

# *Falco columbarius insignis* Clark 1907, a new taxon for Italy and Europe

Andrea Corso<sup>1</sup>, Giovanni Boano<sup>2\*</sup>

**Abstract** - A Merlin (*Falco columbarius*) specimen collected in Piemonte (NW Italy) in the winter of 1952 and preserved in the “Admetos Rolando Barberis” collection is here attributed to *F. c. insignis*, a subspecies breeding in north-eastern Siberia, east of the Yenisey River. This form is reported for the first time in Italy and Europe.

**Key words:** Merlin, *Falco columbarius*, subspecies *insignis*, vagrant.

**Riassunto** - *Falco columbarius insignis* Clark 1907, un nuovo taxon per l'Italia e l'Europa.

Un esemplare di Smeriglio (*Falco columbarius*) raccolto in Piemonte nell'inverno 1952 e conservato nella collezione “Admetos Rolando Barberis” è risultato appartenere alla sottospecie *F. c. insignis*, distribuita come nidificante nella Siberia nord-orientale a Est del fiume Yenisey. Questa forma risulta segnalata per la prima volta in Italia ed in Europa.

**Parole chiave:** Smeriglio, *Falco columbarius*, sottospecie *insignis*, accidentale.

## INTRODUCTION

The “Admetos Rolando Barberis” (ARB) bird collection, currently held at the “Parco del Po Piemontese” in Bosco Marengo (AL, Italy), contains 455 specimens collected between 1840 to 1990 (mostly around the mid-20th century); 213 of these specimens have precise locality data and come from several Italian regions, although the bulk (77%) was collected in Piedmont (NW Italy). Some specimens come from other older collections, including those of the marquis Emilio Balbo Bertone di Sambuy (Turin) and the renowned zoologist Enrico Festa (Moncalieri, Turin) (Moltoni, 1940), probably following purchase.

A few of these specimens were mentioned in ornithological papers by the well-known Turin taxidermist Bajnotti

(1961, 1963), with the relevant ones included in studies on vagrants or rare birds in Piedmont (Debernardi *et al.*, 1983; Boano & Mingozzi 1985; Boano, 2007). After the acquisition by the Po Park, Authority (which took place in 1984), the collection was reviewed and restored by F. Silvano. A specimen of the genus *Falco*, originally recorded as a female Kestrel *Falco tinnunculus* Linnaeus, 1758 and subsequently re-identified as Merlin *Falco columbarius* Linnaeus, 1758, attracted the attention of the first author during a raptor identification course held at the Po Park in 2008. The original data reported in the collection register and under the wooden base of the mounted specimen are: “Stupinigi Torino - ♀ Juv Dicembre 1952”. However, the kestrel-like appearance of this specimen, with a chestnut-brown instead of dark grey-brown ground color and the reduced extension of the dark markings compared to birds normally observed in Italy and the rest of Europe suggested that it could belong to one of the Asian subspecies.

The lack of comparison material at the time meant that a more accurate identification was long delayed.

## MATERIALS AND METHODS

Nine subspecies of *Falco columbarius* are currently recognized (Brown & Amadon, 1968; Ferguson-Lees & Christie, 2001; Dickinson & Reamsen, 2013; Del Hoyo & Collar, 2014): two breeds in Europe, four others in eastern Asia, and three in North America.

In detail, the subspecies are distributed as follows:

- *F. c. subaesalon* Brehm, 1827 – breeding in Iceland, partially migratory to Great Britain and occasionally northern Europe;
- *F. c. aesalon* Tunstall, 1771 – breeding in north Eurasia, from Faroes east to central Siberia, and wintering from Britain to central Russia south to the Mediterranean, North Africa, and the Middle East;
- *F. c. insignis* Clark, 1907 – breeding in north and north-east Siberia, east of the Yenisey river to the Anadyr; long-distance migrant wintering west to Iraq, northern Iran, Israel, and Armenia, east to Afghanistan, Baluchistan, Turkestan southern Mongolia towards north India, Korea and Japan, mainly south of 40° N and east of 31° E. Allegedly has occurred in Egypt (Vaurie, 1965);
- *F. c. pacificus* Stegmann, 1929 – breeding in the Russian Far East, including Sakhalin Island, and wintering in Japan and east China;
- *F. c. pallidus* Sushkin, 1900 – breeding in the steppes of Asia, from the southern Ural Mountains east to NE Kazakhstan, wintering in the southern regions of Cen-

<sup>1</sup>Siracusa, Italy.

E-mail: zoologywp@gmail.com

<sup>2</sup>Museo Civico di Storia Naturale, Carmagnola, Italy.

\* Corresponding author: g.boano@gmail.com

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tral Asia and in the northern regions of South Asia, reaching as far west as the Middle and the Near East (e.g., Turkey, Israel and occasionally Armenia);

- *F. c. lymani* Bangs, 1913 – breeding in the mountains of central Asia, from Pamir-Alaito Altai and east to Transbaikalia and Mongolia, short-distance migrant;
- *F. c. suckley* Ridgway, 1874 - breeding Pacific coast of North America from South Alaska to North Washington;
- *F. c. columbarius* Linnaeus, 1758 – breeding in Alaska (except the coast) east through Canada to Newfoundland and south to the northern USA. Vagrant in Europe;
- *F. c. richardsonii* Ridgway, 1871 – breeding in the Great Plains of North America, migrant to C USA to N Mexico.

The distribution of the different subspecies is summarized in Fig. 1 according to Morozov *et al.* (2013) and Sale (2015).

We reviewed the descriptions and illustrations of all these subspecies in the relevant literature, including regional handbooks and guides (Dementiev & Gladkov, 1951; Cramp & Simmons, 1980; Glutz von Blotzheim *et al.*, 1989; Robson, 2000; Rasmussen & Anderson, 2005; Brazil, 2009; Del Hoyo & Collar, 2014) as well as raptor monographs (Brown & Amadon, 1968, Clark & Schmitt,

1999; Ferguson-Lees & Christie, 2001; Forsman, 2016; Clark & Davies 2018), and specific books (Morozov *et al.*, 2013; Sale, 2015). The biometric measurements used in comparisons and presented in Tab. 1 are also drawn from this literature.

We then examined the rich series of Merlin skins at the Natural History Museum (Tring, UK), Muséum National d'Histoire Naturelle (Paris, France), Naturhistorisches Museum Wien (Austria), Darwin Museum (Moscow, RU), Natural History Museum of Denmark (Copenhagen, DK), and other specimens in the ornithological collections held in the Regional Museum of Natural Science of Turin, the Natural History Museum of Milan, Genoa, Lentate sul Seveso and Carmagnola (Italy) and the ARB collection, on which basis we can address its identification at the subspecific level. When possible, we compared our specimen directly with specimens of other subspecies, especially with *F. c. aesalon*, the only one known from Italy. Among the plumage characters we considered, we focused closely on the ratio of tail bands, comparing, in particular, the width of the dark ventral tail band to the adjacent pale band (proximal to that dark band) of the outermost rectrice, suggested by Pandolfino *et al.* (2018) as the best single character to identify American subspecies. As the limit between

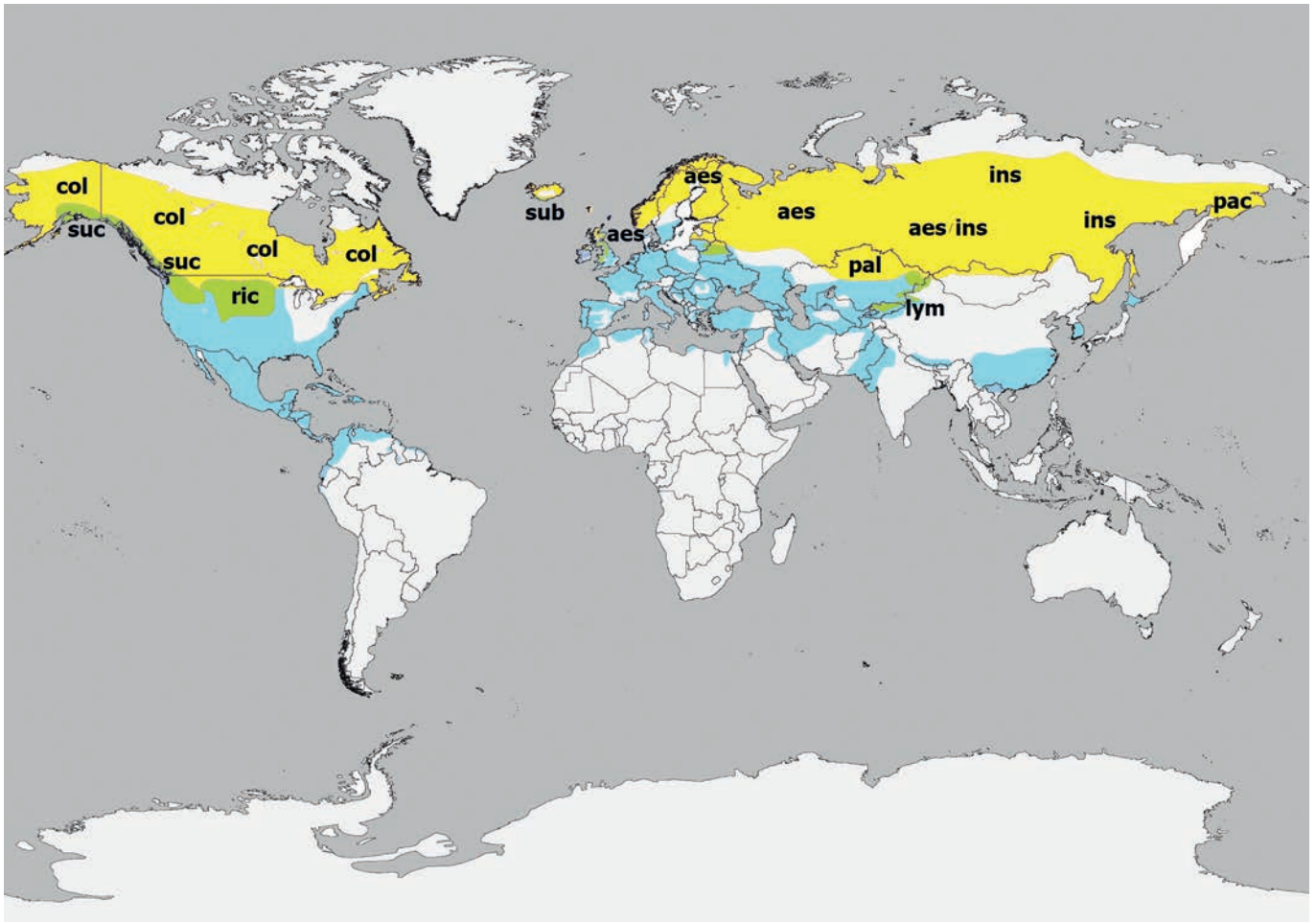


Fig. 1 – Map of the range of the different subspecies of Merlin. Reproduced from: Morozov *et al.*, 2013 and Sale, 2015. / Mappa dell'areale delle diverse sottospecie di smeriglio. Riprodotto da: Morozov *et al.*, 2013 e Sale, 2015.

dark and light bands is irregular, for sake of repeatability we took this measurement on the inner web of the feather near the rachis [Pandolfino *et al.* (2018) measured “from the middle of the feather”). As plumage differences between males and females are minimal in juveniles, with sexing relying almost exclusively on biometrical criteria (Cramp & Simmons, 1980), we pooled the two sexes in our analysis of museum specimens and illustrations of juveniles. Capitalized color names used in the description of the ARB specimen follow Ridgway (1912); however, we believe that the best tool for color comparisons is to rely on the images calibrated with the Xrite Color Checker.

## RESULTS

The ARB specimen is supposed to be a juvenile female according to the data associated with it; “Stupinigi, Turin - ♀ Juv December 1952”. The sex is confirmed by measurements, as it is generally considered that all specimens with a wing length of 212 mm or more can be safely identified as females (Baker, 2016). In our literature review, this limit was only occasionally exceeded in the subspecies

*F. c. insignis*, with male wing length up to 215 mm (Morozov *et al.*, 2013). The only notable exception pertains to the subspecies *F. c. lymani*. For this very long-winged subspecies of the central Asian mountains, Morozov *et al.* (2013) report a male wing range of 208-238 mm (average 230, n=19). The specimen was aged as a juvenile thanks to the broad rufous fringes on the upperparts, and the pronounced rufous barring on the median, greater and primary coverts (Baker, 2016).

The main biometric measurements of the specimen under study are reported in Tab. 1, together with those of adult and juvenile females of all the other accepted subspecies taken from the literature.

The forehead of the specimen is whitish with thin blackish shaft streaks; the cheeks are also whitish with an Orange-Cinnamon hue, as is the moustachial stripe. The crown is Orange-Cinnamon, the upperparts are Warm Sepia with broad light Orange-Cinnamon margins; the underparts are moderately streaked, with arrow, light Chestnut-Brown streaks (Figs. 2 and 3a). The undertail coverts are whitish and almost unstreaked. The Warm Sepia bars of the rectrices (Fig. 3b) and outer primaries (Fig. 3c) are

Tab. 1 – Measurement of Palearctic races of *Falco columbarius* females: mean (min-max). / Misure delle razze paleartiche di femmine di *Falco columbarius* : media (min-max).

Subspecies	Age	Wing	Tail	Tarsus	Bill	Ref.
Subs. ?	Juv.	223	133	38.5	15.4	1
<i>aesalon</i>	Juv.	218(213-223)	130(123-136)		13.6(12.6-14.5)	2
<i>aesalon</i>	Ad.	217 (209-222)	129 (122-135)	37.9 (36.5-39)	13.8(12.9-14.8)	2
<i>aesalon</i> (Scandinavia)	Ad.	213.6 (203-222)				3
<i>aesalon</i> (middle Europe)	Juv.	217.6(212-224)	128.5(124-131.5)			3
<i>aesalon</i> (middle Europe)	Ad.	217.2(207-224)	129.5(124-138)	38.2(37-40)	13.9(12.8-16)	3
<i>subaesalon</i>	Juv.	229(214-236)	133 (125-141)		13.5 (11.8-14.6)	2
<i>subaesalon</i>	Ad.	227 (223-230)	134(130-138)		13.9(13.0-14.8)	2
<i>subaesalon</i>	Ad.	227.9(220-238)				3
<i>subaesalon</i>		228.9				4
<i>insignis</i>	Ad.	221 (218-227)				3
<i>insignis</i>		225.1(220-231)				4
<i>insignis</i>		220-224	121-138	34-39	15-16	5
<i>insignis</i>	Ad.	224.5(215-239)	139.4(121-155)			6
<i>insignis</i>		225 (220-231)				7
<i>pallidus</i>	Ad.	228 (223-232)	138(132-142)		14.5(13.6-15.4)	2
<i>pallidus</i>	Ad.	223(208-233)				3
<i>pallidus</i>		230.6(226-235)				4
<i>pallidus</i>	Ad.	227.8(210-236)				6
<i>pacificus</i>	Ad.	221.2(208-230)	147.9(127-159)			6
<i>pacificus</i>		219.4(214-226)				7
<i>lymani</i>		252.6(248-256)				4
<i>columbarius</i>		208(193-215)				4
<i>richardsoni</i>		220.2(210-226)				4
<i>suckleyi</i>		212(207-215)				4

Ref.: 1, Admetos Rolando Barberis specimen (GB meas.); 2, Cramp & Simmons, 1980; 3, Glutz von Blotzheim *et al.*, 1989; 4, Brown & Amadon, 1968; 5, Ali & Ripley, 1983; 6, Morozov *et al.*, 2013; 7, Dementiev & Gladkov, 1951. In some cases Authors do not separate age.

relatively narrow in comparison with the light Orange-Cinnamon bands, being apparently equal or slightly narrower than the pale ones on the dorsal side of the tail; on the two central rectrices, the light bands are equally wide, but entirely Pallid Neutral Gray. The tail feathers have broad off-white tips. The ratio between the ventral distal dark band and the adjacent proximal light band on the outermost rectrices is 1.4, a value that falls within the range

obtained from a small sample of *F. c. insignis* and *F. c. pallidus* but remarkably lower than those obtained from a larger sample of other subspecies (Tab. 2). As the border between dark and light bands is irregular, a visual inspection of both the ventral and dorsal sides of the feathers capture, even better than measurements, that the light bands are definitely wider in the ARB specimen than in any *F. c. aesalon*.



Fig. 2 – The Admetos Rolando Barberis collection *Falco columbarius* juvenile female, specimen n. 151, December 1952, Stupinigi (Turin, Italy), now held at the Regional Park of the Po River in Boscomarengo (AL) (Photo: G. Boano). / Collezione Admetos Rolando Barberis *Falco columbarius* femmina giovane, esemplare n. 151, dicembre 1952, Stupinigi (Torino, Italia), ora conservato presso il Parco Regionale del Po di Boscomarengo (AL) (Foto: G. Boano).

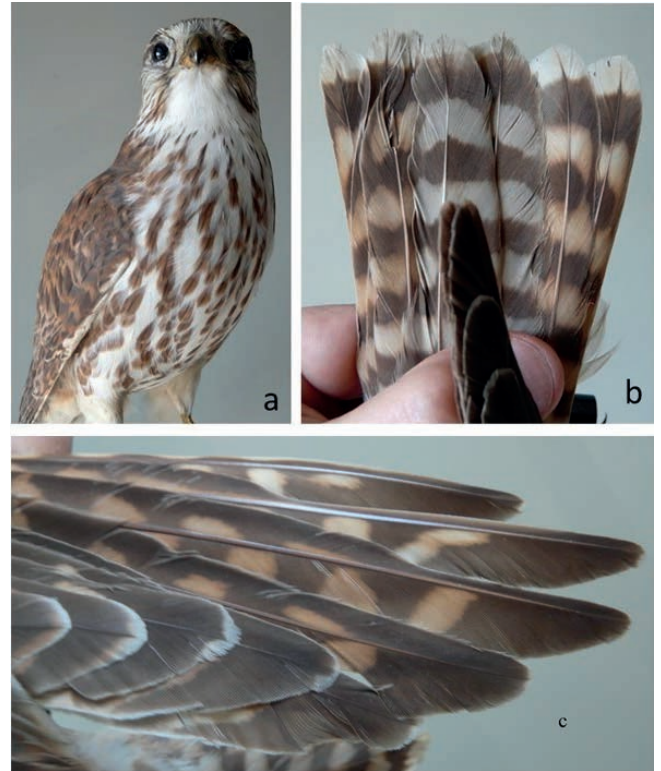


Fig. 3 – The *Falco columbarius* juvenile female, Admetos Rolando Barberis collection n. 151, December 1952, Stupinigi (Turin, Italy): a) front view; b) tail; c) outer primaries (Photo: G. Boano). / La femmina giovanile di *Falco columbarius*, collezione Admetos Rolando Barberis n. 151, dicembre 1952, Stupinigi (Torino, Italia): a) vista frontale; b) coda; c) primarie esterne (Foto: G. Boano).

Tab. 2 – Ventral outermost tail band ratio (dark distal/adjacent proximal light proximal band) of different subspecies of *Falco columbarius*. Nearctic subspecies from Pandolfino *et al.* (2018), others from sample of specimens of the examined collections. / Rapporto banda ventrale esterna della coda (banda scura distale/adiacente prossimale chiara) di diverse sottospecie di *Falco columbarius*. Sottospecie nearctiche da Pandolfino *et al.* (2018), altre sottospecie da un campione degli esemplari esaminati.

Subspecies	W-Palaeartic		E-Palaeartic		American			
	<i>aesalon</i>	<i>subaesalon</i>	<i>pallidus</i>	<i>insignis</i>	<i>richardsonii</i>	<i>columbarius</i>	<i>suckley</i>	
n	25	18	6	6	8	19	13	
ratio D/L	Mean	3.4	5.2	1.6	1.8	1.9	3.8	9
	SD	1.085	1.949	0.388	0.333	-	-	-
	Min	1.9	3.6	1.3	1.3	1.6	2	4.6
	Max	7	9.3	2.3	2.2	2.5	4.7	13.1

W, western; E, eastern; D/L, dark distal/adjacent proximal light proximal band; SD, standard deviation.

## DISCUSSION

Measurements of the wing and tail are both at the upper limits of *aesalon*, the only accepted subspecies up to now recorded in Italy (Baccetti *et al.*, 2021), and exclude *lymani*, *columbarius* and *suckleyi*, but they do not differ significantly from those of *subaesalon* C.L. Brehm, 1827, a subspecies which is larger than *aesalon*. They fall well within

the range of variability of *insignis* and *pallidus*, with the latter being on average slightly longer winged.

The ABR specimen differs in plumage coloration from juveniles and females of *aesalon* (Fig. 4), *subaesalon*, *pacificus*, *columbarius* and *suckleyi*, having a distinctly paler plumage; *richardsoni* is also pale but distinctly greyer or dull light drab.



Fig. 4 – The “A. Rolando Barberis” specimen between a pair of *Falco columbarius aesalon* from the Museo Regionale di Scienze Naturali (ex Museo Zoologico dell’Università di Torino) collection: female (MZUT 8894) and juvenile male (MZUT 11693) (Photo: G. Boano). / L’esemplare “A. Rolando Barberis” tra una coppia di *Falco columbarius aesalon* della collezione del Museo Regionale di Scienze Naturali (ex Museo Zoologico dell’Università di Torino): femmina (MZUT 8894) e maschio giovane (MZUT 11693) (Foto: G. Boano).

In particular, the general color is strikingly warmer and lighter than the females and juveniles of the Western Palearctic subspecies, which are darker brown on the upperparts (sometimes with a gray hue), with narrower rufous or chestnut edges. The forehead is much whiter, and the underparts conspicuously less heavily streaked, with the dark streaking being narrower and lighter and almost absent on the undertail coverts. A key character is the dark barring pattern of the rectrices and outer primaries: in dorsal view, the brown-black bars are, in fact, narrower than in other subspecies, being sub-equal or even narrower than the pale ones; the measurement on the ventral view confirms the sharp differences with West Palearctic and American subspecies, and the similarity with *F. c. pallidus* and *F. c. insignis*. Tertiary markings also differ from European and American *taxa*: the dark bars are narrower, with the pale bars being wider and encompassing much of the outer web as well (whereas in the European and American subspecies the pale bars are much more evident on the inner webs, and subdued or incomplete on the inner webs).

Field guide illustrations of the eastern subspecies *pallidus* and *insignis* are comparable. Clark & Schmitt (1999) illustrated adult female and juvenile *F. c. pallidus* on Plate 43, Fig. 3c, 3d, 3e. Rasmussen & Anderson (2005) illus-

trated adult female *F. c. pallidus* at the top of Plate 45, Fig. 3. Clark & Davies (2018) illustrated an adult female *F. c. pallidus* as in Fig. 2c. on Plate 52. 9. Brazil (2009) illustrated adult female *F. c. insignis* in the upper figures of Plate 45. Robson (2000) illustrated adult female *F. c. insignis* in Fig. 7c, 7d, 7f on Plate 49. Rasmussen & Anderson (2005) illustrated adult female *F. c. insignis* in Fig. 4 on Plate 35.

Comparing museum material (Figs. 5-8) with our specimen, we noticed that, on average, *F. c. pallidus* shows slightly narrower dark bars on outer primaries, tertiaries, and tail-feathers, the pale areas thus being wider. The general appearance of the upperparts is also sandier and more greyish. The dark streaking/spotting on the underparts is even narrower/smaller than on our specimen, which in turn, however, appears to be overall paler, with slightly narrower/smaller dark markings than some typical examples of *insignis*. Our tail band measurement appears to confirm these observations, with the caveat that it is based on a small sample size and that there is some overlap between the two taxa.

The other two Eastern Palearctic subspecies, *F. c. pacificus* and *F. c. lymani*, are said to be similar to *insignis*, with *pacificus* being darker (more similar to *aesalon*) and slightly larger, while *lymani* is similar in coloration (with



Fig. 5 – *Falco columbarius insignis* (Stegmann det.), juv. male, 24/X/-6/XII, Vic[inità] Gulschar (Gulschat, Kazakhstan?), leg. Severtzoff (NHMUK1949.Whi.1.17459). Ventral and dorsal view (Photo: M. Pavia). / *Falco columbarius insignis* (Stegmann det.), giovane maschio, 24/X/-6/XII, Vic[inità] Gulschar (Gulschat, Kazakhstan?), leg. Severtzoff (NHMUK1949.Whi.1.17459). Vista ventrale e dorsale (Foto: M. Pavia).



Fig. 6 – *Falco columbarius insignis*, juv. male, 6/XII/1922, Baghdad, Mesopotamia (NHMUK 1924.3.2047). Ventral and dorsal view (Photo: M. Pavia). / *Falco columbarius insignis*, maschio giovane, 6/XII/1922, Baghdad, Mesopotamia (NHMUK 1924.3.2047). Vista ventrale e dorsale (Foto: M. Pavia).



Fig. 7 – *Falco columbarius pallidus*, female, 2/1/1924, Ainal Najm, Hufuf, Arabia (NHMUK 924.11.309). Ventral and dorsal view (Photo: M. Pavia). / *Falco columbarius pallidus*, femmina, 2/1/1924, Ainal Najm, Hufuf, Arabia (NHMUK 924.11.309). Vista ventrale e dorsale (Foto: M. Pavia).



Fig. 8 – *Falco columbarius pallidus*, juv. male, 26/XI/1922, Nineveh, N Iraq (NHMUK 1965.M.1505). Ventral and dorsal view (Photo: M. Pavia). Data on Meinertzaghen specimens are often considered not to be accurate (Prys-Jones 2020), but specimens with the preparator H. L. Powell initials on label normally carry correct data (R. Prys-Jones in litt. 2/2024). / *Falco columbarius pallidus*, maschio giovane, 26/XI/1922, Ninive, N Iraq (NHMUK 1965.M.1505). Vista ventrale e dorsale (Foto: M. Pavia). I dati sugli esemplari di Meinertzaghen sono spesso considerati non accurati (Prys-Jones 2020), ma gli esemplari con le iniziali del preparatore H. L. Powell sull'etichetta riportano normalmente dati corretti (R. Prys-Jones in litt. 2/2024).

females less conspicuously barred above), but having considerable longer wings (Vaurie, 1965, see also Tab. 1). This last subspecies is also mainly sedentary, with only short distance and altitudinal movements.

## CONCLUSIONS

Our conclusion, based on this morphological analysis, is that the specimen under study represents without any doubt the first record for Italy and Europe of one of the eastern taxa, either *F. c. insignis* Clark, 1907 or *F. c. pallidus* Stegmann, 1929, neither of which is reported in European checklists and guides (Forsman, 2016; Mitchell, 2017). In light of its breeding distribution and migration habits, *insignis* is one of the eastern subspecies most likely to reach southern Europe, as it winters south to Afghanistan, Transcaucasia, northern Iran, Transcaucasia, Armenia, and east to Iraq, Israel, and Egypt (Vaurie, 1965; Mitchell, 2017). *F. c. pallidus* is an equally likely candidate: it is sometimes reported as far west as Turkey, and occurs regularly in the

Middle East as well Egypt (Vaurie, 1965; Forsman, 2016; Mitchell, 2017).

In particular, we believe that the studied Italian specimen best fits *F. c. insignis*. This is also the opinion of V. V. Morozov, the author of a major monograph on the species (Morozov *et al.*, 2013). This subspecies has an extensive breeding range in Siberia, from which many other vagrants arrive annually in Europe (Pfeifer, 2007; Bozó *et al.*, 2016; Stoddard, 2018; Dufour *et al.*, 2022).

We recognize however that a *pallidus* or a *pallidus/ae-salon* intergrade cannot be fully ruled out, as morphological differences are subtle and (pure) *insignis* breeds only as far west as the Yenisey river and seems to winter mainly in N India, Japan, Korea (W. C. Clark, A. Wassink pers. comm.). Further genetic or isotopic tests and comparisons with samples from the breeding ranges could perhaps resolve this problematic attribution.

In recent years, some very pale “Merlins”, identified by the observers as *pallidus/insignis* (both female/juveniles that males) have been observed in Italy (Puglia and

Sicily) but photographic evidence is lacking (AC ined.). In addition, other very late records in May of Merlins of unidentified subspecies migrating north obtained in Veneto (Brichetti & Fracasso, 2020), Calabria (T. Mingozi ined.), Linosa island (O. Janni ined.), and Piedmont (GB ined., F. Carpegna ined.) are worthy of attention as they could be long-distance migrant birds from the eastern populations. Therefore, we advise ornithologists, birders, and museum bird collection managers in Italy as well as in other European countries to devote particular attention to any pale-looking Merlin. Field observations should be documented with good photographs, and it may be worth re-examining museum specimens to better understand/know the status of these two taxa in Europe.

The record was accepted as *F. c. insignis*, category 1A, by the Italian Ornithological Commission (Fulco & Liuzzi, 2023).

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