

THE FALCONS (FALCONIFORMES, FALCONIDAE) VOUCHER
COLLECTION IN THE IRAQ NATURAL HISTORY RESEARCH
CENTER AND MUSEUM (INHM)

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ABSTRACT

A total of 45 voucher specimens of falcons which are deposited in the bird's collection of the Iraq Natural History Research Center and Museum (INHM) were reviewed. Mummified falcons were preserved as voucher study specimens and tagged with museum collection labels. In the current study, morphometrics of six species of the genus *Falco* Linnaeus, 1758: Lanner falcon *F. biarmicus* Temminck, 1825; Sacker Falcon *F. cherrug* Gray, 1834; Lesser Kestrel *F. naumanni* Fleischer, 1818; Peregrine Falcon *F. peregrines* Tunstall, 1771; Eurasian Hobby *F. subbuteo* Linnaeus, 1758 and Common Kestrel *F. tinnunculus* Linnaeus, 1758 were documented.

These species were recorded previously in the ornithological literatures by several authors and deposited in the museum collection; nevertheless, breeding and migrating of these birds are still occurring throughout Iraq. Furthermore, the current distribution ranges and conservation status of each of the mentioned species throughout Iraq were reviewed and comprehensively discussed.

Keywords: Conservation status, Falcons, Falconiformes, Iraq, Voucher specimens.

INTRODUCTION

The falcons order Falconiformes Sharpe, 1874 contains five subtaxa which four of them had extinct: (Antarctoboenus, Parvulivinator, Stintonoris, Masillaraptor); yet, one subtaxon Falconidae (Mayr, 2009) is still valid and contains three subfamilies: Herpetotherinae, Polyborinae and Falconinae, (Bock, 1994).

Worldwide, the genus *Falco* Linnaeus, 1758 contains 38 species (Myers *et al.*, 2009); in Iraq, a total of ten species and subspecies including: Saker Falcon *F. cherrug*; Lanner Falcon *F. biarmicus*; Peregrine Falcon *F. peregrinus*; *F. p. (brookei)*; Barbary Falcon *F. p. (pelegrinoides)*; Eurasian Hobby *F. subbuteo*; Merlin *F. columbarius*; Red Footed

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Falcon *F. vespertinus*; Lesser Kestrel *F. naumanni*; Common Kestrel *F. tinnunculus* are recorded (Cumming, 1918; Donald, 1919; Ticehurst *et al.*, 1922; Meinertzhagen, 1914, 1924 a, 1924 b; Moor and Boswell, 1956; Allouse, 1960; Scott and Carp, 1982; Scott, 1993; Evans, 1994; Scott, 1995; Abed, 2007; Salim *et al.*, 2009; Porter *et al.*, 2010; Ararat *et al.*, 2011; Al-Sheikhly, 2011; Al-Sheikhly, 2012a; Lahoney *et al.*, 2013; Fazaa *et al.*, 2017; Al-Sheikhly and Al-Azawi, 2019).

The aim of the current study is a first attempt to (i) catalogue the *Falco* voucher specimens deposited in the bird collection of the Iraq Natural History Research Center and Museum, University of Baghdad (INHM); and (ii) provide an additional overview of the recorded falcons in Iraq by reviewing literature records and the recent published records. As a consequence, this study is believed to contribute in adding up further knowledge to the status of falcons in Iraq which may support their national conservation strategies.

MATERIALS AND METHODS

A total of 45 voucher specimens of falcons (genus *Falco*) which were collected from different regions of Iraq such as: Falluja road, Karkuk Road, Ukhadur and Mosul Rabiaa (Northern Iraq). Furthermore; Baghdad, Mohmodiya Road, Baguba Road, Azizia Road, Tarmiya across the Tigris, Abu- Gharib, and Swara (Central Iraq); and finally, Naseriya (Southern Iraq) which are deposited in the bird collection in INHM are reviewed. It should be mentioned that the names of the regions are based on the museum records. Falcons were preserved (mummified) as voucher study specimens and tagged with the museum collection labels. The specimen labels included: Accession number, common name, scientific name, and the location of collecting.

The morphological measurements (T.L. = Total body length, W. = body width, T. = Tail, B. = Beak, and T. s. = Tarsus length) in millimeters (mm) were measured for one specimen as a representative element to each studied species. The species identification remarks were based on Allouse (1960). The voucher specimens were also photographed using a mobile digital camera (Samsung SM-N770F) to support species identification and documentation. All photos were photographed by the first author.

RESULTS AND DISCUSSION

A total of 45 voucher specimens (16 male/ 29 female) of six *Falco* species belonging to one family (Falconiformes, Falconidae) were recorded in the bird collection of the INHM, as in Table (1) and Plate (1).

Table (1): Shows the collection of the Falconidae (Order, Falconiformes) voucher specimens deposited in the Iraq Natural History Research Center and Museum (INHM).

Family	Genus	Species	Common name	No. of specimens
Falconidae	<i>Falco</i>	<i>F. cherrug</i>	Saker falcon	1 ♂
		<i>F. peregrinus</i>	Peregrine falcon	1 ♀
		<i>F. naumanni</i>	Lesser Kestrel	2 (♂+♀)
		<i>F. subbuteo</i>	Eurasian hobby	1 ♀
		<i>F. biarmicus</i>	Lanner falcon	1 ♂
		<i>F. tinnunculus</i>	Common Kestrel	39 (13♂+ 26♀)



Plate (1): Shows the collection labels of the six *Falco* voucher specimens deposited in the Iraq Natural History Research Center and Museum (INHM).

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The notes about the falcon species are given as follows:

(1) **Saker Falcon *Falco cherrug*** (Gray, 1834)

Morphology study: This species is larger than the Peregrine and the Lanner Falcons; it is similar to the latter but differs by its honey-white head with brown stripes on the top and its brown upper parts. Furthermore; the edges of the body feathers are light in color and the cheek spot is less visible. The lower parts and upper chest are white with extensive brown spots more than other species which suggests a juvenile bird. The female is similar to the male, but is larger in size (Allouse, 1960). See Plates (2a, 3a), the measurements are shown in Table (2).

Species status in Iraq: A former Falconidae resident (Allouse, 1960). However, the species breeding population was depleted due to extensive illegal hunting and trapping (falconry) and now it is considered a rare winter visitor and passage migrant (see Al-Sheikhly and Al-Azawi 2019). One voucher specimen of *Falco c. cherrug* was collected from Baghdad – Al Kut Road as show in the label of Plate (1). Porter *et al.* (2010) indicated that Saker falcon is one of the rare species in Iraq. While, Bachmann and Bridget (2011) mentioned that Saker Falcons are hunted in the five governorates in Iraq: western steppes of Al-Jazera in Anbar province; Rabea'a and Sinjar in Mosul province; the open steppes of Himreen in Diyala province; Ali-Gearbi and Al-Teeb in Missan province and the Fao of Basrah governorate. Recently, Al-Sheikhly and Al-Azawi, (2019) recorded Saker Falcon *Falco c. milvipes* in the southern wetlands of Iraq.

Conservation status: It is listed as Endangered by Birdlife International (2020) and its occurrence was used as a vulnerability criteria to designate sites as Important Bird (IBAs) and Key Biodiversity Areas (KBAs) in Iraq (Nature Iraq, 2017).

(2) **Peregrine Falcon *Falco peregrinus*** (Tanstall, 1771)

Morphology study: This species is characterized by the presence of a black spot in both cheeks that extends to the bottom of the eye and is surrounded by a white color from the bottom and both sides. Upper parts are gray-bluish in color, and the head is black in color with a hazel brown sometimes. The throat and face are white with broad black eye drops, as mentioned above. Moreover; the wings are long and pointed, and the tail is bluish-gray striped with close lines, and the feathers end with a white color. Whereas the lower parts are honey brown with faint black spots which may suggest an adult male. Both of the female and the male are alike, but females are much larger. Finally, the iris and beak are brown in color, yellow in adult and gray in juvenile. See Plates (2 b, 3 b), the measurements are shown in Table (2).

Species status in Iraq: The current study revealed to one voucher specimen of *F. peregrines* Peregrine Falcon was collected from Naseriya province south of Iraq as show in the label of Plate (1). Peregrine Falcon is a regular winter visitor to the marshy lakes of Mesopotamian marshes, was recorded by Cumming (1918); Donald (1919); Ticehurst *et al.* (1922) and Scott and Carp (1982). While, Bachmann and Bridget (2011) revealed to Peregrine Falcons were hunted near water bodies such as: Dukan Lake near

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Rania in Sulaimani province, Al Tharthar Lake of both Anbar and Salah Adin province and the marshes in the south of Iraq such as the Hawizeh Marshes in Missan and the Fao Peninsula of Basrah. Furthermore, Peregrine Falcons are a city Dowling raptor; it has been recorded wintering over the city of Baghdad (Al-Sheikhly, 2014). Al-Sheikhly and Al-Azawi, (2019) mentioned that a large adult female was trapped in Hawizeh Marsh in Maysan province in 2017.

Conservation status: It is listed as Least Concern (LC) by IUCN (2020) and Birdlife International (2020).

(2) Lanner Falcon *Falco biarmicus* (Temminck, 1825)

Morphology study: This species differs from the Peregrine Falcon in the narrowness of the black cheek spot rather than being round, and the head is predominantly honey-colored and the upper parts are brown with a blue tinge and the edge of the feathers are light in color and there is a black area around the eye that extends to the bottom. While the lower parts are white with scattered black spots, inside wing and tail striped. The female is similar to the male, but is larger in size; iris brown, beak gray, and foot yellow. See Plates (2c, 3c), the measurements are shown in Table (2).

Species status in Iraq: The species seems to be one of the rarities in Iraq where few records have been made. The current study revealed to one voucher specimen of *Falco biarmicus* was collected from Basrah province south of Iraq as shown in the label of Plate (1). That agrees with Cumming (1918) who recorded this species of falcon in Al-Fao Peninsula. Allouse (1960) revealed that the species is a rare falcon in Iraq. While Mohammad and Al- Zubiadi, (2014) recorded it in Ga'ara Depression, the Iraqi Western Desert. Lanner falcon was recorded as a winter visitor and passage migrant to the Marshland south of Iraq by Al-Sheikhly and Al-Azawi (2019).

Conservation status: It is listed as Least Concern (LC) by IUCN (2020) and Birdlife International (2020).

(4) Lesser Kestrel *Falco naumanni* (Fleischer, 1818)

Morphology study: This species is similar to the Common Kestrel, but it is smaller in size and the female is rather indistinguishable for the two species in the field. Head of male with grayish-brown, the tail ends with a black stripe, and the back is maroon red, but it is devoid of black spots, and this is a sign that distinguishes lesser male from the male of Common Kestrel. Chin and chest in male are white and lower parts are colored coffee. Whereas, the female bird would be chestnut in color from the top, with a black striped head and the back and the lower parts are in coffee color; iris dark brown, beak gray, feet orange or yellow color, and claws with light brown to white; rump in adult females with greyer color than those of the juveniles. See the Plates (2 d, 3 d), the measurements are shown in Table (2).

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Species status in Iraq: The current study revealed to two voucher specimens of Lesser Kestrel (male and female) were collected from Falluja desert middle of Iraq. Lesser Kestrel was reported in the territory of southern wetlands by Ticehurst *et al.* (1922). Allouse, (1960) revealed that *Falco naumanni* is a passage migrant in spring and autumn. Furthermore, the breeding ecology of the species in northern and northwestern Iraq was comprehensively studied by Al-Sheikhly (2012b). While, Mohammad and Al-Zubiadi (2014) recorded it in Ga'ara Depression, Iraqi western desert. Recently, Al-Sheikhly and Al-Azawi (2019) recorded it in the Mesopotamian marshes in the southern of Iraq.

Conservation status: It is listed as Least Concern (LC) by IUCN (2020) and Birdlife International (2020).

(5) Eurasian Hobby *Falco subbuteo* (Linnaeus, 1758)

Morphology study: This species is almost resembles the adult plumage of the Peregrine Falcon and is distinguished by its Reddish brown color in vent, trousers, and under tail coverts; lower parts with longitudinally striped, upper parts, wings and tail with gray in color and head black, cheeks are white and there is a collar in the neck. While, the lower parts are white, striped with black, female larger than male, and the black streaks in the tail and thigh are denser than the male. Iris with dark brown, the beak is gray, and the foot is yellow. See Plates (2 d, 3 d), the measurements are shown in Table (2).

Species status in Iraq: The current study revealed to one voucher specimen of Eurasian Hobby which was collected from Baghdad province central of Iraq as shown in Plate (1). Eurasian Hobby was considered a rare winter visitor and passage migrant to the marshy lakes, cultivated fields on the Mesopotamian marshes (Cumming 1918; Ticehurst *et al.* 1922; Fazaa *et al.*, 2017; Al-Sheikhly and Al-Azawi, 2019).

Conservation status: It is listed as Least Concern (LC) by IUCN (2020) and Birdlife International (2020).

(6) Common Kestrel *Falco tinnunculus* (Linnaeus, 1758)

Morphology study: The male has a blue-gray head, a maroon-red back with black spots, a bluish-gray tail with a black stripe and white feathered end; lower parts yellowish, streaked black in the chest area, with a yellow ring surrounding the eye. As for the female, it has a red color with black stripes, the tail is similar to the back in terms of color, and the lower parts are brown, streaked with black brown. While the juvenile plumage resembles those of the adult female, except that the upper body lines are wider and the wing and tail feathers end in a hazel brown color. iris brown; beak blue-gray with black tip, yellow foot. See the Plates (2 f, 3 f), the measurements are shown in Table (2).

Species status in Iraq: Common Kestrel is widespread resident breeding falcon in Iraq (Allouse, 1960). The current study revealed to 39 voucher specimens of this species were collected from different areas in Iraq as: Baghdad, Tarmiya across Tigris, Abu-Gharib, Falluja road, Mohmodiya Road, Swara, Karkuk Road, Baguba Road, Azizia Road, Ukhadur and Mosul Rabiaa. Lahony *et al.* (2013) revealed to *Falco tinnunculus* in the fauna of Hawraman Mountain, Kurdistan province, north-east of Iraq. Also, Mohammad (2014) revealed to Common Kestrel with the vertebrate diversity in Al-Dalmaj Marsh of Al-Diwaniya Province, south of Iraq. It has also been recorded in Bahr Al-Najaf Depression of Al-Najaf Al-Ashraf Province (Mohammad *et al.*, 2013). Then, AL Zubaidi *et al.* (2014) revealed to *Falco tinnunculus* with the Biodiversity of Safeen Mountain- Erbil, Kurdistan, northern of Iraq. While, Mohammad and Al- Zubiadi (2014) recorded it in Ga'ara Depression, Iraqi western desert. More than, Mohammad and Al-Zubaidi (2017) recorded it near Razzaza Lake, central of Iraq. Moreover, Al- Zubaidi *et al.* (2017) recorded the Common Kestrel in the animal diversity in Huwaiza marsh, south of Iraq. The species is also been recorded in the cave areas such as: Shera Swar and Hamashowana Cave in Kurdistan, Iraq by Mohammad *et al.* (2017). Recently, Common Kestrel was recorded in Al-Chebaeish, Huwaiza, Al- Hammar and Central Marshes within the geographical range of the Mesopotamian marshes of southern Iraq by Al-Sheikhly and Al-Azawi (2019).

Conservation status: It is listed as Least Concern (LC) by IUCN (2020) and Birdlife International (2020).

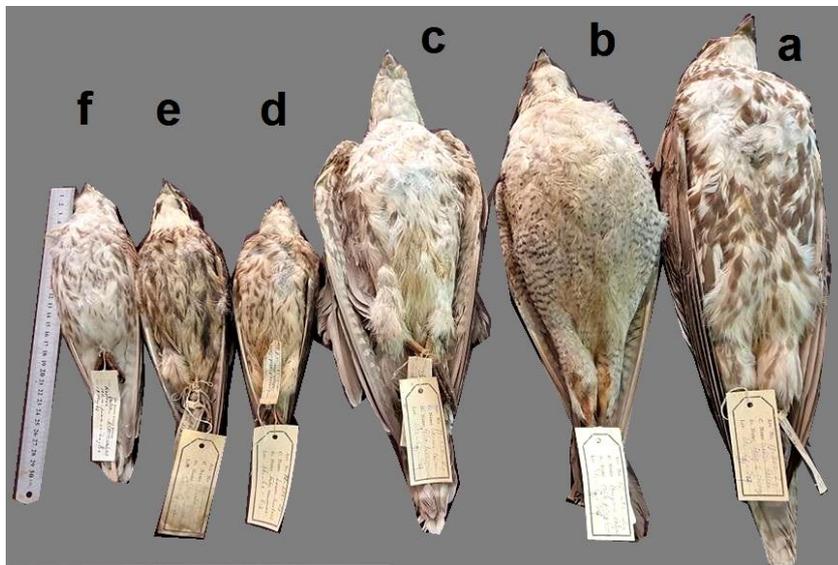


Plate (2): Ventral view of *Falco* species; (a) *F. cherrug*, (b) *F. peregrinus*, (c) *F. biarmicus*, (d) *F. naumanni*, (e) *F. subbuteo*, and (f) *F. tinnunculus*.

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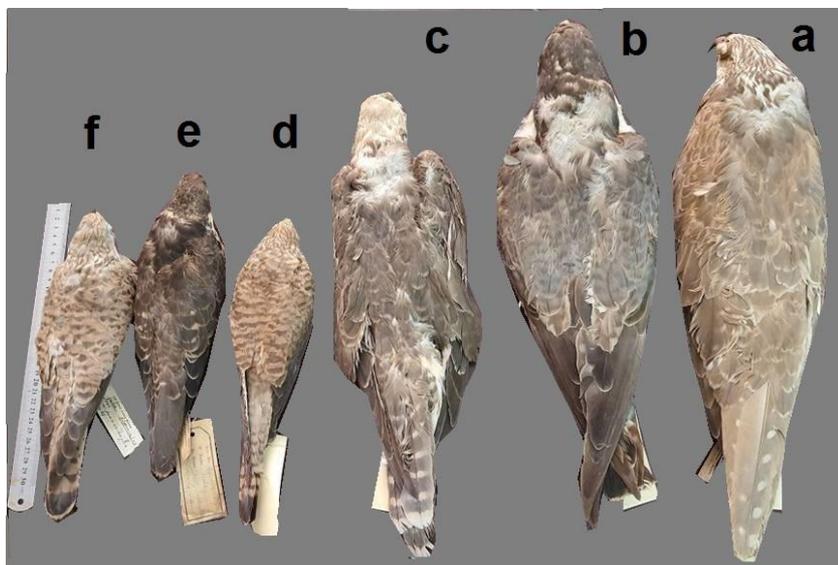


Plate (3): Dorsal view of *Falco* species; (a) *F. cherrug*, (b) *F. peregrinus*, (c) *F. biarmicus*, (d) *F. naumanni*, (e) *F. subbuteo*, (f) *F. tinnunculus*.

Table (2): Measurements (in millimeters) of the *Falco* voucher specimens deposited in the Iraq Natural History Research Center and Museum (INHM) bird collection.

Measurements	<i>F. cherrug</i> ♂	<i>F. peregrinus</i> ♀	<i>F. subbuteo</i> ♀	<i>F. naumanni</i> ♀	<i>F. biarmicus</i> ♂	<i>F. tinnunculus</i> ♀
T.L.	550	480	320	300	470	344
W.	405	320	263	240	310	248
T.	239	176	135	140	170	170
B.	25	23	13	15	21	16
T.s	60	56	35	33	53	42

T.l.=Total body length, W. = width, T. =Tail length, B. = Beak length, T.s. = Tarsus length.

CONCLUSION

There are ten taxa (species and sub species) of the genus *Falco* were recorded in Iraq: Saker Falcon *F. cherrug*; Lanner Falcon *F. biarmicus*; Peregrine Falcon *F. peregrinus*; *F. p. brookei*; Barbary Falcon *F. p. pelegrioides*; Eurasian Hobby *F. subbuteo*; Merlin *F. columbarius*; Red footed Falcon *F. vespertinus*; Lesser Kestrel *F. naumanni*; Common Kestrel *F. tinnunculus*. Among the species mentioned above, six of them were

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recorded previously by several authors and deposited in the Iraq Natural History Research Center and Museum (INHM) collection and reviewed in this study. Nevertheless, the six species covered by this study are still breeding and migrating throughout Iraq. It has been noticed that among the museum *Falco* collection, valuable specimens of the Saker and lanner Falcons are preserved in the INHM collection. And the current occurrence of these species in Iraq is not fully known. It has also observed that Saker Falcon is a rare winter visitor and passage migrant; it has listed as Endangered by Birdlife International (2020) and its occurrence was used as vulnerability criteria to designate sites as Important Bird (IBAs) and Key Biodiversity (KBAs) Areas in Iraq. Similarly, based on literature records, Lanner Falcon seems to be a rare passage migrant, while other species reviewed by this study are listed as Least Concern (LC) by IUCN (2020).

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الصقور المحفوظة في مركز بحوث ومتحف التاريخ الطبيعي العراقي (رتبة Falconiformes، عائلة Falconidae)

أفكار هادي مسلم، هند ضياء هادي، سهاد ياسين جاسم و نور حسين
يوسف
مركز بحوث و متحف التاريخ الطبيعي، جامعة بغداد ، بغداد ،
العراق

تاريخ الاستلام: 2020/11/07، تاريخ القبول: 2021/03/04، تاريخ النشر: 2021/06/20

الخلاصة

دُرست 45 عينة من الصقور المحفوظة في متحف التاريخ الطبيعي العراقي من مناطق مختلفة من العراق مثل: بغداد، الناصرية، طريق الفلوجة، طريق المحمودية، الصويرة، طريق كركوك، أبوغريب، طريق بعقوبة، طريق العزيزية، الطارمية عبر دجلة والأخضر و ربيعة في الموصل.

إن جميع العينات المحفوظة كانت بطريقة التجفيف (التحنيط) و مزودة بالأرقام المتحفية، أخذت القياسات لستة أنواع من جنس *Falco* *F. biarmicus* Linnaeus, 1758 شملت: 1825، *F. naumanni*، *F. cherrug* Gray , 1834، Temminck، *F. peregrines* Tunstall, 1771، Fleischer, 1818، *F. tinnunculus* Linnaeus, 1758 و *subbuteo* Linnaeus, 1758؛ علاوة على ذلك، تمت مراجعة الوضع الحالي والتوزيع الحالي لكل نوع في جميع أنحاء العراق. الأنواع الستة التي تم مراجعتها في هذه الدراسة تم تسجيلها مسبقاً من قبل العديد من الباحثين وتم ايداعها في المجموعة المتحفية، و مع ذلك لاتزال جميعها تحدث (تربية/ هجرة)

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في جميع انحاء العراق. بالاضافة الى ذلك تم مناقشة حالة حفظ الانواع ونطاق التوزيع الحالي في العراق.