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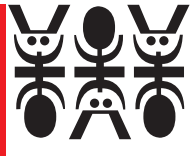

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Silvia Battistella* - Lucia Bello** - Costanza Uboni***

Dragonflies (Insecta: Odonata) of two glacial lakes and new data for *Trithemis annulata* in the north-eastern part of Italy

Abstract: A survey of Odonata was carried out in the northeastern part of Italy, in the Friuli Venezia Giulia region. Sampling sites included two glacial lakes of ancient origin, Ragogna Lake and Cornino Lake. Aiming for a general overview of the species composition, sampling effort was conducted between May 2020 and April 2021. A total of 30 species of Odonata were collected, belonging to 17 genera and 8 families. The most representative family was Aeshnidae (31%), while *Calopterygidae* and *Libellulidae* each comprise 15%, and *Lestidae*, *Coenagrionidae*, *Platycnemididae*, *Cordulegastridae*, and *Corduliidae* each comprise 8% of the total number of species. The most important result was the finding of 16 individuals of *Trithemis annulata*, a newly recorded species for Friuli Venezia Giulia and for the whole Northeast Italy, representing one of the most northeastern data for the species worldwide.

Riassunto: *Libellule (Insecta: Odonata) di due laghi glaciali e nuovi dati su* Trithemis annulata *nella parte nord-orientale dell'Italia.*
Da maggio 2020 ad aprile 2021 è stato effettuato uno studio volto a delineare l'odonatofauna di due laghi glaciali, il Lago Ragogna e il Lago Cornino, situati nell'Italia nord-orientale, nella regione Friuli Venezia Giulia. Sono state raccolte 30 specie di Odonati appartenenti a 17 generi e 8 famiglie. La famiglia più rappresentativa è quella degli Aeshnidae (31%), mentre *Calopterygidae* e *Libellulidae* costituiscono ciascuna il 15%, mentre *Lestidae*, *Coenagrionidae*, *Platycnemididae*, *Cordulegastridae*, *Corduliidae* costituiscono ciascuna l'8% del numero totale di specie. Il risultato più importante è stato il ritrovamento di 16 individui di *Trithemis annulata*, una specie di nuova segnalazione per il Friuli Venezia Giulia e per l'intero Nord-Est d'Italia, che rappresenta uno dei dati più nord-orientali per la specie a livello mondiale.

Key words: climate change, ecology, global warming, species richness, violet dropwing.

Introduction

Friuli Venezia Giulia, characterized by a sub-oceanic climate, is situated in the northeastern part of the Italian peninsula, reflecting a high biological, ecological, and landscape richness. In fact, this region can be considered as a biogeographical crossroads that influenced the wide postglacial migratory currents: this condition reflects in a great species richness that must be also correlated with a strong spatial heterogeneity of many ecological factors, such as the presence of endemism's and tertiary relicts and with the use of the territory that led to the creation and maintenance of numerous secondary habitats. Moreover, the presence of the coastal zone represents the maximum northern expansion of the Adriatic Sea, allowing many Mediterranean species to reach the highest latitude of their distribution range. On the other hand, the proximity of the Alps, located just 80 km from the sea, permits the penetration of Middle-European and typically Alpine components in the region. In addition, in this area, central-western European, eastern European, and Balkan elements occur (Dolce & Lapini, 1987; AA.VV., 2009). In conclusion, in Friuli Venezia Giulia, Illyrian, Central European, Continental, Arctic, Alpine, Endemic and Mediterranean contingents converge. In this context, the number of habitats protected under the 'Habitat' Directive is currently 70, and the number of community interest species (Annexes II and IV 'Habitat' Directive) is equal to 92 for the animal kingdom and 22 for the vegetal one. The number of bird species reported in the region referred to Annex I of Directive 79/409/EEC is 120 (De Colle *et al*., 2012).

In Friuli Venezia Giulia, habitats' heterogeneity also reflects a very interesting odonatofauna, with 64 species detected, representing 67% of the Italian dragonflies (Riservato *et al.*, 2014; Zandigiacomo *et al.*, 2020). Among the species, many of them are noteworthy: *Cordulegaster heros* Theischinger, 1979*, Lindenia tetraphylla* (Vander Linden, 1825)*, Leucorrhinia pectoralis* (Charpentier, 1825), *Coenagrion ornatum*

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(Selys, 1850), *Selysiothemis nigra* (Vander Linden, 1825), *Nehalennia speciosa* (Charpentier, 1840), *Hemianax ephippiger* (Burmeister, 1839). The first four species are listed in the Annexes of the 'Habitat' Directive. *Lindenia tetraphylla*, that in Italy has only a few fragmented populations in Tuscany, Campania, and Sardinia and in the Balkans, has disjunctive populations, was found in the coastal part of the region (Uboni *et al.*, 2020); *Cordulegaster heros* is an endemic species to south-east Europe (Uboni *et al.*, 2007; Chiandetti *et al.*, 2015) that is rapidly expanding its range across the region; *Leucorrhinia pectoralis* is an euro-siberian species very rare in Italy, with populations only in Alto Adige and in Friuli Venezia Giulia (Festi, 2012; Zandigiacomo *et al.*, 2020); *Coenagrion ornatum* is a mainly south-easter Europe species (Dijkstra & Lewington, 2006) present in the whole Italy with only few populations (Mastropasqua & Liuzzi, 2016), it was found in the southern part of the region (Zandigiacomo *et al.*, 2020); *Hemianax ephippiger* is an obligate afro-tropical migrant species that breeds in the coastal part of the Region (Uboni *et al.*, 2018); *Selysiothemis nigra* is an eremic species and its presence in Friuli Venezia Giulia represents the northernmost evidence of breeding in Europe and even worldwide (Uboni *et al.*, 2015); *Nehalennia speciosa* is a Palearctic species whose population in the region is one of the only two present in whole Italy (Chiandetti *et al.*, 2014; Aguzzi *et al.*, 2017).

Study area

This study was conducted in the upper plain of Friuli Venezia Giulia (North-east Italy) in two lakes, Ragogna Lake (46°10'3'' N, 13°0'8'' E, altitude 188 m a.s.l.) and Cornino Lake (46°13'45'' N, 13°1'27'' E, altitude 161 m a.s.l.) (Fig. 1). The two lakes were formed by the retreat of the Glacier of the Tagliamento River nearly 16.000 years ago.

Ragogna Lake (Fig. 2) is a Special Area of Conservation belonging to the Natura 2000 European Network, and it represents the last intramorainic lake in Friuli Venezia Giulia; it originated when the Glacier of

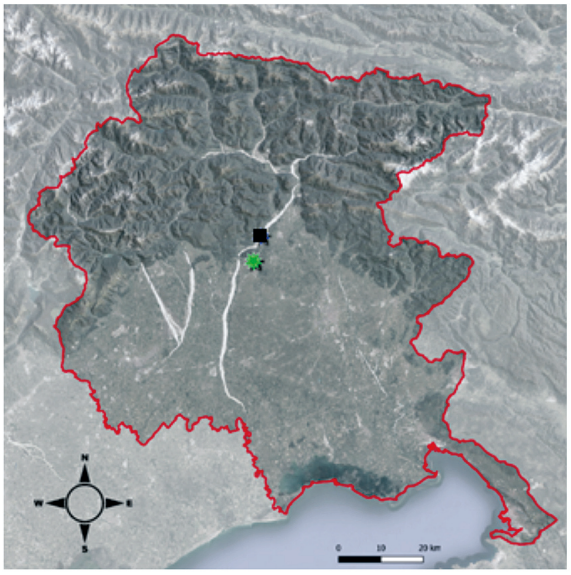

Fig. 1. Friuli Venezia Giulia region. Ragogna Lake (star) and Cornino Lake (square).

Fig. 2. Ragogna Lake (left) and Cornino Lake (right).

the Tagliamento River was retreating, resulting in several belts of morainic hills, currently visible (Monegato, 2006). Ragogna Lake is characterized by temperate thermic stratification (Reisenhofer *et al.*, 1985), and its waters can be considered eutrophic, probably due to chemicals and fertilizers used in the nearby cultivated areas (Oriolo *et al.*, 2013). This site is surrounded by cultivated fields, grasslands, poplar woods, and wooden areas, together with the presence of *Salix alba* L., 1753, *Populus nigra* L., 1753, *Alnus glutinosa* (L.) Gaertn, 1790, and *Fraxinus excelsior* L. as the dominant species. Lake's edges are covered by *Phragmites australis* Cav. reeds and *Salix cinerea* L., 1753 formations, *Potamogeton* sp. L., 1753, *Nymphaea alba* L., 1753, *Nuphar luteum* (L.) Sm., 1809, *Najas marina* L., 1753 and *Trapa natans* L., 1753 (the only site for the species in the whole Friuli Venezia Giulia) (Oriolo *et al.* 2013). Considering the fauna, many species have been reported for the site: *e.g.*, *Esox lucius* L., 1758, *Tinca tinca* L., 1758, *Cyprinus carpio* L.,1758, *Phalacrocorax carbo* L., 1758, *Fulica atra* L., 1758, *Alcedo atthis* L., 1758, *Ardea cinerea* L., 1758, *Rana latastei* (Boulenger, 1879), *Hyla intermedia* (Boulenger, 1882), *Natrix natrix* L.,1758, *Micromys minutus* (Pallas, 1771), *Mustela putorius* L.,1758, *Muscardinus avellinarius* L.,1758, (Oriolo *et al.*, 2013), *Austropotamobius pallipes* (Lereboullet, 1858), *Astacus astacus* L.,1758, bivalve molluscs of genus *Unio* (AA.VV., 2020).

The Cornino Lake (Fig. 2) is situated in the Regional Natural Reserve of Cornino Lake (AA.VV., 2008); it is located at Monte Prât calcareous karstic Upland's feet, whose sides collapsed after the retreat of the Glacier of the Tagliamento River. One of these landslides fell over the glacier's front and, after ice melting, gave rise to a small endorheic depression closed on the sides by a detrital ridge, where today lies the Cornino Lake (Genero *et al.*, 2000). It is a homeothermic and oligotrophic lake (8-12°C all year round), characterized by the lack of phytoplankton and zooplankton. It is primarily supplied by underground waters coming from the karst circulation of Monte Prât Upland and from the aquifer of the nearby Plain of Osoppo (AA.VV., 2008). The rocky bed of the site, where macrophytes cannot develop, is covered by algae (*Chlorophyceae*, *Conjugatae*, colonies of *Cyanophyceae*, and several species of *Diatomeae*) while its surroundings present various habitats such as thermophilic scrub (*Fraxinus ornus* L., *Ostrya carpinifolia* Scop., *Quercus pubescens* Willd., 1805 and herbaceous plants and shrubs (*Crategus* sp. L., 1753, *Cornus* sp. L., 1753, *Corylus avellana* L., 1753). On detrital coverings are found *Ficus carica* L., 1753, *Cotynus coggygria* Scop., 1771, *Pistacia terebinthus* L., 1753, and pioneer species (*Sedum* sp. L., 1753, *Asplenium* sp. L.), while on cliffs grows Mediterranean species like *Quercus ilex* L., 1753, which reaches here one of the northernmost points of its distribution (Genero *et al.*, 2000). Due to its unusual characteristics, only a few faunal species are closely connected to the site, for example, *Salmo trutta trutta* L., 1753, *Phoxinus phoxinus* L., 1758, *Austropotamobius pallipes* (Lereboullet, 1858), *Natrix tessellata* (Laurenti, 1768), *Salamandra salamandra* L., 1758; and *Tachybaptus ruficollis* (Pallas, 1764), the only bird that nests in the site (Genero *et al.*, 2000).

Methods

From May 22, 2020, to November 6, 2020, and from March 25, 2021, to April 20, 2021, every two weeks, adult dragonflies were sampled, and exuviae were collected. The sampling method was a hand-held dragonfly net with a mesh size lower than 1 mm, which was used on sunny days during the peak time of Odonata activity (between 10:00 am to 6:00 pm), with temperatures higher than 20°C and low wind speed (Buchwald, 1994; Uboni *et al.*, 2020). Adults were searched for approximately 30 minutes along the lake banks on a predetermined transect of 10×5×5 in size (length, width, and height, relative to the surface of the lakes), until no new species were encountered. Along the same transects, exuviae were also collected. Each transect was selected as a function of the pond size, in order to maintain a similar sampling intensity throughout the study area. All the adults were identified with a field guide (Dijkstra & Lewington, 2006; Dijkstra *et al.*, 2020), photographed, and then released; exuviae were determined (Uboni C.) using Gerken & Sternberg (1999). Statistical analyses were performed using MS Excel 2010.

Results

In the study area, a total of 4126 individuals belonging to 30 species were collected, with 12 of them confirmed by exuviae (Tab. 1). These species belong to 8 families: Calopterygidae, Lestidae, Coenagrionidae, Platycnemididae, Aeshnidae, Cordulegastridae, Corduliidae, and Libellulidae.

Tab. 1. Total observation of Odonata in the Ragogna Lake and in the Cornino Lake.

TAXON	Ragogna		Cornino	
	Individual/species	**Exuviae**	**Individual/species**	**Exuviae**
ZYGOPTERA				
CALOPTERIGIDAE				
Calopteryx splendens (Harris, 1780)	13		3	
Calopteryx virgo (Linnaeus, 1758)	2		18	
LESTIDAE				
Chalcolestes sp.	1092	X	11	
Sympecma fusca (Vander Linden, 1820)	4	X	0	
COENAGRIONIDAE				
Coenagrion puella (Linnaeus, 1758)	133	X	4	
Erythromma lindenii (Selys, 1840)	13		0	
Erythromma viridulum (Charpenter, 1840)	547		0	
Ischnura elegans (Vander Linden, 1820)	542	X	0	
PLATYCNEMIDIDAE				
Platycnemis pennipes (Pallas, 1771)	17		12	
ANISOPTERA				
AESHNIDAE				
Aeshna cyanea (Müller, 1764)	8		32	
Aeshna isoceles (Müller, 1767)	1		0	
Aeshna mixta Latreille, 1805	137		2	
Anax imperator Leach, 1805	67		6	
Anax Parthenope (Selys, 1839)	71	X	2	
CORDULEGASTRIDAE				
Cordulegaster boltonii (Donovan, 1807)	0		24	
CORDULIIDAE				
Cordulia aenea (Linnaeus, 1758)	12		1	
Somatochlora meridionalis Nielsen, 1935	2		0	
LIBELLULIDAE				
Crocothemis erythraea (Brullé, 1832)	326	X	0	
Libelllula depressa Linnaeus, 1758	1		0	
Libellula fulva Müller, 1764	8		0	
Libellula quadrimaculata Linnaeus, 1758	2		0	
Othetrum albistylum (Selys, 1848)	247	X	0	
Othetrum brunneum (Fonscolombe, 1837)	6		0	
Othetrum cancellatum (Linnaeus, 1758)	177	X	0	
Othetrum coerulescens (Fabricius, 1798)	48	X	0	
Sympetrum fonscolombii (Selys, 1840)	74	X	0	
Sympetrum pedemontanum (Allioni, 1766)	1		1	
Sympetrum sanguineum (Müller, 1764)	213	X	0	
Sympetrum striolatum (Charpenter, 1840)	164	X	60	
Trithemis annulata (Palisot de Beauvois, 1807)	16		0	
Total	3944		176	

In detail, the number of individuals and species differed between the two sites, with 3945 individuals (29 species) in the Ragogna Lake and 176 individuals (13 species) in the Cornino Lake; 13 species were in common between them. In the Ragogna Lake, the predominant family (46%) was Libellulidae, and the predominant genera were *Sympetrum* and *Orthetrum*, whereas in the Cornino Lake, the predominant family (31%) was Aeshnidae, and the predominant genera were *Calopteryx*, *Aeshna*, and *Anax* (Tabs. 2 and 3).

Tab. 2. Number of Odonata species observed per family in the two study sites.

	Ragogna		Cornino	
Suborder / Family	**N**	**%**	**N**	**%**
Zygoptera				
Calopterygidae	2	6.90	2	15.38
Lestidae	2	6.90	1	7.69
Coenagrionidae	4	13.79	1	7.69
Platycnemididae	1	3.45	1	7.69
Anisoptera				
Aeshnidae	5	17.24	4	30.77
Cordulegastridae	0	0.00	1	7.69
Corduliidae	2	6.90	1	7.69
Libellulidae	13	44.84	2	15.38
Total	29	100	13	100

Tab. 3. Number of Odonata species observed per genus in the two study sites.

	Ragogna		Cornino	
Suborder/Genus	**N**	**%**	**N**	**%**
Zygoptera				
Calopteryx	2	7	2	15.38
Chalcolestes	1	3	1	7.69
Sympecma	1	3	0	0
Coenagrion	1	3	1	7.69
Erythromma	2	7	0	0,00
Ischnura	1	3	0	0,00
Platycnemis	1	3	1	7.69
Anisoptera				
Aeshna	3	10	2	15.38
Anax	2	7	2	15.38
Cordulegaster	0	0	1	7.69
Cordulia	1	3	1	769
Somatochlora	1	3	0	0
Crocothemis	1	3	0	0
Libellula	3	10	0	0
Orthetrum	4	14	0	0
Sympetrum	4	14	2	15.38
Trithemis	1	3	0	0
Total	28	100	13	100

In the Ragogna Lake, *Chalcolestes sp.* was the species collected with more individuals, and *A. isoceles*, *L. depressa*, and *S. pedemontanum* were the species collected with only 1 individual (Fig. 3). In the Cornino Lake, the most common species was *S. striolatum,* and the rarest (1 individual) were *S. pedemontanum* and *C. aenea* (Fig. 4).

It must be underlined that the finding of 16 spec-

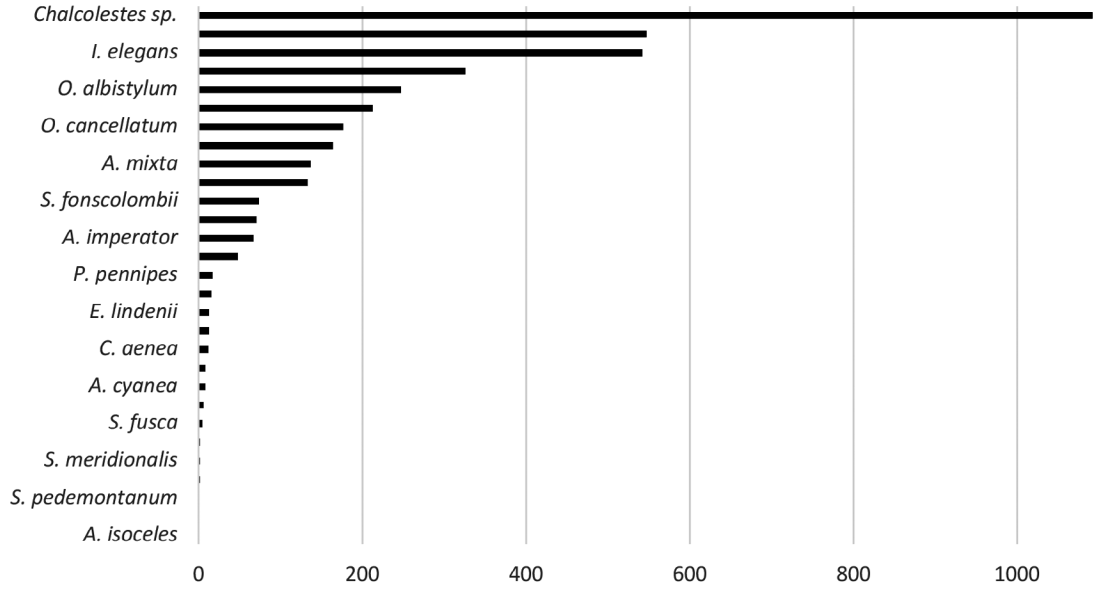

Fig. 3. Frequency of records of odonates in the Ragogna Lake.

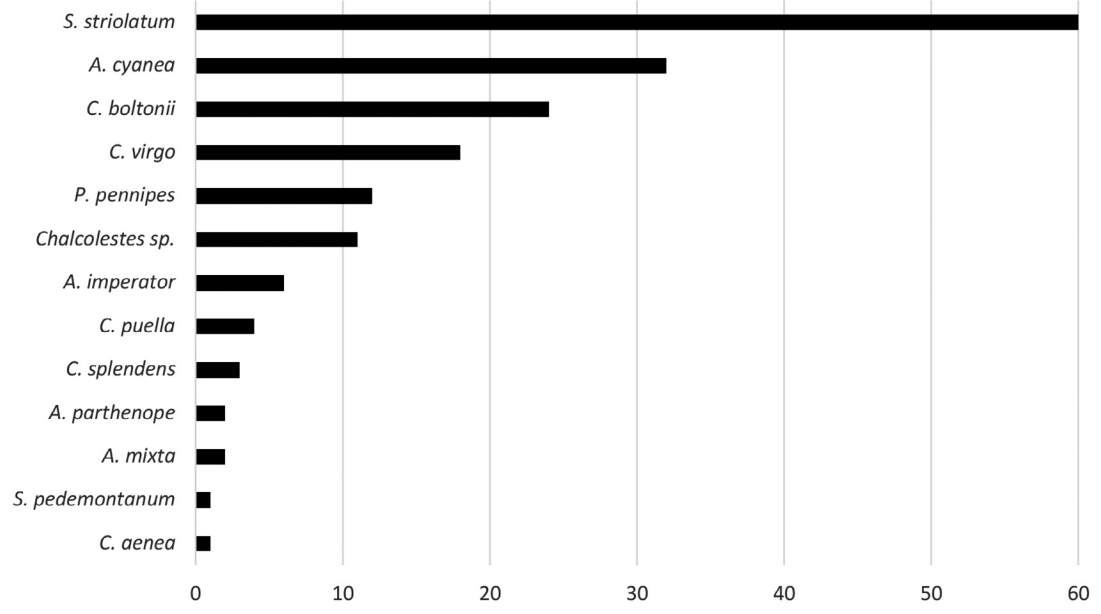

Fig. 4. Frequency of records of odonates in the Cornino Lake.

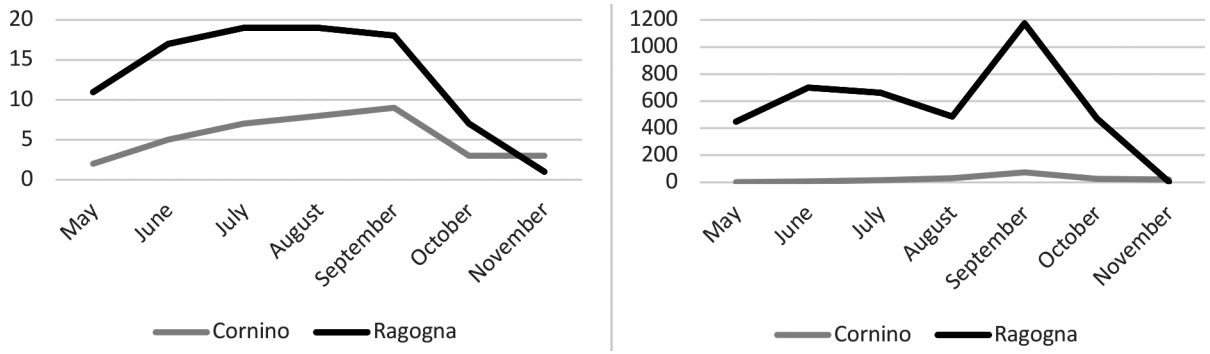

Fig. 5. Number of species (left) and individuals (right) detected in both sampling sites from May to November.

imens of *Trithemis annulata* (15 males and 1 female), observed from September 2 to October 13, 2020.

From the biogeographical point of view (Ottonello & Oneto, 2013), the odonates collected in the Ragogna Lake were mainly represented by Palearctic elements (83%), Holoarctic elements (3%), Afro-european elements (10%), and Afro-tropical elements (3%), as follows:

Palearctic elements: (eurosiberian) – *C. splendens, C. virgo, P. pennipes, C. puella, A. mixta, S. sanguineum, S. pedemontanum*, *C. aenea, Chalcolestes sp;* (western palearctic) – *S. fusca, I. elegans, A. cyanea, L. depressa, L. fulva, O. cancellatum, O. albistylum, O. coerulescens, S. striolatum*; (submediterranean) – *E. viridulum, Aeshna isoceles, O. brunneum*; (mediterranean) – *E. lindenii, A. parthenope, S. meridionalis.* Holoarctic elements: *L. quadrimaculata.* Afro-european elements: *A. imperator, C. erythraea, S. fonscolombii.* Afro-tropical elements: *T. annulata.*

A similar trend was detected in the Cornino Lake, with Palearctic elements (85%) more widespread than Holoarctic elements (8%) and Afro-european elements (8%), as follows:

Palearctic: (eurosiberian) – *C. splendens, C. virgo, P. pennipes, C. puella, A. mixta, C. aenea, Chalcolestes sp.*; (western palearctic) – *A. cyanea, C. boltonii, S. striolatum*; (mediterranean) – *A. parthenope*; Holoarctic: *S. pedemontanum*; Afro-european elements: *A. imperator.*

In both lakes, species and individuals were more abundant during the summer period, especially from July to August, with an evident decline at the end of September (Fig. 5).

Discussion and Conclusions

In 2020, a monitoring of Odonata was conducted in two ancient glacial lakes, situated in the high plain of the central part of Friuli Venezia Giulia, the Ragogna Lake and the Cornino Lake, providing interesting results. In the Ragogna Lake, odonatofauna was already investigated in 1989, with the result of 30 species, equal to 47% of the odonatofauna of the Region (Pecile, 1989). For the Cornino Lake, there are no published data. The results of this research permit the definition of the list of dragonflies present in the Ragogna Lake, with 29 species (9 Zygoptera, 20 Anisoptera), and the creation of the first checklist of 13 species (5 Zygoptera, 8 Anisoptera) for the Cornino Lake. Among the two sites, 12 species were in common, and one species (*Cordulegaster boltonii*) was present only in the Cornino Lake.

The dragonflies sampled in the Ragogna Lake represents 45.3% of the Friuli Venezia Giulia odonatofauna and 30.2% of the Italian one, while in the Cornino Lake, they represent respectively 20.3% and 13.5%. This difference in species among the two sites was probably due to the particular characteristics of the Cornino Lake, a homeothermic and oligotrophic lake (8-12°C). This result can be observed not only for the species number, but also for the number of individuals, with 3945 individuals in Ragogna and 176 in Cornino.

Considering the chorology (www.faunaitalia.it) of the sampled species, 60% of them are widespread in the whole of Italy and none of them is considered as threatened.

In the Cornino Lake, ovideposition was observed for two species, *A. cyanea* and *S. striolatum*, even if no exuviae were collected. Otherwise, in the Ragogna Lake ovideposition was observed for 15 species (*Chalcolestes* sp, *E. viridulum*, *P. pennipes*, *A. isoceles*, *A. mixta*, *A. imperator*, *A. parthenope*, *C. erythraea*, *O. albistylum*, *O. cancellatum*, *O. coerulescens*, *S. fonscolombii*, *S. sanguineum*, *S. striolatum*) of which reproduction was proved by collected exuviae for 12 species (*Chalcolestes* sp., *C. puella*, *S. fusca*, *I. elegans*, *A. parthenope*, *C. erythraea*, *O. albistylum*, *O. cancellatum*, *O. coerulescens*, *S. fonscolombii*, *S. sanguineum*, *S. striolatum*).

In the Ragogna Lake, comparing the data of the present study and those reported by previous research (Pecile, 1989), it was possible to confirm the presence of 23 of 30 species. The species not reconfirmed were *A. affinis S. flavomaculata*, *S. metallica*, *B. pratense*, *O. forcipatum, S. depressiusculum*, *S. vulgatum*. The modifications of the habitats surrounding the lake, due to intensive agricultural practices, the consequent water pollution, and the hydraulic works (*e.g.*, abstraction for irrigation purposes) that can cause the drying up of more or less extensive parts of the rivers where the larvae live, may represent a threat to that species. On the other side, thanks to this study, the list was implemented with 6 species: 3 are Palearctic elements (*Chalcolestes sp*., *C. aenea*, *S. pedemontanum*), 1 is a Mediterranean element (*E. lindenii*), 1 is an Afro-european element (*S. fonscolombii*), and 1 is an Afrotropical element (*T. annulata*). This last species is of particular interest, since *T. annulata* represents a new species not only for the Friuli Venezia Giulia region, incrementing the regional odonatofauna species to 65, but also for northeastern Italy. Moreover, this species is one of the most abundant dragonflies of tropical Africa (Djikstra & Lewington, 2006) that is expanding its range into Europe along the Mediterranean (Askew, 2003) and that reached the southern Alps in 2023 (Puff *et al.*, 2024). First records in Spain dated back to the late 1970s and in Corsica in the late 1980s (Ferreras Romero, 1981; Roche, 1989; Grand, 1990; Bonet Betoret, 2000; Boudot *et al.*, 2009; Groppali, 2009). In Italy, the species is reported for the first time in 1939 in Lake Avernus (Campania) (Harting, 1939), and after that in 1952 in southern Italy (Consiglio, 1952). In the following decades, the species expanded its areal distribution reaching northern Italy in 2018, in the provinces of Milan and Brescia (Gheza *et al.*, 2019; Chiari *et al.*, 2020). The flying season ranges from mid-April to late December in Malta (Gauci, 2018), from May to October in southern France (Boudot *et al.*, 2017), and in the Po Plain (Gheza *et al.*, 2019). In Liguria, in slow-flowing waters present in the alluvial Plain of the Magra River, the flight season was from June to August (Ottonello & Oneto, 2013).

T. annulata is an undemanding species, typical of still waters or at least less running waters, characterized by low oxygen concentration and neutral pH, typical conditions in the arid Mediterranean regions (Bonet Betoret, 2000). Consequently, the slow rise in average temperatures combined with the decrease in the rainfall of the last decades has favored the spread of the species in the regions with greater similarity to the conditions present in the area of its original distribution.

In this study, *T. annulata* was found in a fishpond lake, and thanks to this data, it is possible to confirm that the species can survive in all types of freshwaters, both standing and running, because it is an opportunistic and ubiquitous species. It can reproduce successfully even in temporary water bodies because it has a short larval period (Boudot *et al.*, 2016). In the Ragogna Lake, the flying period of *T. annulata* was from the beginning of September to the middle of October, probably because the species arrived in the lake from somewhere else in the surroundings; it must be underlined that no exuviae have been found and no reproductive behaviors have been observed, maybe because of the low-density number of individuals. However, we confirmed that the species can fly until Autumn, as already described (Boudot *et al.*, 2017; Gauci, 2018). Males were observed in territorial behavior, patrolling the lake shores fighting against *C. erythraea*'s males, as already reported (Gheza *et al.*, 2019). Since the species is characterized by good dispersion ability, new studies should be carried on in order to confirm the presence of the species in this site and deepen its phenology. Its detection is interesting since it is a species of African origin that is rapidly expanding its areal as a result of global warming (Ott, 2010; Gheza *et al.*, 2019; Vinko & Šalamun, 2021), confirming the role of Odonata as good bioindicators of climate change (Hassall, 2015; Termaat *et al*., 2019). More-

over, the increase in temperatures may favor range expansion to the north or shifts of thermophilous odonatan, allowing larval development at greater latitudes and altitudes (Groppali, 2009; Gheza *et al.*, 2019).

In conclusion, the finding of *T. annulata* in the Ragogna Lake, a habitat on the limit between the hilly area and the Pre-Alps, confirms the expansion of this species towards central Europe, arriving just behind the Alps. It should also be underlined that this finding represents one of the most North-eastern spots for the species in its European distribution.

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Contributions

CU, conceptualization, methodology, validation, writing – original draft; CU, LB, data curation, formal analysis, software; SB, funding acquisition. CU, LU, SB, investigation; CU, SB, supervision, writing – review and editing.

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First records of *Chelostoma nasutum*, *Trachusa laeviventris* and *Nomada trispinosa* from Italy, with notes on *Megachile rufescens* in northwestern Italy
(Hymenoptera Apoidea Anthophila)

Abstract: The bees *Chelostoma nasutum*, *Trachusa laeviventris* and *Nomada trispinosa* were collected for the first time in Italy. The occurrence of *Megachile rufescens* in northwestern Italy is discussed.

Riassunto: Prime segnalazioni di *Chelostoma nasutum*, *Trachusa laeviventris* e *Nomada trispinosa* in Italia, con note sulla presenza di *Megachile rufescens* nell'Italia nord-occidentale (Hymenoptera Apoidea Anthophila).
Si segnalano per la prima volta in Italia gli Apoidei *Chelostoma nasutum* Pérez, *Trachusa laeviventris* (Dours) e *Nomada trispinosa* Schmiedeknecht. Viene inoltre discussa la presenza di *Megachile rufescens* (Pérez) nell'Italia nord-occidentale.

Key words: species distribution, wild bees, Italian biodiversity.

Introduction

In the last few years, several species have been added to the list of the bees occurring in Italy (Carisio *et al.,* 2018; Praz *et al.,* 2019; Biella & Galimberti, 2020; Cornalba *et al.,* 2020; Bonifacino, 2021; Gamba & Carta, 2021; Praz *et al.,* 2022; Wood & Le Divelec, 2022; Ghisbain *et al.,* 2023; Flaminio *et al.,* 2023; Wood *et al.,* 2023; Cornalba *et al.,* 2024; Aubert *et al.,* 2024; Flaminio *et al.,* 2024; Le Divelec, 2024). Here, we add three further species to this growing list, namely *Chelostoma (Gyrodromella) nasutum* Pérez, 1895, *Trachusa (Archianthidium) laeviventris* (Dours, 1873), and *Nomada (Gestamen) trispinosa* Schmiedeknecht, 1882, the latter already reported from Italy but based on misidentifications and unverifiable records (see discussion below). We also discuss the distribution of *Megachile (Chalicodoma) rufescens* (Pérez, 1879) in southeastern France and northwestern Italy.

C. nasutum specimens were collected by MB and CM using entomological nets along transects or nearby areas within two Apennine National Parks (Gran Sasso and Monti della Laga; Abruzzo, Lazio, and Molise). Since 2019, both protected areas have been involved in pollinator monitoring activities envisaged by the Biodiversity Directive of the Italian Ministry of the Environment. The monitoring protocol, developed by *Istituto Superiore per la Protezione e la Ricerca Ambientale* and the University of Turin, involves bee sampling along 250-meter-long transects to be covered once a month between April and October. The other *C. nasutum* specimens were collected with Malaise traps in the Abruzzo, Lazio, and Molise National Park or surrounding areas within sampling activities envisaged by the PNNR project detailed in the aknowledgements. The remaining species were collected during random searches by hand-netting, except as explicitly stated in the individual records.

For the specimen identification, we used the keys and descriptions by Tkalců (1974, 1988), Müller (2015, 2025), Kasparek (2017), Schwarz *et al*. (2018) and Smit (2018).

The following abbreviations are used:
- MBC = private collection of Marco Bonifacino, Vado Ligure, Italy;
- MCC = private collection of Maurizio Cornalba, Pavia, Italy;

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- MEC = private collection of Maurizio Mei, Rome, Italy;
- MSNG = Museum of Natural History "Giacomo Doria", Genoa, Italy;
- MZUR = Museum of Zoology of the Sapienza University of Rome, Rome, Italy;
- PNALM = Abruzzo, Lazio and Molise National Park;
- PNGSML = Gran Sasso and Monti della Laga National Park;
- SGC = private collection of Sirio Gamba, San Biagio della Cima, Italy;
- VNC = Vittorio Nobile collection, Museum of Natural History of the University of Florence, Florence, Italy.

New records

Chelostoma nasutum. Abruzzo: L'Aquila, Scanno, Riserva di Chiarano-Sparvera, 41.869825 N 13.959594 E, 1500 m, 5-20/VII/2019, 1 ♂, Malaise trap at the edge of beech forest, leg. A. Lenzi, P. Cerretti (MZUR); PNALM, L'Aquila, Lecce nei Marsi, Cicerana, 41.864448 N 13.723234 E, 1520 m, 28/VI/2022, 2 ♀♀, leg. M. Bonifacino (MBC); PNGSML, L'Aquila, Barisciano, San Colombo, 42.335556 N 13.59 E, 1088 m, 1/VI/2023, 1 ♀, on *Campanula sp.*, leg. C. Mantoni (MBC); PNALM, L'Aquila, Pescasseroli, 41.848436 N 13.736550 E, 1548 m, 6-23/VI/2024, 1 ♂ 3 ♀♀, Malaise trap in beech forest, leg. F. Paone, P. Cerretti (MEC, MZUR); PNGSML, Pescara, Farindola, Vado di Sole, 42.395042 N 13.787775 E, 1625 m, 1/VII/2024, 1 ♀, on *Campanula glomerata*, leg. M. Bonifacino (MBC); PNALM, L'Aquila, Scanno, Monte Godi, 41.831565 N 13.904864 E, 1926 m, 28/VII-13/VIII/2024, Malaise trap, 1 ♀, leg. F. Paone, P. Cerretti (MZUR).

Trachusa laeviventris. Liguria: Imperia, San Biagio della Cima, loc. Cloria, 43.822253 N 7.655481 E, 120 m, 30/VI/2024, 1 ♂, on *Melissa officinalis,* leg. S. Gamba (SGC).

Nomada trispinosa. Friuli Venezia Giulia: Gorizia, Cormons, monte Quarin, 45.967222 N 7.471389 E, 179 m, 23/III/2024, 1 ♀, leg. M. Cornalba (MCC).

Megachile rufescens. Liguria: Imperia, Pieve di Teco, 44.001314 N 7.943827 E, 775 m, 01/VI/2019, 1 ♂, leg. M. Bonifacino (MBC); Imperia, Pietrabruna, Boscomare, 43.875966 N 7.898883 E, 500 m, 19/VI/2019, 1 ♀, leg. M. Bonifacino (MBC); Imperia, Pigna, 43.957868 N 7.627478 E, 1220 m, 02/VII/2019, 1 ♀, leg. M. Bonifacino (MBC); Imperia, Pigna, 43.957836 N 7.627753 E, 1235 m, 18/V/2020, 1 ♂, leg. M. Bonifacino (MBC); Imperia, Rocchetta Nervina, Monte Comune, 43.919924 N 7.598967 E, 1145 m, 18/V/2020, 1 ♂, leg. M. Bonifacino (MBC); Imperia, Pietrabruna, Boscomare, 43.877880 N 7.899433 E, 465 m, 22/V/2020, 1 ♀, leg. M. Bonifacino (MBC); Imperia, Ventimiglia, Colla di Bevera, 43.829429 N 7.567070 E, 435 m, 18/VI/2020, 1 ♀, leg. M. Bonifacino (MBC); Imperia, Soldano, 43.83 N 7.657222 E, 96 m, 04/IV/2020, 2 ♂♂ 2 ♀♀, hatched from nest attached to a clay pot, leg. R. Valfiorito (SGC); Imperia, Vallebona, 43.830833 N 7.676389 E, 536 m, 13/IV/2024, 1 ♂, leg. S. Gamba (SGC); Imperia, Airole, 43.875556 N 7.560278 E, 500 m, 11/V/2024, 1 ♂ 2 ♀♀, leg. S. Gamba (SGC); Savona, Stella, Polzemola, 44.397437 N 8.515451 E, 470 m, 10/V/2020, 1 ♂, leg. M. Bonifacino (MBC). Lombardy: Pavia, Cecima, 44.814483 N 9.079114 E, 688 m, 8/V/2016, 1 ♂ 1 ♀, leg. M. Cornalba (MCC); ibidem, 22/V/2016, 1 ♂, leg. M. Cornalba (MCC); Pavia, Cecima, 44.814523 N 9.079262 E, 691 m, 6/V/2018, 1 ♂, leg. M. Cornalba (MCC); Pavia, Cecima, 44.815686 N 9.080285 E, 663 m, 2/VI/2018, 1 ♂, leg. M. Cornalba (MCC); Pavia, Cecima, 44.815463 N 9.079233 E, 678 m, 21/VI/2018, 1 ♀, leg. M. Cornalba (MCC); Pavia, Varzi, calanchi di Nivione, 44.803723 N 9.170478 E, 642 m, 17/VI/2023, 1 ♀, leg. M. Cornalba (MCC). PIEDMONT: Alessandria, Gremiasco, 44.814287 N 9.079112 E, 685 m, 6/V/2018, 1 ♂, leg. M. Cornalba (MCC).

Other material examined.
Nomada mutabilis Morawitz, 1870. Sicily: Catania, Paternò, contrada Petulenti, 31/III/1993, 1 ♂, leg. S. Tomarchio (VNC, as *Nomada trispinosa* Schmiedeknecht, 1882, V. Nobile det.).

Discussion and Conclusions

C. nasutum (Fig. 1) was collected in montane areas at elevations between 1088 and 1926 m a.s.l., in a variety of habitats: beech forests, open areas near the edge of woodland, summit grasslands, and open grasslands on the Cicerana karst plateau. The few flower records available all refer to *Campanula* species, in ac-

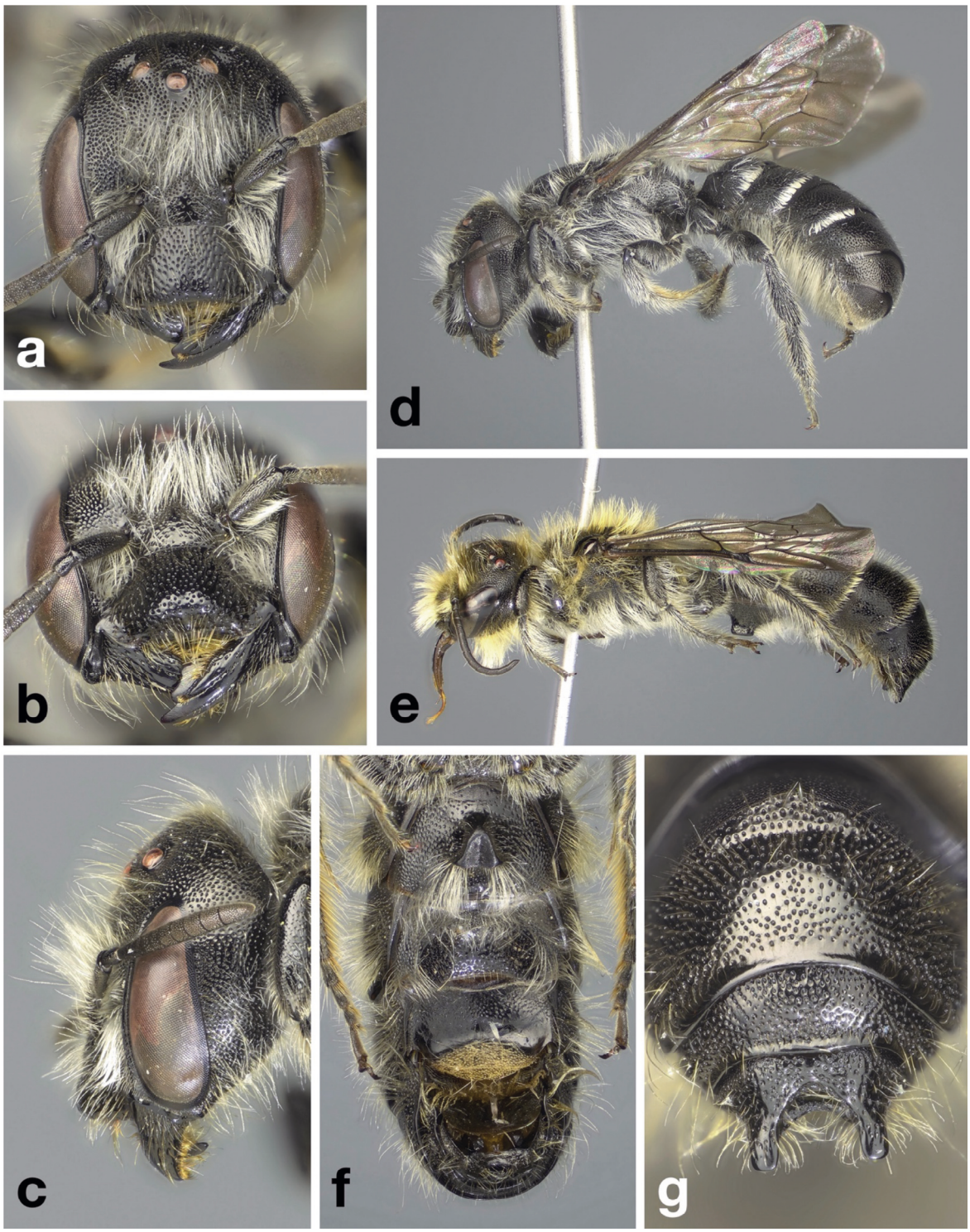

Fig. 1. *Chelostoma nasutum* female from Pescasseroli, head frontal (a), clypeus frontal (b), head lateral (c), habitus lateral (d); male from Pescasseroli, habitus lateral (e), abdominal sterna (f), T5-T7 (g).

cordance with the known foraging preferences of *C. nasutum* (Müller, 2025). According to Müller (2015, 2025), *C. nasutum* occurs in Europe in two disjunct areas, one comprising northernmost Spain and southern France, the other including parts of Romania, Bulgaria, Serbia, and Greece. Therefore, the discovery of *C. nasutum* in the mountains of Abruzzo fills a major gap in the distribution of the species. *C. nasutum* is likely to occur more widely in the Apennines, and the possibility that the range of the species in southern France may extend into Piedmont and Liguria deserves to be investigated. The females of *C. nasutum* can be identified mainly by the strongly protruding clypeus (Fig. 1b and d) and the medioapical impression and sparse punctures on the supraclypeal area (Fig. 1a), while the males are characterized by a roughly triangular projection on sternite 2, large lateral spots of black bristles on sternum 3 reaching the apical margin (Fig. 1f), and two parallel-sided lateral teeth on tergum 7 (Fig. 1g).

Trachusa laeviventris (Fig. 2) has a west-Mediterranean distribution. In Europe, it occurs in Iberia and southern France, east nearly to the Italian border (Kasparek, 2017). It has also been recorded from Monaco (M. Kasparek, pers. comm., 2024). The occurrence of the species in western Liguria is therefore not unexpected. *T. laeviventris* belongs to the *Archianthidium* subgenus, which is characterized by the second recurrent vein entering the second submarginal cell basal to the second submarginal crossvein (Fig. 2a). Within *Archianthidium,* the males of *T. laeviventris* can be identified by the presence of a median tooth on tergite 7 (Fig. 2c), with a keel on the underside not reaching its apex, flanked by two moderate bulges (Fig. 2b).

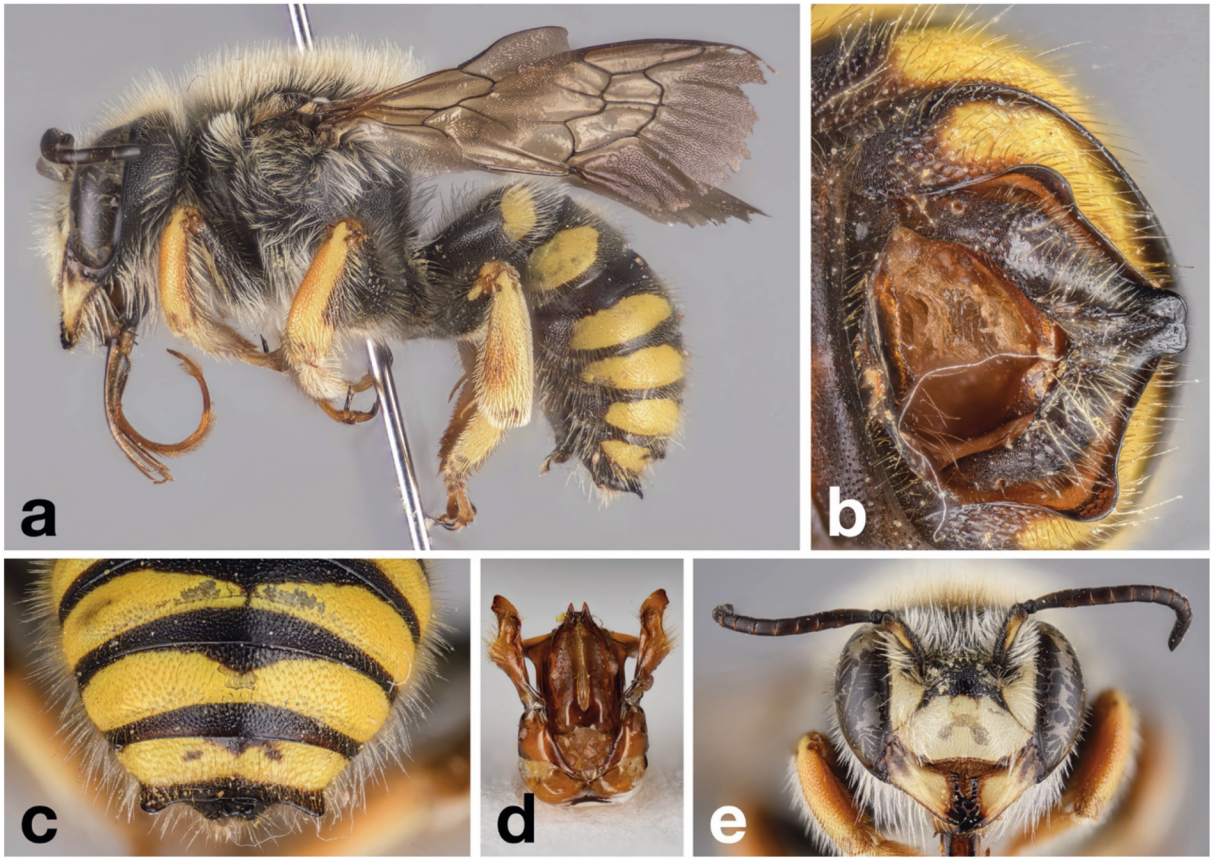

Fig. 2. *Trachusa laeviventris*, male from San Biagio della Cima. a) Habitus lateral; b) T7 ventral; c) T4-T7; d) genitalia dorsal; e) head frontal.

Nobile & Turrisi (2016) reported *N. trispinosa* (Fig. 3) from Latium and Sicily, with 3 males and 1 male, respectively. We examined the specimen from Sicily, now in the Nobile collection, deposited in the "La Specola" Museum of Natural History of the University of Florence, and we found it to be a misidentified male of *Nomada mutabilis* Morawitz, 1870. Despite exhaustive searches, the specimens from Latium could not be located and may be lost. What Nobile & Turrisi (2016) write offers clues to a possible reason for their misidentification. They claim to have relied on Stoeckhert's keys (Schmiedeknecht, 1930) and on other keys, all derived from Stoeckhert's. In the key for males, *N. trispinosa* and *N. mutabilis* appear as the two alternatives in the same couplet, and the distinction between them comes down to differences in the pilosity of the hind femur. Using this character may be tricky, particularly with dirty or worn specimens. On the other hand, males of the two species can be readily distinguished by the absence, in *N. trispinosa*, or presence, in *N. mutabilis*, of the oblique, slightly elevated areas with dense micropunctuation beside the compound eyes, just above the antennas, called "eye plates" by Smit (2018). Males of the two species can also be distinguished by other characters, including the different arrangements of the metatibial spines and of the labral spines and carinas.

The most striking distinguishing feature of the females of *N. trispinosa* (Fig. 3) is the arrangement of the tibial spines. The apex of the hind tibia bears three (four) closely standing short, blunt, almost globular, dark spines (Fig. 3b). Further characters, such as the uniformly expanded red hind basitarsus (Fig. 3c) and

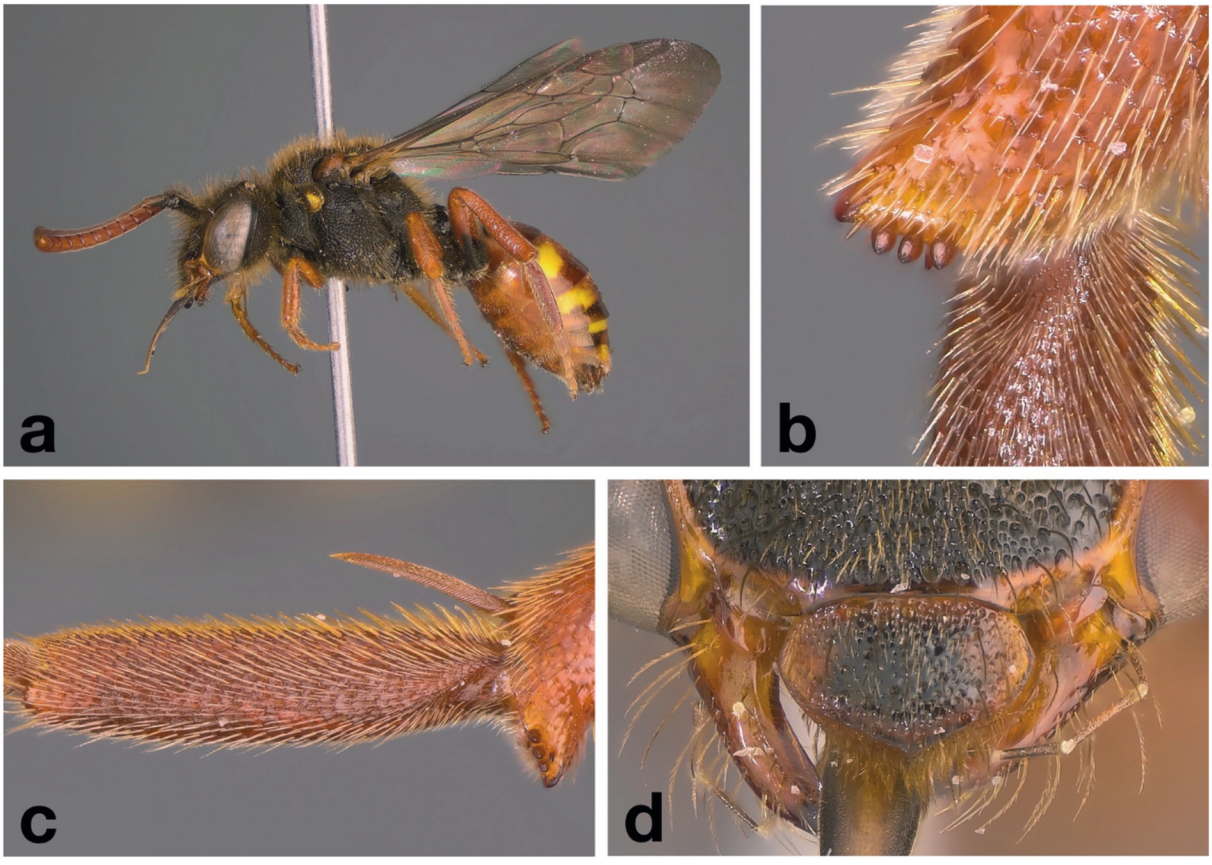

Fig. 3. *Nomada trispinosa*, female from Cormons. a) habitus lateral; b) metatibial spines; c) metabasitarsus; d) labrum.

the densely punctured scutellum without shining interspaces, distinguish *N. trispinosa* from other species in the same group occurring in SE Europe. The labrum (Fig. 3d) bears a sharp carina just before its distal margin, the hair on the head and mesosoma is long and erect, without clear hair tufts on mesopleura and propodeum (Fig. 3a).

In Europe, *N. trispinosa* is distributed in the center and east, extending west to eastern Austria and western Slovenia. Its presence in northeastern Italy close to the Slovenian border is therefore not surprising. *N. trispinosa* is believed to parasitize *Andrena taraxaci* Giraud, 1861 (Smit, 2018). In Italy, *A. taraxaci* occurs only near Trieste (Schwenninger, 2007) and is replaced in most of the country by the closely related *Andrena pastellensis* Schwenninger, 2007. *A. taraxaci* was not observed near the locality where we found *N. trispinosa*. On the other hand, we collected males of *A. pastellensis* just two kilometers away in the same municipality of Cormons. This raises various questions, as *A. pastellensis* is possibly conspecific with *A. taraxaci* (Wood *et al.,* 2023). Does *N. trispinosa* also parasitize *A. pastellensis*? Is it more widely distributed in Italy or essentially restricted to the range of *A. taraxaci*? An answer to these questions might help to shed light on the species status of *A. pastellensis*.

Megachile rufescens (Pérez, 1879) belongs to a complex of taxa that includes, among others, *Megachile albonotata* Radoszkowski, 1886, and whose taxonomy is not completely settled. This complex is traditionally thought to be represented in Italy by the subspecies *M. albonotata italica* (Tkalců, 1988), which occurs in central and southern Italy, while *M. rufescens* is viewed as endemic to southern France (Ghisbain *et al.,* 2023). No clear sculptural differences are known between *M. rufescens* and *M. albonotata italica*, the distinction between the two coming down to differences in the color of the vestiture of females, which is darker and rufous with reduced light rufous tergal fasciae in *rufescens* and whitish-grey or brownish-grey with white tergal fasciae in *italica*. The two taxa are probably conspecific (C. Praz, pers. comm., 2022). Our specimens show the typical vestiture of *rufescens* and are indistinguishable from French ones. It is apparent from the distribution of *M. rufescens* in France and the one of our Italian specimens that the two represent a single continuous population extending from France across the border with Italy along the Ligurian Alps and Apennines east

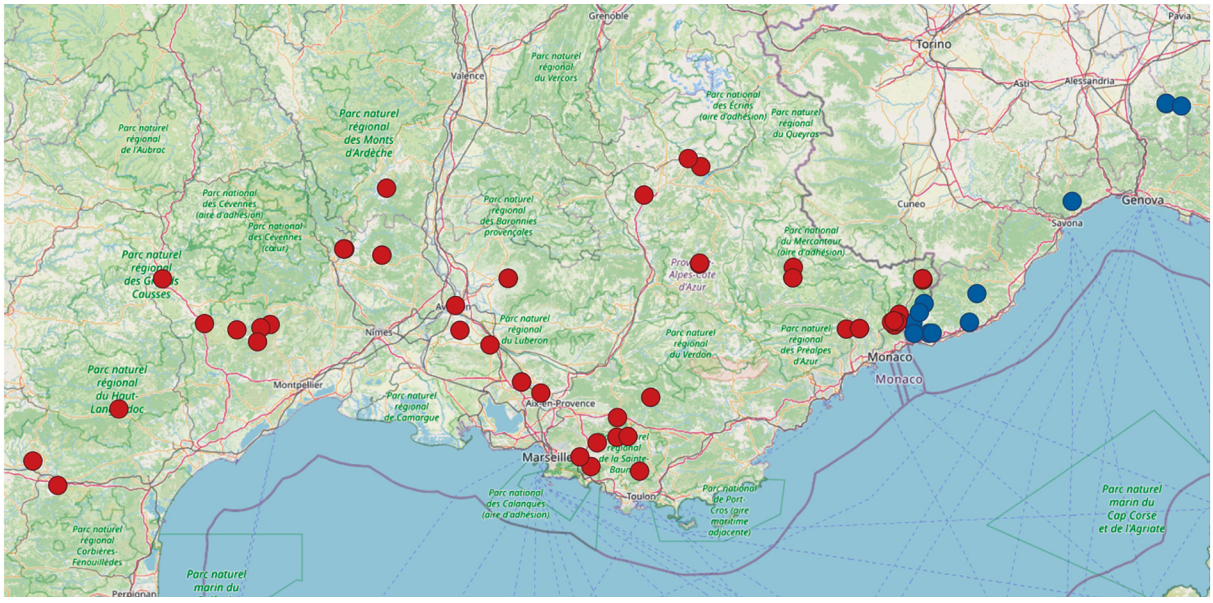

Fig. 4. *Megachile rufescens* in France and northwest Italy. Red dots: GBIF records from France with coordinates. Blue dots: new Italian records. Data source: GBIF.org (19 March 2025) GBIF Occurrence Download (https://doi.org/10.15468/dl.5v9mhy). Map source: OpenStreetMap.

to beyond Genoa (Fig. 4). The population of *M. rufescens* in northwestern Italy might well be connected and intergrade with the one of *M. albonotata italica* in central and southern Italy, but we are not aware of any records from the intervening areas.

In Italy, *M. rufescens* and *M. albonotata* can be confused mainly with *Megachile pyrenaica* (Lepeletier, 1841), but in the females, the tarsi are dark, while in the males, the apex of sternite 6 bears two slender processes and shorter hairs.

There seems to be no literature mentioning *M. rufescens* from northwestern Italy, but the occurrence of the species did not go unnoticed. In the Magretti collection (MSNG) there is a series of seven specimens collected around the year 1900 by Felice Mazza near Varzi, one of our localities, and correctly determined as *Chalicodoma rufescens*, probably by Mazza himself or by Magretti. The absence of literature records is perhaps due to confusion with *M. pyrenaica*, with which *M. rufescens* was viewed as conspecific by some authors, for instance by Benoist (1935,1940). In fact, it is quite possible that some records of *M. pyrenaica* from Italy, particularly low elevation ones, should instead be referred to *M. rufescens*.

Acknowledgements

We are grateful to Giuseppe Fabrizio Turrisi of the Florence Museum of Natural History for granting us access to the Nobile collection and to Maria Tavano (MSNG) for help in locating specimens in the Magretti collection. We thank Max Kasparek for confirming the identity of the specimen of *Trachusa laeviventris*. The MB and CM specimens from Abruzzo were collected within the framework of monitoring activities on pollinators in the PNALM and PNGSML mandated by the Biodiversity Directive of the Italian Ministry of the Environment. We thank Pierfilippo Cerretti and Francesco Paone ("Sapienza" University of Rome) for making available their PNALM specimens, collected during sampling carried out within the PNRR project, Spoke 4- Activity 4: Scenarios of area-based conservation planning & management, Task 2 - Dynamic process analysis in protected areas.

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Giorgio Leigheb*

Microtopographic phenotypic variation in *Plebejus bellieri* (Oberthür, 1910) (Lepidoptera, Lycaenidae, Polyommatinae)

Abstract: The molecularly based study by Toro-Delgado *et al*. (2025) demonstrates an identical genomic structure in all Sardinian-Corsican-Elban populations of *Plebejus bellieri* (Oberthür, 1910). However, the notable number of microtopographic phenotypic variations in wing patterns in the various insular biotopes is surprising. Possible influences from environmental causes emerge and are described in detail. The complex history relating to the discovery and taxonomy of Sardinian taxa, sometimes thought in the past to be conspecific with *P. idas*, is reported. The results of a careful study of the androconial morphology and wing pattern of the various island phenotypes of *P. bellieri* are presented.

Riassunto: *Variazioni fenotipiche microtopografiche di* Plebejus bellieri *(Oberthür, 1910) (Lepidoptera, Lycaenidae, Polyommatinae)*
Gli studi condotti su base molecolare da Toro-Delgado *et al*. (2025) dimostrano identica struttura genomica di *Plebejus bellieri* (Oberthür, 1910) in tutte le popolazioni sardo-corso-elbane. Sorprende, peraltro, il notevole numero di variazioni fenotipiche microtopografiche dei disegni alari nei diversi biotopi insulari. Emergono possibili influenze da parte di cause ambientali descritte dettagliatamente. Viene riportata la complessa storia relativa alla scoperta ed alla tassonomia dei taxa sardi, ritenuti talvolta in passato conspecifici con *P. idas.* Si espongono i risultati di uno studio accurato della morfologia androconiale e del pattern alare dei vari fenotipi insulari di *P. bellieri*.

Key words: *Plebejus idas* complex, *P. bellieri*, endemic Mediterranean polyommatinae, taxonomy.

Introduction

Our understanding of the phylogeny and taxonomy of Lycaenidae has greatly benefited from the advent of widely available molecular methods. Results of the work by Talavera *et al.* (2013), based on several nuclear and mitochondrial markers, have not only demonstrated the monophyly of the morphologically based *Polyommatus* group established in Eliot's (1973) seminal paper, but scaffolded its many genera into a wide-ranging phylogenetic system, thereby setting the basis for further taxonomic studies.

Improvements have not always been as clear-cut as regards species-level taxonomy. Just to make an example, the early cytological work of de Lesse (1969) could finally demonstrate the species-level separation of *Lysandra coridon* and *L. hispana*, but left many doubts on the relationships between the latter and *L. albicans* arising from discrepancies between karyology and morphology, which have not been dispelled by later morphological and molecular studies (Wiemers *et al.*, 2020). More in general, although sequencing of the COI-5P 'barcoding' fragment proved a very useful tool for sorting taxonomically unknown materials for various kinds of studies, the hopes initially raised by the supposed existence of a 'barcoding gap' that would allow to disentangle species rank taxonomy from variation more strictly related to population genetics, have proved unfounded (Wiemers & Fiedler, 2007). The hybridization between widely recognized butterfly species at sites where they come into more or less marginal contact, already suggested by the above-mentioned morphological and karyological works, is demonstrated to be relatively widespread. As many as 7 hybrids between species of *Lysandra* and of other polyommatine genera, and another 11 at the intrageneric level have been (unnecessarily) named in the literature, while several more were left unnamed (see Schurian, 1989). Known cases of barcode-sharing, probably at least sometimes deriving from mitochondrial introgession, are multiplying (Wiemers & Fiedler 2007).

The *P. idas* complex includes several taxa, distributed over a wide Euro-Asian area, which, thanks also to their polyphagous larva, have adapted to strongly different habitats and to many thermal and altitudinal conditions. Many subspecies of *P. idas* have been described. Verity (1943) recognized 16 Italian 'races' while, more recently, Tshikolovets (2011) restricted them to 8 European subspecies (including *P. i. bellieri* s.l.).

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The historical background

The discovery of *Plebejus bellieri* in Sardinia has a long and troubled history, which brings to mind the tormented life of Idas, a strong and violent demigod from Greek mythology, who Zeus finally struck with a terrible lightning bolt.

The species currently known as *Plebejus bellieri* was first described as *Plebeius argyrognomon* var. *corsica* Tutt, 1909, and independently redescribed one year thereafter by Oberthür (1910) as *Lycaena argus bellieri,* on materials from Corsica: Bastelica (Locus Typicus). Oberthür was strangely unaware of Tutt's publication, while Tutt was himself unaware that his own specific epithet had already been used to identify *Lycaena aegon* var. *corsica* Bellier, 1862, a name currently deemed on taxonomic grounds to represent a subspecies of *Plebejus argus* Linné, 1758. As a consequence, in case both taxa are classified under *Plebejus*, as is the current use (Wiemers *et al.*, 2018), Tutt's name becomes a junior secondary homonym of Bellier's and is therefore invalid (ICZN, Art. 53.3, 47.3). All this was, anyway, unknown to Oberthür, who had not proposed '*bellieri*' as a substitution name, but simply to designate a separate subspecies of what is now *Plebejus idas*. The ♂ lectotype of *Lycaena argus bellieri* Oberthür, 1910, labelled: "Bastelica, 7.7.'05., H. Powell/ Ex Oberthur Coll., Brit. Mus. 1927-3. / NHMUK (E) X 265250", was designated by Bálint (1999) and is housed in the collections of the London Natural History Museum (NHMUK).

Taxonomic and nomenclatural problems concerning *P. bellieri* continued even after 1910. Verity (1943) mentioned *P. idas bellieri* as only occurring in Corsica and stated that he did not know of its presence in Sardinia. In fact, before 1958, various authors (Mola, 1916, 1919; Hartig & Amsel, 1951; Nabdil, 1957) did not recognize *P. bellieri* among specimens collected in this island, erroneously attributing them to *P. argus* or *P. argyrognomon*. Higgins & Riley (1983) mentioned this species from Sardinia only in the 5th edition of their well-known 'Guide' (but see Higgins 1975a), while Tolman & Lewington (1997) ignored Sardinian *P. bellieri* and cited it only in the edition of 2013. Many authors had evidently missed the publication by Galassi (1959) on the discovery of '*Lycaeides idas*' on the marine coast of Capo Caccia (northwest Sardinia). Biermann, who devoted himself particularly to this taxon, finally published his recordings obtained by Desulo in July 1974 and at Arcu Correboi, Dorgali, and Mt. Limbara in July 1979, all at relatively high elevations (Biermann & Hesch, 1982; Biermann, 2003).

In 1995, intrigued by the work of Galassi, who had prepared some specimens of '*P. idas*' collected on Capo Caccia for Prof. G. Fiori, then Head of the Institute of Agrarian Entomology of the University of Sassari, I went to the Museum of the said Institute to examine them. I was very surprised to observe that those 4 males and 2 females showed a completely different phenotype compared to that of the Gennargentu specimens in my collection. In 1996, on the occasion of my appointment as professor of Dermatology at the University of Sassari, I went to the peninsula of Capo Caccia to verify whether the colony of *P. bellieri* was still present. After several days of repeated and adventurous visits along the impervious coast of that promontory, I suddenly observed some small blues darting between bushes of giant euphorbia and spiny broom. I identified them as specimens of '*P. idas*'. Although dazed by that arid, wild, primitive, fascinating, unreal environment, scorched by a burning sun, while I was extricating myself from tangles of thorny shrubs of the garrigue and on the edge of cliffs overlooking the open sea, I had no doubt that the taxon of the Capo Caccia promontory was not the same as that of Gennargentu and that, alongside the mountain ones, there were colonies of maritime *P. bellieri* in Sardinia. At the end of the 1990s, together with D. Jutzeler, an expert in breeding lepidoptera for study purposes, we decided to undertake research on the preimaginal stages of populations of *P. bellieri* in the Sardinian-Corsican area and on the Isle of Elba, to verify any morphological differences between their eggs, larvae, and pupae. These investigations, although carefully conducted, did not provide clear evidence in this regard (Jutzeler & Leigheb, 2004). However, they confirmed the morphological differences of the imagines, as I maintained, between mountain populations (characterized by darker blue males, very wide black premarginal wing margins, and mostly brown females) and seaside populations (light blue, thinner black wing margins and blue-washed females).

In 1995, research by the La Sapienza University of Rome on the Lepidoptera of the islands of the Maddalena Archipelago (a Natural Park), in the North East of Sardinia, demonstrated the presence of *P. bellieri* in many of these islets: Isola Maddalena, Spargi, Santo Stefano, Budelli (Cobolli *et al.*, 2005); Jutzeler (2004) found it in Isola Santa Maria, and Balletto (2005) in

Caprera. In contrast, I neither found the taxon in the Asinara National Park, nor along the entire northern coast of Sardinia, from Argentiera to Stintino, and on the Isle of Tavolara, which I visited up to the summit accompanied by a military guard, in June 1995 (see also Leigheb *et al.*, 2005).

Morphological investigations

The study of male androconial scales, principally introduced by Müller (1877), became soon rather widespread among lepidopterists, and Eliot (1973) made extensive reference to androconial features. Courvoisier (1917, whose unnumbered plate was reproduced in Verity,1943, p. 161) was the first to compare some continental 'races' of *P. idas* with *P. bellieri*, based on these features. Although the use of this character declined in more recent times, it was not completely abandoned, and a notable exception is represented by the paper by Ômura *et al.* (2017), for the case of *Celastrina*.

However, these studies were, in their vast majority, aimed at trying to resolve taxonomic problems by complementing results obtained from other morphological features, while very few of them were carried out at the intraspecies level or tried to relate variation in the shape of androconia with respect to the local ecological conditions.

As expected, the comparison between the shape of the androconia (s.a.) in my preparations and those presented by Courvoisier (Fig. 1) demonstrated a heterogeneity of appearance even within each single population. It follows that the phenotype of s.a. of each population must be attributed to the androconia that are percentage-wise more numerous when reading the entire slide. Such heterogeneity should not be surprising, bearing in mind that in some lycaenids, androconial morphology can also vary between annual generations (Ball, 1914). I did not consider the counting of the ribs and nodules of the s.a. very significant, having noted their difficulty in reading and their inconsistency in rereading, in addition to their non-specificity. Moreover, in Courvoisier's picture, we note an equal number of nodules (12/13) in *P. bellieri* and in *P. idas armoricana* and 13/14 ribs in both *P. idas nivea* and *P.argyrognomon*.

The shape of the androconial scales of the studied colonies (Fig. 2) is described below.

- Italy, Valdieri Pian della Casa, 1700 m, Maritime Alps: *P. idas alpina*, Berge: small, oval, narrow at the peduncle, fig-shaped. Used as a control case for high elevation *P. idas*.
- Italy, Busseto, Emilia: *P. idas argellus*, Turati: ovoid, narrowed towards the peduncle. Used as a control case for low elevation *P. idas*.

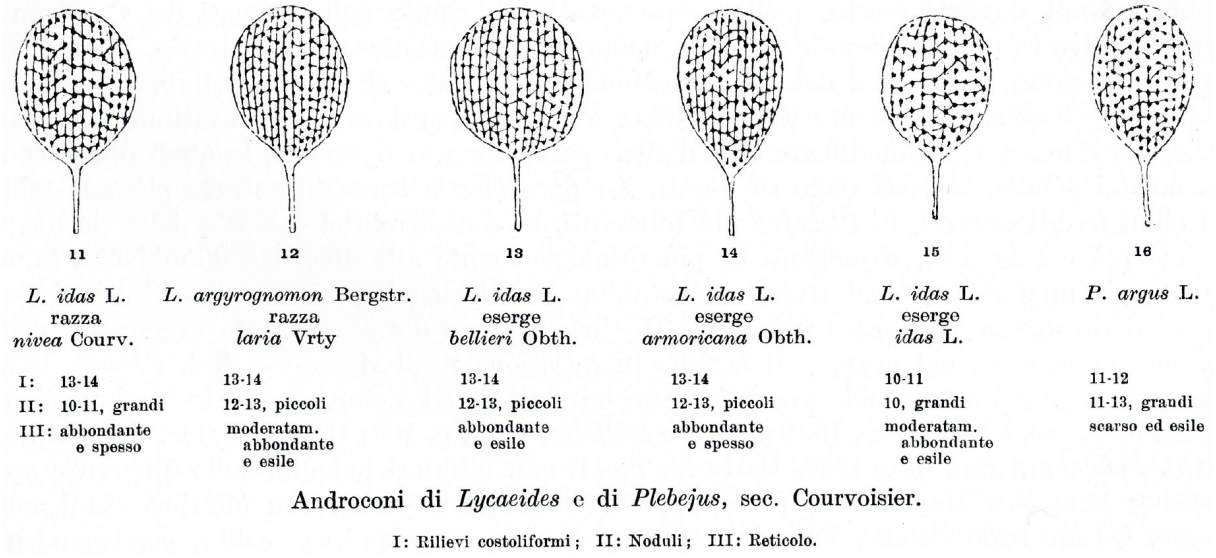

Fig. 1. Androconial scales of various 'races' of *P. idas* drawn by Courvoisier and reproduced by Roger Verity (1943, vol. 2, p. 162).

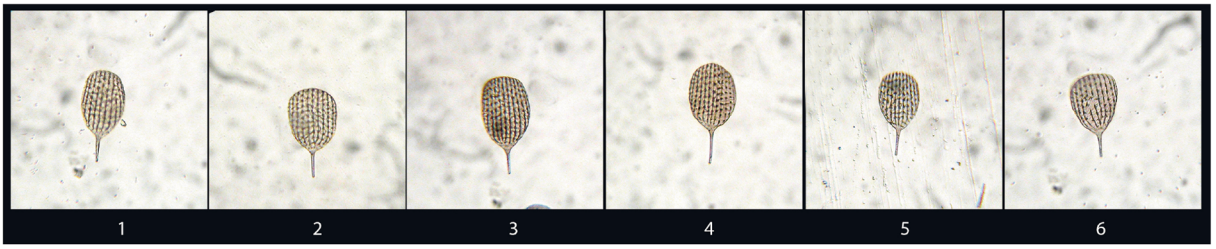

Fig. 2. Androconial scales of various populations of *P. bellieri* of the Sardinian-Corsican Complex investigated in this paper. 1) *P. bellieri* (Col D'Isa, Bastelica, Corsica); 2) *P. bellieri,* phenotype of Maddalena archipelago (Isle of Santo Stefano); 3) phenotype of Capo Caccia: (Capo Caccia, Alghero); 4) phenotype of Monte Limbara, Olbia; 5) mountain phenotype (Bruncu spina, Gennargentu); 6) mountain phenotype (Monte Iscudu, Gennargentu). Enl. 40×, G. Leigheb.

- Corsica, Bastelica, Col d'Isa, 800-1200 m *P. bellieri*, Oberthür: elliptical, ovoid, oar-shaped (N. 1)
- Sardinia, Capo Caccia: monomorphic, large, ellipsoidal, or ellipsoidal slightly flattened at the top (N. 3)
- Sardinia, Islet of Santo Stefano, Maddalena archipelago: similar to the previous ones but a little shorter and wider (N. 2)
- Sardinia, Monte Limbara, 1050 m: small, elliptical, oar-shaped (N. 4).
- Sardinia, Genna Silana, 1017 m: small, oar-like, fig-shaped.
- Sardinia, Gennargentu, Bruncu Spina, 1570 m: very small, elliptical, oar-shaped (N. 5)
- Sardinia, Gennargentu, Monte Iscudu, 1200 m: small, fig-shaped, distally broader (N. 6)
- Sardinia, Gennargentu, Monte Spada, 1360 m: small, very narrow, ovoid, narrowly oar-shaped.

My control samples from the northern Italian plains (Busseto) and mountains (Maritime Alps) may therefore be compared with those of European *P. idas* and *P. bellieri* from Corsica, as Courvoisier did in his time. Apart from highlighting a certain level of polymorphism in the various shapes of the androconia of *P. idas* and *P. bellieri*, no other significant differences have been noted. The smaller dimensions in the continental Alpine colonies of *P. idas* are probably a consequence of the influence of altitude-related (over 1700 m) factors and do not seem to reflect any species-level differentiation.

In the two Sardinian colonies located in different seaside habitats, a slight hypertrophy of the s.a. is noted in the specimens from Capo Caccia (large, ellipsoidal, distally flattened) and, on the contrary, a modest reduction in size in those of the islets of the Maddalena Archipelago. In the mountain populations of 'mainland' Sardinia, the androconia are consistently smaller, oar- and/or fig-shaped and narrower, clearly differentiating themselves from those of seaside origins. Probably the morphology of androconia is less selective than their functional electivity for the production of species-specific pheromones.

Based on wing and androconial phenotypic diversity, as well as for different biotopes of insular *P. bellieri*, the following mycrothopographic populations are described.

DESCRIPTION OF PHENOTYPES OF *PLEBEJUS BELLIERI* POPULATIONS

Mountain phenotype of Sardinia (Fig. 3; column 1, first at left-hand)

Monte Gennargentu, Bruncu spina, Sardinia, 1500 m, 5-VII-1995 and 16-VII-1994, legit G. Leigheb, in the Collection of the Regional Museum of Natural History of Turin (MRSN).
2 ♂♂ and 2 ♀♀: same data , 9-VII-94 leg. et coll. G. Leigheb (Novara).
10♂♂and 4 ♀♀ Monte Iscudu (Gennargentu), 1200 m,3-VII-2011 leg. G. Leigheb.
9♂♂ and 4 ♀♀ Genna Silana (Desulo), m 1000, 3-VII-1990, leg. G. Leigheb.
14♂♂ and 6 ♀♀ Monte Limbara (Olbia), m 1000, 3-VII-1982; 10-VII-1988, leg. G. Leigheb.
Male. Wingspan from 21 to 25 mm. Size varies depending on sites, but is generally larger when compared to all other Sardinian-Corsican taxa. Smaller sizes prevail above 500 m.
Upper wing surface (Ups): background colour dull blue with a hint of violet component. *P. bellieri* (Fig. 3, Col-

umn 2, second from right hand)are bright blue. Wing ciliae white.
Premarginal black band very wide (from 2 to 3 mm) on all wings, with shaded medial margin. Forewings sprayed whitish scales on the medial third of costa.
Lower wing surface (Uns). Ciliae white. Forewing: background colour gray with yellowish-brown hues. Discal and postdiscal spots larger than in continental *P. idas*, all ringed greyish brown scales (white in P. *bellieri* of Capo Caccia phenotype).
Hindwing: background colour as in forewing. All black spots very well marked, ringed as on the forewing. All submarginal markings of considerable thickness; premarginal orange lunules large and well-visible.

Fig. 3. Sardo-corsican *P. bellieri* populations. Left to right and top to bottom. Column 1: mountain phenotype from Bruncu Spina, Gennargentu (♂ Ups); (♂ Uns); (Ups brown ♀); (Ups blue-washed♀); (Uns brown ♀). Column 2: *P. bellieri* from Col d'Isa, Bastelica, Corsica (♂ Ups); (♂ Uns); (Ups blue-washed ♀); (♀ Uns). Column 3: phenotype from Capo Caccia, Alghero (♂ Ups); (♂ Uns); (Ups blue-washed ♀); (Uns ♀). Column 4: Maddalena archipelago phenotype from the Isle of Santo Stefano, Sardinia. (♂ Ups); (♂ Uns); (Ups blue-washed ♀); (Uns blue-washed ♀); (Ups brown ♀); (Uns brown ♀).

Female. Wingspan 23 to 26 mm.
Ups: dark brown with marginal black shading on the four wings. Females washed blue scales are less common than in the other phenotypes. More in detail: at Bruncu Spina (Gennargentu), 1500 m, out of 25 specimens in total, the females are 15, of which 12 are brown and 3 blue-washed. At Mt. Iscudu (Gennargentu), 1200 m, out of 14 specimens, 2 females are brown and 2 are blue. At Dorgali 1000 m, out of 27 specimens, the brown females are 7 and only 1 is blue. On Mt. Limbara, 1000 m, out of 32 specimens, the brown females are 6 and the blue ones 2 (even the dark ♀♀ have variable degrees of a slight blue suffusion on the wing bases).
Hind wings with orange lunules in numbers of two or three, centered by marginal black dots. 33% of the dark ♀♀ do not have orange lunules. Ciliae are variable, either white or brown, in darker individuals. Specimens with black borders may have white ciliae only at the apex of the forewings and/or also on the hindwings.
Uns: grey background colour with brown tones. All black spots are strongly marked on the four wings. Postdiscal black spots very large (double the size of Corsican *P. bellieri* [c.b.], especially on the forewings) and with enormous development of the ovalised fifth spot. The pale rings around the black spots are obscured by dark scales (white in Capo Caccia taxa and c.b.).
Hindwings. Similar to males, with marked development of the pre- and sub-marginal pattern of orange lunulae; marginal ocelli pupillated blue scales, surmounted by a series of large black triangles and a band of white arrowhead-shaped lines (different from the dull marginal patterns of c.b.).
This phenotype, typical of the interior of Sardinia, is restricted to hilly and mountain habitats between 500 and 1600 m. Like those of all Sardinian-Corsican-Elban taxa, the adults come in a single generation. They are on the wing in the first three weeks of July, while those of the populations of the marine coast emerge in June. It occurs with small, wide-spaced colonies found in the clearings within the wooded areas sparsely overgrown with shrubs of *Genista corsica* (possible host plant), *Cistus*, *Rubus* sp., and *Helichrysum* (nectar sources); butterflies are generally abundant (Fig. 4) (Leigheb *et al*., 2005). It was originally found only in the Gennargentu area and on Mount Limbara. The sites where its presence was confirmed during the present investigation are: Mt. Ispada, 1360 m, Mt. Iscudu, 1200 m, Bruncu spina, 1400-1570 m, on the Gennargentu massif; Seui, Barbagia Seulo, 800-900 m; Dorgali, Genna Silana, 1000 m; Mt. Limbara (Tempio Pausania), 800 m (Fig. 5, Bruncu Spina and Fig. 6, Mt. Limbara).

Sea-side phenotype of Capo Caccia promontory (Fig. 3; right-hand column)

Promontory of Capo Caccia (Natural Park), Alghero, Nurra Region, NW Sardinia, 5-VII-1995 legit Giorgio Leigheb, in coll. of the Regional Museum of Natural History, Turin (MRSN). ♀. Promontory of Capo Caccia, 9-VII-1994, legit Giorgio Leigheb. MRSN:10♂♂ and 10 ♀♀, idem: 9-VII-1994 ; 3-VII-1996; 9-VI-1998, in Coll. G. Leigheb.
Male. Wingspan 22 to 24 mm.
Ups: light, bright blue (lighter than in mountain taxa

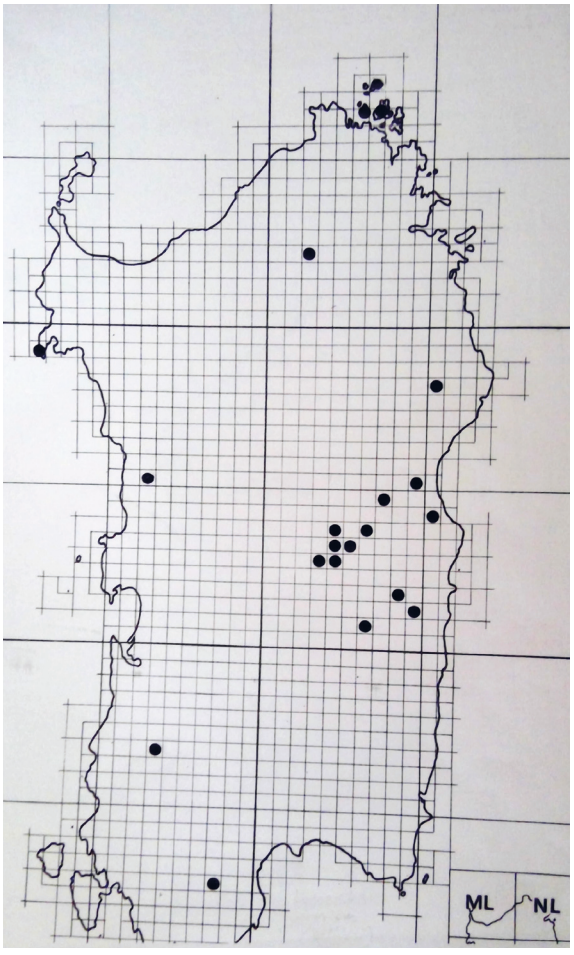

Fig. 4. Map of Sardinia showing sites where the presence of *P. bellieri* is known. Reproduced from: Leigheb *et al.* 2005.

and P. *bellieri*); premarginal black band thin (thinner than in mountain colonies and *belleri* from Corsica), with bluish-white shading on the wing base and the medial part of the costa (as in other populations). Ciliae white. Forewing veins obviously lined with black scales (as in c.b.) Hindwing: marginal black band wavy on medial edge due to the presence of submarginal black spots slightly projecting towards the discal area (less evident in *belleri* from Corsica).
Uns: background colour light gray (as in*belleri*). With white shading in basal areas. Postdiscal black spots large, the fifth one oval and medially expanded. Submarginal and marginal patterns of orange lunulae and pupillated ocelli well marked on both wings (pale or vestigial in c.b.). Ciliae white.
Female. On average, smaller than males. Most of the ♀♀ have more or less extensively blue-whashed wings, on Ups. Of 66 specimens observed from 1994 to 1998, the males were 42, the brown females 10 (40% of the ♀♀), and the blue ones 14 (58%) (G. Leigheb).
Ups: the blue scales extend to the medial third of the forewings, the medial half of the costa, and the lower two-thirds of the hindwings. The remaining wing portions are intensely blackish-brown with jagged medial limits. Wing veins are lined with black scales.
Uns: ground color a little darker than in males. A series of black spots larger than in c.b., especially the oval and medially shifted spot. Orange premarginal lunules well-marked and evident. Distal margin of hind wings blackish-brown with a series of internervular black dots on the medial edge. The brown ♀♀ are devoid of orange premarginal lunules (present in various numbers in mountain colonies).
The adults of the Natural Park of Capo Caccia are on the wing in June, and are restricted to the north-facing xerothermic Mediterranean sites of the maritime

Fig. 5. Mountain biotope towards Bruncu Spina, 1570 m, not far from Punta La Marmora, 1834 m (G. Leigheb).

Fig. 6. Mountain biotope towards Monte Limbara, 1359 m, wooded or bushy areas with clearings (G. Leigheb).

coast, subject to enormous temperature variations and lashed by impetuous winds and saltiness. Only two modest colonies, less than 1 km apart from each other, are known. The exposed geological substrate is of karstic limestone rocks showing frequent outcrops, grooves, and cavities covered by red earth, on which rare plant species grow, such as the endemic *Centaurea horrida*. *Stachys glutinosa*, *Cistus salviifolius*, and *Euphorbia dendroides* are also present, together with shrubs of *Genista sardoa* and *G. corsica* (Valsecchi, 1989), both potential food plants for the caterpillars of this butterfly (Figs. 7 and 8). In its southern strip, the complex nature of the promontory is characterized by *Juniperus phoenicea*, *Chamerops humilis nana*, and *Phyllirea*.

In principle, *P. bellieri* is here protected by the Natural Park of Capo Caccia, but requires utmost care, being a rare relic in a rare biotope. Unfortunately, the area is already suffering significant tourist impact. This set of colonies, initially identified as *P. idas bellieri* by Galassi (1959), was rediscovered by G. Leigheb in 1994 and has not yet been studied by molecular techniques.

Phenotypes of Maddalena archipelago (Fig. 3; column 4, last to the right)

Isola Santo Stefano, Archipelago of La Maddalena, N.E. Sardinia, 17-VI-1989, leg. M. Cobolli, M. Lucarelli and V. Sbordoni (in Coll. Sbordoni).

3 ♂♂, and 1 ♀, as above; in Coll. G. Leigheb (Novara).

Male. Wingspan 20-23 mm. This is the smallest-sized *P. bellieri* of Sardinia.

Ups: forewings more slender than in the Capo Caccia colonies and c.b., with very convex outer margin. Ground colour indigo blue, intermediate between the Capo Caccia phenotype and Corsican *bellieri*; dusted light blue in basal areas. Black marginal band thin (thinner than in c.b.), with a series of internervular black dots along its medial edge (as at Capo Caccia). Ciliae are white.

Uns: grey, with a slight brown tone (darker than in c.b.).

Fig. 7. Capo Caccia promontory, Natural Park, with a view of the cliffs overlooking the sea and the karst plateau above (G. Leigheb).

Fig. 8. Garigue on Capo Caccia, showing the poor herbaceous and bushy vegetation (G. Leigheb).

Postdiscal and discal spots strongly marked, all circled light gray scales (as in the mountain phenotype). Orange submarginal lunules very evident (pale in c.b.). The reduction in width of the white premarginal band located distally to the series of black postdiscal spots is conditioned by the hypertrophy of the black spots (wider in c.b). Marginal ocelli as in the Capo Caccia phenotype.

Female. Wingspan 20-22 mm.

Ups: normally washed bluish scales on a restricted part of wing surface, especially on hindwings, compared to c.b. and to the Capo Caccia phenotype. Veins lined black scales. Remaining wing parts intensely black-brown. The few brown females lack orange lunulae on hindwings. Submarginal black spots included in the marginal blackish band.

Uns: background colour gray, with a slight brown shade, darker than in Capo Caccia and c.b. colonies. All black spots strongly developed, circled in grayish white (as in the ♀♀ of all Sardinian-Corsican populations except Capo Caccia). Orange lunulae, black arrowhead triangles, and marginal ocelli well developed, with well-marked blue pupils (paler in c.b.).

The adults of the Maddalena archipelago are on the wing in June. Small colonies inhabit the arid garrigues lashed by strong winds and showing important variation in temperature. The colonised sites are overgrown by poor, predominantly bushy vegetation and sparse shrubs of *Genista corsica*, a possible host plant. This subspecies has colonized almost all the islands of the Maddalena Archipelago, including Santa Maria, Budelli, and Santo Stefano, which are the smallest.

Discussion

The above-reported observations, all based on features of the external morphology, have allowed us to make a global comparison between the various populations of *P. bellieri*. Karyotypic studies are unlikely to be useful at the taxonomic level, because although

unknown in this particular case, an identical chromosome number of 24 is shared across the entire *P. idas* complex. The examination of male genitalia, performed by Reverdin and Chapman (Verity, 1943, Vol. II, p. 168), demonstrated no difference between *P. idas* and *P. bellieri*. Genitalia sketchily illustrated by Higgins (1975b) and more recently studied by Volpe (in Jutzeler *et al*., 2003) were unable to highlight any significant differences between the various taxa, although a careful re-examination of the latter slides showed that those of Mountain phenotype are more voluminous than in Corsican *P. bellieri* and the valvae are covered with more evident and thicker setae.

The morphological study of androconial scales has shown that:

- those of *P. bellieri* from Corsica (elliptical), similar to those of Mt. Limbara (smaller) and different from those, larger and "oar-shaped" of Capo Caccia, and completely different from mountain populations;
- those of mountain phenotype, although polymorphic between sites, are always small and show an "inverted fig" shape (Bruncu Spina, Monte Iscudu, Genna Silana), or a shortened or narrowed "oar blade" shape (Monte Spada);
- those from the Maddalena archipelago have stocky "shortened oar blade" shape and resemble those of Mt. Spada, but are smaller.

As regards the wing morphology of the four populations considered, reference has been made in the previous paragraphs. Seaside phenotypes of the Maddalena archipelago are the smallest in size, and their underside design is a miniature. Coastal and insular biotopes are exposed to extremely stressful climatic conditions in the channel between Corsica and Sardinia called "Bocche di Bonofacio". In Corsica, in addition to *P. bellieri* of the internal mountainous areas, Manil & Diringer (2003) have reported the occurrence of a colony located at 300-500 m, close to the south-western marine coast (Porto), and perhaps similar to the phenotype of Capo Caccia. Males from this colony, described as 'forma pianae' (a name unfortunately unavailable: ICZN, Art. 15.2), are in fact characterized by a thin terminal black band, while females are blue-washed. Finally, the Elban *P. villai* (Jutzeler *et al.*, 2003) conclude the list of the *P. bellieri* morphae.

Another phenotypic characteristic, typical of the Sardinian-Corsican *P.b*., concerns the size of the discal and postdiscal black spots on the ventral surface of wings. A striking example of variation in this feature is found in *P. idas nevadensis* and in the *P. idas* colonies from the Simplon Pass and Slovakia.

Objectively, the width of the marginal black band brings *P. bellieri* closer to the Capo Caccia phenotype and, to some extent, also to the taxon of the small Sardinian islands, while it clearly differs from mountain phenotypes. The latter undoubtedly represents the most well-defined phenotype, the one that most differs from Corsican *P.bellieri* and whose particular distinctive characteristics have been presented: specific wing and genital morphology, specific androconial scales, specific habitats. I have long been tempted to classify it as a separate species. I refrained from so doing because the sequences of its COI-5P 'barcoding' gene did not support such a separation (Dapporto *et al.*, 2022).

The polymorphic features of Sardinian populations are probably the result of an interbreading mosaic among insular colonies of *P. bellieri.*

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Stefano Zoia*

On the misinterpretation of genus *Microeurydemus*, with description of the new genus *Daccordimolpus* (Coleoptera Chrysomelidae Eumolpinae)

Abstract: The discriminating characters of the genera *Microeurydemus* Pic, 1938, *Microsyagrus* Pic, 1952 and *Afroeurydemus* Selman, 1965 are reevaluated with the examination and redescription of the respective type species (*Microeurydemus unimaculatus* Pic, 1938, *Microsyagrus punctaticollis* Zoia, 2019, *Afroeurydemus nubiensis* (Harold, 1877)). The study of the type species highlighted the incorrect correspondence between the generic characters of *Microeurydemus* and those considered by various authors, starting from Selman (1965). In fact, *Microeurydemus* currently includes taxa that are not congruent with the characteristics of the genus itself in its original meaning. For these species, *Daccordimolpus* **n. gen.** is described, identifiable with *Microeurydemus* Auct. (nec Pic, 1938), including the following taxa: *D. africanus* (Jacoby, 1900) **n. comb.** for *Microeurydemus africanus* (Jacoby, 1900), *D. hartmanni* (Harold, 1877) **n. comb.** for *Eurydemus hartmanni* Harold, 1877, *D. oculatus oculatus* (Chapuis, 1879) **n. comb.** for *Microeurydemus oculatus* (Chapuis, 1879), *D. oculatus wraniki* (Lopatin, 1994) **n. comb.** and **n. stat.** for *Microeurydemus wraniki* Lopatin, 1994, *D. oculatus sobrinus* (Weise, 1903) **n. comb.** and **n. stat.** for *Eurydemus sobrinus* Weise, 1903, *D. adrarensis* (Pic, 1942) **n. comb.** for *Microeurydemus adrarensis* (Pic, 1942). After examination of the type specimens and further material, the following synonymies and a new combination are also formalized: *Microeurydemus fasciolatus* (Fairmaire, 1893) = *Daccordimolpus oculatus oculatus* (Chapuis, 1879) **n. syn.**, *Microeurydemus semivittatus* (Jacoby, 1899) = *Daccordimolpus oculatus oculatus* (Chapuis, 1879) **n. syn.**, *Microeurydemus airensis* (Pic, 1950) = *Daccordimolpus adrarensis* (Pic, 1942) **n. syn.**, *Phascus flavescens* (Bryant, 1942) **n. comb.** for *Microeurydemus flavescens* (Bryant, 1942). Some misidentifications published in works on the fauna of the Arabian Peninsula have also been verified and corrected. A key for the identification of the species of *Daccordimolpus* **n. gen.** and an updated version of the key published by Selman (1965, 1972) for the identification of African genera of Typophorini are also provided.

Riassunto: *Sull'errata interpretazione del genere* Microeurydemus*, con descrizione del nuovo genere* Daccordimolpus *(Coleoptera Chrysomelidae Eumolpinae).*

Sono rivalutati i caratteri discriminanti i generi *Microeurydemus* Pic, 1938, *Microsyagrus* Pic, 1952 e *Afroeurydemus* Selman, 1965 con l'esame e ridescrizione delle rispettive specie tipo (*Microeurydemus unimaculatus* Pic, 1938, *Microsyagrus punctaticollis* Zoia, 2019, *Afroeurydemus nubiensis* (Harold, 1877)). Lo studio della specie tipo ha evidenziato l'errata corrispondenza dei caratteri generici di *Microeurydemus* rispetto a quanto considerato da vari autori a partire da Selman (1965). *Microeurydemus*, infatti, include attualmente taxa non congruenti con le caratteristiche proprie del genere stesso nell'accezione originale. Per queste specie viene descritto *Daccordimolpus* **n. gen.**, identificabile con *Microeurydemus* Auct. (nec Pic, 1938), al quale sono qui ascritti i seguenti taxa: *D. africanus* (Jacoby, 1900) **n. comb.** pro *Microeurydemus africanus* (Jacoby, 1900), *D. hartmanni* (Harold, 1877) **n. comb.** pro *Eurydemus hartmanni* Harold, 1877, *D. oculatus oculatus* (Chapuis, 1879) **n. comb.** pro *Microeurydemus oculatus* (Chapuis, 1879), *D. oculatus wraniki* (Lopatin, 1994) **n. comb.** e **n. stat.** pro *Microeurydemus wraniki* Lopatin, 1994, *D. oculatus sobrinus* (Weise, 1903) **n. comb.** e **n. stat.** pro *Eurydemus sobrinus* Weise, 1903, *D. adrarensis* (Pic, 1942) **n. comb.** pro *Microeurydemus adrarensis* (Pic, 1942). A seguito dell'esame di esemplari tipici e di ulteriore materiale vengono inoltre formalizzate le seguenti sinonimie e una nuova combinazione: *Microeurydemus fasciolatus* (Fairmaire, 1893) = *Daccordimolpus oculatus oculatus* (Chapuis, 1879) **n. syn.**, *Microeurydemus semivittatus* (Jacoby, 1899) = *Daccordimolpus oculatus oculatus* (Chapuis, 1879) **n. syn.**, *Microeurydemus airensis* (Pic, 1950) = *Daccordimolpus adrarensis* (Pic, 1942) **n. syn.**, *Phascus flavescens* (Bryant, 1942) **n. comb.** pro *Microeurydemus flavescens* (Bryant, 1942). Sono inoltre state verificate e corrette alcune errate identificazioni pubblicate su lavori riguardanti la fauna della Penisola Arabica. Viene inoltre fornita una chiave dicotomica per l'identificazione delle specie di *Daccordimolpus* **n. gen.** e una versione aggiornata della chiave dicotomica pubblicata da Selman (1965, 1972) per i generi africani di Typophorini.

Key words: Eumolpinae, *Microeurydemus*, *Microsyagrus*, *Afroeurydemus*, *Daccordimolpus* n. gen., new combinations, new synonymies.

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Introduction

A recent study on material attributed by the authors to the genus *Microeurydemus* Pic, 1938, led me to review the original description and type specimens from Pic's collection at the Muséum National d'Histoire Naturelle of Paris, noting the incorrect attribution to this genus of almost all the material studied and published after Pic's original description.

Microeurydemus was described to include a single species, *M. unimaculatus* Pic, 1938, described

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at the same time, and characterized by Pic as close to *Eurydemus* Chapuis, 1874, but smaller in size, with the second antennomere proportionally shorter than the third, the thorax somewhat narrowed posteriorly, and a more compact body shape.

Selman (1965) included *Microeurydemus* in his key to the genera of African Eumolpinae assigning it an entirely different meaning, reporting diagnostic characters irrelevant to the original description of the genus and to the characteristics of the type species described by Pic. In the same paper (p. 149) *M. unimaculatus* is correctly reported as the type species of the genus; however, the description that follows does not at all match the characteristics of the type specimen housed in the Muséum National d'Histoire Naturelle of Paris (ex coll. Pic), which was probably not studied by Selman. In fact, among the species examined, Selman (1965) reported only *M. africanus* (Jacoby, 1900) and *M. semivittatus* (Jacoby, 1899) – both as new combinations established therein – and "*M. ongemepres* Pic", a taxon that appears never to have been described and has so far been found neither in the collection of the Muséum national d'Histoire Naturelle of Paris, nor recorded in a copy of Clavareau (1914) catalogue that Pic himself kept updated by hand in his personal library. *Microeurydemus* is subsequently reported by Selman (1972) in the same way as in his previous publication and has since been treated accordingly by subsequent authors (Daccordi, 1983; Lopatin, 1983; Lopatin & Konstantinov, 1994; Medvedev, 1996; Lopatin, 2008; Moseyko & Sprecher-Uebersax, 2010; Bezděk & Batelka, 2011; Zoia, 2019, 2024; Janikova, 2023; Bezděk & Sekerka, 2024).

The aim of this work is to redefine the genus *Microeurydemus* based on the type species, to assess its relationships with the related genera, and propose a new combination within a new genus for some taxa currently attributed to *Microeurydemus* and not classifiable within the genera described so far.

The definition of the original characteristics of *Microeurydemus*, in addition to the changes proposed herein, will probably require the re-evaluation of the generic attribution of several species currently attributed to the related genera *Microsyagrus* Pic, 1952, or *Afroeurydemus* Selman, 1965, a work that goes beyond the scope of the present study. However, I believe it is appropriate here to provide a redescription of the type species of these three genera, integrating the original data provided by their respective authors with additional observations.

Materials and Methods

The studied material belongs to the following collections:

AFMT – Africa Museum, Tervuren, Belgium
ISNB – Institut des Sciences naturelles, Bruxelles, Belgium
JMcoll – Joachim Mauser collection, Ballrechten-Dottingen, Germany
MFNB – Museum für Naturkunde, Berlin, Germany
MLcoll – Michael Langer collection, Niederwiesa, Germany
MSNG – Museo Civico di Storia Naturale "G. Doria", Genoa, Italy
MSNM – Museo Civico di Storia Naturale, Milan, Italy
MNHN – Muséum national d'Histoire naturelle, Paris, France
MTMB – Magyar Természettudományi Múzeum, Budapest, Hungary
NHMB – Naturhistorisches Museum Basel, Suisse
NHML – Natural History Museum, London, England
NMCZ – National Museum Natural History Museum, Praha, Czech Republic
NKME – Naturkundemuseum Erfurt, Erfurt, Germany
SZcoll – Stefano Zoia collection, Milan, Italy

Drawings were made with a drawing tube on a Zeiss Standard microscope either from dried material or, for spermathecae, by temporarily soaking the entire genital tract in a solution of lactic acid, chloral hydrate, and water; the drawings were then digitally processed. In the dorsal view of the aedeagi figured herein, the dorsal surface of the apex is positioned horizontally.

The reported length of the specimens includes the head, which is closely inserted into the prothorax. The ratio of frons width to eye width, in order to describe the dimensions of eyes in relation to their minimum distance, was measured in frontal view along a horizontal line at the level of the minimum width of the frons and the corresponding widest point of the eye.

The dissected aedeagi were glued to a card, which was pinned together with the specimen; the dissected female genitalia were preserved in a plastic microvial with glycerin, also pinned together with the specimen. Locality data are given as they appear on the labels of the specimens.

***Microeurydemus* Pic, 1938**

TYPE SPECIES: *M. unimaculatus* Pic, 1938 (monotypy)

DESCRIPTION. A genus in Typophorinae, with glabrous body, 5-6 mm in size; head inserted in prothorax till proximal margins of eyes, partially covered by hypomera when head is bowed, eyes moderately large, convex, distinctly emarginate near antennal insertion, shortest distance between eyes only slightly narrower than, equal to, or greater than width of single eye, ocular sulci narrow, slightly moving forward from edge of eyes towards inner side of slightly raised antennal tubercles; frontoclypeal suture vanished; antennae elongated, distal antennomeres poorly widened, first antennomere elongated, moderately swollen, second smaller than first, nearly 1/3 shorter and wider than third; pronotum regularly convex, transverse, distal edge narrower than base, sides curved, shortly restricted to rear, lateral margin with narrow, distinct, complete border, bearing a single seta at basal corner inserted on small tooth; anterior setae of prothorax arising below lateral edge of pronotum; distal edge of hypomera convex, ending in middle of distal border of procoxal cavities, separate from distal edge of prosternum; prosternum wide, slightly wider between procoxae than long, distal edge somewhat bent downward; suture between hypomera and prothoracic episterna superficial or almost vanished; legs long, femora swollen, toothed in middle; ridges of tibiae not very evident, only slightly raised, meso- and metatibiae emarginate pre-apically, emargination with comb of setae continued into apical basket; last tarsomere exceeding by its half length the third tarsomere, claws bifid; scutellum triangular, somewhat rounded at apex; elytra longer than wide at shoulders, with longitudinal rows of punctures, regular or partly confused on elytral sides; pygidium not grooved.

NOTES. Most of the characteristics of *Microeurydemus*, including the general appearance of the body, are shared by *Microsyagrus* Pic, 1952, and *Afroeurydemus* Selman, 1965. These genera are characterized by antennae with the first antennomere elongated, not particularly swollen, and elongated elytra with sides almost straight or moderately widened in the basal third.

Considering the current state of knowledge, *Microsyagrus* includes some species with less developed eyes and second antennomere moderately curved, approximately equal in length to the third, anterior setae of prothorax arising at a level or just below the level with the lateral edge of pronotum, hypomera poorly protruded, their distal edge almost straight and continuous with the edge of prosternum, pronotum less restricted frontward, the basal corners feebly produced.

Microeurydemus appears more closely related to *Afroeurydemus* which mainly differs in larger eyes, with minimum distance between the two eyes equal to or slightly greater than half the horizontal diameter of one eye, ocular sulci narrow, adhering to edge of eyes in all their length, antennal tubercles not evident, suture between the hypomera and the prothoracic episterna deeply impressed, especially in its distal half, tibiae with raised ridges.

***Microeurydemus unimaculatus* Pic, 1938** (Figs. 1-5)

Microeurydemus unimaculatus Pic, 1938: 35

HOLOTYPE EXAMINED: Gabon (MNHN)

DESCRIPTION. Habitus as in Figs. 1 and 2; body length of holotype 5.5 mm. Body uniformly reddish, glossy, mandibles dark brown, palpi yellowish, each elytron with a black spot in its middle on interstriae 4th and 5th, antennomeres 7th-11th darker. Frons moderately convex; surface smooth, with barely visible punctation, glabrous, distally slightly longitudinally impressed in middle; ocular sulci narrow, slightly moving forward from the edge of eyes towards the inner side of antennal tubercles that are slightly raised; clypeus not separated from frons, with barely visible punctation, its distal border concave. Penultimate article of maxillary palp nearly so long as wide, the ultimate elongate, conical, nearly 2.5 times longer than penultimate. Antennae slender, going beyond half-length of elytra. Antennomeres slender, 2nd a little shorter than first, 1/3 shorter than 3rd, 3rd-7th nearly 5 times longer than wide, 6th-11th a little wider, nearly 5 times longer than wide. Eyes relatively large, space between the inner border of the eyes in frontal view is nearly so wide as the width of an eye. Pronotum nearly 1.5 times wider than long, maximum width a little ahead of the base; base finely bordered, 1.6 times wider than distal edge which is thinly bordered only at sides; lateral edges, as seen from above, more bent proximally, restricted distally, bordered in all their length; surface smooth, unpunctured, evenly convex; anterior seta of prothorax arising below the level of lateral edge of pronotum; posterior seta arising from a small tooth on the basal corner of pronotum. Surface of hypomera not punctured, smooth, separated from prothoracic episterna by a light furrow, the distal margin shortly protruded, feebly convex, covering posterior part of eyes, ending with a low carina in the middle of

anterior edge of procoxal cavities and so separated from distal edge of prosternum which is bent downwards; prosternum wide, a little wider between procoxae than long, surface smooth with a few very thin hairs. Ventral side of body smooth, nearly glabrous. Mesoventrite somewhat longer than wide between mesocoxae, flat in middle; mesocoxae a little less spaced than procoxae; mesoepimera not punctured, alutaceous. Metaventrite not punctured, glossy; metacoxae more spaced than mesocoxae; metathoracic episterna tapering to rear, nearly 3.8 times longer than wide, with a very fine microreticulation, glabrous. Scutellum triangular, a little wider at base than long, apex shortly rounded, smooth, with barely visible sparse punctures. Elytra strongly convex, 1.1 times longer than wide at humeri ; elytral sides feebly widening from humeri to about mid-length, then regularly bent till the apices; apices in a slightly acute angle; elytral striae regular, impressed at base and on elytral disc, vanishing on apical slope; interstriae almost flat, slightly convex on elytral base, smooth. Epipleura moderately wide at base, gradually tapering to rear, glabrous, smooth, impunctate. Metathoracic wings fully developed. Legs long; femora swollen, with an acute tooth, which is smaller on mesofemora; tibiae nearly straight, with low longitudinal ridges, meso- and metatibiae emarginate near the apex. Last tarsomere exceeding by its half length the third; claws bifid, inner tooth thin, nearly reaching half length of claw.

Notes. The species was recorded from Nigeria (prov. Munschi: vallée de la rivière Benn: Loko) by Papp (1952).

I refer to this taxon 3 ♀♀ labeled: NE Gabon, Ogooué-Ovindo Prov., Makokou, Parc National Ivindo, 12°43’00”E, 0°28’00”N, 0°30’N, 12°48’E Ipassa, XII.2013 F. Gallizia leg. (SZcoll). These specimens vary in coloration from uniformly reddish (Fig. 4), without any black spot, to the presence of two small black spots on disc of pronotum (Fig. 3), with or without elytral spots as in Holotype. Moreover, two specimens show irregularly arranged punctation on elytral sides. Antenna as in Fig. 5.

***Microsyagrus* Pic, 1952**

Type species: *M. punctaticollis* Zoia, 2019 [= *M. trinotatus* Pic, 1952 (nec Pic, 1939)] original designation by Pic, 1952)

Notes. For distinctive characters of the genus see Selman (1965, 1972) and here in notes to *Microeurydemus* and in key at the end of this work.

***Microsyagrus punctaticollis* Zoia, 2019** (Figs. 6-10)

Microsyagrus trinotatus Pic, 1952: 507 (nec Pic, 1939)

Microsyagrus punctaticollis Zoia, 2019: 11

Syntypes examined: Koussoukouangou Atakora 600–700 / IFAN 1950 Dahomey 12–20. VI A. Villiers / Microsyagrus trinotatus n. sp. (1 ex., MNHN ex IFAN coll.); Koussoukouangou Atakora 600–700 / IFAN 1950 Dahomey 15.VI A. Villiers / Microsyagrus trinotatus mihi (1 ex., MNHN ex Pic coll.)

Description. Habitus as in Figs. 6-8; body length of syntypes 3-3.6 mm. Ventral part of body dark brown, head red ochre with a darker spot on vertex, dorsum red ochre, glossy, two blackish spots on disc of pronotum, scutellum at least partially blackish, suture, humeri, 4th and 5th elytral interstriae and elytral lateral edges with blackish stripes or spots, mandibles dark brown, palpi reddish, antennae yellow to ochre with darker antennomeres 7th-11th, legs red ochre, distal parts of femora, of meso- and metatibiae and tarsi dark brown to blackish. Frons moderately convex; surface smooth, with deep sparse punctation, glabrous, distally more densely punctured in middle; ocular sulci narrow and relatively deep, slightly widened to rear, slightly moving forward from the edge of eyes towards the inner side of antennal tubercles that are barely raised; clypeus barely separated from frons, sparsely punctured, its distal border nearly straight. Penultimate article of maxillary palp a little longer than wide, ultimate elongate, conical, nearly 3 times longer than penultimate. Antennae slender, reaching the basal third of elytra. Antennomeres slender, 1st elongated, 1.8 times longer than wide, 2nd distinctly curved, as long as 1st and just a little longer than 3th, 3rd-5th subequal, nearly 3 times longer than wide, 6th shorter, 7th-11th wider, more than twice longer than wide. Eyes moderately large, space between the inner border of eyes in frontal view nearly 1.5 times wider than width of an eye. Pronotum nearly 1.4 times wider than long, maximum width a little ahead of the base; base finely bordered, 1.3 times wider than distal edge which is thinly bordered at sides; lateral edges, as seen from above, more bent proximally, restricted distally, bordered in all their length; surface smooth, evenly convex, with a strong sparse punctation, on average the distance between two adjacent punctures as wide as diameter of a puncture; anterior seta of prothorax arising just below the level of lateral edge of pronotum; posterior seta arising from a small tooth on basal

corner of pronotum. Scutellum triangular, so wide at base as long, apex shortly rounded, smooth, unpunctured. Surface of hypomera smooth, separated from prothoracic episterna by a thin furrow, distal margin nearly straight, not covering posterior part of eyes, barely separated from distal edge of prosternum which is weakly folded downwards; prosternum wide, a little longer than wide between the procoxae, slightly convex. Ventral side of body smooth, poorly pubescent. Mesoventrite longer than wide between the mesocoxae, flat in middle; mesocoxae less spaced than procoxae; mesoepimera not punctured, alutaceous. Metaventrite not punctured, glossy; metacoxae more spaced than mesocoxae; metathoracic episterna tapering to rear, nearly 5 times longer than wide, unpunctured, glabrous. Elytra convex, oblong, 1.3 times longer than wide at humeri; elytral sides subparallel from humeri to over mid-length, then regularly curved towards apices; apices forming acute angle; elytral striae regular, with deep punctures impressed also on apical slope; interstriae slightly convex, smooth. Epipleura moderately wide up to mid-length, then gradually tapering posteriorly, glabrous, smooth, impunctate. Legs moderately long; femora moderately swollen, with a small acute tooth, which is smaller on mesofemora; tibiae nearly straight, with low longitudinal ridges, meso- and metatibiae emarginate near the apex. Last tarsomere exceeding by half its length the third; claws bifid, inner tooth thin, nearly reaching half length of claw.

Notes. I refer to this species 3 specimens labelled: Sierra Leone, Northern Province, Bumbuna, 6/14.VI.1987 W. Rossi leg. (SZcoll). They somewhat differ in coloration from the examined syntypes, as one specimen is almost devoid of blackish spots (Fig. 9). These are replaced by halos, slightly darker than the background colour, and the ventral part is red ochre, a variation already described by Pic (1952). Antenna as in Fig. 10.

***Afroeurydemus* Selman, 1965**

Type species: *Eurydemus geniculatus* Jacoby, 1904 [= *A. nubiensis* (Harold, 1877)] (original designation by Selman, 1965)

Notes. For diagnostic characters of the genus see Selman (1965, 1972) and notes to *Microeurydemus* herein and in key at the end of this work. The choice of Selman (1965) to indicate *A. geniculatus* as the type species of *Afroeurydemus* is unclear, as he recorded this name in a list (same publication, p. 151) as both a valid species and a new synonym of *A. nubiensis*. After examination of a large material, I consider the synonymy proposed by Selman to be correct. Considering the morphological variability found in the studied material of this species, I think it is useful to provide a description based on material at my disposal, collected in different locations covering a good part of eastern and southern Africa as listed below.

***Afroeurydemus nubiensis* (Harold, 1877)** (Figs. 13-22)

Eurydemus nubiensis Harold, 1877: 100
Eurydemus geniculatus Jacoby, 1904: 250
Eurydemus nubiensis, Jacoby, 1904: 251
Afroeurydemus geniculatus, Selman, 1965: 150, 151
Afroeurydemus nubiensis, Selman, 1965: 151

Holotype examined: Sennaar (MFNB)

Examined material: Type H.T./ Beira / Jacoby Coll. 1909-28a [Syntype: *Afroeurydemus geniculatus* Jacoby, 1904 - NHML] (another Syntype in the Museum of Comparative Zoology, Harvard University: https://mczbase.mcz.harvard.edu/name/Eurydemus%20geniculatus). **Ethiopia**: Sidamo pr., 1150 m 10 km SE Konsa 17.4.2007 J. Halada lg. (2 exx. MNCZ); Oromyia region, 6 km NW Dolomena (H= 1400 m) IV.2017, Leg. R. Beck (1 ex. SZcoll); Gemu Gofa, Arba Minch 27/28.IV.97 Werner leg. (1 ex. SZcoll); Gamo Gofa, 30 km S Arba Minch, Lake Chamo 1150m, V.2008, R. Beck, G. Riedel (1 ex. SZcoll); Gamo Gofa pr. 1200 m, 45 km SA Arba Minch, J. Halada lgt. 15.4.2007 (1 ex. MNCZ); Chencha prov., secondary forest, 5 km SW from Arba Minch 5°58,139'N, 037°32,329'E 19.VI.2011 V. Hula leg. (14 exx. SZcoll); Mago N. P. V.2013 leg. R. Beck & R. Wanninger (2 exx. SZcoll); SNNSP st. 20 km SE Konso, 850 m N 05°15' E 37°32', Leg. J. Halada 13.4.2016 (2 exx. SZcoll); Konso, 1900 m, 4°55'39"N, 38°01'30"E 8.vii.2012 V. Hula leg. (11 exx. MNCZ; 2 exx. SZcoll). **Somalia**: Somaliland, 9.-13.ix.2017, E of Boorama, Amoud University Campus, 9°56'52"N 43°13'23"E, ca 1400 m, Davis Král lgt. (2 exx. NMCZ); Belet Amin (Giuba) Apr. 1923 Patrizi (4 exx. SZcoll); Jach Sciumo (Giuba) Patrizi 1923 (1 ex. SZcoll); Bidi-Scionde, Basso Giuba, Patrizi 1924 (2 exx. SZcoll). **Kenya**: Garissa env. 30.XI.1999 M. Snížek lgt. (79 exx. SZcoll); S of Garissa, 10 km S of Hola, Snížek 27.IV.2011 (7 exx. SZcoll); Garissa N of Hola 25.IV.2008 lgt. M. Snížek (2 exx. SZcoll); S of Garissa, 40 km N of Bura,

Snížek 25.4.2011 (1 ex. SZcoll); S of Garissa, Bura env., 4.12.2010 Snížek (2 exx. SZcoll); E 729, Sosoma, 202 km E of Thika, 27.4.2008 Lgt. M. Snížek (2 exx. SZcoll); idem, 20.11.2007 (1 ex. SZcoll); E of Thika, Kangonde 25.XI.2011, 1500 m, M. Snížek lgt. (1 ex. SZcoll); Mwingi, Nguni env., 28.XI.1999 M. Snížek leg. (10 exx. SZcoll); idem, 26.XI.1999 (45 exx. SZcoll); Katutu-Kihtioko 27.XI.1999 M. Snížek leg. (11 exx. SZcoll); Kiboko env., 21.XI.1999 M. Snížek leg. (7 exx. SZcoll); 50 km N of Namanga, Ilbisil env., 18.XI.1997 lgt M. Snížek (1 ex. SZcoll); near Kibwezi, 2.XII.96 Werner & Lizler leg. (1 ex. SZcoll); NW of Garsen, 22.4.2008 Lgt M. Snížek (6 exx. SZcoll); idem, 14-17.XII.2009 (13 exx. SZcoll); Coast E of Garsen, W of Witu, 7.XII.2007 lgt. M. Snížek (18 exx. SZcoll); idem, 19.XII.2009 (1 ex. SZcoll); idem, 7.12.2010 (1 ex. SZcoll); Sagala reg., Voi, 3/4.12.96, Werner & Lizler (1 ex. SZcoll); Voi, S Foot Sagala Mts., 12.12.2007, Lgt. Snížek (3 exx. SZcoll); Voi, 10.12.1999 Lgt. M. Snížek (2 exx. SZcoll); idem, 22.XI-2.XII.1996 (1 ex. SZcoll); idem, 8-18.XI.1996 (3 exx. SZcoll); idem, 27.III-4.IV.1997 (1 ex. SZcoll); idem, 11.1997 (3 exx. SZcoll); idem, 13-17.XII.1997 (8 exx. SZcoll); SW of Voi, 8-12.XII.2009 M. Snížek lgt. (3 exx. ZScoll). **Tanzania**: Mombo, 12.3.2002 Lgt. M. Snížek (1 ex. SZcoll); W, S, SE edge Makata Plain (Morogoro) 9.3.2002 Lgt. M. Snížek (3 exx. SZcoll); Uluguru Mts., 4/1997 Werner (1 ex. SZcoll). **Zimbabwe**: Nyagui riv. vall., 50 km E of Bindura 16.XII.1998, lgt. F. Kantner (4 exx. MNCZ, 1 SZcoll); Chivhu, The Range env., 30.XI.1998, M. Snížek leg. (2 exx. SZcoll); Mvuma, route Gutu-Chatsworth, 24.II.1998, M. Snížek leg. (4 exx. SZcoll); Shangani, 60 km SW of Gueru 2.XII.1998 lgt. F. Kantner (7 exx. MNCZ; 1 ex. SZcoll); Bettbridge, Zezani env., 3.12.1998, M. Snížek leg. (1 ex. SZcoll); Bubi river vall., 70 km N of Beitbridge, 8.XII.1998 lgt. F. Kantner (1 ex. MNCZ; 1 ex. SZcoll.). **South Africa**: Limpopo, Thabazimbi, 21.XII.2008, M. Snížek lgt. (2 exx. SZcoll); North West prov. Klerksdorp, Vaal riv., 20 km W of Bothaville, 12.I.2001, lgt. M. Snížek (2 exx. SZcoll); W of Bothaville, Vaal river, 26.X.2009, M. Snížek lgt. (4 exx. SZcoll); Natal, Ndumo G. R., 5.11.2001, 26 52 S, 32 16 E, Lgt. Fencl (1 ex. SZcoll); Kwazulu Natal, Mkuze, 28-29/12/2016, Leg. Tedeschi (1 ex. SZcoll); E Cape, 5 km E Port St. Johns, 31.36.58 S 29.34.61 E, 8/9.XI.2006, E. Colonnelli (1 ex. SZcoll); Kap prov., Karoo, Graaf-Reinet Camp, 32°14'S, 24°32'E, 500 m NN, 29.XI.-01.XII.1996, leg. M. Hartmann (1 ex. SZcoll); Western Cape, Olifants rivier dam nr. De Rust, 33°30.7'S 22°36.2'E 20.i.2020 P. Burlisch lgt. (3 exx. MNCZ).

Description. Habitus as in Figs. 13-15, 20; body length 3.8-5.6 mm. Ventral part of body black or dark brown with abdominal sternites usually more or less widely reddish in middle; head red usually with darker vertex; dorsum glossy, red with black spots, two large black spots on pronotum usually not reaching the distal edge and lateral sides which are red as well as base of pronotum in middle; scutellum at least partially blackish; suture black, humeri, a large part of elytral interstriae 3rd to 5th and elytral epipleura with blackish stripes or spots, in some specimens, usually♀♀, nearly all surface of pronotum and a large part of elytra black (Fig. 20), mandibles dark brown, palpi ochre red, antennae ochre red sometimes with somewhat darker antennomeres 7th-11th, legs red ochre, distal part of femora blackish, proximal part of tibiae and sometimes apical part of meso- and metatibiae and tarsi darkened. Frons convex; surface with deep sparse punctation, glabrous, with a very thin superficial longitudinal furrow in middle; ocular sulci narrow and relatively deep, not widened to rear, close to edge of eyes in all their length; clypeus not separated from frons, strongly and closely punctured, distal border concave. Penultimate article of maxillary palp wider than long, ultimate elongate, conical, nearly 2 times longer than penultimate. Antennae (Fig. 19) slender, reaching the basal third of elytra. Antennomeres slender, the 1st elongated, 1.8 times longer than wide, 2nd a little shorter than 1st and nearly as long as 3th, 4rd-5th subequal, nearly 3 times longer than wide, 6th shorter, 7th-11th a little wider, conical, more than twice longer than wide. Eyes large, width of an eye nearly 3 times wider than the space between inner border of eyes, both in ♂ and ♀. Pronotum transverse, strongly convex distally, nearly 1.3-1.4 times wider than long, maximum width at 1/4 of the length; base bordered, a little wider than distal edge which is bordered only at sides; lateral edges, as seen from above, regularly bent, bordered in all their length; surface smooth, evenly convex, with a strong sparse punctation, on average the distance between two adjacent punctures wider than diameter of a puncture, and a secondary very fine punctation in the interspaces; anterior seta of prothorax arising just below the level of lateral edge of pronotum; posterior seta arising from a small tooth on basal corner of pronotum. Scutellum ogival with sides subparallel towards the base, nearly so long as wide, apex angled, surface

smooth, unpunctured. Surface of hypomera smooth, finely and sparsely punctured, separated from prothoracic episterna by a relatively deep thin furrow, distal margin convex, covering posterior part of eyes, ending with a low carina in middle of distal edge of procoxal cavities, and so separated from distal edge of prosternum which is weakly folded downwards; prosternum relatively narrow, 2.8 times longer than wide between the procoxae, nearly flat, strongly punctate rugose. Ventral side of body smooth, almost glabrous. Mesoventrite longer than wide between the mesocoxae, flat in middle, with a sparse punctation; mesocoxae nearly so spaced as the procoxae; mesoepimera not punctured, alutaceous, with a fine microreticulation. Metaventrite not punctured, glossy; metacoxae more spaced than mesocoxae; metathoracic episterna tapering to rear, nearly 4.5 times longer than wide, unpunctured, glabrous. Surface of abdominal sternites smooth, with a hardly visible punctation; only the base of first abdominal sternite with a sparse stronger punctation in middle. Elytra convex, oblong, 1.3 times longer than wide at humeri; elytral sides subparallel from humeri to over mid-length, then regularly bent till apices; apices in a slightly acute angle; elytral striae regular, with punctures impressed also on apical slope; interstriae slightly convex, smooth. Epipleura moderately wide up to half length, then gradually tapering to rear, glabrous, smooth, impunctate. Legs moderately long; femora swollen, with a relatively large acute tooth, which is somewhat smaller on mesofemora; pro- and mesotibiae slightly curved, metatibiae nearly straight, with longitudinal ridges, meso- and metatibiae emarginate near apex. Last tarsomere exceeding by 2/3 of its length the third; claws bifid, the inner tooth thin, slightly overcoming half length of the claw. Aedeagus as in Figs. 16-18, the apex wide, flat, slightly asymmetrical. Spermatheca as in Fig. 21, with a relatively short and thin accessory gland and moderately long, tightly spiralled ductus ending in a large sclerotized plate of vagina shaped as in Figs. 21 and 22.

NOTES. Examined specimens from Zimbabwe and South Africa show on average a greater extension of black spots on dorsum and of black parts of legs, which are sometimes almost entirely black; they also differ in aedeagus, which is slightly larger, and with a rounded and nearly symmetrical apex (Fig. 17), while spermatheca and sclerotized part of vagina do not show appreciable differences. Observed differences appear constant; however, I do not consider it appropriate to distinguish these southern populations as a separate taxon, even at subspecific level, in the absence of further material to cover the gap between the northern and southernmost populations.

Daccordimolpus n. gen.
urn:lsid:zoobank.org:act:
8901DEED-F20B-4979-93AC-2E7C0B903D2C

Microeurydemus Auct. (nec Pic, 1938)

TYPE SPECIES: *Eurydemus hartmanni* Harold, 1877

DESCRIPTION. A genus in Typophorinae characterized by elongated, almost glabrous body; length 4-5.5 mm. Clypeus not separated from frons; eyes emargination relatively deep, approximately as deep as length of 5 ommatidia, eyes very large and close-set, somewhat larger in ♂♂ with diameter of an eye equal to nearly 6-7 times the distance between eyes; ocular sulci narrow and shallow, close to margin of eye; penultimate article of maxillary palp a little longer than wide, ultimate elongate, conical, nearly 1.7 times longer than penultimate. Antennae slender, going beyond humeri, not reaching the elytral mid-length; 1st antennomere somewhat swollen, following slender, 2nd a little shorter and narrower than first and somewhat shorter than or nearly so long as 3rd, 3rd-6th subequal, 7th-11th poorly widened. Pronotum punctured, somewhat flattened dorsoventrally, strongly transverse; sides of pronotum evenly curved, bordered along their entire length; base bordered in its entire length, distal edge with a very fine border in middle, gradually more strongly bordered at sides where the border is marked by a relatively deep impression; anterior seta of prothorax arising at a level with the lateral edge of pronotum, posterior seta arising from a small tooth on basal corner of pronotum. Scutellum ogival, nearly so long as wide. Hypomera separated from prothoracic episterna by a deep furrow, the distal margin shortly protruded, feebly convex, covering posterior part of eyes, ending with a carina in the middle of anterior edge of procoxal cavities and so separated from distal edge of prosternum which is bent downwards; prosternum relatively narrow in middle, nearly 2.5 times longer than wide between the procoxal cavities. Mesocoxae more spaced than procoxae, metacoxae somewhat more spaced than mesocoxae. Pygidium not grooved. Elytra oblong, sides subparallel in their basal half, humeri developed, elytral punctation regularly arranged in longitudinal striae, comprising a short scutellar stria

and nine striae, the 7th divided into three at the beginning of apical slope of elytron, the 9th short, re-joining the line of dots that marks the fold of lateral edge; epipleura moderately broad and narrowing backwards to the apical angle of elytra. Legs moderately long, femora swollen, more so the profemora which are armed with a large triangular tooth whose height is approximately equal to half diameter of corresponding femur and whose base is greater than its height, its surface with sparse fine hairs; meso- and metafemora with a small median tooth; meso- and metatibiae emarginate near apex, the emargination with a comb of setae which continue in an apical basket; last tarsomere exceeding by more than its half length the third tarsomere, claws bifid with inner tooth exceeding half length of claw.

Derivatio nominis. I am pleased to dedicate this genus to Mauro Daccordi, well-known specialist in Chrysomelinae, friend and fellow traveller in entomological tours; gender name is masculine.

NOTES. *Daccordimolpus* n. gen. corresponds to *Microeurydemus* sensu Selman, 1965 and subsequent authors, as specified above in introduction. Based on examined material, two groups can be easily distinguished based on exoskeletal and aedeagic morphology, also distinct in their geographical diffusion, as highlighted in the following identification key at point 1. For those species for which it was possible to examine a more abundant material, coming from different localities, a large morphological variability was observed; it was found also that differences observed among various populations usually vanish for presence of considerable variability inside each population, regarding shape of pronotum (with maximum width towards mid-length or more distally shifted till the distal third, sides evenly curved throughout or nearly straight proximally), punctation of pronotum (from extremely fine to strong and moderately deep), presence or absence of a micro-sculpture on surface of pronotum and elytra, variability in coloration, both with presence of more or less defined dark spots or with a more or less uniform and extensive dark coloration which is more or less shaded towards lighter parts (generally the apical area of elytra, humeral zone, sides of pronotum, ventral side of body), size of body. In particular, with reference to specimens of *Daccordimolpus* from East Africa, the uniformity of characteristics of both aedeagus and spermatheca, combined with notable morphological and chromatic variability makes it difficult to maintain the distinction of various described taxa for this area, often described on a single specimen.

Adopting a conservative approach towards the names published so far, a taxonomic solution has been sought that also considers the geographical distribution of the major observed chromatic patterns, which seems to be the only aspect that allows us to distinguish some populations from others, every other aspect being apparently taxonomically irrelevant. This has led to formalization of some synonymies and downgrading of two taxa to subspecies.

The possibility is therefore open for a more in-depth study of actual status through molecular studies that may potentially reveal the limits of a traditional morphological approach in this specific case, a study which cannot be conducted on the basis of the material currently available, which is extremely scarce especially with regard to typical localities of individual taxa discussed here.

KEY TO SPECIES

1. Eyes more closely spaced, in males the minimum distance between the eyes is nearly so wide as the sum of the diameter of 2-3 ommatidia, i.e. diameter of an eye is about 7.5-8 times the minimum distance between the eyes, in females 2.5-3 times (Figs. 48, 49, 55, 83-84); coloration of pronotum uniform, or with lighter sides but without presence of light spots with well-defined margins; median lobe of aedeagus elongated (Figs. 46, 57, 63, 77-82) with sides nearly straight, its length, from basal opening to apex, about 2.8-3.7 times the width (nearly 0.24 mm) at the opening of ostium in dorsal view (known so far from the regions north of the 10th parallel south).....2
- Eyes less closely spaced, in males the minimum distance between eyes is nearly so wide as sum of diameter of 6-7 ommatidia, i.e. diameter of an eye is about 2.2-2.6 times the minimum distance between the two eyes, in females 1.7-1.9 times (Figs. 26 and 27); pronotum generally bicolored, dark with a well-defined yellow ochre band on each side and a narrow band of same colour on distal margin; median lobe of aedeagus wider (Figs. 28, 30) with sides widening towards their middle length, its length, from basal opening to apex, about 1.8-2 times the width (0.35-0.38 mm) at the

opening of ostium in dorsal view (known so far from the regions south of the 10th parallel south) .....*africanus* (Jacoby, 1900)

2. Colour of ventral part of body ochre-yellowish, as well as the dorsal part which may present darker pronotum and spots on humeri and on part of 5th to 7th elytral interstriae (sub-desert regions of North Africa, Arabic Peninsula)..... .....*adrarensis* (Pic, 1942)

- Colour of ventral part of body darker, at least in part, prothorax largely dark reddish to dark brown, with or without light metallic reflections; punctation of pronotum stronger, usually clearly visible also at the anterior corners of the pronotum 3

3. Pronotum dark reddish, somewhat paler at sides, with some metallic reflections and a strong and relatively deep punctation, 12-13 punctures can be count along longitudinal median line, nearly as close to each other as diameter of a puncture; punctures of elytral striae relatively deep on discus, vanishing on apical slope; elytra pale with darker edges, suture and spots on humeri and part of 4th and 5th interstriae and sides (Sudan) ....*hartmanni* (Harold, 1877)

- Pronotum darker, usually with finer punctation, more than 14 punctures can be count along the longitudinal median line.....4

4. Pronotum and elytra dark reddish to dark brown or nearly black, with darker not well defined spots or with the only apical slope of elytra gradually paler; punctation of pronotum on average relatively strong and deep, 14-16 punctures can be count along the longitudinal median line, closer to each other than diameter of a puncture; very variable elytral punctation, deep and well impressed also on apical slope (type) or relatively superficial and vanishing on apical slope, correspondingly the intervals more or less convex or flat (Arabian Peninsula).....*oculatus wraniki* (Lopatin, 1994)

- Punctures of pronotum lighter, coloration usually paler.....5

5. Colour of elytra generally darker, sometimes of a dark brown colour that affects the entire surface with only part of apical slope slightly lighter, if darker spots are present these have poorly defined edges and little contrast with the background color; colour of prothorax generally dark on entire surface or slightly lighter towards edges; surface of pronotum and elytra among punctures usually smooth and glossy (Tchad, Ethiopia, Somalia, Northern Kenya) ....*oculatus oculatus* (Chapuis, 1879)

- Dark spots on elytra with better defined edges in contrast with the lighter background color; colour of prothorax generally lighter towards the edges; surface of pronotum and elytra among punctures usually with a fine visible microreticulation (Southern Kenya, Tanzania)..... .....*oculatus sobrinus* (Weise, 1903)

Daccordimolpus africanus (Jacoby, 1900) **n. comb.** (Figs. 23-35)

Pseudosyagrus africanus Jacoby, 1900: 228
Microeurydemus africanus, Selman, 1965: 149

HOLOTYPE EXAMINED: Matabeleland, near Tati (NHML)

EXAMINED MATERIAL: **Mozambique**: 30 km NE Guro, 17°14'S, 33°27'E, 620 m 11.xii.2005, J. Halada leg. (1 ex. NMCZ). **Zimbabwe**: C Zinbabwe, Gweru, Nalatale Ruins, 7-xii.1998 M. Snížek leg. (1 ex. SZcoll); C. Zimbabwe, Mvuma, route Gutu-Chatsworth, 24.ii.1998 M. Snížek leg. (7 exx. SZcoll); Kariba, 20-21.iii.2000 R. Beenen (1 ex. SZcoll); W Zimbabwe, 60 km N of Bulawayo, Maraposa Rd., 3.xii.1998 M. Snížek leg. (5 exx. SZcoll); Zimbabwe mer. 8.XII.1998 Bubi River, 70 km N of Beitbridge lgt. F. Kantner (1 ex. MNCZ); Zimbabwe Mer. occ., 20 km W of Gwanda, 120 km SE Bulawayo, lgt. Kantner 6.12.1999 (2 exx. MNCZ). **Botswana**: Botswana bor., Maun 15.1-29.1.1997 Island Safari Lodge, Lgt M. Snížek (1 ex. SZcoll); idem, 2-15.1.1994 (1 ex. SZcoll); 21°21'06.1"S 23°40'16.9"E Central Kalahari Game Reserve, Sunday Pan Sand/Trockensavanne 17.02.2018 971 m üNN, leg. Schnitter BO10LF (3 exx. NKME). **Namibia**: Provinz Oshana, Etosha-Anderson Tor ~ 10 km Südl., ~ 1100 m, leg. Knapp 23.05.2010 (1 ex JMcoll); Namibia-S Groot Karasberge Mts, 111 km NEN Karasburg, 6.II.2015, S. Prepsl leg. (3 exx. SZcoll); 17-19.XI.2004 C. Namibia, Windhoek - Seeis, Klícha M. Lgt. (1 ex. SZcoll); Hardap, 7 km SW of Aranos, 1190 m, S24.1758°, E19.0512° L. Purshart lgt. 12.i.2019 (1 ex. MNCZ); prov. Hardap, 20 km S Rehoboth, S 23°28'48" E 17°07'24" (alt. 1400 m) 20.3.2014 lgt. P. Kučera (1 ex. MNCZ); prov. Khomas, Gamsberg Pas, 150 km SW Windhoek, S 23°14'52" E 16°18'04" (alt. 1400-1800 m) 19.3.2014 lgt. P. Kučera (3 exx. MNCZ; 1 ex. SZcoll); prov. Khomas, 30 km SE Winghoek, S 22°34'44" E 17°20'12" (alt. 1870 m) 11.3.2014 lgt. P. Kučera (1

ex. MNCZ); prov. Omaheke, 35 km W Gobabis, S 22°22’56” E 18°39’19” (alt. 1483 m) 12.3.2014 lgt. P. Kučera (2 exx. MNCZ; 1 ex. SZcoll). **South Africa**: N Transvaal, Mmabolele estate 22,40 S - 28,15 E, 6.3.1973, E-Y: 16 mercury vap. light, leg. Endrödy-Younga (1 ex. SZcoll); RSA, NW, Limpopo, Thabazimbi, 21.XII.2008, M. Snížek lgt. (2 exx. SZcoll); S. Afr.: Kruger Nat. Pk, Lower Sabie 16km SW, 25.10 S - 31.47 E, 22.2.1995; E-Y 3114 UV light & trap, leg. Endrödy-Younga (1 ex SZcoll); 6.-7.III.2020 Kruger NP - Phalobirwa, 23°56’30”S 31°09’59”E Ondřej Sedláček lgt (1 ex. MNCZ); Kruger NP, Satara, 23.ii.-9.iii.2019, 24°23’S 31°46’E Ondřej Sedláček lgt (1 ex. MNCZ); RSA - Natal, Ndumo G. R. 5.11.2001, 26 52 S - 32 16 E, Lgt. Fencl (2 exx SZcoll); KwaZulu-Natal, Ndumo Game Reserve; at light 26°54.6’S 32°17.9E 25.-27.i.2016 P. Bulirsch lgt. 2 exx. MNCZ); Kwazulu Natal, Hluhluhwe-Umfolozi NP, Moila Camp, 28.3113397S, 31.8615478E 25.ix.2018 P. Hula lgt. (1 ex. MNCZ); Kwazulu Natal, Ithala Game Reserve, Doomkraal Campsite, 27.51282255S 31.2043336E 29.ix.2018 P. Hula lgt. (1 ex. MNCZ); Limpopo pr., 19 km E Thabazimbi, 29.-30.xi.2024 1011 m, 24°34’35”S 27°34’42”E, M. Obořil lgt. (1 ex. MNCZ; 1 ex. SZcoll); RSA - O.F.S., Orange riv., S of Philippolis, 26.12.2007, Lgt M. Snížek (1 ex. SZcoll); -27.074430° 21.280464°, RSA (Südafrika) Ashkam, Drumsheugh Farm/Kuruman River, 16.11.2022, 890 m üNN, leg. E. Stolle, light trap (56 exx. NKME; 7 exx. SZcoll).

Further data reported in literature (not verified): S.W. Africa: Kaokoveld, Omutati, 70 miles WSW Ohopoho (Bryant, 1959).

Notes. Holotype at NHML shows a clear distinction between reddish background colour and black spots on elytra as well as between dark colour of pronotum and reddish spots at its sides (Figs. 23-24), as in majority of examined specimens. However, there is a notable variability of this character, with presence of specimens where dark areas are more extensive, up to melanic forms (Fig. 25). Difference in size of eyes between ♂ and ♀ (Figs. 26-27) is less evident than in other *Daccordimolpus* species. Antenna as in Fig. 32. Aedeagus as in Figs. 28 and 29, the inner sac with two lightly sclerotized symmetrical structures near ostium (Figs. 30 and 31), which are very similar to those present in other species of *Daccordimolpus* (Figs. 65 and 66). Spermatheca as in Figs. 34 and 35, accessory gland moderately long, ending in an elongated chamber, ductus long, not spiralled, vagina not showing any sclerotization; styli short, moderately sclerotized, spiculum thin and moderately long (Fig. 33).

A specimen marked “type” in Museum of Comparative Zoology, Harvard University (https://mczbase.mcz.harvard.edu/name/Pseudosyagrus%20africanus) bear the label “Bulamayo July 1900 GaKM”; the specimen cannot be considered part of type material: Jacoby refers in description to having examined only one specimen, furthermore there is no correspondence in locality with the one reported in description; moreover, description was sent for printing in February 1900 while this specimen reports the collection date of July 1900.

Indications for Arabia published in Medvedev (1996: 225) and from Kenya and Tanzania in Zoia (2022: 445) should instead refer to *D. oculatus wraniki* and *D. oculatus sobrinus* respectively. It was not possible to verify citations by Selman (1963, 1973) for Tchad, Sudan, Eritrea and Yemen, they could refer to other species present in these Countries.

Daccordimolpus hartmanni **(**Harold, 1877) **n. comb.** (Figs. 36 and 37)

Eurydemus hartmanni Harold, 1877: 100

Holotype examined: Sennaar Hartmann / 50097 / Hartmanni Harold * Senaar (MFNB)

Notes. The only available specimen (Figs. 36 and 37) and lack of material from nearby regions does not allow in-depth comparisons with *D. airensis*, the latter being distinguished mainly by its paler coloration, especially regarding the prothorax. The geographical position within the distribution area of *D. airensis* strongly suggests the possibility that future studies will highlight a close relationship of these taxa.

Daccordimolpus oculatus oculatus (Chapuis, 1879) **n. comb.** (Figs. 38-50)

Eurydemus oculatus Chapuis, 1879: 10
Liniscus fasciolatus Fairmaire, 1893: 155 **n. syn.**
Eurydemus semivittatus Jacoby, 1899: 525 **n. syn.**
Microeurydemus semivittatus, Selman, 1965: 149
Microeurydemus semivittatus, Daccordi, 1983: 228
Microeurydemus semivittatus, Medvedev, 1996: 248
Microeurydemus fasciolatus, Zoia, 2022: 446
Microeurydemus semivittatus, Zoia, 2022: 446

Syntypes examined: fra Massaua ed Ain, Beccari 1870/Typus / oculatus Chap. / Eurydemus oculatus Chp. / Typus Eurydemus oculatus Chapuis, 1879 (1 ♀ MSNG); Eurydemus oculatus Chapuis, 1879 TYPE / fra

Massaua ed Ain Beccari 1870 / Type de Chapuis / Ex Musaeo Lefèvre 1894 / oculatus Chap. (2 exx. MNHN) Examined material: Coll. R.I.Sc.N.B. / Somalia Ouebbi DR Keller / Liniscus fasciolatus Fairm. typ Somalis / det. Fairmaire 1893 / Type (Syntype *Liniscus fasciolatus* - ISNB); Cotype / Lago Bass Narok IX.96 Bottego / Jacoby Coll. 1909-28a (Syntype *Eurydemus semivittatus* Jacoby - NHML); Lago Bass Narok IX.96 Bottego / Typus / semivittatus Jac. (Syntype *Eurydemus semivittatus* Jacoby - NHML). **Tchad**: N'Gouri, distr. de Kanem VIII.1958 P. Renaud (1 ex. NHMB). **Somalia**: W Somaliland, 15.-17.vii.2021 Jidhi - S of school env., 10°37'14"N 43°04'08"E, ca. 450 m, D. Král & D. Sommer lgt. (1 NMCZ); W Somaliland, 17.-18.vii.2021, S of Habaas, ca 850 m, 10°24'40"N 42°48'45"E, D. Král & D. Sommer lgt. (21 exx. NMCZ; 5 exx. SZcoll); W Somaliland, 18.-19.vii.2021, Gargoorey-school, ca 1230 m, 10°14'25"N 43°03'05"E, D. Král & D. Sommer lgt. (2 ♀♀ NMCZ); W Somaliland, 22.-23.vii.2021, NW of Xoorey, ca 840 m, 10°10'59"N 43°21'49"E, D. Král & D. Sommer lgt. (2 ♂♂, 2 ♀♀ NMCZ; 1 ♂, 1 ♀ SZcoll); W Somaliland, 21.-22.vii.2021, wadi SW of Xeego, ca 1000 m, 10°04'02"N 43°14'58"E, D. Král & D. Sommer lgt. (23 exx. NMCZ; 5 exx. SZcoll); W Zomaliland, 6.-25.vi.2022, Borama University Campus, 09°56'50"N 43°13'23"E, ca 1400 m, David Král & David Sommer lgt. (4 ♀♀ NMCZ); Somaliland, 9.-13.ix.2017, E of Boorama, Amoud University Campus, 9°56'52"N 43°13'23"E, ca 1400 m, David Král lgt. (3 ♀♀ NMCZ); W Somaliland, 23.-24.vii.2021, S of Cali-Haidh, ca 1090 m, 10°01'07"N 43°46'53"E, D. Král & D. Sommer lgt. (1 ♀ NMCZ); W Somaliland, 13.-18.vi.2022, Laas-Geel, ca 1050 m, 09°46'48"N 44°26'43"E, David Král & David Sommer lgt. (1 ♂ NMCZ); C Somaliland, 9.-10.vi.2022, Beerato, ca 990 m, 09°21'29"N 45°03'59"E, David Král & David Sommer lgt. (1 ♂ 2 ♀♀ NMCZ; 1 ♀ SZcoll); C Somaliland, 12.-13.vi.2022, SE of Xangay, ca 900 m, 08°56'50"N 45°31'34"E, David Král & David Sommer lgt. (1 ♀ NMCZ); C Somaliland, 10.-11.vi.2022, E of Shansha-Cadde, water pool, 08°39'37"N 45°57'24"E, ca 800 m, David Král & David Sommer lgt. (1 ♀ NMCZ); Migiurtinia Som., M. Carcar Gardo, 18.6.1953, m 1000 G. Scortecci (4 exx MSNG); Migiurtinia Som., Bur Tinle (Haud) 5-8.VI.1953 G. Scortecci / 48°E 7°49'N (2 exx. MSNG); Somalia, Terr. Rahanuin X-XI.1911 C. Citerni (2 exx. MSNG); Somalia it., Jach Sciumo (Giuba) Patrizi 1923 (1 ex. SZcoll); Uebi Mane II.1911 C. Citerni (1 ex. MSNG); Daua 20-IV E. Ruspoli 1892-93 (1 ex. MSNG); Dolo III-IV 1937 S. Venzo (1 ex. NHMB). **Ethiopia**: Afar reg., Metahara, volcanic region with Acacia, 9°0,987'N, 39°51,273'E, 1052 m, 28.v.2011, V. Hula & J. Niedobová leg. (9 exx. SZcoll); Dire Dawa, 9°39,27'N, 41°55,813E, 1133 m, 5.vi.2011, V. Hula & J. Niedobová leg. (11 exx. SZcoll); Ginir prov., forest in valley to Sof Omar cave, 16.vi.2011, V. Hula, J. Niedobová & M. Moradmand leg. (1 ex. SZcoll); S-Ethiopia, Sidamo, SE of Yabello, 1610 m, N04°50.574 E038°15.484, 13.-15.iv.2010, R. Beck, H. Bekele, M. & M. Dietl leg. (1 ♀ MLcoll). **Kenya**: Africa or. ingl., Gwasso+2149 Njiro, Patrizi 22.12.19 (1 ex. MSNG).

Further data reported in literature (not verified): **Eritrea**: Samhar, fra Massaua e Ain (Gestro, 1889a). **Djibouti**: Obock (Gestro, 1892). **Somalia** [or Ethiopia]: Las Ej e Uebi (Gestro, 1892). **Kenya**: Mont Nyiro, en janvier (Jacoby, 1922)

Notes. After examination of types of *D. oculatus* (Figs. 38-40), *M. fasciolatus* (Figs. 43 and 44) and *M. semivittatus* (Figs. 41 and 42) and of the material listed above, in consideration of chromatic and morphological variability found as here discussed, I consider appropriate to formalize the following synonymies: *Microeurydemus fasciolatus* (Fairmaire, 1893) = *Daccordimolpus oculatus oculatus* (Chapuis, 1879) **n. syn.**; *Microeurydemus semivittatus* (Jacoby, 1899) = *Daccordimolpus oculatus oculatus* (Chapuis, 1879) **n. syn.**

Difference in size of eyes between ♂ and ♀ as in Figs. 48 and 49. Antenna of ♂ as in Fig. 45. Aedeagus as in Figs. 46 and 47 with slight individual variability; ventral side of median lobe either flat or with a very slight longitudinal relief. Spermatheca as in Fig. 50, the accessory gland moderately long, ending in an elongated chamber, ductus long, not spiralled, vagina not showing sclerotization, styli and spiculum in ♀ not showing appreciable differences from those of *D. africanus*.

Daccordimolpus oculatus wraniki (Lopatin, 1994) **n. comb.**, **n. stat.** (Figs. 51-60)

Microeurydemus semivittatus sensu Daccordi, 1983: 228

Microeurydemus wraniki Lopatin, 1994 (in Lopatin & Konstantinov, 1994: 526)

Microeurydemus africanus sensu Medvedev, 1996: 225, 248

Holotype examined: VDR Jemen [South Yemen], Umg. Sh. Othman (Uadi) VI.1985 leg. Waterlik / Holotypus / Microeurydemus africanus Jac. L. Medvedev det. / Microeurydemus wraniki sp. n. det. I. Lopatin, 1991 (♀NMCZ)

Examined material: **Yemen**: 7.-8.iv.2007, Suknah (NE Al Mansuryah) 14°50'N 43°31'E, ca 770 m, David Král lgt. (70 exx NMCS, 6 exx. SZcoll); Sokna (Tihama) m. 200 20.VIII.1965 leg. G. Scortecci (1 ex. MSNM); 2 km E Hammām Ålī, N14°40' E44°10', 1677 m, 12.IV.2007, lgt. S. Kadlec (5 exx. NMCZ, 1 ex. SZcoll); SW Yemen, Wādī Zabīd E Zabīd, 325 m N14°09'/E43°31' (light) 22.III.2007 M. Rejzek [4] (2 exx. SZcoll). **Saudi Arabia**: Wadi Daykah, 600 m 3.-4.IV.80 W. Büttiker (2 exx. NHMB); Wadi Tisba 7-8.XI.1985 W. Büttiker (1 ex. NHMB); Saudi Arabia (Bahah) 5 km N Al Makhwah, 464 m, 19°49'47"N 41°26'47"E, 30.iii.2017, P. Rapuzzi leg. (2 ♂♂ NMCZ); Wadi Juwa 8.II.1986 J. Grainger (3 exx. NHMB); Wadi Tabalah 19.X.79 W. Büttiker (1 ex. NHMB); pr. Asir, Muhayil env., Wadi Hani, 27.-28.9.2022, 18°29'N 42°22'E, 540 m, P. Pacholátko & V. Major leg. (1 ex. NMCZ); Saudi Arabia (Asir) 6 km N of Ainah, 200 m, 17°55'28"N 42°15'20"E, 3.iv.2017, P. Rapuzzi leg. (18 exx. NMCZ; 5 exx. SZcoll); pr. Jizan, Wadi Ramlan, 29.9.2022, 17°47'N, 42°23'E, 280 m, P. Pacholátko & V. Major leg. (15 exx. NMCZ, 3 exx. SZcoll); pr. Jizan, Al Henayah, 1.10.2022, 17°10'N, 43°02'E, 328 m, P. Pacholátko & V. Major leg. (5 exx. NMCZ, 2 exx. SZcoll); J. Lebaba 24.III.1985 J. Grainger (1 ex. NHMB).

Further data reported in literature (not verified): **Saudi Arabia**: Wadi Minsah, 550 m (Medvedev, 1996, sub *M. africanus*); **United Arab Emirates**: Sharjah Desert Park (Lopatin, 2008, sub *M. semivittatus*); Wadi Maidaq (Lopatin, 2008, sub *M. semivittatus*).

Notes. Body of Holotype (Figs. 51-54) almost completely black, with only the apex of elytra and hypomera slightly paler, with a relatively strong punctation of pronotum and elytral striae, maximum width of pronotum in distal third, the distal edge – lateral view – somewhat sinuate at sides in correspondence with the posterior edge of eye. Specimens from various localities, here attributed to *D. oculatus wraniki*, may exhibit different morphological characteristics (Fig. 56), regarding coloration (somewhat paler with or without poorly defined darker spots), shape of pronotum with more regularly curved sides and anterior edge with nearly straight sides in correspondence with posterior edge of eye, elytral punctation more or less impressed, with correspondingly convex or flat interstriae, more or less deep punctation of pronotum, less developed tooth of profemora; sometimes also the average body size can differ significantly. Based on these characteristics, it would seem possible to distinguish some populations among the examined material; however, the variability present among specimens from same population and the geographical distribution of specimens discordant with characteristics of type specimen does not allow, at present, any taxonomic distinction based on morphological characteristics only.

Ratio between minimum distance between eyes and their width (Fig. 55) is same as in nominal form. Antenna as in Fig. 59. Aedeagus (Figs. 57 and 58) and spermatheca (Fig. 60) do not differ significantly from those of the nominal form; vagina lacking sclerotization.

Daccordimolpus oculatus sobrinus (Weise, 1903) **n. comb.**, **n. stat.** (Figs. 61-68)

Eurydemus sobrinus Weise, 1903: 202

Holotype examined: Wombare Steppe [Northern Tanzania] / Eurydemus sobrinus m. (MFNB)

Examined material: **Kenya**: N-Kenya, Sidot 18/19.XI.95, Werner leg. (3 exx. SZcoll); B. E. A.: Kerio Riv. VI.1914 Dr. Bayer (1 ex. NMCZ); Kenya coast, Garissa, N of Hola, 25.4.2008, lgt. M. Snižek (9 exx. SZcoll); S of Garissa, S of Bura, Snižek 4.12.22010 (1 ex. SZcoll); idem, 26.4.2011 (2 exx. SZcoll); Kenya eastern, Nguni, N of Ngomeni, 27.4.2008 Lgt M. Snižek (1 ex. SZcoll); Kenya E, E of Mwingi, W of Nguni, Snižek 1.12.2010 (1 ex. SZcoll); Kenya eastern, Katutu-Kithioko, 27.xi.1999 M. Snižek leg. (1 ex. SZcoll); Kenya mer., Kasigau mts, env. Rukanga, 26.11.1997, lgt. M. Snižek (2 exx. SZcoll); Kenya-S, Magadi lake, 6.xii.1997, Magadi env., M. Snižek leg. (29 exx. SZcoll); Afr. or. angl. (Wa-Taïta) Bura, Alluaud & Jeannel, Mars 1912 - 1050m - St.61 (1 ex. SZcoll); Kenya coast, NW of Garsen, 22.4.2008, Lgt. M. Snižek (1 ex. SZcoll); Kenya, coast, Garsen, Witu, 8.4.2007, Lgt. Snižek (1 ex. SZcoll); Kenya coast, E of Garsen, W of Witu, 7.12.2007, Lgt. M. Snižek (7 exx. SZcoll); idem, 21.4.2008 (2 exx. SZcoll); idem, 19.XII.2009 (3 exx. SZcoll); idem, 28.4.2011 (1 ex. SZcoll); B. E. A.: Tsavo R. 4/21.V.1913, Dr. Bayer (1 ex. NMCZ);

Kenya, coast p. Malindi, XII.1993, R. Regalin leg. (1 ex. SZcoll); Kenya SE, 12-14.IV.2007, W of Mombasa, S of Mackinnon road, M. Snižek lgt. (1 ex. SZcoll); Kenya SE, Taveta env., 16.IV.2004, M. Snižek lgt. (1 ex. SZcoll); Kenya SE, SW of Voi, 8-12.XII.2009, M. Snižek lgt. (12 exx. SZcoll); Kenya SC, Voi env., Sagala env., 750 m, 13-19.XI.2011, M. Snižek lgt. (8 exx. SZcoll); Kenya SE, Voi, S Foot Sagala Mts, 19.4.2008, Lgt M. Snižek (19 exx. SZcoll); Kenya SC, Tsavo NP, Voi env., 16/5.2007 Snižek (1 ex. SZcoll); Kenya S, Voi, 13-17.xii.1997, M. Snižek lgt. (10 exx. SZcoll); Kenya, Voi (Tsavo) 22.xi-2.xii.1996 M. Snižek leg. (1 ex. SZcoll); Kenya S, Voi, 11.1997 Lgt. M. Snižek (13 exx. SZcoll); idem, 10.12.1999 (1 ex. SZcoll); Kenya, S Tsavo East, Buchuma, 28.XI.1997, M. Snižek (7 exx: SZcoll). **Tanzania**: Tanzania bor., Mombo or., 9.-11.1.1996, lgt. Ing. M. Snižek (1 ex. SZcoll); Tanzania, Arusha distr., Mto Wa Mbu env., 15.-20.4.1997 Mllan Kuboň leg. (1 ex. NHMB).

Further data reported in literature (not verified): **Tanzania**: Longido, Masai Distr., 1500 m; Handeni, 350 m (Bryant, 1960 sub *Eurydemus semivittatus*)

Notes. *D. oculatus sobrinus* (Figs. 61 and 62) is generally distinguished by its lighter colour and usually by an evident microsculpture of surface of pronotum; even in this case, however, these are very variable characteristics. Antenna as in Fig. 67. Aedeagus (Figs. 63 and 64) slightly slender than in *D. oculatus oculatus*, although subject to some individual variability, ventral side of median lobe either flat or with a very slight longitudinal relief. Endophallus as in Figs. 65 and 66, with two short symmetric expansions when everted. Body of spermatheca (Fig. 68) somewhat slender than in the other examined taxa; vagina not showing any sclerotization.

Daccordimolpus adrarensis (Pic, 1942) (Figs. 69-86)

Syagrus adrarensis Pic, 1942:79
Eurydemus airensis Pic, 1950: 205 **n. syn.**
Chloropterus politus sensu Lopatin, 1983: 208
Microeurydemus flavescens sensu Medvedev, 1996: 248
Microeurydemus semivittatus sensu Bezdek & Batelka, 2011: 271
Microeurydemus airensis, Zoia, 2019: 9
Microeurydemus adrarensis, Zoia, 2023: 42

Syntype examined: Kidal Adrar des Iforas / ..?.. 1941 Volk.?. [unclear handwritten label] / ..Peyerim.. Chloropterus [unclear handwritten label] / type / TYPE / Syagrus adrarensis mihi (MNHN).

Examined material: Agadez Aïr Sud 525 m 20.VIII / IFAN-1947 L. Chopard A. Villiers / Eurydemus sp. G. E. Bryant det. / Type (printed red label) Eurydemus airensis n.sp. (Holotype *Eurydemus airensis* Pic - MNHN). **Somalia**: Migiurtinia Som., Amgel - a S di Carim, 15.VI.53 G. Scortecci (1 ♂ MSNG). **Saudi Arabia**: Jebel al Hamariyah 28.IV. / Saudi Arabia W. Büttiker 1981 (1 ♀ NHMB); 111 km before Al Ula, 860 m 21.IV.79 / KAU-NHMB 1979 Esp. N Hedjaz / Chloropterus politus Berti det. I. Lopatin (1 ♀ NHMB); Suwaydarah 910 m 30.IV. / Saudi Arabia W. Büttiker 81 / Microeurydemus flavescens Bryant det. M. Daccordi 2000 (1 ♂ NHMB). **Oman**: Sultanate of Oman, Dhofar prov. Jabal Samhan 3.-6.9.2007, cca 1100 m J. Horák leg. / ex coll. František Kantner, National Museum Prague, Czech Republic (1 ♂, 1 ♀ NMCZ; 1 ♂, 1 ♀ SZcoll); Oman: Ash Sharqiyah N Gov., wadi 2 km N of Khafifah, 28.x.2019, stream, gravel bootom; at light, 22°55.1'N, 58°25.4'E, 680 m, H. Hájek & A. Reiter lgt. (2 ♀♀ NMCZ; 1 ♂ SZcoll); Al Hamra env. 9.1.1997 R. Cervenka lgt / Microeurydemus semivittatus Jac. L. N. Medvedev det. 1999 (1 ex. SZcoll); Oman, Al Batinah, Birkat Al Sharaf, 2000 m, 2.VII.2010, leg. Sándor Ilniczky (1 ♂, 1 ♀ MTMB); Oman, Al Batinah, Birkat Al Sharaf, 2000 m, 2.VII.2010, leg. Sándor Ilniczky (1 ♀ MTMB); Oman, Balaad Seet, 1600 m, 2010.VII.3, leg. Ilniczky Sándor (3 ♀♀ MTMB); Oman Tawi Sadh, Wadi Mu'adin, 650 m, 22°57'N 57°40'E at / foot of Yabel Akhdar to light 8.V.1989 M. D. Gallagher 8133 / Microeurydemus africanus Jac. L. Medvedev det. (1 ♀ NHMB); Oman Wadi Bani AWF (Western Hajar Mts. near rastaq) 500 m 23°17'N / 57°25'E on grand bed of gap between peaks 6-10pm 7.III.1987 M. D. Gallagher 7958 (1 ♀ NHMB); 7 km SE Dibab 23°02'N/59°05'E 60 m 17-18.IV.1985 / Oman M. D. Gallagher K. Smythe (1 ♀ NHMB); Sahil al Jazir, Wadi Haitam 19°11'N/58°46'E [incorrect geographic coordinates] 10/13.V. / Oman 1983 M. D. Gallagher (3 ♀♀ NHMB); Oman, Jabal Shams 3/6/1995 m 2000 Skule leg. (5 ♀♀ NHMB, 1 ♀ SZcoll); Oman, Dhofar pr., Jabal al Qamar, Wadi Al Mughsayl, N 16°52' E 53°43', 10.4.2013 (120 m. n. m.) lgt. P. Kučera (1 ♀ NMCZ). **United Arab Emirates**: UAE - Emirates, emirat Fujairah, Wadi Hayl (300 m. n. m.), p. Hayl 30.11.2013, N 25°05'02" E 56°13'11", lgt. P. Kučera (2 ♀♀ NMCZ); U.A.E., Ras Al Khaimah, Wadi Shawqa, 3.x.2007, N 25°06' E

56°02', 250-280 m, J. Batelka & H. Pinda lgt (1 ♀ SZ-coll).

NOTES. Examination of types of *M. adrarensis* (Figs. 69 and 70) and *M. airensis* (Figs. 71 and 72) (a single specimen - holotype - known for each of these taxa) revealed no significant differences between the two, except for the presence in *M. adrarensis* of some darker spots on prothorax and elytra. I therefore consider it appropriate to formalize the following synonymy: *Microeurydemus airensis* (Pic, 1950) = *Daccordimolpus adrarensis* (Pic, 1942) **n. syn.**

Medvedev (1996) incorrectly identified specimens of *D. adrarensis* from Saudi Arabia and Oman as *Microeurydemus flavescens* (Bryant, 1942) (hereafter transferred to the genus *Phascus*), thus providing for the latter a distribution not properly verified. Most likely records published by Bezdek & Batelka, 2011(United Arab Emirates: Wadi Safad and AvH. Near Mahafiz) must also be referred to *D. adrarensis*.

D. adrarensis closely resembles *D. hartmanni*, except for the paler coloration; it is likely that further research, with availability of more abundant material, may also lead to synonymizing the two taxa, which is not appropriate at the moment due to scarcity of material coming especially from south Saharan regions.

It is appropriate to provide a description of this species based on examination of available material from the Arabian Peninsula. Despite the fragmented geographical distribution, no significant differences have been detected between the material from easternmost populations and type specimens of *D. adrarensis* (Figs. 69 and 70) and its synonym *M. airensis* (Figs. 71 and 72).

DESCRIPTION. Habitus as in Figs. 73 and 74; body length of ♂♂ 3.6-4.5 mm, of ♀♀ 3.9-5.4 mm. Whole body, including legs and antennae, uniformly ochre-yellowish, shiny; some specimens with pronotum somewhat darker in middle, or with a darker brown longitudinal band along the 5th elytral interstria, widening distally towards elytral side, a single ♂ with a darker spot at the beginning of apical slope of each elytron; mandibles dark brown. Frons narrow; surface with fine and sparse punctation, glabrous; clypeus rugosely punctate, its distal border concave; eyes very large in ♂, strongly convex and laterally protruding till the distal corners of prothorax, the space between inner border of eyes very narrow (nearly 0.1 mm), in frontal view it is less than 1/5 the width of an eye (Fig. 83); eyes in ♀smaller, more regularly convex and less protruding laterally, space between the inner border of eyes wider, in frontal view it is nearly 1/3 the width of an eye (Fig. 84). Ocular sulci narrow along their entire length. Penultimate article of maxillary palp nearly 1.2 times longer than wide, ultimate conical, nearly twice longer than wide and 1.6 times longer than penultimate. Antennae (Fig. 76) slender, almost reaching half length of elytra. Antennomeres slender, 7th-11th slightly widened. Length of antennomeres of antenna in Fig. 76 (♂), in mm: 0.25-0.17-0.21-0.24-0.24-0.21-0.27-0.29-0.29-0.28-0.35; length/width ratio: 2.3-1.9-3.5-3.4-3.4-2.6-2.4-2.9-3.2-3.1-4.4. Pronotum convex, nearly 1.4-1.5 times wider than long, maximum width at mid-length or in distal half; the base finely bordered throughout, border marked internally by a row of fine punctures, base a little wider than distal edge; distal edge bordered in all its length; sides of pronotum, as seen from above, nearly regularly bent and bordered throughout; surface with moderately strong and irregularly arranged punctation, the distance between two adjacent punctures smaller than diameter of a puncture; surface between punctures smooth; pronotum glabrous. Corners of base of pronotum extended into a small tooth bearing a seta. Distal setae of prothorax arising on a level with the lateral edges of pronotum. Scutellum ogival, a little longer than wide, smooth, impunctate. Surface of hypomera impunctate, distal margin slightly produced frontward, separated from edge of prosternum with a ridge ending with a low carina in middle of distal edge of procoxal cavities, and so separated from distal edge of prosternum. Prosternum nearly 2.5 times longer than wide between the procoxae, its distal edge regularly bent and just folded downwards, surface with some punctures and poor hyaline pubescence. Ventral side of body with few and thin setae, present on meso- and metasternum and on abdominal sternites. Mesoventrite nearly so long as wide between the mesocoxae, with a few punctures; mesocoxae further apart than procoxae; mesoepimera smooth. Metaventrite in its middle 1.5 times longer than the space between the metacoxae, nearly impunctate; metacoxae a little more spaced than mesocoxae; metathoracic episterna tapering to rear, nearly 3 times longer than wide, with a hardly visible microreticulation. Elytra moderately convex, with moderately prominent humeri and light calluses in basal fifth; elytra 1.4 times longer than wide; elytral sides subparallel from humeri to about their mid-length, then regularly bent till the apices which are in a slightly acute angle. Elytral punctation arranged in regular striae, impressed on dis-

cus, lighter on basal calluses and almost completely vanished on apical slope; interstriae nearly flat or slightly convex on discus, more distinctly convex on elytral sides. Elytral surface smooth, shining; elytral borders narrow, gradually tapering to rear. Epipleura moderately wide at base, gradually tapering to rear, glabrous, smooth, impunctate. Metathoracic wings fully developed. Legs relatively long; profemora swollen, with a large triangular tooth, meso- and metafemora with a small tooth; tibiae nearly straight, with low longitudinal ridges. Protarsi similar in both sexes (Fig. 75). Claws bifid, the inner tooth thin, short, starting from nearly mid length of claw. Aedeagus with slightly curved tip and subject to some individual variability (Figs. 77-82). Spermatheca as in Fig. 85 with spermathecal gland nearly as long as the spermathecal length, ending with a wide chamber, ductus long, not spiralled; vagina not showing any sclerotization; styli short, moderately sclerotized, spiculum thin and moderately long (Fig. 86).

Phascus Lefèvre, 1884
The following species is moved to *Phascus*

Phascus flavescens (Bryant, 1942) **n. comb.** (Figs. 11-12)

Syagrus flavescens Bryant, 1942: 514
Microeurydemus flavescens, Medvedev, 1996: 248, 262

Syntype examined: Type / Uganda Bujumbura IV.1929 T.H.C. Taylor (NHML) [label data are erroneously reported by Bryant (1942) as "Bufumbira (sic!), iv.1939 (sic!)"].

Notes. *Syagrus flavescens* Bryant is here transferred to *Phascus* after examination of a Syntype. The absence of preapical emargination on the meso- and metafemora, a character that is not reported in the description of Bryant (1942), excludes its attribution to Typophorinae. The appendiculate claws, presence of a strong tooth on profemora, glabrous dorsum, shape of pronotum justify the new combination. *P. flavescens* is very similar to *P. pallidus* Lefèvre, 1884 of which it could be a synonym, however such an assertion should be evaluated in the context of a wider study on the species currently attributed to *Phascus*.

P. flavescens was further recorded from Uganda by Bryant (1953) (Kigezi District, Mabungo Camp, c. 6000 ft.) and from Kenya by Bryant (1960) (Molo, Mau Escarpment, 2150-2200 m; Tanganyika Terr.: Korogwe, 450 m; Handeni, 350 m). Moreover, it is recorded from Yemen in Bryant (1957) (Western Aden Protectorate: Jebel Jihaf 7000ft), therefore in a geographical area also occupied by *P. pallidus*.

Citations as *Microeurydemus flavescens* in Medvedev, 1996 for Saudi Arabia are due to a misidentification and should be referred to *Daccordimolpus adrarensis* instead, as discussed above.

Key to the genera of Typophorini of continental Africa (from Selman, 1972, modified)

It is deemed useful to re-propose the key to the genera of Typophorini of continental Africa based on the version published by Selman (1965, 1972 – under the name Nodini) updated to the current state of knowledge.

In addition to the taxonomic changes introduced herein, the genus *Atomyria* Jacobson, 1894 is no longer reported in the key, as it is not present in Africa (Moseyko, 2020), while *Chloropterus* Morawitz, 1861, known from Northern Africa, is included. The genus *Eurydemus* Chapuis, 1874 too is not included in the key: although there are still African species associated with this genus name, it is most likely absent from the continent and a re-examination of these species is necessary for their more appropriate relocation. With reference to continental Africa, of the 10 species currently named under *Eurydemus*, examination of the types or a more careful reading of original descriptions of 6 of them has shown the need for their transfer to other genera and a formalization of the new combinations will be the subject of a subsequent publication.

1. Claws simple or appendiculate 2
– Claws bifid 4
2. Pronotum with sides multiserrate, elytra broader near apex than at base (Fig. 92) ....*Cheiridea* Baly, 1878
– Pronotum not multiserrate, elytra with sides subparallel proximally, not or poorly widening to rear in their basal third 3
3 Sides of pronotum with a single tooth or at least with a protruding lateral angle, claws wide apart and robust, with a broad basal appendage, relatively small species, 2-3 mm long (Fig. 93)..... .....*Pagria* Lefèvre, 1884
– Sides of pronotum more regularly bent, without

tooth, claws longer and thinner, simple or appendiculate with the appendage less evident and close to the main body of claw, larger species, 3-6 mm long (Fig. 94).....*Chloropterus* Morawitz, 1861

4. Head, pronotum and elytra heavily granulate, almost obscuring the punctation, legs stout, lateral arms of prosternum with anterior edge convex (Fig. 95).....*Amblynetes* Weise, 1904
– Interstices not heavily granulate 5
5. Elytra ovate, width at middle 1.5 times as wide as at base, anterior femora not armed, scutellum an equilateral triangle (Fig. 96) ....*Pseudivongius* Jacoby, 1897
– Elytra not ovate, but with sides approximately parallel in the basal third.....6
6. Pronotum somewhat flattened dorsoventrally, strongly transverse with sides heavily margined, front femur with a large tooth in the form of an equilateral triangle, eyes very large and close together (Figs. 23-86).....*Daccordimolpus* **n. gen.**
– Without the above combination of characters.....7
7. Eyes round and large, in at least the males the width as seen from above not less than the distance between the two eyes, some females (e. g. *Atomyria*, *Zohrana*) with smaller eyes which are wider apart; elytra heavily punctured, with intervals often raised.....8
– Eyes smaller, often dorsoventrally elongated, distance between the eyes as seen from above greater than their width in both sexes 9
8. Elytra elongate and at least x1.43 as long at mid-line as wide across the humeri, elytra at mid-line more than x2.5 as long as hind tibia, pronotum hood-like, head turned under, legs short and stout (Fig. 97).....*Zohrana* Aslam, 1968
– Elytra broader, and not more than x1.42 as long at mid-line as wide across the humeri, elytra at mid-line less than x2.5 as long as hind tibia, legs elongate and stout, pronotum not hood-like, anterior seta of prothorax arising on a level with the lateral edges of pronotum (Fig. 13)..... .....*Afroeurydemus* Selman, 1965
9. Insects longer than 5 mm, eyes protuberant, with a very large crescent shaped sulcus above, the sulcus extending to a point well behind midpoint of eye (Fig. 87), the epicranium protuberant, basal segment of antennae twice as wide as the second segment, pronotum cylindrical with a narrow margin, maximum width of the pronotum less than 1.5 times the length of pronotum along mid-line, elytra punctate-striate but in some species punctures are in paired striae and may be very confused, intervals flat and glabrous (Fig. 99) ....*Menius* Chapuis, 1874
– Eyes without a sulcus or with a very narrow one; if there is a large sulcus, epicranium and eyes are not protuberant and/or the maximum width of pronotum is greater than 1.5 times the length along mid-line and/or the sulcus is partially filled by a raised area (Fig. 88) and/or does not extend beyond a point immediately above the middle of eye.....10
10. Antennae with the part of first segment distal to constriction elongated, prothorax with origins of anterior setae below the margins of pronotum.....11
– Antennae with the part of first segment distal to constriction globular or at least greatly expanded 12
11. antennae with third segment approximately equal in length to second segment, distal margin of hypomera nearly straight, not covering the posterior part of eyes, hypomera barely separated from distal edge of prosternum, elytra with punctures deeply impressed, intervals often slightly convex (Fig. 6-8) .....*Microsyagrus* Pic, 1952
– antennae with third segment longer than second, distal margin of hypomera convex, covering posterior part of eyes, distal border of hypomera ending with a low carina in middle of anterior edge of procoxal cavities and so separated from distal edge of prosternum (Fig. 1-2)...*Microeurydemus* Pic, 1938
12. Pronotum often cylindrical, maximum width of pronotum less than 1.45 times the length of pronotum along mid-line.....13
– Maximum width of pronotum greater than 1.45 times the length along mid-line.....14
13. Pronotum with shallow punctures, cylindrical, margins curved and never dentate (Fig. 98)..... .....*Proliniscus* Selman, 1965
– Elongated insects with a hood-like pronotum, in which anterior half is wider than posterior half, punctures broad and deep, and lateral margins very convex and usually dentate; some species show a tendency to confusion of the punctures and to pubescence (Fig. 100) .....*Syagrus* Chapuis, 1874
14. Elytra confusedly punctate or with punctures in irregular bands or double rows, with scattered micropunctures between.....15
– Elytra punctate-striate 17

15. Pronotum less than 1.6 times as broad as long at mid-line, pronotum and elytra often lightly pubescent, eye with a short, broad, crescent shaped area above the sulcus of eye (Fig. 88), surface granular and heavily setose (Fig. 104) ....*Sarum* Selman, 1965
– Pronotum more than 1.6 times as broad as long at mid-line, pronotum and elytra glabrous.....16
16. Body spherical, surface non-metallic and frequently patterned with spots, elytra with punctures in single rows confused by punctures of equal size lying in between the rows, punctures very large, pronotum more than 1.85 times as wide as the length at mid-line (Fig. 102) .....*Meniellus* Weise, 1903
– Body more elongated, surface often metallic, elytra with punctures smaller and usually in confused double rows, pronotum less than 1.85 times as wide as the length at mid-line (Fig. 101) ....*Selmania* Zoia, 2019
17. Anterior seta of prothorax arising above or on a level with the lateral edges of the pronotum (Fig. 91), elytra with intervals either flat or highly convex (Fig. 103) .....*Paraivongius* Pic, 1936
  – ocular sulci finer, usually not strongly widened to rear, at their distal end their relative distance usually a little greater than, or equal to space between the inner sides of antennal insertions; ocular sulci moderately impressed and frons not protruded ....subg. *Paraivongius* Pic, 1936
  – ocular sulci more strongly widened to rear, nearly straight and convergent distally so that at their distal end they are so close as, or closer to each other than the inner sides of antennal insertions; at least in their median portion the bottom of ocular sulci is on a well lower level in relation to frons, which is more or less prominent in middle and gradually restricted distally.....subg. *Micromenius* Pic, 1953
– Anterior setae of prothorax arising on episternum well below the lateral edges of the pronotum (Figs. 89-90), elytra with intervals flat or highly convex 18
18. Pronotum at the base at least twice as wide as at anterior end, anterior setae of the pronotum at the anteroventral corner of episternum (Fig. 89). Elytra approximately twice as long as pronotum, with intervals strongly raised (Fig. 106) ....*Gaberella* Selman, 1965
– Pronotum at base less than twice as wide as at anterior end, anterior setae of prothorax arising at approximately mid point of anterior edge of the episternum (Fig. 90). Elytra much more than twice as long as the pronotum, with intervals either flat or strongly raised.....19
19. Elytra with intervals flat or almost flat, head and pronotum with surface glabrous and punctures shallow (Fig. 105).....*Rhembastus* Harold, 1877
– Elytra with intervals strongly raised, head and pronotum with surface often lightly pubescent and with deep pit-like punctures (Fig. 107)..... .....*Mandollia* Delman, 1965

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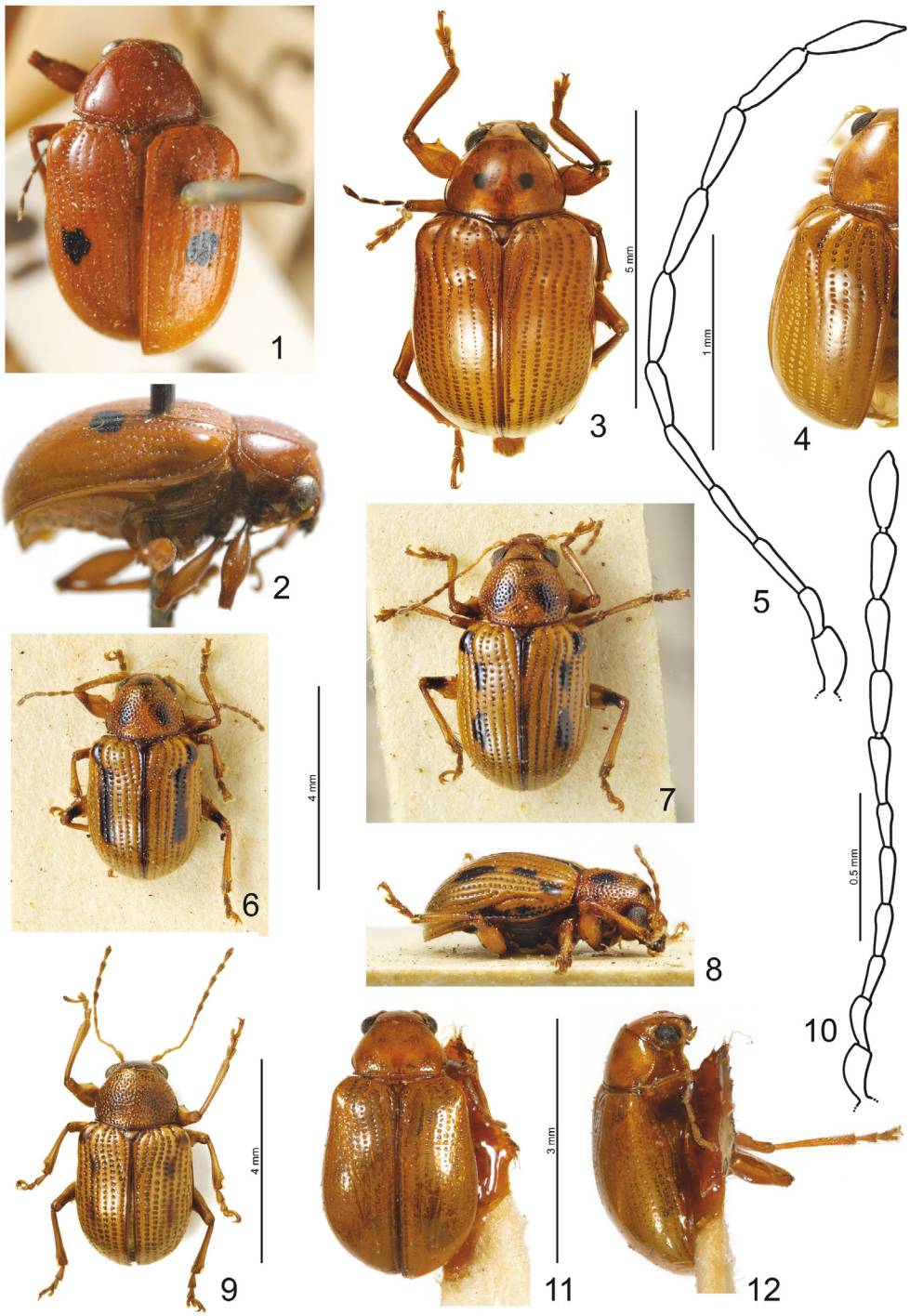
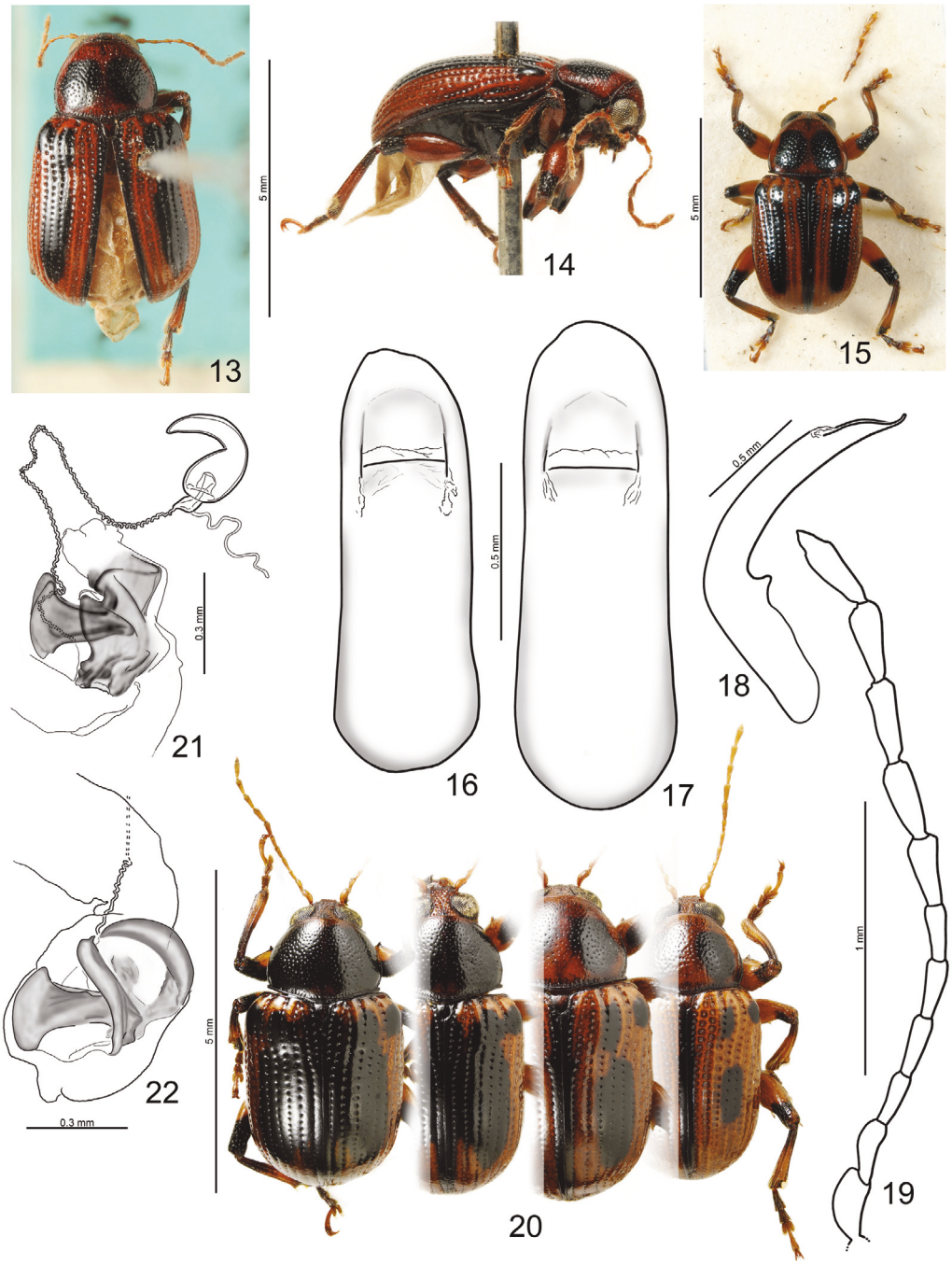
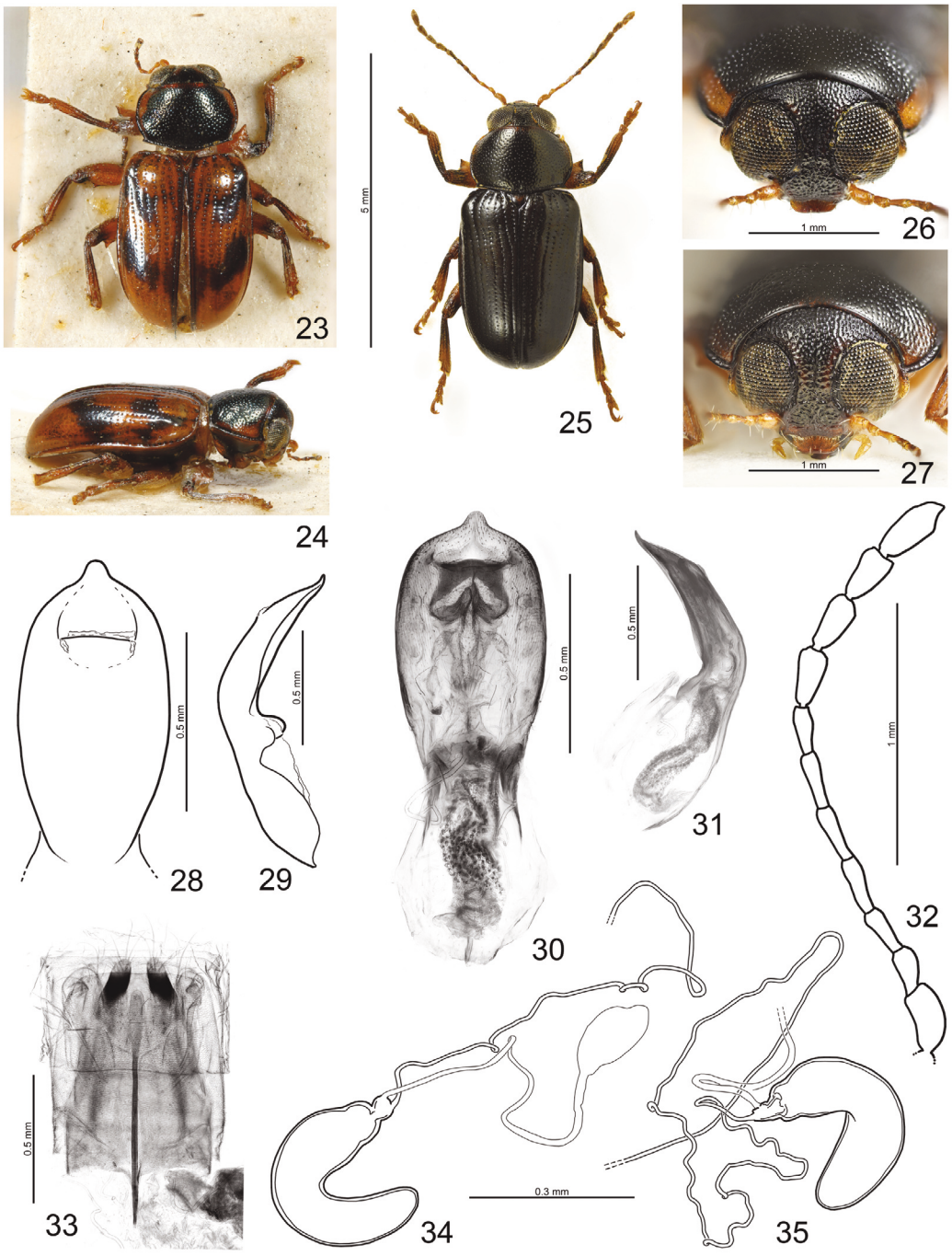


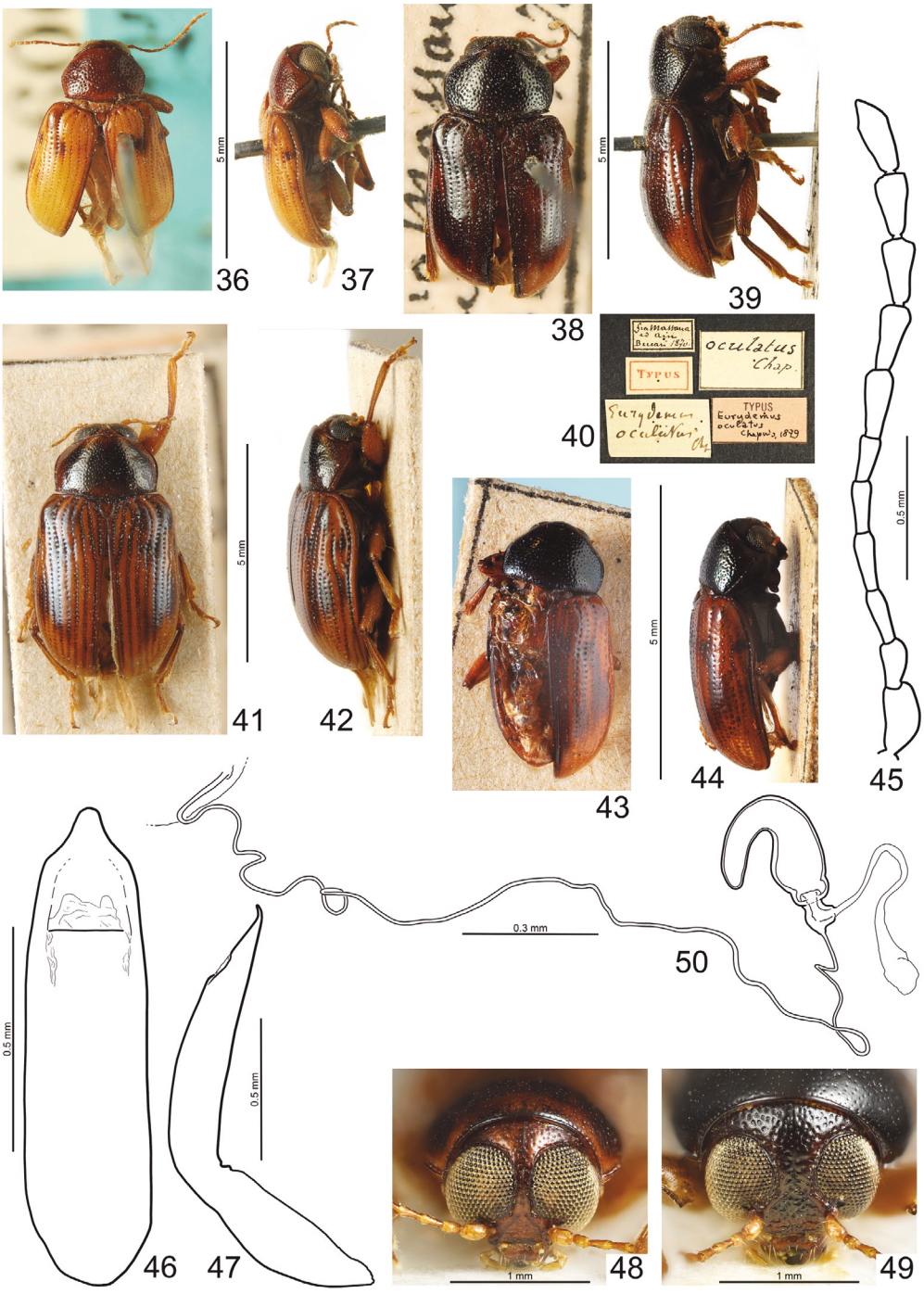
Figs. 1-12. 1 – *Microeurydemus unimaculatus* Pic, 1938, holotype, dorsal view; 2 – same, lateral view; 3 – idem, color variant (Gabon, Parc National Ivindo); 4 – idem, color variant (Gabon, Parc National Ivindo); 5 – antenna (Gabon, Parc National Ivindo); 6 – *Microsyagrus punctaticollis* Zoia, 2019, syntype, dorsal view; 7 – idem, syntype, dorsal view; 8 – same, lateral view; 9 – idem, color variant (Sierra Leone, Bumbuna); 10 – idem, antenna (Sierra Leone, Bumbuna); 11 – *Phascus flavescens* (Bryant, 1942), syntype, dorsal view; 12 – same, lateral view.



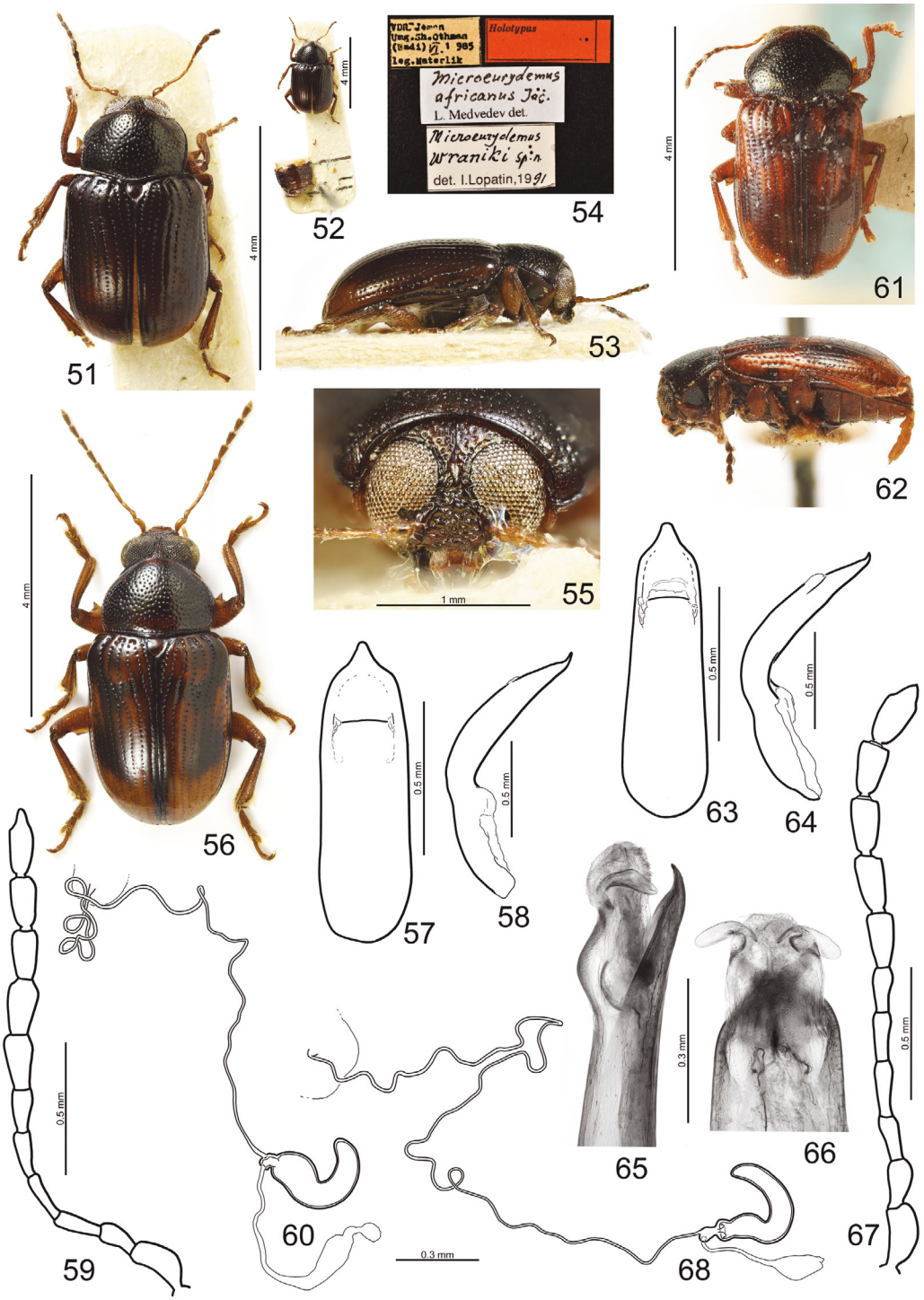
Figs. 13-22. 13 – *Afroeurydemus nubiensis* (Harold, 1877), holotype, dorsal view; 14 – same, lateral view; 15 – *Eurydemus geniculatus* Jacoby, 1904, holotype (= *A. nubiensis*), dorsal view; 16 – *A. nubiensis*, aedeagus, dorsal view (Ethiopia, Chencha prov.); 17 – idem, aedeagus dorsal view (Sud Africa, Kap prov.); 18 – same, lateral view (Sud Africa, Kap prov.); 19 – idem, left antenna (♂, Ethiopia, Chencha prov.); 20 – idem, color variant (Kenya, Garissa); 21 – idem, spermatheca and sclerotized plate of vagina in lateral view (South Africa, W of Bothaville, Vaal river); 22 – idem, same sclerotized plate of vagina in dorsolateral view (South Africa, W of Bothaville, Vaal river).



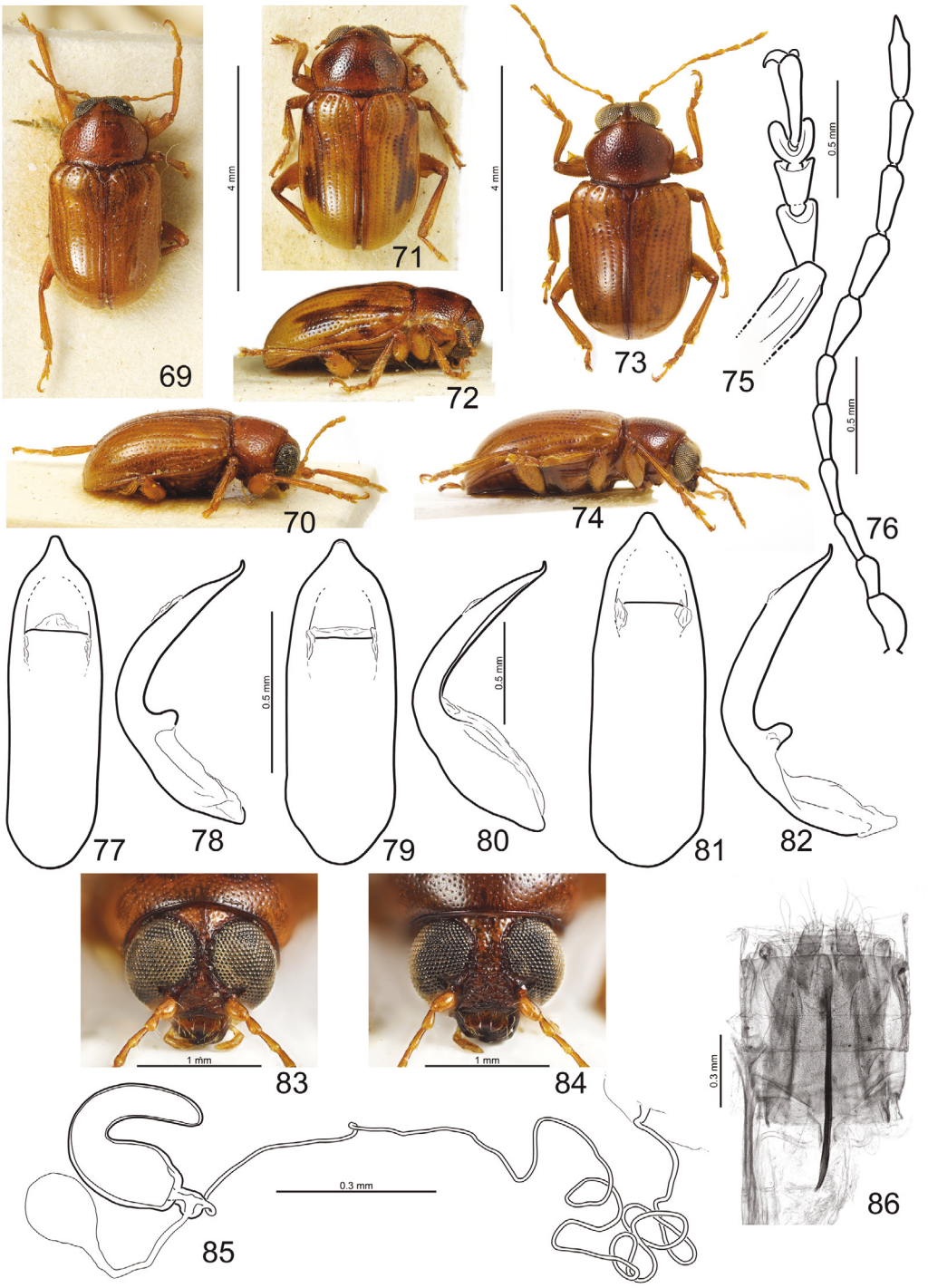
Figs. 23-35. 23 – *Daccordimolpus africanus* (Jacoby, 1900), holotype, dorsal view; 24 – same, lateral view; 25 – idem, melanic specimen (Namibia, Prov. Oshana, Etosha–Anderson Tor); 26 – idem, head (♂, Zimbabwe, 60 km N of Bulawayo); 27 – idem, head (♂, Zimbabwe, 60 km N of Bulawayo); 28 – idem, aedeagus, dorsal view (Zimbabwe, Mvuma, route Gutu–Chatsworth); 29 – same, lateral view; 30 – idem, ventral view showing sclerifications of endophallus (Zimbabwe, Mvuma, route Gutu–Chatsworth); 31 – same, lateral view; 32 – idem, left antenna (♂, Zimbabwe, 60 km N of Bulawayo); 33 – idem, ♀ genital segment (Zimbabwe, 60 km N of Bulawayo); 34 – idem, spermatheca (South Africa, Limpopo, Thabazimbi); 35 – idem (Zimbabwe, 60 km N of Bulawayo).



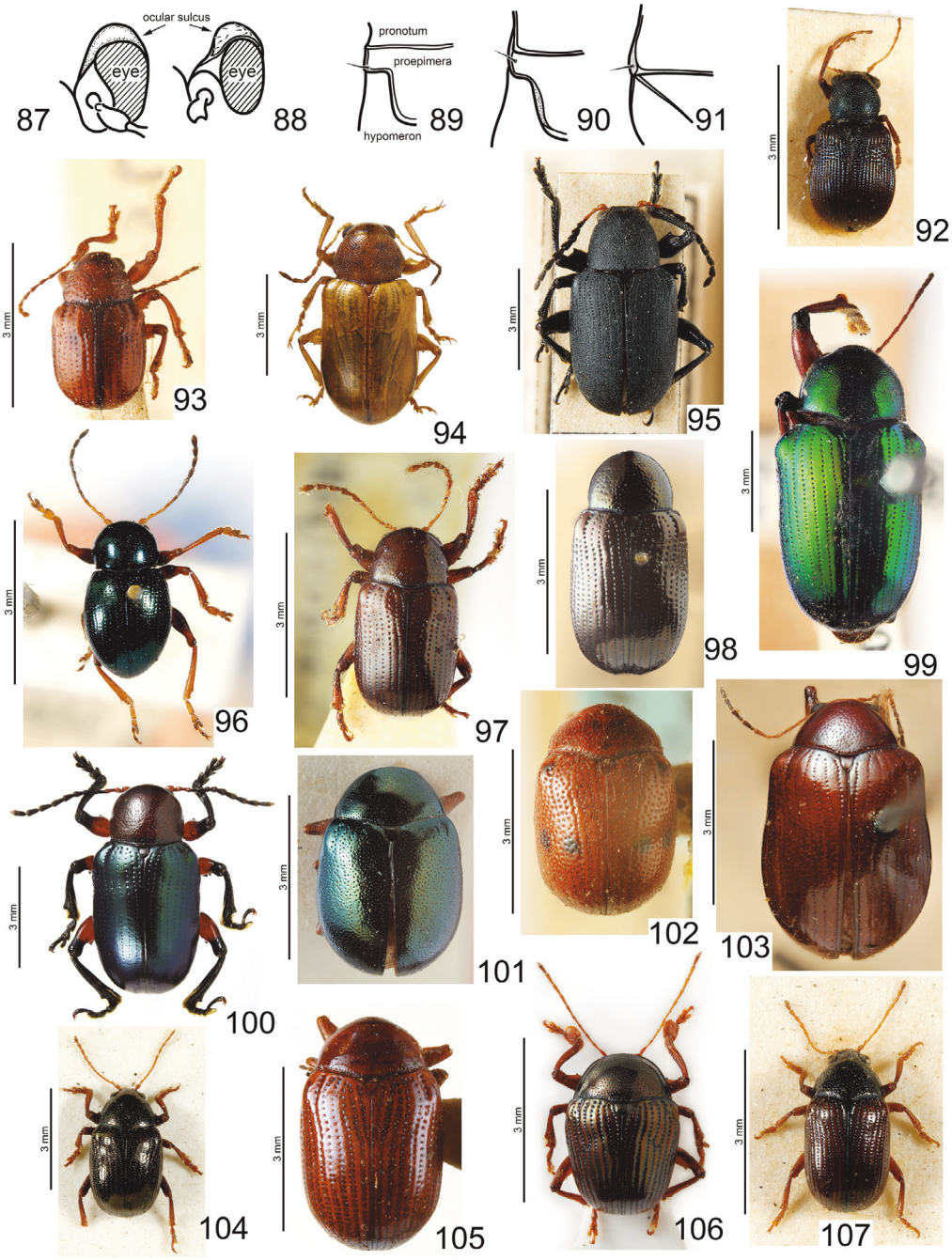
Figs. 36-50. 36 – *Daccordimolpus hartmanni* (Harold, 1877), holotype, dorsal view; 37 – same, lateral view; 38 – *Daccordimolpus oculatus oculatus* (Chapuis, 1879), syntype, dorsal view; 39 – same, lateral view; 40 – same, labels; 41 – *Eurydemus semivittatus* Jacoby, 1899, syntype (= *D. oculatus oculatus*), dorsal view; 42 – same, lateral view; 43 – *Liniscus fasciolatus* Fairmaire, 1893, syntype (= *D. oculatus oculatus*), dorsal view; 44 – same, lateral view; 45 – idem, antenna (♂, Ethiopia, Afar reg., Metahara); 46 – idem, aedeagus, dorsal view (Ethiopia, Afar reg., Metahar); 47 – same, lateral view; 48 – idem, head (♂, Ethiopia, Afar reg., Metahara); 49 – idem, head (♀, Ethiopia, Afar reg., Metahara); 50 – idem, spermatheca (Ethiopia, Afar reg., Metahara).



Figs. 51-68. 51 – *Daccordimolpus oculatus wraniki* (Lopatin, 1994), holotype, dorsal view; 52 – same, card with specimen, dissected abdomen and spermatheca; 53 – same, holotype in lateral view; 54 – same, labels; 55 – same, holotype head (♀); 56 – idem, color variant (Yemen, Suknah); 57 – idem, aedeagus, dorsal view (Yemen, Wādī Zabīd); 58 – same, lateral view; 59 – idem, left antenna (♀, holotype); 60 – idem, spermatheca (Yemen, Suknah); 61 – *D. oculatus sobrinus* (Weise, 1903), holotype, dorsal view; 62 – same, lateral view; 63 – idem, aedeagus, dorsal view (Kenya, Voi); 64 – same, lateral view; 65 – idem, apex of aedeagus with everted endophallus, lateral view (Kenya, Voi); 66 – same, dorsal view; 67 – left antenna (♂, Kenya, Magadi lake); 68 – spermatheca (Kenya, Voi).



Figs. 69-86. 69 – *Daccordimolpus adrarensis* (Pic, 1942), syntype, dorsal view; 70 – same, lateral view; 71 – *Eurydemus airensis* Pic, 1950, holotype (= *D. adrarensis*), dorsal view; 72 – same, lateral view; 73 – *D. adrarensis*, habitus in dorsal view (♂, Oman, Dhofar prov., Jabal Samhan); 74 – same, lateral view; 75 – idem, protarsus (♂, Oman, Dhofar prov., Jabal Samhan); 76 – idem, left antenna (♂, Oman, Dhofar prov., Jabal Samhan); 77 – idem, aedeagus in dorsal view (Somalia, Amgel, S of Carim); 78 – same, lateral view; 79 – idem, aedeagus in dorsal view (Oman, Dhofar prov. Jabal Samhan); 80 – same, lateral view; 81 – idem, aedeagus in dorsal view (Saudi Arabia, Suwaydarah); 82 – same, lateral view; 83 – idem, head (♂, Oman, Dhofar prov. Jabal Samhan); 84 – idem, head (♀, Oman, Dhofar prov. Jabal Samhan); 85 – spermatheca (Oman, Al Batinah, Birkat Al Sharaf); 86 – idem, ♀ genital segment (Oman, Al Batinah, Birkat Al Sharaf).



Figs. 87-107. 87 – *Menius* sp., side view of left eye and base of antenna; 88 – *Sarum* sp., idem; 89 – *Gaberella costata* (Baly, 1878), left anterior view of the side of prothorax showing position of anterior seta; 90 – *Rhembastus* sp., idem; 91 – *Paraivongius* sp., idem; 92 – *Cheiridea chapuisi* Baly, 1878, holotype, Sierra Leone (NHML); 93 – *Pagria suturalis* Lefèvre, 1884, holotype, Zanzibar (MNHN); 94 – *Chloropterus versicolor* Morawitz, 1860, Kazachstan, 30 km sud Koktal (SZcoll); 95 – *Amblynetes bottegoi* Jacoby, 1899, holotype, Da Sancurar agli Amarr Burgi (Ethiopia) (MSNG); 96 – *Pseudivongius natalensis* Jacoby, 1897, Lectotype, Natal (NHML); 97 – *Zohrana sansibarica* (Lefèvre, 1885), syntype, Zanzibar (MNHN); 98 – *Proliniscus natalensis* (Lefèvre, 1891), holotype, Natal (MNHN); 99 – *Menius lacordairei* (Chapuis, 1874), holotype, V. Calabar (ISBN); 100 – *Syagrus calcaratus* (Fabricius, 1775), Sierra Leone, N prov. Bumbura (SZcoll); 101 – *Selmania colasposomoides* (Burgeon, 1941), lectotype, Elisabethville (AFMT); 102 – *Meniellus kohlshuetteri* (Weise, 1903), syntype, Wembare Steppe (MFNB); 103 – *Paraivongius metallicus* (Pic, 1936), syntype, Tanganika (MNHN); 104 – *Sarum geminatus* (Jacoby, 1900), syntype, Salisbury Mashonaland (NHML); 105 – *Rhembastus variabilis* Harold, 1877, syntype, Nyassa (MSNG); 106 – *Gaberella costata* (Baly, 1878), Is. Fernando Poo, Punta Frailes (MSNG); 107 – *Mandollia affinis* (Jacoby, 1900), holotype, Mashonaland Salisbury (NHML); (figs 87-91 from Selman, 1972, redrawn; figs 88-107– type species of genera of Typophorini from Africa).

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Atti Sociali

Assemblea Generale Ordinaria dei Soci del 22 Marzo 2025

L'Assemblea Generale Ordinaria della Società Entomologica Italiana ha avuto luogo sabato 22 marzo 2025 alle ore 15:00 in modalità mista: in presenza presso la sede di Corso Torino 19/4 Genova e contemporaneamente in via telematica su ZOOM. Nel corso dell'Assemblea è stato discusso il seguente:

ORDINE DEL GIORNO

1) Convalida dei soci presentati dal Consiglio.
2) Comunicazioni del Presidente.
3) Relazioni dei membri del Consiglio.
4) Pubblicazioni sociali.
5) Bilancio consuntivo esercizio 2024 e previsioni per il 2025.
6) Varie ed eventuali.

Sono presenti o collegati 74 soci, senza alcuna delega.
A presiedere l'Assemblea viene eletto il Presidente della Società, Prof. Marco Alberto Bologna.
Risultano assenti giustificati i Consiglieri Dott. Marco Dellacasa e Prof. Stefano Vanin e il Bibliotecario, Dott. Antonio Rey, il quale ha delegato il Vicepresidente, Dott. Roberto Poggi, a relazionare sullo stato della Biblioteca.
L'Assemblea si apre con la commemorazione dei Soci defunti nel corso dell'anno precedente, tenuta dal Vicepresidente, Dott. Roberto Poggi.

1) Sono approvati all'unanimità 34 nuovi soci, di cui 4 per il 2024 e 30 per il 2025.
2) Il Presidente, Prof. Marco Alberto Bologna, relaziona sulle principali iniziative che hanno visto il coinvolgimento della Società nel corso dei mesi precedenti. Informa che, con la collaborazione del Tesoriere e del Segretario, nel mese di gennaio 2025 è stata presentata al MIPAC la domanda per i contributi ministeriali a favore della SEI; la Società è attualmente in attesa della comunicazione degli esiti della richiesta.
   Il Presidente comunica inoltre che la Società ha rinnovato l'affiliazione a società scientifiche quali AISSA e FISNA.
   Viene quindi presentato il prossimo XXVIII Congresso Nazionale Italiano di Entomologia (CNIE), che si terrà a Siena dal 16 al 20 giugno 2025. Il Presidente illustra le sessioni scientifiche previste e la composizione del Comitato Organizzativo, ricordando che la Società Entomologica Italiana figura tra gli enti organizzatori del congresso. In tale contesto, viene segnalata l'istituzione, congiuntamente all'Accademia Nazionale Italiana di Entomologia, del "Premio CNIE per la miglior tesi di dottorato", volto a premiare la migliore tesi di dottorato in ambito entomologico, generale o applicato.
   Il Presidente riassume quindi i patrocini concessi dalla Società nei mesi precedenti, tra i quali figurano quelli accordati a Biosolution Academy, al Convegno in memoria di Enrico Ragusa organizzato dalla Società Siciliana di Scienze Naturali, e all'Italy Chapter della Society for Conservation Biology.
   Viene inoltre comunicata la stampa del volume "Sistematica e Evoluzione degli Esapodi", ordinabile presso la casa editrice Liguori, con una spesa complessiva pari a 100 euro. Il Presidente informa altresì che la Società ha ricevuto una richiesta di audizione presso la Camera dei Deputati in merito all'emergenza legata a *Xylella fastidiosa*.
   Su suggerimento del Dott. Marcello Romano, il Presidente comunica di aver preso contatti con la Biblioteca Casanatense di Roma per valutare l'accesso al manoscritto di Saverio Scilla e le possibilità di una sua riproduzione in copia.
   Il Presidente conclude il proprio intervento ricordando il successo degli "Incontri Entomologici della S.E.I. 2024", iniziativa ormai consolidata e caratterizzata da un'elevata partecipazione. È prevista la riproposizione dell'evento nell'autunno 2025, con possibili modifiche di orario per favorirne una migliore fruizione.
3) Il Segretario, Dott. Davide Badano, comunica che i soci in regola con le quote sociali per il 2025 sono 291, in leggera diminuzione rispetto all'anno precedente.
   Fornisce, inoltre, ulteriori dettagli organizzativi relativi al prossimo CNIE.

Per la Biblioteca sociale, il Vicepresidente Poggi riporta la relazione del Bibliotecario, Dott. Antonio Rey, il quale conferma la collaborazione con la Biodiversity Heritage Library per rendere disponibili in formato PDF i volumi delle pubblicazioni della Società. Viene evidenziato che un numero crescente di riviste non accetta più scambi cartacei; tuttavia, l'Assemblea concorda sull'opportunità di continuare comunque l'invio del Bollettino, anche nei casi in cui le riviste siano disponibili esclusivamente online.

4) Il Direttore delle Pubblicazioni, Dott. Pier Mauro Giachino, informa che l'attività editoriale procede regolarmente sia per il Bollettino sia per le Memorie. Il Consigliere, Avv. Alberto Ballerio, riferisce sull'impaginazione del prossimo numero della newsletter Entomata, confermando la regolarità delle attività editoriali.
   Il Presidente indice la costituzione di un gruppo di lavoro incaricato di valutare la possibilità di internazionalizzare e potenziare le pubblicazioni scientifiche della Società, in particolare le Memorie, esaminando diverse opzioni editoriali e modalità di finanziamento. L'obiettivo è la creazione di una nuova rivista indicizzata su Scopus, tenendo conto di aspetti quali la continuità delle pubblicazioni, la qualità dei contributi e il coinvolgimento della comunità entomologica nazionale e internazionale. Il gruppo si riunirà per la prima volta il 9 aprile 2025.
5) L'Amministratore-Tesoriere, Sig. Carlo Giusto, presenta il bilancio consuntivo 2024 e il preventivo 2025. Nel corso del 2024 si è registrato un positivo decremento delle spese di pubblicazione, imputabile alla gestione di Entomata da parte di una nuova casa editrice. L'Amministratore propone inoltre di procedere al recupero delle quote arretrate non versate negli anni precedenti.
6) Il Sig. Carlo Giusto presenta una relazione sulle attività di escursione entomologica svolte nel corso dell'anno, sottolineandone il valore scientifico, formativo e aggregativo per i soci, nonché l'importanza di tali iniziative per la raccolta di dati e per la divulgazione delle attività della Società.
   Il Consigliere Dott. Michele Ricupero propone di valutare la possibilità di individuare un'azienda incaricata della gestione dei contenuti social della Società, inclusa la realizzazione e la diffusione di materiale video.
   Il Consigliere Prof. Maurizio Biondi propone di potenziare gli "Incontri Entomologici", trasformandoli in seminari universitari, al fine di favorire un maggiore coinvolgimento del mondo accademico e degli studenti, valutando anche la possibilità di attribuire CFU.

Esauriti gli argomenti all'ordine del giorno, il Presidente dichiara chiusa l'Assemblea alle ore 17:45.

Nel corso dell'ultima assemblea generale ordinaria sono stati ammessi i seguenti nuovi soci

Per il 2024

Lara Bagolin, Via Ereditari 76, 30027 San Donà di Piave (VE).
Giuseppina Carta, Via di Pré 49/11, 16126 Genova (GE). *(Insetti associati alla decomposizione: Diptera e Coleoptera)*.
Lapo Ragionieri, Via Orazio 49, 39100 Bolzano (BZ). *(Coleoptera Tenebrionidae e Carabidae)*.
Barbara Valle, Via San Bernardino 28, 24122 Bergamo (BG). *(Collembola)*.

Per il 2025

Mattia Animobono, Via Colle Palombara 25, 00039 Zagarolo (RM).
Luca Anselmo, Via Piccole Tanze 1, 10050 Matte (TO).
Salvatore Bella, Via Giovanni Verga 10, 95022 Aci Catena (CT). *(Lepidoptera Heterocera)*.
Alessandro Campanaro, Via Gen. Carlo Alberto dalla Chiesa 2, 50067 Rignano sull'Arno (FI). *(Monitoraggio e conservazione dell'entomofauna saproxilica)*.
Ivana Carofano, Viale della Stazione 5, 37060 Buttapietra (VR). *(Controllo simbiotico, lotta biologica per derrate alimentari)*.
Maria Corbetta, Via Padre Andrea Garelli, 29122 Piacenza (PC).
Ilaria D'Isita, Via Canne 14, 71043 Manfredonia (FG).
Valerio Dal Mas, Via 4 Novembre 42, 31256 Roncade (TV).
Alessandro Del Maro, Via Cesare Fani 84, 00139 Roma (RM). *(Hemiptera Cicadellidae e Coleoptera Carabidae)*.
Marco Falasco, Vicolo San Pio Decimo 5/G, 35020 Albignasego (PD).
Andrea Ferrari, Via Alcide De Gasperi 14, 20832 Desio (MB). *(Biodiversità, ecologia ed adattamenti di Imenotteri aculeati.)*

Lilith Filaferro, Via San Luigi 38, 10094 Giaveno (TO). *(Hymenoptera Apoidea)*.
Eleonora Vittoria Fontana, Via Aldo Moro 181, 15121 Alessandria (AL).
Leonardo Forbicioni, Via Roma 6, 57037 Portoferraio (LI) (*Coleoptera Curculionoidea*).
Pierluigi Forlano, Via San Pietro 515, 84026 Postiglione (SA). *(Controllo biologico, interazioni pianta-fitofago-entomofago, bioinsetticidi)*.
Serena Gallizia, Via Torino 91, 10028 Trofarello (TO).
Pietro Gardini, Via Monte Corno 12/1, 16166 Genova (GE). *(Isopodi terrestri)*.
Valeria Grande, Via Carducci 21, 14100 Asti (AT).
Diana La Forgia, Route de Duillier 60, 1260 Nyon (Svizzera).
Alessandra Locati, Via 8 Giugno 96, 20077 Melegnano (MI).
Marco Manta, Via Benetti 25, 10051 Avigliana (TO). *(Entomologia agraria)*.
Laura Maretto, Via San Valentino 1279/o, 35029 Pontelongo (PD).
Roberto Masturzi, Via Vallombrosa 30, 00135 Roma (RM). *(Phytoptus avellanae e Xylosandrus germanus)*.
Luca Mazzon, Via Mirabello 100, 35038 Torreglia (PD).
Emanuele Repetto, Via Regonca 94, 15061 Arquata Scrivia (AL). *(Ortotterologia e Lepidotterologia)*.
Manuel Roppo Valente, Via Silvio Pellico 3/25, 10125 Torino (TO). *(Hymenoptera Apoidea)*.
Giulia Russo, Via Vittorio Andreis 3, 10152 Torino (TO). *(Hymenoptera)*.
Pompeo Suma, Via Santa Sofia 100, 95123 Catania (CT).
Massimo Tombesi, Via Due Fonti 14, 62100 Macerata (MC). *(Coleoptera Carabidae)*.
Francesco Volpe, Via Gaetano Donizetti 62, 70038 Terlizzi (BA). *(Insetti vettori di Xylella fastidiosa)*.

SOCIETÀ ENTOMOLOGICA ITALIANA
BILANCIO CONSUNTIVO 2024

I. STATO PATRIMONIALE AL 31.12.2024

PATRIMONIO SOCIALE			
Immobile Sede Biblioteca Sociale (valore catastale riv.)		€	405.407,52
Mobili e Attrezzi (pro memoria)		€	1,00
Biblioteca (pro memoria)		€	1,00
		€	405.409,52
LIQUIDITÀ AL 31.12.2024			
Conto corrente bancario		€	23.705,85
	Totale patrimonio	€	429.115,37

II. RENDICONTO DI CASSA AL 31.12.2024

ENTRATE			
Liquidità al 31.12.2023		€	14.155,04
Quote sociali (importi netti)		€	14.560,21
Contributo Ministero (2024)		€	10.569,73
Rimborsi		€	6.689,68
	Totale entrate	€	45.974,66
USCITE			
Conto economico		€	12.134,67
Spese Pubblicazioni sociali		€	10.134,14
	Totale uscite	€	22.268,81

LIQUIDITÀ AL 31.12.2024 (come da stato patrimoniale)		
Conto corrente bancario	€	23.705,85

III. DIMOSTRAZIONE DEL CONTO ECONOMICO 2024

Gestione ordinaria Sede Sociale	€	5.181,12
Biblioteca Sociale	€	2.846,98
Fondo minute spese Segreteria	€	300,00
Fondo minute spese Biblioteca	€	500,00
Fondo minute spese Amministrazione	€	200,00
Spese postali e bancarie ordinarie	€	447,00
Spese spedizioni	€	213,25
Assicurazioni diverse	€	1.169,32
Imposte e tasse	€	977,00
Quote sociali (AISSA)	€	300,00
	€	12.134,67

IV. DIMOSTRAZIONE DELLE SPESE PUBBLICAZIONI SOCIALI 2024

Ind.Com. (Viviani, spedizioniere)	€	3.021,54
PAGEPress (Editrice di Memorie e Bollettino)	€	7.112,60
	€	10.134,14

BILANCIO PREVISIONALE ANNO 2025

ENTRATE			
Disponibilità di cassa all'01.01.2025		€	23.705,85
Quote sociali		€	13.000,00
Rimborsi		€	1.000,00
	Totale entrate	€	37.705,85
USCITE			
Spese di pubblicazione		€	20.000,00
Biblioteca sociale		€	4.000,00
Spese generali di gestione, incl. imposte e tasse		€	13.705,85
	Totale uscite	€	37.705,85

L'Amministratore
(Carlo Giusto)

Il Bibliotecario
(Antonio Rey)

Il Presidente S.E.I.
(Prof. Marco A. Bologna)

Società Entomologica Italiana

Quote associative per il 2025:

Studenti fino a 27 anni	20,00 ⇔
Studenti fino a 27 anni *sez. agraria*	25,00 ⇔
Ordinari paesi UE	40,00 ⇔
Ordinari paesi UE *sez. agraria*	45,00 ⇔
Ordinari paesi extra UE	60,00 ⇔

I soci che desiderano ricevere il Bollettino in versione cartacea devono aggiungere 10,00 ⇔ alla normale quota associativa.

Se si tratta della prima iscrizione bisogna aggiungere 10,00 ⇔.

Il rinnovo della quota deve essere effettuato entro il primo bimestre dell'anno; la quota versata oltre tale periodo deve essere aumentata del 50%.

Versamenti

- Bonifico Bancario intestato a: Società Entomologica Italiana
  BPER Banca - Sede di Genova, Via Cassa di Risparmio 15, 16123 Genova, Italy
  IBAN: IT40W0538701400000047013212
  BIC: BPMOIT22XXX

Segreteria Società Entomologica Italiana, via Brigata Liguria 9, 16121 Genova

Biblioteca Società Entomologica Italiana, Corso Torino 19/4 sc. A, 16129 Genova
(orario: sabato 15.00-18.00, tel. 010.586009)

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Istruzioni per gli Autori: Gli autori che desiderino pubblicare sulle Riviste della Società devono attenersi alle Istruzioni pubblicate sul sito:
http://sei.pagepress.org/index.php/bollettino/information/authors

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