Studies of Socotran birds V. On the validity of *Anthus similis sokotrae* and a few remarks on Arabian and northeast African populations of Long-billed Pipit *A. similis*

GUY M KIRWAN & ANDREW GRIEVE

Based on an analysis of plumage and mensural characters, we present rationale for the continued recognition of the race of Long-billed Pipit *Anthus similis sokotrae* endemic to the island of Socotra, despite overlap in many of the plumage features that have in the past been claimed as useful in separating *sokotrae* from mainland forms. Unlike Clancey (1986) but in agreement with Alström *et al* (2003), we consider most of southern Arabia to be inhabited by a single form of *A. similis*, but we find plumage differences between African *nivescens* and Arabian populations difficult to define, and there is a cline of increasing size from west (northeast Africa) to east (Oman), thus a fuller and more detailed analysis might lead to *arabicus* entering into the synonymy of *nivescens*.

INTRODUCTION

Long-billed Pipit *Anthus similis* is widespread, if local, in the southern Middle East, as well as across sub-Saharan Africa and the Indian subcontinent, with up to 19 recognised subspecies (Tyler 2004). One of these races, *Anthus similis sokotrae*, E. Hartert, 1917, is restricted to the island of Socotra, where it is a common and widespread resident, especially in the rocky interior (Kirwan *et al* 1996). As part of an ongoing re-evaluation of the taxonomic validity and status of taxa endemic or near endemic to Socotra (Kirwan 2004, Kirwan & Grieve 2007, Kirwan 2007, 2008), we reviewed the validity of *A. s. sokotrae*, principally on the basis of specimen material held at The Natural History Museum (NHM), Tring, UK, and the National Museum of Natural History (NMNH), Smithsonian Institution, Washington DC, USA.

Measurements were taken using a standard wing-rule with a perpendicular stop at zero and digital callipers, according to standard parameters outlined in Svensson (1992). In addition to *A. s. sokotrae*, the text below discusses the following races listed north to south and west to east. *A. s. captus* occurs in the Near East, from Lebanon and Syria to southern Israel and western Jordan, whilst *A. s. nivescens* occurs from southeast Egypt (presumably, see below) and northeast Sudan south to northwest Somalia and northern Kenya. *A. s. arabicus* is found across the southern Arabian peninsula, except perhaps in northern Oman, from Muscat north to Musandam, where it is arguably replaced by *A. s. decaptus*, which otherwise is found as a breeder from southern Iran to western Pakistan (Alström *et al* 2003, Tyler 2004).

HISTORICAL TREATMENT

Hartert (1917) described *A. s. sokotrae* in very brief terms thus. "In coloration of the upperside the Sokotra form is intermediate between *arabicus* and *captus*, being dark brown with pale edges to the feathers, but underneath it is even lighter than *captus*. Unfortunately, the specimens collected by the Grant-Forbes expedition are all in very worn plumage." Subsequent commentators have all been content to uphold *sokotrae*, with Sclater (1930) passing no remarks on the Socotran form at all, and Mackworth-Praed & Grant (1960) more or less merely repeating Hartert (1917). Ripley & Bond (1966) passed no comment on its validity or otherwise, but Clancey (1986) also considered *sokotrae* diagnosable, being heavily streaked above with no trace of any reddish (unlike many continental races), whitish underparts heavily streaked dark brown, and size closest to *A. s. nivescens*. Fry *et*

al (1992) treated *sokotrae* as most similar to *A. s. nivescens*, with blacker and more distinct upperparts streaking, a shorter wing and relatively long bill. Most recently, Tyler (2004) also considered *sokotrae* to be most similar to *nivescens* (whose range is generally restricted to northeast Africa, from southeast Egypt to northern Kenya, but see below), albeit generally greyer with well-defined dark centres and pale edges to the feathers of the upperparts. It should be mentioned that Alström *et al*'s (2003) extremely detailed monograph of the pipits and wagtails unfortunately did not extend to treating the African taxa, meaning that they did not re-evaluate *sokotrae*.

RESULTS AND DISCUSSION

Our own analysis of specimen material suggests that *sokotrae* is diagnosable, albeit the differences, other than the mensural characters, are not especially well marked from either *nivescens* or *arabicus* (another Hartert name, traditionally recognised for most or all Arabian populations). It seems doubtful whether *sokotrae* would pass muster for recognition as a separate lineage under a phylogenetic species concept, but it can be upheld subspecifically under the Biological Species Concept, though its mensural characters provide a better means for separation (see below, and Figure 1). Comparing material from similar seasons and state of wear, *sokotrae* is on average marginally paler below, especially on the belly, but all three forms, particularly *arabicus* and *nivescens* can be extensively suffused with sandy-buff below (Plates 1 & 5). The underparts streaking of *sokotrae* is on average slightly better defined than the other two races, but there is probably too much overlap to be definitive on this point. In terms of the upperparts, the streaking is, as remarked by many previous commentators, slightly more clear-cut and darker than on *nivescens* and *arabicus*, especially on the crown, nape and mantle, although again there is some slight overlap. The background colour averages very slightly paler than continental African or Arabian birds (Plate 2). The centres to the wing-coverts and tertials, especially, are darker and set-off by slightly whiter and broader fringes, whereas in *nivescens* and *arabicus* the fringes are obviously buffier, or sandier, with generally less darkly contrasting centres (Plate 3). The

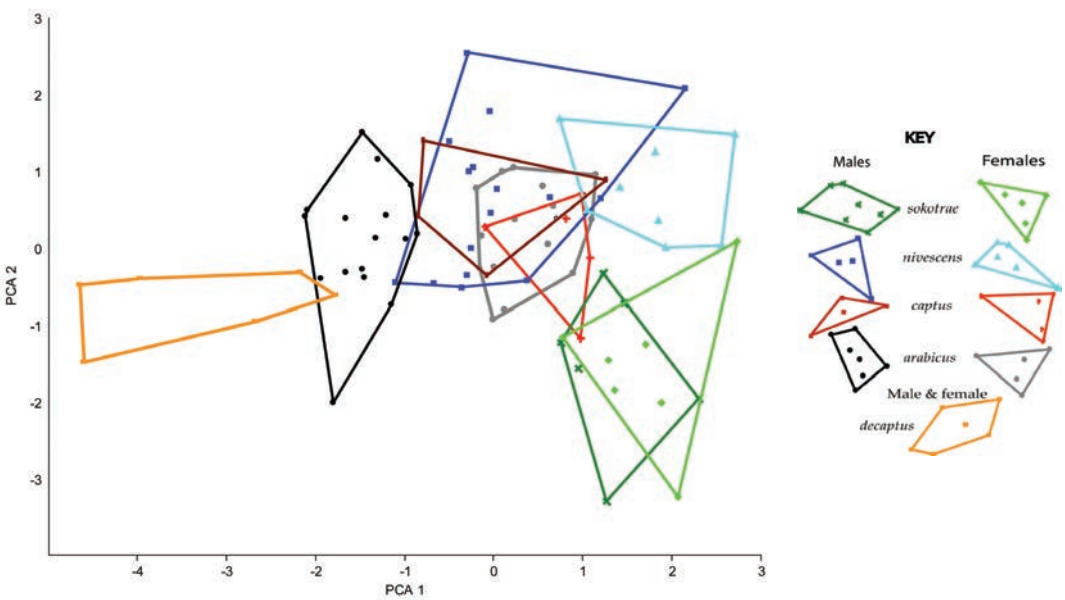

Figure 1. Scatter plot diagram of first (PC1) and second (PC2) principal components for a Principal Components Analysis of five morphometric measurements from five taxa of Long-billed Pipit *Anthus similis* (Table 2).

Plate 1. (top) Ventral view of specimens of Long-billed Pipit *Anthus similis*, showing from left to right: three *A. s. nivescens* from northeast Africa, two *A. s. sokotrae* (Socotra), two *A. s. arabicus* (southern Arabia) and an *A. s. captus* (Palestine). *Guy M Kirwan / © The Natural History Museum, Tring*

Plate 2. (bottom) Dorsal view of Long-billed Pipit *Anthus similis* specimens, showing from left to right: three *A. s. nivescens* from northeast Africa, two *A. s. sokotrae* (Socotra), two *A. s. arabicus* (southern Arabia) and an *A. s. captus* (Palestine). *Guy M Kirwan / © The Natural History Museum, Tring*

fringes of the rectrices are also paler and whiter in *sokotrae*, and in the outermost pair the pale wedges on the inner webs are also paler and closer to grey-white than in the African and Arabian birds (Plate 4).

Although sample sizes are relatively limited (Table 1) *sokotrae* is separable from other relevant subspecies based on its smaller wing and tail, and larger bill size. These differences are shown in the Principal Components Analysis scatter plot diagram (Figure 1), the first three principal components accounting for 89.8% of the original variation (Table 2).

We compared songs of *sokotrae* (recorded by P Davidson and J Hornbuckle) with vocal material from across a broad sample of the species' overall range (*eg* India, Iran, Israel, Malawi, Pakistan, South Africa and Zambia), but like Alström *et al* (2003) we found no evidence of any significant geographical (rather than individual) variation. The Socotran birds' song is, like for instance populations in Israel, a simple series of single or doubled whistles and churring notes, interspersed by uneven pauses (compare Figure 2 with, for instance, the notes given by a perched Long-billed Pipit of the subspecies *captus*, from Israel, in Alström *et al* 2003: 210).

Table 1. Morphological measurements of five taxa of Long-billed Pipit *Anthus similis*, range (mean; SD; sample size). Measurements were taken (by AG at NHM, and GMK at NMNH) using a standard wing-rule with a perpendicular stop at zero (accurate to 0.5 mm) and digital callipers (accurate to 0.01 mm). Culmen length was measured to skull.

	Male	**Female**
Wing	92–98 (95.1; 2.66; 4)	89–91 (89.6; 0.89; 5)
Tail	70.5–78 (75.7; 3.15; 5)	69.5–77 (73.5; 3.12; 5)
Bill	18.6–20.4 (19.8; 0.73; 5)	18.1–20.1 (19.5; 0.81; 5)
Tarsus	24.1–25.7 (24.9, 0.62; 5)	24.5–25.6 (25.2; 0.61; 5)
Hindclaw	8.7–10.9 (9.7; 0.81; 5)	9.2–10.9 (9.6; 0.77; 5)
Tail/wing ratio	0.77–0.80 (0.79; 0.02; 5)	0.78–0.85 (0.82; 0.03; 5)
***A. s. captus* Israel (The Natural History Museum, Tring)**		
Wing	96–101 (98.5; 1.23; 17)	89–95 (92.4; 1.72; 18)
Tail	76–80 (77.9; 1.32; 17)	68–76 (72.7; 2.45; 18)
Bill	18.5–20.9 (19.7; 0.65; 16)	17.4–19.7 (18.6; 0.60; 17)
Tarsus	25.3–27.9 (26.6; 0.83; 17)	24.7–26.8 (25.5; 0.50; 18)
Hindclaw	8.8–11.6 (9.7; 0.71; 17)	9.4–11.0 (10.1; 0.52; 17)
Tail/wing ratio	0.77–0.82 (0.79; 0.01; 17)	0.74–0.82 (0.79; 0.02; 18)
***A. s. arabicus* Yemen (The Natural History Museum, Tring)**		
Wing	84–93 (87.6; 2.16; 21)	80–89 (85.3; 2.47; 17)
Tail	62–76 (70.1; 3.36; 21)	62–72 (67.8; 2.86; 17)
Bill	19.1–21.9 (20.7; 0.95; 21)	19.1–22.8 (20.2; 0.95; 17)
Tarsus	24.5–26.1 (25.1; 0.58; 7)	24.0–26.4 (25.1; 0.99; 7)
Hindclaw	9.2–11.1 (10.1; 0.64; 6)	9.4–10.5 (10.1; 0.42; 7)
Tail/wing ratio	0.76–0.81 (0.78; 0.02; 7)	0.73–0.83 (0.79; 0.03; 7)
***A. s. sokotrae* Socotra (The Natural History Museum, Tring, and NMNH, Smithsonian Institution, Washington DC)**		
Wing	88–97 (94.1; 2.88; 20)	85–92 (89.0; 2.32; 14)
Tail	70–80 (75.6; 2.87; 20)	69–76 (70.9; 1.90; 14)
Bill	17.9–20.7 (19.4; 0.80; 21)	17.0–20.8 (18.5; 0.94; 13)
Tarsus	22.4–26.6 (24.5; 0.96; 21)	22.7–24.4 (23.6; 0.51; 14)
Hindclaw	8.6–10.8 (9.6; 0.61; 21)	8.6–10.4 (9.6; 0.56; 14)
Tail/wing ratio	0.76–0.84 (0.80; 0.02; 19)	0.77–0.83 (0.80; 0.02; 14)
***A. s. nivescens* Sudan and Somalia (The Natural History Museum, Tring)**		
Wing	101–104 (102.7; 1.53; 3)	94–97 (95.3; 1.53; 3)
Tail	88–89 (88.7; 0.58; 3)	81–87 (83.3; 3.21; 3)
Bill	20.1–21.1 (20.6; 0.53; 3)	19.9–21.1 (20.3; 0.65; 3)
Tarsus	28.3–30.7 (29.4; 1.24; 3)	27.7–28.0 (27.8; 0.14, 3)
Hindclaw	9.4–10.5 (9.9; 0.55; 3)	9.7–9.8 (9.8; 0.03; 3)
Tail/wing ratio	0.85–0.88 (0.86; 0.02; 3	0.85–0.92 (0.87; 0.04; 3)
***A. s. decaptus* northern Oman (The Natural History Museum, Tring)**		

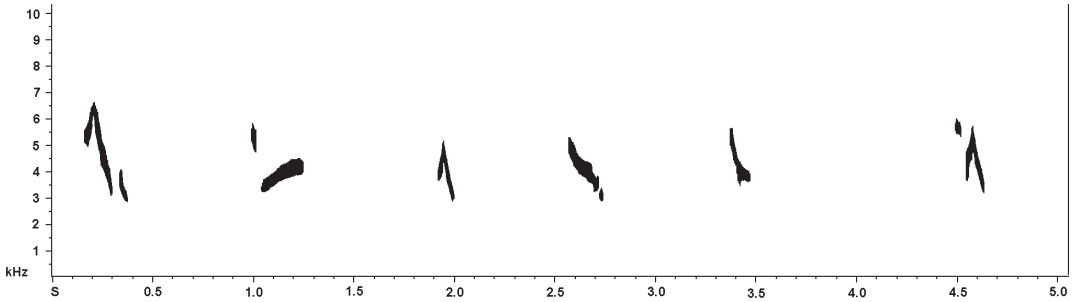

Figure 2. Sonogram of the several strophes of the perched song of a Long-billed Pipit *Anthus similis sokotrae* recorded on Socotra in January 2007. © *Jon Hornbuckle*

Plate 3. Lateral view of Long-billed Pipit *Anthus similis* specimens, showing from left to right: two *A. s. nivescens* from northeast Africa, two *A. s. sokotrae* (Socotra), two *A. s. arabicus* (southern Arabia) and an *A. s. captus* (Palestine). *Guy M Kirwan / © The Natural History Museum, Tring*

Table 2. Character loadings on principal component axes for a Principal Components Analysis of five morphological measurements taken from five taxa (Table 1) of Long-billed Pipit *Anthus similis*.

Variable	PC1	PC2	PC3
Wing length	-0.592	0.232	0.107
Tail length	-0.606	0.157	0.051
Culmen length	-0.119	-0.647	-0.667
Tarsus length	-0.517	-0.349	0.027
Hind claw	0.040	-0.618	0.735
Eigenvalues	2.330	1.166	0.883
% variation explained	47.772	23.907	18.091

Two other remarks are worth making on the basis of our research. We agree with Alström *et al* (2003) concerning the diagnosis useful for separating southern Arabian birds from those in Israel (*A. s. captus*). The latter authors purposely did not compare *A. s. arabicus*, E. Hartert, 1917, with *A. s. nivescens*, Reichenow, 1905, but noted that Clancey (1986) had 'extended' the range of the latter form to Arabia, where he considered it to occur in the "south of North Yemen (at Taizz) and in South Yemen in the Amiri highlands east to western Hadramaut", and that of *arabicus* to Africa, from the "Red Sea hills of southeastern Sudan (at Erkowit), south to Eritrea and … Ethiopia." Clancey (1986) also stated that *arabicus* and *nivescens* intergrade in North Yemen. In common with

Plate 4. (left) Dorsal view of Long-billed Pipit *Anthus similis* specimens to show outer tail feather, from left to right: *A. s. sokotrae* (Socotra), *A. s. arabicus* (Yemen) and *A. s. nivescens* (northeast Africa). *Guy M Kirwan / © The Natural History Museum, Tring*

Plate 5. (right) Long-billed Pipit *Anthus similis sokotrae*, Socotra, January 2007. *© Jon Hornbuckle*

Alström *et al* (2003), we consider that there are no marked differences, beyond those pertaining to wear and individual variation, in these southern and western Arabian populations that demand recognition of more than one subspecies on the peninsula. However, we also concur with Clancey (1986) that many mainland northeast African birds seem impossible to separate from those in Arabia, and given that Long-billed Pipit populations in the latter region are apparently resident (Jennings 1995) immigration into Africa can be largely discounted. In agreement with Grieve *et al* (2001), we consider that other than some subspecifically recognised populations not considered herein, northeast African birds can be assigned to one subspecies, although no specimens are available from Egypt. However, unlike Grieve *et al* (2001), who did not examine specimens (but merely reported from the previous literature), we find plumage differences between African *nivescens* and Arabian populations difficult to define, whilst mensural data indicate a cline of increasing size in all sampled characters from west to east (see Table 1), and would suggest that a more rigorous analysis of specimen material than we have attempted, following a strict definition for recognising subspecies (Barrowclough 1982, Haffer 1997), might result in *arabicus* entering into the synonymy of *nivescens*. If confirmed, this finding would mirror other recent research that suggests that at least some subspecies previously recognised for Arabian populations of mainly Afrotropical birds are better treated as synonyms of taxa on mainland Africa (*eg* Kirwan 2007).

On the other hand, like Clancey (1986) and Alström *et al* (2003), we agree (on the basis of the small available sample at NHM) that birds in northern Oman and the United Arab Emirates can be treated either as *A. s. decaptus* Meinertzhagen, 1920, which otherwise occurs from Iran to northwest India, or as an intergrade population. Given that northern and southern Omani populations of Long-billed Pipit are seemingly geographically separate (Eriksen & Sargeant 2000), it appears quite appropriate to consider these northern birds as *decaptus* rather than intergrades.

ACKNOWLEDGEMENTS

We thank the following museum curators and librarians for permitting us to examine specimens in their care and for access to library: Robert Prŷs-Jones, Mark Adams, Katrina Cook and Alison Harding (Natural History Museum, Tring), and James P Dean and Christina Gebhard (Smithsonian Institution, Washington DC). Work by GMK in North American collections was partially sponsored by a grant from OSME and a scholarship from the Field Museum of Natural History, Chicago. We thank Alan Knox for his careful review of our manuscript. Jon Hornbuckle generously provided additional vocal and photographic material for *Anthus similis sokotrae*.

REFERENCES

Alström, P, K Mild & D Zetterström. 2003. *Pipits and wagtails of Europe, Asia and North America*. Christopher Helm, London.

Barrowclough, GF. 1982. Geographic variation, predictiveness, and subspecies. *Auk* 99: 601–603.

Clancey, PA. 1986. The eastern and north-eastern African subspecies of *Anthus similis* Jerdon. *Bulletin of the British Ornithologists' Club* 106: 80–84.

Eriksen, J & DE Sargeant (eds). 2000. *Oman bird list: the official list of the birds of the Sultanate of Oman*. Fifth edn. Oman Bird Records Committee, Muscat.

Fry, CH, DJ Pearson & PB Taylor. 1992. Motacillidae, wagtails, pipits and longclaws. *In*: Keith, S, EK Urban & CH Fry (eds). *The birds of Africa*. Vol 4. Academic Press, London.

Grieve, A, M Baha el Din & SM Baha el Din. 2001. The occurrence of Long-billed Pipit *Anthus similis* in Egypt. *Sandgrouse* 23: 39–43.

Haffer, J. 2003. Avian zoogeography, speciation and the museum tradition. *Bulletin of the British Ornithologists' Club* Suppl. 123A: 7–25.

Hartert, E. 1917. A few notes on the birds of Yemen. *Novitates Zoologicae* 24: 452–462.

Jennings, MC. 1995. *An interim atlas of the breeding birds of Arabia*. National Commission for Wildlife Conservation and Development, Riyadh.

Kirwan, GM. 2004. Some remarks on the taxonomy of Nubian Nightjar *Caprimulgus nubicus*, with particular reference to *C. n. jonesi* Ogilvie-Grant & Forbes, 1899. *Bulletin of the African Bird Club* 11: 117–125.

Kirwan, GM. 2007. Studies of Socotran birds IV. Synonymization of six endemic bird taxa, with comments on the name *Onychognathus blythii creaghi*. *Sandgrouse* 29: 135–148.

Kirwan, GM. 2008. Studies of Socotran birds III. Morphological and mensural evidence for a 'new' species in the Rufous Sparrow *Passer motitensis* complex endemic to the island of Abd 'Al-Kuri, with the validation of *Passer insularis* Sclater & Hartlaub, 1881. *Bulletin of the British Ornithologists' Club* 128: 83–93.

Kirwan, GM & A Grieve. 2007. Studies of Socotran birds II. One, two or three species: towards a rational taxonomy for the Golden-winged Grosbeak *Rhynchostruthus socotranus*. *Bulletin of the African Bird Club* 14: 159–169.

Kirwan, GM, RP Martins, KM Morton & DA Showler. 1996. The status of birds in Socotra and 'Abd Al-Kuri and the records of the OSME survey in spring 1993. *Sandgrouse* 17: 83–101.

Mackworth-Praed, CW & CHB Grant. 1960. *African handbook of birds. Birds of eastern and north eastern Africa.* Vol 2. Second edn. Longmans, London.

Ripley, SD & GM Bond. 1966. The birds of Socotra and Abd-el-Kuri. *Smithsonian Miscellaneous Collections* 151(7): 1–37.

Sclater, WL. 1930. *Systema avium Æthiopicarum*. British Ornithologists' Union, London.

Svensson, L. 1992. *Identification guide to European passerines*. Privately published, Stockholm.

Tyler, SJ. 2004. Family Motacillidae (pipits and wagtails). *In*: del Hoyo, J, A Elliott & DA Christie (eds). *Handbook of the birds of the world*. Vol 9. Lynx Edicions, Barcelona.

Guy M Kirwan, 74 Waddington Street, Norwich NR2 4JS, UK. GMKirwan@aol.com

Andrew Grieve, 3 Miriam Close, Second Avenue, Caister on Sea, Great Yarmouth, Norfolk NR30 5PH, UK.