

Separation of Willow Tit and Marsh Tit in Britain: a review

Richard K. Broughton

ABSTRACT Separation of the British races of Willow Tit *Poecile montana* and Marsh Tit *P. palustris* is notoriously difficult. Numerous identification criteria have been proposed during the past 50 years, based primarily on information gained from examination of birds in the hand, although none are judged to be wholly reliable. The best separation feature for birds in the field is considered to be voice, yet the vocal repertoires of both species have not been fully documented. Despite some work to assess the reliability of distinguishing characteristics, some current texts continue to place emphasis on discredited criteria for field identification, or on those of use only for in-hand examination.

This paper reviews the separation criteria in the current literature in order to clarify the most important and reliable characters for the separation of this species pair. New information is provided from examination of skins and live birds, and on diagnostic vocalisations. A clarification of the races occurring in Britain is also provided. Recommendations are made for the key criteria to be used for field, photographic and in-hand identification, with a primary focus on voice, bill marks, cheek pattern, plus wing and tail measurements and the presence or absence of a clear wing panel.

Introduction

In Britain at least, separation of the Willow Tit *Poecile montana kleinschmidti* and the Marsh Tit *P. palustris dresseri* has been problematic ever since 1897, when it was first discovered that the Willow Tit was present here. The question of separating the two in the field remains one of the biggest challenges offered by resident species and is difficult even in the hand; this species pair is the only one to be given a dedicated appendix in the *Ringers' Manual* (Redfern & Clark 2001). In addition, the BTO Garden BirdWatch survey combines records of Marsh and Willow Tits owing to persistent confusion (Chamberlain *et al.* 2005), while one popular photographic field guide even contains a misidentified image.

The continuing problems of identification

have conservation implications. Both species have undergone significant changes in population and/or range in recent decades (Baillie *et al.* 2009) and both are Red-listed (Eaton *et al.* 2009). The Willow Tit, in particular, has become so scarce that in many areas county recorders now require a description to accompany records, and many birders lack sufficient experience with one or both species owing to their progressive scarcity in recent times (Vinicombe 2005). While the current BTO/BWI/SOC Atlas project offers an opportunity to assess the status of both species, accurate identification is vital for this to be successful.

Perrins (1964) tackled the problem by summarising a suite of differences between the two species, but concluded that voice was the only certain means of identification. These criteria

were included in later texts (e.g. Perrins 1979, *BWP*) and form the basis of the distinguishing characteristics contained in modern field guides, although some of these lack emphasis when conveying the degree of subjectivity and variability involved. Meanwhile, work during the past decade has sought to quantify the reliability of the differences quoted in the current literature (Scott 1999; Broughton *et al.* 2008a), but this may be too recent or too specialised to have influenced the texts on many bookshelves.

The aim of this paper is to review and update the criteria for the separation of Willow Tits and Marsh Tits that are published in current reference material and leading field guides. It is hoped that clarification of the most important features for identification will help county recorders, birders and Atlas workers to separate the two species accurately. Identification of birds in the field, in photographs, and in the hand is considered.

The identification criteria in each source reference were compared against each other, with the more systematic approaches taking precedence. Further evaluation was based on field experience of both species during long-term research (e.g. Broughton *et al.* 2006, 2008a) and from systematic examination of selected features on 46 specimens of each species after the post-juvenile moult (six live birds and 40 skins in the Natural History Museum, Tring).

Distribution

The Willow Tit appears to be undergoing severe range contraction in Britain. Comparison between the New Breeding Atlas (Gibbons *et al.* 1993) and (unvalidated) sightings in 2008 (www.birdtrack.net) indicates that the species has been lost from much of southern England, and this is reflected in county reports (e.g. Bacon & Jordan 2004). There were an estimated 8,500 territories in Britain in 2000 (Robinson 2005), but the continued decline over subsequent years (Baillie *et al.* 2009) implies that there may now be far fewer than this. The Marsh Tit, by contrast, is still widely yet thinly distributed across southern Britain and the British population was 52,800 territories in 2000 (Robinson 2005). Both species are declining and extremely localised in Scotland (Forrester *et al.* 2007). The relative abundance of the two species is not equal across Britain; for example, Marsh Tits do not occur on the Humberhead Levels but are locally common in the

woods of Cambridgeshire, a situation that is reversed for Willow Tits. However, while geography may be suggestive of identification, particularly where breeding birds are concerned, individuals may also occur as 'accidentals' many tens of kilometres from breeding populations despite the species' typically poor dispersal capabilities (Wernham *et al.* 2002; Forrester *et al.* 2007).

Behaviour and habitat

Both species are generally regarded as woodland birds (Fuller *et al.* 2005) and in some areas both species may breed in the same wood. The Willow Tit is considered to prefer early successional and scrubby habitats, however, such as Alder *Alnus* carr, old hedgerows and overgrown gravel workings or brownfield sites (Lewis *et al.* 2009; *BWP*), although there are no detailed studies published on the territory requirements of this species in Britain (an area that requires urgent attention). There is good evidence that the Willow Tit's decline has been concentrated in woodland and farmland habitats, however, and that populations in wetter environments (such as carr or wet scrub) have been less affected (Siriwardena 2004).

The Marsh Tit appears to show a greater preference for more extensive woodlands, such as old-growth deciduous woods with a tall, mature canopy and well-developed understorey, and territory size in such habitats averages 4–5 ha (Broughton *et al.* 2006). Both species can occur in a variety of habitats, however, from downland scrub to wooded streams and conifer plantations, and habitat is ultimately an unreliable guide to identification. This is particularly so for lone birds or during the non-breeding season, when both species may also frequent gardens near to breeding territories. Svensson *et al.* (1999) stated that Willow Tits do not visit bird tables in winter, while Marsh Tits will, but this is incorrect; both species are frequent visitors to feeders close to breeding sites when given the opportunity (e.g. Willow Tits at Potteric Carr NR in Yorkshire, and Marsh Tits at Paxton Pits NR in Cambridgeshire).

The only helpful behavioural difference between the two species involves nesting activity, with Willow Tits excavating their own nest hole in rotten wood while Marsh Tits are secondary hole-users that never initiate a hole from scratch (Wesołowski 1999). Marsh Tits will nevertheless commonly enlarge existing

Separation of Willow Tit and Marsh Tit in Britain: a review

Marcus Conway



394. Adult or first-winter Willow Tit *Poecile montana*, South Yorkshire, January 2008. Note the plain whitish cheek patch, being of a similar colour both on and behind the ear-coverts, which extends to the dark cap on the nape. A subtle warm buff 'collar' is present on the neck sides, contrasting sharply with the grey-brown mantle and wing. The bill appears to be uniformly dark, with no pale marks on the upper mandible, although reflected light makes interpretation of this feature difficult. The presence of a wing panel is also difficult to determine, as light reflecting off the edges of the tertials and secondaries is obscuring the degree of any contrast between the feather margins and the mantle. Note the small bib, which has previously been regarded as characteristic of a Marsh Tit *P. palustris*.

Mark Hancox



395. Adult or first-winter Marsh Tit *Poecile palustris*, Worcestershire, December 2008. Typical of many sightings at mid range, there are few identification features clearly visible on this bird. The presence or absence of pale bill marks or pale wing panel cannot be determined conclusively, but note the cheek pattern: whitish ear-coverts contrasting with a cold grey-brown wash on the neck sides and rear of the cheek patch is strongly indicative of a Marsh Tit.

Separation of Willow Tit and Marsh Tit in Britain: a review

holes, carrying away the chippings in the manner of Willow Tits, and may also evict Willow Tits from their own nests or occupy similar holes excavated by Lesser Spotted Woodpeckers *Dendrocopos minor*.

Cap colour and gloss

A frequent separation criterion appearing in the literature is cap gloss, with the cap of Marsh Tits being described as glossy black and that of Willow Tits as matt, dull or sooty-black or very deep brown (e.g. Perrins 1979, Svensson *et al.* 1999, *BWP*). Scott (1999) found that Willow Tits could also show a glossy black cap, however, while female Marsh Tits may also have dull caps with deep brown tones (Harrap & Quinn 1995). Examination of specimens showed considerable overlap of cap gloss, with 28% of Willow Tits showing slight or obvious gloss and 7% of Marsh Tits showing no gloss (fig. 1a).

Plumage gloss may vary considerably with viewing conditions and is of little use at distance. Lighting will have a significant bearing in photographs, as even a matt surface may reflect in strong light and a glossy surface will appear dull in deep shade (figs. 2a-b & 3a-d).

A further complication, mentioned in all sources, is that juvenile Marsh Tits have consistently dull black or deep brown caps (as do juvenile Willow Tits) and retain these until the end of the post-juvenile moult, in late September (figs. 2c-d). Cap gloss is therefore a highly unreliable characteristic, being difficult to assess in the field, open to misinterpretation in photographs, and variable in the hand.

Cap shape

Many sources state that the cap of the Willow Tit extends farther down the nape than that of the Marsh Tit, or onto the mantle. This was primarily advocated as a feature to use on birds in the hand, but Scott (1999) found no practical difference in the cap shape of the two species and regarded the feature as too subjective to be of any value. My examination of specimens also

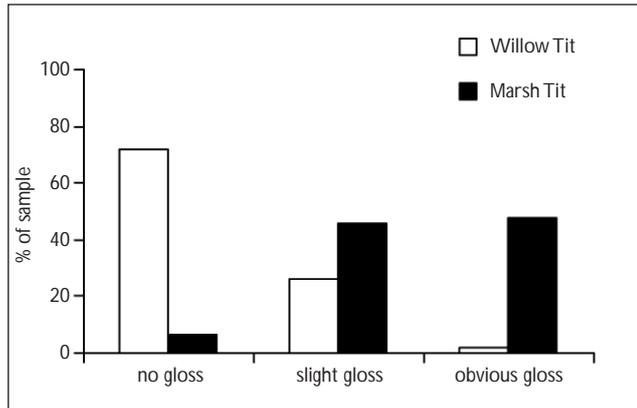


Fig. 1a. Assessment of cap gloss on a sample of Willow *Poecile montana* and Marsh Tits *P. palustris* (40 skins and 6 live birds per species).

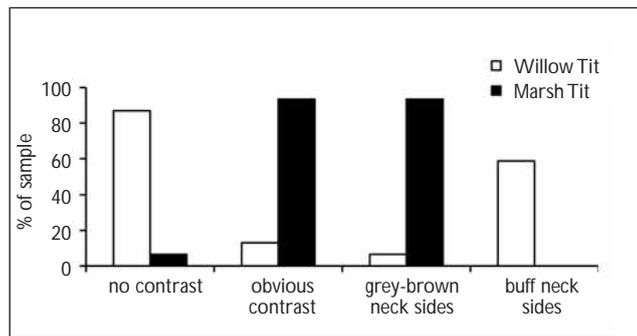


Fig. 1b. Assessment of cheek pattern on a sample of Willow *Poecile montana* and Marsh Tits *P. palustris* (40 skins and 6 live birds per species). Comparison of contrast between colour of ear-coverts and neck sides, and presence of warm buff or cold grey-brown tones on the neck sides.

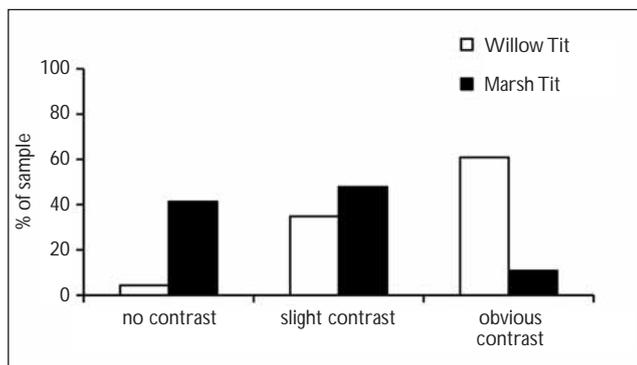


Fig. 1c. Assessment of 'wing panel' on a sample of Willow *Poecile montana* and Marsh Tits *P. palustris* (40 skins, 6 live birds per species), comparing contrast between colour of the fringes of tertials and secondaries with that of the mantle.

Separation of Willow Tit and Marsh Tit in Britain: a review



Fig. 2. Adult and juvenile plumages of Marsh *Poecile palustris* and Willow Tits *P. montana* : 2a adult Marsh Tit (February, © Garth Peacock); 2b adult Willow Tit (December, © John Spink); 2c juvenile Marsh Tit (July); 2d juvenile Willow Tit (August, © www.grayimages.co.uk)

suggested little value in this feature, with 46% of Marsh Tits adjudged to have the cap extending onto the mantle and 20% of Willow Tits having the cap extending only to the nape. Posture of the bird will clearly influence the appearance of the cap shape on specimens and in photographs, and it may be difficult to assess on individuals under most viewing conditions in the field. Furthermore, even where side-by-side comparisons have been attempted, the feature appears to be of little use (Scott 1999; pers. obs.).

Bib

Differences in the shape and size of the bib area on the throat are mentioned in all sources, with Willow Tits reportedly showing a relatively large, diffuse bib and Marsh Tits showing a smaller, neater bib. Again, this difference was highlighted primarily for birds in the hand, although Scott (1999) showed bib features to be unreliable due to significant overlap (figs. 2 & 3). Bib size is variable within both species, and is related to sex (King & Muddeman 1995), social rank (Hogstad & Kroglund 1987) and also age (Harrap & Quinn 1995). Added to this variability and overlap apparent in the hand is the difficulty in assessing subtle differences in the size or shape of

the bib in the field, and the problematic effect of posture and angle of the bird in photographs (fig. 3). Consequently, the bib is not a particularly useful identification feature.

Cheek area

The majority of sources specify differences in the appearance of the pale cheek area of both species. Scott (1999) did not examine this character, although several authors agree on the principal differences (Harris *et al.* 1989; Harrap & Quinn 1995; Svensson *et al.* 1999; Gosler & Clement 2007; *BWP*). The key distinction lies with the pattern of colouring on the ear-coverts and the sides of the neck, which together make up the pale cheek patch. On Marsh Tits, the ear-coverts are a clean whitish colour that frequently contrasts with a pale, cold grey-brown wash on the side of the neck (fig. 1b). The transition between the white ear-coverts and grey-brown neck is often quite distinct, following the curve of the ear-coverts themselves (figs. 2a & 3c). This results in many Marsh Tits appearing to have a much smaller white 'face' than Willow Tits.

The Willow Tit's cheek is whitish or with a faint buff wash, but there is usually no abrupt

Separation of Willow Tit and Marsh Tit in Britain: a review

colour transition behind the ear-coverts (figs. 1b & 3d). Instead, Willow Tits frequently show a subtle colour gradient from the ear-coverts to the sides of the neck, with an increasing warm buff suffusion. Where the cheek meets the mantle, the warm buff suffusion can contrast sharply with the grey-brown of the mantle (fig. 2b). In the field, the Willow Tit appears to have a larger, more uniform whitish cheek area in comparison with the 'two-toned' whitish and grey-brown cheek area of the Marsh Tit.

Examination of specimens revealed a moderately high degree of reliability for these differences, with 87% of Willow Tits assessed showing no distinct contrast in the cheek area and 94% of Marsh Tits showing a clear contrast between whitish ear-coverts and pale grey-brown neck sides (fig. 1b). No Marsh Tits displayed warm buff tones to the neck sides, while warm buff was present to some degree on 59% of Willow Tits.

Juveniles are more problematic, as both have wholly whitish cheeks and lack any grey-brown or buff on the neck (figs. 2c–d). Cheek pattern may nevertheless represent one of the better field characters for identification after the post-juvenile moult (i.e. from October onwards), with less overlap than for other plumage features. Particular caution must be exercised on worn adults or potential juveniles, and exposure of photographic images may also create difficulties by misrepresenting contrast or colour.

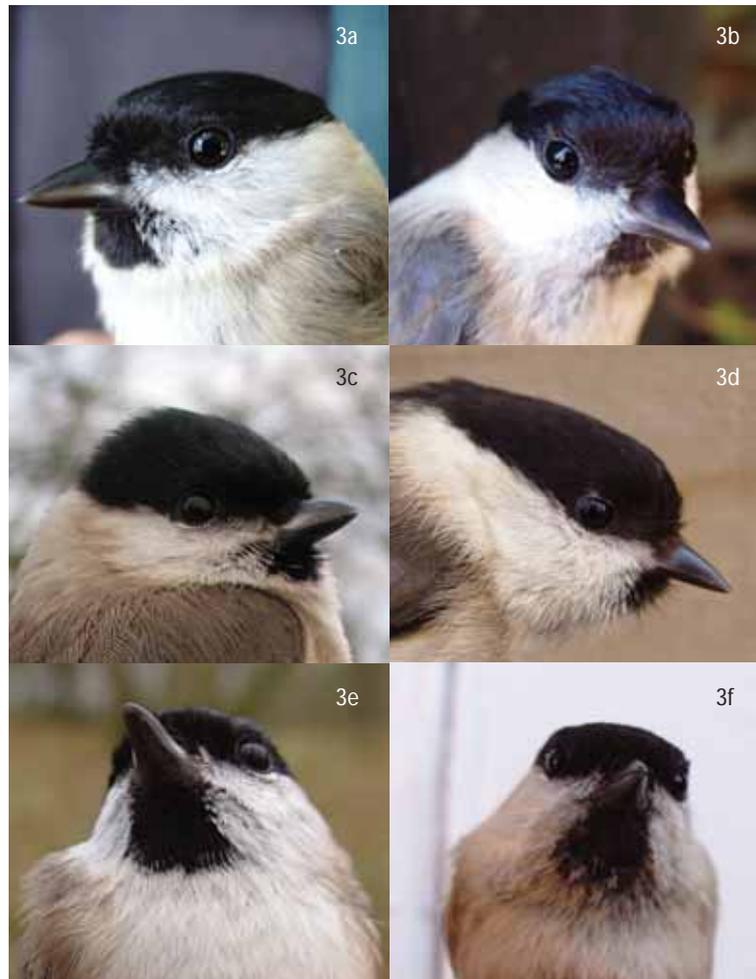


Fig. 3. Caps, cheek patterns, bibs and bills of Marsh *Poecile palustris* and Willow Tits *P. montana*: 3a adult male Marsh Tit; 3b adult male Willow Tit; 3c first-winter female Marsh Tit (© Katie Fuller); 3d first-winter female Willow Tit; 3e adult male Marsh Tit; 3f adult male Willow Tit.

Bill

Bill morphology is of no practical use (see *BWP* for overlapping measurements). Dewolf (1987) suggested that Belgian Marsh Tits showed pale cutting edges to the mandibles that Willow Tits lacked, and this was reported in Svensson (1992). Redfern & Clark (2001) described British Marsh Tits as displaying a white cutting edge to the lower mandible that was lacking in Willow Tits. Broughton *et al.* (2008a) found a significant difference in markings on the bill, but not as previously described: both species displayed pale cutting edges to the lower mandible, but 97% of Marsh Tits showed a pale mark on the upper mandible, on the bill sides below the nostril, which was lacking on 96% of

Separation of Willow Tit and Marsh Tit in Britain: a review



Fig. 4. Variation in 'wing panel' of Willow *Poecile montana* and Marsh Tits *P. palustris*: 4a first-winter Marsh Tit (February); 4b first-winter Marsh Tit (December); 4c adult Willow Tit (February); 4d adult Willow Tit (February); 4e first-winter Willow Tit (February).

Willow Tits (fig. 3). This characteristic mark appears to be the single most reliable and objective physical feature for separating Marsh Tits and Willow Tits, although it may be very difficult to see in the field. It is often readily apparent in photographs, however, although note that reflected light may obscure or mimic the feature.

Colour of flanks/underparts

The flanks or underparts of the Willow Tit are commonly described as being a warm buff colour and those of the Marsh Tit as being paler or colder grey-brown (Perrins 1979; Harris *et al.* 1989; Harrap & Quinn 1995). Scott (1999) found some overlap with birds in the hand and, although buff flanks were an unambiguous characteristic for all the Willow Tits studied, almost half of the Marsh Tits showed buff flanks too (figs. 2a–b). In addition, 78% of Marsh Tit specimens that I examined showed 'warm buff' flanks, although only 6% of Willow Tits displayed atypical greyish-brown flanks. Furthermore, juveniles of both species tend to have rather pale underparts (fig. 2c–d) until the post-juvenile moult. Individual variation, observer subjectivity (in both perceiving and describing colour), field conditions and colour saturation or lighting in photographs could strongly influence the recording of flank colour and, consequently, little weight should be attached to this feature.

Wing panel

Many sources consider the pale creamy or buff fringes on the tertials and inner secondaries of the Willow Tit as one of the best distinguishing features; these fringes form a distinct pale 'panel' on the closed wing that contrasts with the mantle (figs. 4c–d). In comparison, the wing of the Marsh Tit is more uniform in appearance (fig. 4a). Some authors urge caution, however,

stressing that worn Willow Tits may show no pale panel, while fresh Marsh Tits may show a subtle pale panel (Harrap & Quinn 1995; Gosler & Clement 2007; *BWP*). Scott (1999) found that half of the Marsh Tits he studied showed pale fringes on the secondaries, but Harrap & Quinn (1995) stated that Marsh Tits are never as well marked as Willow Tits. This is not so, however, as some Marsh Tits can display a very prominent wing panel (fig. 4b). As with Scott (1999), examination of specimens also revealed a high degree of overlap in the presence of a wing panel, with 59% of Marsh Tits showing some degree of contrast in the wing (fig. 1c). In addition, 'standard' Marsh Tits may also appear to show wing panels in photographs owing to glare or reflectance on the edge of the secondaries, and this may be misinterpreted. While broad creamy margins to the tertials and secondaries are strongly supportive of Willow Tit (fig. 4c), many individuals are less well marked (e.g. figs. 2d & 4e) and the presence or absence of a wing panel is of more limited value than is widely believed, and should be used with caution.

Tail

There is no practical difference in tail length (Harrap & Quinn 1995, *BWP*), or in the extent of white on the outer tail feathers (Harrap & Quinn 1995); both species have a whitish margin to the outer web of the outermost tail feather and no difference between them was apparent when assessing skins or birds in the hand. There is, however, a statistically significant difference in the relative lengths of the tail feathers (du Feu & du Feu 1996; Scott 1999). The difference in length between the outermost tail feather and the longest (innermost) tail feathers is at least 4 mm in the Willow Tit, compared with less than 5 mm in the Marsh Tit, although this has an error rate of up to 23%

(Scott 1999; Redfern & Clark 2001). Viewed from below, the Willow Tit shows a 'stepped' appearance of four successively longer tail feathers from the outermost inwards, compared with two or three in the Marsh Tit (du Feu & du Feu 1996). This contributes to a subtly different tail shape: while the tail of both species has rounded corners, those of the Willow Tit are the more rounded, although this is not obvious in the field (Vinicombe 2005). Although examination of the tail may be of some value for ringers, it is of no practical use for field or photographic identification owing to overlap and the very small measurements involved.

Size, structure and plumage

The Willow Tit is marginally smaller than the Marsh Tit on average, but there is considerable overlap (*BWP*) and this feature is of limited practical value (Willow Tit range 55–63 mm, Marsh Tit range 58–67 mm). Many sources suggest that the Willow Tit has a different shape from the Marsh Tit, the former being described as 'big-headed', 'bull-necked' or 'short-necked' (Harris *et al.* 1989; Jonsson 1992; Svensson *et al.* 1999; Redfern & Clark 2001), while the Marsh Tit is 'smaller-headed' (Jonsson 1992; Gosler & Clement 2007; *BWP*), although any difference is 'not striking' (Svensson *et al.* 1999). The larger pale cheek area and longer contour feathers of the Willow Tit (Harrap & Quinn 1995) may generate this effect, which is nevertheless highly subjective and heavily reliant on posture and 'fluffing up' of the plumage (figs. 2a–d). The plumage texture of the Willow Tit is often described as 'loose' compared with the 'sleek' appearance of the Marsh Tit, and this effect may also be due to the longer feathers of the former, which have fewer interlocking barbs (Perrins 1979; Harrap & Quinn 1995; my unpublished data).

Juvenile feathers also have fewer barbs than those of adults (Svensson 1992), which results in a loose-textured plumage, and this applies to juvenile Marsh Tits as well as Willow Tits. Moulting Marsh Tits also have scruffy plumage during the summer, and the degree of subjectivity involved in assessing such qualities as 'looseness' and 'sleekness', or 'big-headed' and 'small-headed', is an obvious barrier to their reliability.

Voice

Voice is generally regarded as being the most

certain means of identification, although the full range of vocalisations has not been described previously. Willow and Marsh Tits have extensive vocal repertoires based on the 'chick-a-dee' call structure, as with the congeneric New World chickadees (Haftorn 1993; Harrap & Quinn 1995; *BWP*). In these species the major call type is composed of broadly analogous initial 'chick-a' notes and a variable number of wide-band 'dee' notes at the end, hence *chick-a-dee*. While many calls in the vocal repertoires of Willow and Marsh Tits are very similar, such as simple contact calls, components of the 'chick-a-dee' call are diagnostic, along with two other call types.

'Chick-a-dee' calls

The Marsh Tit's 'explosive' or 'sneezing' *pitchou* call (also written *pitchay* or *pitchuu*) is the 'chick-a' note equivalent and is highly distinctive; the Willow Tit produces nothing similar. The call is used in a variety of contexts and is frequently followed by a varying number of *dee* notes to form the full 'chick-a-dee' call, for example *pitchou dee* or *pitchou dee-dee-dee* (fig. 5b). Not all elements of the call may be given, however, and some may be repeated or given in isolation. A complex variety of calls are therefore possible, such as *pit dee-dee*, a simple *chou*, or *pit-it-it*.

The 'chick-a-dee' call of the Willow Tit differs in always lacking the explosive *pitchou* of the Marsh Tit, with the 'chick-a' elements instead being composed of rather thin, high *si*, *zi* or *tsit* notes. The 'dee' notes are also diagnostic, being longer and more buzzing or 'nasal' than those of the Marsh Tit, the full call being transcribed as *si-si dzee dzee*, *si-zur-zur* or *zi-zi taah taah taah* (Harris *et al.* 1989; Harrap & Quinn 1995; Svensson *et al.* 1999). Again, repetition or omission of call elements is common but the key difference is the length of the 'dee' notes, the Willow Tit's generally being 0.25–0.50 seconds long and the Marsh Tit's being 0.2 seconds or less (Harrap & Quinn 1995; *BWP*, figs. 5a & 5b).

Constantine *et al.* (2006) asserted that Willow Tits may emit 'dee' notes on their own (e.g. a *dzee dzee* call) whereas Marsh Tits always include an introductory note such as *pitchou* (e.g. *pitchou dee-dee* rather than just *dee-dee*). This is not always the case for Marsh Tits, however, and a string of stand-alone 'dee' notes is possible (Harrap & Quinn 1995; pers. obs.).

Separation of Willow Tit and Marsh Tit in Britain: a review

Juvenile begging calls

The begging calls of fledged juveniles are also diagnostic and can be heard in late May and June for a week or two after fledging. Those of the Willow Tit are a series of notes that descend the scale and have been described as a 'loud... musical' *dee-doo-derr*, *jzee jzee jzee* or *d'dze'dze'dzah* (fig. 6a) (Lewis 1985; Harrap & Quinn 1995; Vinicombe 2005). The juvenile begging calls of the Marsh Tit have not previously been described, but fledglings are said to be much less vocal than Willow Tit fledglings (Vinicombe 2005; *BWP*). Recent work contradicts this; Marsh Tit fledglings are in fact highly

vocal (pers. obs.) and the main begging calls consist of a thin, squeaking *eehs-it* and a trisyllabic, sometimes descending *eehs-is-it* (fig. 6b). The latter is possibly analogous to the descending *dee-doo-derr* of fledgling Willow Tits but, at just c. 0.3 seconds long, is much shorter.

Song

The common songs of Marsh Tit and Willow Tit are also distinctive. The British Willow Tit has one true song, which is a 'melancholy', 'slow' series of descending notes that are reminiscent of the introductory notes of Wood Warbler *Phylloscopus sibilatrix* song, for example *tsui tsui*

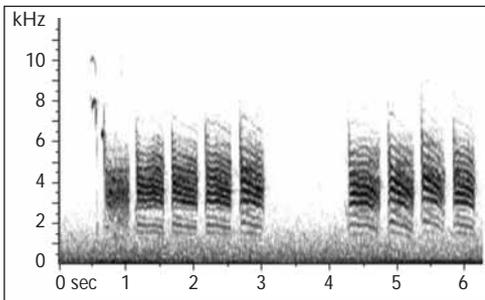


Fig. 5a. Willow Tit *Poecile montana* 'chick-a-dee' calls, the first call containing initial *zi-zi* ('chick-a') notes followed by five wide-band *taah* ('dee') notes. The second call lacks introductory notes.

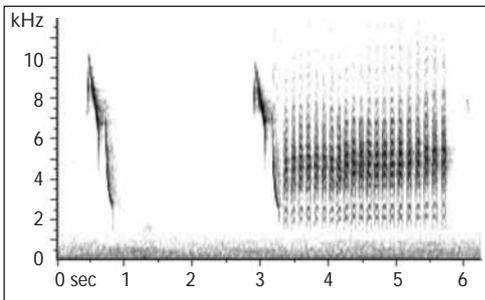


Fig. 5b. Marsh Tit *Poecile palustris* 'pitchou' call and full 'chick-a-dee' call, the latter containing a *pitchou* element and 21 'dee' notes.

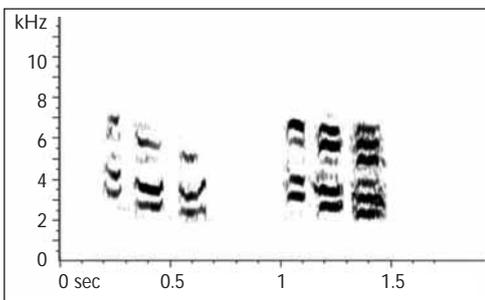


Fig. 6a. Two Willow Tit *Poecile montana* fledgling begging calls: *dee-doo-derr*.

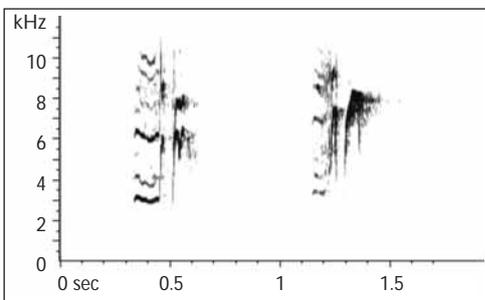


Fig. 6b. Two Marsh Tit *Poecile palustris* fledgling begging calls: *eehs-it*.

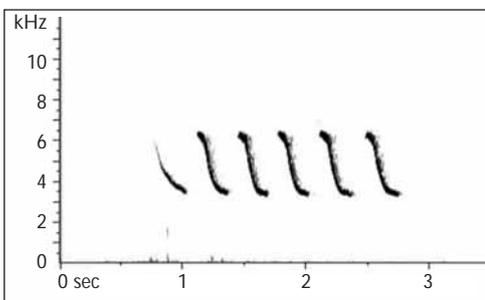


Fig. 7a. Willow Tit *Poecile montana* song: *tiu-tiu-tiu...*

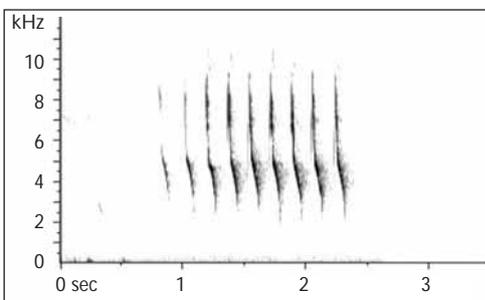


Fig. 7b. Marsh Tit *Poecile palustris* common song variant: *schip-schip-schip...*

Separation of Willow Tit and Marsh Tit in Britain: a review

tsui..., *pew pew pew...* or *tiu tiu tiu...* (Harris *et al.* 1989; Svensson *et al.* 1999; Vinicombe 2005; fig. 7a). Other song types attributed to British Willow Tits appear to refer to 'gargle' calls, brief jumbles of wheezing and musical notes given by *Poecile* species during aggressive interactions (Harrap & Quinn 1995; *BWP*). Marsh Tit 'gargles' are not dissimilar, and their variability and infrequency means that they have little value for identification.

In contrast to the Willow Tit, the Marsh Tit has a large variety of true song types. Males may switch between several 'rapid ringing', 'bell-like rattles' such as a monotonous *schip-schip-schip...* (fig. 7b), a rapid Greenfinch *Carduelis chloris*-like *chipchipchip...* or a Coal Tit *Parus ater*-like *wita-wita-wita* (Harris *et al.* 1989; Svensson *et al.* 1999; *BWP*). The Marsh Tit song is delivered at c. 6–10 notes per second, commonly in bouts of 8–19 notes, compared with the Willow Tit's 2–7 notes delivered at a slower rate of c. 3 per second. One Marsh Tit song variant is very similar to that of the Willow Tit, however, consisting of a much slower series of descending notes: *tiu tiu tiu...* (Harrap & Quinn 1995; pers. obs.), but this appears to be uncommon (0.5 % of 660 song bouts, pers. obs.). Song is generally given from February to May, both sexes may sing, and newly independent juveniles may also sing briefly in June/July (Broughton 2008; *BWP*; pers. obs.).

Other races occurring in Britain

There are just three British records of the Fennoscandian race of Willow Tit *P. m. borealis* (Dudley *et al.* 2006), which is paler and greyer than the British race and less of an identification problem.

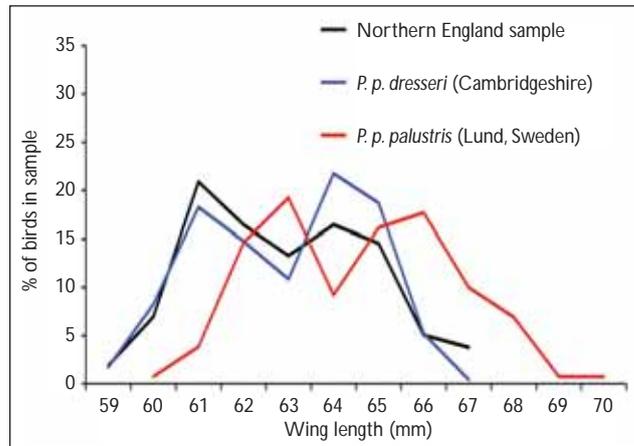


Fig. 8. Distribution curves of Marsh Tit wing lengths by percentage of birds in the sample. Bird samples derived from northern England (subspecies to be defined, n = 165), Cambridgeshire (*Poecile palustris dresseri*, n = 230) and Sweden (*P. p. palustris*, n = 130).

Harrap & Quinn (1995) and *BWP* stated that Marsh Tits in northern England and Scotland are of the larger, greyer, nominate race, which also occurs in northern and central Europe. The source evidence for this claim appears erroneous, however, with the measurements provided being well within the range of British *P. p. dresseri* rather than *P. p. palustris* (Clancey 1947; *BWP*). In order to test the claim, I made a comparison of wing lengths of birds from northern England (Cumbria and Northumberland; BTO ringing data) with those of *dresseri* from Cambridgeshire (Broughton *et al.* 2008b) and *palustris* from Sweden (Nilsson 1992). Wing length in Marsh Tits varies with age and sex, creating a bimodal distribution (Nilsson 1992; Broughton 2008b), so samples were checked to ensure that there were similar proportions of males, females, adults and first-years in each (table 1). Sex was not determined for the northern England sample, however, although the shape of the wing-length distribution curve matched that of the other samples (fig. 8), suggesting a similar proportion of the sexes. The curves for the

Table 1. Wing-length measurements and proportions of adults, first-years, male and female birds in samples of Marsh Tits from northern England (subspecies to be defined), Cambridgeshire (*Poecile palustris dresseri*) and Sweden (*P. p. palustris*).

Subspecies and/or origin of sample	Mean wing length (mm)	SE	Range (mm)	n	% adults	% first-years	% male	% female
Northern England	62.9	0.2	59–67	165	49.7	50.3	?	?
<i>P. p. dresseri</i> (Cambridgeshire)	62.9	0.1	59–67	230	55.2	44.8	56.5	43.5
<i>P. p. palustris</i> (Lund, Sweden)	64.6	0.2	60–70	130	51.5	48.5	51.5	48.5

Separation of Willow Tit and Marsh Tit in Britain: a review

northern England and *dresseri* samples followed each other very closely, with both peaks in exactly the same positions, while the *palustris* sample was offset by an increase of 2 mm. There was also no difference in the ranges of wing lengths of the northern England and *dresseri* samples, nor in the mean values (table 1, two-tailed t-test: $t_{339} = 0.07$, $P = 0.945$), but the mean of the *palustris* sample was significantly greater than that of the northern England sample (table

1, two-tailed t-test: $t_{269} = 6.82$, $P < 0.001$), again by 2 mm. This indicated that the northern England sample was from the same population as the *dresseri* group, and different from *palustris*. Finally, visual examination of birds from Cumbria and Cambridgeshire showed no difference in coloration, providing further evidence that birds in northern England (and Scotland) belong to *P. p. dresseri* and not *P. p. palustris*.

Table 2. Identification criteria for the separation of British Willow *Poecile montana* and Marsh Tits *P. palustris*. While those plumage criteria of high reliability will identify most birds correctly, none is conclusive in isolation and a combination of features is recommended for successful identification.

	Willow Tit	Marsh Tit	
Song¹	One song type of slow c. 2–7 descending whistling notes, at c. 3 notes per second	Variable, usually rapid mono- or disyllabic rattle of c. 8–19 notes, at c. 6–10 notes per second	
Chick-a-dee call²	Does not include <i>pitchou</i> note. Terminal <i>dee</i> notes long, >0.25 secs. Typically <i>zi-zi taah taah taah</i>	Full call includes <i>pitchou</i> note. Terminal <i>dee</i> notes short, ≤0.2 secs. Typically <i>pitchou-dee-dee-dee</i>	
Juvenile begging call	Slow call of 2–5 descending notes, 0.4 secs: e.g. <i>dee-doo-derr</i>	Rapid, high call of 2–5 even or descending notes, <0.3 secs: e.g. <i>eehs-is-it</i>	High reliability: little overlap
Bill	Unmarked upper mandible	Whitish marks on proximal area of upper mandible	
Cheeks³	No contrast between whitish cheek and whitish neck sides; may be warm buff suffusion towards mantle	White cheek contrasts with grey-brown neck sides behind the ear-coverts	
Wing panel	Margins of secondaries and tertials often broad and pale buff/cream, contrasting strongly with mantle	Margins of secondaries and tertials often only slightly paler than mantle, with no strong contrast	
Tail	Outer pair of tail feathers >4 mm less than tip of closed tail	Outer pair of tail feathers <5 mm less than tip of closed tail	Medium reliability: significant overlap
Wing length	55–63 mm	58–67 mm	
Cap⁴	Black, with slight or no bluish gloss, or deep brown	Black, with obvious or slight bluish gloss	
Bib	Diffuse at margins, may cover whole throat	Well defined, restricted to upper throat	Low reliability: substantial overlap, high subjectivity

¹ Marsh Tit has a rare song variant that is very similar to Willow Tit song.
² Caution is required as full call may not be given.
³ Does not apply to juveniles, which show clean whitish cheek and neck sides in both species until majority of post-juvenile moult is completed by September.
⁴ Juveniles of both species have dull black or deep brown caps until late September.

Conclusions

Separating British Willow Tits and Marsh Tits remains difficult and many of the published identification criteria have been shown to be unreliable or highly subjective. With experience, separation of these two species can be straightforward, but it may not be possible to assign all individuals to species (particularly juveniles and those not seen or heard well) and it is best to leave these birds unidentified.

Features such as cap, bib, structure, colour of underparts, habitat and behaviour (except that of extensive nest excavation) appear to have limited or negligible value for identification, owing to the degree of overlap. Tail shape is of use only in the hand. Wing panel is more useful and less subjective, but is also undermined by a large degree of variation, overlap and misinterpretation, and should be used with caution, as a supporting characteristic only. Cheek pattern has less overlap than wing panel and appears to be a more reliable plumage feature (discounting juveniles), particularly the subtle warm buff neck sides on Willow Tits (where present) and a clear transition from white to cold grey-brown on Marsh Tits. Cheek pattern may also be easier to see than wing panel in the field. Bill marks offer the most objective and reliable visual means of separation but may be very difficult to see in the field or obscured on photographs and are therefore primarily of use for birds in the hand. Where visible, however, presence or absence of bill marks has a very high degree of reliability on its own.

Voice remains the most reliable distinguishing feature in the field, notably the diagnostic *pitchou* call of the Marsh Tit, which is unequivocal for identification. The longer, more buzzing 'dee' note of the Willow Tit's 'chick-a-dee' call is also diagnostic once learnt, although confusion may be caused by unfamiliarity or where county recorders receive only an ambiguous written description. Furthermore, lone birds or those visiting feeders may not call at all. Song is very useful, although the slow Marsh Tit variant is a potential pitfall. Juvenile begging calls are also diagnostic but are of limited value due to their brief availability.

While some identification criteria have been refined and improved, some discarded and the reliability of others quantified, the technique for the separation of Marsh and Willow Tits remains much as that stated by Perrins (1964) – in that no single physical feature is conclusively

diagnostic, and a combination of several features must be used (table 2). Assessment of the following characteristics, in descending order of reliability and importance, is recommended for accurate separation: voice, presence/absence of bill marks (primarily in the hand or on photographs), cheek pattern, tail feather lengths (only in the hand), and presence/absence of broad pale margins to the tertials and secondaries that contrast strongly with the mantle. Bib shape and cap gloss may occasionally be useful but should be used only with extreme caution as minor supporting features.

Acknowledgments

The author thanks Marcus Conway, Katie Fuller, Sean Gray, Mark Hancox, Garth Peacock and John Spink for kind permission to use images; Dr Gavin Broad (Natural History Museum), Daria Dadam (Institute of Zoology) and Dr Shelley Hinsley (Centre for Ecology & Hydrology) for comments on the manuscript; the BTO for use of ringing data and the Natural History Museum (Tring) for access to skins. This work was funded by the Natural Environment Research Council.

References

- Bacon, L., & Jordan, B. 2004. Red Data woodland species – Willow Tit, Marsh Tit and Lesser Spotted Woodpecker: a survey in summer 2003. *Cambridgeshire Bird Report* (2003) 77: 167–178.
- Baillie, S. R., Marchant, J. H., Leech, D. I., Joys, A. C., Noble, D. G., Barimore, C., Grantham, M. J., Risely, K., & Robinson, R. A. 2009. *Breeding Birds in the Wider Countryside: their conservation status 2008*. BTO Research Report no. 516, Thetford. (www.bto.org/birdtrends)
- Broughton, R. K. 2008. Singing by female Marsh Tits: frequency and function. *Brit. Birds* 101: 155–156.
- , Hinsley, S. A., & Bellamy, P. E. 2008a. Separation of Marsh Tit *Poecile palustris* from Willow Tit *Poecile montana* using a bill criterion. *Ring. Migr.* 24: 101–103.
- , —, —, Carpenter, J. E., & Rothery, P. 2008b. Ageing and sexing Marsh Tits *Poecile palustris* using wing length and moult. *Ring. Migr.* 24: 88–94.
- , —, —, Hill, R. A., & Rothery, P. 2006. Marsh Tit *Poecile palustris* territories in a British broadleaved wood. *Ibis* 148: 744–752.
- Chamberlain, D. E., Vickery, J. A., Glue, D. E., Robinson, R. A., Conway, G. J., Woodburn, R. J. W., & Cannon, A. R. 2005. Annual and seasonal trends in the use of garden feeders by birds in winter. *Ibis* 147: 563–575.
- Clancey, P. A. 1947. On the races of *Parus palustris* Linnaeus indigenous to England and Wales. *Bull. BOC* 67: 67–69.
- Constantine, M., & The Sound Approach. 2006. *The Sound Approach to Birding*. The Sound Approach, Poole.
- Dewolf, P. 1987. Un nouveau critere de distinction entre la Mesange Nonnette et la Mesange Boreale. *Bulletin à l'Usage du Bagueur Ornithologue*, January 1987: 10–11.
- Dudley, S. P., Gee, M., Kehoe, C., Melling, T. M., & British Ornithologists' Union Records Committee 2006. The British List: a checklist of birds of Britain (7th edn.). *Ibis* 148: 526–563.
- du Feu, C., & du Feu, R. 1996. Separating Marsh and Willow Tits. *Ringers' Bulletin* 9: 34.
- Eaton, M., A., Brown, A. F., Noble, D. G., Musgrove, A. J.,

Separation of Willow Tit and Marsh Tit in Britain: a review

- Hearn, R. D., Aebischer, N. J., Gibbons, D. W., Evans, A., & Gregory, R. D. 2009. Birds of Conservation Concern 3: the population status of birds in the United Kingdom, Channel Islands and Isle of Man. *Brit. Birds* 102: 296–341.
- Forrester, R. W., Andrews, I. J., McInerney, C. J., Murray, R. D., McGowan, R. Y., Zonfrillo, B., Betts, M. W., Jardine, D. C., & Grundy, D. S. (eds.). 2007. *The Birds of Scotland*. The Scottish Ornithologists' Club, Aberlady.
- Fuller, R. J., Noble, D. G., Smith, K. W., & Vanhinsbergh, D. 2005. Recent declines in populations of woodland birds in Britain: a review of possible causes. *Brit. Birds* 98: 116–143.
- Gibbons, D. W., Chapman, R., & Reid, J. 1993. *The New Atlas of Breeding Birds in Britain and Ireland: 1988–91*. Poyser, London.
- Gosler, A., & Clement, P. 2007. Family Paridae (Tits and Chickadees). In: del Hoyo, J., Elliott, A., & Christie, D. A. (eds.), *Handbook of the Birds of the World*. Vol. 12: *Picathartes to Tits and Chickadees*. Lynx Edicions, Barcelona.
- Haftorn, S. 1993. Ontogeny of the vocal repertoire in the Willow Tit *Parus montanus*. *Ornis Scand.* 24: 267–289.
- Harrap, S., & Quinn, D. 1995. *Chickadees, Tits, Nuthatches and Treecreepers*. Christopher Helm, London.
- Harris, A., Tucker, L., & Vinicombe, K. 1989. *The MacMillan Field Guide to Bird Identification*. MacMillan, London.
- Hogstad, O., & Kroglund, R. T. 1987. The throat badge as a status signal in juvenile male Willow Tits, *Parus montanus*. *J. Ornithol.* 134: 413–423.
- Jonsson, L. 1992. *Birds of Europe with North Africa and the Middle East*. Christopher Helm, London.
- King, J. R., & Muddeman, J. L. 1995. Ageing and sexing Marsh Tits *Parus palustris*. *Ring. Migr.* 16: 172–177.
- Lewis, A. J. G., Amar, A., Charman, E. C., & Stewart, F. R. P. 2009. The decline of the Willow Tit in Britain. *Brit. Birds* 102: 386–393.
- Lewis, V. 1985. Voices of Willow Tit and Marsh Tit. *Brit. Birds* 78: 197–198.
- Nilsson, J.-Å. 1992. Variation in wing length in relation to sex and age of Marsh Tits *Parus palustris*. *Ornis Svecica* 2: 7–12.
- Perrins, C. M. 1964. Identification of Marsh and Willow Tits. *Ringers' Bulletin* 2: 10–11.
- 1979. *British Tits*. Collins, London.
- 2003. The status of Marsh and Willow Tits in the UK. *Brit. Birds* 96: 418–426.
- Redfern, C. P. F., & Clark, J. A. 2001. *Ringers' Manual*. BTO, Theford.
- Robinson, R. A. 2005. *BirdFacts: profiles of birds occurring in Britain & Ireland (v1. 22, Oct 2008)*. BTO Research Report No. 407, Theford. (www.bto.org/birdfacts)
- Scott, G. W. 1999. Separation of Marsh Tits *Parus palustris* and Willow Tits *Parus montanus*. *Ring. Migr.* 19: 323–326.
- Siriwardena, G. M. 2004. Possible roles of habitat, competition and avian nest predation in the decline of the Willow Tit *Parus montanus* in Britain. *Bird Study* 51: 193–202.
- Svensson, L. 1992. *Identification Guide to European Passerines*. Privately published, Stockholm.
- , Grant, P. J., Mullarney, K., & Zetterström, D. 1999. *Collins Bird Guide*. HarperCollins, London.
- Vinicombe, K. 2005. Marsh and Willow Tits. *Birdwatch* 14 (6): 28–29.
- Wernham, C. V., Toms, M. P., Marchant, J. H., Clark, J. A., Siriwardena, G. M., & Baillie, S. R. (eds.). 2002. *The Migration Atlas: movements of the birds of Britain and Ireland*. Poyser, London.
- Wesołowski, T. 1999. Marsh Tits (*Parus palustris*) are not excavators. *Ibis* 141: 149.

Richard K. Broughton, Centre for Ecology & Hydrology, Maclean Building, Benson Lane, Crowmarsh Gifford, Wallingford, Oxfordshire OX10 8BB; e-mail rbrou@ceh.ac.uk



POSTSCRIPT: Note that calls to accompany the sonograms in figs. 5–7 are available on the *British Birds* website www.britishbirds.co.uk/sounds.htm



Mark Hancox

396. Adult or first-winter Marsh Tit *Poecile palustris*, Worcestershire, February 2009. The cheek pattern shows a clear demarcation between the whitish ear-coverts and the cold grey-brown wash on the neck sides, giving little contrast between the rear of the cheek patch and the mantle when compared to Willow Tit. Small pale marks are discernible at the proximal end of the upper mandible. Combined presence of both of these features will identify almost all non-calling Marsh Tits correctly, after the post-juvenile moult. Note the thick-necked appearance, due to posture, which may have been wrongly considered as suggestive of Willow Tit *P. montana*.