BTO RESEARCH REPORT 814

Report on the South Colchester Nightingale Survey 2025

Stokes, J. & Conway, G.

BTO Birds Science People

ACKNOWLEDGEMENTS: We would like to thank all of the field surveyors who took part in the survey: Alf Mullins, Andrew Neal, Andy Goodey, Charlie Williams, Chris Poole, Dougal Urquhart, John Fell, Martin Pugh, Michael Padmore, Neil Barker, Renate Barker, Neil Harvey, Paul Everett, Peter Anderson, Sean Minns, Simon Patient, Tim Hayward and Wayne Baker. We would also like to thank Martin Pugh for coordinating the surveys. The analysis and reporting were supported by funding from the Esmée Fairbairn Foundation, to whom we are very grateful

Report on the South Colchester Nightingale Survey 2025

Stokes, J. & Conway, G.

BTO Research Report 814

BTO, The Nunnery, Thetford, Norfolk IP24 2PU
Tel: +44 (0)1842 750050 Email: info@bto.org
Registered Charity Number 216652 (England & Wales), SC039193 (Scotland).

ISBN 978-1-918170-15-3

Birds Science People

Contents

1. Introduction

This report presents the results of the Nightingale *Luscinia megarhynchos* survey carried out in South Colchester, Essex, during spring 2025. The survey focused on coverage of habitat at Colchester Barracks and Middlewick, known to support substantial numbers of breeding Nightingales and other fauna and flora of high conservation importance. Plans for development had been proposed, which would likely cause direct and indirect impacts upon these species.

The Nightingale is a Red-listed species according to Birds of Conservation Concern 5 (Stanbury *et al.* 2021) and underwent a UK population decline of around 90% between 1967 and 2023 (BTO 2025), and a UK breeding range decline of just under 50% between 1968 and 2011 (Balmer *et al.* 2013). Historically, the South Colchester area has been highlighted as supporting a substantial number of Nightingales (Wilson *et al.* 2002, Hewson *et al.* 2018).

The results from the 2012 national survey (Hewson *et al.* 2018) showed that Colchester Barracks was a near-nationally important site (ranked second) for Nightingale, and the concentration of Nightingale territories held within the wider extent of the Colchester Barracks and Fingringhoe Wick sites was the most substantial in England. The survey area contains a number of Sites of Special Scientific Interest (SSSI). However, despite being a core site for Nightingales, the majority of Colchester Barracks (East) (Middlewick Ranges) is not designated as such.

The purpose of the 2025 survey was to obtain a current estimate of the Nightingale population (territorial males) and to determine population change since the 2012 national survey (Hewson *et al.* 2018), as recent observations had indicated an increase in numbers (Pugh 2025). Therefore, the 2012 national survey protocol was followed to permit a direct comparison of population estimates and change in territory numbers. Additionally, habitat data were collected along with observations to assess whether territories contained paired or unpaired males. The new population figures and distribution of Nightingale territories would then be available to inform assessment of potential development impact and a review of site protection.

2. Methods

2.1. Survey area

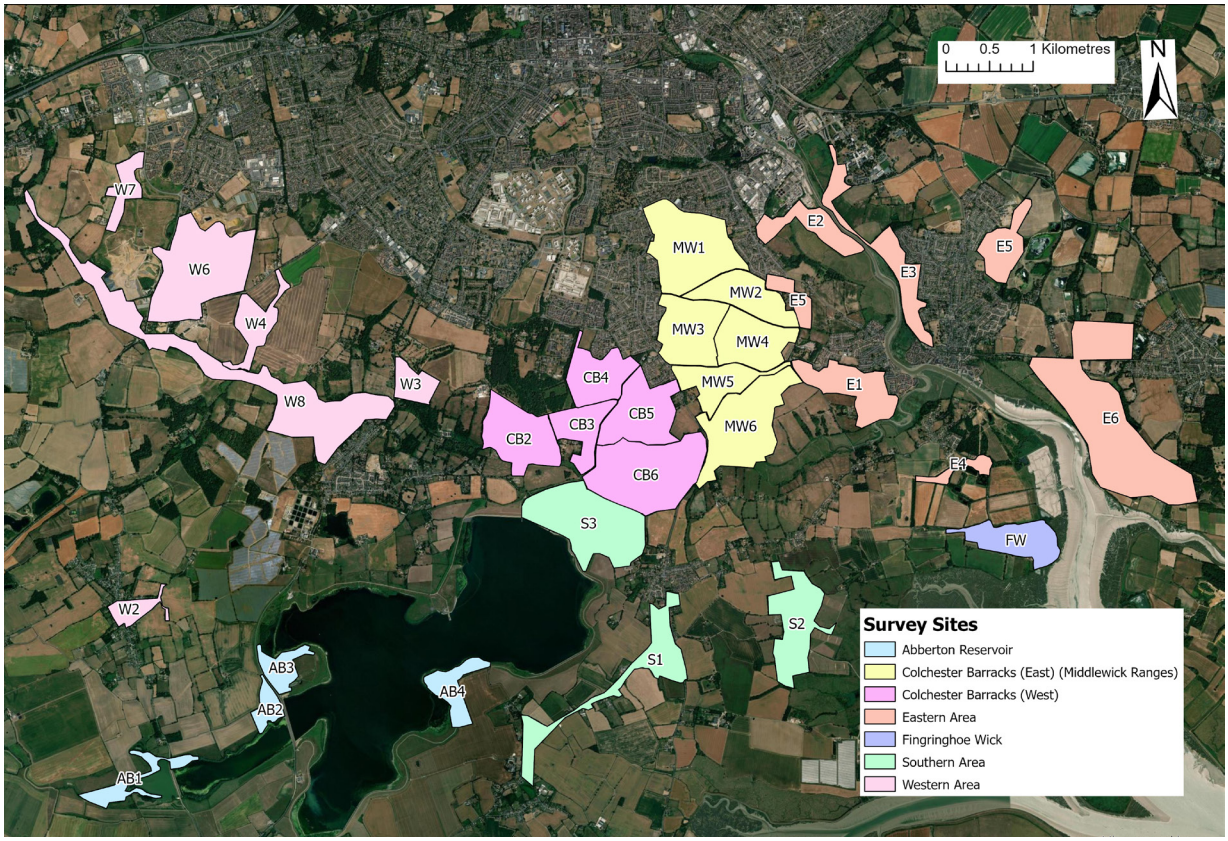
Surveys were carried out over seven sites in the South Colchester area, consisting of three core sites; Colchester Barracks (East) (Middlewick Ranges), Colchester Barracks (West), and Fingringhoe Wick; and four additional sites (Figure 1). Each site was divided into survey areas, in order to facilitate coverage and coordination between surveyors (Figure 1). The survey sites include a number of SSSIs within the core sites: Colne Estuary SSSI, which incorporates Fingringhoe Wick; and Roman River SSSI covering a large area of Colchester Barracks (West) and the southern section of Colchester Barracks (East) (Middlewick Ranges); and across additional sites: Abberton Reservoir SSSI and the boundaries of Upper Colne Marshes SSSI.

Throughout this report, the term 'site' refers to the seven sites surveyed (Figure 1). The term 'survey area' refers to the 33 areas surveyed, which make up the sites (Figure 1; Table 1). 'Core sites' is used to refer to Colchester Barracks (East) (Middlewick Ranges) and Colchester Barracks (West), and Fingringhoe Wick. Other sites are referred to as 'Additional sites'.

2.2. Field methods

The survey was carried out between April and June 2025 (Table 1) to coincide with the peak song period of the Nightingale. Visits to all sites were carried out in the morning, starting up to 30 minutes before sunrise and lasting for one to three hours, within the period of peak song activity. Night-time visits were also carried out to core sites later in the survey period, between 24 May and 11 June 2025, to count night-singing individuals, which indicate unpaired males. Core sites received a total of four morning visits, and two night-time visits, while additional sites received a minimum of two morning visits (Table 1).

Figure 1: Nightingale survey sites and survey areas in South Colchester, 2025



All surveyors were experienced with the species and in the survey methodology, and in most cases familiar with their designated survey area(s). Prior to the survey period, additional training was provided to surveyors by BTO staff, in order to further ensure that the data were collected following the same protocol and standardised methods as used in the 2012 national survey. In order to minimise duplication of records and streamline the surveys, visits were carried out simultaneously where possible, with coordination between surveyors via mobile phone. This is particularly important where survey areas held shared boundaries, as it allowed birds observed in transitional areas to be recorded accurately and to minimise double-counting.

The in-field survey was based on the Common Bird Census (CBC) methodology (Marchant 1983). This uses a standard methodology to record all observations (registrations) of birds which are plotted on site maps. Standardised codes are used to record species, sex and activity of each individual, with particular emphasis placed on singing birds but – most importantly – to record the relationship between individual registrations. Particular efforts were made to record birds observed or heard simultaneously, as this provides the most useful and robust data when estimating territories during analysis. A territory is a discrete area in which a single male or pair of birds undertake breeding activity. Song is the main and most reliable way to identify a territory, which is defended throughout the breeding season.

To estimate the number of breeding bird territories (typically pairs or territorial singing males) the observations from all visits were combined and clusters of bird registrations were defined to provide a minimum estimate of territories present following the methods of Hewson *et al.* (2018), based on Marchant (1983).

The Nightingale is a single-brooded species, with the egg period between late April and early July (Ferguson-Lees *et al.* 2011), meaning that four survey visits between mid to late April and mid May coincide with the peak song period, in which birds are most vocal and most likely to be detected as they defend their territories.

2.3. Data processing

2.3.1. Data entry

Registrations were digitised using geographic information system (GIS) software in order to facilitate analysis, assess distribution and compare data. Data were digitised using QGIS by the field surveyors and provided to BTO for analysis.

2.3.2. Territory analysis

Territory mapping was carried out using ArcGIS Pro 3.6 (ESRI 2025). The methods for establishing territories followed those set out in the 2012 Nightingale survey (Hewson *et al.* 2018). Registrations were grouped into discrete territory clusters primarily based on confirmed different individuals per visit, and polygons drawn around these representing the territory. Each territory was based on an individual singing male in suitable habitat or territorial registrations on multiple visits. Additional individual non-territorial registrations (e.g. calling, seen only) per visit and surveyor were included within an existing territory.

In order to define distinct clusters constituting individual territories, three main criteria were applied in order of priority:

1. registrations of known different singing males;
2. distinct clusters consisting of registrations from multiple visits; and
3. registrations from the same visit separated by more than 250 m (95% of territories were within this distance, with a mean of 111 m (N=298)).

Where criteria for separate territories were not met, registrations were considered to pertain to the same bird and so grouped into the same territory polygon. The following criteria were applied in order of priority:

1. multiple registrations known to be the same mobile individual;
2. multiple same visit territorial registrations that couldn't be confirmed as different individuals, with insufficient other visit registrations to form additional clusters; and
3. where individual visit registrations formed dispersed clusters between 250 m and 350 m (national maximum inter-territory distance threshold), without any indications of more than one individual present on a given visit.

Territory polygons were assigned to sites according to the location of the centroid. Where a territory centroid did not fall within a site but was within 100 m, it was assigned to the nearest site.

2.3.3. Night-time registrations

The criteria for associating confirmed night-singers to territories were as follows, listed in order of priority:

1. night-singing registrations intersecting with territory polygons;
2. night-singing registrations within 27 m of a territory polygon (94%, N=111); and
3. night-singing registrations within 75 m of a polygon that contained another night-singing registration from the other visit.

A maximum of one night-singer per visit was associated to a polygon, with the following exceptions:

1. multiple night-singing registrations intersecting a single territory polygon, and;
2. where the only territory polygon within 75 m already contained a night-singing registration from the same visit.

The association between a night-singer and a territory was considered 'probable' where there was a separation of between 27 m and 75 m (6%, N=111) between the registration and the territory, and where the territory polygon contained existing night-singing registrations from the same visit.

3. Results

3.1. Survey coverage

Morning visits were carried out between 19 April and 11 June 2025, by a total of 18 surveyors. Core sites (Colchester Barracks East and West, and Fingringhoe Wick) received four morning visits, carried out by all surveyors simultaneously (Table 1). Additional sites (Abberton Reservoir, Western Area, Southern Area, and Eastern Area) received a minimum of two morning visits (Table 2). Core sites received two additional night-time visits, and a single night-time visit was carried out to two of the additional areas (Table 3).

Table 1: Core site morning visit dates and times for South Colchester Nightingale Survey 2025

		Visit 1		Visit 2		Visit 3		Visit 4	
Survey location	**Area code**	**Date**	**Time**	**Date**	**Time**	**Date**	**Time**	**Date**	**Time**
Colchester Barracks (East)	MW1	19/04/2025	0522–0800	26/04/2025	0508–0800	03/05/2025	0447–0800	10/05/2025	0442–0800
	MW2	19/04/2025	0522–0800	26/04/2025	0508–0800	03/05/2025	0447–0800	10/05/2025	0442–0800
	MW3	19/04/2025	0522–0800	26/04/2025	0508–0800	03/05/2025	0447–0800	10/05/2025	0442–0800
	MW4	19/04/2025	0522–0800	26/04/2025	0508–0800	03/05/2025	0447–0800	10/05/2025	0442–0800
	MW5	19/04/2025	0522–0800	26/04/2025	0508–0800	03/05/2025	0447–0800	10/05/2025	0442–0800
	MW6	19/04/2025	0522–0800	26/04/2025	0508–0800	03/05/2025	0447–0800	10/05/2025	0442–0800
Colchester Barracks (West)	CB1	19/04/2025	0522–0800	26/04/2025	0508–0800	03/05/2025	0447–0800	10/05/2025	0442–0800
	CB2	19/04/2025	0522–0800	26/04/2025	0508–0800	03/05/2025	0447–0800	10/05/2025	0442–0800
	CB3	19/04/2025	0522–0800	26/04/2025	0508–0800	03/05/2025	0447–0800	10/05/2025	0442–0800
	CB4	19/04/2025	0522–0800	26/04/2025	0508–0800	03/05/2025	0447–0800	10/05/2025	0442–0800
	CB5	19/04/2025	0522–0800	26/04/2025	0508–0800	03/05/2025	0447–0800	10/05/2025	0442–0800
	CB6	19/04/2025	0522–0800	26/04/2025	0508–0800	03/05/2025	0447–0800	10/05/2025	0442–0800
Fingringhoe Wick	FW	19/04/2025	0522–0800	26/04/2025	0508–0800	03/05/2025	0447–0800	10/05/2025	0442–0800

Table 2: Additional site morning visit dates and times for South Colchester Nightingale Survey 2025

		Visit 1		Visit 2		Visit 3		Visit 4	
Survey location	**Area code**	**Date**	**Time**	**Date**	**Time**	**Date**	**Time**	**Date**	**Time**
Abberton Reservoir	AB1	19/04/2025	0522–0800	26/04/2025	0510–0730			10/05/2025	0045–0730
	AB2	19/04/2025	0522–0800	26/04/2025	0510–0730				
	AB3	19/04/2025	0522–0800	26/04/2025	0510–0730			09/05/2025	0445–0730
	AB4	19/04/2025	0522–0800			03/05/2025	0454–0730		
Rowhedge	E1					01/05/2025	0447–0800	09/05/2025	0442–0800
The Hythe	E2	19/04/2025	0522–0800	26/04/2025 27/04/2025	0500–0700 0508-0800	03/05/2025	0447–0800	10/05/2025 11/05/2025	0500–0700 0442-0800
Wivenhoe (University)	E3	19/04/2025	0522-0800	25/04/2025	0508–0800	03/05/2025	0447–0800	10/05/2025	0442–0800
Fingringhoe Quarry	E4			28/04/2025	0508–0800	05/05/2025	0600–0700	11/05/2025	0442–0800
Wivenhoe (East)	E5			27/04/2025	0508–0800				
Cockaynes Wood	E6-N			28/04/2025		05/05/2025			
Alresford South	E6-S			26/04/2025	0508–0800	05/05/2025	0447–0800	10/05/2025	0442–0800
Langenhoe to Peldon	S1	19/04/2025	0522–0800	26/04/2025	0508–0800	03/05/2025	0500–0700	12/05/2025	0442–0800
Fingringhoe Ranges	S2			28/04/2025	0508–0800	05/05/2025	0447–0800	12/05/2025	0442–0800
Abberton Village	S3	19/04/2025	0522–0800	26/04/2025	0508–0800	03/05/2025	0447–0800	10/05/2025 12/05/2025	0442–0800 0442-0800
Layer Breton Heath	W2	21/04/2025	0522–0800			02/05/2025	0530–0630		
King's Ford Grove	W3			30/04/2025	0508–0800	09/05/2025	0530–0700	16/05/2025	0530–0730
Oliver's Thicks and Butcher's Wood	W4			30/04/2025	0508–0800			12/05/2025	0530–0730
Stanway Quarry	W6	22/04/2025	0522–0800			06/05/2025	0520–0645		
Stanway Pit	W7			25/04/2025	0508–0800	07/05/2025	0530–0700		
Roman River (Upper)	W8			28/04/2025	0500–0700			12/05/2025	0530–0730

Table 3: Night visit dates and times for South Colchester Nightingale Survey 2025

		Visit 5		Visit 6	
Location	**Area code**	**Date**	**Time**	**Date**	**Time**
Colchester Barracks (East)	MW1	24/05/2025	0000–0235	07/06/2025	0000–0130
	MW2	24/05/2025	0000–0240	07/06/2025	0000–0130
	MW3	24/05/2025	0000–0220	07/06/2025	0000–0240
	MW4	24/05/2025	0000–0220	07/06/2025	0000–0240
	MW5	24/05/2025	0005–0220	07/06/2025	0000–0130
	MW6	24/05/2025	0000–0200	07/06/2025	0000–0130
Colchester Barracks (West)	CB1	24/05/2025	0000–0200	07/06/2025	0000–0100
	CB2	24/05/2025	0000–0150	07/06/2025	0000–0300
	CB3	24/05/2025	0000–0300	07/06/2025	0000–0100
	CB4	24/05/2025	0000–0300	07/06/2025	0000–0130
	CB5	24/05/2025	0000–0300	07/06/2025	0000–0300
	CB6	24/05/2025	0000–0300	07/06/2025	0000–0300
Fingringhoe Wick	FW	24/05/2025	0000–0130	11/06/2025	0000–0115
The Hythe	E2	24/05/2025	0000–0230		
Wivenhoe (University)	E3	24/05/2025	0000–0235		

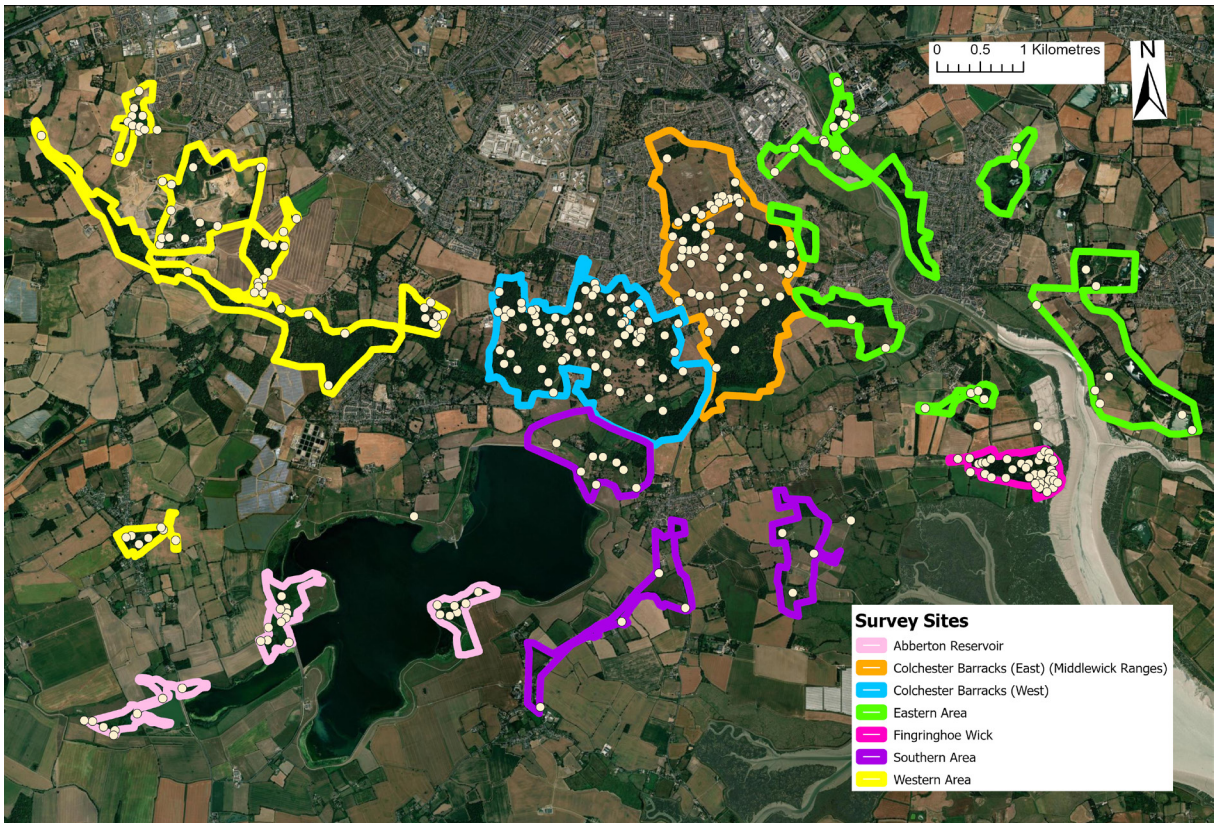
3.2. Territory analysis

Some 298 territories were detected across the South Colchester survey sites (Table 4; Figure 2). Of these, 175 were located in the core sites, representing 59% of the total (Figure 3). Colchester Barracks (West) held the highest number of territories (72; 24%), followed by Colchester Barracks (East) (63; 21%), and the Western Area (18%).

Table 4: Territory totals for South Colchester survey sites, and number of night-singing birds associated and probably associated with the territories in these sites

		Night-singing Birds			
		Night visit 1 (visit 5)		Night visit 2 (visit 6)	
Site	**Site territory total**	**Associated**	**Probable**	**Associated**	**Probable**
Abberton Reservoir	26	0	0	0	0
Colchester Barracks (East)	63	25	1	14	0
Colchester Barracks (West)	72	26	3	12	0
Eastern Area	28	7	0	0	0
Fingringhoe Wick	40	16	0	5	0
Southern Area	16	1	0	1	0
Western Area	53	0	0	0	0
Total	**298**	**75**	**4**	**32**	**0**

Figure 2: Map showing Nightingale territories (white dots) across all the South Colchester survey sites in 2025



3.3. Night-time visits

There was a total of 111 registrations of night-time singing birds across core and additional sites (Table 1, 2; Figure 4). Of these, 79 night-singing males were detected on visit 5 and 32 on visits 6. On visit 5, the highest number of night-singing birds was registered in Colchester Barracks (West) (29), followed by Colchester Barracks (East) (Middlewick Ranges) (26), and Fingringhoe Wick (16). On visit 6, Colchester Barracks (East) (Middlewick Ranges) had the highest number of night-singing birds (14), followed by Colchester Barracks (West) (12), and Fingringhoe Wick (5).

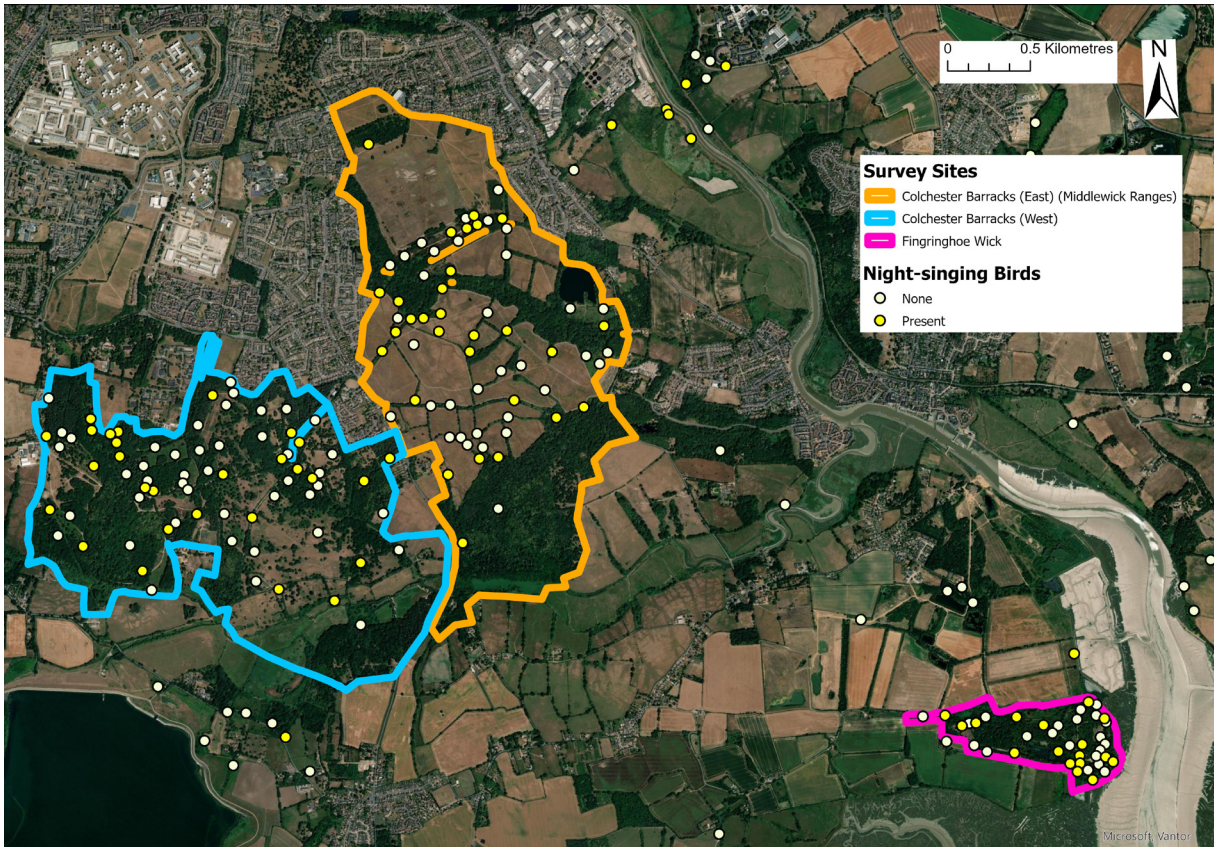
There is a considerable drop in the number of night-singing birds from visit 5 to visit 6, indicating that males are still becoming paired during late May. By the final night survey visit, only 31 of the South Colchester territories contained night-singing/unpaired males, representing 12% of the population.

4. Discussion

4.1. Population change

The total of 298 territories from the 2025 South Colchester surveys compares to 131 territories detected in the 2012 national survey (Hewson *et al.* 2018), covering the same area, representing a 127% increase between the two surveys. In 2025, Colchester Barracks (East) (Middlewick Ranges) and Colchester Barracks (West) together contained 135 territories compared to 73 in 2012. Fingringhoe Wick held 40 territories in 2025 and 36 in 2021, with the small increase likely due to the restricted habitat and already very high density of established territories.

Figure 4: Map showing Nightingale territories in core sites in 2025. Territories marked in yellow held night singing males, whereas territories in white did not.



4.2. Interpreting population change

It should be noted that the 2025 South Colchester survey was more intensive with four morning visits compared to the 2021 national survey which typically had two visits per sites. However, due to the high detectability of the species, the majority of territories will have been detected. As a conservative estimate, potentially up to 10% of territories may not be detected from a two-visit survey compared to four-visit. Even with this potential margin of under recording, the 2025 territory totals are considerably greater than those from 2012, at least for Colchester Barracks, but similar for Fingringhoe Wick.

Generally, the national Nightingale population has shown a slight decline since 2012, according to the BTO/JNCC/RSPB Breeding Bird Survey (BTO 2025a). However, there are indications that the distribution has become more clumped, with some localised sites seeing large increases over the same period (e.g. Lodgehill, Kent) whereas there have been reductions in areas of low-density occupation (Conway in prep.). Thus, these concentrated populations are more significant nationally and from a conservation and protection perspective.

The recent, post-2012, local population increases are likely due to a number of factors. The two main apparent drivers appear to be good breeding productivity and high overwinter survival, meaning more adults return and expand the source populations. In addition, habitat change may also play an important role, as Nightingales are strongly associated with early-successional vegetation, including young woodland and, more typically, scrub. Sites where fields and boundaries are less intensively managed, or not managed at all, can rapidly develop scrub that is suitable for Nightingales. However, successional growth and scrub clearance can rapidly render this vegetation type unsuitable for Nightingales.

4.3. Assessing change in site importance

There are no contemporary national data to confirm whether Colchester Barracks have met the national importance threshold (i.e. > 65 territories, clustered using a 350 m nearest neighbour distance – determined from the 2012 national survey (Hewson *et al.* 2018)), but the substantial number of Nightingales alone emphasises its importance for the species in a national context. However, when a nearest neighbour distance of 500 m was applied to cluster territories, the Colchester Barracks site held the second largest aggregation of Nightingale territories in the United Kingdom (Hewson *et al.* 2018).

Examining the 2025 survey data for Colchester Barracks, if the 350 m distance for nearest neighbour territory clustering was applied, the site now holds an aggregation of 134 Nightingale territories. This is substantially greater than the 2012 territory total and indicates that its importance from a national perspective may also have increased, but a new UK-wide population assessment would be needed to confirm this.

4.4. Future work

It is paramount to maximise the use of the 2025 South Colchester Survey data to fully understand the current habitat use and requirements for Nightingale, to inform appropriate habitat management and help maintain this important population.

Additionally, regular population monitoring is recommended to assess population change, as well as inform potential development decisions, where the Nightingale population may be impacted.

5. References

Balmer, D., Gillings, S., Caffrey, B., Swann, B., Downie, I. & Fuller, R. 2013. *Bird Atlas 2007–11: The Breeding and Wintering Birds of Britain and Ireland.* British Trust for Ornithology, Thetford.

British Trust for Ornithology 2025a. BirdTrends 2024: trends in numbers, breeding success and survival for UK breeding birds. www.bto.org/birdtrends

British Trust for Ornithology 2025b. Bird Trends Explorer. https://data.bto.org/trends_explorer

ESRI 2025. ArcGIS Pro (Version 3.6.0) [Computer software]. (https://pro.arcgis.com/en/pro-app/latest/get-started/download-arcgis-pro.htm).

Ferguson-Lees, J., Castell, R. & Leech, D. 2011. *A Field Guide to Monitoring Nests.* British Trust for Ornithology, Thetford.

Hewson, C.M., Miller, M., Johnston, A., Conway, G.J., Saunders, R., Marchant, J.H. & Fuller, R.J. 2018. Estimating national population sizes: methodological challenges and applications illustrated in the Common Nightingale, a declining songbird in the UK. *Journal of Applied Ecology* **55**: 2,008–2,018.

Marchant, J. 1983. Common Bird Census: instructions. British Trust for Ornithology, Thetford.

Microsoft 2025. Excel. [Computer software]. (https://www.microsoft.com/en-gb/microsoft-365/excel).

Stanbury, A., Eaton, M., Aebischer, N., Balmer, D., Brown, A., Douse, A., Lindley, P., McCulloch, N., Noble, D. & Win I. 2021. The status of our bird populations: the fifth Birds of Conservation Concern in the United Kingdom, Channel Islands and Isle of Man and second IUCN Red List assessment of extinction risk for Great Britain. *British Birds* **114**: 723–747.

Pugh, M. 2025. South Colchester Nightingale Survey 2025.

Wilson, A.M., Henderson, A.C. & Fuller, R.J. 2002. Status of the Nightingale *Luscinia megarhynchos* in Britain at the end of the 20th Century with particular reference to climate change. *Bird Study* **49**: 193–204.

Front and back covers: Nightingales, by Liz Cutting / BTO

Report on the South Colchester Nightingale Survey 2025

This report presents the results of the Nightingale *Luscinia megarhynchos* survey carried out in South Colchester, Essex, during spring 2025. The survey focused on coverage of habitat at Colchester Barracks and Middlewick, known to support substantial numbers of breeding Nightingales and other fauna and flora of high conservation importance. Plans for development had been proposed, which would likely cause direct and indirect impacts upon these species.

Suggested citation: Stokes, J. & Conway, G. 2026. Report on South Colchester Nightingale Survey 2025. *BTO Research Report* **814**, BTO, Thetford, UK.

ISBN 978-1-918170-15-3

9 781918 170153 >

BTO Birds Science People