

The appearance of Lapland Buntings *Calcarius lapponicus* in song flight

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Abstract. The territorial song flight of Lapland Bunting *Calcarius lapponicus* males has been described in the literature as similar to that of pipits *Anthus* spp. Observations at Hardangervidda, S. Norway, show that the buntings sing over their territories while gliding about more or less horizontally, quite different from the steep ascending and descending flight trajectories of singing pipits. Also, the buntings' body plan during song flight differs strikingly from that of pipits, potentially creating a very different visual signal.

Many bird species breeding in open landscapes perform song flights, during which they cruise over their territory while vocalizing, partly to attract mates, partly to mark their territorial ownership. One such species, with a virtually circumpolar breeding distribution on tundra and similar northern alpine habitat, is the Lapland Bunting *Calcarius lapponicus*. While males of this species frequently sing from the top of rocks and bushes, song flight is commonplace. Its song flight has been likened to that of pipits *Anthus* spp. (Cramp & Perrins 1994), with a steep ascent, a cruising song phase, and a gliding descent. The flight is described as taking place with wings outspread and the tail fanned upwards, illustrated on page 109 in Cramp & Perrins (1994). While song flights in general primarily serve to broadcast an auditory signal, the appearance and flight patterns of such flights might also carry visual signals, especially if performed in a stereotyped manner (e.g., Tinbergen 1939, Armstrong 1965).

Partly from ongoing breeding studies of Lapland Buntings at Hardangervidda, Norway (Fjeldheim unpubl.), partly from experience with the species from visits to this alpine area for studies of shorebirds, we have frequently observed its song flights. We are also familiar with the song flights of pipits, in particular the



Figure 1. Lapland Buntings in song flight, drawn from photographs (IB).

Meadow Pipit *A. pratensis*, which at Hardangervidda occurs abundantly in the same habitat as the Lapland Buntings. We find that the song flights of the buntings look very different from that of the pipits. In June 2016 we paid attention to song flights from start to finish of eleven different Lapland Bunting males, and the song flights of all of them conformed to the description below.

While Meadow Pipits ascend rapidly, usually singing as they do so, Lapland Buntings ascend silently. Meadow Pipits may circle for a short while singing, before almost immediately descending steeply ('parachute style', Cramp 1988) with their tail more or less folded and sharply raised at an angle to the birds' back, and their wings typically held in a dihedral position. A specific part of their song accompanies the descending phase of their song flight. Lapland Buntings, on the other hand, start to perform their song after the ascent, and they keep on singing as they float slowly over their territory in varying directions. After having made several such turns over their territory, they finally glide slowly to the ground, often still singing. The same song strophe is repeated throughout the song flight, and no different sound accompanies the descent.

Contra Cramp & Perrins (1994) the Lapland Buntings do not in any stage of their song flight point their tail at an angle upwards in the manner of pipits. Instead they glide on stiff horizontally held wings pointing at a right angle laterally to their body and with the tail spread in a horizontal, or a trifle lowered, position (Figure 1). The primaries are generally more or less assembled making the distal part of the wings narrowly pointed while the secondaries appear to provide the main lift. This causes a striking wing profile of Lapland Buntings in song flight. Drawings in Hussell & Montgomerie (2002) as well as in Cramp & Perrins (1994) fail to capture this feature. Actually, the Lapland Buntings, during their song flight, look 'flattened' as they float about in the air.

In descent, one of the eleven males subject to careful observation, apparently to get quickly to the ground, actually on one occasion tilted forward with the tail slanting upwards, although not at an angle to

the back as in descending pipits. The others maintained the horizontal body plan from the 'cruising' part of the song flight all the way down to the ground.

The song flight of Lapland Buntings differs radically enough from that of Meadow Pipits to make the two species visually distinguishable in such flight at a long distance, although song itself usually identifies these species well before they are spotted. Lapland Buntings as well as Meadow Pipits chiefly fly in a stereotyped manner in song flight, and their appearance in such flights most probably contributes to the flights' signal function.

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