

Willow Tit National Survey Methods 2019/20

Survey background

Our endemic race of Willow Tit is the second-fastest declining species in the UK, after Turtle Dove, and is Red-listed. This resident species, which is highly sedentary remaining in an area centred on the breeding territory throughout the year, has been lost from large areas of southern and eastern England in recent years. RSPB and others have conducted research into causes of decline, and eliminated a number of potential causes which seem unlikely to be causing the large scale declines. One of the potential causes that need investigating further is whether deterioration in habitat quality is affecting this species. One of the main habitats that willow tits occupy in Britain is damp young woodland. This habitat is often short lived with sites frequently drying out and developing into mature woodland over 20-30 years. RSPB and other organisations, including Natural England, are currently trialling woodland management solutions for Willow Tit, and the species is part of the Back From the Brink HLF project (<https://naturebftb.co.uk/the-projects/willow-tit/>), involving detailed study of daily movements and habitat use as well as habitat management.

However, due to the declining numbers, monitoring the species is becoming increasingly difficult. Whilst the BTO/JNCC/RSPB UK Breeding Bird Survey is still able to produce an annual trend, the sample had fallen to just 46 squares by 2017. Although collation of records by the Rare Breeding Birds Panel is useful for the design of future surveys, it is currently insufficient to enable robust population estimates, measures of change or maps of current distribution to be produced: thus a national survey is needed if our conservation work is going to be properly underpinned by evidence.

Survey coverage

Survey tetrads (2x2km) will be chosen based on a stratified random design from across their range, based on:

- 1) non-random, self-selected squares in core areas, mostly around existing monitoring/intervention efforts,
- 2) random sampling of occupied tetrads, from 2007-11 Atlas and later (high intensity),
- 3) random sampling of remaining tetrads in occupied 10km squares, from 2007-11 Atlas and later (medium intensity), and
- 4) lower intensity sampling through the rest of the known range, from the 1988-91 Atlas.

Data from the 1988-91 and 2007-11 bird atlases, recent county atlases and from the RBBP are being used to identify the areas of sampling intensity.

Field methods

A playback method will be used to survey Willow Tits during the pre-breeding season when the birds are territorial, and covering all potentially suitable habitat in the survey tetrad. A summary of suitable Willow Tit breeding habitat is provided at the end of the survey instructions. The playback method, using a standard (2-minute) Willow Tit call and listening for a response, has been successfully developed by the RSPB Willow Tit research project. The recording used for the survey is a combination of willow tit alarm call and song. **The call volume should be checked before surveying: the call should be audible up to 100m away from playback.**

A separate tetrad map with accompanying form will be provided for each visit. The survey form should be used to record visit information, details of any Willow Tits encountered, and an overall survey summary.

Before surveying, it is best to:

- Identify areas of potential habitat using Google earth and OS maps and mark these up on survey sheets.
- Create a survey route and mark the map with survey points, approximately 200m apart so all areas of potential habitat are visited and no suitable habitat is more than 100m from a survey point.

Ideally, two surveys should be carried out in each survey tetrad between mid-February and mid-April, although if you are only able to undertake one survey we will be able to use the results. If no Willow Tits are found after two visits despite there being (potentially) suitable breeding habitat in the tetrads, please consider undertaking a third visit. Once the birds are serious about excavating and nesting they become very quiet, from mid-April. Ideally, surveys should be undertaken on 'fine' days – if present, Willow Tits are much more likely to be detected on relatively warm days with no wind and rain. Willow Tits are more likely to respond to calls during the morning, and when not heavily overcast.

A pre-determined transect should be walked through the survey tetrad and the route taken should be marked on the OS tetrad map on the accompanying survey form, if not marked beforehand. A stop should be made every 200 metres and noted on a recording form. Playback points should be distributed so no suitable habitat is more than 100m from a point, and the location of each point should be marked on the tetrad map (as P1, P2, P3, etc). **To gain access to all potentially suitable habitat in the tetrad, it may be necessary to gain access to private land. If you are unable to gain access to all areas of suitable habitat in the tetrad, the playback point should be from the nearest public access.**

At each stop the standard recording of Willow Tit call and song should be played for two minutes (this is the full length of the standard recording). A further two minutes should then be spent looking and listening for a Willow Tit response. A response is recorded if there are any Willow tit vocalisations heard or they are seen at the survey point. If a response is achieved during playback the recording is stopped and you should move on to the next playback point.

Although the recording used contains Willow Tit calls and song, a wide range of species can sometimes respond not only Willow Tits. In particular, Marsh Tits and other tit species regularly respond.

Recording information

For each visit, record the date, visit number and start/finish times. Record the bird observations on the accompanying tetrad map for each visit. **ALL** Willow Tit contacts (including any contacts between playback points) should be marked on the map by using standard BTO (CBC) symbols. A list of the symbols is included at the end of these instructions. Where individual birds are known to have moved within a visit, join their sequential locations with a solid line. On the map from the first visit mark the locations of the first territorial contact as A1, the second as B1, etc; on the second visit map as A2, B2, etc.

Record ALL Willow Tit contacts on the **Survey form**. Include the relevant territory code, the BTO Atlas Breeding Evidence code(s), whether the contact was located at a playback point and, if so, whether the bird was detected due to its response to playback (although this may not always be clear). If YES, also note the distance to the Willow Tit when first detected and the time taken for the bird to react to the playback. Note if the response to playback was call, song or agitated behaviour. The 'Breeding Evidence' codes are described on the **Survey form**.

On the **Survey form**, record the date of each visit under 'visit details' against the appropriate visit number, even if no Willow Tits were recorded.

After each visit, on the **Survey form** please complete the 'summary of observations' for each territory, giving the appropriate 'Breeding Evidence' code (N.B. enter more than one, if necessary) and a summary of the activities under 'notes'. Also note the number of birds seen. If possible, include details of where birds are seen feeding. If no observations were recorded for a particular territory on a particular visit, please state this by entering 'nil' in the 'Breeding Evidence code' column.

Record on the tetrad map the approximate locations of any Willow Tits found, using the same territory codes from the **Survey form**.

Checking For Colour Rings

Wherever possible, please check any Willow Tits for colour rings, as there are 11 registered projects colour ringing Willow Tits across the country. To make full use of the information from colour ringing we need also need records of birds that were checked and turned out not to be ringed. Please summarise all colour ring records on the **Survey form**.

Although they are not thought to travel far it is always worth checking the legs of any birds seen for colour rings. To be able to attribute a bird to a particular individual you will need to record what rings are present on each leg and the order they occur, e.g. left leg - blue ring above BTO ring and right leg – red ring only. The numbers of rings on each leg vary between projects, and are detailed at the end of the methods.

Recording other bird species

It will be useful to also record any Marsh Tit sightings, which also respond well to Willow Tit calls, on the **Survey form**. As for Willow Tits, please mark ALL Marsh Tit contacts on the map using standard BTO (CBC) symbols.

Habitat recording

For each Willow Tit and Marsh Tit record, please assess the height and structure of the woody habitat and add A, B or C to column 1 of the Habitat Codes section, and add one (or more) category code to column 2. Further information can be given in the notes box if the habitat doesn't fit in to the given categories or you wish to provide more details.

Notes on disturbance and confidentiality

Breeding birds and their nest sites should not be disturbed, although it is very unlikely to find nesting Willow Tits during the survey period. It should be noted here that the RSPB and RBBP believe that playback does not cause undue disturbance and is essential for successful surveying of Willow Tits. It is not necessary to find a nest to confirm breeding. Data will be stored securely and only used for appropriate conservation purposes.

Suitable Willow Tit habitat

Willow Tit habitats vary across the UK and Europe. In Northern Europe they favour conifer forests where they forage in winter during heavy snowfall, while during the breeding season they nest in areas with more birch trees on peaty soils. In the UK they are associated with a number of scrubby habitats, which may include overgrown hedges on river valleys and floodplains, young regrowth in conifer plantations, birch and willow scrub on former industrial sites, linear scrub along railway lines and canals, or scrubby areas on the edge of mature plantation or woodland. A key feature of these sites is the prevalence of pioneer tree and shrub species such as willow, birch, elder and hawthorn with few mature canopy trees. These sites are often but not exclusively on wetter areas.

Based on earlier research, the key properties of Willow Tit habitat are:

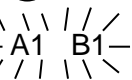
- Dominant tree/shrub species: Hawthorn, Elder, Alder, Birch, Willows.
- Undesirable tree species: Oak, Beech, Sycamore, Mature Conifers (where there is little or no shrub layer).
- Shrub cover at 2-4m above ground: 46-58%.
- Canopy cover: 48-58%.
- Lots of standing small dead trees, 10-20 cm diameter.
- Younger woods preferred but only if they contain favoured tree species and not undesirable tree species.
- Wetter soils preferred, which retain moisture for longer during the breeding season i.e. poorly draining soils, or peat soils.
- Patches of suitable habitat can be as small as 1ha for breeding as they will use surrounding habitats and move between patches.

Willow Tits excavate holes in soft rotten stumps to nest in; they may excavate more than one hole before deciding where to nest. Nests site characteristics are:

- Height above ground 1-2.5m.
- Trunk diameter 10-20 cm.
- Tree species used for nests: willow (16%), birch (40%), elder (15%), + 24 other species.
- Elder used for nesting more frequently than found in habitat and Hawthorn less frequently.

STANDARD BTO SYMBOLS FOR BIRD ACTIVITIES

Rather than use the standard BTO code for Willow Tit (WT) when mapping the location of contacts, please use the terms A1, B1, etc., to denote records from the first visit and A2, B2, etc., from the second visit.

A1, 2A2	Willow Tit sight records with age, or number of birds if appropriate. A1♂ indicates one pair; 2A♂ means two pairs together.
<u>A1</u>	A calling Willow Tit.
<u>A1</u>	A Willow Tit repeatedly giving alarm calls or other vocalisations (not song) thought to have strong territorial significance.
Ⓐ1	A singing Willow Tit.
	An aggressive encounter between Willow Tits.
*A1	An occupied nest of Willow Tits; do not mark unoccupied nests, which are of no territorial significance by themselves.
A1 mat	Willow Tit carrying nesting material.
A1 food	Willow Tit carrying food (during courtship display).
Willow Tit movements can be shown as follows:	
— <u>A1</u> →	A calling Willow Tit in flight (seen only in flight).
Ⓐ1→	A singing Willow Tit perched then flying away (not seen to land).

—→A1

A Willow Tit flying in and landing (first seen in flight).

The following conventions indicate when registrations relate to different birds, and when to the same bird:

A1—→A1

A Willow Tit moving between two perches. The solid line indicates it was definitely the same bird.

(A1)----- (B1)

Two Willow Tits in song at the same time, i.e. definitely different birds. The dotted line indicates a simultaneous registration and is of great value in separating territories.

(A1)——(A1)

The solid line indicates that the registrations refer to the same bird.

(A) — ? — (A)

A question-marked solid line indicates that the registrations probably relate to the same bird.

A (A)

No line joining the registration indicates that the birds are probably different but depending on the pattern of other registrations they may be treated as if only one bird was involved.

WILLOW TIT COLOUR RINGING SCHEMES IN BRITAIN

More information is available from the European colour-ring Birding website: <http://cr-birding.org/>

Berkshire

Combination of 2 colour rings: 1 colour ring above metal ring (on left leg) and 1 colour ring (on right leg).

Cumbria

Combination of 2 colour rings: metal ring (on left leg), 2 colour rings (on right leg).

Used colours are dark-pink, light-green, yellow, orange, mauve, black, light-blue and dark-blue.

Devon

Combination of 3 colour rings: 2 colour rings (on left leg) and 1 colour ring above metal ring (on right leg). Used colours are black, yellow, orange, dark-pink, pale-blue and red.

Gloucestershire

Dark-green ring with a white two alpha-numeric code (on right leg) and metal ring (on left leg).

Greater Manchester

Combination of three colour rings: 1 colour ring above metal ring (on left leg) and two colour rings (on right leg). Used colours are red, light-green, light-blue, white, orange, black and yellow.

Norfolk

Combination of 3 colour rings: 1 colour ring above metal ring (on right leg) and 2 colour rings (on left leg). In total 8 colours are used.

Norfolk/Suffolk

Combination of 3 colour rings: 2 colour rings (on left leg) and metal ring above 1 colour ring (on right leg). Used colours are red, yellow, white, dark-green, dark-blue and black.

Powys

Combination of 3 colour rings: 2 colour rings (on left leg) and metal above 1 colour ring (on right leg).

South Yorkshire (2 schemes)

Combination of two colour rings: 1 colour ring (on left leg), 1 colour ring above metal ring (on right leg). Used colours are yellow, red, orange, dark-green, light-blue, dark-blue, dark-pink, black, white and grey.

Combination of colour rings: 2 colour rings (on left leg), metal ring (on right leg). Used colours are red, yellow, white, dark-blue and dark-green.

Wiltshire

Combination of three colour rings: 1 colour ring above metal ring (on left leg) and two colour rings (on right leg). Used colours are dark-blue, light-blue, dark-pink, red, white, orange, yellow and purple.