Tunbridge Wells Commons

Indicator Species

Survey & Monitoring Project

Dolphin Ecological Surveys 2023

Contents

Introduction

In 2023 the Commons' Freehold Tenants commissioned Dolphin Ecological Surveys to produce new Ecological Management Plans (EMP) for Tunbridge Wells and Rusthall Commons.

A preliminary data review for the EMPs identified the opportunity to introduce botanical monitoring of key habitats on the Commons using indicator species. It stated:

> *"Some plants are strongly associated with particular habitats of conservation importance ("indicator species"). Many indicator species themselves are rare/scarce either locally or nationally. Their presence in a particular area can help to target where habitat restoration will be most effective. They may also be important when monitoring management outcomes".*

> and

> *"Targeted botanical surveys for the more scarce indicator species would be helpful to establish their current status on the Commons".*

This report sets out some suggestions for a botanical survey and monitoring project based on finding and mapping indicator species as well as additional rare plant populations that could be monitored.

Community Engagement

Since community engagement is very important to the Commons Conservators and the site management team, visitors to the Commons are already encouraged to submit wildlife sightings to iNaturalist and to the Tunbridge Wells Commons Facebook group. This indicator species project could build on the existing enthusiasm for spotting wildflowers and provide an excellent opportunity for volunteers to become involved in an ongoing citizen science activity on the Commons.

Some botanical monitoring already takes place on the Commons. A team of volunteers carry out detailed annual counts of Coralroot, which has yielded valuable data on changes in the populations of this rare plant over recent years. Separately Dr Ian Beavis carries out annual counts of Harebell populations on both Commons as well as recording a wide range of fauna and flora with an emphasis on the aculeate hymenoptera.

The initial scale and scope of the indicator species project will depend on how many volunteers wish to take part and on their plant identification skills. Taking a gradual approach and adapting the project as it develops will allow people time to build up their confidence and engagement. Demanding too much from volunteers could easily make the scheme less enjoyable for participants.

At least one member of the Kent Botanical Recording Group (KBRG) is keen to be involved in the new indicator species project. Members of the group may be able to support other volunteers to hone their ID skills and perhaps help to set up the monitoring scheme.

Selecting Indicator Species

In 2003 Joyce Pitt carried out a habitat survey of the Commons and mapped areas of ecologically important heathland and grassland habitats (see Appendix). A repeat survey by the same surveyor is scheduled for 2024, which will provide an invaluable insight into habitat changes over the last two decades.

In order to produce a bespoke set of positive and negative indicator species for valuable grassland and heathy areas on the Commons, the areas mapped in 2003 were visited in July 2023 by Kate Ryland of Dolphin Ecological Surveys. The vegetation in each area was assessed and a set of indicator species, suitable for this project, was chosen.

The 13 positive indicator species are shown in Table 1 with their flowering periods. There is significant overlap between the species found in acid grassland and in heathy vegetation, which often occur together as a mosaic.

Some of the positive indicator species are quite widespread (such as Pignut, Sheep's Sorrel and Tormentil) others are much rarer and have so far only been recorded in a few locations on the Commons (for example Bird's-foot and Heath Grass). All the plants have a strong association with the priority habitats and finding them in new locations would be very helpful in terms of planning future habitat restoration.

Recording negative indicators, shown in Table 2, will be a useful part of monitoring the condition of valuable habitats over time.

Table 1. Positive Indicators

Common Name	Scientific Name	Flowering Period	Typical Habitat(s)
Early Hair-grass	*Aira praecox*	April - June	Acid grassland
Bird's-foot	*Ornithopus perpusillus*	April - August	Acid grassland
Pignut	*Conopodium majus*	May - June	Grassland & woodland edge
Buck's-horn Plantain	*Plantago coronopus*	May - July	Acid grassland
Sheep's Sorrel	*Rumex acetosella*	May - September	Acid grassland
Wavy Hair-grass	*Deschampsia flexuosa*	June - July	Heathland
Common Spotted-orchid	*Dactylorhiza fuchsii*	June - August	Neutral grassland
Heath Bedstraw	*Galium saxatile*	June - August	Grassland & heathland
Heath Grass	*Danthonia decumbens*	June - August	Grassland & heathland
Tormentil	*Potentilla erecta*	June - September	Grassland & heathland
Harebell	*Campanula rotundifolia*	July - September	Grassland
Ling	*Calluna vulgaris*	July - September	Heathland
Purple Moor-grass	*Molinia caerulea*	July - September	Heathland

Table 2. Negative Indicators

Common Name	Scientific Name
Woody seedlings & saplings	
Bracken	*Pteridium aquilinum*
Bramble	*Rubus fruticosus agg.*

The Indicator Species Project

Setting Up

There are potentially two strands to the indicator species project:

- Surveying plants (finding and recording their locations)

- Monitoring the abundance of plants (to measure changes over time).

The data generated by this citizen science project could be useful in different ways that can be summarised in broad terms:

- Finding and mapping new locations for positive indicator species (away from the known core habitats) will help to identify where the soil type and seedbank is likely to be most suitable for habitat restoration. Restoring and connecting ecologically important heathland and grassland habitats is a key objective of management on the Commons.

- Monitoring habitat condition in core areas of heathland and grassland vegetation using changes in the number and/or abundance of different positive indicator species.

- Increasing numbers of species and greater abundance over time suggests improving condition and a decrease in either measure would indicate deterioration.

Organising a citizen science project of this kind can be time-consuming and good results often depend on keeping it simple, especially in the early phases. The different options for collecting data, either digitally or on paper, and how the information generated will be collected and collated are important considerations (see below). Publicity and informal training events would help to generate interest and enthusiasm.

Volunteers will have a range of skills and will include complete beginners as well as more experienced botanists. The indicator species were chosen with this in mind and most of them are wildflowers that are reasonably easy to identify by non-specialists when they are in flower. There are also four grass species that are more challenging to identify but which were included as very strong associates of high value habitats. With practice these too are reasonably easy to spot when they are in flower.

Surveying

Volunteers should be asked to record when and where they see any of the positive indicator species, especially when they occur away from known areas of high value habitat (see Appendix maps). Taking photos of plants to confirm identification should be encouraged.

A project framework should include the following elements:

- An indicator species project pack for volunteers. This should contain a laminated (or digital) photographic ID crib sheet of the indicator species and simple sketch maps of the Commons (which would not require OS copyright).

- A simple recording sheet as part of the pack. It should include prompts for the recorder's name, the date, the location, which indicator species were recorded, how many/how large an area they cover and any other comments.

- Volunteers should be asked to search for the positive indicator species and record their locations (ideally with an indication of the number of plants or what area they cover).

- Either the iNaturalist app or paper maps could be used to record where indicator species are found.

- Use of resources such as wildflower identification books or online apps could be encouraged to help confirm records.

- Working in small groups should be encouraged to add to the enjoyment of survey and monitoring work and help participants to gain confidence in botanical skills.

Monitoring

An indicator species monitoring scheme could be developed if the survey project proves popular with volunteers.

Monitoring changes in the populations of both positive and negative indicator species within defined, core areas of key habitats could give a useful measure of any changes in habitat condition as a result of management actions.

In addition to recording the number and abundance of positive indicator species, the presence and extent of negative indicator species should also be recorded as part of the monitoring process.

Negative indicator species may occur on habitats in poor condition and usually become established as a result of inappropriate management, neglect or elevated soil nutrient levels. They will increase if the cause of decline is not addressed.

Negative indicator species (Table 2) tend to be bulky and/or competitive species that can suppress diverse vegetation and positive indicator species. These plants do occur at different frequency in many areas of key habitat on the Commons and management activities aim to decrease their abundance.

Monitoring Rare Species

Some plants are currently known from only one or two locations on the Commons, notably Coralroot, Bilberry, Chamomile, Harebell and Imperforate St John's-wort. These species are also strongly associated with high quality habitats on old, undisturbed soils.

If there is sufficient interest from volunteers then extending the current rare species monitoring work from Coralroot and Harebell to include more of the site rarities would be very valuable to ensure that management of their habitats is appropriate.

- Bilberry and Chamomile are particularly suitable for monitoring by volunteers as they are easy to identify.

- Imperforate St John's-wort is much more challenging to identify with confidence and may be best left to experienced botanists from KBRG.

Additional records of any of these rare plants at new locations on the Commons would be important and volunteer plant surveyors should be encouraged to report any sightings.

Whilst Chamomile is only known from the Lower Cricket Ground on Tunbridge Wells Common there is an old record from Rusthall Common and it could conceivably be present elsewhere on the Commons in short grassland swards.

Table 3. Rare Species on the Common

Common Name	Scientific Name	Flowering Period	Habitat(s)
Coralroot	*Cardamine bulbifera*	April - June	Woodland (both Commons)
Bilberry	*Vaccinium myrtillus*	April - June	Woodland (Rusthall Common)
Chamomile	*Chamaemelum nobile*	June - July	Grassland (Tunbridge Wells Common)
Imperforate St John's-wort	*Hypericum maculatum*	June - August	Grassland & Road Verge (Tunbridge Wells Common)
Harebell	*Campanula rotundifolia*	July - September	Grassland (both Commons)

Appendix

Key Habitats & Species Maps 2003 & 2023

Key Habitats & Species Maps 2003 & 2023

Habitat Survey Map 2003 (from 2005 Management Plan)

Appendix 3: Habitat Survey, 2003. Habitat Map, based on survey work undertaken by Joyce Pitt. *Representation only. Do not scale.*

Key

- Neutral grassland
- acid grassland
- acid / neutral grassland mosaic
- Marshy grassland
- Heathy vegetation
- Water bodies
- Woodland and scrub
- Wood pasture
- Ruderal vegetation
- Bare ground
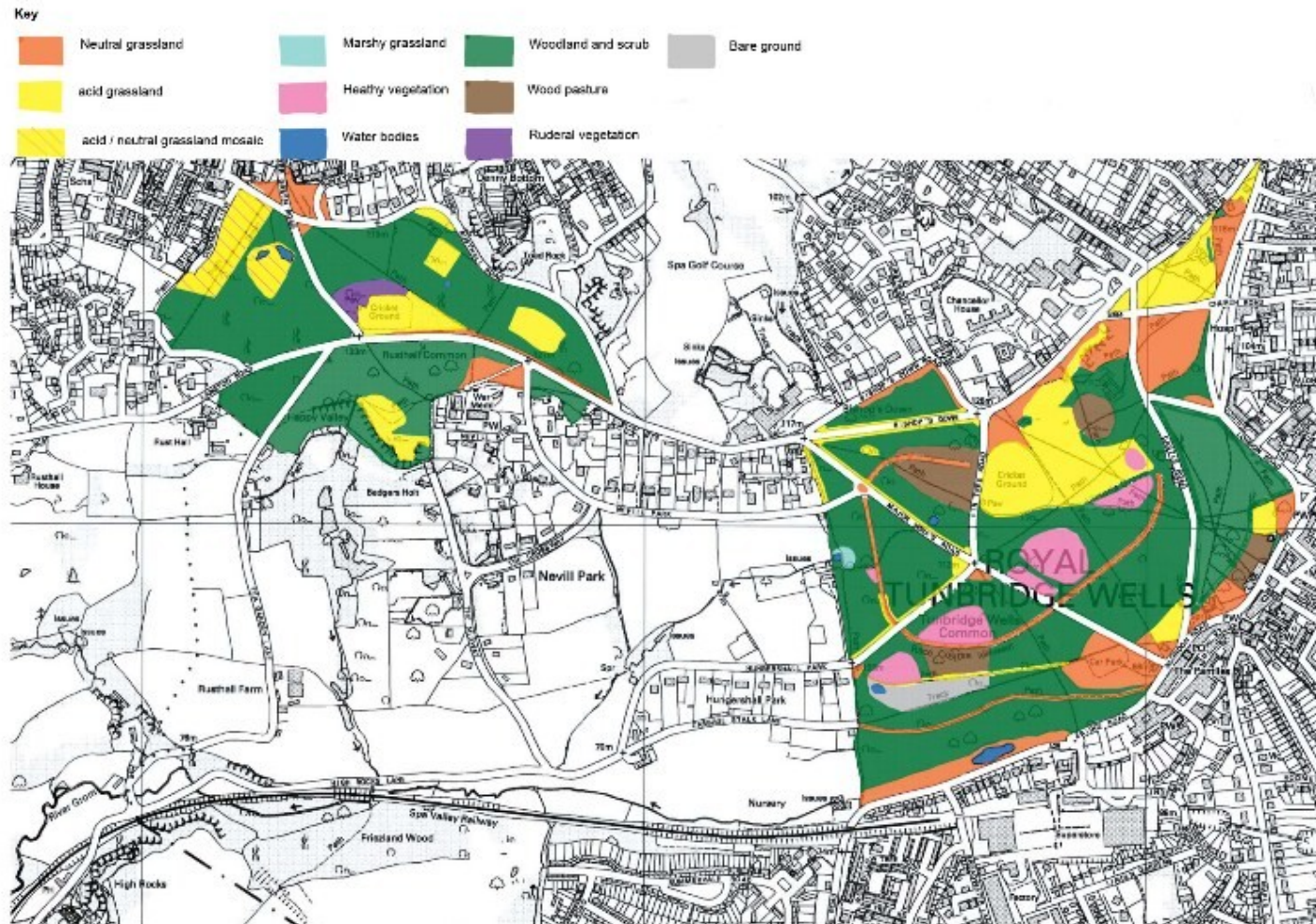
Key Habitat Areas & Species 2023 (from 2023 Ecological Management Plans)

Rusthall Common
Key Habitats, Features
& Species

Legend:
- Sandrock formations
- Valuable & flowery grassland
- Ponds
- Heathy woodland
- Gorse slope

① Royal Fern
② Bilberry
③ Harebell
④ Coralroot
⑤ White Bryony
⑥ Great Crested Newt
⑦ Long-horned Bee

Spa Golf Course

Rusthall Common

Rusthall

Tunbridge Wells Borough Council

Tunbridge Wells Common
Important Habitats & Species

1 Chamomile
2 Japanese Knotweed (INNS)
3 Ant City
4 Harebell
5 Sandpit
6 Linear Gorse feature
7 Bat Cave
8 Lily-of-the-valley
9 Coralroot
10 Signal Crayfish, Curly Waterweed, Terrapin (INNS)
11 New Zealand Pigmyweed (INNS)

Valuable & flowery grassland

Heathy areas

Sandrock formations

Grass/heath vegetation mosaic

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