Ornithology from the Tree Tops

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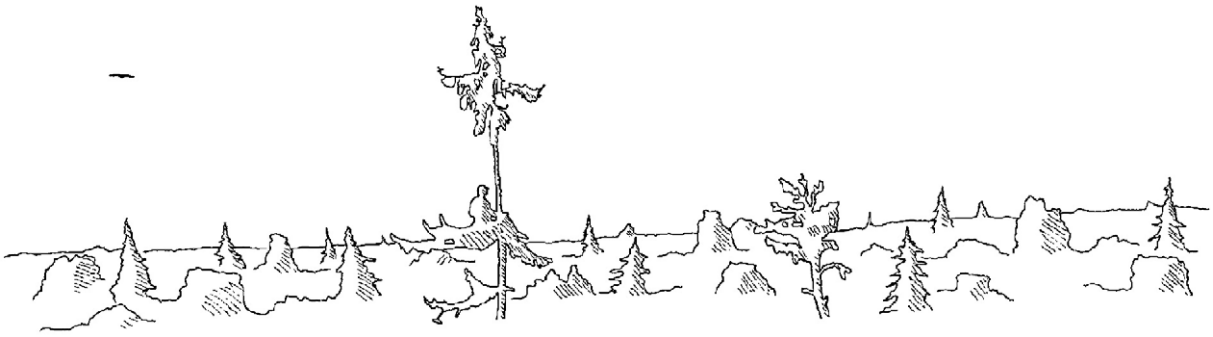

Ornithology from the tree tops

In the crown of a large *Faidherbia albida*, a *Phylloscopus* warbler flutters among the twigs, occasionally using a jump-flight to snatch an insect from the underside of leaves. Definitely a Wood Warbler, the pure white underparts contrasting with the yellow throat. Its feeding behaviour is the same as used on the breeding grounds, but this bird is foraging in the northern Sahel, in the dry cropland of Mali with widely scattered Faidherbia and Balanites. In this region, annual rainfall amounts to only 100–200 mm. What is this Wood Warbler doing so far north in November, when the idea is that its wintering grounds are much farther to the south, in the wooded savannas and forests of the Sudan-Guinean and Guinean vegetation zones with annual rainfall in excess of 800 mm? That's a good question. The point is: we don't have a clue of the whereabouts and doings of many of 'our' songbirds during much of their lives, notably of those spending the non-breeding season in Africa. Admittedly, because their numbers are dwindling at an alarming rate, Palearctic long-distance migrants are receiving a lot of attention in recent years. Some of this attention is now focussed on Africa (although one would be surprised to note that comparatively little 'ground-truthing' is involved), but by far the greatest research effort is made in Europe, on the breeding grounds. Consequently, problems, or perceived problems, in the breeding areas are bound to overshadow all else, perhaps enhanced by the fact that doing research in Africa is difficult, to say the least.

One of these problems has almost reached the status of a dogma: the mismatch between spring arrival/start of breeding and food peak during the breeding season. Remember: food peak in Europe is often used as a synonym for caterpillar peak. To be more precise: a peak in the caterpillars of *Operophtera brumata* and *Tortrix viridana*. There is no denying that the past few decades have shown an advancement of phenology in many organisms, be it plants, insects or birds. A plethora of studies, mostly from the northern

Large *Faidherbia* trees, especially when flowering (November), are of utmost importance to Palearctic passerines; north of Mopti, Mali, 27 November 2013. Each tree may harbour a Pallid Warbler *Hippolais pallida*, one or two Subalpine Warblers *Sylvia cantillans* and Bonelli's Warblers *Phylloscopus bonelli*, depending on crown width. Photo by Rob Bijlsma.

but also from the southern hemisphere, has capitalized on this apparent change, often using phrases like 'long-term' in the title. Long-term can be anything between 10 and 250 years, in terms of climate (as is often the case in these studies) still a whisper in the wind but perhaps for organisms with a short generation cycle of importance. This importance is taken for granted where 'mismatch' is involved, based on the idea that timing of breeding is such that chicks are raised at a time when food resources peak, ensuring well-nourished young with a good chance of survival and a high probability of recruitment. When resources advance at a quicker pace than birds, especially long-distance migrants which have a hard time adjusting to changing temperature on the breeding grounds, the gap between laying and food peaks widens, with dire consequences. At least, that is the *a priori* assumption of many researchers. And indeed, late laying pairs produce fewer chicks than early laying pairs. However, this phenomenon is typical for all single-brood species, irrespective of changes in their phenology. More important, very few researchers have looked into the diet choice of their babies, and even fewer have quantified fitness consequences of phenological changes. Interestingly, two of the major study species in Europe, Great Tit *Parus major* and Pied Flycatcher *Ficedula hypoleuca*, seem to adapt quite well to phenological changes in their breeding haunts. Both have thrived in numbers and distribution in the past decades, and, except for a decline of the tiny, peripheral British population of Pied Flycatchers, show more or less stable numbers or increases throughout Europe (including The Netherlands, see www.sovon.nl). The much quoted decline of Pied Flycatchers in The Netherlands (Both *et al.* 2006), infallibly referred to as proof that phenological mismatches can result in population declines, is based on three small nestbox areas (with 9–26 pairs, see Keppel, Liesbos and Oldhorst in the supplementary information in Both *et al.* 2006). Hardly populations, and certainly not sufficient to speak of declines considering the rest of the country. Perhaps the penalties of a mismatch are not that high? Perhaps declining long-distance migrants are facing other troubles more serious than a phenological mismatch on the breeding grounds?

Rather than tumbling in the snake pit of affirmative science, or continue producing correlative studies showing links between declines, changing phenologies and climate (see for example Jones & Cresswell 2010), we need empirical evidence to support those claims, as also pointed out in a critical review by Knudsen *et al.* (2011). Indeed we do. For starters, why not study diet choice in the (pre-)breeding season, rather than *a priori* assuming that caterpillars are the main food and that a trophic mismatch therefore is bound to have dire fitness consequences. The chances are that we discover something else entirely, such as a more diverse diet to begin with (Burger *et al.* 2012), seasonal shifts in habitat and diet choice (Fuller 2012, Geiger *et al.* 2014), or a lack of fitness consequences of a mismatch (Wilkin *et al.* 2009). It will not do to rely on food information in handbooks, no matter how detailed, simply because many such studies are from days long gone. The world is changing rapidly, and chances are that abundance and quality of food have been changing accordingly. Food studies are difficult, time-consuming and hardly sexy in this age of modelling, electronic gadgets and fast science. Still, to avoid speculation about fitness consequences, and mechanisms involved, hardcore fieldwork and stamina are unavoidable, no matter how unpopular. Nothing can be taken for granted, not even apparently obvious population declines (most monitoring schemes for birds started as late as the 1980s).

And for long-distance migrants, we still have Africa awaiting. In the Americas, where migratory birds have been studied in detail on the breeding and wintering grounds and *en route*, the impact of the non-breeding season on arrival dates, breeding, survival and recruitment have been well established (for example, Tonra *et al.* 2011). Why would the Palearctic–African migration system be any different?

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