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The Identification, Nesting Habits and the Provision of Natural and Artificial Nest Sites for Willow Tit (*Poecile montanus*) on RSPB Old Moor Reserve

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The Willow Tit (*Poecile montanus*) is a breeding bird on the RSPB Old Moor reserve in South Yorkshire. It can be confused with the very similar looking Marsh Tit (*Poecile palustris*) as both are members of the Paridae family and are small coffee and cream coloured bird with a black cap. There are 8,500 pairs in the UK (Holden and Cleeves, 2002) compared to 52,800 pairs of Marsh Tit, and the species has declined by 80% since 1969 (Perrins, 2003). It is a red data list and a UK Biodiversity Action Plan (UK BAP) species giving it high importance in any consideration of planning or land use within the breeding area. Because of its status and in order to help to promote it as a breeding bird at Old Moor the reserve team has looked at five options to provide both natural and artificial nest sites for the Willow Tit, they are to:



Willow Tit showing the key features in spring fresh condition Photo: S. Rutherford

1. Provide dead wood by leaving standing stumps when a tree is felled;
2. Erect nest boxes filled with wood shavings;
3. Attach soft wood branches that have spent 12 months soaking in water to host trees;
4. Plant an orchard as a long-term soft wood area; and
5. Increase hedgerows and allow some beneficial scrub, in particular crack willow (*Salix fragilis*) to grow in limited areas.

This article is to help the reader to identify the Willow Tit, look at the constraints of this specialist breeding bird and to consider the five options in this project and the thinking behind them.

Identification

When seen on a regular basis the differences between Willow Tit and Marsh Tit can seem obvious and stand out well. However, on the first or casual sighting or when seen for only a moment visual identification can be tricky. This is compounded by the feeding habits of both the Willow Tit and the Marsh Tit at bird feeding stations as they tend to be bullied by other birds such as Blue Tit (*Cyanistes caeruleus*), Great Tit (*Parus major*) and Greenfinch (*Carduelis chloris*) so don't stay on the feeders long.

Identification keys start with the head as on the Marsh Tit the cap is black and appears shiny and extends to the base of the nape, whereas the Willow Tit has a slightly longer cap ending on the shoulders which is a dark chocolate brown colour giving a duller look. The bib of the Marsh Tit extends down in a narrow triangular shape ending at the throat only slightly wider than the bill; the bib on the Willow Tit extends wider on the throat wrapping slightly more around the collar. The Willow Tit also shows a pale wing bar when the wing is closed because of pale fringing around the secondaries that the Marsh Tit lacks. When both of these birds are at their most pristine in autumn or with spring fresh plumage these keys work well, however, they cannot be wholly relied upon as worn feathering on the head of the Marsh Tit can dull the look, and wear on the Willow Tit's secondaries can remove the pale bar on the wing pre-moult.

Another identification key that can be used is the thick bull like neck of the Willow Tit giving a scruffy appearance to the head when compared to the neat head of the Marsh Tit. This enlarged neck muscle has evolved with the breeding habit of the Willow Tit in that it excavates its own nest hole in soft wood like a woodpecker. The Marsh Tit will always make use of naturally formed hollows, an old woodpecker nest hole, nest box or will even use an old Willow Tit nest

(Cramp & Perrins, 1993). Local knowledge of which bird you are likely to find in a given area is obviously a great help to positive identification: the Marsh Tit is more of a woodland bird while the Willow Tit prefers wet scrubby areas.

The fact that the Marsh Tit is more prevalent throughout the British Isles with the exceptions of South Yorkshire and South East Scotland may be helpful too (Sharrock, 1976), however care must be taken with these clues as the ranges of both birds can overlap.

The last key that I will discuss here can be the most reliable when the feathers are not in perfect condition or even when the bird is seen in low light, and is that of the songs and calls of these birds, and with a wide selection of CDs to refer to these should present the reader with an understanding of the sounds to listen for. The typical song given by the Willow Tit is a slow descending, almost piping sound of “psu-psu-psu”. The Marsh Tit is more varied in its vocalisation with sometimes five different songs. The typical songs are a variety of either pitch, pits or choos in a rapid repetition of 4 or 5 cycles sounding similar to the Coal Tit (*Periparus ater*).



The glossy black cap and lack of a pale wing bar identify this Marsh Tit

Photo: D. Farrar

The songs of the birds will, of course, be only given at times throughout the rest of the year will be of more use to the observer to locate and identify these birds. The contact call of the Marsh Tit is a small thin sneezing like sound described in the RSPB Handbook of British Birds as “pit-chu” sometimes followed by a “dee dee” sound – this I find to be quite accurate. The contact call of the Willow Tit is very flat and nasally making a “chicka zee zee zee” sound followed quite often with the flat “zee zee” part repeated three or four times. It may be useful to say here that this call is slower in repetition than the Marsh Tit call.

Nesting habits

Typical habitat that Willow Tits nest in is usually a damp scrubby area with their favoured trees of willow (*Salix*) and, as described earlier, nest chambers are excavated, usually by the female, but with some help by the male, into soft or rotting wood (Witherby et al., 1938). The trees found to be used on the Old Moor reserve include Common Ash (*Fraxinus excelsior*), Apple (*Malus domestica*), Elder (*Sambucus niger*) and Sycamore (*Acer pseudoplatanus*), however Willow is the most commonly used. (This habit of excavation is similar to that of the nest building of the Crested Tit (*Lophophanes cristatus*) in the Highlands of Scotland but with Silver Birch (*Betula pendula*), Lodgepole Pine (*Pinus contorta ssp. latifolia*) and Scots Pine (*Pinus sylvestris*) being the usual trees of choice there and of which there will be further discussion later).

Six to eight eggs are incubated by the female while she is being fed by the male for 13-15 days (Witherby et al., 1938) and the young are then fed by both adults and fly after about 17 days (Holden & Cleeves, 2010). While both birds are feeding the female will beg for food as she passes the male when he returns to feed the nestlings (pers. obs.) The nests of the Willow Tit have been vulnerable to take over twice by other birds on Old Moor, on both occasions by a blue tit pair (pers. obs.). Mammal predation on adults by Stoat (*Mustela ermine*) and Weasel (*M. nivalis*) has been noted and the prominent avian danger to adults comes from Little Owls (*Athene noctua*) and Sparrowhawks (*Accipiter nisus*). Nestlings' main mammalian predators are again the stoat and weasel but also the Grey Squirrel (*Sciurus carolinensis*), and avian predators are restricted usually to the Great Spotted Woodpecker (*Dendrocopos major*) with its ability to break into the nests. The nest site can be two metres from the ground and most nest sites are within one metre, with some nests being at ground level. The nest is only used once with a new nest cavity created for every brood. The size of the tree section that I have found being used for the nest cavity has varied between two metres in circumference for a nest in the main trunk down to a branch of 44 centimetres in circumference found with an active nest cavity. However, the available trees on Old Moor may be giving a false view as most trees on the site are quite young. The availability of standing deadwood or trees with soft exposed inner wood may also be dictating the size of the breeding population of the Willow Tit so it is hoped that with the creation of more of this type of habitat numbers will increase from two pairs nesting on the site and up to six pairs around the reserve borders this last season (2012) to six pairs on the reserve and to at least a sufficient number to maintain the breeding stock beyond the borders.

The provision of natural and artificial nest sites

Provision of natural nesting sites for Willow Tits is being looked at as both a long-term project providing a permanent solution by encouraging some new wet woodland areas with standing and lying dead wood, with some help from artificial nests to maintain the population short term. These solutions could also provide problems to the wetland areas of the site as an increase in scrub and mature trees could have a detrimental effect on the hydrology in these areas by the drying effect of the trees and the filling of ponds with leaf litter. This could then affect the breeding of two other UK BAP species – the Bittern (*Botaurus stellaris*) and the Water Vole (*Arvicola terrestris*). The area around the wildlife ponds is one of the favoured areas for nesting by Willow Tits having some scrubby trees such as Crack Willow (*Salix fragilis*) and Pedunculate

Oak (*Quercus robur*) being allowed to stay around the reed bed edges in a limited and controlled state, while there will be removal of Aspen (*Populus tremula*), Silver Birch and Common Alder (*Alnus glutinosa*) because of their pioneering and so drying nature. Some standing dead wood will be left. One area that is not affecting the hydrology of the reserve is the field next to the children's play area and this has been planted with trees as an orchard using local varieties of cherry, apple and pear. As these trees develop and grow the heart wood becomes soft and the bark opens in cracks that allow the Willow Tits to excavate nests so these trees will become beneficial in the long term (below left). The hedges, also away from the hydro sensitive areas on the reserve, have been allowed to grow high and thick with mixed species including trees associated with Willow Tit nesting; these hedgerows will also increase the available natural food in the form of invertebrates and seeds of associated plants for this and other passerines that is especially important for nestlings. A sacrificial crop is sown in the field next to this maturing hedge and a wild flower meadow lies to the west of the wildlife ponds so these help with the provision of natural food. A further 5000 mixed native trees were planted in 2010 in a hedge form to increase this long-term project.



An old nest hole in a Crack Willow tree



One of the artificial nest boxes for Willow Tits

Photos: S. Rutherford

There is an area of hybrid Black Poplar (*Populus x candensis*) wood at the rear of the staff car park; these trees will be thinned to allow other native trees such as oak, sweet chestnut and hornbeam to be planted with an understory of hazel, bird cherry and hawthorn being encouraged to develop over a long period of time so not to change the habitat too quickly. It is hoped that this will be managed, leaving some standing dead wood of up to two metres high to encourage nesting by Willow Tits. Some of the felling will use a technique to encourage the heart wood to rot more quickly and so be available for use sooner by the breeding birds. This technique is used on the Abernethy reserve in the Central Highlands of Scotland by the RSPB to increase nesting sites for the Crested Tit (*Lophophanes cristatus* which also excavates its nest chamber) in Scots Pine, and is produced by cutting half way through the trunk of a tree then using a pulley system to bring the top half of the tree over. This then leaves ragged splits at the top of the standing dead wood allowing water to penetrate and encourage the rotting process to be quicker and deeper through the remaining wood. The part felled top of the tree will also be allowed to stand and will also provide nest sites for the Willow Tits. The remaining wood from this work will be kept in the area where it was felled in the form of log piles and larger stumps to rot down.

The creation of other artificial nest sites will supplement soft rotting wood and standing deadwood found around the reserve. The first of the artificial nests to be used by a breeding pair of Willow Tits was an old rotting cherry tree that had been blown over by high winds near the reserve. It was brought onto the reserve and placed in an area where Willow Tits had been singing and was used successfully by a pair of Willow Tits in the same season. There are three other types of artificial nest boxes being trialled on Old Moor with the first being a standard nest box with an entrance hole of 28mm designed for a Blue Tit but which has been filled to the mouth of the entrance with wood shavings and chippings to encourage some nest creation. One nest box of this design has been used. The second type of nest site (above right) is created by putting up new deadwood, i.e. strapping to another tree a large branch from a felled Sycamore, of about a metre in length and which has been soaked in water for twelve months to soften the wood and start the rotting process. Four of these nest sites have been used in the last two years. The third nest site will be provided by using logs from the hybrid black poplar felling, which will be hollowed out and repacked with the wood chippings and have a hole drilled in the side so they can be used as a type of nest box. This nest box design is yet to be used.

Conclusion

As with any management work the provision of a change within the wetland habitat with some scrub left for the Willow Tit will have benefits for other vulnerable red data list birds such as the Yellowhammer (*Emberiza citrinella*), Song Thrush (*Turdus philomelos*) and Tree Sparrow (*Passer montanus*). However, the balance between increasing the range of the Willow Tit and the need to maintain the hydrology of the site for other important birds and animals such as the bittern

and the water vole that breed on the reserve must be maintained. It is also hoped that increasing the number of hedgerows and allowing some trees to mature and others to stand as deadwood will result in an increase in populations of moths, butterflies and wood boring invertebrate as well as an increase of fruit and seeds, with more hedgerow related flowers as natural food for birds; this will also be of benefit to small mammals which will in turn be of benefit to their predators such as owls.

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