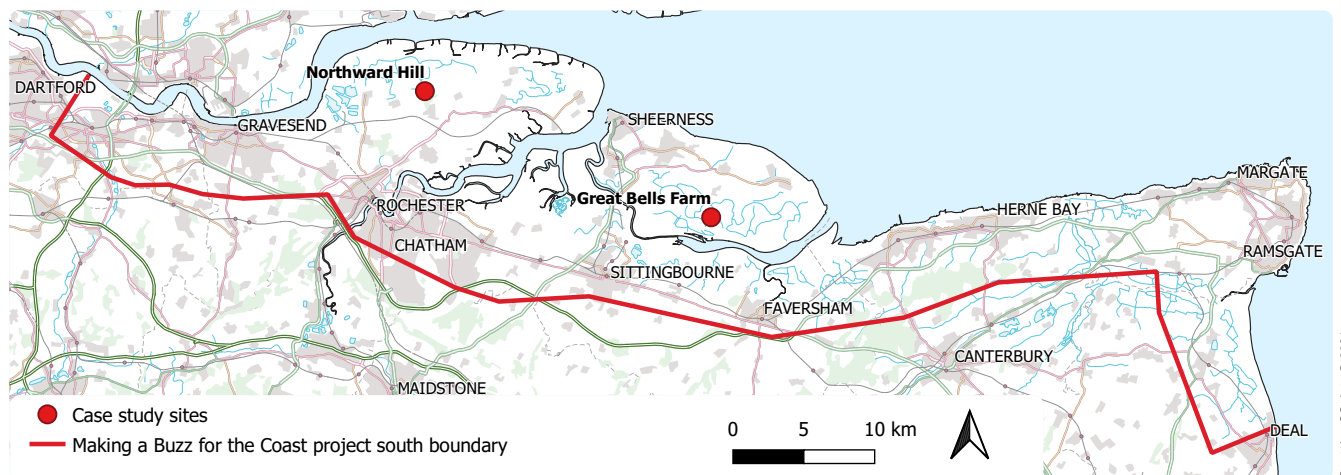


Making a Buzz for the Coast

The north Kent coast is recognised nationally for the diversity of bumblebee species it supports with 22 of the 24 UK species, including five of the seven nationally rare and scarce bumblebees. Much of Kent's cultural and economic heritage is intrinsically linked to bees, with a landscape of orchards, arable flowering crops and grassland. Kent's bumblebee diversity can be linked to its varied habitats and the milder southern climate.



The Making a Buzz for the Coast project was set up to re-address the decline and help to conserve wild bees in north Kent. Making a Buzz for the Coast is working to safeguard Kent's wild bees, focusing on coastal areas from Dartford to Deal. The aims of this ambitious project, are 1) to create and restore flower-rich habitat 2) recruit, train and support volunteers to take action for bumblebees and other wild bees 3) raise awareness about the value of these important insects and their conservation needs.

Making a Buzz for the Coast is a multi-partner project led by Bumblebee Conservation Trust (BBCT) and with key partners including Kent Wildlife Trust, Kent County Council, Natural England, Royal Society for the Protection of Birds, Swale Borough Council, Thames Water and Thanet District Council, as well as numerous landowners and supporters. Its primary funder is the National Lottery Heritage Fund.

Site introduction

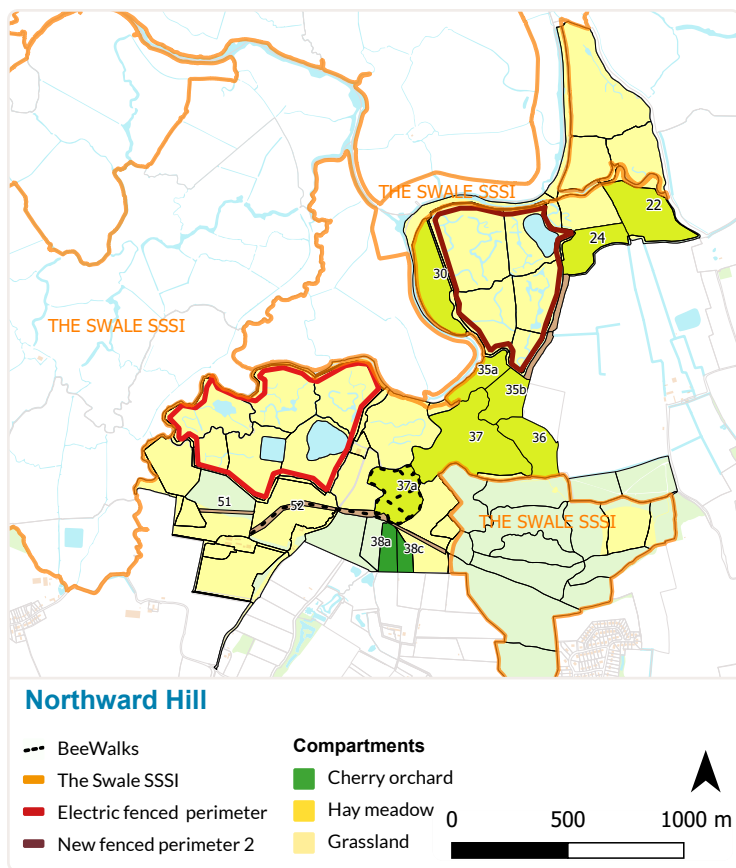
The RSPB manage two grazing marsh nature reserves situated on the north Kent coast; Northward Hill and Great Bells Farm. Both sites are managed by RSPB wardens, RSPB lead volunteer teams and graziers.

Great Bells Farm RSPB Reserve is a 195ha site of ex-arable wet grassland (grazing marsh) reversion with a smaller area of higher grassland managed as hay meadows. This reserve is owned by the Environment Agency (EA) and located at the southern coastline of the Isle of Sheppey. The surrounding land consists of Swale estuary to the south of the site with sea wall habitat and salt-marsh along the southern boundary. Arable land surrounds the other boundaries, and a prison borders the site to the North. The littoral sediment habitat to the south of the site is SSSI and RAMSAR designated.

Northward Hill RSPB Reserve is a 257ha site located on the Hoo Peninsular at High Halstow consisting of ex-arable reversion to wet grassland, as well as reed bed, hay meadows, scrub and woodland habitats and contains the largest heronry in Britain. Some of the site is under a Higher Level Stewardship agreement from 2010–2020 so derogations were needed to implement bumblebee habitat improvements. Parts of the site are designated as SSSI, NNR, SPA, and Ramsar.

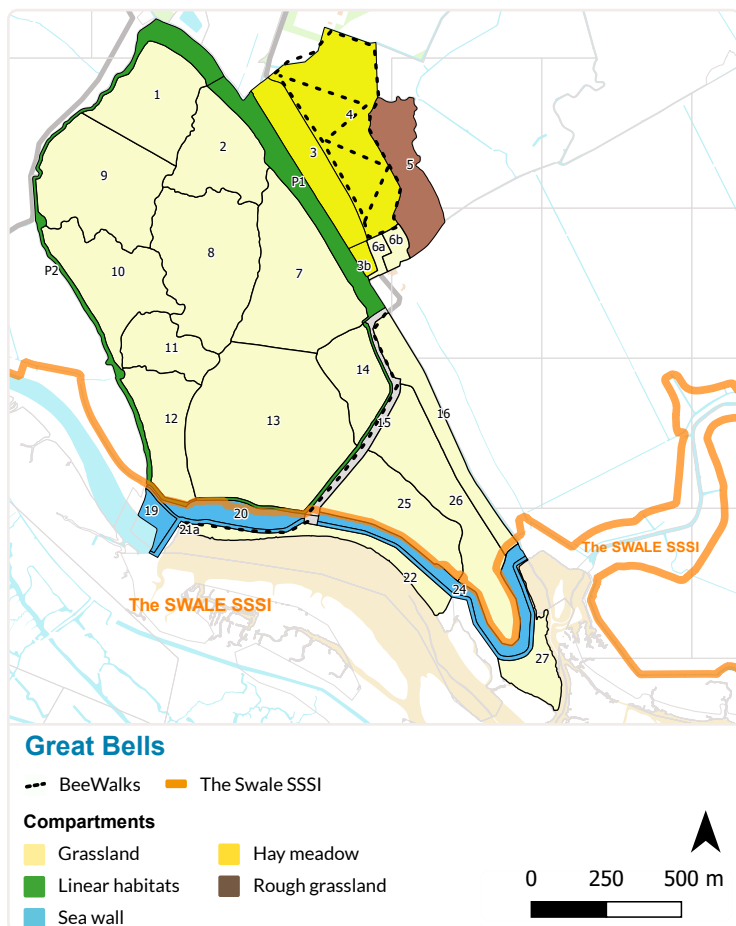
Surrounding Northward Hill the land is predominantly grazing marsh, arable and orchards, with the Thames Estuary to the north of the site. South Thames Estuary and Marshes (SSSI and RAMSAR) is to the west and north.

Both sites are primarily managed for breeding waders, wintering wildfowl and Water vole as well as other priority species such as nightingale, turtle dove and white-letter hairstreak butterfly at Northward Hill.



Shrill carder bee is a late-emerging species of open, flower-rich landscapes and requires abundant forage close to suitable nesting areas, throughout its flight season (April–October).

Nesting occurs in rough, often tussocky grassland either on or slightly below the surface of the ground. Old small mammal burrows may be used. This habitat is also used by other rare carder bees; the Brown-banded carder bee, Moss carder bee and Red-shanked carder bee.



Grazing marshes and rare bumblebees

Four Section 41 (NERC Act 2006) bumblebee species were recorded at Great Bells prior to the project; Shrill carder bee (*Bombus sylvarum*), Moss carder bee (*B. muscorum*), Brown-banded carder bee (*B. humilis*) and the Red-shanked carder bee (*Bombus ruderarius*). In addition, the Ruderal bumblebee (*Bombus ruderatus*) was added to this list in 2019 during project surveys. A large nesting aggregation (20m) of the rare Sea Aster mining bee (*Colletes halophilus*) was discovered in 2019 on the sea wall in Compartment 20; with the last record of this species on site dating back to 1973.

Similarly at Northward Hill three Section 41 bumblebee species were recorded prior to the project; Shrill carder bee, Brown-banded carder bee and the Red-shanked carder bee. In addition, the Ruderal bumblebee was added to this list in 2019 during project surveys.

Rare carder bumblebees and their requirements

The Shrill carder bee is one of the rarest and most vulnerable bumblebee species in England and Wales; now only found in five isolated population areas across England and Wales. The

Habitat management and site condition

14.5ha of Northward Hill and 37.8ha of Great Bells Farm RSPB Nature Reserve are included in Making a Buzz for the Coast management plans written during the development phase of the project.

Previous management

The grassland areas of both sites are managed as grazing marsh and hay meadows. Management of the hay meadows is undertaken by the grazier, and prior to the project involved a single hay cut in early-mid July, followed by aftermath grazing from September until early December. This hay cut is a vital part of the graziers' business and is used as cattle feed for their own animals over winter; graziers were therefore an important part of the discussions when changing management of the hay meadows.

Management of woodland and scrub areas and orchards at Northward Hill is undertaken by RSPB staff and volunteers. Rotational clearance of rides and openings within scrub areas is done annually to create a mosaic of habitats.

Sea wall grassland habitat at Great Bells Farm is managed by the EA with cut and drop method carried out for asset management purposes in either late summer or early autumn. The berm of the sea wall at Great Bells Farm is managed by



Photo-credit: Kate Fidczuk-Stern/BBC.

Seed collection task day at Great Bells Farm.



Photo-credit: Kate Fidczuk-Stern/BBC.

White dead-nettle task day.



Photo-credit: Kate Fidczuk-Stern/BBC.

Track way forage at Great Bells Farm.

RSPB graziers with cattle moved in to compartments on an ad-hoc basis.

New management

Key priorities identified for the grazing marsh sites were to restore hay meadows, and increase the floristic diversity and the season long abundance of forage for bumblebees and other pollinators.

To address this the hay meadow management was adapted with the hay cut recommended to be pushed back to late July/August with large margins left around compartments until aftermath grazing commences in autumn/winter; providing forage for late flying rare carder bumblebee species. During the course of the project, the hay meadow cuts were not postponed but large margins (5–8m) helped compensate the slightly earlier cuts.

Chosen hay meadows at both sites were lightly scarified and over-seeded with a bespoke UK native wildflower meadow mix to increase the floristic diversity. Yellow rattle was added to the mixes at both sites to tackle coarse grass dominance, with reassurance to the graziers that this plant could be removed easily (due to its annual nature) if it started to take over and change the composition of the sward too drastically.

Soils samples were taken prior to seeding to help decide which meadow would respond the best to seed addition (lower fertility areas) and what seed mix would suit the soil type.

Targeted and rotational grazing regimes were implemented within rank grassland areas at both reserves to create high quality tussocky grassland habitat, providing suitable nesting for the rare carder bumblebees on site. Grazing and targeting topping was also used to tackle weed burden from Creeping thistle and Bristly ox-tongue.

Two large linear bee banks have been created at Great Bells Farm to provide more space for solitary ground nesting bees, positioned close to existing bee ground nesting habitat.

Plant propagation

Multiple volunteer conservation task days were organised every year focusing on increasing the abundance of key bumblebee forage plants; this entailed collecting seed and plant cuttings from Dead-nettle (Lamiaceae) family and teasel from site to promote local plant provenance. These were then grown on by the Making a Buzz for the Coast conservation officer and planted back on to site the next year as plug plants. The decision to create plug plants instead of sowing seed was made due to seed sown in the first year being unsuccessful; plug plants stand a better chance of establishing.

Volunteer engagement

Over the course of the project many successful volunteer task days were organised with both existing RSPB volunteers and Making a Buzz for the Coast volunteers. Overall, 24 task days were ran with 140 attendees across both sites involving a large range of activities.

Clearing around existing patches of forage plants was an important volunteer activity; creating bare ground ready for seed drop, therefore extending the coverage of these species. This was incredibly successful with patches of white dead nettle doubling in areas at Northward Hill.

Feedback from volunteers has been incredibly positive not only from a social standpoint but for the bumblebee, habitat management, botanical and horticultural knowledge they have learnt due to attending these events.

Survey and monitoring overview

Baseline monitoring for plants and bumblebees took place in 2015 and 2016.

During 2018, 2019 and 2020 plant monitoring has taken place on site. Surveys take place three times a year in the bumblebee flight season (early, mid and later season surveys). 1m² quadrats were randomly selected across

Compartment 37a and footpaths through scrub areas at Northward Hill and Compartments 4 and 20 at Great Bells. All plant species were recorded within each. The percentage cover of each species was estimated and other measurements were taken such as vegetation height and percentage of bare ground.

In 2018, five bumblebee transects were set in compartments across both sites using the BeeWalk methodology, which forms part of Bumblebee Conservation Trust's national monitoring scheme. Bumblebees are counted monthly along this fixed route between March and October each year. The transects were walked by a Making a Buzz for the Coast conservation officer with the help of RSPB wardens, interns and volunteers; and it is hoped the monitoring will continue after the project ends.

Results

Baseline surveys

Baseline surveys reveal that there is a good range of positive indicator forage species suitable for a diversity of long and short-tongued bee and other pollinator species particularly in the summer months across the hay meadows but also a weed burden from species such as Bristly ox-tongue and Creeping thistle. Early spring forage is abundant in places due to flowering hedgerows such as Hawthorn and Blackthorn as well as White dead-nettle.

Teasel and Black horehound are great sources of late summer forage and is present at both sites but limited to certain areas.

2017-2020 survey results

Botanical survey

The botanical surveys between 2018–2020 provided a consistent record of the presence of existing flowering species, with species recorded across hay meadows, sea wall and trackways. However, the planned wildflower reseedling work, which was undertaken to increase floristic diversity, was carried out too late for its potential benefit to add to the overall botanical record. Hopefully, greater species diversity will be recorded in the longer-term.

Bee survey results

The Shrill carder bee has been a regular summer visitor at both reserves, with Northward Hill seeing particularly high numbers every year of the project from April onwards; 14 recorded over the three years of BeeWalk with an additional 20 recorded via iRecord by the project team. Great Bells saw good numbers mainly at the end of the season with 21 recorded during BeeWalks in July and August. Brown-banded carder bees were also recorded at both sites during Bee Walks with five recorded at Great Bells and 14 at Northward Hill. Many more records were submitted to iRecord on an ad-hoc basis.

A further nationally scarce bumblebee species was recorded at both reserves in 2019 – the Ruderal bumblebee. This bumblebee has not been recorded on either site previously and provides an exciting addition to the already rare and scarce bees found. A potential Moss carder bee was recorded on the sea wall at Great Bells but the identification was not verified. Unfortunately, the previously recorded Red-shanked carder bee was not recorded during the project surveys.



Photo credit: Kate Fidczuk-Stern/Bumblebee Conservation Trust

Shrill carder bee, on White dead-nettle.

Ongoing management

The RSPB wardens will continue to implement the bumblebee management plan on both sites and liaise and support the graziers to make sure large margins are left and grazing takes place at the right time. We also hope that the EA will adapt the cutting of the sea wall to further benefit the rare carder bumblebees found on site.

