

Unusual post-juvenile moult extension in Common Chiffchaffs *Phylloscopus collybita*

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First-year Common Chiffchaffs *Phylloscopus collybita* undergo a partial post-juvenile moult that is markedly variable in extension. In a set of 309 individuals trapped during autumn migration in 2013 and 2014 in central Catalonia (NE Iberia), two juveniles were found with an unusually extensive moult that included a few primary coverts. The moult pattern was symmetric in both cases, suggesting that the feather replacement was not accidental. This exceptional moult extent in juveniles should thus be taken into account when ageing this species.

Key words: Common Chiffchaff, *Phylloscopus collybita*, moult extent, juvenile, NE Iberia.

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Birds moult regularly their feathers in order to guarantee their flight, thermoregulation and signalling performance (Farner & King 1972). The type and number of moulted feathers during the moulting period vary both between species and between the individuals of a single species (Ginn & Melville 1983, Jenni & Winkler 1994). In the Common Chiffchaff *Phylloscopus collybita*, there is great variation in the post-juvenile moult extension. Some individuals replace just a few inner greater coverts, while others moult all their greater coverts, tertials and some of the innermost secondaries (Norman 1991, Svensson 1992, Jenni & Winkler 1994). Adults, however, undergo a complete post-nuptial moult. Therefore, the post-juvenile moult is a key trait for ageing this species and so it is important to know with precision the moulting pattern of this species.

Material and methods

During the autumns of 2013 and 2014 at L'Aiguamoll de la Bòbila, Santpedor (Catalonia, NE Iberia; coordinates: 41°46'N, 1°50'E), birds were trapped in mist nets and ringed as part of a moni-

toring campaign of songbird autumn migration. Sampling was done on random days, either in the morning or afternoon, in late September to December in both study years. We used 84 m of mist-nets and tape-lures. Moult extension was recorded in all immature (EURING age code 3) Common Chiffchaffs: the greater coverts, tertials, alula, carpal covert, primary coverts, primaries, secondaries and rectrices on both wings were carefully examined and their status either moulted or not-moulted was determined by a single ringer.

Results

Two out of 309 examined birds had a number of moulted primary coverts that were part of an unusually extensive moult (Table 1). The first bird (ring code: ESA 1Z00470) was trapped on 10th October 2014 and the second (ESA 1Z14280) on 17th October 2014. The two birds had wing lengths of 62.0 mm and 63.0 mm (maximum wing chord, measured to the nearest 0.5 mm), lengths that are within the expected range for the species (Cramp 1992, Svensson

1992). Both individuals were probably males (Gordo *et al.* 2016).

Discussion

Southern European populations of the Common Chiffchaff carry out a more extensive partial post-juvenile moult than central and north European populations (Glutz & Bauer 1991, Cramp 1992, Svensson 1992, Jenni & Winkler 1994, Gargallo & Clarabuch 1995) like other species such as the European Greenfinch *Chloris chloris* (Gargallo & Clarabuch 1995). Hence, both these first-year birds could have originated from populations in NE Iberia or S France. The two birds were trapped with a difference of seven days, and geographical origin and migration timing have been suggested as an influence for moult extension (Pagani-Núñez *et al.* 2014). In addition, post-juvenile moult extension in Common Chiffchaffs is related to individual quality (Pagani-Núñez & Hernández-Gómez 2013) and thus these two unusual individuals could represent exceptionally high quality individuals.

Moulting asymmetry occurs regularly in birds with a partial moult (Brommer *et al.* 2003) but typically a moulted feather on just one wing is the result of an accidental loss and subsequent regrowth and not due to a natural moulting process. In this case, it is interesting to note the symmetry of the primary covert moult in both individuals, and the fact that the same feathers were replaced in both wings. This suggests that these feathers were part of the post-juvenile moult. The only alternative explanation for such a moulting pattern would be a symmetrical accidental loss, which would seem to be highly unlikely in these well-protected feathers.

Some immature (EURING 3) Common Chiffchaffs with very extensive moults can be quite tricky to age. The best ageing criteria is the moult limit in the greater coverts, tertials and rectrices, when it is generally fairly patent. Shape, colour and wear of the retained primary coverts and alula can also be used as a criterion for ageing. If any primary covert is moulted, the difference in shape (more rounded and wider close to the tip) and colour (more obvious green border, no yellow) will attract the attention of the ringer (Figure 1). Nonetheless, inner primary coverts are some of the most protected feath-

ers in the wing and so an observer could note differential wear between them, even when all belong to the same generation. No information about moulted primary coverts in post-juvenile moults of Common Chiffchaff was found in the literature (e.g. Norman 1991, Cramp 1992, Svensson 1992, Jenni & Winkler 1994, Gargallo & Clarabuch 1995). Nikolaus (2000) found several birds moulting outer primaries in the wintering quarters in Guinea, but primary coverts are not mentioned in his work. However, those individuals are likely to be Iberian Chiffchaffs (*Phylloscopus ibericus*), a species that was once classified as subspecies *P. c. brehmii* of the Common Chiffchaff (Salomon *et al.* 2003). Iberian Chiffchaffs may replace some wing feathers during the winter (Monteagudo *et al.* 2003), but this has never been found to occur systematically to date in what is nowadays recognised as Common Chiffchaff (*P. c. collybita*).

Primary coverts are usually less well examined in moult studies (e.g. Gargallo & Clarabuch 1995) and actually not mentioned in many (e.g., Norman 1991, Pagani-Núñez *et al.* 2014). More research should thus be done on them as usually only greater coverts and flight feathers are noted on moult cards. Other feathers should also be assessed, especially the rest of wing coverts, as they can reveal essential information.

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Resum

Extensió inusual de la muda postjuvenil en el Mosquiter comú *Phylloscopus collybita*

Els joves de Mosquiter comú *Phylloscopus collybita* fan una muda postjuvenil parcial, que és molt variable en la seva extensió. Després d'examinar 309 individus durant la migració de tardor a la Catalunya Central, dos ocells tenien algunes cobertores primàries mudades simètricament a les dues ales, fet que fa molt poc probable una pèrdua accidental. Tots dos tenien, a més, mudes extenses. És fonamental conèixer aquests casos excepcionals per millorar la datació de l'espècie.

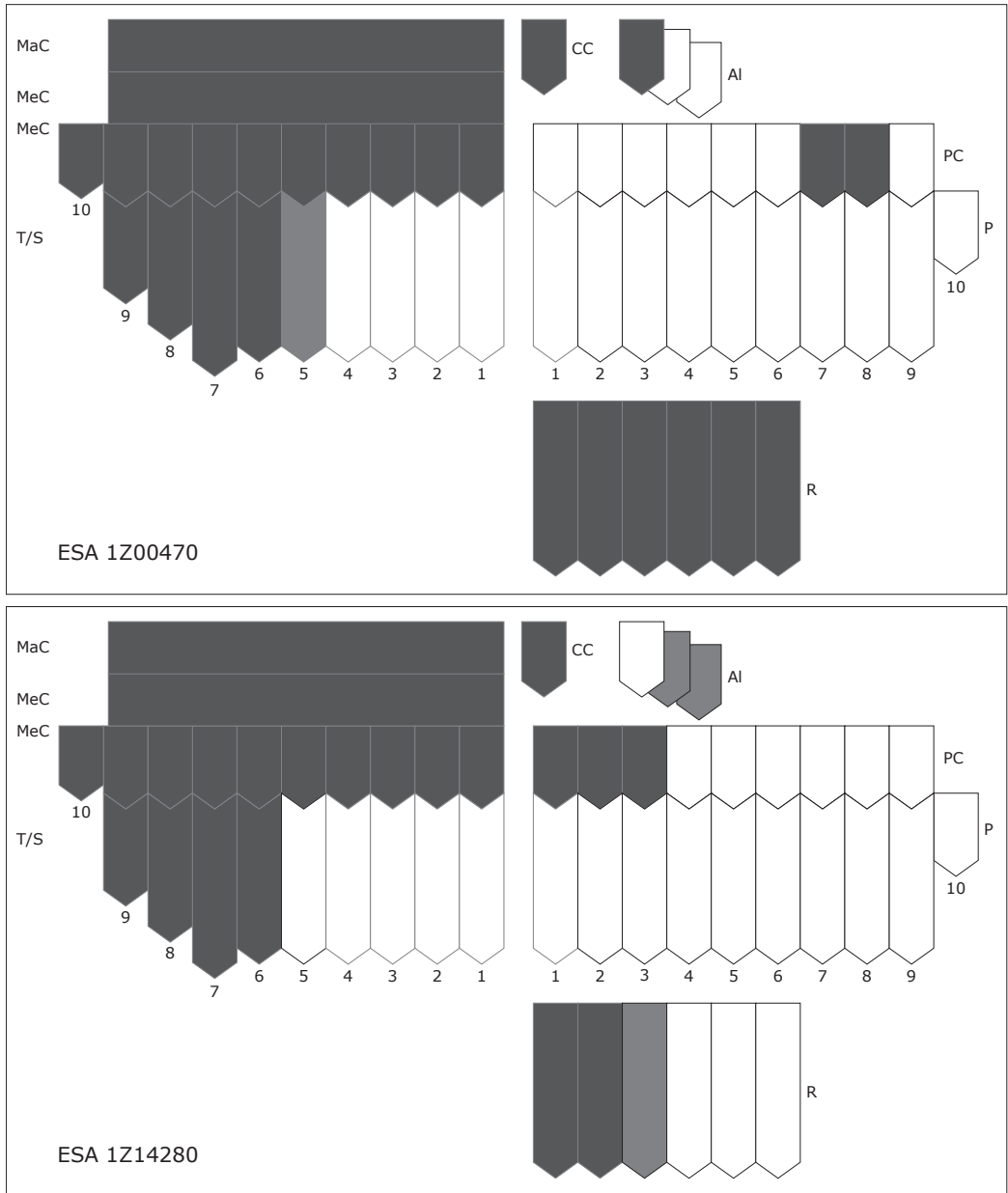


Figure 1. Extent of moult in wing and tail of the two exceptional immature Common Chiffchaffs reported here. The ring code of each individual is given. Dark grey feathers moulted in both wings, light grey only in one side. In ESA 1Z00470, the S5 was moulted in the left-hand wing, while the R3 was only moulted on the right-hand side of the tail. MaC=Marginal Coverts, MeC=Median Coverts, CC=Carpal Covert, Al=Alula, GC=Greater Coverts, PC=Primary Coverts, T/S=Tertials/Secondaries, P=Primaries, R=Rectrices.

Extensió de la muda a l'ala i la cua dels dos casos de muda excepcional en dos joves de Mosquiter comú estudiats. El codi de l'anella de cada individu s'indica en cada cas. Gris fosc per a les plomes mudades en ambdues ales, gris clar per les que només ho han estat en un dels costats. L'exemplar ESA 1Z00470 va mudar la S5 a l'ala esquerra. En l'exemplar 1Z14280, les plomes de l'Àlula mudades van ser a l'ala esquerra, mentre que la R3 només es va mudar al costat dret de la cua. MaC=Cobertores Menors, MeC=Cobertores Mitjanes, CC=Cobertora Carpal, Al=Àlula, GC=Cobertores Grans, PC=Cobertores Primàries, T/S=Terciàries/Secundàries, P=Primàries, R=Rectrius.



Figure 2. A) View of the right-hand wing of individual ESA 1Z14280. B) Detail of the moulted primary covers 8–10. Photos: Marc Illa.

A) Vista de l'ala dreta de l'individu ESA 1Z14280. B) Detall de les cobertores primàries 8 a 10 mudades. Fotos: Marc Illa.

Resumen

Extensión inusual de la muda postjuvenil en el Mosquitero común *Phylloscopus collybita*

Los jóvenes de Mosquitero común *Phylloscopus collybita* realizan una muda postjuvenil parcial que es muy variable en extensión. Después de examinar 309 individuos durante el paso otoñal en una localidad del centro de Catalunya, dos ejemplares mostraron algunas cobertoras primarias mudadas simétricamente en las dos alas, hecho que hace poco probable que se trate de una pérdida accidental. Estos dos casos de mudas tan extensas son relevantes y deben tenerse en cuenta para una correcta datación de la especie.

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