

Mixed song of Chiffchaffs in Northern Russia

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The Chiffchaff group of species or subspecies *Phylloscopus collybita* has received a remarkable amount of attention from taxonomists in recent times. It has been pointed out that the contact zone of the Siberian subspecies *tristis* and the Eastern European *abietinus* is not well studied (e.g. Helbig *et al* 1996). The degree to which breeding is assortive, has been controversial and is unclear. It has been speculated that the situation in the contact area may have similarities to that in the much better-studied contact zone between *ibericus* and *collybita* in the Pyrenees. The song and calls of *ibericus* differ distinctly from those of *collybita*, and there are some mixed singers in their contact zone (e.g. Salomon 1989, Salomon & Hemim 1992). However, the amount of hybridisation and gene flow is restricted, and *ibericus* is nowadays most often regarded as a species in its own right (Sangster *et al* 2002, AERC TAC 2003). The two subspecies with a wide European distribution, western *collybita* and eastern *abietinus*, have songs and calls which are very similar to each other, although Hansson *et al* (2000) describes a small difference in the pitch of the songs. The song and call of *tristis* are distinctly different from those of *collybita*, *abietinus* and *ibericus*, but the differentiation of mitochondrial DNA has been judged to be small, of about subspecies level (Helbig *et al* 1996). *Tristis* is commonly regarded as a subspecies of Common Chiffchaff *Phylloscopus collybita*.

In this article I comment on the songs of *tristis* and *abietinus*, their differences and the variation of songs in the contact area. The starting point is the articles by Martens & Meincke (1989) about the song of *tristis* and by Marova & Leonovich (1993) about the contact area between *abietinus* and *tristis*. This study was based on the

sound recordings of 195 different individuals of different Chiffchaff taxa. Mixed singing was especially studied. It is not, as such, a proof of hybridisation, because a considerable part of song is learned – it can be merely copying – but in any case, if two taxa of species rank meet each other in some areas, they should retain their specific characters in song and ecology. In addition, I made a complementary study of some museum specimens in order to judge whether their morphological variation in the contact area is compatible with the results from the song study.

Differences in song

The songs of *abietinus* (= *collybita*) and *tristis* have been described in many publications, of which the most important include Cramp (1992), Glutz & Bauer (1991) and Martens & Meincke (1989).

The song of *abietinus* is simple and rhythmic. Similar syllables follow each other with little variation. Essentially the song consists of alternately higher and lower pitched syllables, but in other respects they are rather similar. This alternation is a distinct feature of the song, and has contributed to the species name in many languages, including Finnish, German and English. The frequency range in both styles of note is still rather similar, and the difference in the impression of the pitch is due to the point in the syllable where the rapid drop in frequency stops and even stays more or less the same for a moment, or is dependent on how strong and rising the end of the note is. Typical notes of *abietinus*-song are invariably descending in frequency, but at the end there is often a short rise or several short rises and falls. Examples of typical *abietinus* song are presented in figs 1-3. The phrases often consist of slightly more than ten notes, but they can sometimes continue for much longer.

The song of *tristis* is distinctly different: much faster, more flowing and floating, not as rhythmical. To the human ear, many notes are less simple and distinctly more disyllabic. Martens & Meincke (1989) found the following distinct average differences: the individual notes of *tristis* are shorter, and the pauses between them are also shorter, the highest frequency is lower and the bandwidth smaller. The song essentially consists of alternately ascending and descending syllables. There are many exceptions to the rhythm, for example two rising notes can be consecutive occasionally, but not frequently. The descending syllables are in theory rather similar to the elements of *abietinus* song (but shorter and with a smaller bandwidth), and they can also include a rising end part. This ascending end to a syllable is similar to a separate ascending syllable and can replace one. Because the song is faster, the phrases include more notes than in *abietinus*. Examples of typical *tristis* – song are presented in figs 4-5.

Differences in appearance

Abietinus and *tristis* are quite similar to each other in appearance, but normally are clearly different – we have to remember that there are several taxa in the genus *Phylloscopus*, which look very similar, but are still regarded as separate species. Identification features are described in e.g. Cramp (1992), Dean & Svensson (2005), Glutz & Bauer (1991) and Svensson (1992), and they are not extensively repeated here. Generally, *tristis* is more strongly brown or buff, less green and yellow than *abietinus*. In addition, *tristis* is somewhat smaller. The differences in the appearance of *abietinus* and *tristis* are clearer than between the very similar *collybita* and *ibericus*. During breeding in May-July, adult Chiffchaffs are in a quite worn plumage, and the colour

