not so much layered as highly complex in terms of topography and like layering this can lead to cover estimates for in excess of 100%.

Bare ground, rock/gravel and water!

Bare ground is usually relatively straightforward to record and is basically the cover of any bare organic surface including soil, mud, peat or sand that is visible as gaps in the vegetation. Ideally, it should be calculated separately to rock and gravel, especially in open mires and other places where these are likely to have an influence on the vegetation.



Occasionally plots include standing or running water, as in the plot to the left which shows an NPMS linear plot on the edge of an acidic pool on the Hebridean Island of Colonsay. The flags mark the landward edge of the plot and so all the bare peat and water on the edge of the plot should be counted as 'bare ground'.

Litter

Litter includes all the non-living vegetation found in the plot whether detached and lying on the ground (e.g. dead leaves, stems, seeds, fruits, twigs, fallen wood, etc.), as is usual, as well as standing dead vegetation, including tree stumps and dead standing wood. In some habitats other types of organic litter is found and these should be estimated in the same way.



For example, on saltmarsh a strandline of seaweeds deposited at high tide can cover some plots as shown in the photo above, again an NPMS plot from the Hebridean island of Colonsay.

Don't forget you can find more advice and tips in our FAQs document: [HERE](#)

SPECIES SPOTLIGHT

Gorse, Western Gorse and Dwarf Gorse!
 (*Ulex europaeus*, *Ulex gallii* and *Ulex minor*)
 Sarah Shuttleworth



All gorse species are part of the pea family (Fabaceae – a.k.a. Leguminosae), with their distinctive pea flowers. These species are quickly keyed-out from the rest of the family via the following attributes; being a woody shrub (not a herb), erect yellow flowers and having leaves in a general trifoliate arrangement, albeit reduced to spines.

Gorse tends to be found in more acidic habitats, for example on heathland, acidic woodlands and dry acid grassland. They are grouped in with similar species, like broom (*Cytisus*) and whins (*Genista*), all being evergreen with yellow flowers that explode when insects (bees) land on the flower. This is quite a fascinating adaptation that shoots a cloud of pollen onto the insect when the join between the keel petals is disrupted by the presence of the insect, allowing a coiled stamen to be released.

For the purposes of NPMS, you only need to know the difference between European Gorse and the other two species, as it does not ask you to differentiate between Western Gorse or Dwarf, unless you are recording at Inventory level.

European Gorse *Ulex europaeus* (Maritime cliffs and slopes as a negative indicator)

The most common of the three species, this is very spiny and can grow up to 2 metres. The yellow flowers are said to be coconut scented. They have bracteoles (see photo below) that are 3- 5mm long. The calyx (see photo) is 10-17 mm long, usually the largest of the three species. The spines are usually 1.5 cm to 2.5 cm long and are deeply furrowed, unlike the other two species, which have only faintly furrowed spines.

This species is included as a negative indicator for Maritime cliffs and slopes, this is because where European Gorse exceeds more than occasional frequency, the overall habitat condition is deemed to be in potential decline.

Western Gorse *Ulex gallii* (Wet Heath, Dry Heathland, Dry Montane Heathland, Dry Acid Grassland as a positive indicator)

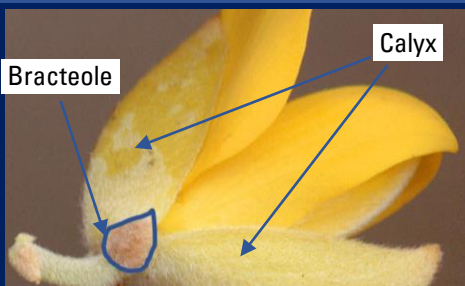
A woody shrub of heaths on infertile acidic soils, including leached soils overlying chalk and limestone; also found on sea-cliffs, in under-grazed or abandoned pastures, and on scrubby banks and waste ground. Very much a plant of Wales, SW England and NW England as it is less common in many other areas of Britain.

Whilst it is very similar to European Gorse, Western Gorse tends to be low growing, forming compact, lighter green mounds. It also tends to flower later (Jul-Sept) whilst European Gorse flowers mainly in spring.

It could be said that it is an intermediate between European and Dwarf in habit and general look. The key difference from Dwarf is calyx length is greater than 9mm (measure at least 10 flowers if some are measuring 9 mms exactly). The spines are faintly furrowed unlike European Gorse and between 1 – 2.5cm long. The flowers are deep yellow with bracteoles about 0.6 mm.



Ulex gallii © Andrew Gagg



Dwarf Gorse *Ulex minor* (Wet Heath, Dry Heathland, Dry Montane Heathland, Dry Acid Grassland as a positive indicator)

Usually the smallest of the three, hence it's name, but can still get up to 1 metre. The stems are often weaker and therefore sometimes more prostrate than European Gorse with smaller spines, only up to 1cm. The calyx is the smallest out of the three species and not more than 9mm long. This species is most commonly found in Southern England.



NEWS AND RESEARCH



British & Irish Botanical Conference 2022

~250 people attended the 2022 British & Irish Botanical Conference, held at the Natural History Museum last month. What a joy it was to take part in this event in person again, after a few years being held online. There were a wide range of fascinating and inspiring talks and exhibits throughout the day. NPMS Volunteer manager Rachel Murphy attended, exhibiting a poster on the NPMS, which you can view [here](#). She was on hand to answer questions about the scheme and also delivered short flash talk, you can watch [here](#).

The conference webpage [here](#) provides links to recordings of the various talks and some of the exhibits.



Indicating the way forward for NPMS data?

In the last newsletter (Summer 2022) we included a piece on what might be called the “philosophy” of ecological indicators. This is all very well, but what news of practical indicator outputs and applications from the NPMS? NPMS data and our indicators are moving up the charts in this respect, as it seems likely that your data, and the models based on them, will be incorporated into forthcoming metrics used by both the government and NGOs to indicate the state of our wildlife. For the first, we have heard that the UK’s recently enacted [Environment Act 2021](#) is likely to use NPMS data among the metrics used to monitor our biodiversity. This act contains a mechanism for the Secretary of State to “set a target ... in respect of a matter relating to the abundance of species” by the 31st December 2030, and NPMS data are under consideration to furnish the plant element of this. More immediately, the RSPB-led consortium producing the occasional “State of Nature” reports (see [here](#) for 2019) are looking to include the NPMS indicator in their 2023 production. It’s very exciting to see our volunteers’ hard work being used for numerous high-profile applications!

Despite all this usage, and as regular readers of this newsletter will appreciate, the NPMS partnership are not however sitting on our indicator laurels, but are hard at work improving their “representativeness”. The current “experimental” indicator takes your data and assumes that it is a good representation of any given habitat across the UK. This, of course, is not always the case, as variation in where people live and survey squares, as well as issues such as a square’s accessibility, will inevitably influence which locations we actually receive data for. Seriously disruptive events, such as the

pandemic, also affect this in unexpected ways. As a result of this, our analytical team is currently engaged on work aiming to adjust for such unevenness of habitat coverage between years, and we hope to be able to present the preliminary results from this work in the next newsletter or annual report. As any reader who knows anything about predicting elections from unrepresentative polling will appreciate, this is delicate work, and we will be looking forward to feedback about these statistical “adjustments” from volunteers in the future. Stories of change in surveyors’ squares also help to place abstractions such as statistics in context, and as a scheme we very much value both for what they tell us about our natural environment. Readers with a background in mathematics or statistics may enjoy some of our team’s recent work in this area [here](#) and [here](#) (both links are to freely available academic papers).

NPMS data in press:

NPMS data have been used earlier this year, alongside other national-scale UK biological monitoring schemes with location data on historical landfill sites, to investigate the impacts of developing brownfield sites on biodiversity at a landscape scale. You can find the full peer reviewed paper by Macgregor et al. 2002 [here](#).



Science of The Total Environment

Volume 804, 15 January 2022, 150162



Brownfield sites promote biodiversity at a landscape scale

Callum J. Macgregor ^{a, b}, M. Jane Bunting ^c, Pauline Deutz ^c, Nigel A.D. Bourn ^d, David B. Roy ^e, Will M. Mayes ^c



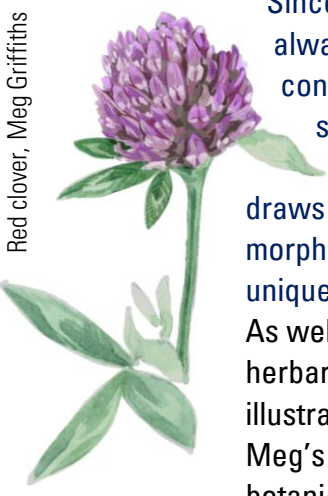
Botany through art



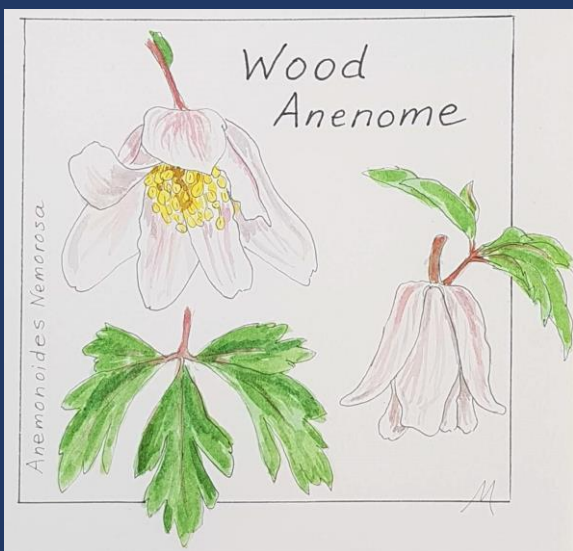
Hawthorn study, Beth Newman

Botanical art can be overwhelming for the amateur artist wanting to start out in the field. The answer perhaps is to make the decision to start. Even if you don't consider yourself an artist, simple sketches can be rewarding and provide a different perspective of the subject, whether for personal use or wider sharing. The process gives permission to slow down and take the time to explore the subject matter.

Red clover, Meg Griffiths



"Since recording began, illustration and botany have always gone hand-in-hand. Despite the speed and convenience of photography, drawings still showcase plant characters in a way that photos simply cannot. The act of sketching a plant draws the eye to the minute complexities and morphological differences that make each species unique." – Meg Griffiths, *Botanist and illustrator*. As well as her role at Plantlife, Meg works alongside herbaria to create scientifically accurate botanical illustrations of newly discovered plants species. Join Meg's live workshop - Bringing field notes to life with botanical sketches, next month! Find out more [here](#).



Wood anemone, Early dog violet and Fleabane illustrations by NPMS volunteer Marieke Bosman

NPMS Volunteer Marieke Bosman

Shares with us some of her beautiful illustrations (right), and the benefits she has found in exploring botany through art.

"Since 2020 I've been a volunteer surveyor for the NPMS - I have surveyed three squares in the Chilterns. Before I started, I knew some plants, but there was lots to learn. I did a few botanical courses but what's helped me most is art.

I set myself a challenge to find a new plant every day (later every week) to paint and read up on. It's been really enjoyable - I mostly use watercolour and pen, and doing the artwork is really fun and absorbing. The bonus is that, to do it well, you have to look very carefully at all the botanical features; so once you've drawn a plant, you'll recognise it anywhere! I have now painted so many local plants that finding new ones to draw is a bit of a challenge...

The ones shown here are of Wood anemone, Early Dog violet and Fleabane in different styles. I post each painting, together with some botanical info, on Instagram (@mrsbloem) so that others can enjoy the plants too. There's a really nice community on Instagram that are all into nature and nature art which ensures really nice encouragement, feedback and inspiration.

I've recently been asked to paint a wildflower board for a school project and am working on a book on the wildflowers in a wild cottage garden in Wales, both of which have been fun to work on. Isn't it interesting where NPMS volunteering can take you!"

GET INVOLVED



NPMS

Submit your data:

If you have not yet entered your data for the 2022 season, don't panic! But please do submit your data as soon as possible, to be included in the over winter analyses.

Previous season's data – it's not too late!

Similarly, if you still have historical data, this can still be entered any time to contribute to the NPMS database and analyses.

For any advice on entering your data, contact support@npms.org.uk.



Could you be a Mentor?

Volunteer mentors are a hugely valued part of our team, and there are several ways you can be involved, with both field and desk-based opportunities. Full support is given. You can find out more in our Mentors Opportunities video [here](#). Please get in touch if you feel you can give some time.

Experienced botanist? Confident in your species ID?

If you are interested in data records and verification and would like to volunteer to review species records that have been flagged by system checks, please get in touch to discuss. We now have introductory training to iRecord, where data submitted by NPMS volunteers, including any associated species images are verified. Full support is given.



Don't put your NPMS survey pack into hibernation this winter!

There are still plenty of ways to get involved with the NPMS over the winter months.

Here are 6 ways anyone can take part...



1 Enter any data you may have that hasn't yet been submitted.

1



2 Enjoy delving into our online training resources and videos.



3 Join any sessions in our field skills mini-series (see page 6).

3

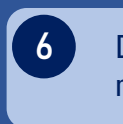


4 Get to know your square, reccy and plan for 2023.



5 Share your photos and stories from the 2022 season with us.

5



6 Don't forget to follow us on social media. *Stay in touch!*



Follow us @the_npms and @theNPMS



New recording forms for 2023 can be downloaded from the [resources page](#) of the NPMS website. If you are unable to print these, we will be sending them out to those who request them during the last week of February.

If you do need us to send new recording forms for the upcoming season, we are more than happy to do so. See our latest blog [here](#), to find out how to request these.

GET INVOLVED

Further opportunities...



... and projects that may be of interest to NPMS volunteers.

Are you based in, or a regular visitor to the Highlands?

Plantlife Scotland are currently running the Cairngorms Rare Plants and Wild Connections project. We're looking for volunteers to help with all kinds of things both at home and in the field in the Cairngorms, with everything from hands-on pinewood conservation to mountain-top monitoring. From April, we'll be back out planting rare pinewood twinflower at reintroduction sites, surveying very rare one-flowered wintergreen, and preparing for a summer of meadows and mountain top site visits.



Image: Colin Maclennan

If you think you might be interested or have any questions feel free to email sam.jones@plantlife.org.uk

Visit the website: www.dynamicdunesapes.co.uk to find out more about the project and any volunteering events and opportunities. You can also find some fantastic self-guided activities, bioblitzes and arts activities. Find the wide-ranging events page [here](#).



Dynamic Dunesapes/ Ian J Lee Photography



@dynamicdunes



[National Project Newsletter](#)

Indoors or outdoors, get ready for the 2023 survey season with the BSBI



Too cold to venture out?

Stay home with a hot drink and check out the videos and flash talks from November's [British & Irish Botanical Conference](#) - from the [rare plants of Welsh mountains](#) to the [botanical treasures of Somerset](#); from [rare plant reintroductions in Cumbria](#) to [how wild plants help a forensic botanist to catch criminals](#).

Want some free money? Applications open on New Year's Day for [BSBI Training Grants](#) to help you take a [short plant ID course](#), either with BSBI or with an [external provider in your area](#).

Note the deadline for applications for the [Identiplant](#) course is the end of December!

Ready to go outside? Thousands of plant-hunters will be out at New Year finding out which plants are managing to bloom in the midwinter. Want to wrap up warm and join them? Collect valuable data on how our wildflowers are responding to a changing climate? [Here's how!](#)





Field Diaries: Your pics

Here are just a few more of your great images that have been shared with us this season. We love to receive your photos from out in the field, whether to help with ID, or simply to share a fun find or moment of reflection.

Volunteer Sophie Flux shares some of the highlights encountered while visiting her NPMS survey plots during the 2022 field season. Not all botanical, but an opportunity to experience a wide range of wonderful species on site. She writes - **“Wow! What a fantastic morning doing a National Plant Monitoring Survey! This is my 3rd year of doing this & it is an utter joy!”**



THANK YOU

We would like to thank the stakeholders who have supported the NPMS in recent years and have promoted the scheme.

Thanks to Andrew van Breda, Biren Rathod and Karolis Kazlauskis for technical support, along with our incredibly knowledgeable trainers for their contributions this season.

Also a huge thank you to all our dedicated volunteers that make the programme possible. We are so grateful for your enthusiasm and efforts this year.

Thank you to all the contributors of the newsletter.



Colin MacLennan shares an atmospheric shot of his acidic fen survey plot in Scotland. Alongside a bonus offering below, of a unique view and perspective of the surrounding area taken by drone during Colin’s initial reccy of the survey area.

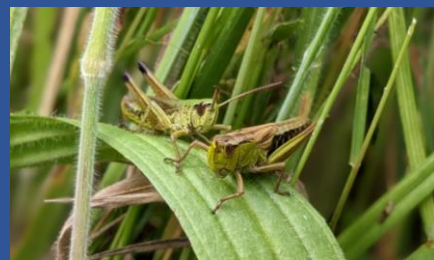


A plot with a view! Liz Askins shares a glorious shot of one of her survey plots on the Isles of Scilly.



We are here to help. Send us an email or give us a bell.

support@npms.org.uk
07711 922098



Don't forget to tag us in your social media plant or plot photos! We'd love to share what you see with the whole NPMS community! #NPMS @theNPMS

