

- Roberts, A. 1940. *Birds of South Africa*. H. F. & G. Witherby, London.
- Sclater, W. L. 1930. *Systema Avium Æthiopicarum*. Taylor and Francis, London.
- Sharpe, R. B. 1869. On the genus *Chaetops*. *Proc. Zool. Soc. London* 1869: 163–164.
- Sharpe, R. B. 1883. *Catalogue of the Birds in the British Museum*. Vol. 7. British Museum (Natural History), London.
- Strickland, H. E. & Selater, P. L. 1852. List of a collection of birds procured by Mr C. T. Andersson in the Damara country in South Western Africa with notes. Pp. 141–160 in W. Jardine's *Contributions to Ornithology*, part 7.
- Swainson, W. 1831 (=1832). *Birds*. In Swainson and Richardson, *Fauna Boreali Americana*. Part 2. Longman *et al.*, London.
- Traylor, M. A., Jr. 1986. [African Sylviidae] In E. Mayr & G. W. Cotrell (eds), *Check-list of Birds of the World*. Vol. 11. Museum of Comparative Zoology, Cambridge, Massachusetts.
- Tristram, H. B. 1870. Notes on some Old-World species of passerine birds. *Ibis* (2) 6: 493–497.
- White, C. M. N. 1960. Notes on some African warblers. *Bull. Brit. Orn. Cl.* 80: 18–21.
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## IN BRIEF

# Differences in tarsal length between adult female Montagu's and Pallid Harriers: an easy method to separate specimens

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Adult females of Pallid Harrier *Circus macrourus* and Montagu's Harrier *C. pygargus* are often misidentified in museum collections as the other because of their similar plumages. Both have dark brown upperparts, buffy to creamy, heavily streaked underparts, and similar tail patterns. Adult males and juveniles differ between species and are rather easy to distinguish.

Some differences between the species, especially adult females, have been pointed out by Svensson (1971) and illustrated in Bruun *et al.* (1986). These differences, as well as some new ones, are summarized by Forsman (1995). However, none of these references mention the difference in leg lengths.

One of us (WSC) noticed, from observing Pallid and Montagu's Harriers perched on bare ground near each other, that Montagu's appear to have much shorter legs, resulting in a more horizontal perch attitude, compared to the more upright stance of Pallid Harriers.

To test if there was a clear separation between species of this measure that could be used as a species indicator, we measured the tarsal length of a large sample of adult female specimens in the British Museum

TABLE 1

	Tarsal length (mm) of adult female Montagu's and Pallid Harriers	
	BMNH	AMNH
<i>C. pygargus</i>	57.4-67.1 (26)	55.2-65.5 (16)
(mean)	61.6	61.0
<i>C. macrourus</i>	70.6-77.5 (27)	71.5-77.8 (18)
(mean)	74.2	75.0

(Natural History) (BMNH) and the American Museum of Natural History (AMNH). We used the standard measurement of tarsus as described in Baldwin *et al.* (1931).

We found no overlap in the measure of tarsi between adult females of Montagu's and Pallid Harriers (Table 1).

The ranges of tarsi measurements given by Nieboer (1973) are 55-65 mm (61) for *pygargus* and 63-76 mm (72) for *macrourus*. These are in general agreement with our measurements, but the overlap of ranges in his measurements and the lower mean *macrourus* suggest that his lower range of *macrourus* was due to one or more misidentified *pygargus* specimens.

Even allowing for as much as a 5% measuring error, tarsal measurement clearly facilitates the correct identification of adult female specimens.

Described differences between the two adult females are useful in field identification but are less useful for identification of museum specimens. However, they can be used to check the identity based on tarsal measurement. These are:

1. The more distinct whitish facial ring of the Pallid Harrier, which extends across the throat of Pallid but not Montagu's.
2. Differences in markings on the secondaries; illustrated by Jonsson (1993).
3. Differences in markings on axillaries and underwing coverts; pointed out for the first time by Forsman (1995).

Although the difference in the position of the emargination on primary number 9, as illustrated on page 84 of Bruun *et al.* (1986), also serves to distinguish the species, apparently it is not being used, as we have found many misidentified specimens. This method should be used to verify the identification made using the tarsal measurements.

We found that tarsal measurements of museum specimens are somewhat difficult, particularly locating the proper upper end of the tarsi with the caliper or divider. We took extra care in finding the proper measure points.

Because raptors capture prey with their talons, it seems reasonable to hypothesise that tarsus length in each species has evolved with prey preferences. Apparent adaptations to detect prey by listening (Rice

1982) imply specialisation of the genus *Circus* to prey hidden amongst rank vegetation. Long tarsi would assist in reaching such prey, and so it has been suggested that differences in tarsus length proportionate to body size in the harriers are linked to the height of vegetation in their preferred hunting habitats (Nieboer 1977). For example, the Marsh Harrier *Circus aeruginosus* has long tarsi and forages in tall marsh vegetation. However, no clear distinction between Montagu's and Pallid Harriers in habitat preference has yet been identified, but a marked contrast has been discovered in their prey preferences. Pallid Harriers most often hunt for passerines, whereas Montagu's Harriers specialise more in lizards, large Orthoptera, and probably nest contents (Clarke 1996).

In Accipiters, long tarsi occur in species that hunt for flying prey and shorter tarsi in those living on ground-dwelling prey (Wattel 1973). Long tarsi could give Pallid Harriers an edge in striking at fleeing birds. Adaptation to more agile prey is also evidenced by the greater reversed sexual dimorphism (Newton 1977) in this species as compared to Montagu's Harriers, as well as their streamlining in wing shape and larger foot size.

In summary, tarsal measurements are a quick and easy method to check the identity of all museum specimens of adult female Montagu's and Pallid Harriers.

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#### References:

- Baldwin, S. P., Oberholser, H. G. & Worley, L. G. 1931. Measurements of Birds. *Sci. Publ. Cleveland Mus. Nat. Hist.*, Vol. 2.
- Bruun, B., Delin, H. & Svensson, L. 1986. *Birds of Britain and Europe*. Country Life Books, Twickenham.
- Clarke, R. 1996. *Montagu's Harriers*. Arlequin, Chelmsford.
- Forsman, D. 1995. Field identification of female and juvenile Montagu's and Pallid Harriers. *Dutch Birding* 17: 41-54.
- Jonsson, L. 1993. *Birds of Europe, with North Africa and the Middle East*. Princeton Univ. Press.
- Newton, I. 1979. *Population Ecology of Raptors*. T. & A. D. Poyser, London.
- Nieboer, E. 1973. Geographic and ecological differentiation in the genus *Circus*. Ph.D. dissertation. Free University, Amsterdam, Netherlands.
- Rice, W. R. 1982. Acoustical location of prey by the Marsh Hawk: adaptation to concealed prey. *Auk* 99: 403-413.
- Svensson, L. 1971. Stapphok *Circus macrourus* och angshok *C. pygargus*—problemet att skilja dem at. *Vår Fågelvärld* 30: 106-121.
- Wattel, J. 1973. Geographical differentiation in the Genus *Accipiter*. *Publ. Nuttall Orn. Club* no. 13.

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