

## Review of Sarcophagidae (Diptera) of North African countries with new faunistic data from Algeria

Yuriy Verves

Department of Ecological Monitoring, Institute for Evolutionary Ecology, National Academy of Sciences of Ukraine, Kyiv, Ukraine, Academician Lebedev Str. 37, Kyiv, Ukraine, 03143.

(Email: yuryverves@gmail.com)

### Abstract

A total of 199 sarcophagid species are listed from North African region, including Algeria (84 species), Azores (17), Canary Is. (33), Ceuta & Melilla (2), Egypt (116), Libya (24), Madeira Is. (7), Malta (43), Morocco (49), and Tunisia (45). 20 species have been collected in Oum El Bouaghi forest, including one species new for science (*Sarcophila khrokalo* sp. n.) and 10 species first recorded from Algeria (*Metopia argyrocephala*, *Paragusia multipunctata*, *Phrosinella fedtshenkoi*, *Helicophagella novercoides*, *Artamonoviella monspellensia*, *Heteronychia uncicurva*, *Thyrsoctenema belgiana*, *Liosarcophaga catalunya*, *L. portschinskyi*, *L. teretirostris*).

**Keywords:** *Sarcophagidae*, North Africa, Algeria, fauna, new species.

Received: 5 July 2019; Revised: 19 November 2019; Online: 31 December 2019

### Introduction

Altogether (including present data) 199 sarcophagid species (Enderlein (1928), Lehrer (1995, 2003a), Pape (1996); Povolný, 1992; Rohdendorf (1930, 1935, 1937, 1971, 1975), Salem (1938a, b), Séguy (1941a, b), Sotiraki *et al.* (2010), Verves (1982, 1985, 1986, 1993a, b), Verves & Khrokalo (2006, 2015, 2017), Verves *et al.* (2015), Villeneuve (1910, 1912a, b), Whitmore (2011) have been recorded from the North African territory. Country faunas from within this region have been explored by many authors, the most significant ones being: Egypt (Abd El-Halim *et al.*, 2005, 2009; Becker, 1902, 1903; El-Ahmady *et al.*, 2015; El-Hawagry & El-Azab, 2019; Helal *et al.*, 1981; Lehrer 2003a; Mohamed & Abdel-Rahman, 1985; Rohdendorf, 1934; Salem, 1935, 1936, 1940; Salwa & Abdel-Rahman, 1983; Shaumar & Kamal, 1984; Steyskal & El-Bialy, 1967; Tantawi *et al.*, 1996, 2018); Libya (Séguy, 1935; Venturi, 1960); Malta (Gatt & Ebejer, 2014; Schembri *et al.*, 1991; Venturi, 1960; Villeneuve, 1910; Wyatt, 1991), Tunisia (Bezzi, 1922; Gatt & Ebejer, 2014; Mathis, 1957; Séguy, 1934), Spanish North Africa (Peris *et al.*, 1996), Morocco (Becker & Stein, 1914; Delanoë, 1922; El-Abrak *et al.*, 2002; El-Mezouari *et al.*, 2014; Farkas *et al.*, 2003; Lmimouni *et al.*, 2004; Romli *et al.*, 2010;

Séguy, 1930, 1939, 1940a, b, 1941c, d, 1949, 1953; Tliqui *et al.*, 2007; Verves, 1993b), Canary Is. (Báez, 1980; Báez & García, 2004; Becker, 1908a; Carles-Tolrá, 2002, Lehrer & Báez, 1986; Peris *et al.*, 1996, 2001; Verves & Barták, 2017; Villeneuve, 1908), Madeira Is. (Becker, 1908b; Pape, 1986, 1990), Azores (Séguy, 1936; Kehlmaier, 1998). A brief review of studies of Algerian sarcophagids with a checklist of 74 species was published in my previous article (Verves, 2017). To compile the existing data here I present a checklist of 84 species.

### Materials and Methods

The commune of Oum El Bouaghi is located in the north-east of Algeria in the Constantine Highlands on area of 7638.13 km<sup>2</sup>. This commune is located in the high Constantine plains, between the mountain regions. It bends from the north to the south where it passes from an altitude of 1635 m (Jebel sidiR'ghiss) in the North, to 808m (Garaa of Tarf) to the South. 57 specimens of sarcophagids have been collected in Oum El Bouaghi forest, 1210 m, 35.899, 7.129, pt., iv.2016, by Mr. N. Baba Aissa and were sent to me by Prof. Miroslav Barták (Czech University of Life Sciences, Praha) for study. Author follows classification of Verves (1986)

and Verves & Khrokalo (2006) in order of species in check list. The material was examined under Nikon SMZ 1500 stereozoom microscope.

Abbreviations of morphological features: *acr* - acrostichal seta; *ad* - anterodorsal seta; *ap* - apical seta; *bas* - basal seta; *d* - discal seta; *dc* - dorsocentral seta; *dm-cu* - discal medial cubital crossvein; *f<sub>2</sub>* - mid femur; *fr* - frontal seta; *h* - humeral seta; *ia* - intraalar seta; *ivt* - inner vertical seta; *kepst* - katepisternal seta; *M* - medial vein; *npl* - notopleural seta; *oc* - ocellar seta; *orb* - orbital seta; *ovt* - outer vertical seta; *ph* - posthumeral seta; *poc* - postocellar seta; *pocl* - postorbital seta; *R<sub>1</sub>* - first longitudinal vein; *R<sub>2+3</sub>* - second longitudinal vein; *R<sub>4+5</sub>* - third longitudinal vein; *r<sub>5</sub>* - first posterior cell; *subap* - subapical seta; *t<sub>1</sub>* - fore tibia.

I provide here a checklist of Sarcophagidae for all the North African countries (Table 1).

## Results

### Description of a new species

#### *Sarcophila khrokaloae* Verves, sp. n.

Figures: 1-2

[urn:lsid:zoobank.org:act:40F60453-31A3-488C-A4AE-22258D720D30](https://doi.org/10.21203/rs.3.rs-22258720/v1)

**Male. Head:** Black, thickly silver grey pollinated; antennae and palpi black. Eyes bare, dichoptic, separated at vertex 0.40×, at level of antennal base 0.36× of head width. Frontal vitta 1.67× widened backward, matt grey, with distinct grey-silver dusting around matt black ocellar triangle, about 2× as wide as one of parafrontalia just in front of anterior ocellus. Parafrontalia silver grey dusted, in addition to strong *orb* and *fr*, and with a longitudinal row of 4-6 small setae along the edge of the eye between the fore *orb* and fore *fr*. Two regular rows of *pocl* present; *fr* 6; *orb* 2+1; *oc* strong and long, directed laterodorsally; *poc* weak and elongate; *ovt* and *ivt* well developed. Parafacialia at level of antennal base 0.26× of head length, silver grey dusted, with a single irregular row of the mid-long fine black setae. Face distinctly widened forwardly to vibrissal angles, silver grey dusted, with broad facial carina. Facial ridge bare, vibrissae well developed. Genae 0.22× of head-height, thickly silver-grey dusted, clothed with numerous black setae. Genal groove

blackish grey, bare. Postgenae black, largely clothed with mid-long black hairs. Occiput black, covered with black hairs. Pedicel matt black, its surface across pedicelar bristle orange yellow. First flagellomere matt black, about 1.8-2.0× as long as pedicel. Arista widened in basal 1/3, black, long plumose. Palpi entirely black, distinctly widened apically.

**Thorax:** Black, light grey-dusted, covered with black hairs. Dorsum marked with broad median, a pair of approximated narrow submedian and two lateral broad longitudinal black stripes on prescutum and scutum, each more distinctly visible when viewed from behind; only the median one reaches the end of scutellum. Humeri, notopleura, sternopleura and scutellum distinctly yellowish grey-dusted; thoracic spiracles yellowish white. Prosternum and propleuron bare, the other pleura with setae. *acr* 1+1; *dc* 2+3; *ia* 0+3; *h* 3; *ph* 1, *npl* 2, *kepst* 2+1. Scutellum with long strong pair of *ap* and more short fine *subap*, *bas* and *d*.

**Wings:** Membrane hyaline; veins yellowish brown; epaulet and basicosta yellowish white; subcostal sclerite yellowish brown. Costal spine small, unclear; *R<sub>1</sub>* and *R<sub>2+3</sub>* bare; *R<sub>4+5</sub>* with a row of black setae from basal node to the intersection with *r-m* above; node of *R<sub>2+3</sub>* and *R<sub>4+5</sub>* with a few black setae below. The ratio of 3<sup>rd</sup> and 5<sup>th</sup> costal sections is 1:1.4. Cell *r<sub>5</sub>* open; the last section of *M* curved at a blunt almost right angle; *dm-cu* sigmoid. Both calypteres white, slightly grayish, halteres yellow.

**Legs:** Black. Claws curved, distinctly shortened than 5<sup>th</sup> tarsomere; pulvilli ovale equal to claws in length; *t<sub>1</sub>* with 3 *ad*; *f<sub>2</sub>* without ctenidium.

**Abdomen:** Grey dusted, with shining black dorsal drawing. 1+2<sup>nd</sup> tergite with 3 (medial and two lateral) longitudinal bands; each of 3<sup>rd</sup>-5<sup>th</sup> tergites with 3 triangled hind spots. Middle longitudinal spots reach to the fore margins of 3<sup>rd</sup> and 4<sup>th</sup> tergites, and lateral spots oval, located in hind 0.5-0.6; 5<sup>th</sup> tergite with 3 rounded unclear spots in hind part.

**Terminalia:** Black, grey dusted. Narrowed apical part of cercus subulate, not serrated, shorter than widened basal one. Surstylus is separated by a deep oval cut on the upper and lower parts; the latter carries a vertical row of setae from the cut to the lower corner and numerous apical hairs (Fig. 1). Pregonites s-

like curved, pointed on apex; postgonites leaf-shaped in the apical part, with numerous hairs bearing particular dorsolateral site. Aedeagus with short apical hook and special membrane lobe located below. Hypophallus consists of a thickened hairy basal part and a narrow and long rod-shaped apical one located at an obtuse angle (Fig. 2).

**Female:** unknown.

**Measurement:** Holotype (male): Body length: 5.5 mm.

**Etymology:** The specific name is given in honour of my wife, well known Ukrainian entomologist Dr. Liudmyla A. Khrokalo (National Technical University of Ukraine "Igor Sikorsky Kyiv Polytechnic Institute", Kyiv, Ukraine).

**Type material:** Holotype ♂: Algeria, Oum El Bouaghi forest, 1210m, 35.899, 7.129, pt., iv.2016. Holotype is deposited in collection of Czech University of Life Sciences, Prague, Czech Republic.

**Comparison:** This species is related to *Sarcophila dayanella* Lehrer, 2003 (Fig. 3) from Syria and *Sarcophila navara* Lehrer, 2003 (Fig. 4) from Israel by a single row of black setae on parafacials, by shortened apical part of cercus and by strongly curved hypophallus, but differs by absence of spines of apical part of cercus, by presence of a vertical row of setae on lower part of surstylus, and pointed aedeagus.

**Ecology:** Probably, mesophilous forest species.

#### List of Algerian Sarcophagidae, collected in Oum El Bouaghi forest<sup>1</sup>

1. *Metopia* (s.str.) *argyrocephala* (Meigen, 1824)<sup>\*2</sup>: 1 ♂.
2. *Paragusia multipunctata* (Rondani, 1859)<sup>\*</sup>: 1 ♂.
3. *Phrosinella* (s. str.) *fedtshenkoi* (Rohdendorf, 1925)<sup>\*</sup>: 1 ♂.
4. *Sarcophila khrokalo* sp. n.<sup>\*</sup>: 1 ♂.
5. *Blaesoxipha rufipes* (Macquart, 1839) [Verves, 1985, 2017]<sup>3</sup>: 1 ♀.

6. *Helicophagella* (s. str.) *novercoides* Böttcher, 1913<sup>\*</sup>: 3 ♂.
7. *Artamonoviella monspellensia* (Böttcher, 1913)<sup>\*</sup>: 2 ♂.
8. *Heteronychia* (*Ctenodasypygia*) *minima* (Rondani, 1862) [Verves, 2017; Villeneuve, 1911; Whitmore, 2011]: 9 ♂.
9. *H.* (C.) *thirionae* (Lehrer, 1976) [Verves, 2017; Whitmore, 2009]: 2 ♂.
10. *H.* (C.) *uncicurva* Pandellé, 1896<sup>\*</sup>: 1 ♂, 1 ♀.
11. *H.* (C.) *villeneuveana* (Enderlein, 1928) [Enderlein, 1928]: 1 ♂.
12. *H.* (s. str.) *pandellei* (Rohdendorf, 1937) [Rohdendorf, 1937; Verves, 2017]: 3 ♂.
13. *Karovia hirticrus* (Pandellé, 1896) [Böttcher, 1912; Verves, 2017]: 6 ♂.
14. *Myorhina* (s. str.) *nigriventris* (Meigen, 1826) [Séguy, 1941; Verves, 2017]: 7 ♂, 1 ♀.
15. *Thyrsocnema belgiana* Lehrer, 1976<sup>\*</sup>: 1 ♂.
16. *Bercaea africa* (Wiedemann, 1824) [James, 1947; Verves, 2017]: 3 ♂.
17. *Liosarcophaga* (s. str.) *catalunya* Lehrer, 2008<sup>\*</sup>: 1 ♂.
18. *L.* (s. str.) *marshalli* (Parker, 1923) [El-Hawagry & El-Azab, 2019]: 4 ♂.
19. *L.* (s. str.) *portschinskyi* (Rohdendorf, 1937)<sup>\*</sup>: 1 ♂.
20. *L.* (s. str.) *teretirostris* (Pandellé, 1896)<sup>\*</sup>: 8 ♂.

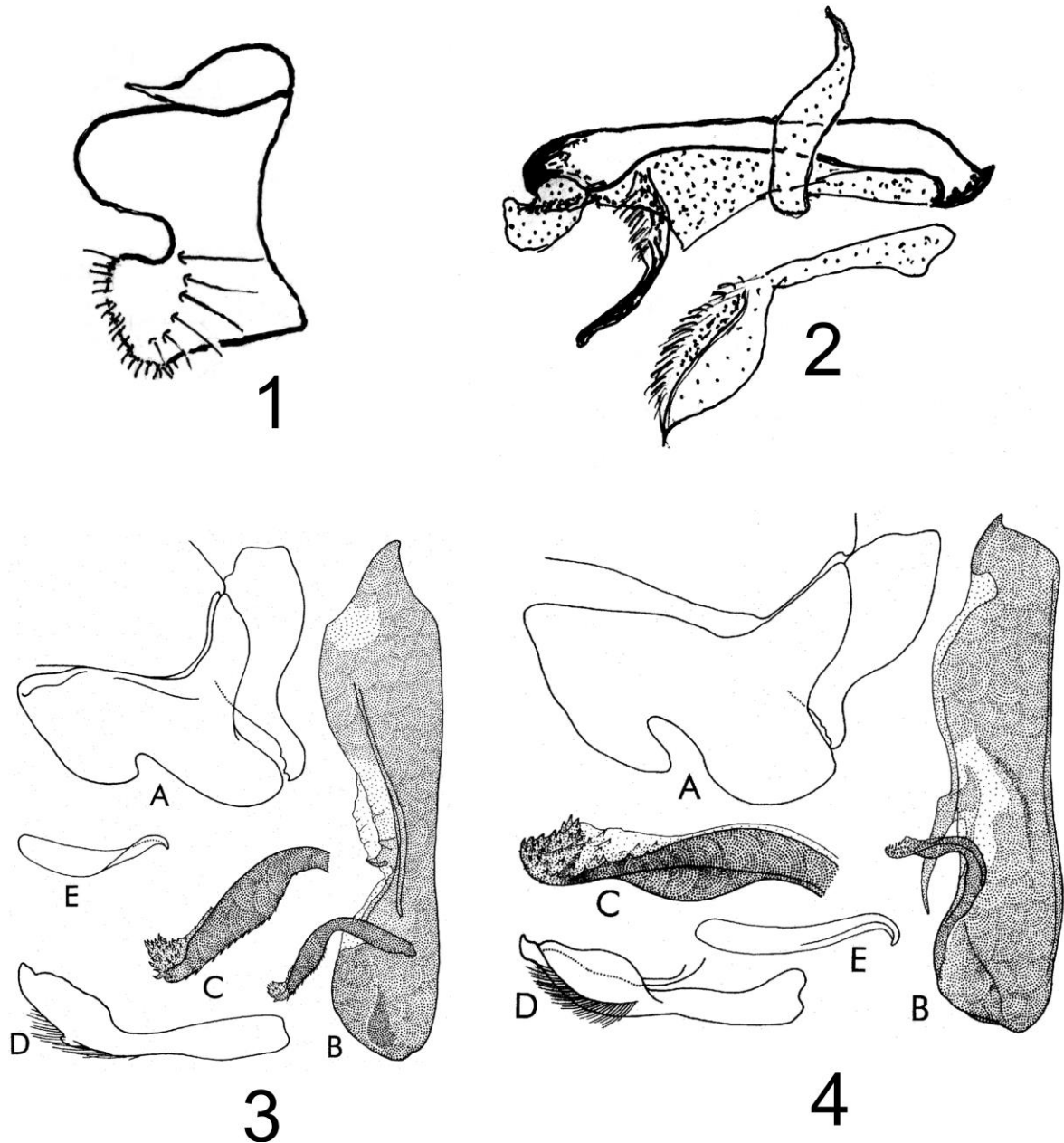
#### Discussion

A total of 199 sarcophagid species are known from North African region. Regional faunas of North Africa are not studied in detail: their review (including the results of present paper) is given in Table 1. The regional cadastres present not less than 80-90% of full special lists of depleted island ecosystems, such as Azores (17 species), Canary Is. (33), Madeira (7) and Malta (45). Among continental countries, the most of the studies are designated for Egypt (116) and Algeria (84). The faunistic lists at level 20-40% are known for Morocco (49) Tunisia (45) and Libya (24). Only two species are known from the enclave area Ceuta & Melilla.

<sup>1</sup> The sequence of species in the list corresponds to the system of family adopted by Verves (1986).

<sup>2</sup> \* - firstly recorded to Algerian fauna.

<sup>3</sup> The references to previous publications about the collection of this species in Algeria are given in square brackets.



**Figures 1-4:** Male genitalia (lateral view) of *Sarcophila khrokaloae* sp. n. [1. cercus and surstylus; 2. aedeagus and gonites, orig.]; after Lehrer, 2003b: *S. dayaniella* Lehrer, 2003 [3] and *S. navara* Lehrer, 2003 [4]. A. cercus and surstylus; B. aedeagus; C. apical part of hypophallus; D. postgonite; E. pregonite.

**Acknowledgements**

Author is thankful to Prof., Dr. Sci. Miroslav Barták (Department of Zoology and Fisheries, Faculty of Agrobiolgy, Food and

Natural Resources, Czech University of Life Sciences, Prague, Czech Republic) for sending dry flies.

Table 1

List of species of Sarcophagidae from different North African countries<sup>4</sup>

No.	Species	Countries and islands (in direction from West to East)								
		Azores	Madeira Is.	Canary Is.	Morocco	Spanish Africa (Ceuta & Melilla)	Algeria	Tunisia	Malta	Libya
1	<i>Macronychia</i> (s. str.) <i>lemariei</i> Jacentkovský, 1941	-	-	-	-	-	+	-	-	-
2	<i>M. (Moschusa) polyodon</i> (Meigen, 1824)	-	-	-	+	-	-	-	+	-
<b>(2 sp.) Macronychiinae, sum</b>		-	-	-	<b>1</b>	-	<b>1</b>	-	<b>1</b>	-
3	<i>Senotainia (Arrenopus) albifrons</i> (Rondani, 1859)	-	-	+	-	-	+	+	-	+
4	<i>S. (s. str.) aegyptiaca</i> Rohdendorf, 1935	-	-	-	-	-	-	-	-	+
5	<i>S. (s. str.) caspica</i> Rohdendorf, 1935	-	-	-	-	-	-	-	-	+
6	<i>S. (s. str.) deserta</i> Rohdendorf, 1935	-	-	-	-	-	-	-	-	+
7	<i>S. (s. str.) efflatouni</i> (Rohdendorf, 1935)	-	-	-	-	-	-	-	-	+
8	<i>S. (s. str.) tricuspis</i> (Meigen, 1838)	+	-	-	+	-	-	+	+	+
9	<i>Eremasiomya macularis</i> (Wiedemann, 1824)	-	-	-	-	-	-	-	-	+
10	<i>E. meridionalis</i> (Rohdendorf, 1927)	-	-	-	-	-	-	-	-	+
11	<i>E. nigra</i> Rohdendorf, 1935	-	-	-	-	-	-	-	-	+
12	<i>E. thereomyioides</i> Rohdendorf, 1935	-	-	-	-	-	-	-	-	+
13	<i>Protomiltogramma aegyptiaca</i> (Rohdendorf, 1934)	-	-	-	-	-	-	-	-	+
14	<i>P. fasciata</i> (Meigen, 1824)	-	-	+	+	-	+	-	-	+
15	<i>P. immunita</i> (Villeneuve, 1923), <b>comb. n.</b>	-	-	-	-	-	-	-	-	+
16	<i>P. obscurior</i> (Villeneuve, 1916)	-	-	-	-	-	-	-	-	+
17	<i>Pterella convergens</i> (Pandellé, 1895)	-	-	-	-	-	+	-	-	-
18	<i>P. grisea</i> (Meigen, 1824)	-	-	-	-	-	-	-	+	-
19	<i>P. melanura</i> (Meigen, 1824)	-	-	-	-	-	-	-	+	-
20	<i>P. nigrofasciata</i> (Rohdendorf, 1935)	-	-	-	-	-	-	-	-	+
21	<i>Achaetocephalon nudum</i> (Rohdendorf, 1934)	-	-	-	-	-	-	-	-	+
22	<i>Anacanthothecum testaceifrons</i> (Roser, 1840)	-	-	-	+	-	-	-	-	-
23	<i>Capnopteron africanum</i> (Verves, 1979)	-	-	-	-	-	-	-	-	+
24	<i>C. maroccanum</i> (Séguy, 1941)	-	-	-	+	-	-	-	-	+
25	<i>Cylindrothecum ibericum</i> (Villeneuve, 1912)	-	-	-	-	-	+	-	-	-
26	<i>Efflatounomyia albidopilosa</i> Rohdendorf, 1934	-	-	-	-	-	-	-	-	+
27	<i>E. pardalina</i> Rohdendorf, 1934	-	-	-	-	-	-	-	-	+
28	<i>Miltogramma algira</i> Macquart, 1843	-	-	-	-	-	+	-	-	+
29	<i>M. aurifrons</i> Dufour, 1850	-	-	+	+	-	+	+	-	+
30	<i>M. brevipila</i> Villeneuve, 1911	-	-	-	-	-	-	+	-	+
31	<i>M. germari</i> Meigen, 1824	-	-	-	+	-	+	-	-	+
32	<i>M. murina</i> Meigen, 1824	-	-	-	+	-	-	+	+	-

<sup>4</sup> Legend: “+” – species recorded after previous publications; “\*” - species firstly recorded; “-” – species not recorded.

Review of Sarcophagidae (Diptera) of North African countries with new faunistic data from Algeria

33	<i>M. oestracea</i> (Fallén, 1820)	-	-	-	-	-	+	-	-	+	+
34	<i>M. punctata</i> Meigen, 1824	-	-	+	-	-	+	+	-	-	+
35	<i>M. ruficornis</i> Meigen, 1824	-	-	-	-	-	-	-	+	-	-
36	<i>M. tunesica</i> (Enderlein, 1936)	-	-	-	-	-	-	+	-	-	-
37	<i>M. villeneuvei</i> Verves, 1982	-	-	-	-	-	-	-	-	-	+
38	<i>Miltogrammidium albifacies</i> (Villeneuve, 1929)	-	-	-	-	-	-	-	-	-	+
39	<i>M. chivae</i> (Rohdendorf, 1935)	-	-	-	-	-	-	-	-	-	+
40	<i>M. efflatouni</i> (Rohdendorf, 1934)	-	-	-	-	-	-	-	-	-	+
41	<i>M. rutilans</i> (Meigen, 1824)	-	-	-	-	-	-	-	+	-	-
42	<i>Craticulina barbifera</i> (Pandellé, 1895)	-	-	-	-	-	-	-	-	-	+
43	<i>C. bequaerti</i> Venturi, 1958	-	-	-	+	-	-	-	-	-	+
44	<i>C. diffusa</i> Villeneuve, 1934	-	-	-	-	-	-	-	-	-	+
45	<i>C. tabaniformis</i> (Fabricius, 1805)	-	-	-	+	-	+	-	+	+	+
46	<i>Apodacra chrysocephala</i> Rohdendorf, 1925	-	-	-	-	-	-	-	-	-	+
47	<i>A. seriemaculata</i> Macquart, 1854	-	-	-	-	-	-	-	-	-	+
48	<i>Xeromyia africana</i> (Rohdendorf, 1930)	-	-	-	+	-	-	-	-	-	-
49	<i>X. algiralis</i> (Séguy, 1941)	-	-	-	-	-	+	-	-	-	+
50	<i>X. dasystigma</i> (Rohdendorf, 1934)	-	-	-	-	-	-	-	-	-	+
51	<i>X. merei</i> (Séguy, 1941)	-	-	-	-	-	+	-	-	-	-
52	<i>X. orthogona</i> (Rohdendorf, 1925)	-	-	-	-	-	-	-	-	-	+
53	<i>X. stenorhina</i> (Rohdendorf, 1934)	-	-	-	-	-	-	-	-	-	+
54	<i>X. sulcata</i> (Villeneuve, 1933)	-	-	-	-	-	-	-	-	-	+
55	<i>Xerophilomyia cyprica</i> (Rondani, 1859)	-	-	-	-	-	-	-	-	-	+
56	<i>X. nigropicta</i> Rohdendorf, 1934	-	-	-	-	-	-	-	-	-	+
57	<i>X. plumipes</i> (Villeneuve, 1933)	-	-	-	+	-	-	+	-	-	+
58	<i>Amobia oculata</i> (Zetterstedt, 1844)	-	-	-	-	-	+	-	-	-	-
59	<i>A. signata</i> (Meigen, 1824)	+	-	+	+	-	+	+	+	+	-
60	<i>Sphecapatodes ornatus</i> Villeneuve, 1912	-	-	-	-	-	-	+	-	-	+
61	<i>Dolichotachina marginella</i> (Wiedemann, 1830)	-	-	-	+	-	+	+	-	+	+
62	<i>Hoplcephala hirtifrons</i> (Villeneuve, 1929)	-	-	-	-	-	-	-	-	-	+
63	<i>Prohoplacephala hafezi</i> (Rohdendorf, 1975)	-	-	-	-	-	-	-	-	-	+
64	<i>Metopodia pilicornis</i> (Pandellé, 1895)	-	-	-	-	-	+	-	-	-	-
65	<i>Alusomyia transfuga</i> Villeneuve, 1933	-	-	-	-	-	-	-	-	-	+
66	<i>Sphecapatoclea excisa</i> Villeneuve, 1909	-	-	-	-	-	-	-	-	-	+
67	<i>S. ghoulsensis</i> Rohdendorf, 1975	-	-	-	-	-	-	-	-	-	+
68	<i>S. minor</i> Villeneuve, 1912	-	-	-	-	-	+	-	-	-	-
69	<i>Metopia argyrocephala</i> (Meigen, 1824)	-	-	-	-	-	*	-	-	-	-
70	<i>Phrosinella fedtshenkoi</i> Rohdendorf, 1925	-	-	-	-	-	*	-	-	-	-
71	<i>P. nasuta</i> (Meigen, 1824)	-	-	-	-	-	+	-	-	+	+
72	<i>P. zarudnoji</i> Rohdendorf, 1971	-	-	-	-	-	-	-	-	-	*
73	<i>Hilarella hilarella</i> (Zetterstedt, 1844)	-	-	+	-	-	-	-	-	-	-
74	<i>H. stictica</i> (Meigen, 1830)	-	-	-	-	-	+	-	-	-	-
75	<i>Paragusia albina</i> (Rohdendorf, 1935)	-	-	-	-	-	-	-	-	-	*
76	<i>P. elegantula</i> (Zetterstedt, 1844)	-	-	-	-	-	-	-	-	-	*
77	<i>P. multipunctata</i> (Rondani, 1859)	-	-	+	-	-	*	+	+	-	+
78	<i>Taxigramma heteroneura</i> (Meigen, 1830)	-	-	+	+	-	+	-	-	-	+
79	<i>Sphenometopa (Euaraba) claripennis</i> (Villeneuve, 1933)	-	-	-	-	-	-	-	-	-	+
80	<i>S. (E.) efflatouni</i> (Villeneuve, 1933)	-	-	-	-	-	-	-	-	-	+
81	<i>S. (E.) fastuosa</i> (Meigen, 1824)	-	-	-	-	-	-	-	-	-	+
82	<i>S. (Sahararaba) elegans</i> (Rohdendorf, 1971)	-	-	-	-	-	-	-	-	-	+
<b>(80 sp.) Miltogramminae, sum</b>		<b>2</b>	<b>-</b>	<b>8</b>	<b>14</b>	<b>-</b>	<b>23</b>	<b>12</b>	<b>9</b>	<b>7</b>	<b>61</b>

Yuriy Verves

83	<i>Sarcotachina aegyptiaca</i> Villeneuve, 1910	-	-	-	-	-	+	-	-	-	+
84	<i>S. umbrinervis</i> Villeneuve, 1910	-	-	-	-	-	-	-	-	-	+
<b>(2 sp.) Eumacronychiinae, sum</b>		-	-	-	-	-	<b>1</b>	-	-	-	<b>2</b>
85	<i>Nyctia halterata</i> (Panzer, 1798)	-	-	-	+	-	+	-	+	+	+
86	<i>N. lugubris</i> (Macquart, 1843)	-	-	+	-	-	+	+	+	-	-
87	<i>Agria affinis</i> (Fallén, 1817)	+	-	-	-	-	-	-	-	+	-
88	<i>Blaesoxiphella brevicornis</i> Villeneuve, 1912	-	-	-	-	-	+	-	-	-	-
89	<i>Sarcophila khrokaloae</i> sp. n.	-	-	-	-	-	*	-	-	-	-
90	<i>S. latifrons</i> (Fallén, 1817)	-	-	+	-	-	-	-	+	-	-
91	<i>S. meridionalis</i> Rohdendorf et Verves, 1982	-	-	-	-	-	+	-	+	-	+
92	<i>S. navara</i> Lehrer, 2003	-	-	-	-	-	-	-	-	-	+
93	<i>Wohlfahrtia aschersoni</i> (Enderlein, 1934)	-	-	-	-	-	-	-	-	+	+
94	<i>W. bella</i> (Macquart, 1839)	-	-	+	+	-	+	+	-	-	+
95	<i>W. brunnipalpis</i> (Macquart, 1851)	-	-	-	-	-	+	-	-	-	+
96	<i>W. erythrocerata</i> Villeneuve, 1910	-	-	-	-	-	+	-	-	+	-
97	<i>W. indigena</i> Villeneuve, 1928	-	-	+	+	-	+	+	-	-	+
98	<i>W. magnifica</i> (Schiner, 1862)	-	-	-	+	-	+	+	-	+	+
99	<i>W. nuba</i> (Wiedemann, 1830)	-	-	-	+	-	-	+	-	-	+
100	<i>W. trina</i> (Wiedemann, 1830)	-	-	+	-	-	+	-	-	+	+
101	<i>W. villeneuvei</i> Salem, 1938	-	-	-	-	-	+	-	-	+	+
102	<i>Wohlfahrtiodes aemulus</i> Séguy, 1940	-	-	-	-	-	+	-	-	-	-
103	<i>W. nudus</i> Villeneuve, 1910	-	-	-	-	-	-	-	-	-	+
<b>(19 sp.) Paramacronychiinae, sum</b>		<b>1</b>	-	<b>5</b>	<b>5</b>	-	<b>13</b>	<b>5</b>	<b>2</b>	<b>7</b>	<b>12</b>
104	<i>Agriella algeriensis</i> (Townsend, 1919)	-	-	-	-	-	+	-	-	-	+
105	<i>A. pandellei</i> Villeneuve, 1911	-	-	-	-	-	+	+	-	-	-
106	<i>A. rufescens</i> (Villeneuve, 1928)	-	-	-	-	-	+	-	-	-	-
107	<i>A. setosa</i> Salem, 1938	-	-	-	-	-	-	+	-	+	+
108	<i>Agriella tunisia</i> (Pape, 1994)	-	-	-	-	-	-	+	-	-	-
109	<i>Blaesoxipha cochlearis</i> (Pandellé, 1896)	-	-	-	-	-	+	-	-	-	-
110	<i>B. colorata</i> Verves, 1985	-	-	-	-	-	+	-	-	-	-
111	<i>B. dupuisi</i> Léonide et Léonide, 1973	-	-	-	-	-	+	-	-	-	-
112	<i>B. grylloctona</i> Löw, 1861	+	-	-	-	-	-	-	-	-	+
113	<i>B. laticornis</i> (Meigen, 1826)	-	-	-	-	-	-	-	-	-	+
114	<i>B. litoralis</i> (Villeneuve, 1911)	-	-	-	+	-	+	-	-	-	-
115	<i>B. misriella</i> Lehrer, 2002	-	-	-	-	-	-	-	-	-	+
116	<i>B. pygmaea</i> (Zetterstedt, 1844)	-	-	-	+	-	-	-	-	-	-
117	<i>B. redempta</i> (Pandellé, 1896)	-	-	+	+	-	+	+	+	+	+
118	<i>B. rufipes</i> (Macquart, 1839)	+	-	+	-	-	+	-	-	-	+
119	<i>B. subcochlearis</i> Séguy, 1932	-	-	-	-	-	+	-	-	-	-
120	<i>B. ungulata</i> (Pandellé, 1896)	-	-	-	-	-	+	-	-	-	-
121	<i>Servaisia</i> (s. str.) <i>rossica</i> (Villeneuve, 1912)	-	-	-	+	-	-	-	-	-	-
122	<i>Ravinia pernix</i> (Harris, 1780)	+	-	+	+	-	+	+	+	+	+
123	<i>Helicophagella</i> (s. str.) <i>noverca</i> (Rondani, 1860)	-	-	-	-	-	-	-	+	-	+
124	<i>H.</i> (s. str.) <i>novercoides</i> (Böttcher, 1913)	-	-	-	-	-	*	-	-	-	+
125	<i>H.</i> (s. str.) <i>rosellei</i> (Böttcher, 1912)	-	-	-	-	-	-	-	+	-	+
126	<i>H. (Parabellieria) maculata</i> (Meigen, 1835)	+	-	+	+	-	+	+	-	-	+
127	<i>H. (P.) melanura</i> (Meigen, 1826)	-	-	+	+	-	+	+	+	+	+
128	<i>Beziella (Brasia) kadeisi</i> (Salem, 1938)	-	-	-	-	-	-	-	-	-	+
129	<i>Artamonoviella monspellensia</i> (Böttcher, 1913)	-	-	-	-	-	*	+	+	-	-
130	<i>Discachaeta kunonis</i> Pape, 1986	-	+	-	-	-	-	-	-	-	-
131	<i>Heteronychia (Asceloctis) amputata</i> (Pape, 1990)	-	+	-	-	-	-	-	-	-	-

Review of Sarcophagidae (Diptera) of North African countries with new faunistic data from Algeria

132	<i>H. (A.) balanina</i> (Pandellé, 1896)	-	-	-	+	-	-	-	-	-	-
133	<i>H. (A.) desertorum</i> (Salem, 1935)	-	-	-	-	-	-	-	-	-	+
134	<i>H. (A.) ferox</i> (Villeneuve, 1908)	-	-	+	+	-	+	+	+	-	-
135	<i>H. (A.) mariutana</i> (Salem, 1935)	-	-	-	-	-	-	-	-	-	+
136	<i>H. (Boettcherella) setinervis</i> (Rondani, 1860)	-	-	-	-	-	-	-	-	-	+
137	<i>H. (Ctenodasyphygia) graeca</i> (Rohdendorf, 1937)	-	-	-	-	-	*	-	-	-	-
138	<i>H. (C.) minima</i> (Rondani, 1862)	-	-	-	+	-	+	+	+	-	+
139	<i>H. (C.) penicillata</i> (Villeneuve, 1907)	-	-	-	+	-	+	+	+	-	-
140	<i>H. (C.) santospintosi</i> (Lehrer & Báez, 1986)	-	-	+	-	-	-	-	-	-	-
141	<i>H. (C.) siciliensis</i> (Böttcher, 1913)	-	-	+	-	-	-	-	-	-	+
142	<i>H. (C.) thirionae</i> (Lehrer, 1976)	-	-	-	-	-	+	-	-	-	-
143	<i>H. (C.) tricolor</i> (Villeneuve, 1908)	-	-	+	-	-	-	-	-	-	-
144	<i>H. (C.) uncicurva</i> (Pandellé, 1896)	+	-	+	-	+	*	+	+	-	-
145	<i>H. (C.) villeneuveana</i> (Enderlein, 1928)	-	-	-	+	-	+	+	+	-	-
146	<i>H. (s. str.) amica</i> Peris, González-Mora et Mingo, 1998	-	-	-	+	-	-	-	-	-	-
147	<i>H. (s. str.) benaci</i> (Böttcher, 1913)	-	-	-	-	-	-	-	+	-	-
148	<i>H. (s. str.) bulgarica</i> (Enderlein, 1936)	-	-	-	-	-	-	-	+	-	-
149	<i>H. (s. str.) consanguinea</i> (Rondani, 1860)	-	-	-	-	-	+	-	-	-	-
150	<i>H. (s. str.) depressifrons</i> (Zetterstedt, 1845)	-	-	-	-	-	-	-	+	-	-
151	<i>H. (s. str.) haemorrhoides</i> (Böttcher, 1913)	-	-	-	-	-	-	-	+	-	-
152	<i>H. (s. str.) metopina</i> (Villeneuve, 1908)	-	-	+	-	-	-	-	-	-	-
153	<i>H. (s. str.) pandellei</i> (Rohdendorf, 1937)	-	-	-	-	-	+	+	-	-	-
154	<i>H. (s. str.) proxima</i> (Rondani, 1860)	-	-	-	-	-	-	-	-	+	-
155	<i>H. (s. str.) tunisiae</i> (Whitmore, 2011)	-	-	-	-	-	-	+	-	-	-
156	<i>H. (Pandelleola) filia</i> (Rondani, 1860)	-	-	-	+	-	-	-	+	-	-
157	<i>H. (P.) sicilia</i> (Pape, 1996)	-	-	-	-	-	-	-	+	-	-
158	<i>Karovia hirticrus</i> (Pandellé, 1896)	-	-	-	-	-	+	-	+	-	-
159	<i>Notoecus longestylatus</i> (Strobl, 1906)	-	-	-	+	-	+	+	-	-	-
160	<i>Krameromyia anaces</i> (Walker, 1849)	-	-	-	-	-	+	-	-	-	-
161	<i>Myorhina (s. str.) nigriventris</i> (Meigen, 1826)	-	-	-	+	-	+	+	+	+	-
162	<i>M. (s. str.) soror</i> (Rondani, 1860)	-	-	+	-	-	-	-	-	-	-
163	<i>Pandelleana berberina</i> Lehrer, 2003	-	-	-	+	-	-	-	-	-	-
164	<i>Pseudothyrocneema spinosa</i> (Villeneuve, 1912)	-	-	-	-	-	-	-	-	-	+
165	<i>Sarina sexpunctata</i> (Fabricius, 1805)	-	-	+	-	-	-	-	-	-	-
166	<i>Thyrocneema belgiana</i> Lehrer, 1976	-	-	-	-	-	*	-	-	-	-
167	<i>T. incisilobata</i> (Pandellé, 1896)	-	-	-	-	-	+	-	-	-	-
168	<i>Transvaalomomyia rohdendorfi</i> (Salem, 1936)	-	-	-	-	-	-	-	-	-	+
169	<i>Phytosarcophaga (s. str.) destructor</i> (Malloch, 1929)	-	-	-	-	-	-	-	+	-	+
170	<i>Bercaea africa</i> (Wiedemann, 1824)	+	+	+	+	-	+	+	+	+	+
171	<i>Liopygia (Engelisca) surcoufi</i> (Villeneuve, 1913)	+	-	-	-	-	+	+	-	-	+
172	<i>L. (Jantia) crassipalpis</i> (Macquart, 1839)	+	+	+	+	-	+	+	+	+	+
173	<i>L. (Thomsonia) argyrostoma</i> (Robineau-Desvoidy, 1830)	+	+	+	-	-	+	+	+	-	+
174	<i>Liosarcophaga (Curranea) tibialis</i> (Macquart, 1851)	+	+	+	-	-	+	+	+	+	+
175	<i>L. (s. str.) aegyptica</i> (Salem, 1935)	-	-	-	-	-	-	-	-	-	+
176	<i>L. (s. str.) catalunya</i> Lehrer, 2008	-	-	-	-	-	+	-	-	-	-
177	<i>L. (s. str.) deviedmai</i> (Lehrer & Baez, 1986)	-	-	+	-	-	-	-	-	-	-
178	<i>L. (s. str.) dux</i> (Thomson, 1869)	+	-	+	+	-	-	+	+	+	+



179	<i>L.</i> (s. str.) <i>ismailiana</i> Lehrer, 1998	-	-	-	-	-	-	-	-	-	+
180	<i>L.</i> (s. str.) <i>jacobsoni</i> (Rohdendorf, 1937)	+	-	+	+	+	+	+	+	-	+
181	<i>L.</i> (s. str.) <i>madeirensis</i> (Schiner, 1869)	-	+	-	-	-	-	-	-	-	-
182	<i>L.</i> (s. str.) <i>marshalli</i> (Parker, 1923)	-	-	-	+	-	+	+	+	-	+
183	<i>L.</i> (s. str.) <i>mennae</i> (El-Ahmady, Taha, Soliman & El-Hawagry, 2018)	-	-	-	-	-	*	-	-	-	-
184	<i>L.</i> (s. str.) <i>parkeri</i> (Rohdendorf, 1937)	-	-	-	-	-	-	-	-	-	+
185	<i>L.</i> (s. str.) <i>pharaonis</i> (Rohdendorf, 1934)	-	-	-	+	-	-	+	-	-	+
186	<i>L.</i> (s. str.) <i>portschinskyi</i> (Rohdendorf, 1937)	-	-	-	+	-	*	-	-	-	-
187	<i>L.</i> (s. str.) <i>redux</i> (Walker, 1849)	-	-	-	-	-	-	-	-	-	+
188	<i>L.</i> (s. str.) <i>teretirostris</i> (Pandellé, 1896)	-	-	-	+	-	*	-	+	-	-
189	<i>L.</i> (s. str.) <i>tuberosa</i> (Pandellé, 1896)	+	-	-	-	-	-	-	-	-	-
190	<i>L.</i> ( <i>Pandelleisca</i> ) <i>similis</i> (Meade, 1876)	+	-	-	-	-	-	-	-	-	-
191	<i>L.</i> ( <i>Pharaonops</i> ) <i>tewfiki</i> (Salem, 1940)	-	-	-	-	-	-	-	-	-	+
192	<i>Parasarcophaga</i> (s. str.) <i>albiceps</i> (Meigen, 1826)	-	-	-	-	-	+	-	-	-	+
193	<i>P.</i> (s. str.) <i>hirtipes</i> (Wiedemann, 1830)	-	-	-	+	-	+	-	-	-	+
194	<i>Stackelbergeola</i> <i>grueti</i> Lehrer, 2000	-	-	-	-	-	-	-	-	-	+
195	<i>Sarcophaga</i> <i>carriaria</i> (Linnaeus, 1758)	-	-	-	-	-	-	-	+	-	-
196	<i>S.</i> <i>lehmanni</i> Müller, 1922	-	-	-	+	-	+	+	+	-	+
197	<i>S.</i> <i>marcelleclercqi</i> Lehrer, 1975	-	-	-	+	-	-	-	-	-	-
198	<i>S.</i> <i>subvicina</i> Rohdendorf, 1937	-	-	-	-	-	-	+	-	-	-
199	<i>S.</i> <i>variegata</i> (Scopoli, 1763)	-	-	-	+	-	+	-	+	-	+
<b>(96 sp.) Sarcophaginae sum</b>		<b>14</b>	<b>7</b>	<b>20</b>	<b>29</b>	<b>2</b>	<b>46</b>	<b>28</b>	<b>31</b>	<b>10</b>	<b>41</b>
<b>Sarcophagidae total</b>		<b>17</b>	<b>7</b>	<b>33</b>	<b>49</b>	<b>2</b>	<b>84</b>	<b>45</b>	<b>43</b>	<b>24</b>	<b>116</b>

## References

- Abd El-Halim, A.S., Mostafa, A.A. & Allam, K.A. 2005. Dipterous flies species and their densities in fourteen Egyptian Governorates. *Journal of Egyptian Society of Parasitology* 35: 351-362.
- Abd El-Halim, A.S., Soliman, M.I. & Mikhail, M.W. 2009. Prevalence of dipterous flies associated with human and animal diseases in Matruh and South Sinai Governorates, Egypt. *Journal of Egyptian Society of Parasitology* 39: 803-809.
- Báez, M. 1980. The genus *Wohlfahrtia* (Diptera, Sarcophagidae) in the Canary Islands, Spain: taxonomy and distribution. *Nouvelle Revue d'Entomologie* 10(4): 351-357.
- Báez, M. & García, A. 2004. Orden Diptera. - *In*: I. Izquierdo, J. L. Martín, N. Zurita & M. Arechavaleta (eds), *Lista de especies silvestres de Canarias (hogos, plantas y animales terrestres)*, pp. 261–281. Consejería de Medio Ambiente y Ordenación Territorial, Gobierno de Canarias, La Laguna.
- Becker, T. 1902. Aegyptische Dipteren (Fortsetzung und Schluss). *Mitteilungen aus dem Zoologischen Museum in Berlin* 2(1-2): 1-66.
- Becker, T. 1903. Aegyptische Dipteren (Fortsetzung und Schluss). *Mitteilungen aus dem Zoologischen Museum in Berlin* 2(3): 67-195.
- Becker, T. 1908a. Dipteren der Kanarischen Inseln. *Mitteilungen des Zoologische Museums in Berlin* 4(1): 1-180.
- Becker, T. 1908b. Dipteren der Insel Madeira. - *Mitteilungen des Zoologische Museums in Berlin* 4(1): 181-206.
- Becker, T. & Stein, P. 1914. Dipteren aus Marokko. I. *Annuaire Musée zoologique, Academie Science Saint-Petersburgue* 18 [1913]: 62-95.
- Bezzi, M. 1922. Materiali per lo studio della fauna tunisina raccolti da G. e L. Doria. *Ditteri. Annali del Museo Civico di Storia Naturale Giacomo Doria [Ser. 3]* 10: 98-139.
- Böttcher, G. 1912. Zu Meigens und Pandellés *Sarcophaga*-Typen nebst Anmerkungen zu Kramers "Tachiniden der Oberlausitz". *Deutsche entomologische Zeitschrift* (3): 343-350.

## Review of Sarcophagidae (Diptera) of North African countries with new faunistic data from Algeria

- Carles-Tolrà, M. 2002. Catálogo de los Diptera de España, Portugal y Andorra (Insecta). Monografías S. T. A. 8: 1-323.
- Delanoë, P. 1922. Myiases du bétail du cercle des Doukkala causées par les larves d'une mouche sarcophile *Wohlfahrtia magnifica* Schiner, 1862. Bulletin de la Société de science naturelle de Maroc 2: 132-136.
- El-Abtrak A., Tabarani, A. & Zro, K. 2002. Dossier myiases animals. Bulletin of Epidemiological Veterinary 9: 1-3.
- El-Ahmady, A.M., Hossni, M.M.T., Soliman, A.M. & El-Hawagry, M. 2015. Distribution, activity periods, and an annotated checklist of species of the genus *Sarcophaga* (Diptera: Sarcophagidae) from Egypt. Al Azhar Bulletin of Science 26: 11-17.
- El-Hawagry, M.S. & El-Azab, S.A. 2019. Catalog of the Calliphoridae, Rhiniidae, and Sarcophagidae of Egypt (Diptera: Oestroidea). Egyptian Journal of Biological Pest Control 29: 1-50.
- El-Mezouari, E, Lamrani, H.A., Hocar, O., Akhdari, N., Amal, S. & Moutaj, R. 2014. Une myiase du cuir chevelu à *Wohlfahrtia magnifica*: à propos d'un cas. Research France 1: 956-958
- Enderlein, G. 1928. Klassifikation der Sarcophagiden. Sarcophagiden-Studien I. Archiv für klassifikatorische und phylogenetische Entomologie 1 (1): 1-56.
- Farkas, R., Hall, M.J.R., Bouzagou, A.K. & Hor, Y.L. 2003. Are dogs important in the epidemiology of Wohlfahrtiosis in northern Morocco? - In: M. Good, , M.J.R. Hall, , B. Losson, , D. O'Brien, , K. Pithan, & J. Sol, (eds.). Mange and myiasis of livestock. Proceedings of the final conference held at the University of Bari, Italy 19 to 22 September 2002, pp. 172-176. Luxembourg: Office for official publications of the European communities.
- Gatt, P. & Ebejer, M.J. 2014. A review and checklist of the flesh-flies (Diptera, Sarcophagidae) of Malta. Dipterists Digest 21: 103-122.
- Helal, T.V., Abd-el-Naser, M.A., Salit, A.M. & Ali, A.M. 1981. Species composition of non biting flies in Assiut, upper Egypt. Assiut Journal of Agricultural Sciences 12: 44-49.
- James, M.T. 1947. The flies that cause myiasis in man. Miscellaneous Publications of the United States Department of Agriculture (631): 1-175.
- Kehlmaier, C. 1998. Data-basis for a check-list of all known Diptera-species from the Azores Archipelago (Insecta: Diptera). Boletim do Museu Municipal do Funchal 50(287): 71-90.
- Lehrer, A.Z. 1995. Cinq nouvelles *Blaesoxipha* Loew pour la faune du continent africain, avec quelques commentaires sur les espèces paléarctiques affines (Diptera, Sarcophagidae). Beiträge zur Entomologie 45(1): 199-213.
- Lehrer, A.Z. 2003a. Sarcophaginae de l'Afrique (Insecta, Diptera, Sarcophagidae). Entomologica 37: 5-528.
- Lehrer, A.Z. 2003b. La revision du genre *Sarcophila* Rondani en Israel et la description de deux especes nouvelles afro-asiatiques (Diptera: Sarcophagidae). Belgian Journal of Entomology 5(1-2): 79-87.
- Lehrer, A.Z. & Báez, M. 1986. Sarcophagines nouvelles des Îles Canaries (Diptera, Sarcophagidae). Bulletin et annales de la royale Société entomologique de Belgique 122(7-9): 233-241.
- Lmimouni, B.E., Baba, N.E., Yahyaoui, A., Khallaayoune, K., Dakkak, O., Sedrati, O. & El Mellouki, W. 2004. Myiase des plaies dues à *Wohlfahrtia magnifica* (Schiner, 1862). Premier cas humain au Maroc. Bulletin de la Société de Pathologie Exotique 97: 235-237.
- Mathis, M. 1957. Un diptère parasite des abeilles adultes, *Senotainia tricuspis* Meig., identifié pour la première fois en Tunisie. Archives de Institute de Pasteur du Afrique Nord 34: 107-113.
- Mohamed, S.K. & Abdel-Rahman, H.A. 1985. Seasonal abundance of Sarcophagidae (Diptera) in two localities in Egypt. Bulletin de la Société entomologique de Égypte 64: 89-104.
- Pape, T. 1986. The Sarcophagidae (Diptera) of Madeira, with the description of a new species of *Discachaeta* Enderlein. Bocagiana 93: 1-4.
- Pape, T. 1990. Two new species of *Sarcophaga* Meigen from Madeira and mainland Portugal (Diptera: Sarcophagidae). Tijdschrift voor Entomologie 113: 39-42.

- Pape, T. 1996. Catalogue of the Sarcophagidae of the world (Insecta: Diptera). *Memoirs of Entomology, International* 8: 1-558. Gainesville, Florida: Associated Publishers.
- Peris, S.V., González-Mora, D. & Mingo, E. 1996. The Heteronychiina of the Iberian Peninsula: subgenus *Heteronychia* s. str. with a description of one new species from Tánger (Diptera, Sarcophagidae). *Boletín de la Real Sociedad española de Historia Natural (Sección Biológica)* 94 (1-4): 21-28.
- Peris, S.V., González-Mora, D. & Mingo, E. 2001. The *Blaesoxipha* "sensu lato" (Diptera, Sarcophagidae) from the Iberian Peninsula with some records from Canary Islands. *Boletín de la Real Sociedad española de Historia Natural (Sección Biológica)* 96(3-4): 213-230.
- Peris, S.V., González-Mora, D., Mingo, E. & Richet, R. 1996. The Heteronychiina of the Iberian Peninsula: genus *Heteronychia*. Subgenera *Pandelleola* and *Ctenodasypygia*, with notes on two species of Canary Islands (Diptera, Sarcophagidae). *Boletín de la Real Sociedad española de Historia Natural (Sección Biológica)* 92(1-4): 21-28.
- Povolný, D. 1992. Zum Schneckenparasitismus und zur Taxonomie einiger Sarcophagini-Arten (Diptera, Sarcophagidae). *Acta universitatis agriculturæ Brno A* 40(3-4): 169-185.
- Rohdendorf, B.B. 1930. 64h. Sarcophaginae. In: E. Lindner (ed.). *Die Fliegen der paläarktischen Region* 11(39): 1-48. Stuttgart.
- Rohdendorf, B.B. 1934. Egyptian Larvaevoridae collected by Prof. H. C. Efflatoun Bay (Diptera: Tachinidae). *Bulletin de la Société Royale entomologique de Égypte* 18: 1-16.
- Rohdendorf, B.B. 1935. 64h. Sarcophaginae. In: E. Lindner (ed.). *Die Fliegen der paläarktischen Region* 11 (88): 49-128. Stuttgart.
- Rohdendorf, B.B. 1937. Fam. Sarcophagidae (Part I). *Faune de l'URSS. N. S.* 12. *Insecta Diptera*, 19 (1), 1-501.
- Rohdendorf, B.B. 1971. 64h. Sarcophaginae. In: E. Lindner (ed.). *Die Fliegen der paläarktischen Region* 11 (285): 129-176. Stuttgart.
- Rohdendorf, B.B. 1975. 64h. Sarcophaginae. In: E. Lindner (ed.). *Die Fliegen der paläarktischen Region* 11 (311): 177-232. Stuttgart.
- Romli, A., Agoumi, A., Hamoutahra, A., Zerhouni, H., Nakari, K., Lahlou, M., Ettayebi, F. & Tligui, H. 2010. Myiasis of the scalp due to *Wohlfahrtia magnifica*. *Annales de Dermatologie et de Vénérologie* 137 (8-9): 560-561
- Salem, H.H. 1935. The Egyptian species of the genus *Sarcophaga*. Egyptian University. Faculty of Medicine Publ. 5: 1-61.
- Salem, H.H. 1936. A summary of Egyptian species of the genus *Sarcophaga* with a description of *S. rohdendorfi* nov. spec. *Bulletin de la Société entomologique de Égypte* [1936]: 229-247.
- Salem, H.H. 1938a. A complete revision of the species of the genus *Wohlfahrtia* B. B. et. Egyptian University. Faculty of Medicine Publ. 13: 1-90.
- Salem, H.H. 1938b. The species of the genus *Agriella* Villeneuve, 1911 (Diptera, Tachinidae, Sarcophaginae). Egyptian University. Faculty of Medicine Publ. 14: 1-16.
- Salem, H.H. 1940. A new species of *Sarcophaga* from Egypt with a note on the male hypopygium of *Sarcophaga kadeisi* Salem (Diptera: Sarcophagidae). *Bulletin de la Société Fouad 1<sup>er</sup> de Entomologique* 24: 6-10.
- Salwa, K.M. & Abdel-Rahman, H.A. 1983. Seasonal abundance of Sarcophagidae (Diptera) in two localities in Egypt. *Bulletin de la Société entomologique de Égypte* 64: 89-94.
- Schembri, S., Gatt, P. & Schembri, J. 1991. Recent records of flies from the Maltese Islands (Diptera). *Memorie della Società entomologica italiana* 70(1): 255-277.
- Séguy, E. 1930. Contribution à l'étude des diptères du Maroc. *Mémoires de la Société des sciences naturelles du Maroc* 24(1): 1-207.
- Séguy, E. 1934. Diptères d'Afrique. *Encyclopédie entomologique. Série B. Mémoires et notes. II. Diptera* 7: 63-89.
- Séguy, E. 1935. Mission au Tibesti, 1930-1931, dirigée par M. Dalloni. *Insectes diptères. Mémoires de l'Académie des Sciences de l'Institut de France* 62(1): 1-6.
- Séguy, E. 1936. Voyage de M.M.L. Copard et A. Méquignon aux Açores (aout-

- septembre 1930). X. Diptères. Annales de la Société entomologique de France 105: 11-26.
- Séguy, E. 1939. Diptères recueillis par M. Berland dans le Sud-Marocain. Annales de la Société entomologique de France 108: 1-16.
- Séguy, E. 1940a. Diptères du Maroc. Annales de la Société entomologique de France 109: 1-25.
- Séguy, E. 1940b. Recoltes entomologiques de M.L. Berland à Villa Cisneros (Rio de Oro). Insectes diptères. Bulletin de la Muséum nationale d'histoire naturelle (2) 12: 340-343.
- Séguy, E. 1941a. Études sur les mouches parasites. Tome 2. Calliphorines (suite), sarcophagines et rhinophorides de l'Europe occidentale et meridionale. Recherches sur la morphologie et la distribution géographique des Diptères à larves parasites. Encyclopédie entomologique Sér. A 21: 1-436.
- Séguy, E. 1941b. Étude biologique et systématique des sarcophagines myiasigènes du genre *Wohlfahrtia*. Annales de parasitologie humaine et comparée (4-5): 221-232.
- Séguy, E. 1941c. Recoltes de R. Paulian et A. Villers dans le haut Atlas marocain, 1938 (XVII<sup>e</sup> note). Diptères. Revue française d'entomologie 8(1): 25-33.
- Séguy, E. 1941d. Diptères recueillis par M.L. Berland dans le Sud Marocain. Annales de la Société entomologique de France 110: 1-23.
- Séguy, E. 1949. Diptères du Sud-Marocain (Vallée du Draa) recueillis par M.L. Berland en 1947. Revue française d'entomologie 16: 152-161.
- Séguy, E. 1953. Diptères du Maroc. Encyclopédie entomologique. Série B. Mémoires et notes. II. Diptera 11: 77-92.
- Shaumar, N.F. & Kamal, S. 1984. Keys for identification of species of family Sarcophagidae (Diptera) in Egypt. Bulletin de la Société entomologique de Égypte 64: 121-135.
- Sotiraki, S., Farkas, R. & Hall, M.J.R. 2010. Fleshflies in the flesh: epidemiology, population genetics and control of outbreaks of traumatic myiasis in the Mediterranean Basin. Veterinary Parasitology 174(1-2): 12-18.
- Steyskal, G.C. & El-Bialy, S. 1967. A list of Egyptian Diptera with a bibliography and key to families. Technical Bulletin of Ministry of Agriculture of United Arab Republic (3): 1-87.
- Tantawi, T.I., El-Kady, E.M., Greenberg, B. & El-Ghaffar, H.A. 1996. Arthropod succession on exposed rabbit carrion in Alexandria, Egypt. Journal of Medical Entomology 33(4): 566-580.
- Tantawi, T.I., El-Shenawy, I.E., Abd El-Salam, H.F., Madkour, S.A. & Mahany, N.M. 2018. Flies (Diptera: Calliphoridae, Sarcophagidae, Muscidae) associated with human corpses in Alexandria, Egypt. Journal of Bioscience and Applied Research 4(2): 106-130.
- Tliqui, H., Bouazzaoui, A. & Agoumi, A. 2007. Human auricular myiasis caused by *Wohlfahrtia magnifica* (Diptera: Sarcophagidae): about three observations in Morocco. Bulletin de la Société de pathologie exotique 100(1): 61-64.
- Venturi, F. 1960. Sistematica e geonemia dei sarcophagidi (escl. *Sarcophaga* s. l.) italiani (Diptera). Frustula entomologica 2(7): 1-124.
- Verves, Yu.G. 1982. 64h. Sarcophaginae. In: E. Lindner (ed.). Die Fliegen der paläarktischen Region 11(327): 235-296. Stuttgart.
- Verves, Yu.G. 1985. 64h. Sarcophaginae. In: E. Lindner (ed.). Die Fliegen der paläarktischen Region 11(330): 297-400. Stuttgart.
- Verves, Yu.G. 1986. Family Sarcophagidae. In: Á. Soós & Papp, L. (eds.). Catalogue of Palaearctic Diptera. Vol. 12. Calliphoridae-Sarcophagidae: 58-193. Budapest: Academy Press.
- Verves, Yu.G. 1993a. 64h. Sarcophaginae. In: E. Lindner (ed.). Die Fliegen der paläarktischen Region 11(331): 441-504. Stuttgart.
- Verves, Yu.G. 1993b. Palaearctic species of the genus *Craticulina* (Diptera, Sarcophagidae). Vestnik Zoologii 27 (1): 9-17.
- Verves, Yu.G. 2017. A check list of Sarcophagidae (Diptera) from Algeria. Halteres 8: 72-76.
- Verves, Y. & Barták, M. 2017. New records of flesh flies (Diptera, Sarcophagidae) part II. In: Š. Kubík & M. Barták (eds). 9<sup>th</sup> Workshop on biodiversity,

- Jevany, Česká zemědělská univerzita v Praze, pp. 131-139. Prague.
- Verves, Yu.G. & Khrokalo, L.A. 2006. 123. Fam. Sarcophagidae – sarcophagids. Key to the insects of Russian Far East 6 (4): 64-178. Vladivostok.
- Verves, Yu.G. & Khrokalo, L.A. 2015. Review of *Heteronychia* (Diptera, Sarcophagidae). Priamus Suppl. 36: 1-60.
- Verves, Yu.G. & Khrokalo, L.A. 2017. A review of subtribe *Phrosinellina* Verves, 1989, with description of *Phrosinella (Asiometopia) kocaki* sp. nov. from the Middle East (Diptera: Sarcophagidae: Miltogramminae: Metopiini). Turkish Journal of Zoology 41(1): 43-59.
- Verves, Yu., Radchenko, V. & Khrokalo, L. 2015. A review of species of subtribe *Apodacrina* Rohdendorf, 1967 with description of a new species of *Apodacra* Macquart, 1854 from Turkey (Insecta: Diptera: Sarcophagidae: Miltogramminae: Miltogrammini). Turkish Journal of Zoology 39 (2): 263-278.
- Villeneuve, J. 1908. Tachinidae. In: T. Becker. Dipteren der Kanarischen Inseln. Mitteilungen aus dem Zoologischen Museum in Berlin 4: 122-126.
- Villeneuve, J. 1910. Diptères nouveaux du nord de l'Afrique. Deutsche entomologische Zeitschrift (1910): 150-152.
- Villeneuve, J. 1911. Dipterologische Sammelreise nach Korsika (Dipt.). (Schluss). Tachinidae. Deutsche entomologische Zeitschrift (2): 117-130.
- Villeneuve, J. 1912a. Sarcophagines nouveaux. Annales historico-naturales Musei nationalis Hungarici 10: 508, 610-616.
- Villeneuve, J. 1912b. Diptères nouveaux du nord Africain. Bulletin de la Muséum nationale d'histoire naturelle [1912]: 415-417, 505-511.
- Whitmore, D. 2009. A review of the *Sarcophaga (Heteronychia)* (Diptera: Sarcophagidae) of Sardinia. Zootaxa 2318: 566–588.
- Whitmore, D. 2011. New taxonomic and nomenclatural data on *Sarcophaga (Heteronychia)* (Diptera: Sarcophagidae), with description of six new species. Zootaxa 2778: 1–57.
- Wyatt, N.P. 1991. Notes on Sarcophagidae (Dipt.), including onespecies new to Ireland, one new to science from England and Malta and a change in the British List. Entomologist's Monthly Magazine 127: 1-6.