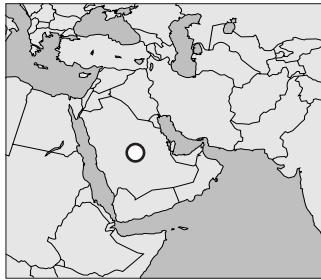


## Will the real Sykes's Warbler please stand up? Breeding data support specific status for *Hippolais rama* and *H. caligata*, with comments on the Arabian population of 'booted warbler'

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In early-January 2000, one of us (GMK) received a communication from Michael Walters, the former Curator of Eggs at the Natural History Museum (Tring), concerning a recent short note by Castell (1999, see below) within these pages, in which a nest, apparently of *Hippolais rama*, was depicted. MW commented: "However, in the photograph of the nest accompanying the note, the eggs do not appear to be those of *rama*, which has a very distinctive egg quite different from those of all other species of *Hippolais*... These eggs are definitely those of a *Hippolais*, but not of *H. rama*. I suggest that the identity of this isolated population should be investigated carefully." Recently, PC has gained unequivocal first-hand experience of both *H. rama* and *caligata* on their breeding grounds in Kazakhstan. Thus, the time has now come to reopen the investigation...

Despite significant interest in the field identification of the genus *Hippolais* since the 1960s (Wallace 1964), until recently the two principal taxa within the Booted Warbler *Hippolais caligata* complex were widely treated as subspecies, except by some Russian literature (Stepanyan 1978, 1983). (It should be noted that *H. caligata annectans* Sushkin, 1925 is not generally accepted, but if considered a valid taxon probably clusters with *rama*.) For West European ornithologists, more readily accessible evidence for their specific separation did not arrive until the remarks of J. Haffer, in Glutz von Blotzheim & Bauer (1991), comments that were swiftly taken up by Sibley & Monroe (1993), in a supplement to their influential world checklist, as support for such a split. Thereafter, renewed interest in *rama* and *caligata* and the greater accessibility of their zone of overlap in the breeding season, in Central Asia, culminated in the important contributions of Svensson (2001, 2003), who provided a detailed résumé of the vocal, mensural, behavioural and, limited, morphological differences between *rama* and *caligata*, which are now generally accepted as being two biological species (e.g. Knox *et al.* 2002, Parkin *et al.* 2004).

The aim of the present contribution is to bring to wider attention qualitative data on differences in breeding biology between *caligata* and *rama*, documenting the appearance of the nest, eggs and nestlings, as well as habitat, nest site and methods of nesting, all of which factors may operate to differentiate between species; the importance of behavioural and biological traits in the elucidation of taxonomic conundrums was emphasised by Löhr & Thaler (1992). Our remarks are based on several nests, of both species, found by PC and co-workers in two different areas of Kazakhstan, in June 2003, and other nests in the United Arab Emirates, in May 1998 (Castell 1999). Based on the latter, we proffer comments on the identity of those birds nesting in Arabia, which to date have been unequivocally assigned to *rama*, although published evidence for this treatment has been relatively thin until very recently (Pearson *et al.* 2004).

Beyond the scope of the present work is to comment in detail on the suggestion that the Olivaceous Warbler *Hippolais pallida* group (including *rama* and *caligata*) is

genetically closer to *Acrocephalus* (Leisler *et al.* 1997), a proposal that has received mixed support (see discussions in Sangster *et al.* 1999, Parkin *et al.* 2004). Helbig & Seibold (1999) also found some divergence between the Olivaceous/Booted Warbler group and the remainder of the taxa traditionally placed in *Hippolais*, suggesting that the name *Iduna* would serve as a suitable subgenus for the former grouping. Dickinson (2003) also employed *Iduna* for these taxa, but at the level of genus. Nonetheless, it might be noted that nests of *Acrocephalus* are constructed in dense vegetation and, in the case of most species, often over or by water. They are typically deep well-formed cups, usually among vertical stems, the nests often being woven around or bound to these. In contrast, nests of *Hippolais* are usually in bushes or trees, sometimes in the thinner twigs at the end of branches. They are not as deep (relatively) as those of *Acrocephalus*. Nests of Booted, Sykes's and all forms of Olivaceous are typical of *Hippolais*, but the nestlings of two forms within this group have three tongue spots (see below), unlike any other *Hippolais*, all the rest of which show two spots.

### SYKES'S WARBLER

*H. rama* was noted breeding in an area of semi-desert with young *Saxaul* trees/scrub, mainly c. 3 metres tall, 30 km north-west of the village of Kokpek, south-east Kazakhstan (Plate 1). Pairs were distributed over much of the area, but were distinctly concentrated in an area of older, woodier and slightly taller bushes. On 3 June 2003 five nests had: C/5 (Plate 2), C/5, C/2 (incomplete clutch), B/5 (newly hatched; Plate 3), B/5 (aged 4–5 days). All nests were constructed in the low forks of *Saxaul* bushes, 0.2–1.2 m above ground, and the two lowest nests were partially screened by weeds growing within the bushes. Nests were mainly of grasses, with some roots and strips of bark, and a base and outer edge of small twigs, with spider webs around the rim, and lined with fine grass and/or vegetable down. Typical eggs of *Hippolais* warblers are pink with sparse black spots and specks, but those of *rama* are greyish white with heavy blackish-brown (or irregular black) scrawls and blotches at the larger end, and sparse spots and specks elsewhere (Harrison & Castell 2002); the eggs in these nests were typical of *rama*. The newly hatched young were altricial and naked; gape flanges yellowish white; mouth orange-yellow, with two oval black spots, one at either side of the base of the tongue; and both broods had the two tongue spots.

### BOOTED WARBLER

*H. caligata* was breeding in scattered low bushes (of *Artemisia* and *Spirea* spp.), mainly growing in slight depressions, on flat open steppe near the village of Qorghalzhin (Plate 4), south of Astana in northern Kazakhstan, c. 1,000 km north of where the Sykes's Warbler nests were discovered. Between 19 and 23 June, six nests contained: C/2 (incomplete clutch, and subsequently four eggs on 26 June; Plate 5), C/6 (deserted), C/0 (new and ready for eggs, and probably a replacement for the deserted nest), B/6 (aged 3–4 days; Plate 6), B/3 (aged 6–7 days), B/3 (aged 9–10 days) and an infertile egg. In addition, several broods of fledged young were observed, and one young was caught and photographed (Plate 7). The nests were mainly 0.3 m (or lower) in the centre and base of low bushes, some partially screened by grass, and were similar to those of Sykes's Warbler in Kazakhstan, except that twigs were absent and plant stems had been utilised. The eggs were typical of most species of *Hippolais*, and thus quite different from *H. rama*. The young were altricial and naked at hatching; gape flanges pale yellow; mouth orange-yellow. In one nest all six young, aged 3–4 days, had three spots on the tongue, two black oval spots, one at either side of the base, and a much smaller, narrow spot at the tip; in another nest, two of the three young, aged 6–7 days, had only two spots at the base of the tongue, but the third also had a third spot at the tip. Three young, aged 9–10 days, in another nest, had only the

two spots at the base. A recently fledged juvenile, photographed in the hand, had only two tongue spots; the legs were pinkish cream; not dark pinkish- or pale reddish-brown, with a variable greyish cast, as in adults (Svensson 2001). It is likely that the spot at the tip of the tongue fades and disappears as the nestling develops, which also occurs in other species (Harrison & Castell 2002).

### ARABIAN BIRDS

Those breeding (apparently just 5–20 pairs) at Khor Kalba in the United Arab Emirates (UAE) are considered to be Sykes's Warblers, according to Aspinall (1996) and Richardson & Aspinall (1998), as are those in the Batinah, at Shinas and Liwa, in adjacent Oman (Eriksen & Sargeant 2000), with occasional records from elsewhere (Aspinall 1996). Svensson (2001) was also of the opinion that this population was referable to *rama* (and further suggested that such birds might also breed in similar habitat on the opposite shore of the Gulf, in Iran), but until very recently the only detailed published justification for such a viewpoint was that by Ash & Pearson (2002), who examined two specimens in the Natural History Museum (Tring; NHM), one from Khor Kalba and the other from Ras al Khaimah (both UAE; the latter had originally been identified as an Olivaceous Warbler, form *elaeica*, the one from Khor Kalba as *rama*), and concluded that they were, indeed, *rama*. This identification appears correct, as evidenced by an independent examination of the same specimens by GMK and A. Grieve; however, these individuals do exhibit some differences from classic *rama* in wing formula and moult timing. In UAE, the birds breed in low mangroves on the landward edge of taller, more mature mangrove trees (Plate 8). Two nests contained eggs on 11–14 May 1998 (Plate 9), and several were ready for eggs, with singing birds nearby (Castell 1999), and a fresh, but empty nest was observed on 21 March 2000 (PC unpubl.). All nests were situated lower than c. 0.5 m, in tree forks, and constructed mainly of plant stems, grass and roots. Eggs were typical of other *Hippolais*, including *caligata*, but totally unlike those of *rama* in Kazakhstan. Nestlings in UAE do not appear to have been described.

### TAXONOMIC IMPLICATIONS

Differences in the appearance of eggs and nestlings are significant factors in differentiating between species, equally as important as differences in adults, especially when consistent. The eggs of *rama* and *caligata* in Kazakhstan clearly differ, whilst eggs from the population breeding in Arabia are consistent with *caligata*, despite all of the literature implying that the form there is *rama*. Whilst available data are limited, nestlings of *rama* (two tongue spots) and *caligata* (three spots) clearly differ on hatching in Kazakhstan, and it would be most interesting to discover the pattern in newly hatched nestlings from Arabia. Nestlings of closely related species can also be identified by the number of tongue spots, e.g. two spots in Eastern Olivaceous Warbler *H. pallida* and three in Western Olivaceous Warbler *H. opaca* (Crespo *et al.* 1988), re-emphasising the potential usefulness of breeding biology data in taxonomic



**Figure 1.** Mouth-marking diagrams: (a) Booted Warbler *Hippolais caligata* nestlings at 3–4 days; (b) Booted Warbler nestlings at 9–10 days; (c) Sykes's Warbler *H. rama* newly hatched nestlings; and (d) Sykes's Warbler nestlings at 4–5 days. (Richard Castell, from photographs by Peter Castell)



Will the real Sykes's Warbler please stand up?



**Plate 1.** Sykes's Warbler *Hippolais rama* breeding habitat, south-east Kazakhstan. (Peter Castell)



**Plate 2.** Nest with five eggs of Sykes's Warbler *Hippolais rama*, south-east Kazakhstan. (Peter Castell)



**Plate 3.** Nest and newly hatched young of Sykes's Warbler *Hippolais rama*, south-east Kazakhstan. (Peter Castell)



**Plate 4.** Booted Warbler *Hippolais caligata* breeding habitat, near Qorghalzhin, Kazakhstan. (Peter Castell)



**Plate 5.** Nest with four eggs of Booted Warbler *Hippolais caligata*, near Qorghalzhin, Kazakhstan. (Peter Castell)



**Plate 6.** Nest with six Booted Warbler *Hippolais caligata* chicks, near Qorghalzhin, Kazakhstan. (Peter Castell)

studies. Habitat, nest site and nest are considered much less important in differentiating species: bush-nesting species may choose to breed in a variety of shrubs, depending on the tree species available in different parts of the range; the nest may also be built at differing heights above ground, presumably to optimise the site (e.g. strength of fork and best cover) within a particular bush; and nests are constructed of local materials, i.e. nests of the same species may be superficially similar in perhaps shape and size, but of totally different local materials in different parts of the range.

Clearly more detailed work on the vocalisations, morphometrics (data for only two birds are widely available) and, to a much lesser extent, the morphology of the Arabian birds is demanded (Pearson *et al.* 2004 already noted that the two UAE specimens show slightly atypical wing formulae from Central Asian *rama*). Current data suggest that this population is almost certainly resident, as singing birds are present at Khor Kalba in January (Aspinall 1996) and A. Grieve *et al.* (pers. comm.) have records from most winter months in the mangroves in Omani Batinah, but detailed information on the temporal status of these birds is urgently required as part of efforts to acquire a more complete understanding of the natural history of this population. It appears to be the case that Arabian birds were originally presumed to be *rama*, in part perhaps given the relative proximity of populations, in central Iran, known to be of this form (e.g. one taken by W. T. Blanford near Kerman, in May 1872 [NHM 98.9.1.964]). Whereas *caligata* breeds across taiga and other steppic habitats, from the Baltic states and south-east Finland east to north-west Mongolia, *rama* breeds principally east and south of the Caspian Sea as far east as north-west Pakistan (see Svensson 2001, Parkin *et al.* 2004). Both taxa principally winter in India, but 'migrant' *rama* also winter in Arabia, whilst *caligata* has apparently also occurred in Oman in winter (Eriksen & Sargeant 2000), although this form is principally a passage migrant through Arabia.

Whilst this note was in preparation Pearson *et al.* (2004) published the results of mtDNA cytochrome-*b* gene analysis of the two Arabian specimens mentioned above, as well as another suspected *rama* specimen from Eritrea. All three proved to have perfect matches for the published sequence of *rama* in Helbig & Siebold (1999). At face value, this would appear to prove, beyond reasonable doubt, that the Arabian population is referable to *H. rama*, but leaves us with a significant quandary concerning the anomalous breeding data for this population.

If the east Arabian mangrove population shows some characters of *caligata*, and not purely of *rama* as previously believed, this presents a new taxonomic query: is a cryptic (mangrove-dwelling) species involved? If this population is resident, as appears to be the case, then the case for specific status for these birds would surely be strengthened, as they are most certainly pursuing a separate evolutionary trajectory to other populations of *caligata*, all of which are migratory. Separation from *rama* would be less clear-cut, given that this form is considered to winter in some numbers in Arabia and the close similarity of the available specimens to *rama* from Central Asia (Ash & Pearson 2002), but would still require fuller investigation than has thus far been performed. It is also interesting to speculate which population of *rama* might be considered 'basal'. Given that *Hippolais* appears, at face value, to have an east Mediterranean / Middle Eastern centre of evolutionary origin, perhaps it is the mangrove-dwellers that represent the oldest branch of the modern species' lineage. It is important to remember that some birds exhibit rather pronounced nuclear-genetic-based variation, which will *not* be revealed by mtDNA analysis (see Brawn *et al.* 1996), and that some avian taxa appear to have arisen to species-level status much more rapidly than would normally be predicted (see Klicka & Zink 1997, Buckley & Buckley



2004), albeit usually on oceanic islands. See also García-Moreno (2004) and Witt & Brumfield (2004) for comments on the difficulties in fitting speciation events into the context of molecular phylogenies.

In sum, the eggs and mouth markings of nestlings on hatching of *caligata* and *rama* are diagnosably and consistently different (Harrison & Castell 2002; this work), but the Arabian population appears to be *caligata* (based on breeding data), rather than *rama* as long assumed and recently 'confirmed' by DNA analysis. As with so many modern taxonomic problems, additional molecular (specifically nuclear-genetic) research into the Arabian birds, and all plausibly related populations, e.g. *H. pallida elaeica* and *H. p. pallida*, and those birds, also considered to be *rama*, that were recently discovered, almost certainly breeding, in mangrove in Somalia and perhaps elsewhere in north-east Africa (Ash & Pearson 2002), as well as *caligata* and *rama* from Central Asia, is urgently required.

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**Plate 7.** Recently fledged young Booted Warbler *Hippolais caligata*, near Qorghalzhin, Kazakhstan. (Peter Castell)



**Plate 8.** Sykes's Warbler *Hippolais rama* breeding habitat, Khor Kalba, United Arab Emirates. (Peter Castell)



**Plate 9.** Nest and three eggs of Sykes's Warbler *Hippolais rama*, Khor Kalba, United Arab Emirates. (Peter Castell)



**Plate 10.** Adult male Sykes's Warbler *Hippolais rama*, Shinas, Oman, 27 March 2004. (Andrew Lassey)

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