



Wharnccliffe Heath Nature Reserve Breeding Bird Survey, Nest Box Project and Nocturnal Bird Survey 2019

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1.0 INTRODUCTION AND SITE DESCRIPTION

This report details the findings of the breeding bird survey, the survey of the nest box project, and nocturnal bird survey for Wharnccliffe Heath Local Nature Reserve (The Site) in 2019. A breeding bird survey for the Site was undertaken in 1999-2000 and 2002, and every year since 2009.

The Site is located to the north of Sheffield, to the west of the town of Deepcar, South Yorkshire (approximate central OS grid ref SK 29747 97648). The Site is a Scheduled Ancient Monument (SAM), a Geological SSSI and a Local Nature Reserve (LNR). The Site is under the ownership of Forestry England, and managed jointly by Forestry England and Wharnccliffe Heathlands Trust (WHT).

The Site covers an area of approximately 60 hectares, and consists predominantly of heathland, mixed woodland of varying maturity, Wharnccliffe sandstone crags and sessile oak and silver birch dominated wood pasture (Plate 1). The heathland and wood pasture areas of the Site are located within three enclosures, which are grazed by varying numbers of Shetland sheep and cattle. The largest of these is found to the west of the Site, and includes the top of Wharnccliffe Crags. The northern and southern enclosures are located in the Site's central area, and make up the majority of the Site's heath. Two ponds are also found on the Site, the largest being the "Dam Pond" found to the north of the reserve's woodland, and a smaller grazing pond, located to the east of the southern enclosure.

2.0 METHODOLOGY

The breeding bird survey was undertaken following the British Trust for Ornithology (BTO) Common Bird Census (CBC) methodology (Gilbert et al, 1998). The entirety of Wharnccliffe Heath Nature Reserve was systematically surveyed for breeding/territorial activity during a total of ten survey visits undertaken between 20th April and 2nd July 2019.

During each survey visit, the site was walked along a pre-defined route, covering all parts of the reserve. All visual and/or auditory contact with birds was recorded on a field map using standard one or two letter BTO species codes and activity codes.

Field signs characteristic of confirmed breeding include nest building in vegetation/nest boxes etc, excavation of nest holes in trees, active nests found during the surveys, adult(s) carrying food, the presence of nestlings or newly fledged young, and adult(s) removing faecal matter. Field signs

characteristic of holding a territory include birds singing, courtship behaviour and adult birds giving alarm calls.

Additional visits were made to record birds utilising nest boxes on the reserve in May and June.

Separate visits after sunset were made between late May and July to establish the status of crepuscular and nocturnal species on the reserve, including using the standard methodology set out by the BTO to record woodcock, where counts of the territorial “roding” flights undertaken by males at dusk and dawn are used to estimate the number of breeding males.



Plate 1: The wood pasture in the southern enclosure of Wharnccliffe Heath

3.0 RESULTS

A full list of territorial bird species, conservation status (Eaton et al, 2015) and the number of territories recorded during the surveys from 1999-2019 is provided in Table 1 below. The total number of nest boxes and the number of nest boxes used by each species of bird is found in Table 2.

Species	1999	2000	2002	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Mallard	0	0	0	0	0	0	0	0	0	0	1	2	0	1
Tree Pipit	6	6	5	3	4	6	4	5	5	5	5	3	4	5
Willow Warbler	21	14	14	22	19	23	20	18	24	24	34	38	30	51
Chiffchaff	1	0	0	0	0	1	1	0	2	2	3	5	5	4
Blackcap	1	1	0	0	0	1	2	1	4	3	3	5	5	4
Garden Warbler	1	0	0	0	0	1	0	1	2	2	1	1	1	2
Common Redstart	0	0	0	0	0	1	0	1	1	1	0	0	0	0
Pied Flycatcher	0	0	0	0	0	0	0	0	1	3	6	3	5	12
Spotted Flycatcher	0	0	0	0	0	0	0	0	1	1	1	1	0	1
Blue Tit	1	0	0	0	0	1	6	15	21	12	19	33	42	51
Great Tit	1	0	0	0	0	2	3	3	8	6	8	19	24	33
Coal Tit	2	0	0	0	0	1	0	1	1	0	1	3	2	2
Long – tailed Tit	1	0	0	0	0	0	0	0	0	0	0	0	0	1
Wren	22	22	20	22	9	11	10	5	22	23	27	26	21	25
Robin	18	13	6	15	10	7	6	13	14	17	19	18	20	27
Nuthatch	0	0	0	0	0	1	1	1	1	0	0	1	2	10
Duncock	2	2	1	7	4	1	2	2	2	2	3	4	3	3
Great Spotted Woodpecker	0	0	0	0	0	0	0	0	1	1	1	1	0	1
Green Woodpecker	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Goldcrest	2	0	0	0	0	0	0	0	0	1	1	3	3	3
Treecreeper	0	0	0	0	0	0	0	0	0	0	1	2	1	2
Blackbird	0	0	0	0	0	0	0	0	0	0	0	2	2	2
Song Thrush	0	0	0	0	0	0	1	2	0	0	1	1	2	3
Mistle Thrush	0	0	0	0	1	0	1	0	0	0	1	1	2	1
Chaffinch	12	3	0	4	2	5	4	10	10	11	11	8	8	9
Lesser Redpoll	0	0	0	0	0	0	0	0	0	0	0	2	1	1
Linnet	1	1	4	1	2	3	3	2	2	4	3	3	4	3
Nightjar	1	0	0	1	1	1	1	1	1	1	1	1	1	2
Woodcock	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	8	8	8	12
Cuckoo	0	0	0	1	1	1	1	1	1	1	1	1	1	1
Tawny Owl	0	0	0	0	0	0	0	0	0	0	0	1	1	1
Pheasant	2	1	0	0	0	0	0	0	0	0	0	2	0	1
Yellowhammer	2	2	1	0	0	0	0	0	0	0	0	0	0	0
Sparrowhawk	0	0	0	0	0	0	0	0	0	0	0	0	0	2

Table 1: Territory numbers of birds recorded on Wharnclyffe Heath from 1999-2019. Bird species highlighted in red are red listed and in amber are amber listed. The survey in 1999 was undertaken by Paul Medforth, from 2000 to 2002 by Dave Buttle, and from 2009 onward by Andrew Hill. The woodcock survey was undertaken by Dave Buttle in May and June between 2016-2019.

Year	Number of Boxes	Blue Tit	Great Tit	Coal Tit	Pied Flycatcher	Redstart	Nuthatch	Tit sp.	Total Occupied Boxes (%)
2011	5	0	0	0	0	0	0	0	0 (0%)
2012	18	6	2	0	0	0	0	0	8 (44%)
2013	18	15	2	0	0	0	0	0	17 (94%)
2014	30	19	6	0	0	0	0	0	26 (87%)
2015	40	12	5	0	3	0	0	0	20 (50%)
2016	60	19	8	0	4	1	0	2	34 (57%)
2017	120	32	18	1	2	0	1	8	62 (52%)
2018	224	41	23	0	3	0	2	6	77 (34%)
2019	211	50	30	0	7	0	8	7	102 (48%)

Table 2: Numbers of birds utilising nest boxes on Wharnccliffe Heath from 2011-2019.

A total of 31 species had established territories on Wharnccliffe Heath Nature Reserve in 2019. Fourteen of these were species of conservation concern, which included nine red list species: pied flycatcher (*Ficedula hypoleuca*), spotted flycatcher (*Muscicapa striata*), cuckoo (*Cuculus canorus*), tree pipit (*Anthus trivialis*), song thrush (*Turdus philomelos*), mistle thrush (*Turdus viscivorus*), woodcock (*Scolopax rusticola*), linnet (*Linaria cannabina*), lesser redpoll (*Acanthis cabaret*), and five from the amber list: nightjar (*Caprimulgus europaeus*), willow warbler (*Phylloscopus trochilus*), dunnoek (*Prunella modularis*), mallard (*Anas platyrhynchos*) and tawny owl (*Strix aluco*).

For the first time since 2013, no additional nest boxes were placed on the reserve over the winter before the breeding season. Significant damage to nest box entrance holes by grey squirrel was noted before the breeding season, mainly on oval holed boxes, with further damage inflicted in the spring and summer of 2019. Non-squirrel related structural damage was noted on two boxes which were found to have large cracks that allow water in. Some of the damage to the boxes was severe enough to render them unusable, and as a consequence, has reduced the base total of nest boxes from 224 in 2018, to 211 in 2019.

A total of 102 of the 211 nest boxes on the reserve were occupied by birds in 2019, an increase of 25 from 2018. This includes seven boxes that were initially occupied, but subsequently resulted in failure or abandonment by unknown tit species. Occupancy of nest boxes was proportionately higher in 2019 than in 2018 (48% in 2019 compared to 34% in 2018). As in the previous year, the open fronted nest boxes and the treecreeper boxes remained unused in 2019. Occupancy was highest in the woodland to the north west of the dam pond, where all boxes were occupied, and lowest in the northern enclosure, where only two were occupied. Contrary to the previous two years, no evidence of nest box predation by weasel was noted in 2019. In addition to bird occupancy, four nest boxes were occupied by colonies of tree bumblebee (*Bombus hypnorum*), two by common wasp (*Vespula vulgaris*) and one by tree wasp (*Dolichovespula sylvestris*).

Twelve pied flycatcher territories were established on the reserve in 2019, the highest number ever recorded, and an increase of seven from 2018. Four territories were located in woodland to the north-west of the dam pond, four in the western enclosure, two in woodland to the north of Wharnccliffe Chase, and single territories in the southern enclosure and woodland to the east of the northern enclosure. Seven of these males were paired with females by early May, which all led to breeding attempts (Plate 2). Three nests were located in close proximity to each other in mature

sessile oak woodland in the western enclosure, one in woodland to the west of the Dam Pond, one in the southern enclosure, and two in the woodland to the north of Wharnccliffe Chase.



Plate 2: *Incubating female pied flycatcher*

Five of the attempts were successful, and two failed, with the southern enclosure nest of four recently hatched juveniles and an unhatched egg abandoned after a period of poor weather in early June, and one of the nests to the north of Wharnccliffe Chase abandoned at the nest building stage. Clutch sizes ranged between seven and five eggs in the nest boxes that could be surveyed. Of the five successful nests, five juveniles fledged from three of the nests and an unknown number fledged from the remaining two nests. One of the nests in the western enclosure was located within the husk of a common wasp nest from the previous year (Plate 3).



Plate 3: *Pied flycatcher nest within an old wasp nest, found during a nest box check in June 2019.*

Two male pied flycatchers were observed singing outside of boxes recently vacated by great tits in early June, although given the lateness in the breeding season, these failed to attract a female bird. The remaining unpaired males had all departed by early June, with the relatively early date of 9th June being the last time any pied flycatchers were recorded on the reserve in 2019.

The highest recorded numbers of both blue tit and great tit occurred on the reserve in 2019, with 51 pairs of blue tit, and 33 pairs of great tit recorded. Most of these pairs were recorded using nest boxes throughout the reserve, with only a single blue tit nest and three great tit nests found in other cavities, including the blue tit nest low down in a rotting silver birch tree, and a great tit nest in the remains of a dry stone wall in the central heath area.

Eight pairs of nuthatch utilised nest boxes in 2019 (Plate 4), a record count, and six higher than in 2018. Three nests were located in woodland to the north of Wharncliffe Chase, three in the western enclosure, one in the southern enclosure, and one in woodland to the north west of the Dam Pond, with a further two territories located in the same area, totalling ten territories. All but two of these nests was thought to be successful, with the nest in the southern enclosure and one of the western enclosure abandoned at the nest building stage.



Plate 4: A nest box occupied by nuthatch, with mud plastered around the entrance hole and lid.

Nest building was noted in a further seven boxes, but as these were abandoned early, with only traces of moss found inside, the species using these boxes could not be reliably identified.

A pair of nightjar was recorded on the reserve from early June, with a male bird heard ‘churring’ and calling, and a female bird observed in flight on 16th June. Another male was seen in flight and heard churring close to the recently cleared pylon line in the western enclosure on 18th July, representing the first year since 2008 that more than one male has been present on the reserve.

The method used to estimate the number of breeding male woodcock on the reserve suggested the presence of about twelve roding males, an increase of four from the previous year. During the surveys, multiple birds were often observed roding simultaneously, with three males observed on 24th June.

Five tree pipit territories were established in 2019. One territory was located in each of the three enclosures, and two were located on the reserve boundary with Wharncliffe Chase in the south. Breeding was confirmed in early June, when a family group containing at least two juveniles was found in woodland in the western enclosure.

After the blank year in 2018, a confirmed spotted flycatcher territory was established in 2019, with a singing male recorded near the dam pond in May. Breeding was proven when a group of two adults and three juveniles was recorded below Wharncliffe Crags in August.

After the drop in numbers recorded in 2018, the number of willow warbler territories increased to a record 51 (30 in 2018), and were mainly located in the edges of the heathland and below Wharnccliffe Crags, in a noticeably higher density than in 2018. There was also an increase in singing birds along the recently felled areas under the pylon lines in the western enclosure.

As in 2017 and 2018, breeding of tawny owl was confirmed in 2019, with a juvenile heard calling in the woodland to the east of the heathland during several evening visits.

Mallards were present throughout the year in 2019, with a breeding attempt noted in early May when eight ducklings were observed on the Dam Pond. By the following survey, no ducklings were present, with predation strongly suspected.

The other species recorded on the reserve in 2019 remained at similar numbers to 2018, although an increase in robins was noted. Breeding was proven for long-tailed tit, pheasant and treecreeper, with food carrying observed for the long tailed tit, a female pheasant with three juveniles near Wharnccliffe Chase, and a treecreeper nest with at least four juveniles found near the Dam Pond.

While no evidence of breeding sparrowhawk (*Accipiter nisus*) was recorded during the surveys, juveniles were observed and heard on the reserve in early to mid-July, and it later transpired that two pairs were present on the reserve 2019 (A. Platts, pers. comm., 04/04/2020). One of the nests was successful, rearing four juveniles, while the other failed at the chick stage.

Non - Territorial and Incidental Species Recorded in 2019

Common Buzzard, Grey Heron, Cormorant, Goshawk, Kestrel, Bullfinch, Carrion Crow, Raven, Jackdaw, Swallow, Swift, Goldfinch, Jay, Wood Warbler, Red Legged Partridge, Common Redstart, Wheatear, Skylark, Green Woodpecker.

4.0 DISCUSSION

Despite the slight reduction in total available nest boxes in 2019, all of the hole nesting species increased from the numbers recorded in 2018. The increase in nuthatch in particular was proportionately the largest year to year increase of any of the hole nesting species on the reserve. This could in part be attributed to the weather conditions during the spring, which was a notable improvement over the cold and wet conditions that occurred in 2018, particularly in mid to late April. The relatively mild winter may also have been a factor for resident hole nesting species survival, hence improving breeding numbers.

The nest boxes located to the north west of the dam pond were all occupied in 2019, mostly by tit species, with single nuthatch, pied flycatcher and tree bumblebee nests occupying the remaining boxes. The high occupancy in this area over the last couple of years suggests optimal habitat, and suggests that the area has not yet been saturated by nest boxes. Pied flycatchers were noted singing outside of occupied nest boxes to the north of this woodland, but did not linger, suggesting further placement of boxes in this area would be beneficial.

Both the territory count and total breeding attempts for pied flycatcher in 2019 were the highest number recorded on the reserve. Most of the territories were in areas previously used by this species, with the notable exception being the cluster of territories located in mature sessile oak woodland in the western enclosure. No territories or breeding attempts have been recorded in this area before, and boxes have been located in this area since 2016. Future monitoring will be needed to determine if this part of the reserve will become a more long term breeding area.

The increase in churring male nightjar on the reserve is in line with the national and local trend, and is perhaps overdue, given the size of the reserve's open areas.

The two pairs of sparrowhawk that occurred on the reserve in 2019 were missed during the breeding bird survey, likely due to the route that is taken for the survey which bypassed the nest sites. In future it would be beneficial to incorporate a more rigorous nest search for all species into the survey methodology.

References

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