

New Data on the Coastal Fly Fauna (Diptera: Calliphoridae, Rhinophoridae, Sarcophagidae) of the Kherson Region (Ukraine)

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Abstract: The faunistic lists for the Kherson region of Ukraine are updated based on a literature review and a recent collecting trip in August 2020. The faunas of the following oestroid families are updated: seven genera and twenty-two species of Calliphoridae, including one species [*Lucilia richardsi* Collin, 1926] recorded for the first time in this region; four genera and four species of Rhinophoridae, including two species [*Paykullia maculata* (Fallén, 1815) and *Phyto melanocephala* (Meigen, 1824)] recorded for the first time in the region; forty-four genera and eighty-eight species of Sarcophagidae. Original data on the behaviour of adult flies feeding on aphid excreta on leaves of *Lycium barbarum* Linnaeus, 1753 (Solanaceae) and flowering plants of *Seseli tortuosum* Linnaeus, 1753 (Apiaceae) are also provided.

Keywords: Two-winged insects, Species diversity, Imaginal feeding, Northern Black Sea region

Introduction

New faunistic data on the families Calliphoridae, Rhinophoridae and Sarcophagidae (Diptera: Oestroidea) are presented based on the results of a collection trip by the authors in the Kherson Region, Ukraine. The total numbers of known genera and species of these families

from the Kherson Region faunas are based on an original analysis of the literature and data from the authors' collection. The listed species are classified according to the taxonomic conception of the senior author (Povolný and Verves, 1997; Verves, 1989, 1990; Verves and Khrokalo, 2006a, 2006b).

Materials and Methods

The flies were collected with a hand net in the Lazurne village (Skadovsk district, Kherson), 46°5.13'N, 32°31.31'E, from 04. to 15.08.2020, in different habitats surrounding the “Maiak” wellness complex. The village is located in an extremely synanthropic area: the seashore consists of a longitudinal series of cultural sand beaches 100–300 m wide, behind which there are rest houses, sanatoriums, camping sites, etc. The “Maiak” complex covers an area of about five hectares, of which approximately two are wasteland. Most flies were caught on soil, leaves, and walls; others were collected separately on a bush of *Lycium barbarum* Linnaeus, 1753 (Solanaceae) near a residential building (Figures 1–2) and on the flowering plants of *Seseli tortuosum* Linnaeus, 1753 (Apiaceae) in the wasteland (Figures 3–4). Information on the Kherson regional fauna was completed through the analysis of the scientific literature on calliphorids (Makovetskaya and Verves, 2018; Szpila and Verves, 2008; Verves, 1985b, 2004, 2005c; Verves and Khrokalo, 2006a, 2010; Verves et al., 2005),

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rhinophorids (Verves, 2005a, b; Verves and Khrokalo, 2010) and sarcophagids (Richet et al., 2013; Valentyuk, 1971; Verves, 1974, 1975, 1979, 1982, 1984, 1985a, 1985b, 1993,



Figure 1. Bush of *Lycium barbarum*.



Figure 3. Wasteland with thickets of *Seseli tortuosum*.

Results

A total of 470 specimens were collected belonging to twenty species (Table 1), among which three (*Lucilia richardsi*, *Paykullia maculata*, and *Phyto melanocephala*) are recorded for the first time for the Kherson Region.

Interestingly, specimens of *Lucilia sericata* used a *Lycium barbarum* bush, the leaves of which were populated by numerous aphids, as a kind of “fly hostel.”

2000a, 2000b, 2006; Verves and Khrokalo, 2006b, 2006c, 2014a, 2014b; Verves et al., 1977, 2015; Verves and Szpila, 2008, 2011) from the region.



Figure 2. Aphids on leaves of *Lycium barbarum*.



Figure 4. Solitary wasp *Megascolia maculata* between flowering branches of *Seseli tortuosum*.

The flies appeared *en masse* on the leaves at about seven o'clock in the morning and fed on honeydew. After nine o'clock, almost all the flies dispersed and returned to the bush at about seventeen o'clock. Usually before twenty o'clock they hid on the underside of the leaves, where they spent the night. *Bercaea africa* adults fed on honeydew only during the day, between ten and seventeen o'clock.

Table 1. Flies, collected in the Lazurne village from 4. to 15.08.2020 in different habitats.

No	Fly species	Substrates			Sum
		soil, leaves and walls	<i>Lycium barbarum</i>	<i>Seseli tortuosum</i>	
1	<i>Lucilia richardsi</i> Collin, 1926	1 (1♂)	–	–	1 (1♂)
2	<i>Lucilia silvarum</i> (Meigen, 1826)	1 (1♀)	–	2 (1♂1♀)	3 (2♂1♀)
3	<i>Lucilia sericata</i> (Meigen, 1826)	96 (51♂45♀)	81 (31♂50♀)	170 (85♂85♀)	347 (167♂180♀)
Calliphoridae, sum		98 (52♂46♀)	81 (31♂50♀)	172 (86♂86♀)	351 (169♂182♀)
1	<i>Paykullia maculata</i> (Fallén, 1815)	2 (1♂1♀)	–	1 (1♀)	3 (1♂2♀)
2	<i>Phyto melanocephala</i> (Meigen, 1824)	3 (3♀)	–	–	3 (3♀)
Rhinophoridae, sum		5 (1♂4♀)	–	1 (1♀)	6 (1♂5♀)
1	<i>Senotainia albifrons</i> (Rondani, 1859)	1 (1♀)	–	3 (2♂1♀)	4 (2♂2♀)
2	<i>Senotainia conica</i> (Fallén, 1810)	14 (6♂8♀)	–	9 (6♂3♀)	23 (12♂11♀)
3	<i>Senotainia deserta</i> Rohdendorf, 1935	6 (1♂5♀)	–	1 (1♀)	7 (1♂6♀)
4	<i>Pterella convergens</i> (Pandellé, 1895)	1 (1♀)	–	1 (1♀)	2 (2♀)
5	<i>Pterella melanura</i> (Meigen, 1824)	–	–	2 (2♀)	2 (2♀)
6	<i>Sarcophila latifrons</i> (Fallén, 1817)	6 (1♂5♀)	–	12 (3♂9♀)	18 (4♂14♀)
7	<i>Sarcophila meridionalis</i> Rohdendorf and Verves, 1982	3 (2♂1♀)	–	21 (12♂9♀)	24 (14♂10♀)
8	<i>Wohlfahrtia balassogloi</i> (Portschinsky, 1881)	–	–	1 (1♂)	1 (1♂)
9	<i>Helicophagella melanura</i> (Meigen, 1826)	1 (1♂)	–	3 (3♀)	4 (1♂3♀)
10	<i>Discachaeta cucullans</i> (Pandellé, 1896)	1 (1♂)	–	–	1 (1♂)
11	<i>Heteronychia haemorrhoides</i> (Böttcher, 1913)	4 (4♂)	–	2 (2♂)	6 (6♂)
12	<i>Heteronychia lacrymans</i> (Villeneuve, 1912)	6 (6♂)	–	2 (2♂)	8 (8♂)
13	<i>Bercaea africa</i> (Wiedemann, 1824)	–	7 (7♂)	–	7 (7♂)
14	<i>Liosarcophaga parkeri</i> (Rohdendorf, 1937)	3 (2♂1♀)	–	1 (1♂)	4 (3♂1♀)
15	<i>Sarcophaga lehmanni</i> Müller, 1922	2 (1♂1♀)	–	–	2 (1♂1♀)
Sarcophagidae, sum		48 (26♂22♀)	7 (7♂)	58 (29♂29♀)	113 (62♂51♀)
Total, sum		151 (79♂72♀)	88 (38♂50♀)	231 (115♂116♀)	470 (232♂238♀)

Discussion

According to the Povolný's classification (1963, 1971, 1976) of degrees of synanthropy, among the twenty collected species, two (10% of all species) are eusynanthropic (*Lucilia sericata*, *Bercaea africa*), one (5%) – is hemisynanthropic (*Helicophagella melanura*), ten (50%) – are culturophilous (*Lucilia richardsi*, *L. silvarum*, *Phyto melanocephala*, *Senotainia albifrons*, *S. conica*, *Sarcophila latifrons*, *S. meridionalis*, *Heteronychia haemorrhoides*, *Liosarcophaga parkeri*, *Sarcophaga lehmanni*), and seven (35%) – are culturophobic (*Paykullia maculata*, *Senotainia deserta*, *Pterella convergens*, *P. melanura*, *Wohlfahrtia balassogloi*, *Discachaeta cucullans*, *Heteronychia lacrymans*). Thus, even an insignificant area in a cultural zone with a moderate anthropogenic load can serve as a refugium for native species. For example, an adult solitary wasp *Megascolia maculata* (Drury, 1773) (Hymenoptera: Scoliidae) (Figure 4), which is listed in the Red Book of Ukraine (Kotenko *et al.*, 2009), was collected by the researchers in this locality. Based on these results, the overall species' lists of these three families for the Kherson Region represent, at least 80% (eighty-eight species) of the potential full list for sarcophagids, 50–60% (twenty species) for calliphorids, and no more than 20–30% (four species) for rhinophorids.

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