Local Wildlife Sites Initiative
SUSSEX

SUSSEX LOCAL WILDLIFE SITE SURVEY REPORT

Ecological Survey of C102 Slipper Mill Pond and Peter Pond

National Grid Reference of Local Wildlife Site: SU753057

Survey Date: 21 July 2021

Surveyor: Dan Watkins

CONTENTS

1.0 Introduction

1.1 Background

Local Wildlife Sites (LWS), formerly known as Sites of Nature Conservation Importance, are a non-statutory designation. They form a comprehensive suite of sites of substantive nature conservation value of at least local (County) importance. LWS designation started in Sussex in the early 1990s.

This ecological survey forms part of a review of LWSs to ensure all areas of substantive nature conservation value are recognised as LWSs, as per national and local guidance. As a result of this review, an LWS may be designated, modified or deleted.

1.2 Aim

This survey aims to gather sufficient ecological information on the site to establish:

- If the site has/retains substantive nature conservation value, in whole, part, or in combination with nearby land; and
- If the site should be designated/modified/retained as an LWS.

2.0 Methods

2.1 Desk Study

Existing biodiversity records from the Sussex Biodiversity Records Centre (2019) were reviewed prior to survey.

2.2 Field Survey

Favourable weather conditions were sought for survey where possible.

Distinct land parcels, as indicated on the survey map, were surveyed separately. Survey areas were traversed on foot, systematically ensuring even coverage of the survey area and habitats present.

All habitats present within the boundary of the LWS were recorded in accordance with UKHab classification and the approximate extent of each habitat type was mapped. A habitat map of the site using UKHab classification is provided in Appendix A. Target Notes are provided in section 3.2 for features that meet or support LWS selection criteria.

Plant species were recorded and their abundance within each survey area was estimated using the DAFOR scale of abundance, which allows rapid visual assessment of the relative abundance of plants over larger areas, as follows:

D =Dominant
A = Abundant
F = Frequent
O = Occasional
R = Rare.

The prefixes L for locally and V for very are also used. For example, 'RLA' indicates rare overall but locally abundant (e.g., an enriched area of ground supporting nettles within a churchyard site).

Species of fauna (including birds, mammals, and invertebrates) were recorded and counted numerically.

DAFOR plant records were recorded to the central point of survey compartments. Mobile species records (e.g., birds) were generally recorded to 100-metre resolution. Notable fauna records were recorded to 10-metre resolution where possible.

The full list of species recorded is provided in Appendix B.

3.0 Results

3.1 Desk Study

Records of notable species from within the site, or in the close vicinity that could make use of the site, were received from the Sussex Biodiversity Record Centre (2021). See Table 1.

Table 1: Desk study records

Common Name	Scientific Name	Date of Record	Designation	Location
Sea Carrot	*Daucus carota* subsp. *gummifer*	11/07/2006	Nat Scarce	By Slipper Pond
Coast Neb	*Monochroa moyses*	08/09/1990	Notable, Sussex Rare	Southbourne CP, Southbourne
Lagoon Cockle	*Cerastoderma glaucum*	2001	Sussex Rare	Slipper Mill Pond, Emsworth
Mouse-eared Snail	*Myosotella myosotis*	12/03/1998	RedList GB post2001 DD	Emsworth, Slipper and Peter Pond
Starlet Sea Anemone	*Nematostella vectensis*	2001, 1998, 1982	WCA Sch5 s9.1/s9.1 kill/s9.1 take/s9.4a/s9.4b/s9.4c/s9.5a, NERC S41, RedList Global post94 VU, Sussex Rare	Emsworth, Slipper and Peter Pond
Tentacled Lagoon-Worm	*Alkmaria romijni*	2001, 1998, 1991, 1987, 1982	WCA Sch5 s9.4a, Nat Scarce Marine, Sussex Rare	Emsworth, Slipper and Peter Pond
European Water Vole	*Arvicola amphibius*	12/08/2014	WCA Sch5 s9.4a/s9.4b/s9.4c, NERC S41, RedList GB post2001 EN, Sussex Rare	Brook meadow, south bridge

3.2 Site Description

The following Target Notes highlight notable features identified from the desk study or the field survey that indicate where the site could meet LWS Selection Criteria.

TN1: NERC S41 Habitat – Saline Lagoon

The Slipper Mill Pond and Peter Pond LWS is located on the east side of Emsworth on the north shore of Chichester Harbour. Peter Pond (TN1a) is fed by the Lumley Stream, a channel of the River Ems.

Photograph 1: Peter Pond looking north

This then flows beneath the A259 into the larger Slipper Mill Pond (TN1b) to the south. Water is then held within the Slipper Mill Pond by a sluice and tidal gate at the southern end of the pond, the gates only opening during spring tides.

Photograph 2: Slipper Mill Pond looking south

These two water bodies together are an example of a saline lagoon. A saline lagoon is defined as a natural or artificial body of saline water that is partially separated from the adjacent sea, and which retains a proportion of its seawater at low tide. The water in a saline lagoon may be brackish, fully saline or hyper-saline (BRIG, 2011). A number of species of crustacean, mollusc, segmented worm, sea anemone and hydrozoan have been recorded from the saline lagoon of Slipper Mill Pond and Peter Pond, including a number of notable species (see Table 1 and TN4).

TN2: Mosaic Habitats

The Slipper Mill Pond and Peter Pond LWS is immediately adjacent to Chichester Harbour, which is afforded a number of statutory nature conservation designations including Ramsar, SAC, SPA and SSSI (see Appendix C). Chichester Harbour contains a number of habitats, including mudflats, saltmarsh and reedbeds, as well as saline lagoons. The saline lagoon and other habitats within the LWS provide a significant and clearly identifiable extension to the habitats of the statutorily designated site.

Photograph 3: Southern end of Slipper Mill Pond showing the sluice gate with Chichester Harbour beyond

TN3: Mosaic Habitats

In addition to the saline lagoon the LWS contains a number of other coastal and wetland habitats along the margins of the two waterbodies, including reedbed, Sea Club-rush *Bolboschoenus maritimus* swamp and saltmarsh, as well as more terrestrial habitats, such as woodland and hedgerows. The reedbed and saltmarsh are both NERC S41 habitats, although both are of rather more limited extent within the LWS. The reedbed (TN3a) was limited largely to the northern end of Peter Pond where it was bisected by a number of channels of the Lumley Stream as the watercourse flows into the waterbody.

Photograph 4: Reedbed on either side of the main channel at the top of Peter Pond

The small extent of saltmarsh comprised two different communities: tall, closed, species-poor swards dominated by abundant Sea Couch *Elytrigia atherica* (TN3b); and short, open, species-rich vegetation (TN3c) containing Golden-samphire *Inula crithmoides*, Saltmarsh Rush *Juncus gerardii*, Brookweed *Samolus valerandi* and Sea Mayweed *Tripleurospermum maritimum*, amongst others.

Photograph 5: Small area of short, open, species-rich saltmarsh vegetation

TN4: Rare Species - Starlet Sea Anemone and Tentacled Lagoon-Worm

Two particularly notable invertebrate species, the Starlet Sea Anemone and the Tentacled Lagoon-Worm, have been recorded from the saline lagoon of Slipper Mill Pond (see Table 1). Both species live in the mud of brackish saline lagoons. TN4 on the habitat map shows the approximate location of records for these species dating from 1998, 1991, 1987 and 1982 (the resolution of the 2001 records was too coarse to include on the map).

4.0 Evaluation and Recommendations

4.1 Threats and Opportunities

Potential threats and opportunities related to the ecological interest of the site include the following:

- The saline conditions of the lagoon must be maintained to provide suitable habitat conditions for the notable invertebrate fauna it contains.
- Potential threats to saline lagoons such as the Slipper Mill Pond and Peter Pond LWS include pollution and, in particular, nutrient enrichment leading to eutrophication (BRIG, 2011).

4.2 Comparison with Results of Previous Survey

Comparison of the current survey results with previous surveys or the citation show the following changes:

- The Slipper Mill Pond and Peter Pond LWS appears to have changed little since the previous citation was prepared in 1997.

4.3 Assessment against LWS Selection Criteria

The site has been assessed against the Sussex LWS Selection Criteria. See Table 2.

Table 2: Sussex LWS Selection Criteria

Sussex Criteria	Yes	No	Comments
NERC Section 41 Habitat or Sussex BAP Habitat	Y		Saline lagoon is a NERC S41 habitat.
Supporting/relict population of internationally, nationally or locally rare species or assemblages (Red Data List, NERC Section 41, Sussex RSI or Sussex BAP)	Y		A number of notable invertebrate species have been recorded from Slipper Mill Pond and Peter Pond, including Starlet Sea Anemone, which is listed as vulnerable on the IUCN red list, Tentacled Lagoon-Worm, Lagoon Cockle and Mouse-eared Snail. Water vole are also known to be present.
Mosaic habitat	Y		The saline lagoon and other habitats within the LWS provide a significant and clearly identifiable extension to the habitats of Chichester Harbour, which is designated as a Ramsar site, SAC, SPA and SSSI.
Wildlife corridors		N	
Sandrock exposure		N	
Site expansion		N	

N/A = criteria either not applied or may not be applicable

The site has also been assessed against the Defra reference criteria for the selection of Local Sites (Defra, 2006). See Table 3.

Table 3: Defra LWS Selection Criteria

DEFRA Criteria	Yes	No	Comments
Size or extent		N	
Rare or exceptional feature (Annex 1, NERC Section 41, Birds of Conservation Concern Red or Amber)	Y		A number of notable invertebrate species have been recorded from Slipper Mill Pond and Peter Pond, including Starlet Sea Anemone, Tentacled Lagoon-Worm, Lagoon Cockle and Mouse-eared Snail. Water vole are also known to be present from Peter Pond.
Diversity	Y		In addition to the saline lagoon the LWS also contains a number of subsidiary habitats, including reedbed, swamp and saltmarsh, as well as woodland, hedgerow and grassland. The saline lagoon supports a diversity of invertebrate fauna, while the subsidiary habitats provide a greater range of habitat conditions that can support a greater number of floral and faunal species.
Fragility (including threats)	Y		The brackish conditions within the saline lagoon must be maintained to ensure that it continues to support the notable invertebrate fauna.
Connectivity within the landscape	Y		The saline lagoon at Slipper Mill Pond and Peter Pond forms part of the wider estuarine system of Chichester Harbour.
Recorded history and cultural association	Y		The Slipper Mill Pond dates from 1760 and was constructed for the Slipper Mill. Peter Pond was constructed in 1805 as an extension to the pond.
Typicalness		N	
Value for appreciation of nature	Y		Both Slipper Mill Pond and Peter Pond are surrounded by a network of public rights of way, allowing public access for the appreciation of nature.
Value for learning		N	
Naturalness (including processes as well as features)		N	

N/A = criteria either not applied or may not be applicable

4.4 Initial Management Recommendations

Initial management recommendations to maintain the ecological interest of the site are as follows:

- The Slipper Mill Pond Preservation Association manages and maintains the Slipper Mill Pond. One of their tasks is maintaining the infrastructure to ensure that the pond retains its brackish saline conditions, it is recommended that this continues.
- The owner of Peter Pond has been maintaining the channels and excavating new ones at the northern end of the waterbody to ensure that adequate flow is maintained, it is recommended that this continues.

4.5 Recommendations for Further Survey

Recommendations for further survey include the following:

- Surveys for the Starlet Sea Anemone and Tentacled Lagoon-Worm were last carried out in 2001; it would be good if these could be repeated to confirm the current status of these notable species within the lagoon.

5.0 References

BRIG (ed. Ant Maddock) (2011) UK Biodiversity Action Plan; Priority Habitat Descriptions

Defra (2006) Local Sites – Guidance on their Identification, Selection and Management

Sussex Biodiversity Record Centre (2021) Ecological data search for land at C102 Slipper Mill Pond and Peter Pond on behalf of Dan Watkins (Sussex LWS partnership), Report reference SxBRC/21/159

Appendix A – Habitat Map

Habitat Map

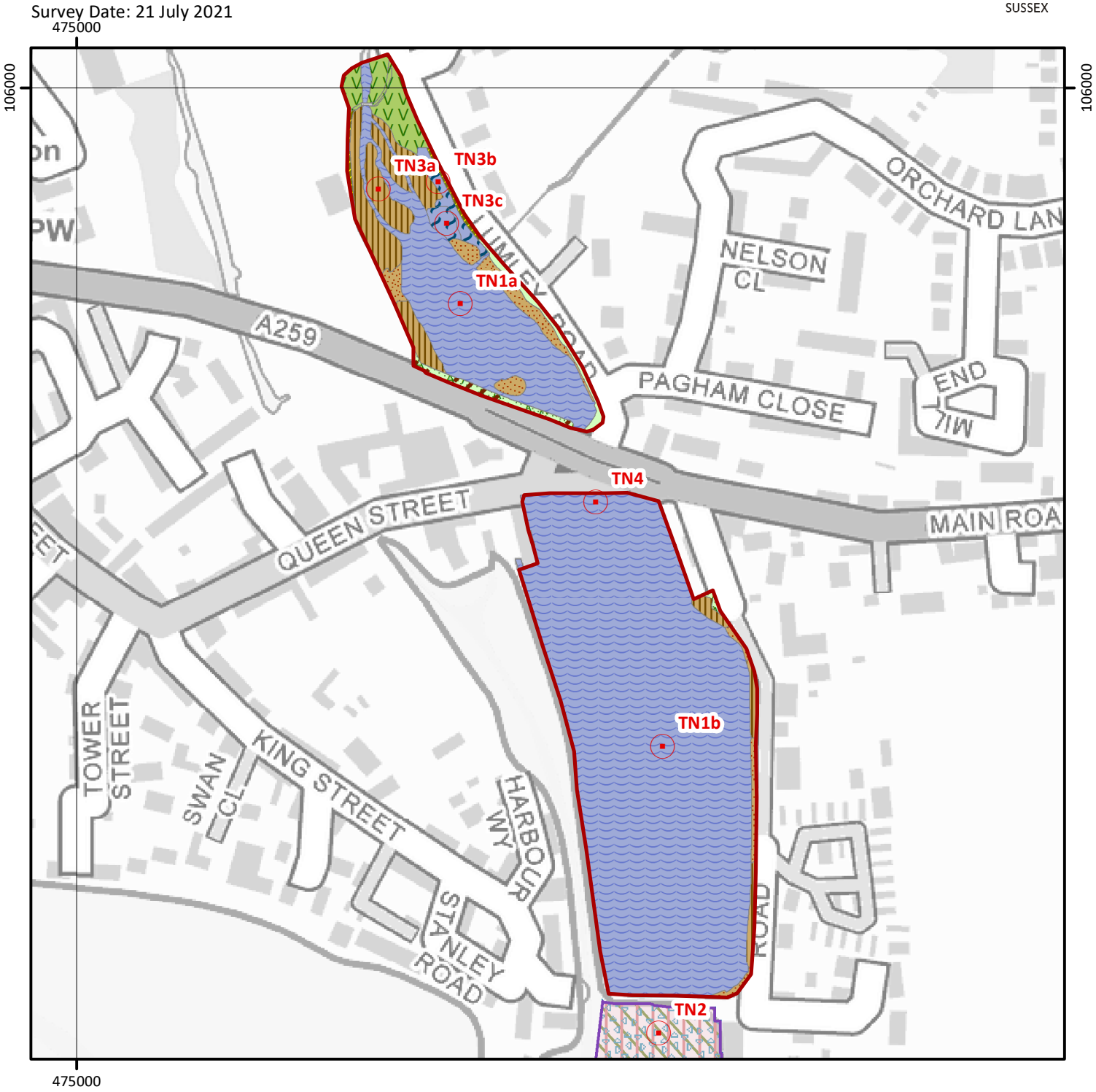
Site Name: Slipper Mill Pond and Peter Pond

Site Code: C102

Survey Date: 21 July 2021

Sussex Biodiversity Record Centre

Local Wildlife Sites Initiative
SUSSEX



Key to Map:

- Local Wildlife Site boundary
- Ramsar
- Special Area of Conservation
- Special Protection Area
- SSSI
- Target Note

1:3,132

0 0.075 0.15 Km

N

Habitat (UKHab Classification)

Primary Habitat (UKHab level 5)

- g3c5 - Arrhenatherum neutral grassland
- f2e - Reedbeds
- f2f - Other swamps
- g3 - Neutral grassland
- h2a - Hedgerow (priority habitat)
- t2a - Coastal saltmarsh
- t2g - (Saline lagoons)
- u1b - Developed land; sealed surface
- u1e - Built linear features
- w1f - Lowland mixed deciduous woodland
- Scattered scrub

Local Wildlife Site boundaries maintained by Sussex Biodiversity Record Centre on behalf of Sussex Local Wildlife Sites Initiative.

Appendix B – Survey Records

Slipper Mill Pond and Peter Pond: Reedbed (TN3a)

Scientific name	Common name	Relative abundance (DAFOR)	Statutory designations	Other designations	Invasive non-native species
Eupatorium cannabinum	Hemp-agrimony	R			
Oenanthe crocata	Hemlock Water-dropwort	R			
Phragmites australis	Common Reed	D			
Sonchus arvensis	Perennial Sow-thistle	R			

Slipper Mill Pond and Peter Pond: Coastal Saltmarsh (TN3b - Tall closed vegetation)

Scientific name	Common name	Relative abundance (DAFOR)	Statutory designations	Other designations	Invasive non-native species
Allium vineale	Wild Onion				
Elytrigia atherica	Sea Couch	A			
Sonchus arvensis	Perennial Sow-thistle				

Slipper Mill Pond and Peter Pond: Coastal Saltmarsh (TN3c - Short open vegetation)

Scientific name	Common name	Relative abundance (DAFOR)	Statutory designations	Other designations	Invasive non-native species
Agrostis stolonifera	Creeping Bent				
Bolboschoenus maritimus	Sea Club-rush				
Chenopodium sp.	Goosefoot species				
Inula crithmoides	Golden-samphire			Nat Scarce, Sussex Rare	
Juncus bufonius	Toad Rush				
Juncus gerardii	Saltmarsh Rush				
Polygonum sp.	Knotgrass species				
Ranunculus sceleratus	Celery-leaved Buttercup				
Samolus valerandi	Brookweed				
Spergularia sp.	Sea-Spurrey species				
Tripleurospermum maritimum	Sea Mayweed				

Slipper Mill Pond and Peter Pond: Other Swamp

Scientific name	Common name	Relative abundance (DAFOR)	Statutory designations	Other designations	Invasive non-native species
Apium graveolens	Wild Celery	R			
Bolboschoenus maritimus	Sea Club-rush	D			
Lythrum salicaria	Purple-loosestrife	R			

Slipper Mill Pond and Peter Pond: Lowland Mixed Deciduous Woodland

Scientific name	Common name	Relative abundance (DAFOR)	Statutory designations	Other designations	Invasive non-native species
Quercus robur	Pedunculate Oak				
Acer pseudoplatanus	Sycamore				
Corylus avellana	Hazel				
Ulmus sp.	Elm species				
Iris foetidissima	Stinking Iris				
Carex pendula	Pendulous Sedge				
Lamium album	White Dead-nettle				
Hedera helix	Ivy				
Rumex sanguineus	Wood Dock				
Stachys sylvatica	Hedge Woundwort				

Slipper Mill Pond and Peter Pond: Hedgerow

Scientific name	Common name	Relative abundance (DAFOR)	Statutory designations	Other designations	Invasive non-native species
Crataegus monogyna	Hawthorn				
Rubus fruticosus agg.	Bramble				
Ulmus sp.	Elm species				
Ilex aquifolium	Holly				
Anthriscus sylvestris	Cow Parsley				

Slipper Mill Pond and Peter Pond: Arrhenatherum Neutral Grassland with Scattered Scrub

Scientific name	Common name	Relative abundance (DAFOR)	Statutory designations	Other designations	Invasive non-native species
Arrhenatherum elatius	False Oat-grass				
Crataegus monogyna	Hawthorn				
Daucus carota subsp. carota	Wild Carrot				
Elytrigia atherica	Sea Couch				
Linaria purpurea	Purple Toadflax				
Ophrys apifera	Bee Orchid				
Sison amomum	Stone Parsley				
Verbascum blattaria	Moth Mullein				

Slipper Mill Pond and Peter Pond: Incidental Faunal Records

Scientific name	Common name	Relative abundance (DAFOR)	Statutory designations	Other designations	Invasive non-native species
Chroicocephalus ridibundus	Black-headed Gull			Bird Amber	
Fulica atra	Coot				
Phalacrocorax carbo	Cormorant				
Anas platyrhynchos	Mallard			Bird Amber	
Gallinula chloropus	Moorhen				
Cygnus olor	Mute Swan			Bird Amber	
Acrocephalus scirpaceus	Reed Warbler				
Calopteryx virgo	Beautiful Demoiselle				

Appendix C – Spatial Context Map

LWS Spatial Context Map

Slipper Mill Pond & Peter Pond

Site Code: C102

Sussex Biodiversity Record Centre

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Key to Map:

- LWS boundary
- Neighbouring LWS

Other site designations:

- Local Nature Reserve
- Site of Special Scientific Interest
- Special Area of Conservation
- Special Protection Area
- Ramsar

0 0.25 0.5 Km

N

1:10,000

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