

Solent Waders and Brent Goose Strategy 2019

Interim Project Report: Year One



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EXECUTIVE SUMMARY

Through its previous two iterations in 2002 and 2010, the Solent Wader and Brent Goose Strategy (SW&BGS) has proven to be a useful tool for planners, developers, statutory consultees, as well as non-governmental organisations. It has been an important tool for highlighting issues where sites proposed for development fall within the important network of sites used by over-wintering wading birds and brent geese, that functionally support the Solent's Special Protection Areas (SPAs).

The primary aims of the project are as follows:

- to identify the network of core areas that are regularly used and are of fundamental importance to over-wintering waterfowl across the Solent;
- to maintain a network of sites through better management and protection from development and recreational pressure, and to ensure that they will be resilient to the pressures of climate change and predicted sea level rise in the future;
- to provide a strategy that will ensure that the network of important sites are protected, whilst reducing the current uncertainty over site use, in order to better inform key coastal stakeholders.

This interim report provides an update to the SW&BGS steering group and project funders for the first year of a three year project to update the Solent Waders and Brent Goose Strategy.

A new suite of maps, GIS layers and bird records have been produced, for use by local authorities and land managers, in conjunction with new mitigation guidance.

The sites have been classified according to a newly developed metric scoring system, which incorporates the results of a bird movement study, to be carried over three years, having begun with the Eastern Solent during the winter of 2016-17.

Twenty-two sites in the Eastern Solent (outside of the SPA) were found to be important in terms of bird movement, acting as "stepping stones" to and from the intertidal areas to inland sites, or between inland sites. Overall, using the new metric method, 76 sites out of a total of 766 across the whole Solent were classified as "core areas", and should therefore be considered important for maintaining the integrity of the ecological network and appropriate mitigation guidance followed should their suitability be threatened through direct loss or as a consequence of negative management.

The survey method and data analysis techniques are described below. The project outputs will be made available via the project website: <https://solentwbgs.wordpress.com/> and Hampshire Biodiversity Information Centre.

INTRODUCTION

The natural and man-made environment of the Solent makes it one of the most important coastal zones in the UK. It provides an internationally important over-wintering area for waterfowl (waders, ducks and geese) and as a consequence the area is afforded protection at International, European and national levels. This suite of protection includes designation under the Ramsar Convention as a wetland of international importance, under European law as a Special Protection Area and under national legislation as a Site of Special Scientific Interest, and locally as County Wildlife Sites.

The Solent qualifies for these designations because it is used regularly by 1% or more of the biogeographic population of key species, including dark-bellied brent goose *Branta bernicla bernicla*, common teal *Anas crecca*, ringed plover *Charadrius hiaticula* and black-tailed godwit *Limosa limosa*, and an outstanding assemblage of wintering and passage birds that are reliant on the wetland habitats within the Solent.

In 2002, the Brent Goose Strategy Steering Group delivered the Brent Goose Strategy, which aimed to provide a proactive and multi-disciplinary approach to resolving conflicts between brent geese and the needs of people along the south-east Hampshire coast. With increased levels of development and a lack of open space, increased pressure was being put on areas that brent geese were using for feeding, often outside the defined SPA boundary, the strategy's aim was to identify these areas to inform decision-making.

In 2010, the strategy was enlarged and expanded to cover the whole of the Hampshire coast and also the north coast of the Isle of Wight; at the same time the breadth of the strategy increased to include over-wintering waders, as well as brent geese. This strategy identified sites where there was regular recorded use, classifying these as "important". Sites where too few records were collected to be confident of regular use (important) were classified as "uncertain". The strategy also used the data gathered to model the features of sites, which make them potentially suitable for use by waders and/or brent geese, creating a set of habitat suitability criteria.

In order for the strategy to continue to function as a useful and important tool for all user groups the decision was taken to take forward the next phase of the strategy. The 2010 strategy focused on the identification of sites in order to raise awareness, but this new strategy looks to prioritise the conservation of the existing key network of sites used by birds and maintain them in favourable management through agreements with landowners and/or land acquisition. Survey work focused on understanding how and when birds use the various sites. The primary aims were as follows:

- to identify the network of sites that are regularly used and are of fundamental importance to over-wintering waterfowl across the Solent;
- to maintain a network of sites through better management and protection from development and recreation pressure and ensure that they will be resilient to the pressures of climate change and predicted sea level rise in the future;
- to provide a strategy that will ensure that the network of important sites are protected whilst reducing current uncertainty in order to better inform key stakeholders of the ecological network required to support over-wintering waterfowl using the Solent.

METHODS

In order to update the strategy, three years ground-truthing and bird movement survey work has been scheduled in three geographical phases: the Eastern Solent; Western Solent and the Isle of Wight. The Eastern Solent data gathering took place in the winter of 2016/17. The survey methods employed are outlined below.

Ground-truthing

Two principal aims of the update were to ground-truth sites where bird usage is still “uncertain” and to remove sites by virtue of land use that makes them unsuitable for bird use. This was carried out by expert surveyors visiting sites and noting current land use, making an assessment of likely use by birds and where appropriate recommending adjusting boundaries to follow those on the ground. This information, in combination with up to date mapping and aerial photography checks were used to update survey site boundaries. The ground-truthing work was carried out in the Eastern Solent throughout the winter of 2016/17.

Bird Movement Surveys

The bird movement survey method was trialled in October 2016 and refined to form a standard replicable method by November 2016. The method divided the Eastern Solent into eight sections (see Map 1). A lead surveyor and three support surveyors were assigned to each section and each survey lasted four hours. Both movement observations and species counts were recorded. The survey sections for the Eastern Solent are shown in Figure 1 below:

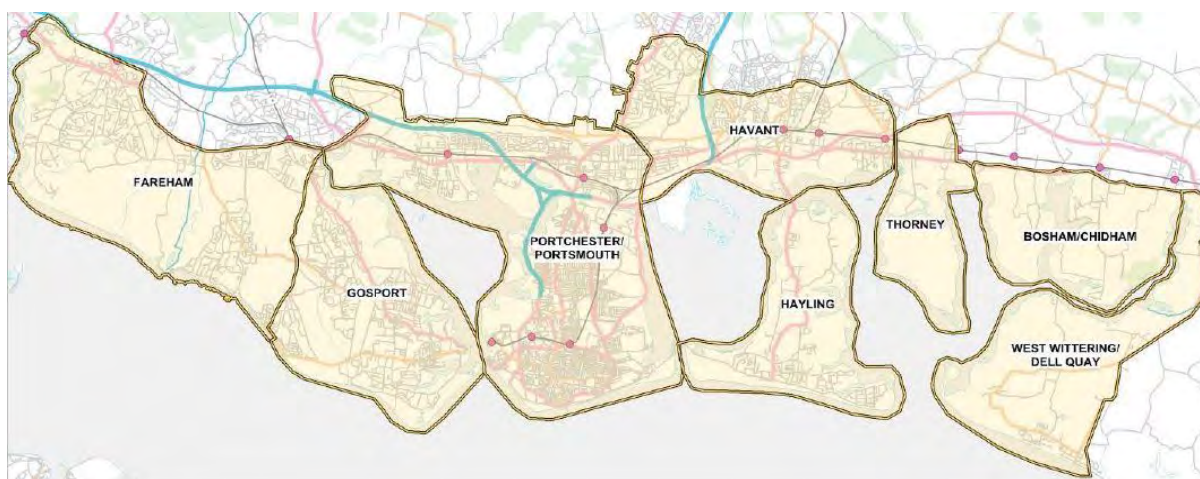


Figure 1. Eastern Solent Survey Sections

Survey times and days were selected using tide timetables, with surveys carried out three times a month, alternating between, morning, midday and evening, around the high-tide. Although high-tide was not found to be crucial in driving movements of birds between sites, it was used as a basis to maximise chances of seeing birds on the inland sites, which was also found to increase over the course of the winter, as the intertidal feeding resources depleted.

In order to observe movements both within and across sections, surveyors kept in touch by mobile phone. Within sections two surveyors were based at “vantage” point locations and one surveyor at a point from which they would move to follow any movement observations.

Observations of movements were recorded on a bespoke survey form and annotated on a map, the maps were used to provide additional information and for confirming that site and movements locations. Sites codes from the previous strategies were used for consistency.

Data Collation

Bird records were collated from the 2010 strategy and supplemented with more recent data from Hampshire Ornithological Society, Hampshire & Isle of Wight Wildlife Trust (HIWWT) surveyors, the Solent Birds Studies bird surveys and Solent Birds App, recent surveys by Hampshire Biodiversity Information Centre surveys, and the 2016/2017 movement surveys.

These data were all formatted to a consistent standard obvious errors and duplicates were removed, records filtered to be within the survey period (October to March inclusive) and non-target species omitted. All records were collated into a single “master” dataset.

Each record was spatially linked to a network survey site and assigned the site’s unique code using GIS.

DATA ANALYSIS

In order to assess the importance of each site, a metric-based analysis technique was developed.

The first two metrics assess each site in relation to population thresholds for species at national and local levels.

- 1) **Comparison to national population thresholds:** the BTO publishes national and international thresholds for each species (**BTO, 2017**), after which a count of that species should be considered important, scoring as follows:

0: Site has less than the GB threshold for any species
1: Site has more than the GB threshold for any species

- 2) Comparison to SPA designated features of interest: compares records for species that are designated a ‘feature of interest’ in the closest SPA i.e. the number of birds recorded compared to **the population size listed in the SPA designation (JNCCa, 2017; JNCCb 2017)**, scoring is as follows:

0: Site has <1% of SPA’s designated population
2: Site has 1-5% of SPA’s designated population
3: Site has ≥5% of SPA’s designated population

- 3) The third metric assesses the ‘feature of interest’ for the closest SPA for **species assemblage**. The total of all max counts for all species recorded, compared to the assemblage population size listed in the SPA designation (**JNCCa, 2017; JNCCb, 2017**), scoring as follows:

0: Site has <1% of SPA’s designated assemblage population
2: Site has 1-5% of SPA’s designated assemblage population
3: Site has ≥5% of SPA’s designated assemblage population

- 4) The fourth metric is the **max count** of any target species recorded on the site.

- 5) The fifth metric relates a site’s importance to a **network score** for birds moving to and from the intertidal areas to inland sites, and between inland sites. This metric uses data from the HIWWT bird movement surveys. The network of sites used by brent geese and waders were mapped, and all movements where both the origin and destination were observed by a surveyor analysed. The properties of this network were then assessed, this identified two types of sites: those that function as ‘hubs’, with connections to lots of other sites, and those that function as ‘bottlenecks’, linking two areas of the network together.

Hubs are identified by their degree: defined as the number of other sites to which they are connected, bottlenecks are identified by their betweenness centrality: this is a measure of the number of pathways through the network that pass through a given site. Some sites may score highly on both metrics, functioning essentially as both a hub and a bottleneck. The concept of hubs and bottleneck sites is illustrated in Figure 2 below:

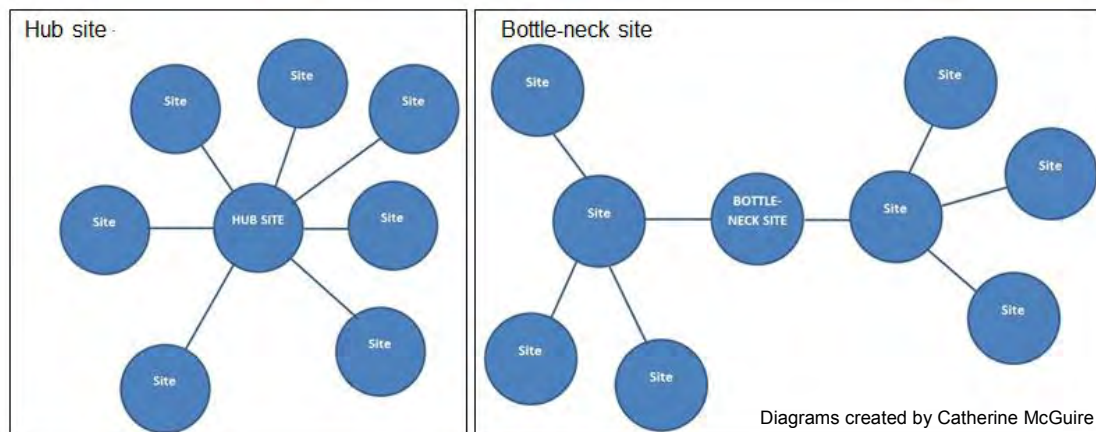


Figure 2: Hub and bottleneck sites

The network analyses were conducted using the igraph software package (Csardi & Nepusz, 2006).

Sites were included for their network value if they scored:

- 1 or higher for bottlenecks and/or
- 2 or higher for hubs

If sites scored a 1 and/or 2 as above they were marked for inclusion with a “yes”.

The quantitative scores from each of the metrics were then summed to then classify each site as either:

Core Areas: All sites that were identified as having a network value and/or sites that have a max count of bird use of 1000 or more, and/or the max score in 3 metrics (7): GB Importance, SPA Importance and SPA Assemblage

Primary Support Areas: Sites that score 3-6.

Secondary Support Areas: Sites that score 1-2 and/or have max counts of 100 plus birds for any species

Low Use: Sites that have records of birds but in low numbers (total score 0)

In a change to previous iterations “uncertain” sites were redefined for this update as being sites with positive records of more than 100 birds but with less than three records, they have also been renamed as “candidate” sites, as their classification is likely to change on the submission of more records.

Candidate: Sites that have records of high numbers of birds (max count => 100) and/or or a total score =>3 but have less than 3 records in total.

In a further change to previous iterations, sites within SPA sites were not classified but are shown to provide complete picture of the Solent-wide network:

SPA Sites: Sites within the SPA area that have birds records and form part of the ecological network

The number of records for each site was taken into account with sites having less than 3 records restricted to “Low Use” or “Candidate” categories.

Sites with only negative records are not mapped but provided for information as a separate list and GIS layer entitled “Sites with Negative Records”

Only sites outside of the SPA were analysed but sites used by birds with SPA are shown on the maps for completeness.

RESULTS

The data analysis identified a total of 509 inland sites (non-SPA) used by birds and forming the ecological network. Seventy-six core area sites were identified. Twenty-two sites were identified as having a network value from the movement study analysis. The project outputs will be made available via the project website: <https://solentwbgs.wordpress.com/> and Hampshire Biodiversity Information Centre.

NEXT STEPS

The next phase of the project is to complete the movement surveys for the Western Solent (Milford-on-Sea to Hamble). The same survey method and data analysis techniques will be applied and a second interim project report and update mapping outputs will be produced in the winter of 2018.

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