TABLE 1

Tarsal length (mm) of adult female Montagu's and Pallid Harriers

	BMNH	AMNH
C. pygargus	57.4–67.1 (26)	55.2–65.5 (16)
(mean)	61.6	61.0
C. macrourus	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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