Katalog vpijatov (Coraciiformes) ornitološke zbirke Prirodoslovnega muzeja Slovenije

Catalogue of Coraciiformes in ornithological collection of the Slovenian Museum of Natural History

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Izvleček

V katalogu so predstavljeni podatki o vseh primerkih vpijatov (Coraciiformes) v zbirki Prirodoslovnega muzeja Slovenije (PMS). Navedeni so ohranjeni preparati iz inventarnih knjig, primerki, zabeleženi v akcesijskih in terenskih knjigah, ter podatki o propadlih ali izgubljenih primerkih. Glavni vir podatkov o razstavni zbirki je stara inventarna knjiga, poimenovana kot Inventarna knjiga sesalcev, rib, ptic, plazilcev Prirodoslovnega muzeja. Večji del podatkov o študijskih preparatih je iz Kataloga zbirke Državnega ornitološkega observatorija. Primerki, pridobljeni med odpravo v Etiopijo, so zapisani v Terensko knjigo Sava Breliha. Vsi ohranjeni primerki so danes evidentirani v inventarni knjigi v sistemu Galis ali v akcesijski knjigi. Skupno je bilo do leta 2016 evidentiranih 124 primerkov 15 vrst vpijatov. Prve primerke je za muzejsko zbirko pridobil preparator Ferdinand Schulz leta 1873. Večje število primerkov pa je muzej prejel med letoma 1890 in 1897. Druga večja pridobitev je bila z odprave Sava Breliha v Etiopijo med letoma 1960 in 1961. Po letu 1980 se je število pridobitev povečalo s prevzemi najdenih mrtvih ptic na terenu. V zbirki PMS so v večji meri zastopane predvsem vrste vpijatov, ki se pojavljajo v Sloveniji, in sicer zlatovranka *(Coracias garrulus)*, vodomec *(Alcedo atthis)* in čebelar *(Merops apiaster)*, ki so zastopane z največjim številom primerkov. Preostali material izvira iz sedmih držav Evrope, Afrike in Severne Amerike. Do leta 2016 se je v ornitološki zbirki ohranila le okoli polovica vseh zbranih primerkov. Ohranjeni primerki vpijatov sicer sestavljajo le 1 % celotne ornitološke zbirke PMS, vendar delež propadlih ali izgubljenih muzealij presega delež izgubljenih muzealij v drugih evropskih naravoslovnih muzejih.

Ključne besede: muzejska zbirka, zgodovina zbirke, Coraciidae, Alcedinidae, Meropidae, inventar, akcesija, zbiralci ptic

Abstract

The catalogue presents the data on all specimens of Coraciiformes in the collection of the Slovenian Museum of Natural History (PMS). These are preserved specimens from inventory books, specimens recorded in accession books and fieldnotes, as well as data on lost specimens. The main source of information is the old inventory book named as the Inventory book of mammals, fish, birds, reptiles of

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the Natural History Museum. Most of the data on study skins are from the Catalogue of bird collection of the State Ornithological Observatory. The specimens obtained during the expedition to Ethiopia are recorded in the Field Book of Savo Brelih. All preserved specimens are now recorded in the Inventory book for birds of the Slovenian Museum of Natural History in the Galis system or in the Accession book for birds of the Slovenian Museum of Natural History. Altogether, 124 specimens of 15 Coraciiformes species were recorded by 2016. The first specimens were acquired by taxidermist Ferdinand Schulz in 1873. A larger number of specimens were received by the Museum between 1890 and 1897. Another major accession was the expedition by Savo Brelih into Ethiopia between 1960 and 1961. After 1980, the number of acquisitions increased with the salvage of dead birds. Best represented Coraciiformes in the PMS collection are species occurring in Slovenia, i.e. the European Roller *(Coracias garrulus)*, the Common Kingfisher *(Alcedo atthis)* and the European Bee-eater *(Merops apiaster)*. The remaining material originates from seven countries of Europe, Africa and North America. By 2016, only about half of all collected specimens were preserved in the ornithological collection. The preserved specimens constitute only 1% of the entire PMS ornithological collection, but the share of lost museum specimens exceeds the share of lost specimens in other natural history museums in Europe.

Key words: museum collection, collection history, Coraciidae, Alcedinidae, Meropidae, inventory, accession, bird collectors

1. Uvod

Ptice so taksonomsko ena najbolje poznanih živalskih skupin (Newton 2003), saj je njihova filogenija raziskana že na nivoju celotnega genoma (Jarvis et al. 2014). Čeprav so muzejski primerki prispevali ključno informacijo za klasifikacijo ptic, se danes pomen in vloga muzejskih ornitoloških zbirk spreminja (Mearns & Mearns 1998, Mlikovsky 2010, Töpfer 2010, Vrezec 2016) za namene (1) določevanja (npr. izdelava določevalnih ključev in priročnikov, reference za preverjanje določitev redkih vrst, določanje materiala v ekoloških, zooarheoloških in paleontoloških raziskavah), (2) raziskav biologije (npr. študij golitvenih vzorcev, morfometrične študije, raziskave biologije malo znanih vrst), (3) varstva (npr. podatki o nekdanji razširjenosti in o izumrlih vrstah, podatki o smrtnosti), (4) pravnih postopkov, (5) izobraževanja in (6) varovanja zdravja in okolja (npr. določanje vsebnosti nevarnih snovi v tkivih ptic, bioindikacija). Vsekakor so muzejski primerki zanesljiv podatkovni vir o favni preteklosti, saj je iz njih mogoče ob dobri provenienci, podatkovnem zapisu o izvoru, izluščiti podatke, ki jih pred 100 in več leti še ni bilo mogoče. Muzejske

1. Introduction

Birds are taxonomically one of the best known animal groups (Newton 2003), since their phylogeny has been studied at the level of the entire genome (Jarvis et al., 2014). Although the museum specimens have provided key information for the classification of birds, the significance and role of museum ornithological collections is changing today (Mearns & Mearns 1998, Mlikovsky 2010, Töpfer 2010, Vrezec 2016) for the purpose of (1) identification (e.g. for preparation of identification keys, as references for verifying the identification of rare species, determining material in ecological, zooarcheological and palaeontological studies); (2) studies of bird biology (e.g. study of moult patterns, morphometric studies, studies of biology of little known species), (3) conservation (e.g. data on former distributions, extinct species, mortality data), (4) legal procedures, (5) education, and (6) health and environmental protection (e.g. determining the level of contaminants in bird tissues, bioindication). Museum specimens are a reliable data source on the past fauna, since it is possible to extract information from the well labelled specimens that was not possible 100 or more years ago. The museum natural collections are

naravoslovne zbirke so torej naravni arhivi, katerih pomen in vloga v sodobni znanosti in družbi se spreminjata (Winker 2004), tako da je nadaljevanje sistematičnega zbiranja še vedno smiselno in potrebno (Fjeldså & Kristensen 2010). Po drugi strani pa je ohranjanje zgodovinskih primerkov in njihove provenience ključno za študij novodobnih sprememb v biotski pestrosti (Ade s sod. 2001). Poleg tega so muzejski primerki kot nacionalno bogastvo del kulturno-zgodovinske in znanstvene dediščine, čeprav so raziskovalno v zgodovinskem oziru slabo izkoriščeni (npr. Roselaar 2010, Violani & Rovati 2010, Schnalke 2011).

Prav zaradi novih trendov uporabe muzejskih naravoslovnih zbirk so objave katalogov in pregledov zbranega in ohranjenega materiala smiselne. Pričujoči katalog vpijatov (Coraciiformes) v zbirki Prirodoslovnega muzeja Slovenije (PMS), ki vključuje zapise v inventarnih in akcesijskih knjigah, je tako prispevek k javni predstavitvi muzejskega materiala v seriji objav Kustodiata za vretenčarje (Kryštufek & Jernejc Kodrič 2013, Vrezec & Kačar 2016). V katalogu so predstavljeni podatki o vseh primerkih vpijatov, zbranih v okviru dejavnosti PMS. To poleg ohranjenih vključuje tudi propadle ali izgubljene primerke ter primerke, ki še niso bili uvrščeni v muzejsko zbirko, a so bili zabeleženi v muzejske akcesijske in terenske knjige. Tak način prikaza omogoča tudi ovrednotenje stanja zbirke ter njene nadaljnje perspektive.

2. Zgodovinski pregled akcesij vpijatov (Coraciiformes) v ornitološko zbirko Prirodoslovnega muzeja Slovenije

Prvo zbirko vretenčarjev je ustanovnima zbirkama Kranjskega deželnega muzeja dodal kustos Henrik Freyer v prvi polovici 19. stoletja (Kryštufek & Jernejc Kodrič

therefore natural archives, whose meaning and role in modern science and society is changing (Winker 2004), which makes the continuation of systematic collection still sensible and necessary (Fjeldså & Kristensen 2010). On the other hand, the preservation of historical specimens and their accompanying data is essential for the study of modern biodiversity changes (Ade et al. 2001). In addition, museum specimens as a national treasure are part of the cultural, historical and scientific heritage, although from the research point of view in the historical context there are still poorly exploited (e.g. Roselaar 2010, Violani & Rovati 2010, Schnalke 2011).

Due to new trends in the use of museum natural science collections, catalogues and reviews of collected and preserved material are meaningful. The present catalogue of absorbents (Coraciiformes) in the collection of the Slovenian Museum of Natural History (PMS), which includes both inventories and accessory books, is thus a contribution to the public presentation of museum material in the series of publications by the Vertebrate Department (Kryštufek & Jernejc Kodrič 2013, Vrezec & Kačar 2016). The catalogue presents data on all specimens of absorbents collected within the PMS working area. In addition to the preserved specimens, the catalogue includes lost specimens and specimens that have not yet been included in the museum collection, but were recorded in museum accession and field books. In this way it is also possible to evaluate the state of the collection and its further perspective.

2. Historical overview of accessions of Coraciiformes to the ornithological collection of the Slovenian Museum of Natural History

The first collection of vertebrates was established by curator Henrik Freyer within the founding collections of the Carniolan Provincial Museum in the first half of the 19th century

2013). Podatki o njih so zapisani v stari inventarni knjigi, ki je bila po letu 1944, ko se je dotlej enotni Narodni muzej razdelil na Prirodoslovni muzej v Ljubljani in Kulturno zgodovinski muzej v Ljubljani (Faninger 1986, Ur. list RS 60/2003), poimenovana kot Inventarna knjiga sesalcev, rib, ptic, plazilcev Prirodoslovnega muzeja (SIK) (slika 1) in bila leta 2008 tudi digitalizirana.

Ornitološki del knjige je glavni vir podatkov o razstavni zbirki dermoplastik in skeletov, pridobljenih med letoma 1841 in 1974. Leta 2010 so v knjigo vpisali tudi dermoplastične preparate, odkupljene iz zasebne zbirke Jožeta Mausarja, čeprav jim niso dodelili inventarnih številk in tako niso bili inventarizirani. Od konca 19. stoletja do 50ih let 20. stoletja je bilo v SIK vnesenih 394 inventarnih enot gnezd in jajc, ki so večinoma izhajali iz zasebne oološke zbirke dr. Janka Ponebška. V manjšem številu so v knjigi vneseni tudi primerki, preparirani kot mehovi, ki so bili del študijske muzejske zbirke. Slednja je bila sicer evidentirana v Študijski inventarni knjigi ptic (ŠIKP) (slika 2) s prvimi zapisi v začetku 20. stoletja, ki so jo kustosi dopolnjevali vse do vzpostavitve digitalne baze podatkov leta 2013.

ŠIKP je bila sprva digitalizirana kot Excellova baza (2013), v letu 2015 pa je bila prenesena v muzejski informacijski sistem Galis, namenjen vodenju muzejske dokumentacije. V sistemu Galis vodimo Inventarno knjigo ptic Prirodoslovnega muzeja Slovenije, Ljubljana (PMSL) (slika 3), katere osnova so inventarne številke iz ŠIKP. Z reinventarizacijo ohranjenih starih preparatov, ki so bili vneseni v SIK, smo vzpostavili enotno vodenje celotne ornitološke zbirke.

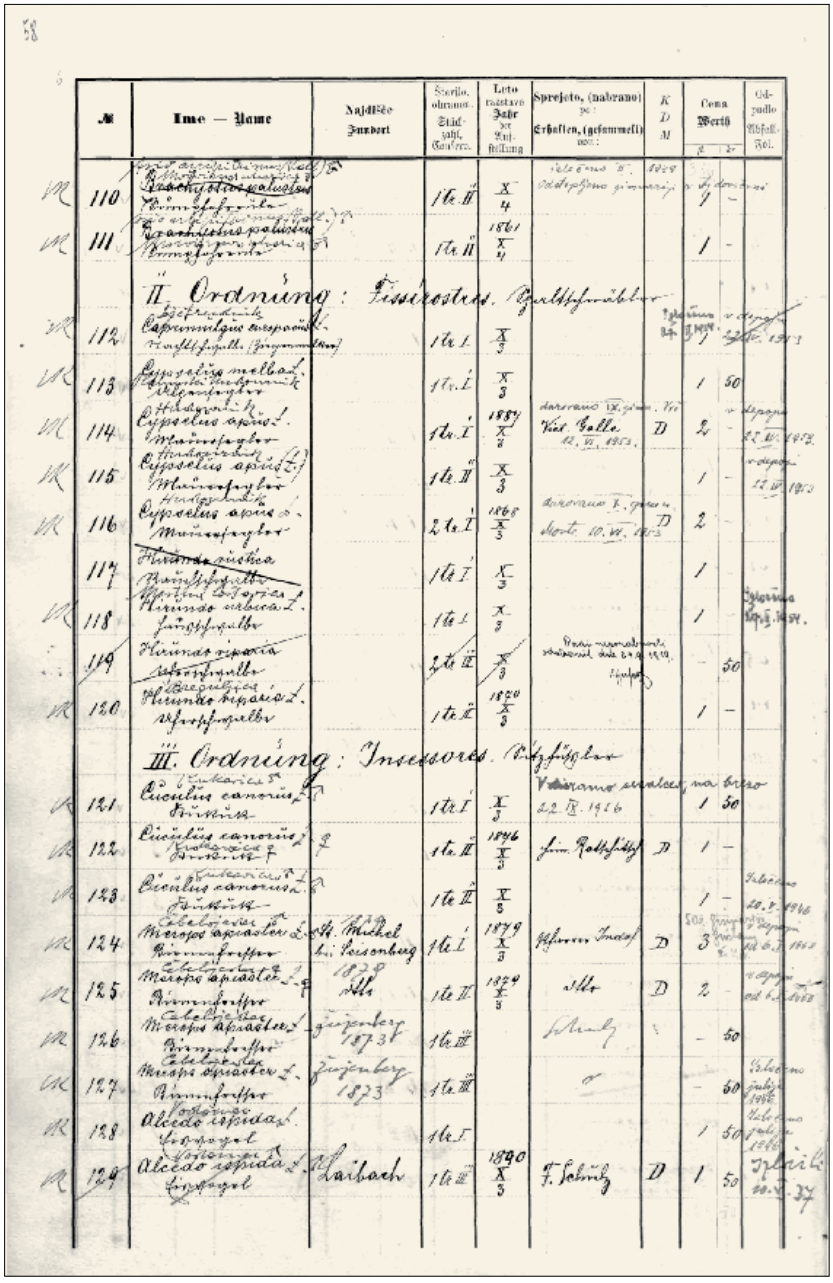
Vir podatkov je tudi Katalog zbirke Državnega ornitološkega observatorija (KDOO) (slika 4), katerega dejavnost je leta 1944 prešla pod pokroviteljstvo PMS (Gregori 2009). V katalogu so evidentirani preparati, pridobljeni med letoma 1903 in 1964, šlo pa je predvsem za študijsko zbirko, ki je bila, z izjemo propadlega materiala, prepisana v ŠKIP. Na strani 10 je zapisana opomba, da so bili primerki od

(Kryštufek & Jernejc Kodrič 2013). The data on them are recorded in the old inventory book, which was after 1944, when the former unified National Museum was divided into the Museum of Natural History in Ljubljana and the Cultural and Historical Museum in Ljubljana (Faninger 1986, Ur. list RS 60/2003), named as the Inventory book of mammals, fish, birds, reptiles of Natural History Museum (Figure 1) and digitalized in 2008.

The ornithological part of the book is the main source of data on the exhibited mounts and skeletons obtained between 1841 and 1974. In 2010, mounts purchased from the private collection of Jože Mausar were also inscribed in the book, although they were not given inventory numbers and were thus not catalogued. From the end of the 19th century until the 1950s, 394 inventory units of nests and eggs were catalogued in the SIK. They mostly originated from the private oological collection of Dr Janko Ponebšek. In the book, a small number of study skins were also catalogued. Most of study skins were catalogued in the Study inventory book of birds in the Slovenian Museum of Natural History (ŠIKP) (Figure 2) with the first records from the beginning of the 20th century. This book was active until the establishment of digital database in 2013.

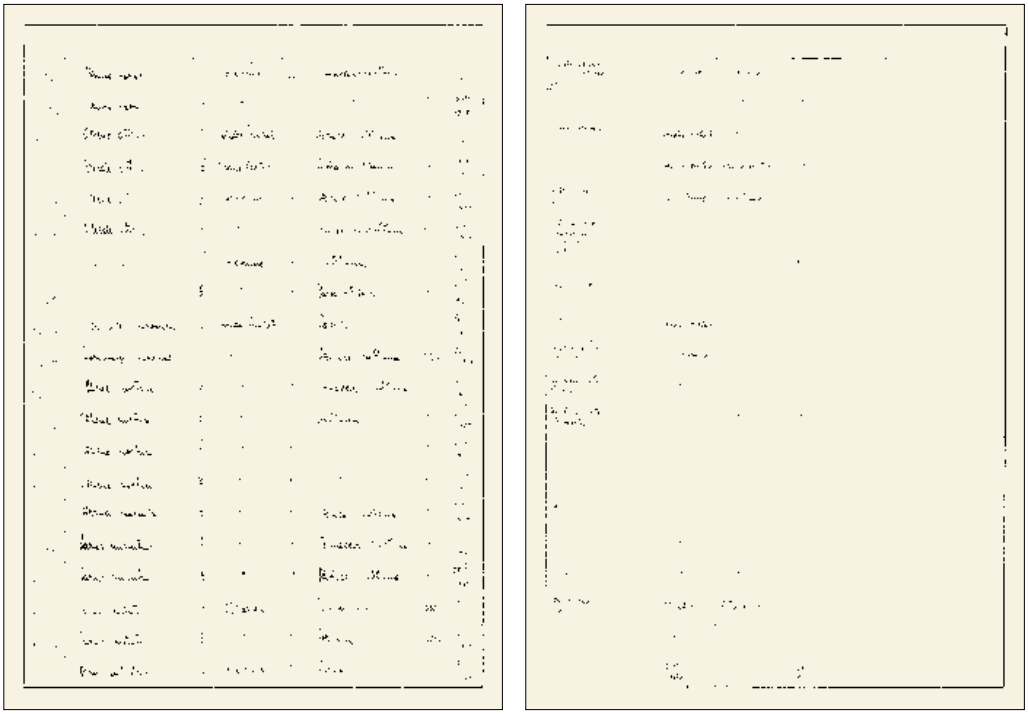
ŠIKP was originally digitized as an Excell database (2013) and in 2015 transferred to the Galis museum information system, intended for the management of museum documentation. In the Galis system, we are conducting the Inventory book for birds of Slovenian Museum of Natural History, Ljubljana (PMSL) (Figure 3), which is based on the inventory numbers from the ŠIKP. By recataloguing the preserved old specimens from the SIK, we established a uniform management of the entire ornithological collection.

The source of data is also the Catalogue of bird collections of the State Ornithological Observatory (KDOO) (Figure 4), which became part of PMS in 1944 (Gregori 2009). The catalogue contains study skins prepared between 1903 and 1964, mainly for a study collection, which, with the exception of the destroyed material, was copied into ŠKIP. On page 10, a note is given that samples from inventory numbers 1 to 120 were



Slika 1: Stran 58 v Inventarni knjigi sesalcev, rib, ptic, plazilcev Prirodoslovnega muzeja (Stara inventarna knjiga; SIK), kjer je evidentiranih šest preparatov iz redu vpijatov (Coraciiformes), pridobljenih oziroma razstavljenih med letoma 1873 in 1890.

Figure 1: Page 58 in the Inventory book of mammals, fish, birds, reptiles of the Natural History Museum (Old inventory book; SIK), in which six specimens of Coraciiformes, accessed or exhibited between 1873 and 1890, are catalogued.



Slika 2: Izsek zapisov inventarnih enot iz Študijske inventarne knjige ptic Prirodoslovnega muzeja Slovenije (ŠIKP)

Figure 2: Catalogue of inventory units in the Study inventory book of birds in the Slovenian Museum of Natural History (ŠIKP)

inventarne številke 1 do 120 uničeni zaradi moljev (Stožice, 18.9.1949, Alojz Šmuc).

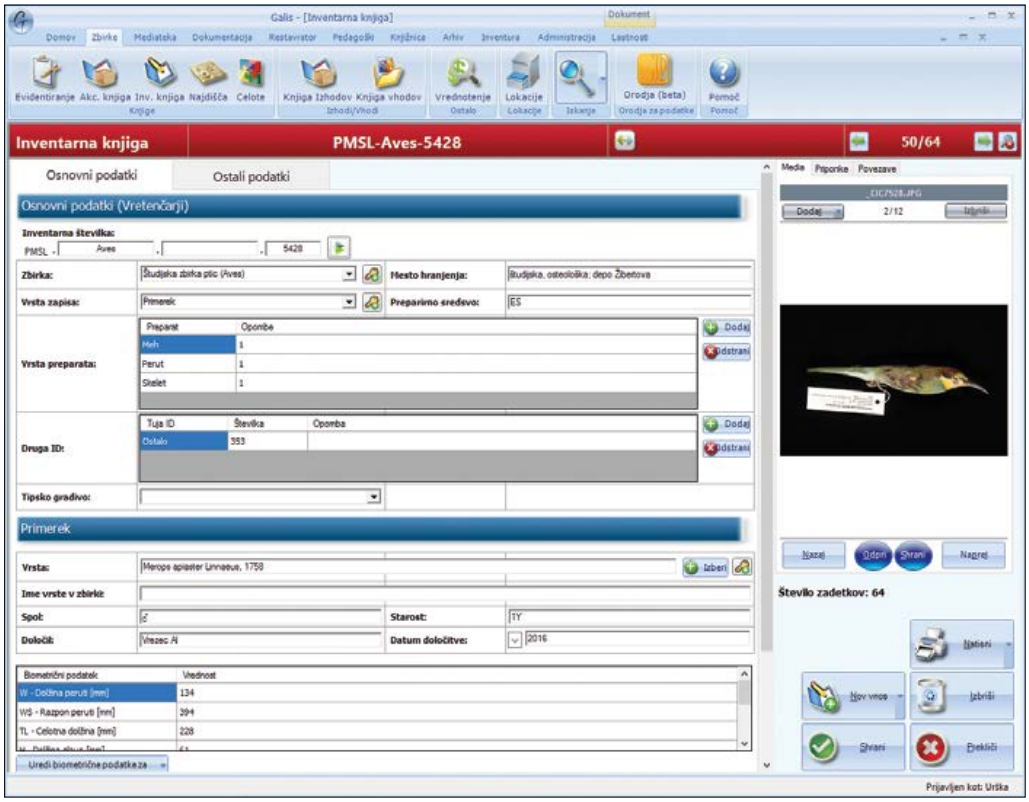
Največji delež pridobljenih vpijatov sestavljajo primerki, ki jih je zbral Savo Brelih med odpravo v Etiopijo med letoma 1960 in 1961 (Brelih 1979). O etiopskem materialu se v muzeju ni ohranila inventarna ali akcesijska knjiga, vendar pa se je v Brelihovi zapuščini ohranila terenska knjiga o zbranih pticah iz Etiopije (Terenska knjiga Sava Breliha – TKSB) (slika 5), ki je sedaj edini vir tovrstnih podatkov.

V katalog sva dodala tudi primerke, ki še niso inventarizirani in so vneseni v Akcesijski knjigi ptic Prirodoslovnega muzeja Slovenije, Ljubljana (AKPMSL), ki jo od leta 2012 vodimo kot Excellovo bazo. Ti primerki

destroyed due to moths (Stožice, 18 September 1949, Alojz Šmuc).

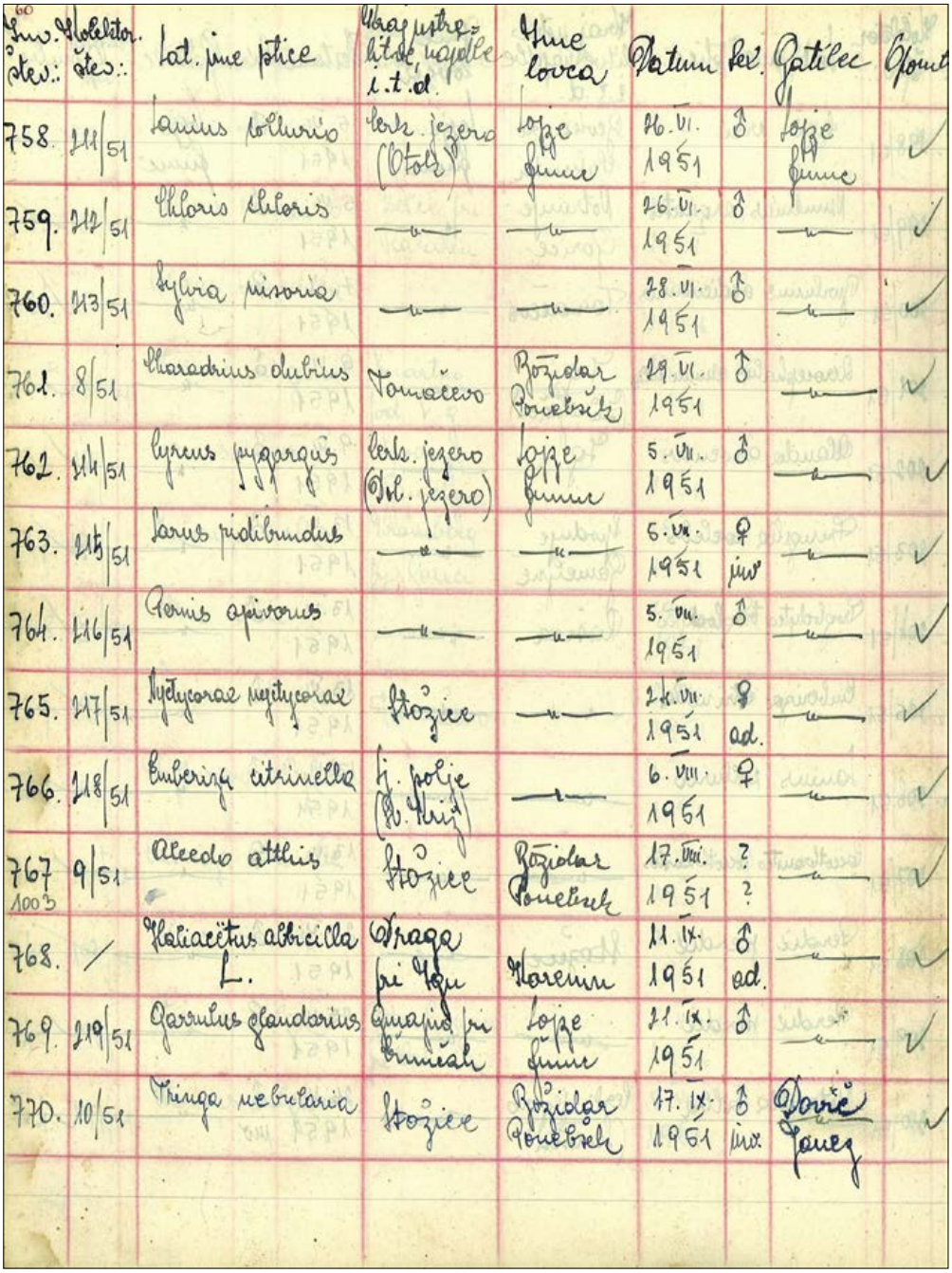
The largest part of the acquired specimens of Coraciiformes was collected by Savo Brelih during his expedition to Ethiopia between 1960 and 1961 (Brelih 1979). No catalogue or accession book was preserved in the museum for the Ethiopian material, but only field notes on collected birds by Savo Brelih (Field Book of Savo Brelih - TKSB) (Figure 5), which is now the only source of data for Ethiopian collection.

We added to the catalogue the specimens that have not yet been inventoried and are recorded in the Accession book for birds of the Slovenian Museum of Natural History (AKPMSL), which has been managed as an Excell database since



Slika 3: Primer zapisa ene inventarne enote z osnovnimi podatki o primerku v Inventarni knjigi ptic Prirodoslovnega muzeja Slovenije, Ljubljana (PMSL) v informacijskem sistemu Galis

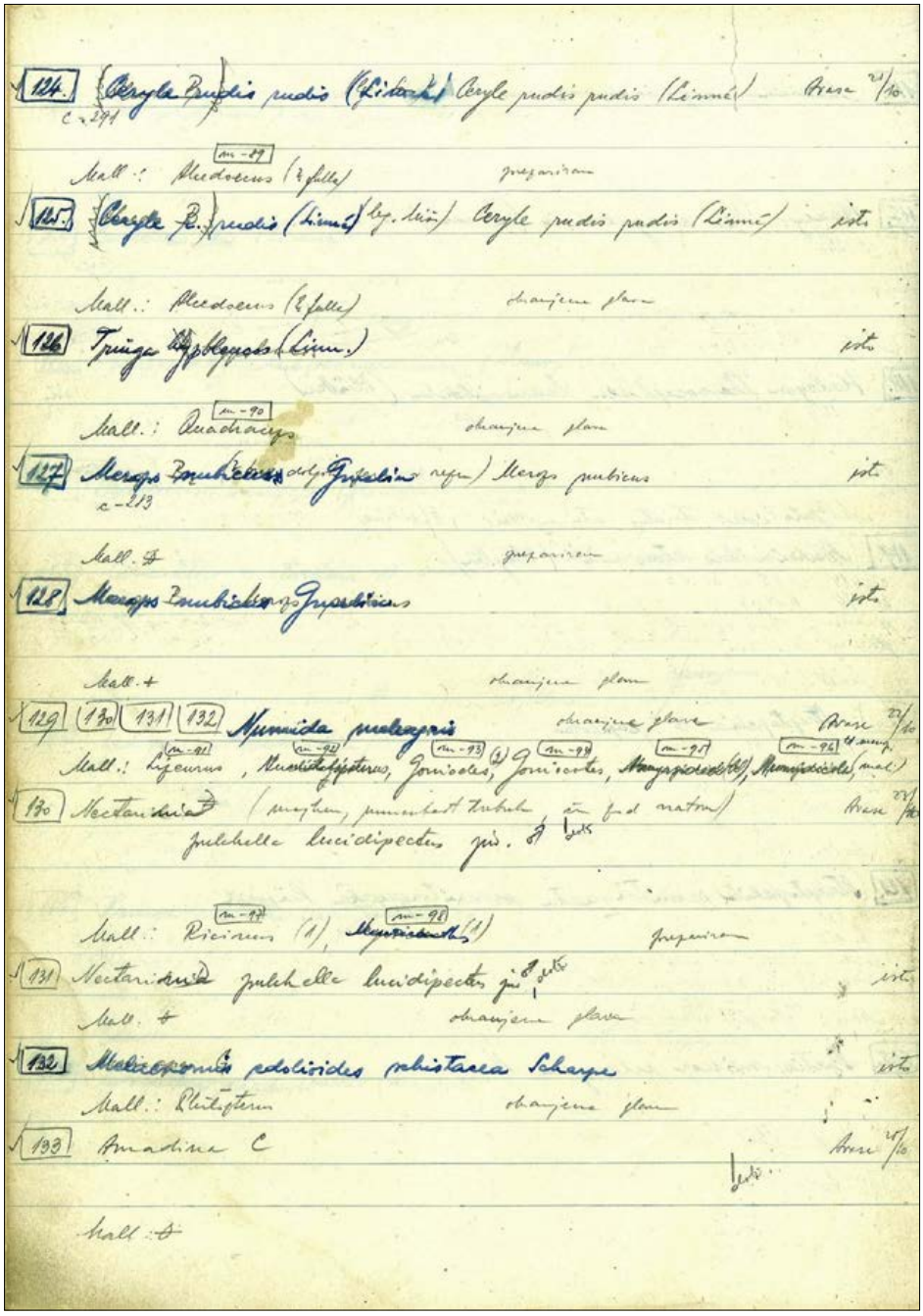
Figure 3. An example of one inventory unit page with main specimen data in the Inventory book for birds of the Slovenian Museum of Natural History Ljubljana (PMSL) in the Galis information system.



Inv. štev.	Kolektor. štev.	Lat. ime ptice	Kraj ustrelitve, najdbe i.t.d.	Ime lovca	Datum	Spol	Zbiratelj	Opomba
758.	211/51	Lanius collurio	Cerk. jezero (Otoki)	Lojze Šmuc	26. VI. 1951	♂	Lojze Šmuc	
759.	212/51	Chloris chloris	— " —	— " —	26. VI. 1951	♂	— " —	
760.	213/51	Sylvia nisoria	— " —	— " —	28. VI. 1951	♂	— " —	
761.	8/51	Charadrius dubius	Domačevo	Rajko Dolenc	29. VI. 1951	♂	— " —	
762.	214/51	Cyrcus pygargus	Cerk. jezero (Sv. jezero)	Lojze Šmuc	5. VII. 1951	♂	— " —	
763.	215/51	Larus ridibundus	— " —	— " —	5. VII. 1951	♀ juv	— " —	
764.	216/51	Pernis apivorus	— " —	— " —	5. VII. 1951	♂	— " —	
765.	217/51	Nycticorax nycticorax	Stožice	— " —	24. VII. 1951	♀ ad.	— " —	
766.	218/51	Emberiza citrinella	Ij. polje (Sv. Križ)	— " —	6. VIII. 1951	♀	— " —	
767 1003	9/51	Accedo atthis	Stožice	Rajko Dolenc	17. VIII. 1951	? ?	— " —	
768.	/	Galiacetus albicilla L.	Draga pri Igu	Marenin	11. IX. 1951	♂ ad.	— " —	
769.	219/51	Garrulus glandarius	Gmajna pri Šmarjah	Lojze Šmuc	21. IX. 1951	♂	— " —	
770.	10/51	Tringa nebularia	Stožice	Rajko Dolenc	17. IX. 1951	♂ juv.	Janez Dovič	

Slika 4: Stran 60 iz Kataloga Državnega ornitološkega observatorija (KDOO), z zapisi o študijskih preparatih, ki sta jih izdelala preparatorja Alojz Šmuc and Janez Dovič.

Figure 4: Page 60 from the Catalogue of bird collection of the State Ornithological Observatory (KDOO) with inscriptions about the bird skins prepared by Alojz Šmuc and Janez Dovič.

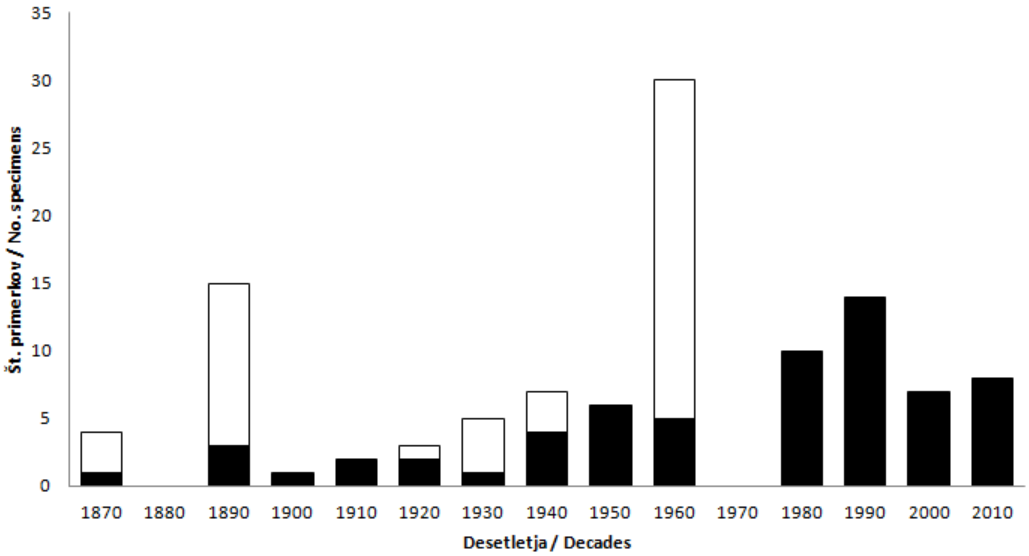


Slika 5: Stran iz Terenske knjige Sava Breliha, Etiopija (1960-1961) (TKBS), s podatki o vrsti, lokaciji in datumu najdbe, ohranjenem materialu ter o morebitnih ektoparazitih.

Figure 5: A page from the Field Book of Savo Brelih, Ethiopia (1960-1961) (TKBS), with data on the species, location, date, preserved material and ectoparasites presence.

niso preparirani ali pa gre za preparate v izpitni zbirki. Slednja je zaradi uporabe v izobraževanju v obročkovalni dejavnosti zaradi pogostejšega ravnanja bolj izpostavljena poškodbam, zato teh preparatov ne inventariziramo v inventarno knjigo državnega muzeja. Inventarizirani preparati namreč postanejo muzealije, ki jih Zakon o varstvu kulturne dediščine opredeljuje kot nacionalno bogastvo (Ur. list RS 16/2008). V postopek akcesije gre sicer vsak pridobljeni primerek. V akcesijski knjigi vodimo vse podatke o primerku, najdbi, sprejemu v muzej in postopku prepariranja (Holm 2003). V nadaljnjem postopku inventarizacije pa se ti podatki prenesejo v inventarno knjigo (PMSL).

2012. These specimens are not prepared or they are skins in the birdringing exam collection. Due to the use in education, the specimens are more susceptible to injuries due to more frequent handling, therefore we do not catalogue these specimens in the inventory book of the state museum. By law, inventoried specimens of the state museum become national treasure as defined by the Cultural Heritage Protection Act (Ur. list RS 16/2008). But any new specimen goes first through the accession process. In the accession book, we keep all the data on the specimen, the find, the reception in the museum and the procedure of preparation (Holm 2003). In the subsequent inventory process, these data are transferred to the inventory book (PMSL).



Slika 6: Dinamika pridobitev vpijatov (Coraciiformes) po desetletnih obdobjih med letoma 1873 in 2016 v ornitološko zbirko PMS glede na zapise v inventarnih in akcesijskih knjigah. Pozornost zbujajo pridobitve v letih 1894 (Ferdinand Schulz: Slovenija), 1960 (Savo Brelih: Etiopija) in 1996 (carinski zaseg: Romunija). Črni stolpci prikazujejo primerke, ki so še vedno ohranjeni (N=68), beli stolpci pa neohranjene primerke (N=55). Primerki brez navedbe letnice pridobitve niso prikazani (N=8).

Figure 6: The acquisition dynamics of Coraciiformes into the ornithological collection of PMS according to ten-year periods between 1873 and 2016 based on the records in the inventory and accession books. Of particular interest are those from 1894 (Ferdinand Schulz: Slovenia), 1960 (Savo Brelih: Ethiopia) and 1996 (customs seizure: Romania). Black columns indicate still preserved specimens (N = 68), while white columns indicate lost specimens (N = 55). Specimens preserved without a year of purchase are not shown (N = 8).

V navedene inventarne in akcesijske knjige PMS je bilo do leta 2016 vnesenih 124 primerkov 15 vrst vpijatov. Od tega je 8 primerkov (7 %) brez provenience. Čeprav je vse tri pri nas pojavljajoče se vrste vpijatov omenjal že prvi kustos in ustanovitelj muzejske zbirke vretenčarjev Henrik Freyer (1842), pa je prve primerke pridobil za muzejsko zbirko muzejski preparator Ferdinand Schulz leta 1873. Šlo je za dva čebelarja *(Merops apiaster)* iz Žužemberka, pri čemer se je v zbirki do danes ohranil le en. Vendar pa ti zapisi v SIK glede na objave Schulza (1892, 1893) niso jasni, kar komentirava kasneje. V času službovanja Ferdinanda Schulza je muzej med letoma 1890 in 1897 s Kranjske pridobil večje število primerkov vodomcev *(Alcedo atthis)* in zlatovrank *(Coracias garrulus)* (slika 6). Dr. Holub je leta 1897 muzeju podaril primerek kraljevega pasata *(Megaceryle alcyon)* iz Severne Amerike. Kasneje je šlo zgolj za naključne pridobitve ali pridobitve v sklopu sprejema iz zasebnih zbirk, kakršna je bila oološka zbirka dr. Janka Ponebška (Ponebšek & Ponebšek 1934). Druga večja pridobitev je bila v letih 1960-1961 s terenske odprave Sava Breliha v Etiopijo. Brelih je zbiral predvsem zunanje zajedavce ptic, ob tem pa s primerki etiopskih ptic obogatil tudi ornitološko zbirko PMS (Brelih 1979, Jernejc Kodrič s sod. 2012) z 10 novimi vrstami afriških vpijatov: abesinsko zlatovranko *(Coracias abyssinicus)*, lastovičjo zlatovranko *(C. caudatus)*, čopastim vodomcem *(Corythornis cristatus)*, sivoglavim gozdomcem *(Halcyon leucocephala)*, sinjim gozdomcem *(H. senegalensis)*, poljskim gozdomcem *(H. albiventris)*, črnobelim pasatom *(Ceryle rudis)*, malim čebelarjem *(Merops pusillus)*, močvirskim čebelarjem *(M. variegatus)* in rdečim čebelarjem *(M. nubicus)*. Večino preparatov, šlo je predvsem za mumije, je Brelih od jeseni 1961 do februarja 1962 predstavil javnosti v prostorih PMS na razstavi »Slovenska odprava v Etiopijo leta 1960-1961« (slika 7). Po letu 1980 se je število pridobitev vpijatov nekoliko povečalo, večinoma kot priložno-

Up to 2016, 124 specimens of 15 Coraciiformes species were recorded in PMS inventory and accession books. Of these, 8 (7%) are without any data. Although the first curator and the founder of the museum vertebrate collection, Henrik Freyer (1842), mentioned all three Coraciiformes species found in Slovenia, the first specimens to the museum collection were obtained by the museum taxidermist Ferdinand Schulz in 1873. These were two European Bee-eaters (*Merops apiaster*) from Žužemberk, but only one has remained in the collection until now. However, these records in the SIK are not clear according to Schulz publications (1892, 1893), which is commented upon later on. During the service of Ferdinand Schulz, between 1890 and 1897, the museum acquired a large number of specimens of Common Kingfishers (*Alcedo atthis*) and European Rollers (*Coracias garrulus*) from Carniola (Figure 6). In 1897, Dr Holub donated to the museum a specimen of the Belted Kingfisher (*Megaceryle alcyon*) from North America. Later, there were only random acquisitions or acquisitions as part of the donated private collections, such as oological collection of Dr Janko Ponebšek (Ponebšek & Ponebšek 1934). The second major acquisition was the birds from Savo Brelih field expedition to Ethiopia in 1960-1961. Brelih collected primarily the bird ectoparasites, but saved the caught birds also for the ornithological collection of PMS (Brelih 1979, Jernejc Kodrič et al. 2012). He added to the collection 10 new species of Coraciiformes from Africa: Abyssinian Roller (*Coracias abyssinicus*), Lilac-breasted Roller (*C. caudatus*), Malachite Kingfisher (*Corythornis cristatus*), Grey-headed Kingfisher (*Halcyon leucocephala*), Woodland Kingfisher (*H. senegalensis*), Brown-hooded Kingfisher (*H. albiventris*), Pied Kingfisher (*Ceryle rudis*), Little Bee-eater (*Merops pusillus*), Blue-breasted Bee-eater (*M. variegatus*) and Northern Carmine Bee-eater (*M. nubicus*). From the autumn of 1961 to February 1962, most of the prepared birds, mainly as mummies, were presented to the public in the museum exhibition »Slovene Expedition to Ethiopia in 1960-1961« in PMS (Figure 7). After 1980, the number of accessed Coraciiformes specimens increased slightly, mostly as salvage of found dead

Slika 7: Leta 1961 prikazani preparati ptic na razstavi »Slovenska odprava v Etiopijo leta 1960-1961«, ki jih je v Etiopiji zbral in prepariral Savo Brelih. Na sliki so med razstavljenimi primerki med drugimi tudi naslednje vrste vpijatov (Coraciiformes): abesinska zlatovranka *(Coracias abyssinicus*; 1 primerek*)*, lastovičja zlatovranka *(C. caudatus*; 2 primerka*)*, sivoglavi gozdomec *(Halcyon leucocephala*; 3 primerki na mizi, 1 primerek obešen z razprtimi perutmi*)*, sinji gozdomec *(H. senegalensis*; 1 primerek na mizi, 1 primerek obešen z razprtimi perutmi*)*, poljski gozdomec *(H. albiventris*; 2 primerka*)*, črnobeli pasat *(Ceryle rudis*; 1 primerek*)*, mali čebelar *(Merops pusillus*; 2 primerka*)* in rdeči čebelar *(M. nubicus*; 1 primerek na mizi, 1 primerek obešen z razprtimi perutmi*)*. Poleg vpijatov so na sliki vidni tudi primerki mišakov (Coliiformes), kljunorožcev (Bucerotiformes), plezalcev (Piciformes) in papig (Psittaciformes). Vsi primerki na sliki so kasneje propadli, nekaj pa je ohranjenih kot lobanje in postkranialni deli (foto: arhiv PMS).

Figure 7: Skins of birds exhibited at the exhibition »Slovenian expedition to Ethiopia in 1960-1961« in 1961, which were collected and prepared by Savo Brelih. On the picture the following Coraciiformes specimens are shown: Abyssinian Roller (*Coracias abyssinicus*; 1 specimen), Lilac-breasted Roller (*C. caudatus*; 2 specimens), Grey-headed Kingfisher (*Halcyon leucocephala*; 3 specimens on the table, 1 specimen hung with spread wings), Woodland Kingfisher (*H. senegalensis*; 1 specimen on the table, 1 specimen hung with spread wings), Brown-hooded Kingfisher (*H. albiventris*; 2 specimens), Pied Kingfisher (*Ceryle rudis*; 1 specimen), Little Bee-eater (*Merops pusillus*; 2 specimens) and Northern Carmine Bee-eater (*M. nubicus*; 1 specimen on the table, 1 specimen hung with spread wings). In addition, the specimens of Coliiformes, Bucerotiformes, Piciformes and Psittaciformes are shown on the picture. All shown specimens later decomposed and only some have been preserved as skulls and postcranial bone parts (photo: PMS archives).

stno najdene mrtve ptice na terenu. Največ primerkov je muzej pridobil leta 1996 ob carinskem zasegu 3914 primerkov mrtvih ptic na mednarodnem mejnem prehodu Dolga vas pri Lendavi (Šere 1997). V tovoru je bilo tudi 19 čebelarjev, od katerih je PMS po zaslugi Dareta Šereta ohranil 9 primerkov. Takrat je muzej pridobil še vrsto drugih zanimivih primerkov ptic (Vrezec & Kačar 2016).

3. Katalog vpijatov (Coraciiformes) v zbirki Prirodoslovnega muzeja Slovenije

V zbirki PMS so primerki vpijatov ohranjeni kot različni tipi preparatov. Prevladujejo študijski mehovi in dermoplastike (tabela 1). Savo Brelih je ptice prepariral predvsem po tehniki mumifikacije, pri kateri je celoten primerek posušen brez izkoževanja z ohranjenim celotnim okostjem, mišičjem ter seveda kožo in perjem (Alinger 1948). Ker takšni primerki funkcionalno ohranjajo enako informacijo kot študijski mehovi, smo jih v prikazu združili. Preparati telesnih delov, torej posameznih peruti, repov in nog, so v zbirko prišli šele v zadnjem času, zlasti po letu 2012, ko smo, za lažje določanje golitvenega stanja živali (slika 8), pričeli izdelovati študijske mehove z eno perutjo odrezano in razprto. Prav tako od leta 2012 dalje shranjujemo skelete. Večji del muzejske zbirke ptičjih lobanj je zbral Savo Brelih. Od vpijatov so kot lobanje in skeleti ohranjeni štirje primerki afriških vpijatov z Brelihove etiopske ekspedicije (tabela 1). Ustanovna zbirka ptičjih jajc (oološka zbirka) PMS je bila prvotno last dr. Janka Ponebška. V njej so se od vpijatov do danes ohranila le jajca zlatovranke (Ponebšek & Ponebšek 1934).

Do leta 2016 se je v zbirki PMS ohranila le okoli polovica vseh zbranih vpijatov, 55 % (N=68), medtem ko so drugi primerki bodisi

birds. The largest number of specimens was obtained by the museum in 1996 with the customs seizure of 3,914 specimens of dead birds at the international border crossing Dolga vas near Lendava (Šere 1997). There were also 19 European Bee-eaters in the cargo, of which PMS retained 9 specimens thanks to Dare Šere. At that time, the museum acquired a number of other interesting bird specimens as well (Vrezec & Kačar 2016).

3. Catalogue of Coraciiformes in the collection of the Slovenian Museum of Natural History

In the PMS collection, specimens of Coraciiformes are preserved in different ways. Study skins and mounts predominate (Table 1). Savo Brelih prepared the birds mainly by mummification technique, in which the entire specimen was dried without depletion with preserving whole skeleton, muscle, and of course the skin and feathers (Alinger 1948). Since such specimens functionally retain the same information as study skins, we have merged them in Table 1. Preparations of body parts, that is, individual wings, tail and legs, have only recently been included in the collection, especially after 2012. In order to facilitate the determination of the moult state of animals (Figure 8), we began to produce study skins with one wing cut off and dried open. We also store skeletons from 2012 onwards. Most of the bird skulls in the museum collection were collected by Savo Brelih. Even four specimens of African Coraciiformes from the Brelih Ethiopian expedition have been preserved as skulls and skeletons (Table 1). The founding PMS collection of bird eggs (oological collection) was originally owned by Dr Janko Ponebšek. In it, only European Roller eggs have been included and preserved considering Coraciiformes (Ponebšek & Ponebšek 1934).

By 2016, only about half of all collected specimens of Coraciiformes were retained in the PMS

propadli ali so bili izločeni iz zbirke (tabela 2). Propadla je večina starejših preparatov (67 % oziroma 48 primerkov), ki so bili pridobljeni med letoma 1873 in 1960 (slika 1). Po pripisih v inventarnih knjigah je sklepati, da je bil večji del preparatov izločen med letoma 1937 in 1950. Šlo je zlasti za (1) izločitve v korist gimnazij kot učila (zlasti iz razstavne zbirke, ki je bila shranjena in razstavljena v matični muzejski hiši) in (2) izgubo provenience ob kasnejših postavitvah razstav, nekaj muzealij pa je propadlo zaradi (3) napadov

collection, 55% (N = 68), the other specimens either decayed or were removed from the collection (Table 2). Most of old specimens (67% or 48 specimens) were lost between 1873 and 1960 (Figure 1). According to the subscriptions in the inventory books, it was concluded that most of the specimens were eliminated between 1937 and 1950. In particular, the specimens were (1) donated to a secondary school as teaching tools (especially from the exhibition collection that was stored and exhibited in the main museum building) and (2) the labels and accompanying

Tabela 1: Pregled števila muzealij vrst vpijatov (Coraciiformes) po tipih preparatov v ornitološki zbirki Prirodoslovnega muzeja Slovenije. Številka pomeni število enot, ohranjenih v zbirki, številka v oklepaju pa število vseh enot, vnesenih v muzejske knjige, ki vključuje tudi uničene muzealije.

Table 1: An overview of the number of specimens of Coraciiformes species by types of preparations in the ornithological collection of the Slovenian Museum of Natural History. The number indicates the number of units preserved in the collection, whereas the number in brackets is the number of all recorded units in the museum book, which also includes lost specimens.

Vrsta / Species	Dermoplastika / Mount	Meh / Skin	Deli / Parts	Peresa / Feathers	Lobanja / Skull	Skelet / Skeleton	Jajca / Eggs	Gnezdo / Nest	Nepreparirani primerek / Unprepared specimen
Coracias garrulus	2 (10)	6 (6)	0 (0)	0 (0)	0 (0)	0 (0)	1 (1)	0 (1)	0 (0)
Coracias abyssinicus	0 (0)	0 (2)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Coracias caudatus	0 (0)	0 (1)	0 (0)	0 (0)	1 (1)	1 (1)	0 (0)	0 (0)	0 (0)
Coraciidae, skupaj/total	**2 (10)**	**6 (9)**	**0 (0)**	**0 (0)**	**1 (1)**	**1 (1)**	**1 (1)**	**0 (1)**	**0 (0)**
Alcedo atthis	4 (14)	20 (25)	7 (7)	2 (2)	2 (2)	6 (6)	0 (0)	0 (0)	2 (2)
Corythornis cristatus	0 (0)	0 (1)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Halcyon leucocephala	0 (0)	0 (2)	0 (1)	0 (0)	1 (2)	0 (0)	0 (0)	0 (0)	0 (0)
Halcyon senegalensis	0 (0)	0 (3)	0 (0)	0 (0)	0 (1)	0 (0)	0 (0)	0 (0)	0 (0)
Halcyon albiventris	0 (0)	0 (2)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Megaceryle alcyon	1 (1)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Ceryle rudis	0 (0)	0 (1)	0 (0)	0 (0)	1 (1)	0 (0)	0 (0)	0 (0)	0 (0)
Alcedinidae, skupaj/total	**5 (15)**	**20 (34)**	**7 (8)**	**2 (2)**	**4 (6)**	**6 (6)**	**0 (0)**	**0 (0)**	**2 (2)**
Merops bullockoides	0 (0)	1 (1)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Merops pusillus	0 (0)	0 (3)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Merops variegatus	0 (0)	0 (3)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Merops apiaster	3 (6)	18 (20)	2 (2)	1 (1)	0 (0)	2 (2)	0 (0)	0 (0)	1 (1)
Merops nubicus	0 (0)	0 (5)	0 (0)	0 (0)	1 (1)	0 (0)	0 (0)	0 (0)	0 (0)
Meropidae, skupaj/total	**3 (6)**	**19 (32)**	**2 (2)**	**1 (1)**	**1 (1)**	**2 (2)**	**0 (0)**	**0 (0)**	**1 (1)**
SKUPAJ / TOTAL	**10 (31)**	**45 (75)**	**9 (10)**	**3 (3)**	**6 (8)**	**9 (9)**	**1 (1)**	**0 (1)**	**3 (3)**

moljev, zlasti v zbirki Državnega ornitološkega observatorija, ki je kot dislocirana enota Prirodoslovnega muzeja v Ljubljani deloval v Stožicah (Božič 1976). Večino izločitev so opravili po spremembi stare postavitve muzejske razstave, ki je bila postavljena še v sklopu Prirodopisnega oddelka Narodnega muzeja v Ljubljani (Kos 1933) in se je obdržala najmanj do leta 1949 (Prirodoslovni muzej v Ljubljani 1949; slika 3). Drastična pa je bila usoda Brelihovih etiopskih preparatov. Etiopska zbirka ptic se je v muzeju hranila ločeno od ostalega dela ornitološke zbirke in ni bila nikoli vnesena v muzejsko inventarno

data were lost due to the later exhibitions, while some specimens decayed due to (3) moths attacks, especially in the collection of the State Ornithological Observatory, which operated at a dislocated unit of the Slovenian Museum of Natural History at Stožice in Ljubljana (Božič 1976). Most of the exclusions were made after the change of the old museum exhibition, which was kept until at least 1949, and which was set up still within the Department of Natural History within the former unified National Museum of Ljubljana (Kos 1933, Prirodoslovni muzej v Ljubljani 1949; Figure 3). Drastic, however, was the fate of the Brelih Ethiopian specimens.

Tabela 2: Pregled števila primerkov vpijatov (Coraciiformes) v ornitološki zbirki Prirodoslovnega muzeja Slovenije po vrstah in državah izvora. Številka pomeni število enot, ohranjenih v zbirki, številka v oklepaju pa število vseh enot, vnesenih v muzejske knjige, ki vključuje tudi propadle in izločene muzealije. Podani so tudi sumarni podatki o ohranjenosti preparatov vpijatov v zbirki.

Table 2: An overview of the number of specimens of Coraciiformes in the ornithological collection of the Slovenian Museum of Natural History by species and countries of origin. The number indicates the number of units preserved in the collection, while the number in brackets is the number of all recorded units in the museum books, which also includes lost specimens. Summarized data on the preservation of specimens in the collection are also given.

Vrsta / Species	Slovenija	Hrvaška	Madžarska	Srbija	Romunija	Etiopija	Sudan	Severna Amerika	iz konfinacije	**Skupaj / Total**	**% ohranjenega / % preserved**
Coracias garrulus	9 (18)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	**9 (18)**	**50 %**
Coracias abyssinicus	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (2)	0 (0)	0 (0)	0 (0)	**0 (2)**	**0 %**
Coracias caudatus	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (2)	0 (0)	0 (0)	0 (0)	**1 (2)**	**50 %**
Alcedo atthis	30 (45)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	**30 (45)**	**67 %**
Corythornis cristatus	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (1)	0 (0)	0 (0)	0 (0)	**0 (1)**	**0 %**
Halcyon leucocephala	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (5)	0 (0)	0 (0)	0 (0)	**1 (5)**	**20 %**
Halcyon senegalensis	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (4)	0 (0)	0 (0)	0 (0)	**0 (4)**	**0 %**
Halcyon albiventris	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (2)	0 (0)	0 (0)	0 (0)	**0 (2)**	**0 %**
Megaceryle alcyon	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (1)	0 (0)	**1 (1)**	**100 %**
Ceryle rudis	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (3)	0 (0)	0 (0)	0 (0)	**1 (3)**	**33 %**
Merops bullockoides	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (1)	**1 (1)**	**100 %**
Merops pusillus	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (3)	0 (0)	0 (0)	0 (0)	**0 (3)**	**0 %**
Merops variegatus	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (3)	0 (0)	0 (0)	0 (0)	**0 (3)**	**0 %**
Merops apiaster	7 (11)	5 (5)	1 (1)	1 (1)	9 (9)	0 (0)	0 (1)	0 (0)	0 (0)	**23 (28)**	**82 %**
Merops nubicus	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (6)	0 (0)	0 (0)	0 (0)	**1 (6)**	**17 %**
Skupaj / Total	**46 (74)**	**5 (5)**	**1 (1)**	**1 (1)**	**9 (9)**	**4 (31)**	**0 (1)**	**1 (1)**	**1 (1)**	**68 (124)**	**55 %**
% ohranjenega / % preserved	**62 %**	**100 %**	**100 %**	**100 %**	**100 %**	**13 %**	**0%**	**100 %**	**100 %**	**55 %**	

Slika 8: Primer shranjevanja ornitološkega materiala po letu 2012 za študijske namene: meh, perut in preostali skelet 1Y ♂ čebelarja *(Merops apiaster)* iz Gorenjih Sušic pri Novem mestu (iz Zatočišča za živali prosto živečih vrst). Primerek PMSL 5428, zbran 28.9.2010 (prepariral Vilijem Žgavec). Foto: Ciril Mlinar Cic

Figure 8: An example of the storage of ornithological material after 2012 for study purposes: skin, wing and the remaining skeleton 1Y ♂ of the European Bee-eater (*Merops apiaster*) from Gorenje Sušice near Novo mesto (from the Wildlife Refuge). The specimen PMSL 5428 was collected on 28 September 2010 (prepared by Vilijem Žgavec). Photo: Ciril Mlinar Cic

Slika 9: Izsek iz stare postavitve razstavne zbirke v Prirodoslovnem muzeju Slovenije pred letom 1950. Na sliki so razstavljeni dermoplastični preparati treh vrst vpijatov, ki se pojavljajo tudi v Sloveniji: zlatovranka *(Coracias garrulus)* (omara 61, polica 4), vodomec *(Alcedo atthis)* (omara 64, polica 4) in čebelar *(Merops apiaster)* (omara 64, polica 4). Le manjši del primerkov na sliki se je dejansko ohranil do danes (foto: arhiv PMS).

Figure 9: An excerpt from the old arrangement of the exhibition in the Slovenian Museum of Natural History before 1950. The picture shows the mounts of three Coraciiformes species which also occur in Slovenia: the European Roller *(Coracias garrulus)* (cabinet 61, shelf 4), the Common Kingfisher *(Alcedo atthis)* (cabinet 64, shelf 4) and the European Bee-eater *(Merops apiaster)* (cabinet 64, shelf 4). Only a small part of the shown specimens has survived to this day (photo: PMS archives).

knjigo. Edina do danes ohranjena dokumenta o obstoju te zbirke so terenska knjiga iz zasebne zapuščine Sava Breliha in fotografija z razstave iz leta 1961 (slika 2). Do danes se je od etiopske zbirke ptic ohranilo le nekaj lobanj in skeletov (pri vpijatih le 4 od skupno 31 primerkov; 13 %). Vsi preparati, izdelani večinoma kot mumije ali peruti, so propadli zaradi napada moljev v 70ih letih 20. stoletja (S. Brelih, ustno). Del etiopskega materiala pa je propadel že med transportom v Slovenijo, saj ga je Brelih pošiljal v več pošiljkah in vsaj

The Ethiopian collection of birds was kept in the museum separately from the rest of the ornithological collection and was never catalogued into the main museum inventory book. The only documents preserved to date proving the existence of this collection are the Field Book of Savo Brelih and photograph from the exhibition from 1961 (Figure 2). To date, only a few skulls and skeletons have survived from the Ethiopian bird collection (in Coraciiformes only 4 out of the 31 specimens; 13%). All specimens, prepared mostly as mummies, were destroyed due

Tabela 3: Razlaga kratic, uporabljenih v katalogu

Table 3: Abbreviations used in the catalogue

Oznake	Abbreviations
* primerek ni več ohranjen v zbirki Prirodoslovnega muzeja Slovenije	* specimen no longer preserved in the collection of the Slovenian Museum of Natural History
1Y prvoletna ptica	1Y first-year bird
2Y drugoletna ptica	2Y second-year bird
ad. odrasla ptica	ad. adult bird
AKPMSL Akcesijska knjiga ptic Prirodoslovnega muzeja Slovenije, Ljubljana	AKPMSL Accession book for birds of the Slovenian Museum of Natural History
juv. juvenilna ptica	juv. juvenile bird
KDOO Katalog zbirke Državnega ornitološkega observatorija (1903-1964)	KDOO Catalogue of bird collection of the State Ornithological Observatory (1903-1964)
leg. legit (najditelj)	leg. legit
n.v. nadmorska višina	n.v. altitude
PMSL Inventarna knjiga ptic Prirodoslovnega muzeja Slovenije, Ljubljana	PMSL Inventory book for birds of the Slovenian Museum of Natural History, Ljubljana
prep. preparator	prep. taxidermist
pull. mladič v gnezdu	pull. nestling
SIK Inventarna knjiga sesalcev, rib, ptic, plazilcev Prirodoslovnega muzeja, 1841-1974 (Stara inventarna knjiga)	SIK Inventory book of mammals, fish, birds, reptiles of the Natural History Museum, 1841-1974 (Old inventory book)
TKSB Terenska knjiga Sava Breliha (Etiopija, 1960-1961)	TKSB Field book of Savo Brelih (Ethiopia, 1960-1961)

ena izmed njih je na poti zaradi dolgotrajnega carinskega pregleda propadla (S. Brelih, ustno). Kaj je v tej pošiljki propadlo, ni znano, saj se popis materiala ni ohranil. Čeprav so v prispevku obravnavani le vpijati, ki sestavljajo zelo majhen del celotne ornitološke zbirke PMS (1 %), ki je konec leta 2016 štela 6979 inventarnih enot, pa delež propadlih in izgubljenih muzealij presega delež izgubljenih muzealij v drugih evropskih naravoslovnih muzejih (Anonymous 2014).

V nadaljevanju podajava kataloški pregled v ornitološki zbirki PMS evidentiranih primerkov vpijatov, ki vključuje tako ohranjeni kot neohranjeni inventarizirani material, kot tudi še ne preparirane in neiventarizirane primerke iz muzejske akcesije.

to moth attacks in the 1970s (S. Brelih, pers. comm.). A part of the Ethiopian material had already been lost during the transport to Slovenia, as it was shipped by Brelih in several shipments, and at least one of them was lost due to a lengthy customs inspection (S. Brelih, pers. comm.). What was in the lost consignment is unknown, given that the inventory of the material in the shipments has not been preserved. Although this paper deals only with Coraciiformes, which present a very small part of the entire ornithological collection of PMS (1%) that at the end of 2016 counted 6,979 catalogued specimens, the share of lost specimens exceeds the share of lost specimens in other European natural history museums (Anonymous 2014).

Below is a catalogue of the Coraciiformes specimens in the ornithological collection of PMS, which includes both preserved and lost catalogued material, as well as not yet prepared and non-catalogued specimens from the museum accessory.

3.1. Zlatovranke (Coraciidae) / Rollers

3.1.1. *Coracias caudatus lorti* Shelley, 1885 – lastovičja zlatovranka / Lilac-breasted Roller

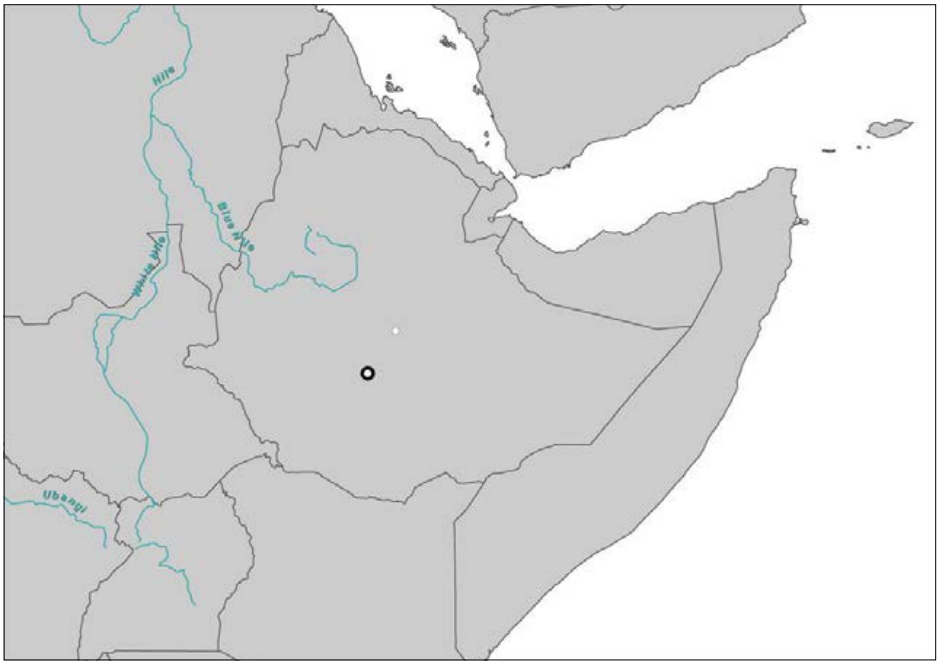
Etiopija / Ethiopia

Shashamane (7°12'N, 38°36'E, 1920 m asl): 1 skeleton and skull (PMSL 4691), 20.11.1960, leg. & prep. Savo Brelih (slika/figure 11)

*Shashamane (7°12'N, 38°36'E, 1920 m asl): 1 mummy (TKSB 261 ali 262), 20.11.1960, leg. & prep. Savo Brelih

Lastovičja zlatovranka je pretežno južnoafriška vrsta, v severnem delu areala pa živi izolirana somalijsko-etiopska podvrsta *C. c. lorti* (Fry & Fry 1992). Dva primerka te podvrste sta bila zbrana v Etiopiji (slika 10) in preparirana kot mumiji ter leta 1961 prikazana na razstavi v PMS (slika 7). Kasneje sta propadla, vendar sta bila skelet in lobanja enega od primerkov v celoti ohranjena (slika 11).

The Lilac-breasted Roller is predominantly South African species, while the northern part of the range is home to the isolated Somali-Ethiopian subspecies C. c. lorti (Fry & Fry 1992). Two specimens of this subspecies were collected in Ethiopia (Figure 10) and prepared as mummies, and in 1961 presented at the exhibition in PMS (Figure 7). Later they were destroyed, but the skeleton and skull of one of the specimens were completely preserved (Figure 11).



Slika 10: Geografski izvor primerkov lastovičje *(Coracias caudatus*; črna pika) in abesinske zlatovranke *(C. abyssinicus*; bela pika) v zbirki PMS. Velike pike nakazujejo v zbirki ohranjene primerke, majhne pike pa propadle primerke.

Figure 10: Geographical origin of the specimens of the Lilac-breasted Roller (*Coracias caudatus*; black dot) and Abyssinian Roller (*C. abyssinicus*; white dot) in the PMS collection. Large dots indicate a preserved specimen in the collection, while small dots stand for lost specimens.

Slika 11: Lobanja lastovičje zlatovranke *(Coracias caudatus lorti)*, ki je bila ohranjena po propadu mumijskega preparata. Primerek (PMSL 4691), zbran 20.10.1960 v Etiopiji, je prepariral Savo Brelih. Foto: Ciril Mlinar Cic

Figure 11: The skull of the Lilac-breasted Roller *(Coracias caudatus lorti)*, which survived after the decay of the mummy. The specimen (PMSL 4691) was collected on 20 October 1960 in Ethiopia and prepared by Savo Brelih. Photo: Ciril Mlinar Cic

3.1.2. *Coracias garrulus garrulus* Linnaeus, 1758 – zlatovranka / European Roller

Slovenija / Slovenia

Domžale (46°08'N, 14°35'E, 307 m asl): 1 skin (PMSL 186), ad. ♂, 8.9.1912, leg. I. Hamperl

Globodol (45°50'N, 15°02'E, 204 m asl): 2 eggs (PMSL 4101), 8.6.1912 (slika/figure 14)

Ljubljana-Tomačevo (46°04'N, 14°32'E, 289 m asl): 1 skin (PMSL 490), ad. ♀, 17.5.1950, leg. & prep. Alojz Šmuc (slika/figure 18)

Medvode (46°08'N, 14°24'E, 326 m asl): 1 mount (PMSL 5320), ad. ♂, 1890, leg. & prep. Ferdinand Schulz (slika/figure 13)

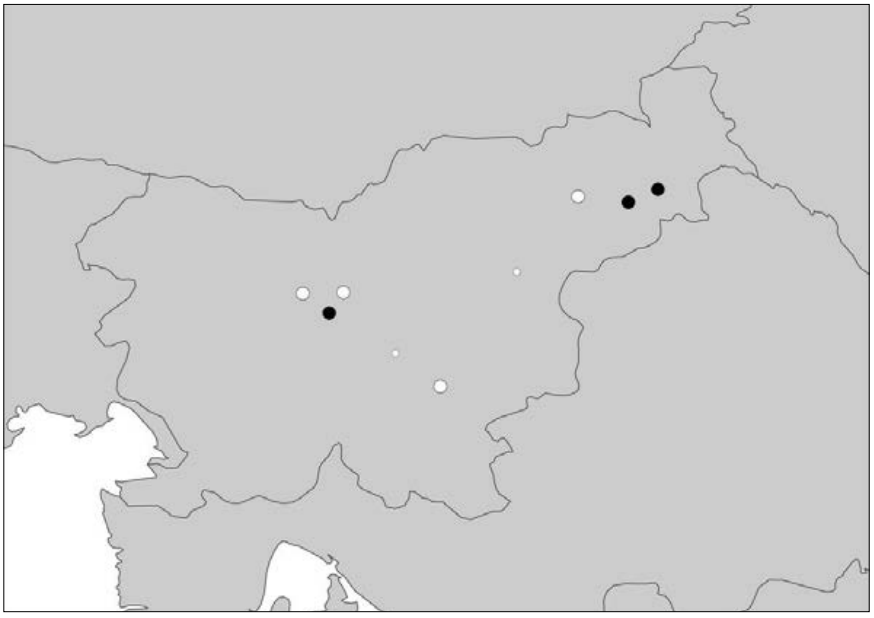
Podvinci (46°25'N, 15°54'E, 224 m asl): 1 skin (PMSL 491), ad. ♀, 31.7.1954, leg. I. Golob, prep. Janez Dovič

Podvinci (46°25'N, 15°54'E, 224 m asl): 1 skin (PMSL 492), ad. ♂, 31.8.1954, leg. I. Golob, prep. Janez Dovič (slika/figure 17)

Rače (46°27'N, 15°40'E, 264 m asl): 1 skin (PMSL 187), ad. ♂, 9.8.1908

Savci (46°28'N, 16°02'E, 226 m asl): 1 skin (PMSL 2463), ad., 19.8.1991, leg. Z. Meško, prep. Janez Dovič (slika 15)

*Šentvid pri Stični (45°57'N, 14°50'E, 334 m asl): 6 mounts (SIK 93), 2 ad., 4 pull., X. 1894, leg. & prep. Ferdinand Schulz (opomba: v biološki skupini skupaj z gnezdom SIK 1070/ remark: in group with the nest SIK 1070) (slika/figure 16)



Slika 12: Geografski izvor primerkov zlatovranke *(Coracias garrulus)* v zbirki PMS. Velike pike nakazujejo v zbirki ohranjene primerke, majhne pike primerke, ki niso več ohranjeni. Bele pike so primerki, pridobljeni pred letom 1950, črne pike pa primerki, pridobljeni po letu 1950.

Figure 12: Geographical origin of the specimens of the European Roller *(Coracias garrulus)* in the PMS collection. Great dots indicate preserved specimens in the collection, small dots lost specimens. White dots are specimens obtained before 1950, and black dots specimens obtained after 1950.

* Šentvid pri Stični (45°57'N, 14°50'E, 334 m asl): 1 nest (SIK 1070), leg. & prep. Ferdinand Schulz (opomba: v biološki skupini skupaj z gnezdom SIK 93/ remark: in group with the nest SIK 93) (slika/figure 16)
*Šentjur pri Celju, Botričnica (46°12' N, 15°24' E, 257 m asl): 1 mount (SIK 1781), ♂, 26.5.1949, leg.& prep. Franc Barbič (opomba: pri duplu na omari biološke skupine/ remark: by the nest hole on the biological group cabinet)
*Šentjur pri Celju, Botričnica (46°12' N, 15°24' E, 257 m asl): 1 mount (SIK 1782), ♀, 26.5.1949, leg. & prep. Franc Barbič (opomba/remark: Diorama IX.)
Neznana lokacija/Unknown locality: 1 mount (PMSL 5850), ad., pred/before 1890

Čeprav je zlatovranka dokaj razširjena po južni in vzhodni Evropi, severni Afriki in centralni Aziji s prezimovališči večinoma južno od ekvatorja v Afriki (del Hoyo s sod. 2001), pa izginja v večjem delu evropskega areala (BirdLife International 2004), vključno s Slovenijo (Božič 2009). V zbirki PMS so zastopani zgolj primerki, zbrani na ozemlju Slovenije (slika 12), pri čemer so zastopani primerki iz zgodovinskih ljubljanskih (slika 13) in dolenjskih gnezdišč (slika 14), in z zadnjih štajerskih gnezdišč (slika 15). Danes je vrsta na ozemlju Slovenije domnevno izumrla z zgolj priložnostnim gnezdenjem osebkov iz izolirane avstrijske populacije na Goričkem (Denac & Kmecl 2014). Kot gnezditveno relevanten material iz Slovenije sta se ohranili le dve jajci iz Ponebškove oološke zbirke (slika 14). Schulz (1895) je poročal o gnezdu s štirimi mladiči, ki ga je leta 1894 osebno zbral v Šentvidu pri Stični: »Leta 1894 sem našel 2 gnezdi pri Šentvidu, dve uri od Ljubljane. Gnezdi sta bili v votlih hrastih s po 3 in 4 mladiči. Gnezdilno duplo sem skupaj s 4 mladiči zbral za zoološko zbirko.« Preparat gnezda z mladiči in gnezdečim parom je bila del stare razstavne postavitve PMS (slika 16), po pripisih iz SIK so odrasli ptici izločili iz zbirke avgusta 1949, mladiče pa zažgali 15.12.1955. Najmlajši in ohranjeni primerek zlatovranke je iz Savcev v Slovenskih goricah iz leta 1991 iz gnezdečega para. Ptico naj bi pobila toča. Glava preparata je precej poškodovana (slika 15). Med preparati v muzejski zbirki so ohranjene le odrasle ptice (sliki 17 in 18).

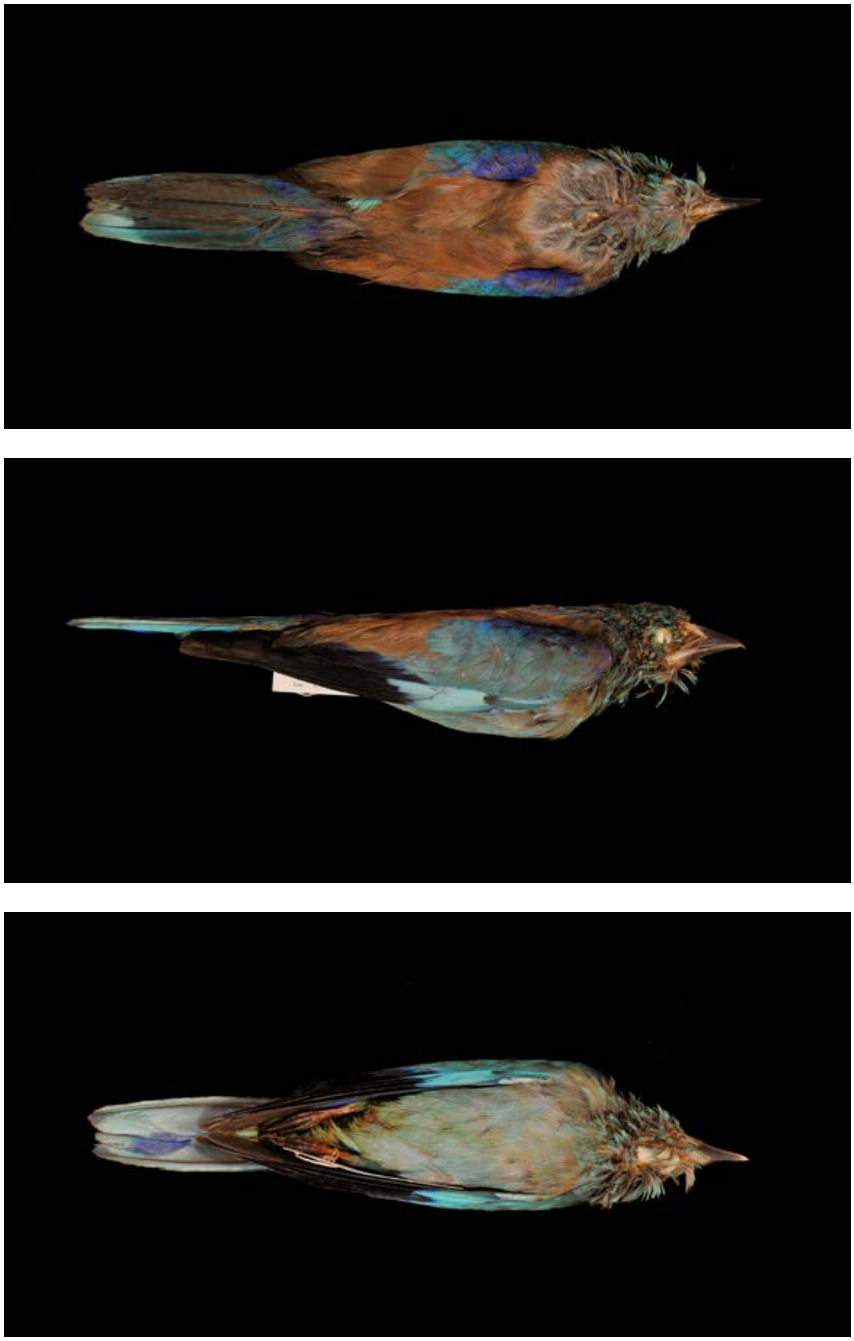
Although the European Roller is fairly widespread in southern and eastern Europe, North Africa and Central Asia, with wintering grounds mostly south of the equator in Africa (del Hoyo et al., 2001), it disappears in much of its European range (BirdLife International 2004), including Slovenia (Božič 2009). Only the specimens collected on the territory of Slovenia (Figure 12) are represented in the PMS collection, with specimens from the historical breeding grounds of Ljubljana (Figure 13) and Dolenjska (Figure 14), and from the species' last Styrian breeding sites (Figure 15). Today, the species is regarded extinct in the territory of Slovenia, with only one occasional breeding from the isolated Austrian population in Goričko (Denac & Kmecl 2014). Only two eggs from the Ponebšek oological collection (Figure 14) were preserved as a breeding-relevant material from Slovenia. Schulz (1895) reported on the nest with four fledglings, which he personally collected in 1894 at Šentvid near Stična: "In 1894, I found two nests near Šentvid, two hours from Ljubljana. Nests were in hollow oaks with 3 and 4 nestlings. I collected a breeding hole with 4 nestlings for a zoological collection." The breeding hole with mounted nestlings and breeding pair was part of the old PMS exhibition (Figure 16), and according to the SIK reports, adult birds were excluded from the collection in August 1949, and the nestlings were burned on 15 December 1955. The youngest preserved specimen of the European Roller in the collection was from Savci in Slovenske gorice found in 1991. It was a breeding bird, which was allegedly killed by hail. The head of the skin is significantly damaged (Figure 15). Among the specimens in the museum collection only adult birds are preserved (Figures 17 and 18).

Slika 13: Dermoplastični preparat zlatovranke *(Coracias garrulus garrulus)*, ad. ♂ , iz Medvod, ki ga je zbral in prepariral Ferdinand Schulz. Primerek PMSL 5320, zbran leta 1890. Foto: Ciril Mlinar Cic

Figure 13: Mount of the European Roller *(Coracias garrulus garrulus)*, ad. ♂, from Medvode, which was collected and prepared by Ferdinand Schulz. Specimen PMSL 5320 was collected in 1890. Photo: Ciril Mlinar Cic

Slika 14: Jajci zlatovranke *(Coracias garrulus garrulus)* iz Globodola. Primerka PMSL 4101, zbrana 8.6.1912. Foto: Ciril Mlinar Cic

Figure 14: Two eggs of the European Roller *(Coracias garrulus garrulus)* from Globodol. Specimens PMSL 4101 were collected on 8 June 1912. Photo: Ciril Mlinar Cic

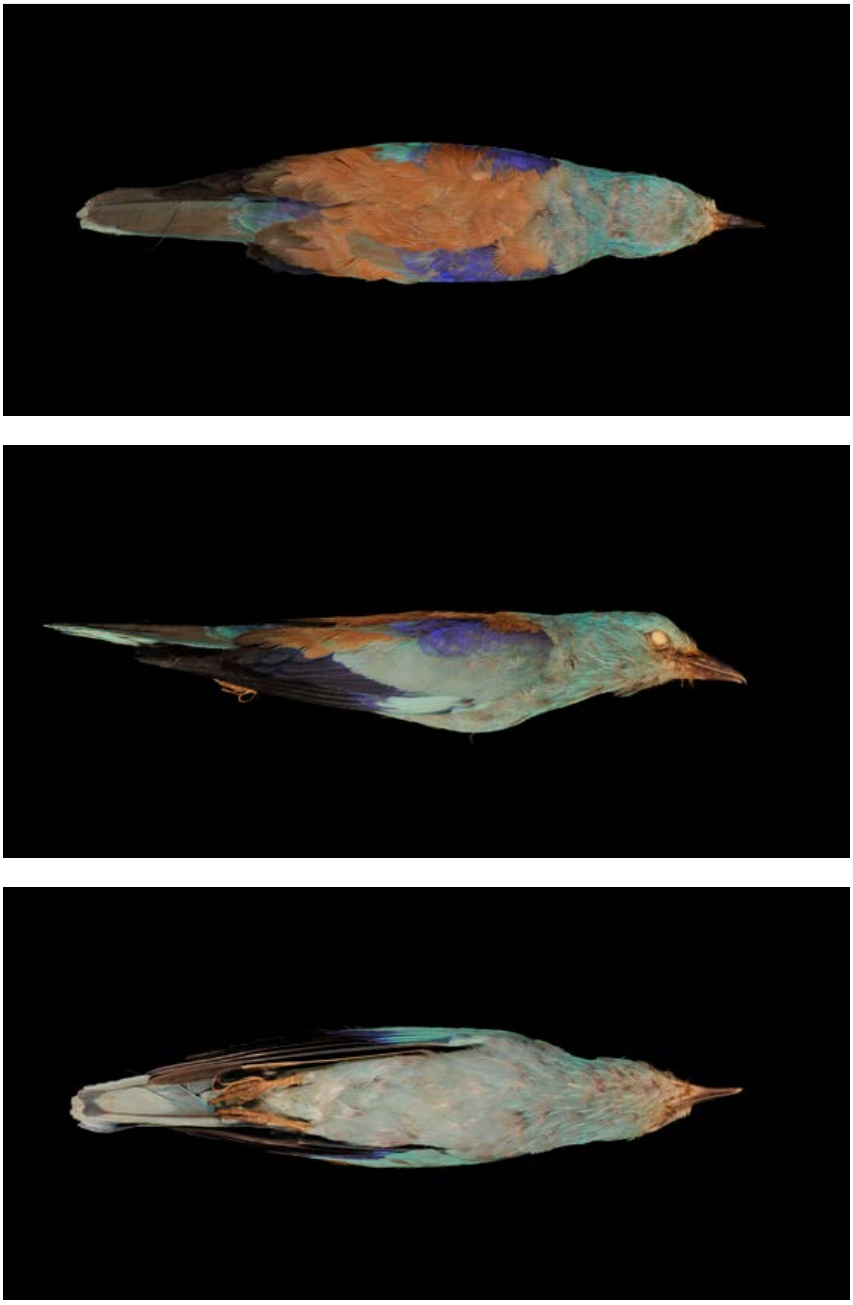


Slika 15: Študijski meh odrasle zlatovranke *(Coracias garrulus garrulus)* iz Savcev, ki ga je zbral Z. Meško in prepariral Janez Dovič. Primerek PMSL 2463, zbran 19.8.1991. Foto: Ciril Mlinar Cic

Figure 15: A study skin of the European Roller *(Coracias garrulus garrulus)* from Savci collected by Z. Meško and prepared by Janez Dovič. Specimen PMSL 2463 was collected on 19 August 1991. Photo: Ciril Mlinar Cic

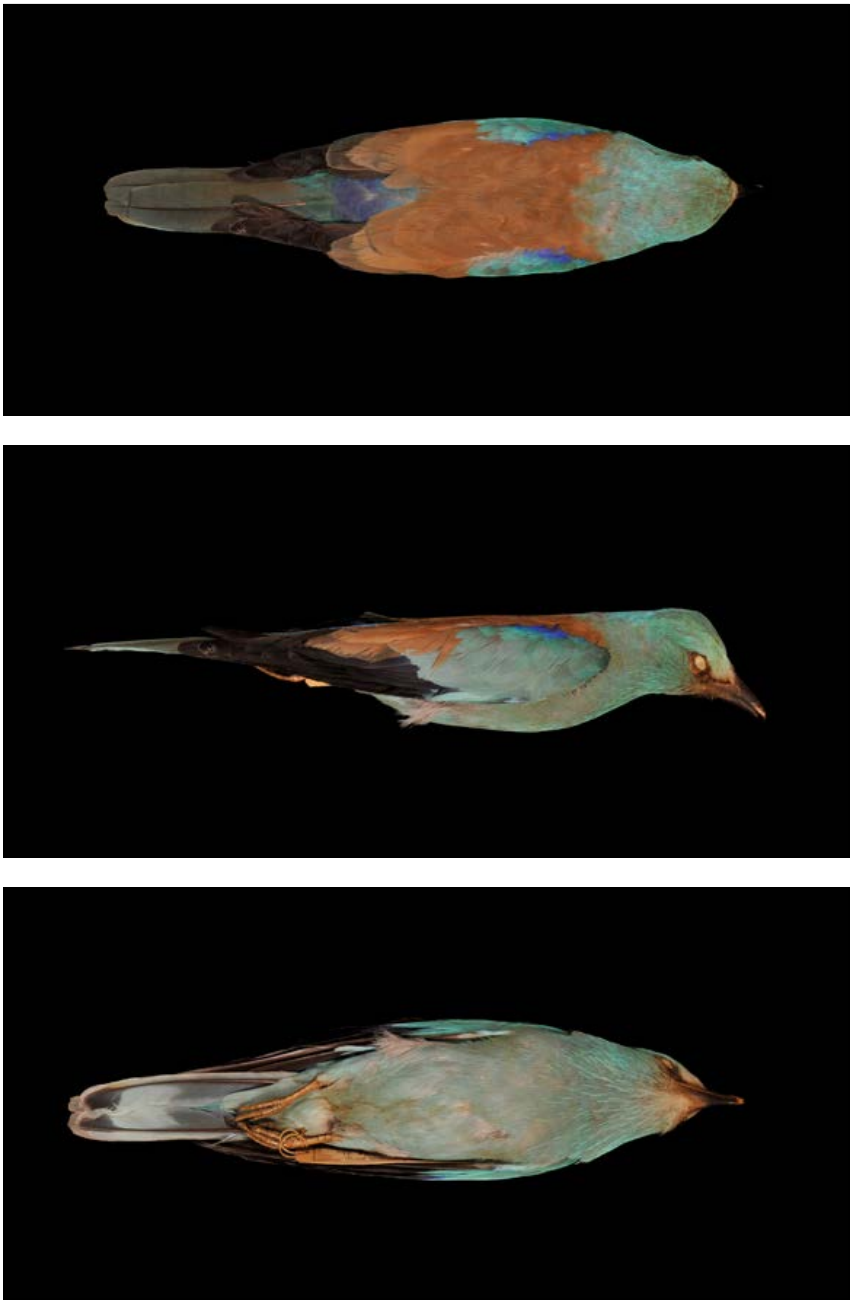
Slika 16: Gnezdo s štirimi mladiči zlatovranke *(Coracias garrulus garrulus)* iz Šentvida pri Stični, ki ga je zbral in prepariral Ferdinand Schulz leta 1894 (SIK 93 in 1070). Fotografija iz stare razstavne postavitve. Gnezdo, ki ga omenja Schulz (1895), ni več ohranjeno v zbirki PMS (foto: arhiv PMS).

Figure 16: A nest with four fledglings of the European Roller *(Coracias garrulus garrulus)* from Šentvid near Stična, collected and prepared by Ferdinand Schulz in 1894 (SIK 93 and 1070). Photo from the old exhibition. The nest mentioned by Schulz (1895) is no longer preserved in the PMS collection (photo: PMS archives).



Slika 17: Študijski meh zlatovranke *(Coracias garrulus garrulus)*, ad. ♂ , iz Podvincev, ki ga je zbral I. Golob in prepariral Janez Dovič. Primerek PMSL 492, zbran 31.8.1954. Foto: Ciril Mlinar Cic

Figure 17: A study skin of the European Roller *(Coracias garrulus garrulus)*, ad. ♂, from Podvinci, collected by I. Golob and prepared by Janez Dovič. Specimen PMSL 492 was collected on 31 August 1954. Photo: Ciril Mlinar Cic



Slika 18: Študijski meh zlatovranke *(Coracias garrulus garrulus)*, ad. ♀ , iz Tomačevega pri Ljubljani, ki ga je zbral in prepariral Alojz Šmuc. Primerek PMSL 490, zbran 17.5.1950. Foto: Ciril Mlinar Cic

Figure 18: A study skin on the European Roller *(Coracias garrulus garrulus)*, ad. ♀, from Tomačevo near Ljubljana, collected and prepared by Alojz Šmuc. Specimen PMSL 490 was collected on 17 May 1950. Photo: Ciril Mlinar Cic

3.1.3. *Coracias abyssinicus* Hermann, 1783 – abesinska zlatovranka / Abyssinian Roller

Etiopija / Ethiopia

*Shashamane (7°12' N, 38°36' E, 1920 m asl) : 1 mummy (TKSB 263), 20.11.1960, leg. & prep. Savo Brelih

*Koka (8°25' N, 39°07' E, 1590 m asl): 1 mummy (TKSB 313), 16.12.1960, leg. & prep. Savo Brelih

Monotipska severno-tropska afriška vrsta (Fry & Fry 1992). Na etiopski ekspediciji je Savo Brelih zbral dva primerka (slika 10), od katerih je vsaj eno mumijo razstavil v PMS leta 1961 (slika 7). Ob kasnejšem uničenju zbirke so v celoti zavrgli oba preparata.

Monotypic North-Tropical African Species (Fry & Fry 1992). During the Ethiopian expedition, Savo Brelih collected two specimens (Figure 10), of which at least one mummy was exhibited in the PMS in 1961 (Figure 7). Upon the subsequent destruction of the collection, both specimens were discarded.

3.2. Vodomci (Alcedinidae) / Kingfishers

3.2.1. *Alcedo atthis ispida* (Linnaeus, 1758) – vodomec / Common Kingfisher

Slovenija / Slovenia

Bistra (45°56' N, 14°19' E, 310 m asl): 1 skin (PMSL 1004), 1Y ♀, 23.11.1951, leg. & prep. Franc Barbič (slika 27)

Bizeljsko (46°01' N, 15°41' E, 187 m asl): 1 os./ex., feathers (PMSL 5529), juv., 30.5.1999, leg. Katarina Senegačnik

Borovnica (45°55' N, 14°21' E, 306 m asl): 1 skin,1 wing (PMSL 5669), ad. ♂, 8.11.2006, leg. Andrej Belič, prep. Vilijem Žgavec

Bukovci (46°22' N, 15°57' E, 213 m asl): 1 skin (PMSL 1957), 1Y ♂, 13.7.1983, leg. Borut Štumberger, prep. Janez Dovič

*Dragomelj (46°06' N, 14°35' E, 287 m asl): 2 mounts (SIK 1674), ♂ & ♀, 20.8.1937

Ivančna Gorica, Hudo (45°56' N, 14°47' E, 362 m asl): 1 skin (PMSL 3349), 1Y ♀, 24.8.2000, leg. Ludvik Jakopin, prep. Vilijem Žgavec

Koper (45°32' N, 13°44' E, 1 m asl): 1 skin, 1 wing (PMSL 3813), 1Y ♂, 10.10.2008, leg. Igor Brajnik prep. Andrej Kapla

Koper (45°32' N, 13°44' E, 1 m asl): 1 nepreparirani primerek/unprepared specimen (AKPMSL 2016/012), 14.8.2015, leg. Peter Maričič

Laško (46°10'N, 15°14'E, 221 m asl): 1 skin, 1 wing, skeleton (PMSL 4889), 1Y ♂, 26.12.2011, leg. M. Sodjak, prep. Vilijem Žgavec

Laško (46°10'N, 15°14'E, 221 m asl): 1 skin, 1 wing, skeleton (PMSL 4890), ad. ♂, 26.12.2011, leg. M. Sodjak, prep. Vilijem Žgavec (slika/figure 24)

Ljubljana (46°03'N, 14°30'E, 305 asl): 1 mount (PMSL 5688), 1Y ♀, 1894, leg. & prep. Ferdinand Schulz (slika/figure 22)

Ljubljana-Črnuče (46°05'N, 14°31'E, 288 m asl): 1 skin (PMSL 1006), 1Y ♂, 12.8.1949, leg. & prep. Alojz Šmuc

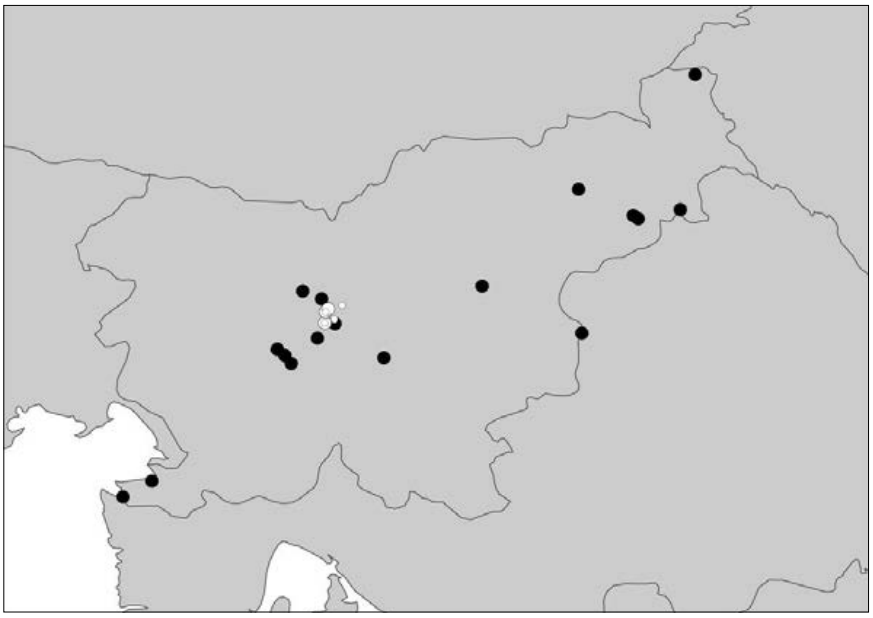
Ljubljana-Fužine (46°03' N, 14°33' E, 287 m asl): 1 nepreparirani primerek/unprepared specimen (AKPMSL 2016/300), 1Y ♂, 11.10.2016, leg. Nada Koso
Ljubljana-Stožice (46°05'N, 14°31'E, 293 m asl): 1 skin (PMSL 1003), 1Y ♂, 17.8.1951, leg. Božidar Ponebšek, prep. Alojz Šmuc
Ljubljana-Stožice (46°05'N, 14°31'E, 293 m asl): 1 skin (PMSL 1005), 2Y ♀, 24.1.1949, leg. & prep. Alojz Šmuc
Ljubljana, Črna vas (46°00'N, 14°28'E, 289 m asl): 1 skin, 1 wing, skeleton (PMSL 3837), ad. ♀, 6.1.2009, prep. Andrej Kapla
Ljubljana, Gameljne (46°07'N, 14°29'E, 314 m asl): 1 skin (PMSL 2702), ad. ♀, 14.11.1993, leg. J. Ocvirk, prep. Vilijem Žgavec
*Ljubljana (46°03'N, 14°30'E, 305 m asl): 1 mount (SIK 129), ♂, 1890, leg. & prep. Ferdinand Schulz
*Ljubljana (46°03'N, 14°30'E, 305 m asl): 5 mounts (SIK 749), 1894, leg. & prep. Ferdinand Schulz (opomba: prvotno 6 dermoplastik, 1 dermoplastika ohranjena kot PMSL 5688 / remark: originally 6 mounts, 1 mount preserved as PMSL 5688 (slika/figure 22))
*Ljubljana – Moste ob Ljubljanici (46°03'N, 14°33'E, 284 m asl): 1 skin (KDOO 44), ♂, 15.6.1937, leg. & prep. Viktor Herfort
*Ljubljana-Stožice (46°05'N, 14°31'E, 293 m asl): 1 skin (KDOO 181), ad. ♂, 15.11.1948, prep. Alojz Šmuc
Maribor-letališče Edvarda Rusjana (46°28'N, 15°40'E, 264 m asl): 1 os./ex., 2 wings, 1 tail, 2 legs, skeleton, 1 skull (PMSL 6526), 1Y ♂, 14.10.2014, leg. Jožica Bordjan, prep. Al Vrezec, Vilijem Žgavec, Mojca Jernejc Kodrič (slika/figure 28)
Markovci (46°23'N, 15°55'E, 220 m asl): 1 skin (PMSL 1956), 1Y ♂, 5.9.1983, leg. Borut Štumberger, prep. Janez Dovič
Markovci, Nova vas (46°50'N, 16°13'E, 265 m asl): 1 skin (PMSL 1753), ad. ♀, 15.12.1980, leg. Borut Štumberger, prep. Janez Dovič (slika/figure 25)
Medvode, Zbiljsko jezero (46°09'N, 14°24'E, 351 m asl): 1 skull (PMSL 4688), 15.12.1953, leg. Franc Barbič, prep. Savo Brelih (slika/figure 30)
Ormož (46°24'N, 16°09'E, 218 m asl): 1 skin (PMSL 1769), 1Y ♂, 30.7.1981, leg. Dare Šere, prep. Janez Dovič (slika/figure 26)
Sečovlje (45°28'N, 13°37'E, 1 m asl): 1 skin (PMSL 1923), ad. ♀, 3.9.1983. leg. Jože Gračner, Dare Šere, prep. Janez Dovič
Sečoveljske soline (45°29'N, 13°36'E, 0 m asl): 1 skin, 1 wing, skeleton (PMSL 6520), 1Y ♂, 15.10.2013, leg. Peter Maričič, prep. Vilijem Žgavec, Mojca Jernejc Kodrič
Vrhnika (45°57'N, 14°17'E, 296 m asl): 1 skin (PMSL 2763), 1Y ♂, 16.10.1993, leg. Branko Lapajna, prep. Viljem Žgavec
Vrhnika (45°57'N, 14°17'E, 296 m asl): 1 os./ex., feathers (PMSL 6861), 1Y, 18.9.1988, leg. & prep. Dare Šere (slika/figure 29)
Neznana lokacija/Unknown locality: 1 skin (PMSL 22), ad. ♂, pred 1923, leg. Janko Ponebšek
Neznana lokacija/Unknown locality: 1 skin (PMSL 5952), ad. ♀ (slika/figure 23)
Neznana lokacija/Unknown locality: 1 skin (PMSL 5953), ad. ♀ (slika/figure 23)
Neznana lokacija/Unknown locality: 1 mount (PMSL 6171), ad. ♀ (slika/figure 21)
Neznana lokacija/Unknown locality: 1 skin (AKPMSL 2014/040), ad. ♂
*Neznana lokacija/Unknown locality: 1 mount (SIK 128), pred/before 1890
*Neznana lokacija/Unknown locality: 1 mount (SIK 1012), 1923
*Neznana lokacija/Unknown locality: 1 skin (KDOO 1128)
*Neznana lokacija/Unknown locality: 1 skin (KDOO 1129)
*Neznana lokacija/Unknown locality: 1 skin (SIK 1326), before 1935

Vodomec s sedmimi opisanimi podvrstami je južno transevrazijsko razširjen (del Hoyo s sod. 2001). V Evropi se pojavljata dve podvrsti: *A. a. ispida* v večjem delu Evrope in *A. a. atthis* v južni Evropi. Matvejev & Vasić (1973) za Slovenijo navajata le podvrsto *A. a. ispida*, *A. a. atthis* pa se po navedbah pojavlja že v Istri, zato njeno pojavljanje v jugozahodnem delu Slovenije ni izključeno. Razlike med podvrstama so majhne. Nominotipska *A. a. atthis* je v povprečju manjša z daljšim in močnejšim kljunom, biometrični podatki pa se na veliko prekrivajo. Manjše razlike so tudi v obarvanosti (Cramp 1985, Baker 1993, Demongin 2016). V zbirki PMS je bilo zelo malo primerkov zbranih v jugozahodni Sloveniji, od teh le eden iz domnevno gnezditvenega obdobja. V zbirki tudi ni primerjalnega materiala nominotipske podvrste *A. a. atthis* iz južne Evrope (slika 19). Na podlagi doslej zbranega materiala je torej težko zaključiti, ali severni rob areala nominotiopske podvrste sega tudi v Slovenijo. Za razrešitev vprašanja pojavljanja in gnezdenja nominotipske podvrste vodomca pri nas je potrebnega več zbranega materiala, predvsem pa natančnejše meritve gnezdečih ptic v okviru obročkovalne dejavnosti v jugozahodni Sloveniji. Danes so v ornitološki zbirki ohranjeni zgolj primerki doraslih ptic, v preteklosti pa so bila zagotovo vključena tudi jajca vodomca, ki so bila razstavljena v diorami z vodomčevim gnezdom (slika 20) v stari razstavni postavitvi pred letom 1950 (dvorana IX., omara 88; Kos 1933, Prirodoslovni muzej v Ljubljani 1949). Tako diorama kot njeni preparati, vključno z jajci, se niso ohranili. Tudi provenienca jajc ni znana, saj le ta niso zabeležena v nobeni izmed muzejskih inventarnih ali akcesijskih knjig. Med dermoplastičnimi preparati vodomcev se jih je do danes ohranilo le nekaj (slike 21, 22, 23). V stari postavitvi razstave je bila prikazana skupina 6 ptic iz Ljubljane iz leta 1894, delo preparatorja Ferdinanda Schulza, ki pa se ni ohranila. Primerjava preparatov s sliko razstavljene skupine pred letom 1950 (slika 9) kaže, da je bila verjetno vsaj ena od ptic iz skupine ohranjena, vendar brez zapisa

The Common Kingfisher with seven described subspecies has a southern transeurasian distribution (del Hoyo et al. 2001). There are two subspecies in Europe: *A. a. ispida* in most parts of Europe and *A. a. atthis* in southern Europe. Matvejev & Vasić (1973) refer only to the subspecies of *A. a. ispida* for Slovenia, but *A. a. atthis* was already known from Istria, therefore the presence in the southwestern part of Slovenia is possible. The differences between subspecies are subtle. Nominotypic *A. a. atthis* is on average smaller with a longer and stronger beak, but biometric data overlaps a great deal. Minor differences are also in the colouring (Cramp 1985, Baker 1993, Demongin 2016). In the PMS collection, very few specimens were collected in southwestern Slovenia, of which only one was from the breeding period. The collection also holds no comparative material of the nominotypic subspecies *A. a. atthis* from southern Europe (Figure 19). Based on the material collected so far, it is difficult to conclude that the northern edge of the range of the nominotypic subspecies extends to Slovenia. In order to resolve the issue of occurrence and breeding of the nominotypic subspecies, more collected material is needed as well as more precise measurements of nesting birds during bird ringing in south-western Slovenia. Today only the specimens of full grown birds are preserved in the ornithological collection; in the past, before 1950, the eggs of the Common Kingfisher were displayed in dioramas with the Kingfisher's nest (Figure 20; hall IX., cabinet 88; Kos 1933, Prirodoslovni muzej v Ljubljani 1949). Diorama and exhibited specimens including eggs have not been preserved. There is also no data on the eggs' origin, as they were not recorded in any of the museum inventory or accession books. Only few mounts have been preserved to date (Figures 21, 22, 23). In the old exhibition a group of 6 birds from Ljubljana from 1894 was exhibited, the work of the taxidermist Ferdinand Schulz. The group has not survived. Comparison of preparations with a picture of the exhibited group before 1950 (Figure 9) shows that at least one of the birds from the group might have been preserved, but without a record or label

ali etikete (slika 22). V ornitološki zbirki PMS so sicer ohranjeni primerki obeh spolov in različnih starosti (slike 24, 25, 26, 27). Sicer pa so v zbirki ohranjeni tudi posamezni deli ptic (slika 28), peresa (slika 29) in kosti (slika 30).

(Figure 22). In the ornithological collection of PMS, specimens of both sexes and of different ages are preserved (Figures 24, 25, 26, 27). Otherwise, in the collection, also individual parts of birds have survived (Figure 28), i.e. feathers (Figure 29) and bones (Figure 30).



Slika 19: Geografski izvor primerkov vodomca *(Alcedo atthis)* v zbirki PMS. Velike pike nakazujejo v zbirki ohranjene primerke, majhne pike pa propadle primerke. Bele pike so primerki, pridobljeni pred letom 1950, črne pike pa primerki, pridobljeni po letu 1950.

Figure 19: Geographical origin of the Common Kingfishers *(Alcedo atthis)* in the PMS collection. Large dots indicate preserved specimens in the collection, and small dots lost specimens. White dots indicate specimens obtained before 1950, and black dots specimens obtained after 1950.

Slika 20: Diorama z gnezdom vodomca *(Alcedo atthis ispida)* iz stare razstavne postavitve pred letom 1950 (dvorana IX., omara 88). Diorama in preparati v njej se niso ohranili, razstavljena jajca pa so bila verjetno edini primerki vodomčevih jajc v PMS, vendar njihova provenienca ni znana, saj niso bila zapisana v nobeno muzejsko knjigo (foto: arhiv PMS).

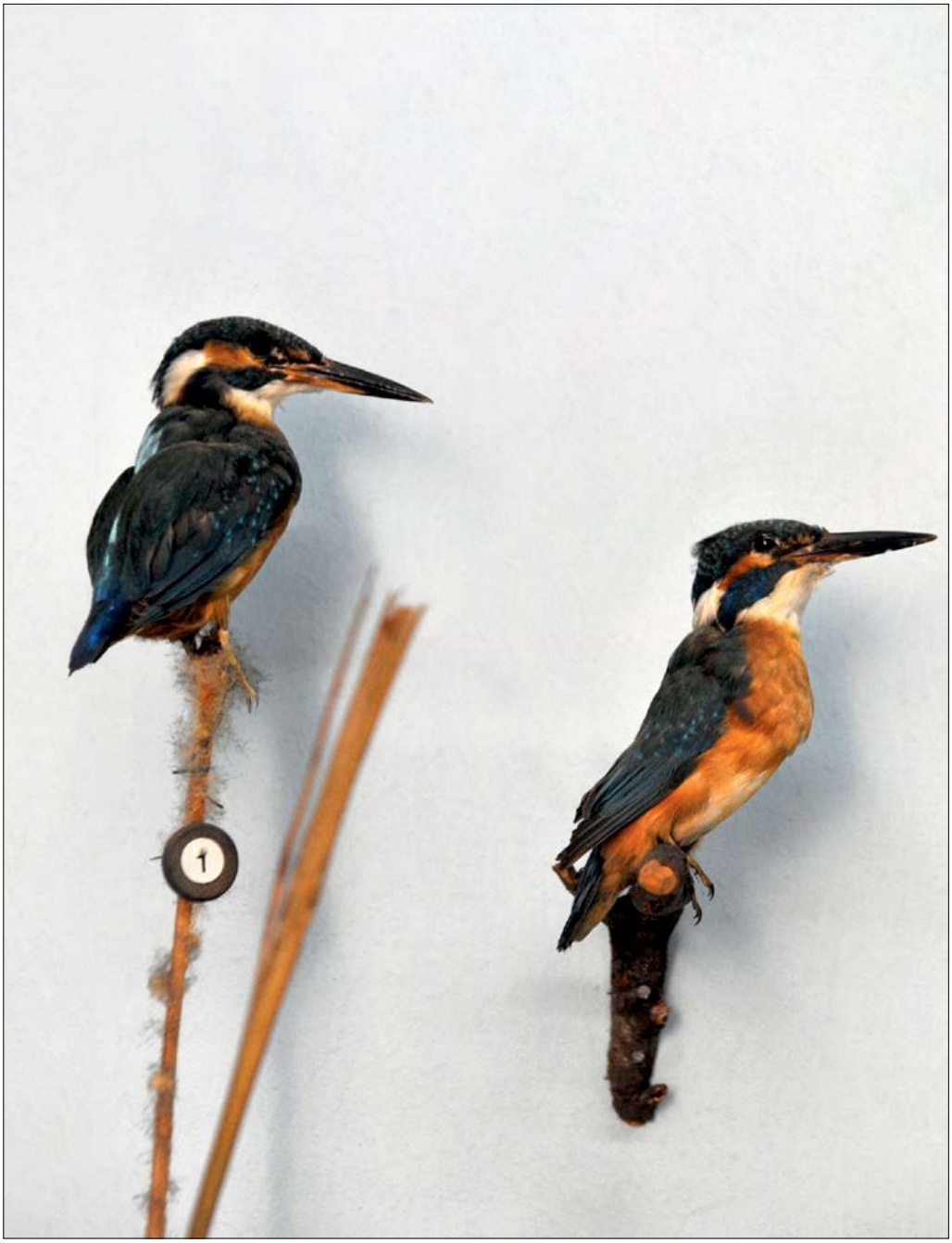
Figure 20: Diorama with a nest of Common Kingfisher *(Alcedo atthis ispida)* from the old museum exhibition before 1950 (hall IX., cabinet 88). The diorama and mounts have not survived till this day. The exhibited eggs were probably the only eggs of the Common Kingfisher in the PMS, but their origin is unknown, since they were not recorded in any of museum books (photo: PMS archives).

Slika 21: Dermoplastični preparat vodomca *(Alcedo atthis ispida)*, ad. ♀. Primerek PMSL 6171. Foto: Ciril Mlinar Cic

Figure 21: Mount of the Common Kingfisher *(Alcedo atthis ispida),* ad. ♀. Specimen PMSL 6171. Photo: Ciril Mlinar Cic

Slika 22: Fotografija (spodaj) primerka iz stare razstavne postavitve z dermoplastičnim preparatom vodomca *(Alcedo atthis ispida)* iz t.i. Schulzeve skupine iz leta 1894, ki se je verjetno edini ohranil do danes (zgoraj). Gre za dermoplastični preparat 1Y ♀. Primerek PMSL 5688. Foto: arhiv PMS, Ciril Mlinar Cic

Figure 22: Photograph (below) of the specimen from the old museum exhibition arrangement with taxidermy of the Common Kingfisher *(Alcedo atthis ispida)* from the so-called Schulz's group from 1894, which is probably the only preserved specimen till now (above). Mount of 1Y ♀. Specimen PMSL 5688. Photo: PMS archives, Ciril Mlinar Cic



Slika 23: Dermoplastična preparata vodomcev *(Alcedo atthis ispida)*, ad. ♀ , iz trenutne razstavne postavitve PMS. Levo - primerek PMSL 5953. Desno - primerek PMSL 5952. Foto: Ciril Mlinar Cic

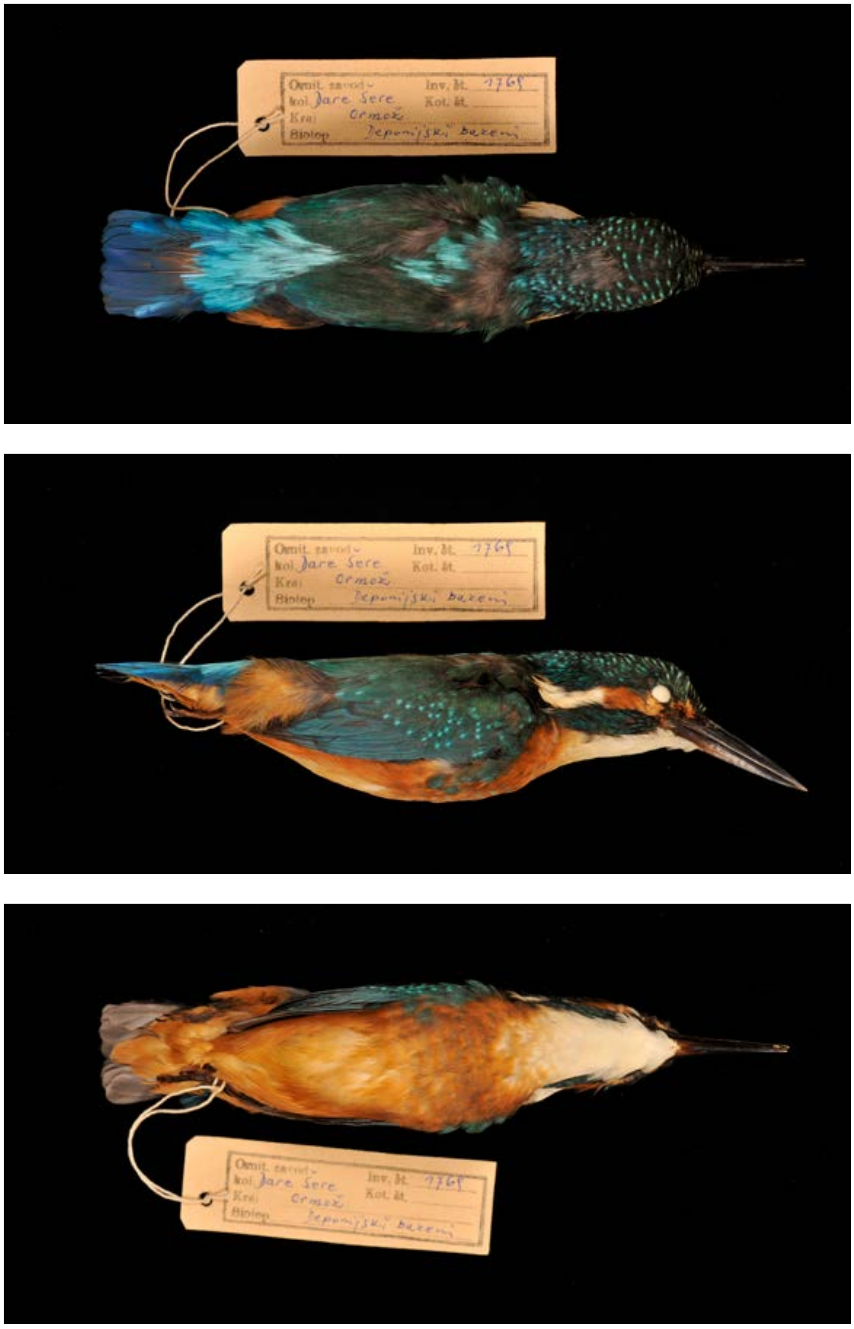
Figure 23: Mounts of the Common Kingfisher *(Alcedo atthis ispida)*, ad. ♀, from the current museum exhibition in PMS. Left - specimen PMSL 5953. Right - specimen PMSL 5952. Photo: Ciril Mlinar Cic

Slika 24: Študijski meh in perut vodomca *(Alcedo atthis ispida)*, ad. ♂ , iz Laškega, ki ga je zbral M. Sodjak in prepariral Vilijem Žgavec. Primerek PMSL 4890, zbran 26.12.2011. Foto: Ciril Mlinar Cic

Figure 24: Study skin of the Common Kingfisher *(Alcedo atthis ispida)*, ad. ♂, from Laško, collected by M. Sodjak and prepared by Vilijem Žgavec. Specimen PMSL 4890 was collected on 26 December 2011. Photo: Ciril Mlinar Cic

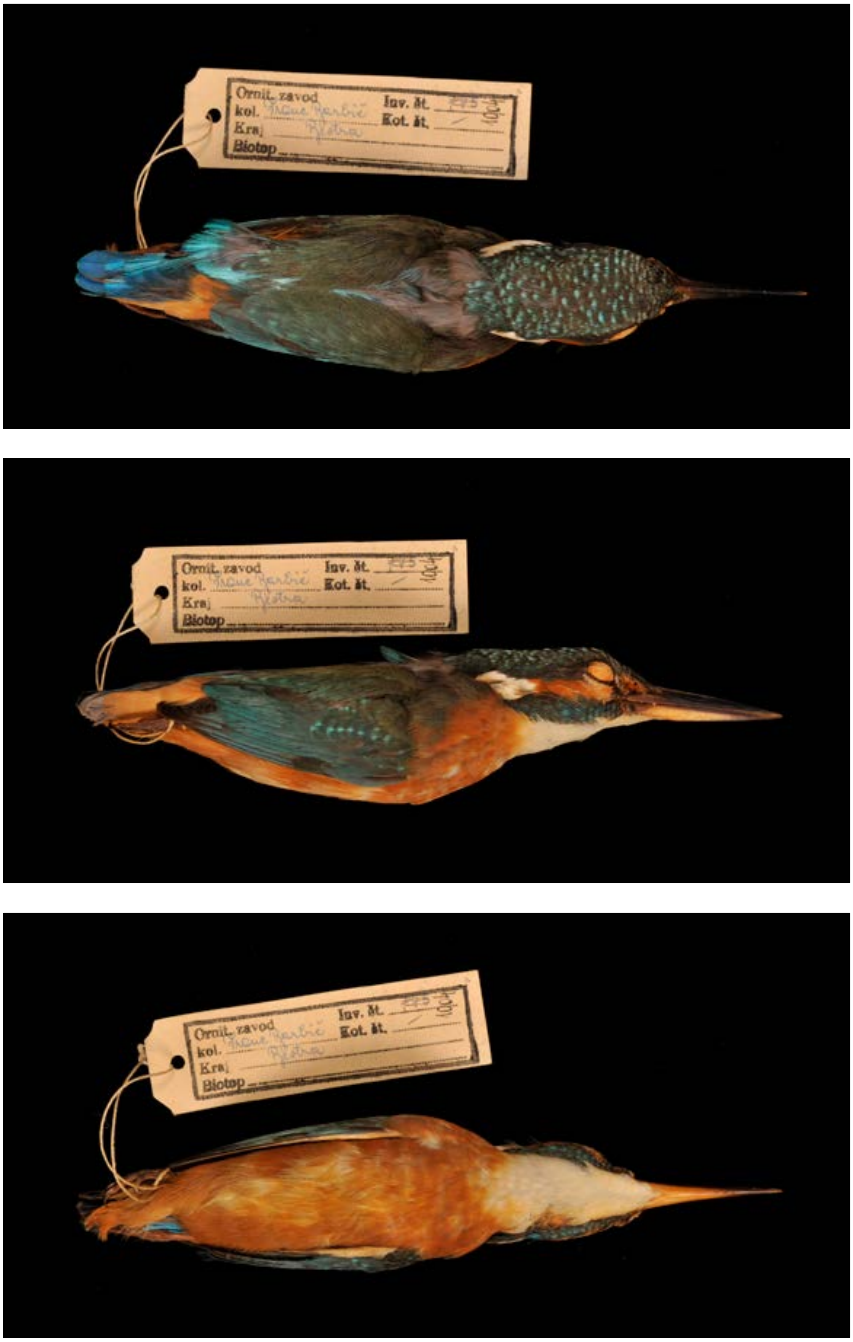
Slika 25: Študijski meh vodomca *(Alcedo atthis ispida)*, ad. ♀ , iz Nove vasi pri Markovcih, ki ga je zbral Borut Štumberger in prepariral Janez Dovič. Primerek PMSL 1753, zbran 15.12.1980. Foto: Ciril Mlinar Cic

Figure 25: A study skin of the Common Kingfisher *(Alcedo atthis ispida)*, ad. ♀, from Nova vas near Markovci, collected by Borut Štumberger and prepared by Janez Dovič. Specimen PMSL 1753 was collected on 15 December 1980. Photo: Ciril Mlinar Cic



Slika 26: Študijski meh vodomca *(Alcedo atthis ispida)*, 1Y ♂ , iz Ormoža, ki ga je zbral Dare Šere in prepariral Janez Dovič. Primerek PMSL 1769, zbran 30.7.1981. Foto: Ciril Mlinar Cic

Figure 26: A study skin of the Common Kingfisher *(Alcedo atthis ispida)*, 1Y ♂, from Ormož, collected by Dare Šere and prepared by Janez Dovič. Specimen PMSL 1769 was collected on 30 July 1981. Photo: Ciril Mlinar Cic



Slika 27: Študijski meh vodomca *(Alcedo atthis ispida)*, 1Y ♀, iz Bistre, ki ga je zbral in prepariral Franc Barbič. Primerek PMSL 1004, zbran 23.11.1951. Foto: Ciril Mlinar Cic

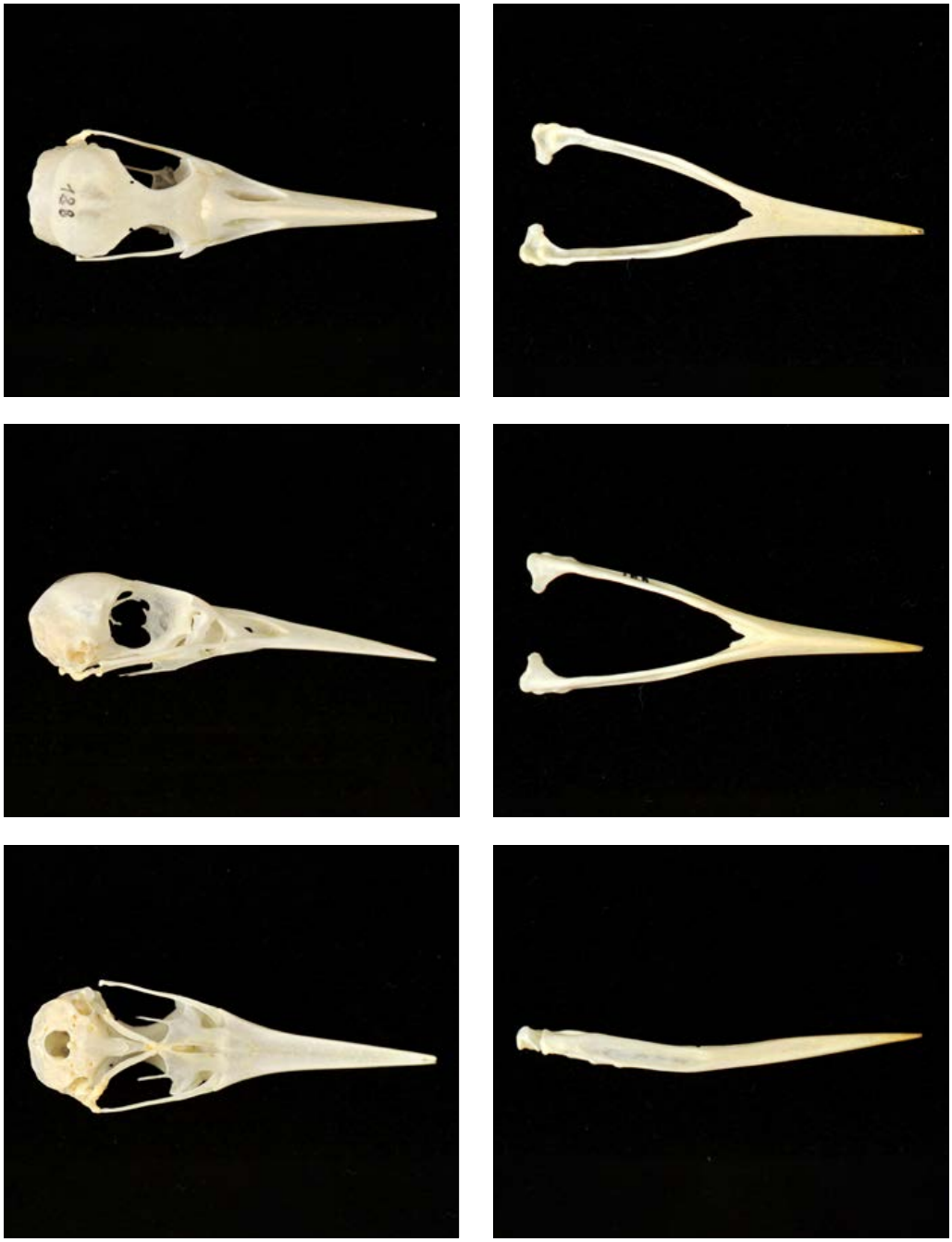
Figure 27: A study skin of the Common Kingfisher *(Alcedo atthis ispida)*, 1Y ♀, from Bistra, collected and prepared by Franc Barbič. Specimen PMSL 1004 was collected on 23 November 1951. Photo: Ciril Mlinar Cic

Slika 28: Peruti, rep in nogi vodomca *(Alcedo atthis ispida)*, 1Y ♂, z letališča Edvarda Rusjana v Mariboru, ki ga je zbrala Jožica Bordjan in preparirala Al Vrezec in Vilijem Žgavec. Primerek PMSL 6526, zbran 14.10.2014. Foto: Ciril Mlinar Cic

Figure 28: Wings, tail and legs of the Common Kingfisher *(Alcedo atthis ispida)*, 1Y ♂, from the Edvard Rusjan airport in Maribor, collected by Jožica Bordjan and prepared by Al Vrezec and Vilijem Žgavec. Specimen PMSL 6526 was collected on 14 October 2014. Photo: Ciril Mlinar Cic

Slika 29: Peresi vodomca *(Alcedo atthis ispida)*, 1Y, z Vrhnike, ki ju je zbral in prepariral Dare Šere. Primerek PMSL 6861, zbran 18.9.1988. Foto: Ciril Mlinar Cic

Figure 29: Feathers of the Common Kingfisher *(Alcedo atthis ispida)*, 1Y, from Vrhnika, collected and prepared by Dare Šere. Specimen PMSL 6861 was collected on 18 September 1988. Photo: Ciril Mlinar Cic



Slika 30: Lobanja vodomca *(Alcedo atthis ispida)* z Zbiljskega jezera, ki ga je zbral Franc Barbič in prepariral Savo Brelih. Primerek (PMSL4688), zbran 15.12.1953. Foto: Ciril Mlinar Cic

Figure 30: Skull of the Common Kingfisher *(Alcedo atthis ispida)* from lake Zbilje, collected by Franc Barbič and prepared by Savo Brelih. Specimen PMSL4688 was collected on 15 December 1953. Photo: Ciril Mlinar Cic

3.2.2. *Corythornis cristatus stuartkeithi* Dickerman, 1989 – čopasti vodomec / Malachite Kingfisher

Etiopija / Ethiopia

*Awasa (7°11' N, 38°33' E, 1841 m asl): 1 mummy (TKSB 71), 11.10.1960, leg. & prep. Savo Brelih

Primerek čopastega vodomca je Savo Brelih leta 1960 zbral ob jezeru Awasa v osrednji Etiopiji (slika 31) in je najverjetneje pripadal takrat še neopisani podvrsti *C. c. stuartkeithi*, ki je bila poimenovana 30 let kasneje po zgodovinskem primerku iz severne Etiopije v Ameriškem naravoslovnem muzeju (Dickerman 1989). Edini primerek v zbirki PMS se ni ohranil, preparata pa tudi ni najti na fotografiji razstave iz leta 1961 (slika 7), zato je mogoče, da je propadel že pri transportu iz Etiopije v Slovenijo.

A specimen of the Malachite Kingfisher was collected by Savo Brelih in 1960 at Awasa Lake in central Ethiopia (Figure 31) and most likely belonged to the then undescribed subspecies of *C. c. stuartkeithi*. It was described 30 years later after a historical specimen from northern Ethiopia from the American Natural History Museum (Dickerman 1989). The only specimen in the PMS collection has not been preserved, and the specimen cannot be found on the photograph of the exhibition from 1961 (Figure 7). It is therefore possible that it had been lost during transport from Ethiopia to Slovenia.

Slika 31: Geografski izvor primerkov čopastega vodomca *(Corythornis cristatus*; bela pika) in črnobelega pasata *(Ceryle rudis*; *črna* pika) v zbirki PMS. Velike pike nakazujejo v zbirki ohranjene primerke, majhne pike pa propadle primerke.

Figure 31: Geographical origin of the specimens of the Malachite Kingfisher (*Corythornis cristatus*; white dot) and the Pied Kingfisher (*Ceryle rudis*; black dot) in the PMS collection. The large dots indicate a preserved specimen in the collection, small dots lost specimens.

3.2.3. *Halcyon leucocephala leucocephala* (Statius Müller, PL, 1776) – sivoglavi gozdomec / Grey-headed Kingfisher

Etiopija / Ethiopia

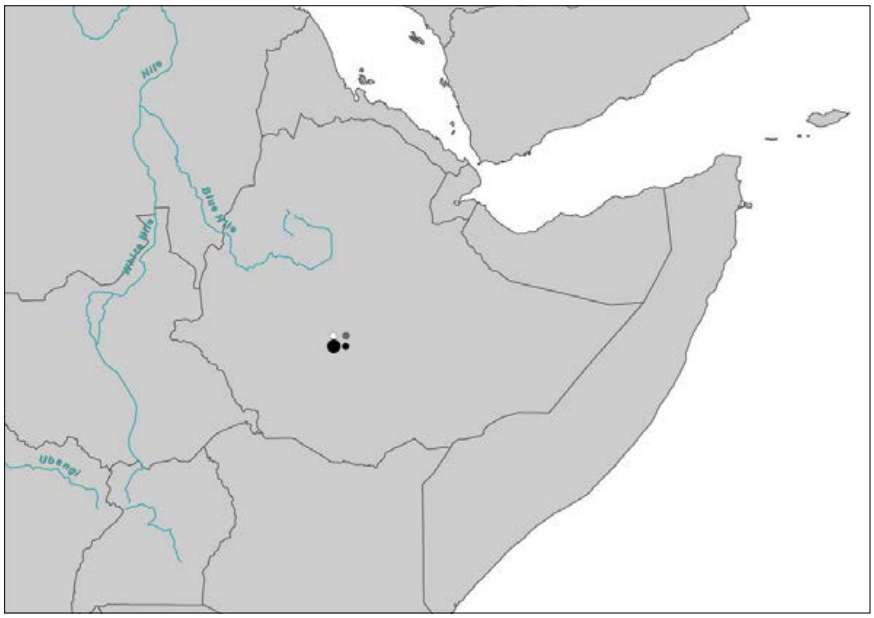
Awasa (7°11' N, 38°33' E, 1841 m asl): 1 skull (PMSL 4689), 31.10.1960, leg. & prep. Savo Brelih (slika/figure 33)

*Awasa (7°11' N, 38°33' E, 1841 m asl): 1 skull (TKSB 118), 20.10.1960, leg. & prep. Savo Brelih

*Awasa (7°11' N, 38°33' E, 1841 m asl): 1 mummy (TKSB 148), 25.10.1960, leg. & prep. Savo Brelih

*Awasa (7°11' N, 38°33' E, 1841 m asl): 1 mummy (TKSB 173), 1.11.1960, leg. & prep. Savo Brelih

*Awasa (7°11' N, 38°33' E, 1841 m asl): 1 wing (TKSB 172), 31.10.1960, leg. & prep. Savo Brelih (opomba: ohranjena lobanja kot PMSL 4689/ remark: preserved skull as PMSL 4689 (slika/ figure 33))



Slika 32: Geografski izvor primerkov sivoglavega *(Halcyon leucocephala*; črna pika), sinjega *(H. senegalensis*; bela pika) in poljskega gozdomca *(H. albiventris*; siva pika) v zbirki PMS. Velike pike nakazujejo v zbirki ohranjene primerke, majhne pike pa propadle primerke.

Figure 32: Geographical origin of the Grey-headed Kingfisher (*Halcyon leucocephala*; black dot), the Woodland Kingfisher (*H. senegalensis*; white dot) and the Brown-hooded Kingfisher (*H. albiventris*; grey dot) in the PMS collection. The large dots indicate a preserved specimen in the collection, and small dots lost specimens.

Slika 33: Lobanja sivoglavega gozdomca *(Halcyon leucocephala leucocephala)* iz Etiopije, ki ga je zbral in prepariral Savo Brelih. Primerek (PMSL 4689), zbran 31.10.1960 ob jezeru Awasa. Foto: Ciril Mlinar Cic

Figure 33: Skull of the Grey-headed Kingfisher (*Halcyon leucocephala leucocephala*) from Ethiopia, collected and prepared by Savo Brelih. Specimen PMSL 4689 was collected on 31 October 1960 at Lake Awasa. Photo: Ciril Mlinar Cic

Savanska vrsta, splošno razširjena v podsaharski Afriki, severni del areala pa naseljuje nominotipska podvrsta (Fry & Fry 1992). Na etiopski ekspediciji je S. Brelih zbral štiri primerke (slika 32) in vse tri kot mumije predstavil na razstavi leta 1961 v PMS (slika 7). Kasneje, ob propadu zbirke, je bila ohranjena le ena lobanja (slika 33), domnevno primerka, ki je bil prvotno prepariran z razprtimi perutmi.

Savannah species, commonly distributed in sub-Saharan Africa. The northern part of the range is inhabited by the nominotypic subspecies (Fry & Fry 1992). During the Ethiopian expedition, S. Brelih collected four specimens (Figure 32) and presented all three as mummies at the exhibition in 1961 in the PMS (Figure 7). Later, when the collection was destroyed, only one skull was preserved (Figure 33), most probably from a specimen originally prepared with open wings.

3.2.4. *Halcyon senegalensis senegalensis* (Linnaeus, 1766) – sinji gozdomec / Woodland Kingfisher

Etiopija / Ethiopia

*Awasa (7°11' N, 38°33' E, 1841 m asl): 1 skull (TKSB 117), 20.10.1960, leg. & prep. Savo Brelih
*Awasa (7°11' N, 38°33' E, 1841 m asl): 1 mummy (TKSB 189), 3.11.1960, leg. & prep. Savo Brelih
*Awasa (7°11' N, 38°33' E, 1841 m asl): 1 mummy (TKSB 238), 15.11.1960, leg. & prep. Savo Brelih (opomba: oddano tov. Repiču/remark: given to Mr Repič)
*Awasa (7°11' N, 38°33' E, 1841 m asl): 1 mummy (TKSB 239), 15.11.1960, leg. & prep. Savo Brelih (opomba: oddano tov. Repiču/remark: given to Mr Repič)

Transekvatorialna vrsta, pri kateri so severno in južnotropske populacije migratorne (Fry & Fry 1992). Etiopijo poseljuje migratorna nominotipska podvrsta. S. Brelih je ob jezeru Awasa v osrednji Etiopiji zbral štiri primerke (slika 32), vendar je dva že na terenu podaril tov. Repiču, tako da sta v muzej prišli le dve mumiji, pri čemer je bila ena preparirana z razprtimi perutmi. Oba primerka sta bila leta 1961 tudi razstavljena (slika 7). Kljub temu pa zapis v terenski knjigi ni jasen, saj je pri enem primerku zapisano, da je bila shranjena le lobanja, razen če so bili v razstavo vključeni tudi Repičevi primerki. Do danes se v muzeju ni ohranil noben primerek, usoda Repičevih primerkov pa ni znana.

Trans-equatorial species in which the northern and southern tropical populations are migratory (Fry & Fry 1992). Ethiopia is inhabited by a migratory nominotypic subspecies. S. Brelih collected four specimens near Awasa Lake in central Ethiopia (Figure 32), but immediately donated two of them to Mr Repič. Finally, only two mummies came to the museum, one of which was prepared with open wings. Both specimens were exhibited in 1961 (Figure 7). Nevertheless, the record from the Field Book is not clear, as it states that from one specimen only the skull was stored, unless specimens of Mr Repič were also included in the exhibition. To date, no specimens have been preserved in the museum, but the fate of Repič's specimens remains unknown.

3.2.5. *Halcyon albiventris orientalis* Peters, W, 1868 – poljski gozdomec / Brown-hooded Kingfisher

Etiopija / Ethiopia
*Awasa (7°11' N, 38°33' E, 1841 m asl): 1 mummy (TKSB 149), 25.10.1960, leg. & prep. Savo Brelih
*Awasa (7°11' N, 38°33' E, 1841 m asl): 1 mummy (TKSB 174), 1.11.1960, leg. & prep. Savo Brelih

Pretežno južnoafriška vrsta, Etiopija pa leži na skrajni severni meji njene razširjenosti. Možna je tudi zamenjava s pogostejšo vrsto *H. leucocephala* v Etiopiji (Fry & Fry 1992) in tudi S. Brelih pri ptici TKSB 149 ni bil povsem gotov pri določitvi vrste. Oba primerka je zbral ob jezeru Awasa (slika 32). Sodeč po fotografiji z razstave leta 1961 (slika 7) sta bila razstavljena oba primerka kot mumiji, do danes pa se ni ohranil nobeden od njiju.

It is predominantly South African species, and Ethiopia is located at the extreme northern boundary of its range. In Ethiopia, confusion with *H. leucocephala* is possible (Fry & Fry 1992), and even S. Brelih in the bird TKSB 149 was not quite certain about the species determination. Two specimens were collected along Lake Awasa (Figure 32). According to the photograph from the exhibition in 1961 (Figure 7), both specimens were exhibited as mummies, and none of them has survived to date.

3.2.6. *Megaceryle alcyon* (Linnaeus, 1758) – kraljevi pasat / Belted Kingfisher

Severna Amerika / North America
Neznana lokacija/Unkonwn locality: 1 dermoplastika (PMSL 5114), ♂, 1897, leg. dr. Holub (slika 34)

Splošno razširjena severnoameriška vrsta, katere areal je večinoma v ZDA in južni Kanadi (Fry & Fry 1992). Dermoplastični preparat samca (slika 34) je leta 1897 muzeju podaril dr. Holub. Verjetno je preparat starejši, a podrobna provenienca ni znana. Dr. Holub je v letu 1897 muzeju podaril še dva dermoplastična preparata ameriških ptic, vzhodnega travniškega škorčevca *(Sturnella magna*; PMSL4997) in rdečeperutega škorčevca *(Agelaius phoeniceus*; PMSL5585), ki izvirata iz Združenih držav Amerike. Verjetno je bil preparat kraljevega pasata vključen tudi v staro razstavno postavitev muzeja skupaj z obema škorčevcema med eksotičnimi pticami, čeprav v vodnikih po zbirkah niso omenjeni (Kos 1933, Prirodoslovni muzej v Ljubljani 1949). Škorčevca sta zabeležena na fotografijah stare razstavne postavitve izpred leta 1950.

The widespread North American species, with the greater part of its range in the USA and southern Canada (Fry & Fry 1992). The mount of the male (Figure 34) was donated to the museum by Dr Holub in 1897. The specimen is probably older, but a detailed origin is unknown. In 1897, Dr Holub donated to the museum also two other mounts of American birds, the Eastern Meadowlark (*Sturnella magna*; PMSL4997) and the Red-winged Blackbird (*Agelaius phoeniceus*; PMSL5585) originating from the USA. Probably the Belted Kingfisher was also included in the old exhibition of the museum among exotic birds, although they are not mentioned in the guides through museum collections (Kos 1933, Prirodoslovni muzej v Ljubljani 1949). The Eastern Meadowlark and Red-winged Blackbird were otherwise recorded in photographs of an old museum exhibition before 1950.

Slika 34: Dermoplastični preparat ♂ kraljevega pasata *(Megaceryle alcyon)* iz Severne Amerike, ki ga je zbral dr. Holub. Primerek PMSL 5114, zbran leta 1897. Foto: Ciril Mlinar Cic

Figure 34: Mount of ♂ Belted Kingfisher (*Megaceryle alcyon*) from North America, collected by Dr. Holub. Specimen PMSL 5114 was collected in 1897. Photo: Ciril Mlinar Cic

3.2.7. *Ceryle rudis rudis* (Linnaeus, 1758) – črnobeli pasat / Pied Kingfisher

Etiopija / Ethiopia

Awasa (7°11' N, 38°33' E, 1841 m asl): 1 skull (PMSL 4687), 21.10.1960 ali 5.11.1960, leg. & prep. Savo Brelih (slika 35)

*Awasa (7°11' N, 38°33' E, 1841 m asl): 1 mummy (TKSB 124), 21.10.1960, leg. & prep. Savo Brelih

*Awasa (7°11' N, 38°33' E, 1841 m asl): 1 skull (TKSB 125 ali 199), 21.10.1960 ali 5.11.1960, leg. & prep. Savo Brelih

Območje razširjenosti črnobelega pasata je trodelno (Fry & Fry 1992). Po zadnjih taksonomskih spremembah afriški areal poseljuje nominotipska podvrsta *C. r. rudis*, sredozemski areal podvrsta *C. r. syriacus* in azijski areal tri podvrste, *C. r. leucomelanurus, C. r. travancoreensis* in *C. r. insignis* (Gill & Donsker 2016). V zbirki PMS je ohranjena lobanja afriške nominotipske podvrste primerka, ki je bil zbran v okviru odprave v Etiopijo leta 1960 (slika 35). Savo Brelih je na odpravi zbral tri primerke, pri čemer je kot mumijski preparat ohranil le enega, pozneje razstavljenega na muzejski razstavi leta 1961 (slika 2). Od dveh primerkov, zbranih ob jezeru Awasa v osrednji Etiopiji (slika 31), je shranil le glavo, zgolj ena lobanja pa se je ohranila do danes. Za slednjo ni jasno, ali gre za primerek, nabran dne 21.10. ali 5.11.1960. V obeh primerih gre za isto lokacijo.

The range of the Pied Kingfisher is three-fold (Fry & Fry 1992). Following the recent taxonomic changes, the African range is inhabited by the nominotypic subspecies of *C. r. rudis*, the Mediterranean range by the subspecies *C. r. syriacus*, and the Asian range by three subspecies, *C. r. leucomelanurus, C. r. travancoreensis* and *C. r. insignis* (Gill & Donsker 2016). The PMS collection includes the preserved skull of the African nominotypic subspecies of the specimen, which was collected during the expedition to Ethiopia in 1960 (Figure 35). Savo Brelih collected three specimens, where only one, eventually exhibited at the museum exhibition in 1961, was retained as a mummy (Figure 2). Of the two specimens collected at Lake Awasa in central Ethiopia (Figure 31), only a head was stored, and only one skull has survived to date. It is not clear whether the specimen was collected on 21 October or 5 November 1960. In both cases the location is the same.

Slika 35: Lobanja črnobelega pasata *(Ceryle rudis rudis)* iz Etiopije, ki ga je zbral in prepariral Savo Brelih. Primerek (PMSL4687), zbran 21.10.1960 ali 5.11.1960 ob jezeru Awasa. Foto: Ciril Mlinar Cic

Figure 35: A skull of the Pied Kingfisher (*Ceryle rudis rudis*) from Ethiopia, collected and prepared by Savo Brelih. Specimen PMSL4687 was collected on 21 October 1960 or on 5 November 1960 at Lake Awasa. Photo: Ciril Mlinar Cic

3.3. Čebelarji (Meropidae) / Bee-eaters

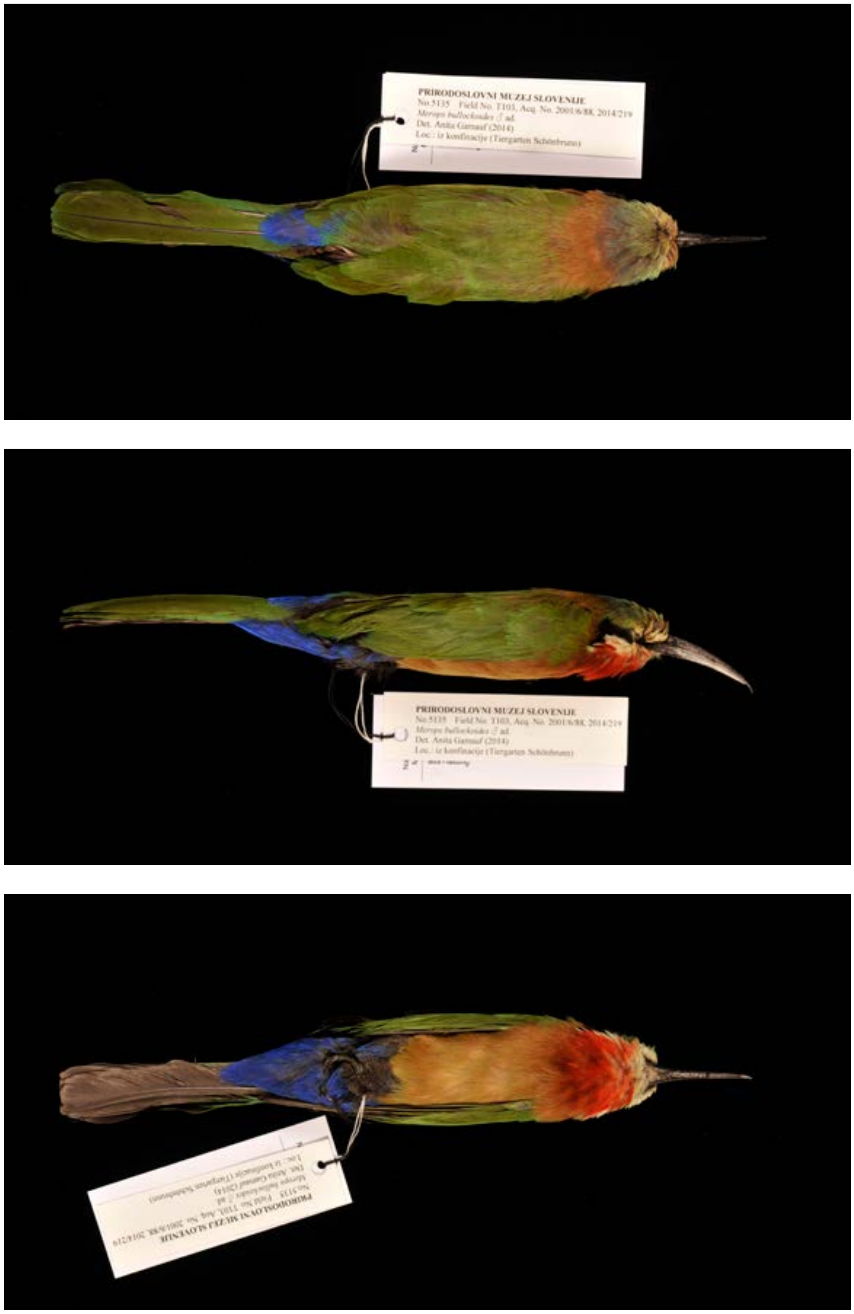
3.3.1. *Merops bullockoides* Smith, 1834 – beločeli čebelar / White-fronted Bee-eater

Avstrija / Austria

Iz ujetništva/from captivity (Wien-Tiergarten Schönbrunn): 1 skin (PMSL 5135), ad. ♂, 2.5.2001 (slika 36)

Tropska vrsta čebelarja, splošno razširjena v južnem delu afriške celine (Fry & Fry 1992). Študijski meh je v zbirko PMS prišel v sklopu sodelovanja z Naravoslovnim muzejem na Dunaju (Naturhistorisches Museum Wien; kustodinja dr. Anita Gamauf) leta 2014. Gre za primerek iz dunajskega živalskega vrta Schönbrunn, ki je poginil 2.5.2001 (slika 36). Meh so izdelali v preparatorski delavnici Naravoslovnega muzeja na Dunaju.

A tropical species of Bee-eater, widely distributed in the southern part of the African continent (Fry & Fry 1992). The study skin came to the PMS collection in collaboration with the Natural History Museum in Vienna (Naturhistorisches Museum Wien, curator Dr Anita Gamauf) in 2014. It is a specimen from the Schönbrunn Zoo in Vienna, which died on 2 May 2001 (Figure 36). The skin was prepared in the taxidermy workshop of the Natural History Museum in Vienna.



Slika 36: Študijski meh beločelega čebelarja *(Merops bullockoides)*, ad. ♂ , iz zbirke živali dunajskega živalskega vrta Schönbrunn. Primerek PMSL 5135, poginil v konfinaciji 2.5.2001. Foto: Ciril Mlinar Cic

Figure 36: A study skin of the White-fronted Bee-eater (*Merops bullockoides*), ad. ♂, from the collection of animals in the Schönbrunn Zoo in Vienna. PMSL 5135 specimen died in captivity on 2 May 2001. Photo: Ciril Mlinar Cic

3.3.2. *Merops apiaster* Linnaeus, 1758 – čebelar / European Bee-eater

Slovenija / Slovenia

Stanjevci (46°48'N, 16°11'E, 298 m asl): 1 skin (PMSL 1260), 1Y ♀, 20.11.1964, leg. & prep. Ernest Škerlak (slika/figure 45)

Mojstrana, Dovje (46°28'N, 13°56'E, 712 m asl): 1 skin (PMSL 3520), ad. ♂, 13.5.1993, leg. Zdenka Oven, prep. Vilijem Žgavec (slika/figure 42)

Novo mesto, Gorenje Sušice (45°43'N, 15°05'E, 198 m asl): 1 skin, 1 wing, skeleton (PMSL 5428), 1Y ♂, 28.9.2010, iz Zatočišča za živali prosto živečih vrst/from Refugee for wildlife species, prep. Vilijem Žgavec

*Šmihel pri Žužemberku (45°50'N, 14°52'E, 274 m asl): 1 mount (SIK 124), ♂, 1879, leg. R. Indof, prep. Ferdinand Schulz (opomba: darovano Gimnaziji Guštanj, danes Gimnazija Ravne na Koroškem/remark: donated to Guštanj Secondary School) (slika/figure 39)

*Šmihel pri Žužemberku (45°50'N, 14°52'E, 274 m asl): 1 mount (SIK 125), ♀, 1879, leg. R. Indof, prep. Ferdinand Schulz (slika/figure 39)

Žužemberk (45°49' N, 14°55' E, 223 m asl): 1 mount (PMSL 5028), ad. ♀, 1873, leg. & prep. Ferdinand Schulz (slika/figure 38)

*Žužemberk (45°49' N, 14°55' E, 223 m asl): 1 mount (SIK 127), 1873, leg. & prep. Ferdinand Schulz

Neznana lokacija/Unknown locality: 1 mount (PMSL 5773), ad., 1948, leg. & prep. Viktor Herfort (slika 40)

Neznana lokacija/Unknown locality: 1 mount (PMSL 5774), 1Y ♂, 1948, leg. & prep. Viktor Herfort (slika 40)

Neznana lokacija/Unknown locality: 1 skin (PMSL 6902), ad. ♂, pred/before 1935, leg. V. Dombruovski (slika/figure 41)

*Neznana lokacija/Unknown locality: 1 skin (KDOO 1116)

Hrvaška / Croatia

Smilčić (44°07' N, 15°30' E, 196 m asl): 1 skin (PMSL 2323), ad. ♀, V. 1988, leg. Janez Gregori, prep. Janez Dovič (slika/figure 43)

Smilčić (44°07' N, 15°30' E, 196 m asl): 1 skin (PMSL 2324), ad. ♂, V. 1988, leg. Janez Gregori, prep. Janez Dovič

Zadar, Nin (44°14'N, 15°11'E, 0 m asl): 1 os./ex., feathers (PMSL 6862), ad., 15.7.1988, leg. & prep. Dare Šere (slika/figure 46)

Zadar, Nin, Sabunike (44°15'N, 15°09'E, 19 m asl): 1 skin (PMSL 2870), ad. ♂, 12.7.1989, leg. Dare Šere, prep. Janez Dovič

Zadar, Ražanac (44°16'N, 15°20'E, 8 m asl): 1 skin, 1 wing, skeleton (PMSL 4888), ad. ♂, 22.5.2008, leg. Dare Šere, prep. Vilijem Žgavec

Madžarska / Hungary

Neznana lokacija/Unknown locality: 1 skin (PMSL 3519), 2Y ♀, IX. 2002, prep. Vilijem Žgavec

Srbija / Serbia

Deliblatska peščara, Dubovac, Stevanova ravnica (44°51' N, 21°12' E, 107 m asl): 1 nepreparirani primerek/unprepared specimen (AKPMSL 2016/212), 2016, leg. Miroslav Marković

Romunija / Romania

Neznana lokacija/Unknown locality: 1 skin (PMSL 3503), 1Y ♀, XII. 1996, carinski zaseg, prep. Vilijem Žgavec

Neznana lokacija/Unknown locality: 1 skin (PMSL 3504), 1Y ♀, XII. 1996, carinski zaseg, prep. Vilijem Žgavec
Neznana lokacija/Unknown locality: 1 skin (PMSL 3505), 1Y ♀, XII. 1996, carinski zaseg, prep. Vilijem Žgavec
Neznana lokacija/Unknown locality: 1 skin (PMSL 3506), 1Y ♀, XII. 1996, carinski zaseg, prep. Vilijem Žgavec
Neznana lokacija/Unknown locality: 1 skin (PMSL 3507), 1Y ♀, XII. 1996, carinski zaseg, prep. Vilijem Žgavec
Neznana lokacija/Unknown locality: 1 skin (PMSL 3508), ad. ♀, XII. 1996, carinski zaseg, prep. Vilijem Žgavec
Neznana lokacija/Unknown locality: 1 skin (PMSL 3509), 1Y ♀, XII. 1996, carinski zaseg, prep. Vilijem Žgavec
Neznana lokacija/Unknown locality: 1 skin (PMSL 3510), 2Y ♀, XII. 1996, carinski zaseg, prep. Vilijem Žgavec (slika/figure 44)
Neznana lokacija/Unknown locality: 1 skin (PMSL 3511), 1Y ♀, XII. 1996, carinski zaseg, prep. Vilijem Žgavec

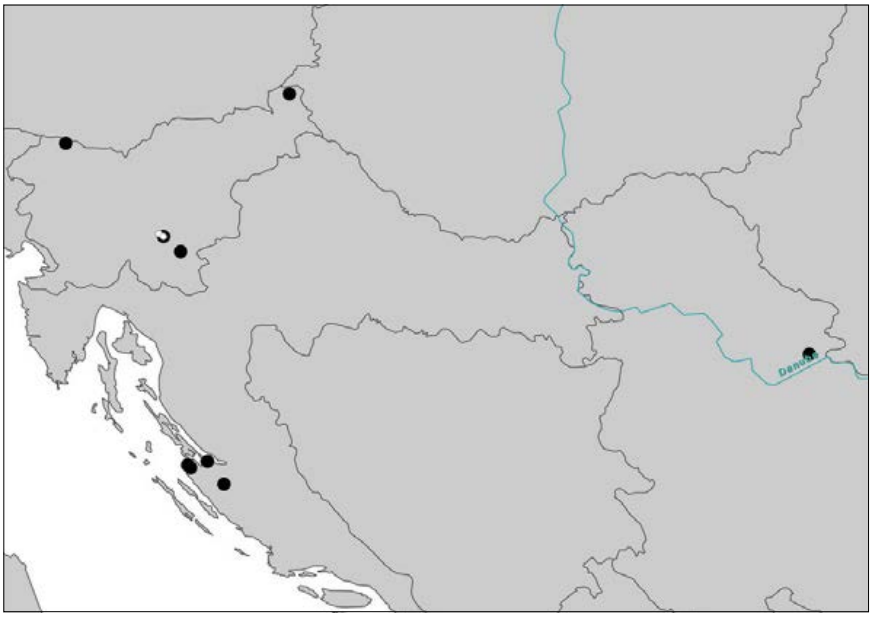
Sudan / Sudan
*Red Sea district (19°N; 35°E): 1 mummy (TKSB 8), 9.9.1960, leg. & prep. Savo Brelih

Razširjenost čebelarja obsega poleg južne Evrope še severno Afriko in centralno Azijo, del populacije pa gnezdi tudi v južni Afriki, kjer je tudi pretežni del prezimovališč severnih ptic (del Hoyo s sod. 2001). Populacija narašča tako v Evropi kot Sloveniji (BirdLife International 2004). V Sloveniji so vrsto nekdaj obravnavali kot redkega gosta, danes pa gre za redno gnezdilko (Geister 1995). V zbirki PMS so primerki zbrani na območju Slovenije in Balkanskega polotoka (slika 37). Izjema je primerek ptice, ujete na selitvi v Sudanu, ki ga je zbral Savo Brelih in se v zbirki ni ohranil. Vsi starejši preparati izvirajo z Dolenjske, vendar se je do danes ohranil le primerek iz Žužemberka iz leta 1873 (slika 38). Vsi drugi primerki iz 19. stoletja pa so propadli (po pripisih v SIK so bili iz zbirke izločeni med letoma 1946 in 1950). Ohranjene so le fotografije iz stare razstavne postavitve (slika 39). V SIK so bili iz okolice Žužemberka vneseni štirje primerki, od katerih sta bila dva pridobljena v letu 1873 in dva v letu 1879. Domnevamo, da jih je zbral in prepariral muzejski preparator Ferdinand Schulz. Schulz v svojih kasnejših zapisih o čebelarju omenja le primerka iz leta 1879, primerkov iz leta 1873 pa ne (Schulz 1892, 1893). Kasneje

In addition to southern Europe, the presence of European Bee-eater extends to North Africa and Central Asia, and a portion of the population also inhabits southern Africa, where the majority of the northern birds overwinter (del Hoyo et al. 2001). The population is increasing both in Europe and Slovenia (BirdLife International 2004). In Slovenia, the species was once considered a rare vagrant, but is today a regular breeder (Geister 1995). In the PMS collection, specimens were collected in the territory of Slovenia and the Balkan Peninsula (Figure 37). The exception is the specimen of a bird caught on the move to Sudan, which was collected by Savo Brelih, but was not preserved in the collection. All older specimens originate from Dolenjska, but until now only a specimen from Žužemberk from 1873 has been preserved (Figure 38). All other specimens from the 19th century were lost (according to the subscriptions in the SIK they were removed from the collection between 1946 and 1950). Only photographs from the old museum exhibition have survived(Figure 39). In SIK, four specimens were recorded from the surroundings of Žužemberk, two of which were acquired in 1873 and two in 1879. We assume that they were collected and prepared by the museum

je Kos (1925) v svojem pregledu podatkov navedel Schulzevo ustno poročilo po spominu, da sta bila dva čebelarja, dotlej brez podatkov, poslana v muzej leta 1873 iz Žužemberka, kar danes upoštevamo kot relevantno provenienco obeh preparatov, od katerih je ohranjen le eden. V zbirki je tudi nekaj primerkov brez popolnih podatkov o najdbi, med drugim tudi primerka iz leta 1948, ki ju je izdelal preparator Viktor Herfort (slika 40), ter več primerkov iz Romunije in Madžarske, zaseženih v carinskih postopkih na meji. V zbirki so ohranjene ptice različnih starosti obeh spolov (slike 41, 42, 43, 44, 45). Vključena so tudi repna peresa iz primerjalne ptilološke zbirke, ki jo je zbral Dare Šere (slika 46).

taxidermist Ferdinand Schulz. Schulz referred to only the specimen from the year 1879 in his later notes on the Bee-eaters, and not the specimens from 1873 (Schulz 1892, 1893). Later, in his review of Bee-eater data in Slovenia, Kos (1925) mentioned Schulz's personal communication that the two Bee-eaters, stored without data, were sent to the museum in 1873 from Žužemberk, which is now considered as a relevant origin of both mounts, only one of which has been preserved. The collection also contains some specimens without complete information, including a 1948 specimen prepared by Viktor Herfort (Figure 40) and several specimens from Romania and Hungary seized by the customs on the state border. The collection contains birds of different ages of both sexes (Figures 41, 42, 43, 44, 45). Tail feathers from the comparative feather collection collected by Dare Šere (Figure 46) are also included in the museum collection.



Slika 37: Geografski izvor primerkov čebelarja *(Merops apiaster)* v zbirki PMS. Velike pike nakazujejo v zbirki ohranjene primerke, majhne pike pa propadle primerke. Bele pike so primerki, pridobljeni pred letom 1950, črne pike pa primerki, pridobljeni po letu 1950.

Figure 37: Geographical origin of the European Bee-eaters (*Merops apiaster*) in the PMS collection. Large dots indicate a preserved specimen in the collection, and small dots lost specimens. The white spots are specimens obtained before 1950, and black specks specimens obtained after 1950.

Slika 38: Dermoplastični preparat čebelarja *(Merops apiaster)*, ad. ♀ , iz Žužemberka, ki ga je zbral in prepariral Ferdinand Schulz. Primerek PMSL 5028, zbran leta 1873. Foto: Ciril Mlinar Cic

Figure 38: Mount of the European Bee-eater (*Merops apiaster*), ad. ♀, from Žužemberk, collected and prepared by Ferdinand Schulz. Specimen PMSL 5028 was collected in 1873. Photo: Ciril Mlinar Cic

Slika 39: Fotografija preparata čebelarja *(Merops apiaster)* št. 72 iz *Vodnika po zbirkah Narodnega muzeja v Ljubljani* iz leta 1933 (Kos 1933). Primerek na sliki je najverjetneje ptica iz Šmihela pri Žužemberku iz leta 1879 (SIK 124 ali 125), ki je bila iz zbirke izločena leta 1950.

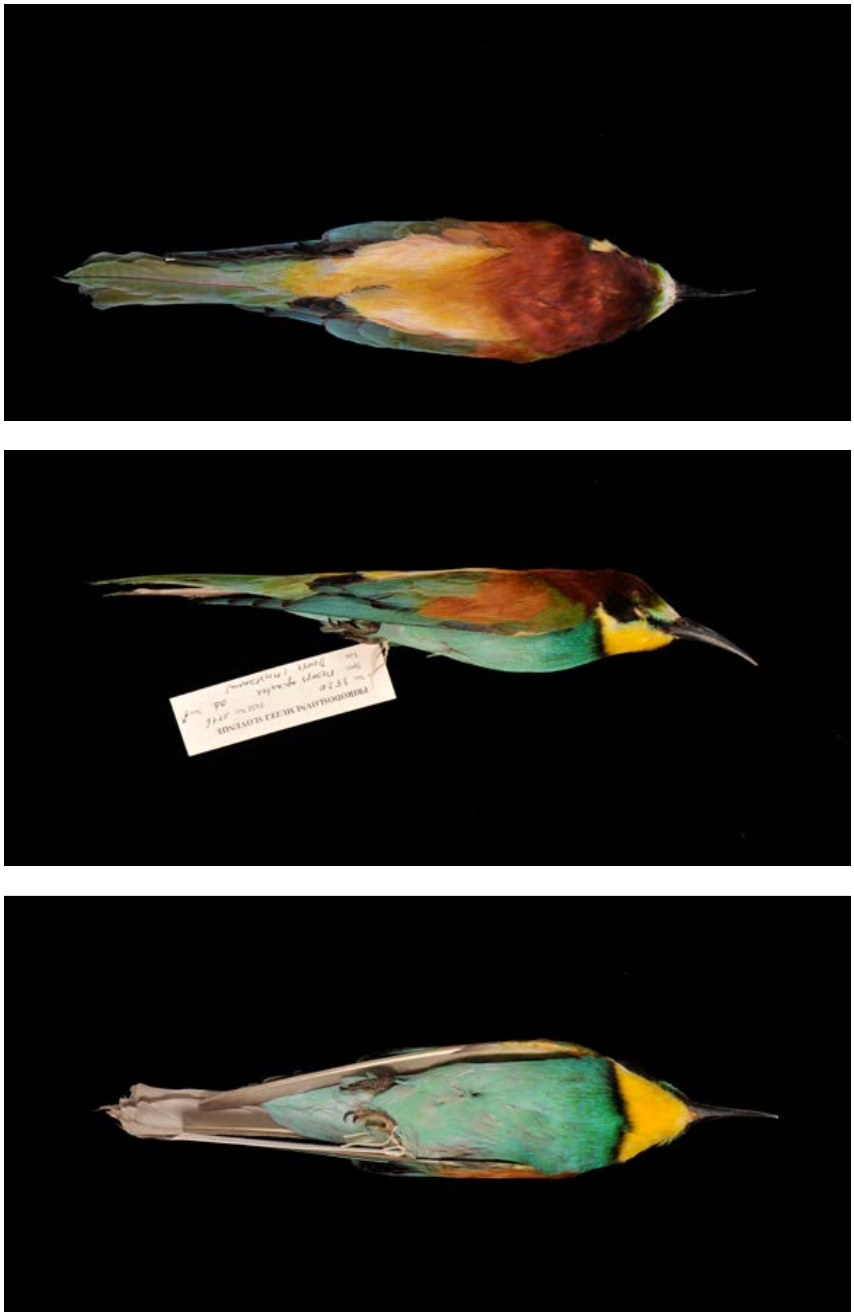
Figure 39: Photo of the European Bee-eater (*Merops apiaster*) mount No. 72 from *Guide through the collections of the National Museum in Ljubljana* from 1933 (Kos 1933). The specimen in the picture is most likely the bird from Šmihel near Žužemberk from 1879 (SIK 124 or 125), which was removed from the collection in 1950.

Slika 40: Dermoplastična preparata ad. (levo – PMSL 5773) in 1Y (desno - PMSL 5774) čebelarja *(Merops apiaster)*, ki ju je zbral in prepariral Viktor Herfort leta 1948. Preparata sta del trenutne razstavne postavitve PMS. Foto: Ciril Mlinar Cic

Figure 40: Mounts of ad. (left - PMSL 5773) and 1Y (right - PMSL 5774) European Bee-eaters (*Merops apiaster*), collected and prepared by Viktor Herfort in 1948. The mounts are part of the current museum exhibition in PMS. Photo: Ciril Mlinar Cic

Slika 41: Študijski meh čebelarja *(Merops apiaster)*, ad. ♂ , ki ga je zbral V. Dombruovski. Primerek PMSL 6902, zbran pred letom 1935. Foto: Ciril Mlinar Cic

Figure 41: A study skin of the European Bee-eater (*Merops apiaster*), ad. ♂, which was collected by V. Dombruovski. PMSL 6902 specimen was collected before 1935 Photo: Ciril Mlinar Cic

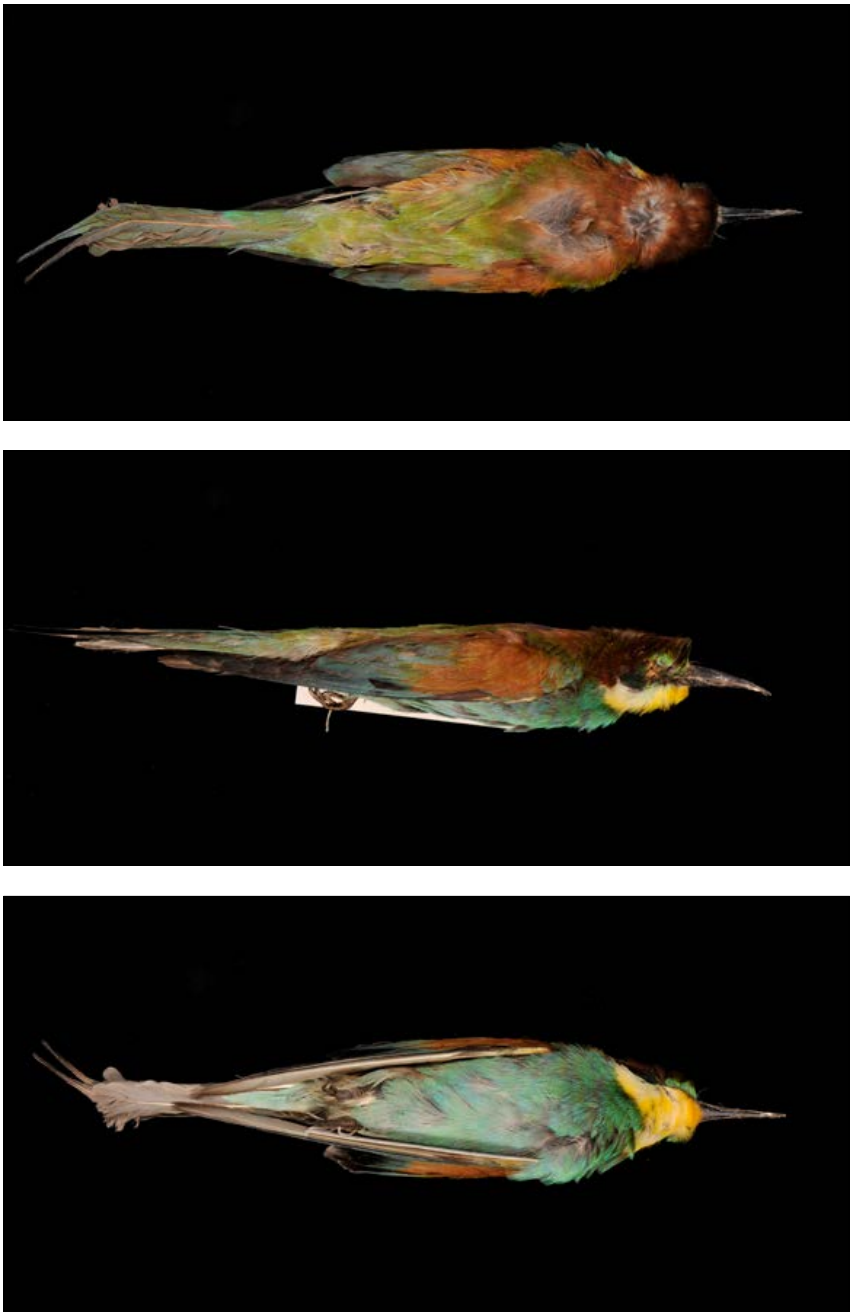


Slika 42: Študijski meh čebelarja *(Merops apiaster)*, ad. ♂ , iz Dovjega pri Mojstrani, ki ga je našla Zdenka Oven in prepariral Vilijem Žgavec. Primerek PMSL 3520, zbran 13.5.1993. Foto: Ciril Mlinar Cic

Figure 42: A study skin of the European Bee-eater (*Merops apiaster*), ad. ♂, from Dovje near Mojstrana, found by Zdenka Oven and prepared by Vilijem Žgavec. Specimen PMSL 3520 was collected on 13 May 1993. Photo: Ciril Mlinar Cic

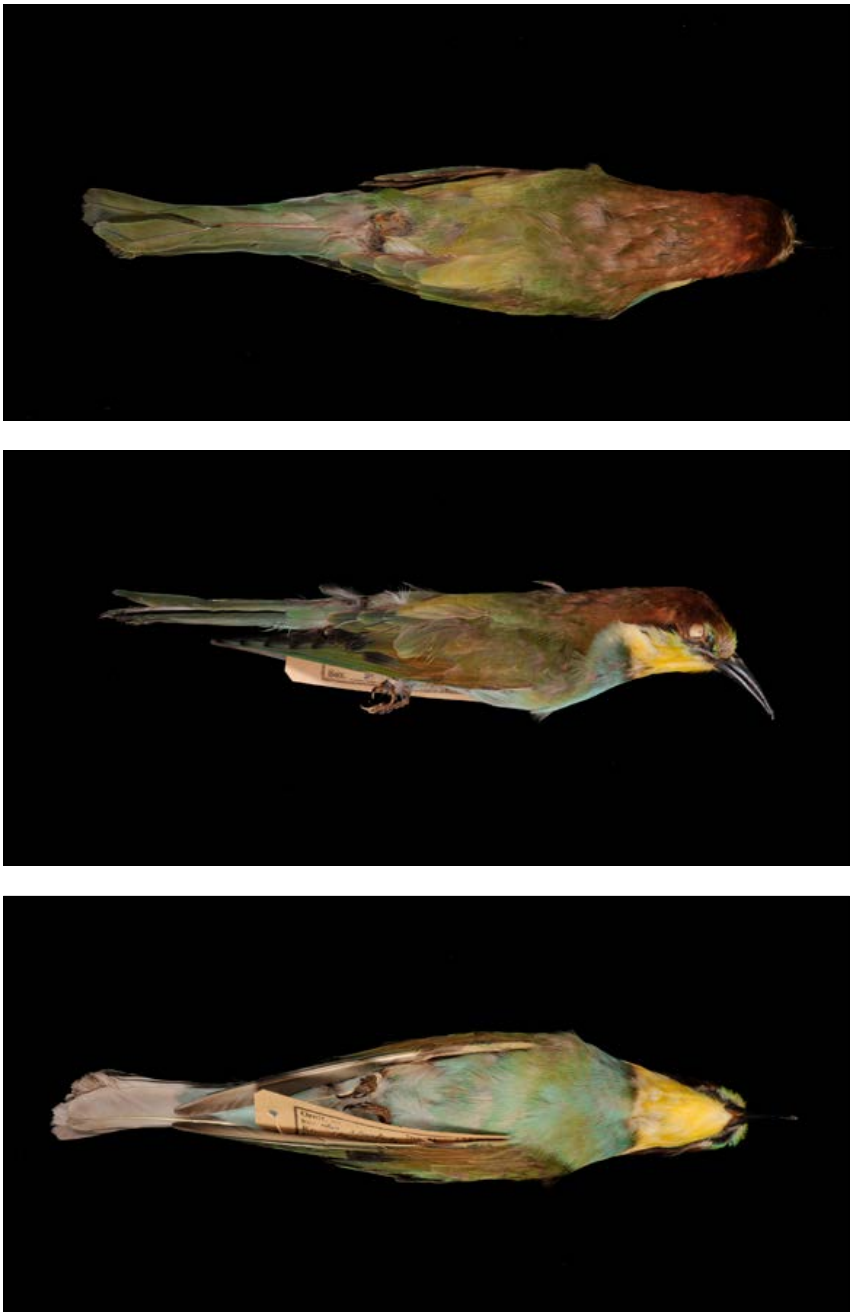
Slika 43: Študijski meh čebelarja *(Merops apiaster)*, ad. ♀ , iz Smilčićev, ki ga je zbral Janez Gregori in prepariral Janez Dovič. Primerek PMSL 2323, zbran maja 1988. Foto: Ciril Mlinar Cic

Figure 43: A study skin of the European Bee-eater (*Merops apiaster*), ad. ♀, from Smilčići, collected by Janez Gregori and prepared by Janez Dovič. Specimen PMSL 2323 was collected in May 1988. Photo: Ciril Mlinar Cic



Slika 44: Študijski meh čebelarja *(Merops apiaster)*, 2Y ♀ , iz Romunije, ki jo je zasegla obmejna policija in prepariral Vilijem Žgavec. Primerek PMSL 3510, zbran decembra 1996. Foto: Ciril Mlinar Cic

Figure 44: A study skin of the European Bee-eater (*Merops apiaster*), 2Y ♀, from Romania, seized by the border police and prepared by Vilijem Žgavec. Specimen PMSL 3510 was collected in December 1996. Photo: Ciril Mlinar Cic



Slika 45: Študijski meh čebelarja *(Merops apiaster)*, 1Y ♀ , iz Stanjevcev, ki ga je zbral in prepariral Ernest Škerlak. Primerek PMSL 1260, zbran 20.11.1964. Foto: Ciril Mlinar Cic

Figure 45: A study skin of the European Bee-eater (*Merops apiaster*), 1Y ♀, from Stanjevci, collected and prepared by Ernest Škerlak. Specimen PMSL 1260 was collected on 20 November 1964. Photo: Ciril Mlinar Cic

Slika 46: Peresi čebelarja *(Merops apiaster)*, ad., iz Nina pri Zadru, ki jih je zbral in prepariral Dare Šere. Primerek PMSL 6862, zbran 15.7.1988. Foto: Ciril Mlinar Cic

Figure 46: Feathers of the European Bee-eater (*Merops apiaster*), ad., from Nin near Zadar, collected and prepared by Dare Šere. Specimen PMSL 6862 was collected on 15 July 1988. Photo: Ciril Mlinar Cic

3.3.4. *Merops pusillus cyanostictus* (Cabanis, 1869) – mali čebelar / Little Bee-eater

Etiopija / Ethiopia

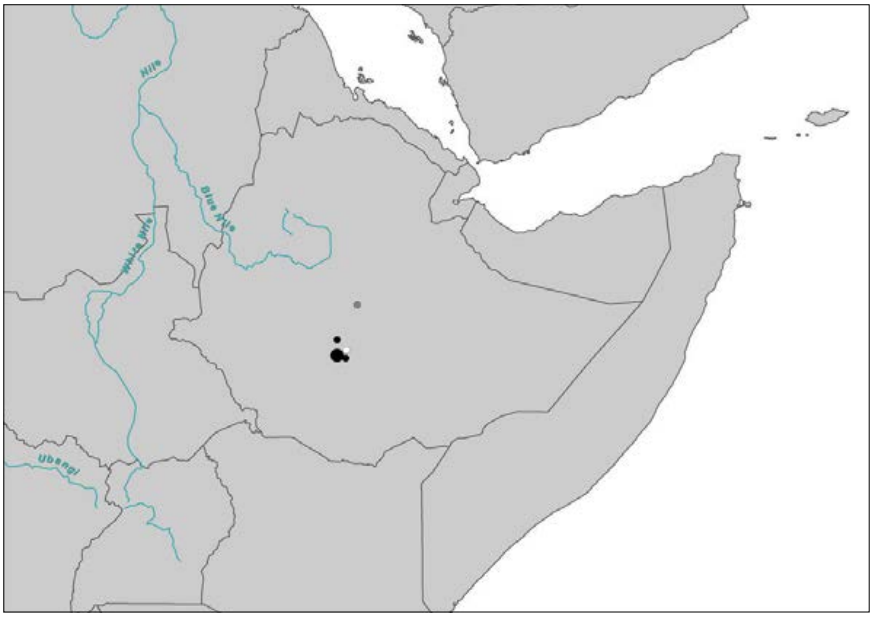
*Koka (8°25'N, 39°07'E, 1590 m asl): 1 mummy (TKSB 300), 13.12.1960, leg. & prep. Savo Brelih

*Koka (8°25'N, 39°07'E, 1590 m asl): 1 mummy (TKSB 305), ♂, 15.12.1960, leg. & prep. Savo Brelih

*Koka (8°25'N, 39°07'E, 1590 m asl): 1 mummy (TKSB 306), ♀, 15.12.1960, leg. & prep. Savo Brelih

Splošno razširjena vrsta podsaharske Afrike, ki v Etiopiji dosega severovzhodno mejo razširjenosti (Fry & Fry 1992). Muzej je v preteklosti pridobil najmanj dva mumificirana preparata iz Etiopije (slika 47), ki sta bila prikazana na razstavi leta 1961 (slika 7), vendar se do danes ni ohranil noben od njiju.

A widespread species of Sub-Saharan Africa, reaching Ethiopia in the northeastern part of the range (Fry & Fry 1992). In the past, the museum has acquired at least two mummified specimens from Ethiopia (Figure 47), which were exhibited in 1961 (Figure 7), but none of them has been preserved to date.



Slika 47: Geografski izvor primerkov malega *(Merops pusillus*; siva pika), močvirskega *(Merops variegatus*; bela pika) in rdečega čebelarja *(Merops nubicus*; *črna* pika) v zbirki PMS. Velike pike nakazujejo v zbirki ohranjene primerke, majhne pike pa propadle primerke.

Figure 47: Geographical origin of specimens of the Little Bee-eater (*Merops pusillus*; grey dot), the Blue-breasted Bee-eater (*Merops variegatus*; white dot) and the Northern Carmine Bee-eater (*Merops nubicus*; black dot) in the PMS collection. Large dots indicate a preserved specimen in the collection, small dots lost specimens.

3.3.5. *Merops variegatus lafresnayii* Guérin-Méneville, 1843 – močvirski čebelar / Blue-breasted Bee-eater

Etiopija / Ethiopia

*Awasa (7°11' N, 38°33' E, 1841 m asl): 1 mummy (TKSB 188), 2.11.1960, leg. & prep. Savo Brelih

*Awasa (7°11' N, 38°33' E, 1841 m asl): 1 mummy (TKSB 213), 10.11.1960, leg. & prep. Savo Brelih

*Awasa (7°11' N, 38°33' E, 1841 m asl): 1 mummy (TKSB 214), 10.11.1960, leg. & prep. Savo Brelih

Vrsta močvirij, travišč in gozdnih obronkov pretežno tropske Afrike z endemično podvrsto *M. v. lafresnayii* v etiopskem višavju (Fry & Fry 1992), kot jo je v svojih terenskih zapiskih določil tudi Savo Brelih (slika 47). Sodeč po razstavljenih primerkih na fotografiji razstave v letu 1961 (slika 7) sklepamo, da močvirski čebelarji verjetno niso prispeli v muzej in so propadli že med transportom iz Etiopije v Slovenijo.

The species of marshes, grasslands and forest slopes of predominantly tropical Africa with an endemic subspecies of *M. v. lafresnayii* in the Ethiopian Highlands (Fry & Fry 1992), as also identified by Savo Brelih in his field notes (Figure 47). According to the exhibited specimens in the photograph of the exhibition in 1961 (Figure 7), we conclude that Blue-breasted Bee-eaters probably did not arrive to the museum and had already been lost during their transportation from Ethiopia to Slovenia.

3.3.6. *Merops nubicus* Gmelin, 1788 – rdeči čebelar / Northern Carmine Bee-eater

Etiopija / Ethiopia

Awasa (7°11' N, 38°33' E, 1841 m asl): 1 skull (PMSL 4690), 21.10.1960, leg. & prep. Savo Brelih (slika 48)

*Awasa (7°11' N, 38°33' E, 1841 m asl): 1 mummy (TKSB 100), 15.10.1960, leg. & prep. Savo Brelih

*Awasa (7°11' N, 38°33' E, 1841 m asl): 1 mummy (TKSB 101), 16.10.1960, leg. & prep. Savo Brelih

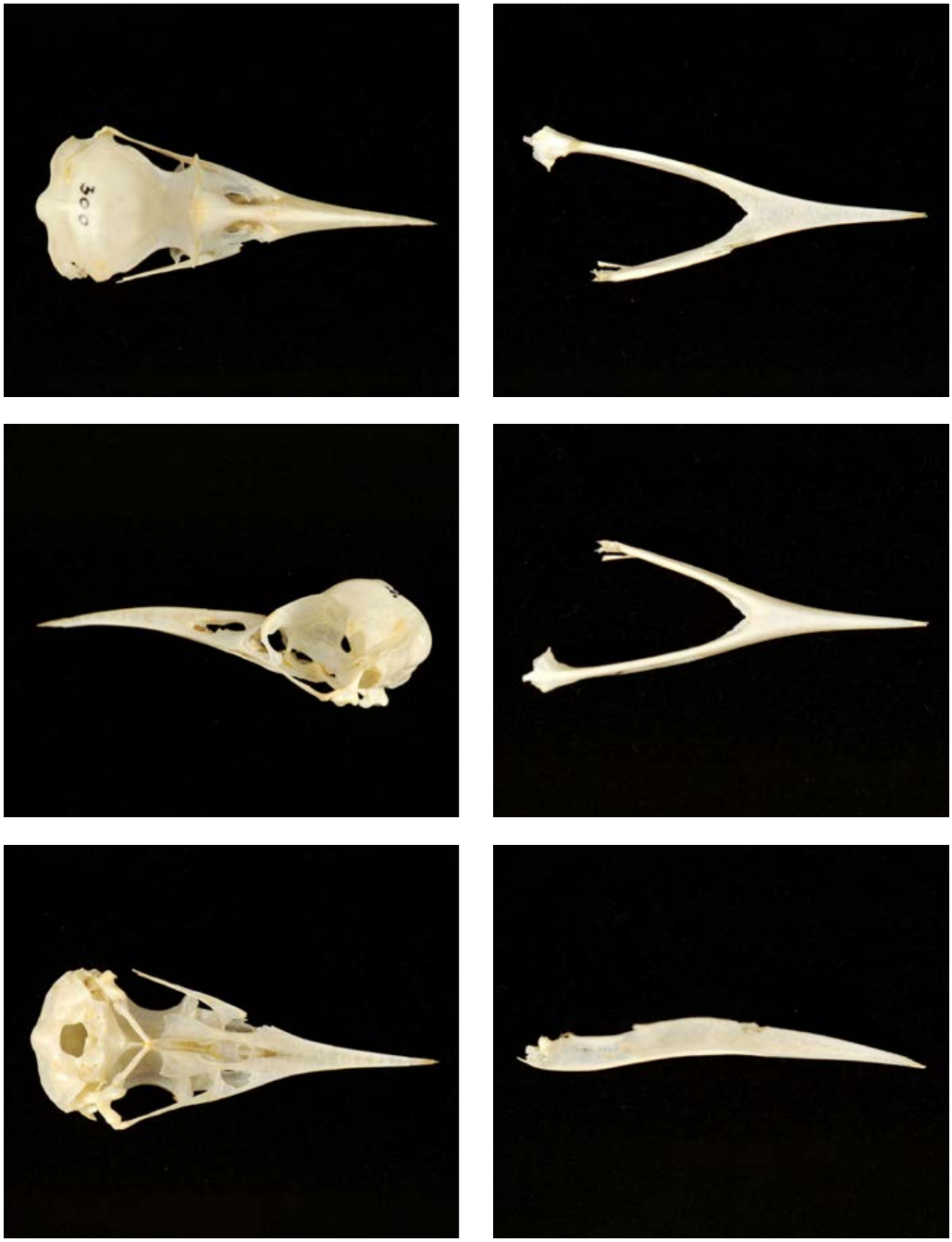
*Awasa (7°11' N, 38°33' E, 1841 m asl): 1 mummy (TKSB 102), 16.10.1960, leg. & prep. Savo Brelih

*Awasa (7°11' N, 38°33' E, 1841 m asl): 1 mummy (TKSB 127), 21.10.1960, leg. & prep. Savo Brelih

*Shashamane (7°12' N, 38°36' E, 1920 m asl): 1 mummy (TKSB 260), 20.11.1960, leg. & prep. Savo Brelih

Rdeči čebelar je monotipska vrsta severnega tropskega pasu Afrike. Južna tropska vrsta *Merops nubicoides*, nekoč obravnavana kot podvrsta rdečega čebelarja, ima status samostojne vrste (Gill & Donsker 2016). Savo Brelih je na svoji etiopski ekspediciji v letu 1960 zbral šest primerkov. Vsaj dva primerka sta bila kot mumijska preparata (slika 47) prikazana na muzejski razstavi leta 1961, eden z razprtimi perutmi (slika 7). V zbirki PMS se je do danes ohranila le ena lobanja (slika 48).

The Northern Carmine Bee-eater is a monotypic species of the northern tropical belt of Africa. The southern tropical species *Merops nubicoides*, once considered a subspecies of the Northern Carmine Bee-eater, has a status of an independent species (Gill & Donsker 2016). In 1960, Savo Brelih collected six specimens in his Ethiopian expedition. At least two specimens were exhibited at the museum exhibition in 1961 as the mummies (Figure 47). One specimen was displayed with stretched wings (Figure 7). In the PMS collection, only one skull has survived to date (Figure 48)



Slika 48: Lobanja rdečega čebelarja *(Merops nubicus)*, zbrana 21.10.1960 ob jezeru Awasa v Etiopiji. Zbral in prepariral jo je Savo Brelih (PMSL 4690). Foto: Ciril Mlinar Cic

Figure 48: A skull of the Northern Carmine Bee-eater (*Merops nubicus*) collected on 21 October 1960 near Lake Awasa in Ethiopia. Collected and prepared by Savo Brelih (PMSL 4690). Photo: Ciril Mlinar Cic

4. Zahvala

PMS vse od svoje ustanovitve leta 1944 nima urejenih samostojnih in po mednarodnih muzejskih standardih urejenih depojskih prostorov za shranjevanje občutljivega naravoslovnega gradiva, ki naj bi bili osnova za shranjevanje zbirk državnega pomena (Živković 2015). Zato se ob tej priložnosti zahvaljujeva vsem predhodnim kustosom in sodelavcem muzeja, da jim je v takšnih razmerah uspelo ohraniti toliko gradiva, ki ga predstavljava v katalogu. Posebej se zahvaljujeva tudi pokojnemu Savu Brelihu, saj so se podrobnosti o etiopski odpravi med leti 1960-61, o katerih je pripovedoval, izkazale kot ključne pri interpretaciji etiopskega gradiva in opredeljevanju njegove provenience. Zahvaljujeva se tudi Janezu Gregoriju, ki je pomagal pri razkrivanju gradiva v osteološki zbirki, dr. Tomiju Trilarju za posredovanje dragocene terenske knjige Sava Breliha iz etiopske odprave, s katero smo lahko reinventarizirali ohranjeni etiopski material ter dobili vpogled v celotno ornitološko gradivo, zbrano na tej odpravi, ter prof. dr. Borisu Kryštufku za posredovanje fotografij dioram stare razstavne postavitve muzejske zbirke pred letom 1950, ki so bile ključne pri opredeljevanju zlasti propadlega gradiva in gradiva z izgubljeno provenienco. Zahvaljujeva se tudi Cirilu Mlinarju Cicu za fotografije eksponatov in Andreju Kapli za izdelavo odličnih zemljevidov.

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Since its foundation in 1944, PMS does not keep, according to the international museum standards, suitable organized depots for the storage of sensitive natural materials, which should be the basis for the storage of nationally important collections (Živković 2015). Therefore, on this occasion, we would like to thank all previous curators and museum associates for preserving in such conditions the material that we now present in the catalogue. We are especially grateful to the late Savo Brelih, since the details of the Ethiopian expedition between 1960 and 1961, about which he wrote, proved to be crucial in the interpretation of Ethiopian material. We also thank Janez Gregori, who helped to reveal the material in the osteological collection, Dr Tomi Trilar for the transfer of the valuable Field Book of Savo Brelih from the Ethiopian expedition, with which we were able to recatalogue the preserved Ethiopian material and to get an insight into the entire ornithological material collected during this expedition, and to Prof Dr Boris Kryštufek for the distribution of photographs of dioramas of the old museum exhibition before 1950, which were crucial in defining the lost material and specimens with lost labels. We also thank Ciril Mlinar Cic for photographs of the specimens and to Andrej Kapla for making excellent maps.

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