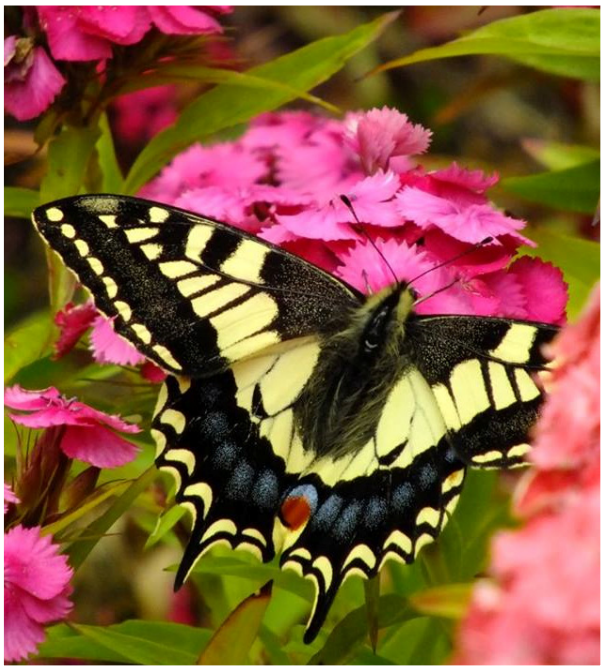
State of the Natural Environment in Norfolk 2016 - 2018

Danielle Engelbrecht and Lizzy Oddy Norfolk Biodiversity Information Service

Fragrant Orchid at Whitwell Common © Ed Stocker

State of the Natural Environment in Norfolk

Contents



Introduction

The natural environment is one of Norfolk's greatest assets.

Its landscapes and wildlife draw in people from far afield, whilst its habitats and protected sites support fantastic species diversity. From the majestic north coast, to the rolling arable fields, from the lakes and ditches of the Broads to the forests of Breckland, there is something to discover in every corner of the county.

This report summarises the information held by Norfolk Biodiversity Information Service on species, habitats and protected sites within Norfolk for the years 2016-2018.

This report is available for download from www.nbis.org.uk

Images: Little Egret © Lizzy Oddy; North Norfolk Coast © Lizzy Oddy; Ox-eye daisies © Darren Oddy; Swallowtail butterfly © Darren Oddy

Species in Norfolk

Norfolk is blessed with a fabulous diversity of flora and fauna. Thanks to its position and its diverse range of habitats, around 16,300 different species have been recorded in the county since 1670.

219 of these species were recorded between the April 2017 and March 2018 (the eventual total will be higher as there is often a delay between recording and those records being submitted to NBIS. In particular, a large bird record import is not included)

2324 of these species are classified as 'Species of Conservation Concern'. This means they are rare, threatened or protected by law.

702
Bees, Ants & Wasps

3334
Fungi & Lichen

428
Birds

1828
Moths

2625
Beetles

2166
Vascular plants & stoneworts

Images: Mining Bee © Nick Owens, Longhorn Beetle © Danielle Engelbrecht, Little Terns © Kevin Simmons, Crucian carp © Carl Sayer, Fly Agaric © Adele Southall, Beautiful marbled © Dave Hipperson, Bluebells © Danielle Engelbrecht.

How many species have been recorded in Norfolk?

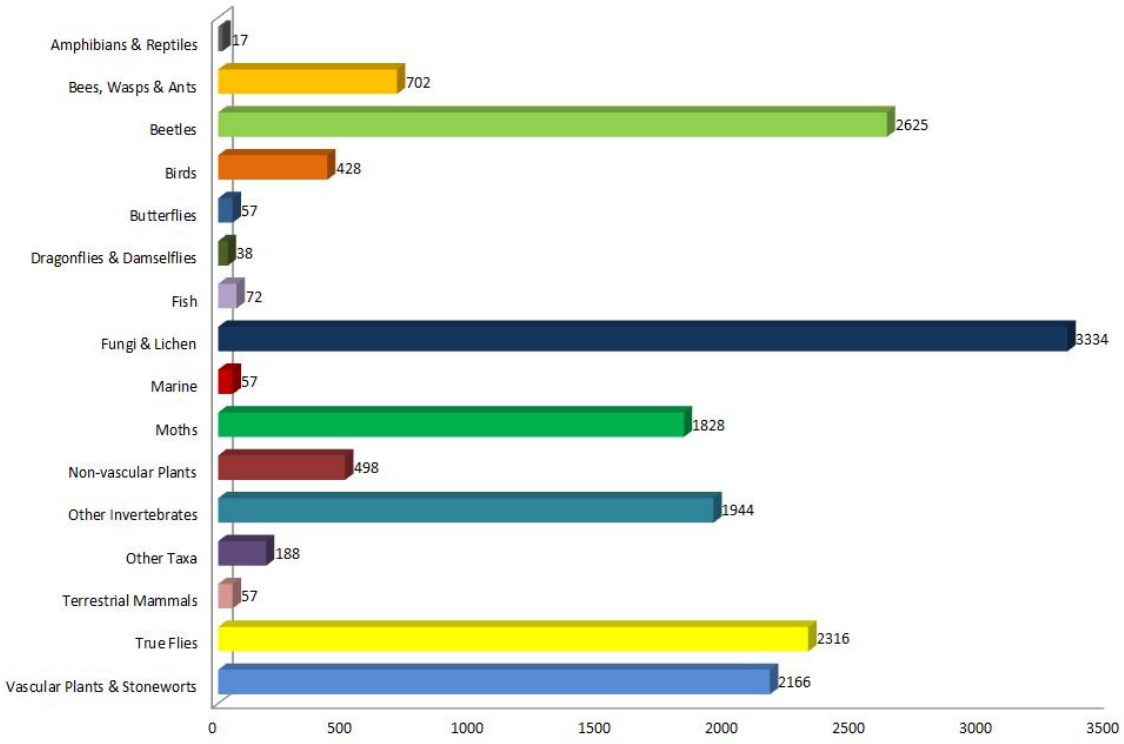


Figure 1. Species diversity in Norfolk, by taxonomic group (based on data held by NBIS, March 2018).

Non-native species

NBIS also holds 21620 records of 57 Invasive non-native species. Invasive non-native species are one of the most serious threats to global biodiversity. The Norfolk Non-native Species Initiative was launched in 2008 to promote the prevention, control and eradication of invasive non-native species.

You can follow them on Facebook at www.facebook.com/NorfolkInvasives and find out more about invasive species at www.nonnativespecies.org.

Images: Signal crayfish © Katy Owen, Crassula © Trevor Renals, Munjac © Trevor Banham, Himalyan balsam © Mike Sutton-Croft

Species case study: *Anguilla anguilla* - The European Eel

The European Eel (*Anguilla anguilla*) is a critically endangered species which has suffered population declines of up to 95% over recent decades. Declines in eel populations have been noted on rivers across Norfolk, but the cause is not known. Potential threats to the species include habitat loss, climate change, changes in oceanic currents, disease and parasites, pollutants and predation. The eel is a little known and mysterious species which travels thousands of miles to breed in the Sargasso Sea in the west Atlantic Ocean. This slippery, rope-like fish is able to survive out of water for extended periods and can live up to 85 years.

Eels were once a valuable commodity in Norfolk. People once earnt a living as eel catchers. The River Wensum holds a good number of eels, as do many of our small chalk rivers along the north coast and many of the Broads in Norfolk.

Images from Norfolk Coast Partnership: European eel; Local school site visit 2016; Measuring eels caught; Glandford Mill eel pass

A recent Heritage Lottery Fund Project led by the Norfolk Coast Partnership worked with eels on the River Glaven in North Norfolk. It aimed to find out more about their populations and movements in the catchment, to improve their habitat and to help schools and local communities to engage with the river and the eels; re-connecting current generations with the eel and its folklore before those connections were lost forever. Survey work suggested that the River Glaven is a key site for eels and needs to be managed as such. A full summary of this project and its outcomes can be found at http://www.norfolkcoastaonb.org.uk/partnership/the-glaven-eel-project/1105.

Information sources: http://www.iucnredlist.org/details/60344/0; https://www.arkive.org/european-eel/anguilla-anguilla/ https://www.norfolkwildlifetrust.org.uk/wildlife-in-norfolk/species-explorer/fish/eel http://www.norfolkcoastaonb.org.uk/partnership/the-glaven-eel-project/1105. Thanks to Estelle Hook (Norfolk Coast Partnership) for her help with this case study

Species case study: *Lasius neglectus* - The UK's first invasive ant species

Background

Most likely originating from Asia-minor, *Lasius neglectus* is a widespread invasive pest in Europe.

First colony found at Hidcote Manor in Gloucestershire. Now known to be established at 6 UK locations but is probably under-recorded.

Forms 'supercolonies' which can spread over several hectares. These are cooperating nests with many 1000s of queens. Highly successful forager, collects honeydew from a range of insects and exploits other resources e.g. plant nectar.

Identification

Look out for unusual and persistent infestations in houses or large numbers of small dark ants indoors during winter. Usually found in disturbed, urban and semi-urban habitats or places with a high level of plant exchange such as botanical gardens.

- Superficially similar to common garden ant *Lasius niger* – occupy similar habitat but there are differences in anatomy, behaviour and social structure
- Workers are slightly smaller (3-6 mm) and lighter in colour than the common garden ant *L. niger* (5-8 mm)
- Erect standing hairs present on the antennal scapes and hind tibiae of *L. niger* are absent in *L. neglectus*.
- Both species nest in the ground, under stones and pavement and are often found in parks and garden.
- *L. neglectus* workers can form dense trails on tree trunks and are often abundant around honey dew producing insects.
- Trees are crucial to their existence. Workers will be almost continuously active in tending aphids for their honeydew. Colonies are therefore more likely to be found in areas close to trees.
- Has a shorter hibernation period so may be active for longer in the year – look for ant activity in early spring or late autumn.

Dispersal

L. neglectus is usually found in disturbed, urban/semi-urban habitat or places with a high level of plant exchange.

Impacts

Severely effects local invertebrate biodiversity. Native ants are excluded from the core regions of the colony and ground foraging groups e.g. beetles and woodlice are also affected.

Any ants that match this description and are unusually abundant or persistent in buildings should be investigated. Identification should be confirmed from voucher specimens by someone familiar with the species.

Identify – Report – Contain

If you find a suspicious colony:

Doreen Wells (County Ant Recorder) - wells_doreen@hotmail.com

Phillip Buckham-Bonnett (York University) -

Norfolk Non-native Species Initiative

BWARS

Animal & Plant Health Agency

New & nearly new species for Norfolk 2016-17

Species that are new to Norfolk are discovered by recorders every year. Below is just a selection of species new (or nearly new) to Norfolk in 2016-17.

Herb emerald

Microloxia herbaria was spotted in Norfolk in July (2016) by Matthew Casey in Costessey. This species is not only new to Norfolk but to the UK!

New ants for Norfolk

Three ant species new to Norfolk have been recorded over the past three years: *Formica cunicularia* in 2014, *Lasius sabularum* in 2015 and *Lasius brunneus* in 2016. With climate change bringing warmer temperatures to Britain, we are discovering that several ant species are migrating further north into Norfolk.

Both *Formica cunicularia* and *Lasius sabularum* are ground nesting ants, but the former will only nest in the warmest of microclimates. The tree ant *Lasius brunneus* has been recorded moving steadily northwards in Britain for the past few years. This species was first discovered nesting in the dead heartwood of old standing trees of oak and birch at Foulden Common in August 2016 by the county ant recorders, Anna Jordan and Doreen Wells.

Polecat

Mustela putorius has made a remarkable comeback after populations plummeted in Britain a hundred years ago. The first polecat for the county was recorded in 2014; however, a further two were sighted in July (2016).

Oxythyrea funesta (Poda)

A chafer species commonly found in Europe but only recently in Britain. This attractive chafer has become well-established in parts of southern Britain in recent years but it seems more likely that this Norfolk population developed from a direct import with plant material rather than by natural dispersal from colonies in the south.

Purple emperor

The iconic *Apatura iris* has been spotted four times in the last two years. With the nearest breeding colony in Suffolk only 15km from the county border, it is just a matter of time before we regain this butterfly, which has been extinct in the county since the 1970s.

Australian basket fungi

This fungi is not only new to Norfolk, but is the first recorded specimen in the UK. *Ileodictyon gracile* was found in Hethersett during February (2017) by John Alban.

Nomada baccata

This scarce cleptoparasitic bee, which parasitises the heather-dependent mining bee Andrena argenata, was found at Roydon Common by Nick Owens in August 2016.

New & nearly new species for Norfolk 2017-18

Species that are new to Norfolk are discovered by recorders every year. Below is just a selection of species new (or nearly new) to Norfolk in 2017-18.

Bilberry Bumblebee

Bombus monticola had previously only been found in Norfolk at Scolt Head Island in 2007. Three individual males thought to be vagrants were spotted in 2007. In June 2017 a queen was found in Dersingham by Allan Drewitt, in very good condition. This may become a new bee species for Norfolk!

Little Yellow-face Bee

Hylaeus pictipes was rediscovered by Jeremy and Vanna Bartlett in their Norwich garden in 2017. Recorded in Norfolk only once before, in the 19th Century, it has probably been present but un-noticed since then due to its size. Further individuals have been found since.

Large Meadow Mining Bee

Andrena labialis, readily identifiable by its face markings was also recorded during the 19th Century but not seen since. 12 males were seen on white clover at Halvergate in June 2017 by Mark Welch.

Lasiobolus macrotrichus

On a Norfolk Fungus Study Group foray to Barnet Wood in March 2017, Keith Fox noticed a discomycete on deer dung which turned out to be this species, hitherto mostly recorded from Scotland and nowhere nearer to Norfolk than Berkshire!

Large Black Longhorn Beetle

Stictoleptura scutellata is a Nationally Scarce species in Britain with a distribution confined mainly to southern counties.
There had been no records for Norfolk or Suffolk until one was seen and photographed on fen vegetation at Sutton Fen on July 2016 by Tessa Needham. It was then spotted at How Hill at the dipping pond in June 2017 by Red O'Hara. County Beetle Recorder Martin Collier and national expert Martin Rejzek discovered a breeding site on a tall, dead beech trunk, where a few examples were seen flying and ovipositing in the bark in July 2017.

Lasius emarginatus

This ant species was discovered by Anna Jordan, Joint County Ant Recorder, nesting in the churchyard of the Parish Church of St Peter in Upwell in July 2017. It was confirmed by Mike Fox of BWARS. Only recognised as a species for mainland Britain in 2008, this is the first British record anywhere to the north or east of London. Could it have been in mainland Britain all along, but not recognised?

Lasius emarginatus worker, July 2017, © Anna Jordan

Species case study: *Loxia pytyopsittacus* - Parrot Crossbill

Case study by Andy Musgrove, BTO

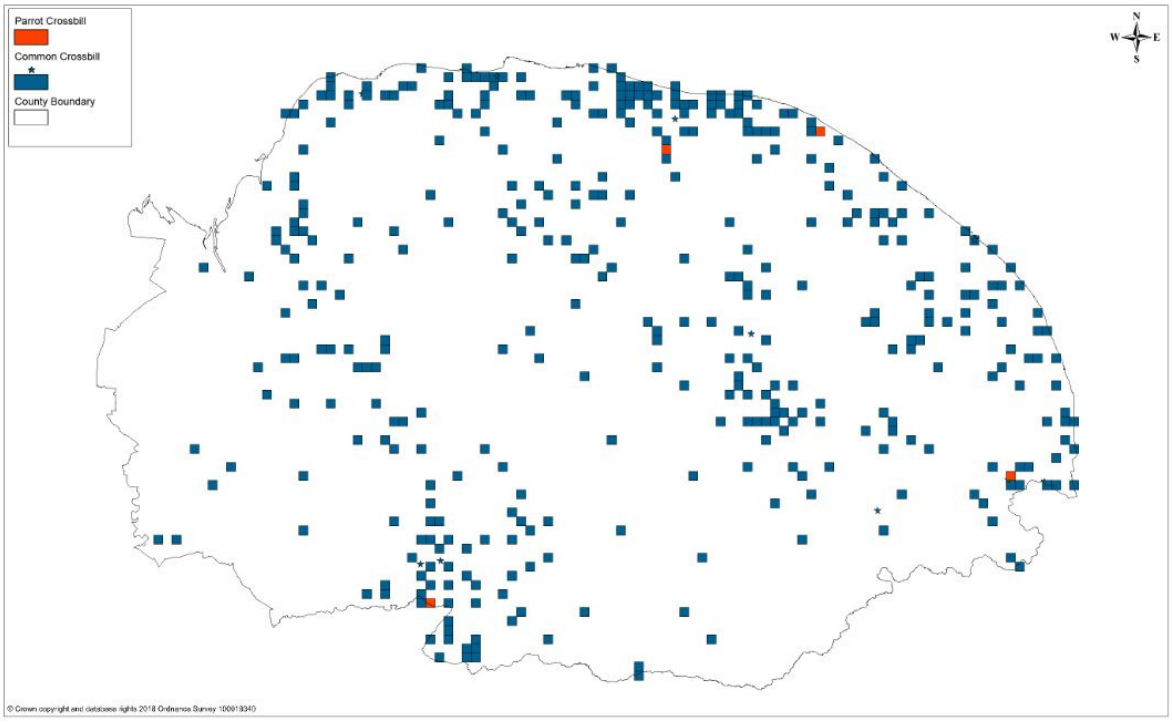
Parrot Crossbill, Petri Pihlaja, CC-BY-SA-4.0

On 23rd November, 2017 a small flock of crossbills was found by a birder near Santon Downham in the heart of Thetford Forest. Not all that unusual, but subsequent closer examination confirmed the initial suspicion that these were Parrot Crossbills, a rare visitor from Scandinavia. This species has not been easy to see in Britain in recent years and, as a result, many birders have travelled to the Brecks to enjoy the opportunity to see the birds. The flock built up to at least 40 birds and was often seen in the vicinity of St Helen's car park.

Crossbills are a group of finches that specialise in extracting the seeds from conifer cones and have evolved distinctive 'crossed' upper and lower mandibles of the bill with which to do so.

The bills of Parrot Crossbills are particularly large and powerful compared to those of Common Crossbills.

Males are a deep red colour with the females and immatures being green, but all can be easily overlooked whilst they feed quietly high in the tree tops. More often than not, birders notice crossbills when they fly over giving a distinctive 'chip-chip' call - although for the larger Parrot Crossbill, this is a deeper 'chup-chup'.

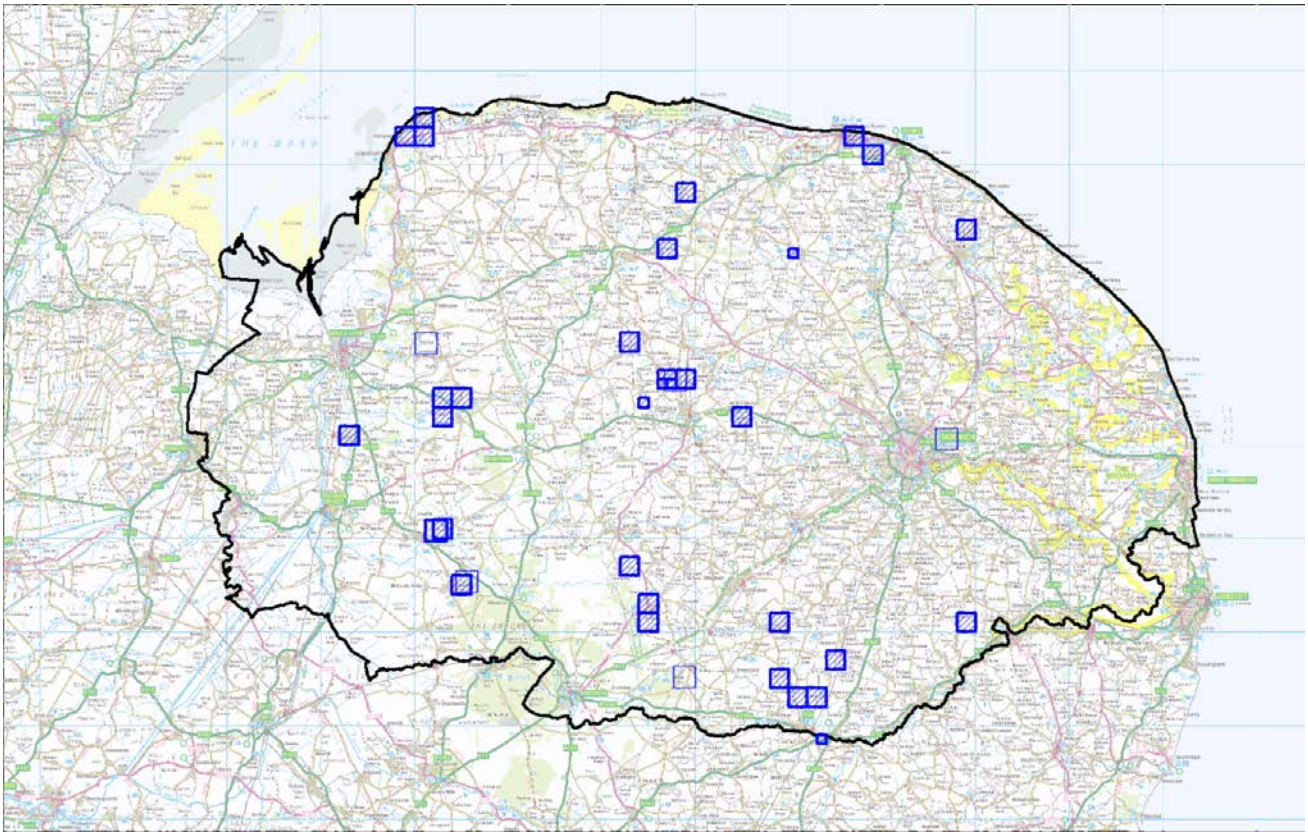


Common and Parrot Crossbill records in Norfolk. Produced by Norfolk Biodiversity Information Service.

Species case study: *Anacamptis morio* - Green-winged Orchid

Once a common wildflower in meadows in pastures, this species has disappeared from 49% of its historical range in the UK.
This reduction is due to changing agricultural practices and the neglect of meadows.
This species is identified by flowers clustering around a single spike, with the three lobes often coloured pink or purple. Leaves are pointed and narrow. Unlike other common grassland orchids, the leaves are not spotted.
Green-winged orchids can be found in old hay meadows and other unimproved grasslands; the majority of sites are of SSSI status or are commons. New Buckenham Common is a spectacular site to see the species during May.
There are currently 45 records of Green-winged orchids in Norfolk, with the earliest record in 1950.

Green-winged orchid © Danielle Engelbrecht



Green-winged orchid records in Norfolk (1950 to 2017). Produced by Norfolk Biodiversity Information Service.

Habitats in Norfolk 2017-18


Ploughed Field © Lizzy Oddy


North Norfolk Coast (CL Lizzy Oddy

Habitat types in Norfolk and why they are important

Arable

Arable areas can sometimes seem boring and devoid of wildlife. However if they are well managed they support important species, some of which are found nowhere else. Vascular plants of arable land are some of the most threatened flora in the UK. A very large area of Norfolk is arable farmland so it is important that it is managed effectively for both food production and wildlife.

Coastal and Floodplain Grazing Marsh

Pasture or meadow that is periodically inundated. Ditches maintain water levels and these are generally rich in invertebrates. Almost all areas are grazed or cut for hay and silage. The habitat is important for both breeding and wintering birds.

Coastal Sand Dunes

Develop where large amounts of sand are blown landwards from the coast, and can support a wide range of vegetation types. Dune systems are very rich in invertebrates.

Deciduous Woodland

Although deciduous woodlands vary in quality, the best examples are rich in biodiversity, both in tree species and ground flora, and also in associated invertebrate and bird diversity.

Coastal Saltmarsh

The vegetation on a saltmarsh is limited to a low number of salt-tolerant species which are adapted to regular immersion by the tides. They act as an important resource for wading birds and wildfowl, and provide sheltered nursery sites for several species of fish. Since medieval times, many saltmarshes have been converted into agricultural land.

Coniferous Plantation

While coniferous woodlands tend to contain fewer species than deciduous woodlands, they can still be home to an array of birds, invertebrates and fungi. Good management of plantations to introduce a mosaic of habitats can increase biodiversity value.

Habitat Type	Area (hectares)	% of County Area
Arable	344407.88	62.9
Deciduous Woodland	31429.97	5.7
Semi-Improved Grassland	28131.41	5.1
Coastal & Floodplain - Grazing marsh	17847.94	3.3
Coniferous Plantation	10832.47	2.0
Waterbodies	9363.11	1.7
Coastal Saltmarsh	4102.3	0.7
Fen, Marsh & Swamp	2266.44	0.4
Lowland Heathland	1173.23	0.2
Coastal Sand Dunes	588.04	0.1
Humid Dune Slacks	13.58	0.002

Table 1. Areas of different habitat types in Norfolk and the % of the county they cover. These figures were determined from a habitat map of the county generated using remote sensing. The remaining area of the county is made up of improved grassland, scrub, bare ground and urban areas. Marine habitats were not included.

Fen, Marsh and Swamp

This includes fen (peatlands which receive water and nutrients from ground water and surface run-off as well as rain), marsh (areas of waterlogged soil, including fen meadows and rush pasture on mineral soils and shallow peat) and swamp (areas of tall emergent vegetation such as reed bed). UK fen habitats support a diversity of plant and animal communities – up to 550 species of higher plant, up to half of the UK's dragonfly species and several thousand other invertebrates. Reed beds are amongst the most important habitats for birds in the UK.

Humid Dune Slacks

Low lying areas within dune systems that are seasonally flooded and where nutrient levels are low. Designated an Annex I habitat, the UK has a significant proportion of the EU resource. In Norfolk it is found on the North Norfolk Coast and Winterton – Horsey Dunes where it presents an extreme of the geographical range and ecological variation of the habitat in the UK.

Lowland Heathland

Occurs on acidic low nutrient soils and is characterised by the presence of a range of dwarf shrubs such as heather and gorse. Heathland in Norfolk (and in the rest of the UK) has declined massively in the last few decades. It is an important habitat for many rare invertebrates, including the silver-studded blue butterfly, and birds such as nightjar and woodlark.

Whitlingham Broad © Darren Oddy

Waterbodies

This includes ponds, lakes, saline lagoons, rivers and drainage ditches.

Saline Lagoons

Partially separated from the adjacent sea, these lagoons often contain invertebrates rarely found elsewhere. They are also important habitats for coastal birds.

Chalk Rivers

85% of the world's chalk rivers are found in England, with a number of them in Norfolk. They are famed for their crystal clear waters and rich plant and invertebrate life.

Drainage Ditches and Lakes in the Broads

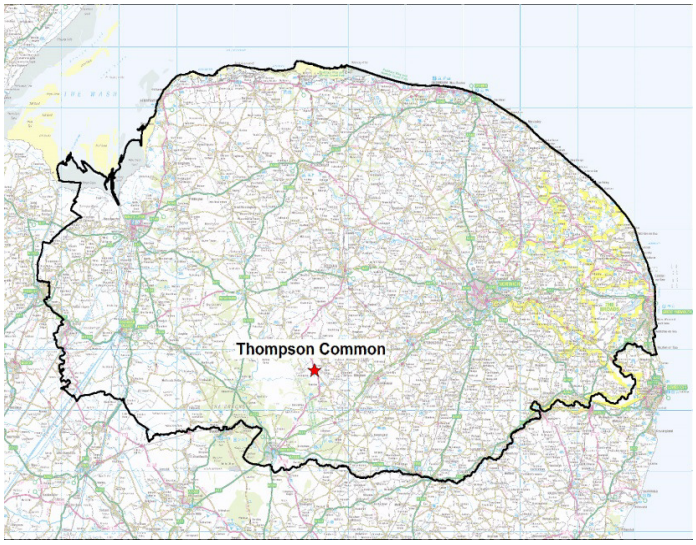
A unique habitat home to a number of rare and scarce species, such as the Norfolk Hawker dragonfly and Water Soldier.

Ponds

Often linked to agriculture, ponds can be oases of biodiversity in an a able landscape. The pingos in the Brecks are a special type of Pond formed during the ice age. They often contain unusually high numbers of rare and scarce species.

Habitat Case Study: Pingos

Most of Norfolk is characterised by the presence of pits and depressions, many of which are of unexplained origin. Research has shown that, while many may be man-made, some depressions date to the last ice age, and were created by freezing ground-ice in periglacial conditions. Periglacial landforms are believed to occur in various parts of Norfolk, most typically in West Norfolk and Breckland, but with some sites also located in central Norfolk and to the north of Norwich. They usually occur where underlying chalk bedrock is close to the surface, mantled by shallow deposits. These depressions, particularly where water-filled, are commonly referred to as 'pingos'. (NBIS & NWT, 2017)



These shallow, fluctuating pools offer a unique habitat for a variety of rare and interesting flora and fauna.

Thompson Common is designated as SSSI, SAC and CWS. Famous for its pingos, Thompson Common has around 400 post-glacial depressions. The site contains an amazing variety of plant communities, with over 400 species recorded. Listed as one of the most important sites in the county for dragonflies and damselflies, this site hosts 19 species, one of which is the scarce emerald damselfly. Over 600 species of beetle and 25 species of butterfly have also been recorded on this site. (NBIS & NWT, 2017)

4-spotted chaser

Sources: http://www.nbis.org.uk, http://www.norfolkbiodiversity.org, http://www.norfolkwildlifetrust.org.uk/wildlife-in-norfolk/nature-reserves/reserves/thompson-common#TabsReserveTabs_TabWildlifehighlights, https://www.norfolkwildlifetrust.org.uk/wildlife-in-norfolk/habitat-explorer/ponds-and-pingos

Habitat case study: Lowland Heathland

Lowland heathland is a priority habitat for nature conservation in the UK. The UK supports approximately 20% of this rare and threatened habitat in Europe. Declines in the extent of lowland heathland have been high over the past two centuries and it is estimated that only one sixth of the heathland that was present in 1800 remains today (JNCC).

Heathland is found on poor sandy soils. These were deforested in the past and kept open through livestock grazing (NCP).

Dominant plants of heather heathland are common ling, bell heather and gorse (NCP). Many Norfolk heathlands are more of a mosaic, with acid grassland and bracken often being significant elements. The heaths of the Brecks are even more distinctive, including chalk grassland and little or no heather (NBAP).

Scarce birds such as nightjar and Dartford Warbler, along with many scarce plants and invertebrates, and reptiles such as adder, slow worm and common lizard are found on heathland (JNCC).

Over 80% of Norfolk's existing heathland and acid grassland is found on a Site of Special Scientific Interest. (NBAP).


North Norfolk heath © Ed Stocker


Silver studded blue butterfly © Graeme Cresswell


Salthouse Heath © Ed Stocker

Sources: Joint Nature Conservation Committee (JNCC):http://jncc.defra.gov.uk/page-1432 Norfolk Biodiversity Action Plan (NBAP): http://www.norfolkbiodiversity.org/pdf/SAPsHAPs/HAPs/lowland%20heathland%20plan%20-%20FINAL%2017%20Nov%202011.pdf
Norfolk Coast Partnership (NCP): http://www.norfolkcoastaonb.org.uk/mediaps/pdfuploads/pd003658.pdf

Protected sites in Norfolk


North Norfolk Saltmarsh © Lizzy Oddy

Type	Number	Area (ha)	County Area (%)
Ramsar	8	22767.5	4.2
SAC	12	27381.0	5
SPA	9	51070.97	9.3
SSSI	163	51118.48	9.3
NNR	22	13227.31	2.4
LNR	28	928.5	0.2
CWS	1352	15330.4	2.8
RNR	111	-	-
CGS	5	-	-
Geodiversity site	370	-	-

Table 2. Number and area of each type of statutory and non-statutory designated sites and the percentage of the county that they cover. Does not include marine designated areas.

What does the site designation mean?

Norfolk contains a wealth of sites notified or protected for their wildlife, geodiversity and landscape value.

Many of these sites are accessible to the general public and they provide a huge draw, bringing visitors and tourists to the county.

Ramsar Sites

Wetlands of international importance are designated under the Ramsar Convention. Many are also very important for birds and are therefore also designated as Special Protection Areas.

Special Areas of Conservation (SAC)

Strictly protected under the EC Habitats Directive and forming part of a European network (Natura 2000), these high quality sites make a significant contribution to conserving habitats and species considered most in need of protection at a European level.

North Norfolk Coast © Darren Oddy

Special Protection Areas (SPA)

Form the other part of the Natura 2000 network and are designated due to their importance for birds, in accordance with the EC Birds Directive.

Wiveton © Sarah Price

Sites of Special Scientific Interest (SSSI)

The country's best sites for wildlife or geology. They have statutory protection under the Wildlife and Countryside Act 1981 as amended by the CROW Act 2000 and the NERC Act 2006. Many SSSIs are also international or European designated sites (Ramsar, SPA, SAC), National Nature Reserves or Local Nature Reserves. Identified and designated by Natural England.

National Nature Reserve (NNR)

Chosen as the best of the SSSIs. In addition to managing rare and significant habitats, species and geology the majority of reserves are accessible and offer fantastic opportunities for people to get close to nature.

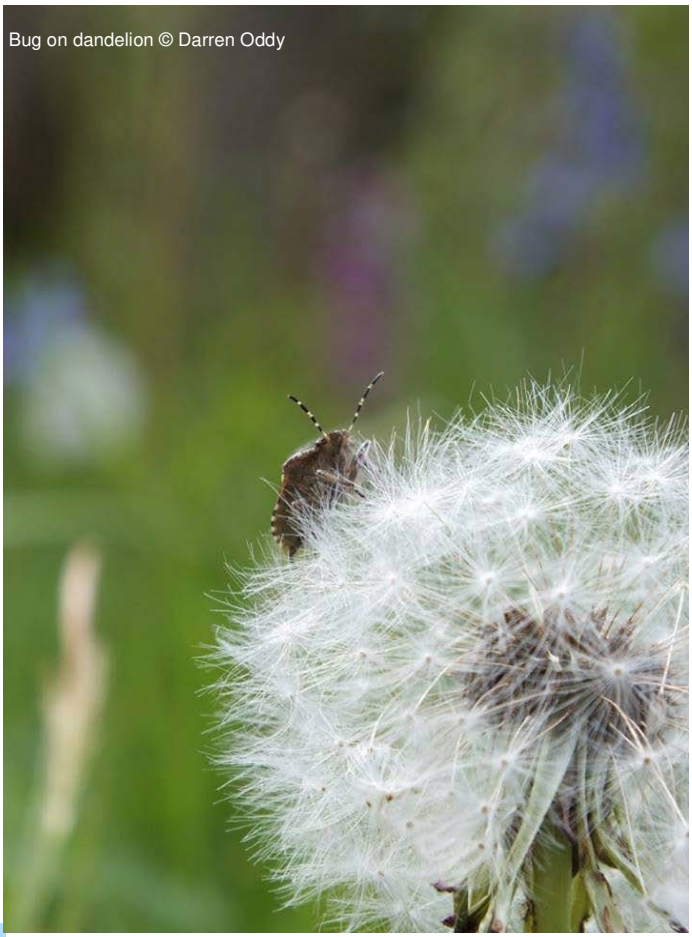

Strumpshaw Fen © Darren Oddy

Local Nature Reserve (LNR)

Designated for the benefit of both people and wildlife. These sites are controlled by Local Authorities in consultation with Natural England, LNRs are important for wildlife, geology, education and/or public enjoyment.

Roadside Nature Reserves (RNR)

Established to protect and promote those road verges in Norfolk containing rare and scarce plant species. Norfolk's road verges are often of special botanical significance and act as havens for wildlife as they are not sprayed or fertilised. Co-ordinated by Norfolk County Council, the RNR scheme brings the most important verges into appropriate conservation management.


Bug on dandelion © Darren Oddy


Gorse © Darren Oddy

County Wildlife Sites (CWS)

Sites considered to be important for wildlife in a county context. They aim to identify, protect and enhance the most important places for wildlife outside legally protected land. While they do not have statutory protection they are taken into account in planning decisions. Many County Wildlife Sites are privately owned and have no public access.

The effect of public access and recreation on Natura 2000 Sites

Natura 2000 sites are Special Protection Areas (SPAs) and Special Areas of Conservation (SACs) designated for their international importance for wildlife. The Conservation of Habitats and Species Regulations 2010 require that plans be assessed for adverse impacts on the Natura 2000 network. Tensions exist on designated sites between their value for biodiversity and their use for recreation.

Types of recreation affecting Natura 2000 sites include dog walking, walking and running, water sports, recreational fishing, cycling, off road vehicles and horse riding.

Currently 60% of Natura 2000 sites in Norfolk are adversely affected by access or recreation (Calculated from Natural England Site Improvement Plans).

In 2017, Norfolk County Council and Norfolk Biodiversity Partnership published the results of an 18 month study to assess the baseline use of Natura 2000 sites for public recreation. The work was commissioned by Norfolk County Council, Norfolk's District Councils and The Wildlife Trust on behalf of all local planning authorities across Norfolk. The full report can be found at http://www.nbis.org.uk/sites/default/files/documents/Norfolkreport130117.pdf

North Norfolk Coast Path © Lizzy Oddy

SSSI and Local Site condition

Sites of Special Scientific Interest (SSSIs) are managed and reported on by Natural England, who regularly assess the state of each land parcel in each SSSI in the country. The categories they are assessed against are: Favourable, Unfavourable Recovering, Unfavourable No Change, Unfavourable Declining, Part Destroyed or Destroyed. When a site is in favourable condition it is deemed to be meeting its conservation objectives.

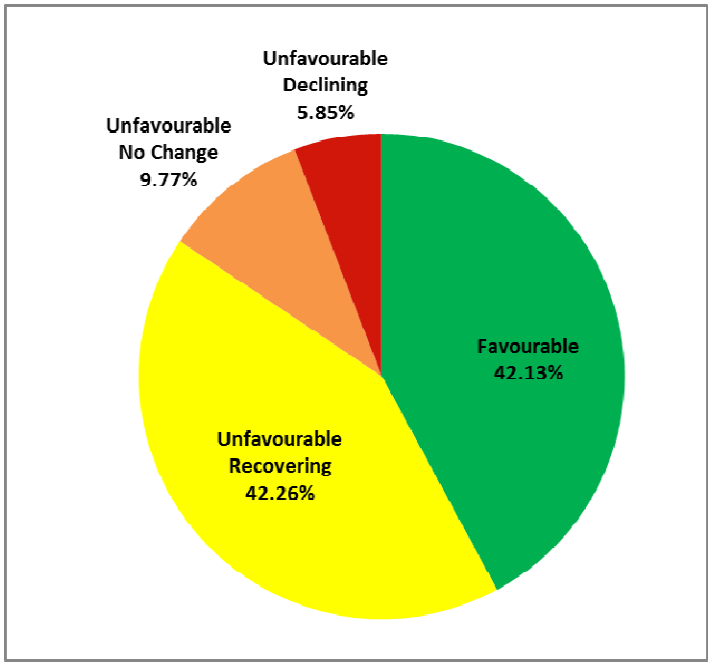


Figure 2. Percentage of SSSI units in each condition. (data from Natural England website accessed Aug 2018)

NBIS reports back to central government on Single Data List 160-00 (formerly NI197) on the proportion of local sites (non-statutory sites designated for their biodiversity or geodiversity value) in positive conservation management. Figure 2 shows the latest results for 2016-17 by district and for the county as a whole. Overall 75% of local sites in Norfolk are in positive conservation management. This compares very favourably to an average of 50% for the whole of England.

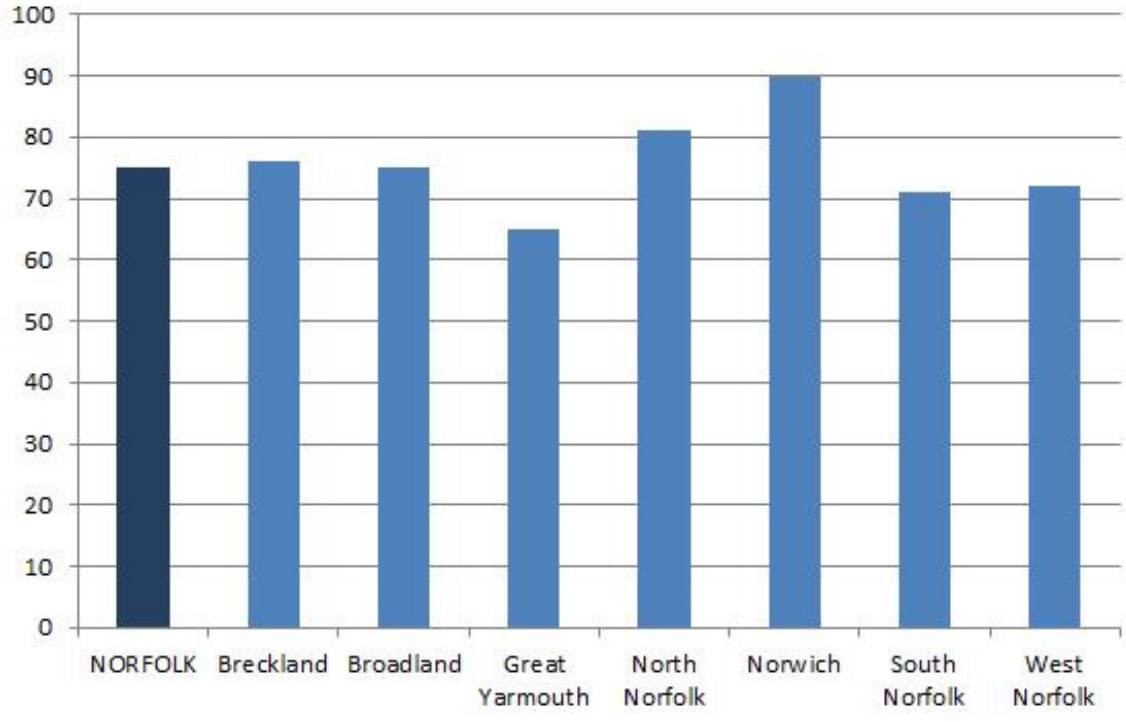


Figure 3. Percentage of Local Sites (by district) in positive conservation management 2016-17.

Protected site case study: Whitwell Common SSSI

Case study by Ed Stocker, NCC and Whitwell Common Management Committee

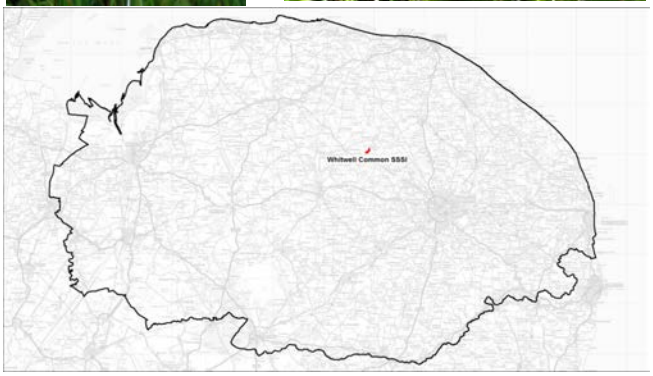
Whitwell Common SSSI is a rare spring fed valley fen that adjoins a tributary of the River Wensum (SAC, SSSI) within the parish of Reepham, Norfolk. It represents one of the last remaining fragments of classic Norfolk river valley habitat, and contains a fantastic range of orchids, wildflowers, invertebrates and birds. Covering nearly 20 hectares it provides us with a fascinating glimpse of a type of landscape and wildlife that has all but disappeared.
The variety of habitats and lack of disturbance on the common makes it a wonderful place to visit at any time of year, but the site is particularly special in summer when there is an exceptional display of native plants, dragonflies, nesting birds, butterflies and moths.

Whitwell Common SSSI has been maintained for over 20 years by a management committee of local Trustees, Norfolk County Council, Natural England, and in recent years The Hawk and Owl Trust, based at Sculthorpe Moor.

In April 2014 the committee began a project to fence the important area of the common and graze with highland cows. They applied to the Secretary of State for the Environment for approval to fence common land. At around the same time, they began looking for funding for the project, and approached the Biffa Awards scheme for a grant to pay for fencing, a corral for the livestock, ditch clearance and a sluice gate to manage the water levels on the site. The Biffa Awards were very excited by the idea for local sustainable management for the site and offered the full funding.

The project culminated on a sunny evening in July 2017 when two Highland cows provided by Stephen Yarham arrived on the site. They were watched by local people, Bishop Tony Footitt (a retired Trustee), Peter Lambley (a previous site advisor from English Nature and a continual supporter), long serving contractors, the Trustees and local reporters to record the occasion.

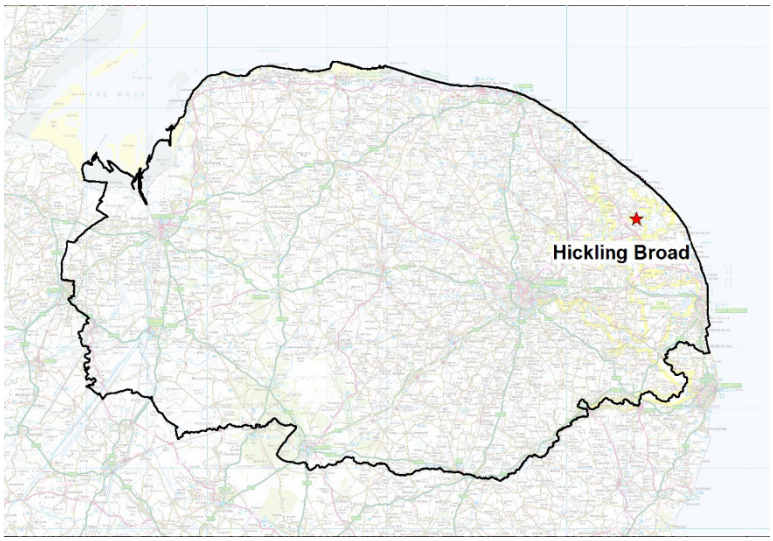
Follow them on Facebook: Whitwell Common SSSI Facebook Page



Photos from Ed Stocker: Marsh Hellieorine; Bog Pimpernel; Highland Cow in pond

Protected site case study: Hickling Broad NNR, SSSI, Ramsar, SPA and SAC

Hickling Broad is a 585 hectare National Nature Reserve in the Norfolk Broads. The site is designated as part of the Upper Thurne Broads and Marshes Site of Special Scientific Interest which includes Horsey Mere and Martham Broad. The international importance of this area has been recognised in its designation as a Broads Ramsar site.
(NBIS, NWT, NE, 2017)



The largest of the Norfolk Broads, Hickling is a year-round haven for wildlife encompassing a range of wetland habitats including open water, reedbed and grazing marsh. The site holds a significant percentage of the UK population of the common crane as well as bittern, marsh harrier, bearded tit and Cetti's warbler. The broad is home to two of Norfolk's most iconic species, the swallowtail butterfly and Norfolk hawker dragonfly as well as many other rare invertebrate species.
(NBIS, NWT, NE, 2017)

Historically the area has been drained for arable cultivation. Increased levels of salinity have a significant impact on water quality and consequently on rare aquatic plants such as stoneworts. The area is low-lying and vulnerable to flooding, causing concern with sea level rise and climate change.
(NBIS, NWT, NE, 2017)

Sources: http://www.nbis.org.uk, https://www.gov.uk/government/publications/norfolks-national-nature-reserves/norfolks-national-nature-reserves#hickling-broad, http://www.norfolkwildlifetrust.org.uk/a-living-landscape/upper-thurne

Arable field, North Norfolk © Darren Oddy