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A Chipping Sparrow, *Spizella passerina*, with Probable 'Progressive Graying'

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I observed a pied Chipping Sparrow (CHSP), *Spizella passerina*, at my feeders on 10 April 2015, with a replacement of normally colored feathers by white ones (Figure 1). I identified it as a CHSP because it was the same, small size as the other CHSPs with which it visited the feeders. Also, the remaining color patterns of the plumage match CHSP. Upon review of Hein van Grouw's publications discussing aberrant bird coloration (van Grouw 2012, 2013), I concluded that this bird expressed one of two mutations: 'leucism' or the much more common 'progressive graying', although a conclusive determination would require observations of the bird over time to see if more white patches appeared with successive moltings as occurs in 'progressive graying' (for comparative review of these two conditions, see van Grouw 2018).

'Leucism' tends, in general, to be symmetrical in its appearance whereas 'progressive graying' is more random in disposition (van Grouw 2013, 2018). When one considers the pattern of white feathering on the dorsal surface of the subject (Figures 1 and 2), although there are regions of abnormal white feathers bilaterally, the distributions are not symmetrical. For example, there are more white feathers in the left than right secondaries and tertials (Figure 2). The coloration aberration appears similar to that of a House Sparrow, *Passer domesticus*, suffering from 'progressive graying' as shown in Figure 10 of van Grouw (2012). I am not aware of a previous report of a CHSP with 'progressive graying' although similarly appearing birds have been reported as having 'leucism' (e.g., Lotterhos 2016, Mattie 2020), so the possibility for mischaracterization exists.

Unlike 'leucism', for which numerous genes in pigeons (van Grouw and de Jong 2009) and mammals (Fleck et al. 2016) have been identified, the exact cause(s) of 'progressive graying' in birds is currently unknown and most may not be heritable (e.g., epigenetic, van Grouw 2018). A similar and heritable graying phenotype is seen in horses and is linked to a genomic duplication or triplication of a particular set of genes (Pielberg et al. 2008, Nowacka-Woszuk et al. 2021) that leads to melanocyte and melanin pigment loss (Sundström et al. 2011). How this mutation leads precisely to 'progressive graying' and whether a homologous

mutation is at play in any forms of 'progressive graying' of birds remains to be determined.

Figure 1. Chipping Sparrow, *Spizella passerina*, with 'progressive graying'. Top: right lateral view; B**ottom:** left lateral view. Notice the differences between the patterns between the right and left sides. A normally colored CHSP is present in the left foreground (bottom panel).

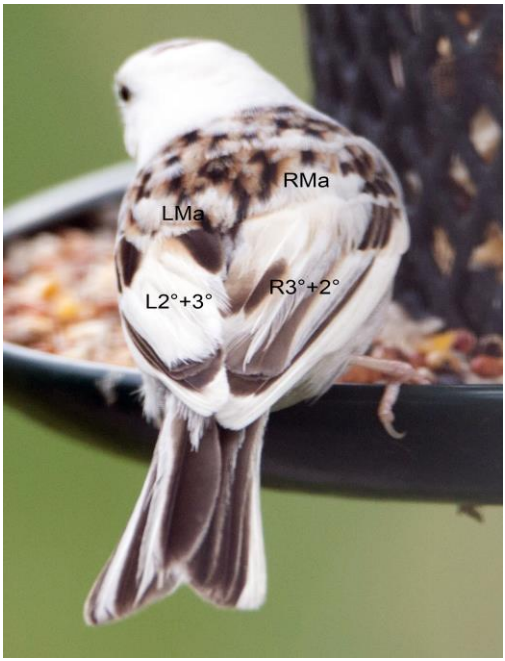

Figure 2. Dorsal view of the Chipping Sparrow allowing comparison of left and right sides. The left and right tertials and secondaries (L2°+3°, R3°+2°) and mantles (LMa, RMa) show asymmetrical patterning consistent with 'progressive graying'.

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