

Confirmation of the first record of Red-footed Falcon *Falco vespertinus* for the Indian Subcontinent

Robert P. Prŷs-Jones, Adrian Skerrett, Hazel A. Jackson, Lisa M. Smith & Praveen J.

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Robert P. Prŷs-Jones, Bird Group, Department of Life Sciences, Natural History Museum, Akeman St, Tring, Herts HP23 6AP, UK. E-mail: r.prys-jones@nhm.ac.uk [RPP-J]

Adrian Skerrett, Seychelles Bird Records Committee, PO Box 336, Victoria, Mahé, Seychelles. E-mail: sbrsecretary@googlemail.com [AS]

Hazel A. Jackson, Durrell Institute of Conservation and Ecology, Marlowe Building, University of Kent, Canterbury, Kent CT2 7NR, UK. E-mail: h.jackson-203@kent.ac.uk [HAJ]

Lisa M. Smith, Department of Life Sciences, Natural History Museum, Cromwell Road, London SW7 5BD, UK. E-mail: l.smith@nhm.ac.uk [LMS]

Praveen, J., B303, Shriram Spurthi, ITPL Main Road, Brookefields, Bengaluru 560037, Karnataka, India. E-mail: paintdstork@gmail.com [PJ]

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Radde (1863) first distinguished *Falco vespertinus* specimens from eastern Siberia as the separate “variety” *amurensis*. However, over ten years later Hume (1874: 527) was still concerned “...whether the birds that we obtain in India belong to the Eastern or the Western form”, and pleading that “...some competent European ornithologist would point out how immature specimens of *Erythropus vespertinus* and its Eastern representative *E. amurensis*, are to be distinguished...”.

Sharpe (1875: 303) helpfully responded to this, adding to information already published in Sharpe (1874), by providing a key giving “...the differences between the Eastern and Western Red-footed Kestrels in all their respective plumages...”. Within a few years the status of Amur Falcon *amurensis*, as very much the predominant species present on the Indian Subcontinent, was clear, and Hume (1879: 76, 81) only mentioned *vespertinus* [= *Cerchneis vespertinus* Lin.] in italics in his India (*sensu lato*)



76. Ventral, lateral, and dorsal views of Biddulph's 1880 *Falco vespertinus* specimen from Gilgit (NHMUK 1897.12.10.1733). Note that the ventral surface seemingly has some staining on it.

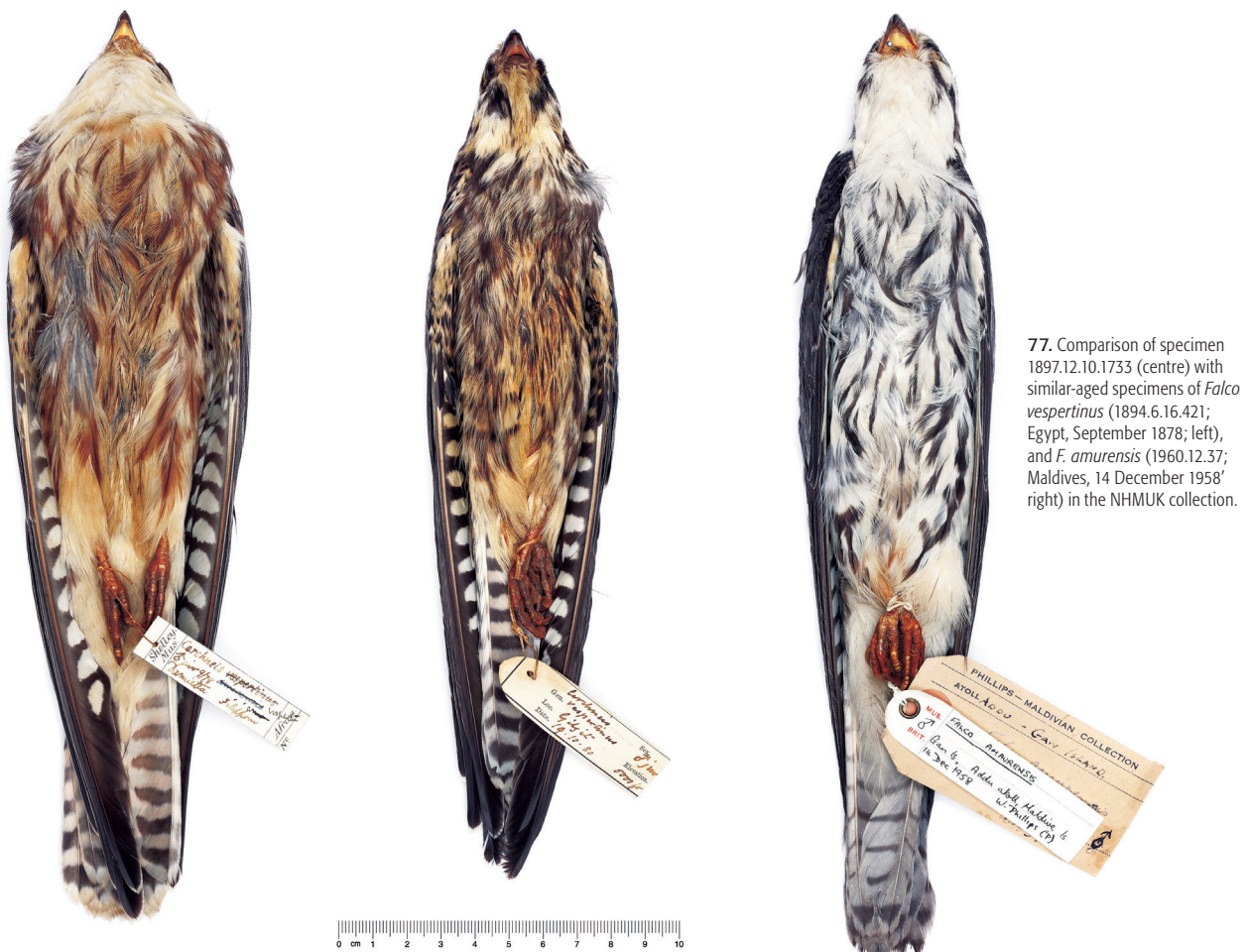
checklist, indicating a "...species whose occurrence within our limits...I disbelieve or seriously doubt."

On 19 October 1880, Maj. J. Biddulph collected a juvenile male falcon at ca 1500 m in Gilgit (35.91°N, 74.31°E) [now in Pakistan-administered Kashmir]. In a subsequent paper on birds from the area, Biddulph (1882: 268) recorded of this specimen: "Length 11.25 inches, wing 8.8, tail 5.1, tarsus 1.12; irides light brown; legs and cere orange; claws paler. I have compared this specimen with those of *C. amurensis* and *C. vespertina* in Mr. Seebohm's collection, and have no doubt of its identity with the latter species, though the immature specimens are difficult to discriminate." Despite this clear statement, subsequent standard handbooks covering the region either failed to mention the occurrence of *Falco vespertinus* (Baker 1928; Ali & Ripley 1978; Roberts 1991), or treated it as hypothetical (Rasmussen & Anderton 2012).

However, Naoroji (2006: 575) cites T. J. Roberts (*pers. comm.*) as noting that "...a specimen of the Red-footed Falcon *Falco vespertinus* from Gilgit, Pakistan, is in the British Museum", now the Natural History Museum (NHMUK). A search for this in 2015 turned up the Biddulph specimen, on whose original label Biddulph (presumably) had initially pencilled "*amurensis*", but then inked the species name over this as *vespertinus* [76]. On arrival in NHMUK it had been registered as 1897.12.10.1733 under the name *vespertinus*, but in 2015 the specimen was found stored as an *F. amurensis*.

Standard identification guides (e.g., Clark 1999; Ferguson-Lees & Christie 2001; Forsman 2016) indicate that discriminating between young birds of these two species is not straightforward, a view reinforced by the detailed studies of Corso & Dennis (1998), Corso & Clark (1998), and Corso & Catley (2003). Initial assessment of the specimen by NHMUK Bird Group staff, and of photographs of it by external authorities with experience of the species, provided strong but not unanimous support confirming Biddulph's (1882) identification as *vespertinus*. Notably, members of the Seychelles Bird Records Committee, who have to deal with both species as vagrants to Seychelles, concurred on this basis in assessing it as *vespertinus*: gingery fringes to its coverts, and lack of both the overall black-and-white appearance of *amurensis* and also of any transition of its flank streaking to larger blackish marks on the lower flanks. Subsequently, following a visit to NHMUK during which they compared the specimen directly to an array of both species, they unanimously maintained this opinion, with which RPP-J agrees, stressing in particular the dark brown (not black) streaking and strong ginger wash of the underparts; the latter feature, in their opinion, not accounted for by staining alone.

[77] provides a comparison of Biddulph's Gilgit specimen (in the centre) with similar-aged specimens of *vespertinus* and *amurensis* in the NHMUK. Although the head, and underpart markings, of specimen 1897.12.10.1733 are somewhat darker than the typical, rusty, warm-toned, broadly pale fringed, pale-



headed juvenile *vespertinus* as shown in field guides, there is a poorly-known plumage variant that has darker crown (more like juvenile *amurensis*), narrower pale fringing on upperparts, and duller and broader dark markings below (A. Corso, *in litt.*, e-mail dated 28 April 2017). However, the dark tail barring is always broader than in juvenile *amurensis*, as shown in [77].

Although strongly indicative, the lack of unanimity in morphological identification of the specimen caused us to seek molecular corroboration via two separate laboratories in the Natural History Museum, and in the University of Kent respectively. Both concurred in producing identifications pointing to *F. vespertinus*.

At the University of Kent, DNA was isolated from the specimen using a Bionline Isolate Genomic DNA extraction kit (Bionline UK) in a sterile UV-irradiated fume hood, and a negative control was included to ensure no contamination during the extraction or PCR process. The sample was suspended in 400 µl of lysis buffer with 25 µl of proteinase K and digested overnight at 55°C. DNA was washed through a spin column, and suspended into 50 µl of elution buffer. Amplification of 325bp of the mitochondrial cytochrome b gene was conducted using a suite of three newly designed overlapping fragment primers. PCRs were conducted using volumes of 25 µl containing 2 µl of template DNA, 12.5 µl MyTaq HS redmix (Bionline), 0.5 µl of each primer and 9.5 µl of dH₂O. Cycle parameters comprised an initial hot start of 95°C for 01 min followed by 35 cycles of 95°C/ 15 secs, 52°C/15 secs, and 72°C/10 secs followed by a final 10 min 72°C incubation period. To confirm the specimen's identity, the 325bp sequence was then compared to other published sequences using the BLAST function in Genbank. The sequence was found to be a 100% match to available cytochrome b sequences for *F. vespertinus*, and was between 3–6% different to other sequences for *F. amurensis* (Genbank accession no. LT852756).

At the Natural History Museum, DNA was isolated from the specimen using a Qiagen DNeasy Blood and Tissue Kit (Qiagen); the sample was suspended in 180µl of lysis buffer with 20µl of proteinase K and digested at 56°C overnight. Following digestion, the sample was washed through a spin column and suspended in 200µl of elution buffer. Amplification of 127bp of the cytochrome oxidase I (COI) gene was conducted using the primers FalcoFA (Kerr *et al.* 2007) and Uni-MinibarR1 (Meusnier *et al.* 2008). PCRs were conducted using volumes of 25µl containing 2µl of template DNA, 12.5µl of GoTaq Green Master Mix (Promega), 1.25µl of each primer, and 8µl of dH₂O. Cycle parameters were 94°C for 04 min, followed by 40 cycles of 94°C /30 secs, 48°C/30 secs, and 72°C/45 secs, followed by a 05 min incubation at 72°C. To confirm the species identity, the resultant sequence was compared to other published sequences using the BLAST function in Genbank. The sequence was found to be a 100% match to other COI sequences for *F. vespertinus* (Genbank accession no. LT852757).

The species-rich genus *Falco* has radiated very recently, within the past 5–8 million years (Fuchs *et al.* 2015). Although frequently considered conspecific historically, a recent comprehensive molecular analysis of *Falco* phylogeny indicates that *F. vespertinus* and *F. amurensis* are best viewed as sister species that diverged approximately one million years ago (Fuchs *et al.* 2015). They form geographical replacements: with *F. vespertinus* breeding across a wide swathe of the north-central Palearctic, from eastern Europe to just into north-west China, and wintering predominantly in western-, and central-southern Africa (del Hoyo *et al.* 2017a); whereas *F. amurensis* breeds further

east in the Palearctic and predominantly winters in south-eastern Africa (del Hoyo *et al.* 2017b). Their main autumn migration routes diverge substantially. *F. vespertinus* undertakes an unusual westwards loop migration to cross from the Palearctic to Africa via the central-eastern Mediterranean region *sensu lato* (Corso 2005; Kirwan *et al.* 2008; Katzner *et al.* 2016). By contrast, *F. amurensis* predominantly pass across India from the north-east in autumn, before undertaking a trans-oceanic flight to eastern Africa (Clement & Holman 2001; del Hoyo *et al.* 2017b), probably taking advantage of an equivalent large-scale trans-oceanic migration by dragonflies, on which they prey (Anderson 2009). Between these migration paths, in Iran *F. vespertinus* is merely a rare passage migrant, mainly in the north-west of the country (Scott & Adhmi 2006; Scott 2008), and only a single Iranian record of *F. amurensis* has been published, from the south-east (Lantsheer *et al.* 2009). East of Iran, the few sight records of *F. vespertinus*—only from Afghanistan (*e.g.* Meinertzhagen 1938; Smith 1974)—require verification (Rasmussen & Anderton 2012). The situation in the Indian Subcontinent reinforces this picture, with the present confirmation of the occurrence of a single specimen of *F. vespertinus* from the extreme north-west being the first record of this species from the region.

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A reassessment of Meadow Pipit *Anthus pratensis* records from India, and their rejection

Pamela C. Rasmussen, Robert P. Prÿs-Jones & Praveen J.

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Pamela C. Rasmussen, Department of Integrative Biology and MSU Museum, Michigan State University, East Lansing, MI 48864, USA; Bird Group, Department of Life Sciences, Natural History Museum, Akeman St, Tring, Herts HP23 6AP, UK. E-mail: rasmus39@msu.edu [PCR]

Robert P. Prÿs-Jones, Bird Group, Department of Life Sciences, Natural History Museum, Akeman St, Tring, Herts HP23 6AP, UK. E-mail: r.prys-jones@nhm.ac.uk [RPP-J]

Praveen J., B303, Shriram Spurthi, ITPL Main Road, Brookefields, Bengaluru 560037, Karnataka, India. E-mail: paintedstork@gmail.com [PJ]

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The inclusion of the Meadow Pipit *Anthus pratensis* in the list of Indian birds has been ambiguous. Hume (1879: 76), stated, '...a species whose occurrence within our limits...I disbelieve or seriously doubt'. This species does not find a place in Oates (1890), but Baker (1930) included it, based on records from Pakistan. Ali & Ripley (1987) included this species on the basis of records from both India and Pakistan. All subsequent works (Kazmierczak 2000; Grimmett *et al.* 2011; Rasmussen & Anderton 2012) base its inclusion solely on records from Pakistan, carried down from the earlier works. The species has been excluded from the latest 'India' checklist (Praveen *et al.* 2016). This note evaluates each of the historical claims from Indian Territory.

A. O. Hume (1869) procured a specimen(s) from Ferozpur [=Ferozpoor] (30.92°N, 74.60°E), one of which he sent to Jules Verreaux, whose rationale for identifying it as *A. pratensis* was published in Hume (1871). However, Hume (1878: 455) retracted this, stating, 'I now believe that we were both wrong, and I very much doubt whether *A. pratensis* occurs at all in India', a position maintained in Hume (1879). Oates (1890) and Baker (1930) followed Hume in excluding this particular record. Strangely, Ali & Ripley (1987) endorsed this record, citing

Hume (1869), but later Rasmussen & Anderton (2012) treated it as 'verification required'. PCR, while researching Rasmussen & Anderton (2005), searched unsuccessfully for this specimen in the Hume Collection in the Natural History Museum, UK (*henceforth*, NHMUK), and also failed to locate it in the register of that collection.

While investigating this issue, RPP-J found three pipit specimens, collected by A. O. Hume in Ferozpur before 1869, recorded in the NHMUK registers. Two of these (NHMUK 1887.2.1.3101 and 3102) are Tawny Pipits *A. campestris*, collected on 11 and 09 November 1867 respectively. From the original label of 3101 (3102 was not located), there is no doubt that Hume identified the species correctly, at the very beginning, as '*Agrodroma campestris*' (the name on the label, and in Hume 1871). The third specimen (NHMUK 1887.2.1.3612; **78, top**) is that of an adult female, collected on 09 November 1867, which was entered into the specimen register at NHMUK as '*Anthus spipoletta* Linn.' [*sic*], a formerly used variant on the name *spinoletta*, which is currently correctly held as *Anthus spinoletta blakistoni/coutellii* [=Water Pipit]. Its original label, however, shows that it is, almost certainly, one of the specimens that Hume (1869, 1871) thought was *A. pratensis*. Hume's