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Survey of order Coleoptera attracted to light traps in Alexandria Governorate with two species newly recorded to Egyptian fauna

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Abstract

A survey of coleopterous insects was conducted at Alexandria Governorate (Burg Al-Arab and Al-Amria districts) during two successive years from April 2018 to March 2020 using Robinson light traps set up at Alexandria in Burg Al-Arab (Burg Al-Arab regions) and Al-Amria (Rahim and Gurisat regions). The collected individuals were separated, listed, and identified under their related families, genera, and species (25 families and 76 species). *Psyllobora renifer* Cas. (Family: Coccinellidae) and *Digonums irroratus* Kiesen (Family: Ptinidae) are newly recorded to the Egyptian fauna and collected for the first time from our fauna.

Introduction

Order Coleoptera is the largest order in class Insecta. All over the world, only a quarter of a million species have been described (White, 1983). In Egypt, there are about 2974 species belonging to Coleoptera published by Alfieri (1976) in his professional studies on Egyptian fauna. Very little was known about their distribution, abundance, and identification. More attention has been given to the survey of insect species in different areas of Egypt (Salem *et al.*, 1985, 1986 and 2020; El-Moursy *et al.*, 1996, 1998 and 2001; Fadl and Mossaad, 1997; El-Akkad *et al.*, 1997; Emad, 2000; El-Shewy, 2007 and 2013; EL-Metwally, 2002 and 2008; Salah, 2017 and Ismaieel *et al.*, 2021).

In the present work, the coleopterous species were collected from Burg Al-Arab (Burg Al-Arab regions) and in Al-Amria

(Rahim and Gurisat regions) Alexandria Governorate during two successive years (2018-2019 and 2019-2020). The relative abundance of species is mentioned.

Materials and methods

A light trap of the Robinson type was set up and operated at the Agricultural Research Station and at Al-Amria and Burg Al-Arab districts, Alexandria Governorate from sunset to sunrise for two consecutive years, April 2018 to March 2020.

Sodium cyanide was used as a killing agent within the receptacle of the trap. Catches of coleopterous insects were separated monthly and sorted into families, genera, and species. Classification, counting, and recording were carried out. Records of monthly catches for each species and each family together with their total annual catches and percentage of abundance were

tabulated and alphabetically arranged. All species were identified in the Department of Insect Survey and Taxonomy, Plant Protection Research Institute, Ministry of Agriculture, Dokki, Egypt.

Results and discussion

The survey of coleopterous insects was carried out at Alexandria Governorate (Burg Al-Arab and Al-Amria districts) during two successive years from April 2018 to March 2020 using Robinson light traps. Data in Table (1 and 2) showed that the activity of insect populations varied from one year to another. The numbers of the whole catches were (10547 and 11024) in Burg Al-Arab (Figure 1), while the numbers of the whole catches in Al-Amria district were (35715 and 37397) in Rahim and Gurisat, respectively during the two years under study (Figure2). In these two years, the coleopterous insects were collected from April to November and completely disappeared from December to March of the

next year. The collected individuals were separated, listed and identified under their related families, genera and species (25 families and 76 species).

Data also showed that the species of the family Staphylinidae dominated the coleopterous catches in all regions of both districts followed by Carabidae, Anthicidae and Tenbrionidae. Other families were less abundant and represented by smaller numbers of individuals. On the other hand, Nitidulidae, Phalacridae, Apionidae, Monotomidae and Mycetophagidae were represented by rare numbers in the regions under study.

In addition, the family Coccinellidae was represented by two species: *Rodalia cardinalis* Muls. and *Psyllobora renifer* Casey which was collected and identified for the first time in the Egyptian fauna (Figure 3). Also, Family Ptinidae, including *Dignomus irroratus* Kieser was collected and identified for the first time in Egyptian fauna (Figure 4).

Table (1): Different families of Coleoptera presented in Burg El-Arab district, Alexandria Governorate along with their species during 2018-2020 seasons.

Family Species	First year		Second year	
	Annual Total number of individuals	Annual Percentage	Annual Total number of individuals	Annual Percentage
Anobiidae	34	0.3	21	0.2
<i>Lasioderma serricorne</i> F.	34	100	9	42.9
Anthicidae	1086	10.3	1543	16.1
<i>Anthelephila caeruleipennis</i> La-ferte	61	5.6	24	1.6
<i>Anthicus crinitus</i> La-Fert.	652	60	828	53.7
<i>Anthicus vittatus</i> Lucas.			35	2.3
<i>Cyclodinus debilis</i> La-Fert.	160	14.7	236	15.3
<i>Cyclodinus larvipennis</i> (Mars.)	194	17.9	75	4.9
<i>Leptaleus klugi</i> (Laf.)	19	1.7	83	5.4
Apionidae	40	0.4	42	0.4
<i>Malvapion malvae</i> Fab.	40	100	42	100
Bostrychidae	512	4.9	539	4.9
<i>Bostryehopsis reichei</i> Mars.	18	3.5	23	4.3
<i>Phonapate frontalis</i> Fahr.	21	4.1	19	3.5
<i>Rhizopertha dominica</i> (Fab.)	147	28.7	167	31
<i>Scobicia chevieri</i> Villa.	326	63.7	330	61
Carabidae	2094	19.9	2194	19.9
<i>Cicindela lunulata</i> Fabr.	10	2.7	10	0.5
<i>Cicindela melancholica</i> Fabr.	212	6.5	204	9.3
<i>Dyschirius clypeatus</i> Putz.	40	1.9	42	1.9

<i>Microlestes minutulus</i> Goeze.	150	7.2	151	6.9
<i>Orthomusbar barbarus</i> (Dej.)	34	0.1	26	1.2
<i>Scarites subcylindricus</i> Chau.	13	0.5	13	0.6
<i>Sphaerotachys lucasi</i> (Jacq.)	770	11.9	854	38.9
<i>Stenolophus marginatus</i> Dej.	668	63.2	672	30.6
<i>Tachys aegytiacus</i> Chatz-Koch.	197	5.6	222	10.1
Coccinellidae	9	0.09	14	0.1
<i>Psyllobora renifer</i> Casey	9	100	14	100
Chrysomelidae	150	1.4	148	1.3
<i>Phyllotreta cruciferae</i> G.	150	100	148	100
Cleridae	349	3.3	378	3.4
<i>Necrobia rufipes</i> (Fab.)	349	100	378	100
Curculionidae	80	0.8	87	0.8
<i>Hypolixus nubilosus</i> Boh.	54	67.5	51	58.6
<i>Rhynchophorus ferrugineus</i> Oliv.	26	32.5	36	41.4
Dynastidae	146	1.4	162	1.5
<i>Temnorrhynchus baal</i> Reiche.	146	100	162	100
Dytiscidae	171	1.6	182	1.7
<i>Hydroglyphus confuses</i> (Klug.)	51	29.8	62	34.1
<i>Hydaticus leander</i> Rossi.	120	70.2	120	65.9
Elateridae	415	4	425	3.9
<i>Agrypnus notodonta</i> Germ.	37	8.9	31	7.3
<i>Drasterius figuratus</i> Germ.	378	91.1	394	92.7
Hybosoridae	257	2.4	260	2.4
<i>Hybosorus illigeri</i> Reiche.	257	100	260	100
Hydrophilidae	849	8.1	945	8.6
<i>Cercyon laminatus</i> Sharp.	184	31.7	196	20.7
<i>Cercyon quisquilius</i> L.	476	30	534	56.5
<i>Enochrus Politus</i> (Kust.)	105	20.4	123	13
<i>Holochares melanophthalmus</i> Muls.	70	17.8	74	7.8
<i>Hydrobius fuscipes</i> L.	14		18	1.9
Latridiidae	33	0.3	38	0.4
<i>Corticaria fulv</i> (Com.)	33	100	38	100
Meloidae	10	0.1	14	0.1
<i>Synhoria senegalensis</i> Laf.	5	50	6	42.9
<i>Zonitoscema pallidissima</i> Rtt	5	50	8	57.1
Mycetophagidae	216	2	231	2.1
<i>Typhaea stercorea</i> L.	216	100	231	100
Nitidulidae	5	0.05	7	0.06
<i>Carpophilus mutilats</i> Er.	5	100	7	100
Ptinidae	32	0.2	27	0.2
<i>Dignomus irroratus</i> Kiesen.	8	3.5		
<i>Gastrallus marginipennis</i> Lecont.	17	70.8	19	70.4
<i>Gastrallus striatus</i> Zoufal.	7	29.2	8	29.6
Scarabaeidae	679	6.4	723	6.6
<i>Aphodius lividus</i> Pan.	467	68.8	491	67.9
<i>Onitis alexis</i> Klug.	41	6	44	6.1
<i>Onthophagus sellatus</i> Klug.	55	8.1	65	9
<i>Pentodon algermius</i> (Fuess.)	1	0.1	1	0.1
<i>Pentodon desert ferrantei</i> N.	33	4.9	38	5.3
<i>Phyllognathus excavatus</i> Forster.	1	0.1	2	0.3
<i>Pleurophorus caesus</i> Creutz.	43	6.3	46	6.4
<i>Rhysemodes orientalis</i> (Muls.God.)	38	5.6	63	5

Silvanidae	78	0.7	80	0.7
<i>Ahasverus advena</i> (Walt.)	78	100	80	100
Staphylinidae	2946	28	2918	26.5
<i>Aleochara bipustulata</i> L.	53	1.8	58	2
<i>Aleochara moesta</i> Grav.	53	1.8	61	2.1
<i>Bledius unicornis</i> Germ.	160	5.4	174	6
<i>Gabronthus maritimus</i> Motsch.	73	2.5	87	3
<i>Paederus alfieri</i> Koch.	328	11.1	344	11.8
<i>Philonthus agilis</i> Grave.	33	1.1	30	1
<i>Philonthus concinnus</i> Grav.	27	0.9	29	1
<i>Philonthus longicornis</i> Steph.	139	4.7	152	5.2
<i>Philonthus quisquiliarius</i> Gylle.	119	4	118	4
<i>Philonthus</i> Sp.	6	0.2	3	0.1
<i>Scopae debilis</i> Hoch.	1955	66.4	1862	63.8
Tenebrionidae	356	3.4	402	3.6
<i>Alphitobius diaperinus</i> Panz.	10	2.8	16	4
<i>Alphitobius laevigatus</i> Fabr.	102	28.7	109	27.1
<i>Cheirodes sardoa</i> Gene.	3	0.8	5	1.2
<i>Gonocephalum rusticum</i> Oli.	51	14.3	54	13.4
<i>Gonocephalum setulosum</i> Fald.	29	8.1	35	8.7
<i>Imatismus villosus</i> Haag.Rutenberg.	12	3.4	14	3.5
<i>Myrmecixenus picinus</i> (Aube.)	44	12.4	46	11.4
<i>Opatropis hispida</i> Brull.	27	7.6	29	7.2
<i>Opatroides punctulatus</i> Brull.	34	9.6	42	10.4
<i>Palorus subdepressus</i> Wall.	1	0.3	4	1
<i>Scleron orientalis</i> F.	43	12.1	48	11.9
Grand total	10547		11024	

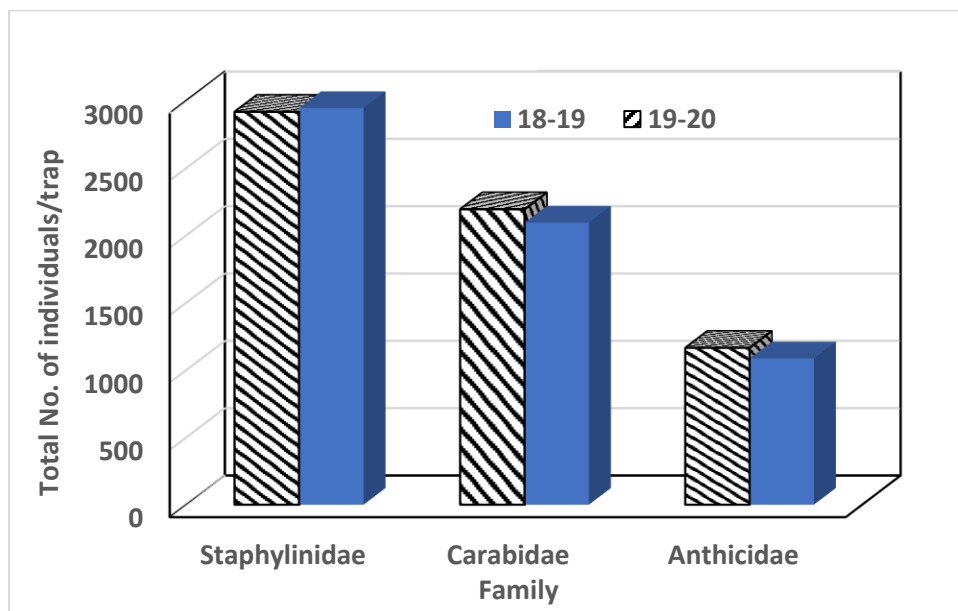


Figure (1): The total numbers of the most abundant coleopterous families at Burg El-Arab district, Alexandria Governorate caught using light trap during 2018-2019 and 2019-2020.

Table (2): Different families of Coleoptera presented in Al-Amria district, Alexandria Governorate along with their species during 2018-2020 seasons.

Family Species	First year		Second year	
	Annual Total number of individuals	annual Percentage	Annual Total number of individuals	Annual Percentage
Anobiidae	41	0.1	50	0.1
<i>Lasioderma serricorne</i> F.	41	100	50	100
Anthicidae	2335	6.5	2428	6.5
<i>Anthicus crinitus</i> La-Fert.	1222	52.3	1212	49.9
<i>Cyclodinus bremeri</i> Laf.	393	16.8	397	16.4
<i>Cyclodinus debilis</i> La-Fert.	160	6.9	205	8.4
<i>Hirticollis hispidus</i> Rossi.	290	12.4	321	13.2
<i>Omonadus floralis</i> L.	270	11.6	293	12.1
Bostrychidae	311	0.9	349	0.9
<i>Bostryehopsis reichei</i> Mars.	35	11.3	49	14
<i>Lyctus brunneus</i> Steph.	16	5.1		
<i>Rhizopertha dominica</i> (Fab.)	59	18.8	72	20.6
<i>Scobicia chevieri</i> Villa.	201	64.6	228	65.3
Carabidae	4378	12.3	4510	12.1
<i>Amblystomus metallescens</i> (Dej.)	501	11.4	528	11.7
<i>Cicindela lunulata</i> Fabr.	75	1.7	84	1.9
<i>Cicindela melancholica</i> Fab.	51	1.2	62	1.4
<i>Microlestes minutulus</i> Goeze.	481	11	487	10.8
<i>Pterostichus pharao</i> Luts.	455	10.4	485	10.8
<i>Scarites subcylindricus</i> Chau.	26	0.6	27	0.6
<i>Sphaerotachys lucasi</i> (Jacq.)	1164	26.6	1184	26.3
<i>Stenolophus marginatus</i> Dej.	1430	32.7	1441	32
<i>Tachys gilvus</i> Shaum.	9	0.2	11	0.2
<i>Tachys torretassoi</i> Schatz&Koch.	1186	4.2	201	4.5
Coccinellidae	89	0.2	119	0.3
<i>Psyllobora renifer</i> Casey	89	100	119	100
Chrysomelidae	932	2.6	937	2.5
<i>Chloropterus stigmaticollis</i> Fair.	2	0.2	6	0.6
<i>Phyllotreta cruciferae</i> G.	930	99.8	931	99.4
Cleridae	320	0.9	332	0.9
<i>Necrobia rufipes</i> (Fab.)	320	100	332	100
Cryptophgidae	36	0.1	39	0.1
<i>Cryptophgus affinis</i> Stem.	36	100	39	100
Curculionidae	83	0.2	90	0.2
<i>Lixus ornatus v.nubilosus</i> Boh.	39	47	44	48.9
<i>Temnorhinus brevirostris</i> Gyll.	44	53	46	51.1
Dytiscidae	771	2.2	807	2.2
<i>Copelatus Ibrahimi</i> Angus. & Kaschef.	229	29.7	240	29.7
<i>Hydroglyphus confuses</i> (Klug.)	9	1.2	12	1.5
<i>Hydaticus leander</i> Rossi.	533	69.1	555	68.8
Elateridae	735	2.1	764	2
<i>Agrypnus notodonta</i> Germ.	12	1.6	18	2.4
<i>Cardiophorus pharaonum</i> Buyss.	22	3	27	3.5
<i>Drasterius figuratus</i> Germ.	701	95.4	719	94.1

Hybosoridae	248	0.7	262	0.7
<i>Hybosorus illigeri</i> Reiche.	248	100	262	100
Hydrophilidae	999	2.8	1035	2.8
<i>Cercyon laminatus</i> Sharp.	112	11.2	118	11.4
<i>Cercyon quisquilius</i> L.	799	80	824	79.6
<i>Holochares melanophthalmus</i> Muls.	88	8.8	93	9
Monotomidae	87	0.2	95	0.3
<i>Monotoma picipes</i> Her.	87	100	95	100
Mycetophagidae	142	0.4	160	0.4
<i>Typhaea stercorea</i> L.	142	100	160	100
Nitidulidae	498	1.4	513	1.4
<i>Carpophilus immaculatus</i> Luc.	498	100	513	100
Phalacridae	3	0.008	4	0.01
<i>Stilbus nitidus</i> (Mel.)	3	100	4	100
Ptinidae	544	1.5	576	1.5
<i>Gastrallus marginipennis</i> Lecont.	314	57.7	327	56.8
<i>Gastrallus striatus</i> Zoufal.	230	42.3	249	43.2
Scarabaeidae	573	1.6	610	1.6
<i>Aphodius lividus</i> Pan.	452	78.9	468	76.7
<i>Onitis alexis</i> Klug.	3	0.5	5	0.8
<i>Pentodon desert ferrantei</i> N.	10	1.7	14	2.3
<i>Phyllognathus excavatus</i> Forster.	51	8.9	63	10.3
<i>Pleurophorus caesus</i> Creutz.	57	9.9	60	9.8
Scolytidae	60	0.2	68	0.2
<i>Coccotypes dactyliperda</i> F.	60	100	68	100
Silvanidae	167	0.5	180	0.5
<i>Ahasverus advena</i> (Walt.)	90	53.9	99	55
<i>Oryzophilus surinamensis</i> L.	77	46.1	81	45
Staphylinidae	19213	53.8	20003	53.5
<i>Aleochara bipustulata</i> L.	508	2.6	536	2.7
<i>Aleochara moesta</i> Grav.	15	0.08	17	0.08
<i>Bledius unicornis</i> Germ.	219	1.1	217	1.08
<i>Paederus alfieri</i> Koch.	13973	72.7	14536	72.7
<i>Philonthus longicornis</i> Steph	84	0.4	89	0.4
<i>Philonthus maritimus</i> Motsch.	62	0.3	69	0.3
<i>Philonthus quisquiliarius</i> Gylle.	35	0.2	41	0.2
<i>Philonthus</i> Sp.	5	0.02	6	0.02
<i>Philonthus sordidus</i> Grav.	120	0.6	124	0.6
<i>Scopaes debilis</i> Hoch.	4092	21.3	4260	21.3
<i>Trogophloeus niloricus</i> Er.	100	0.5	108	0.5
Tenebrionidae	3108	8.7	3339	9
<i>Alphitophagus bifasciatus</i> Mostly.	445	14.3	480	14.4
<i>Alphitobius diaperinus</i> Panz.	14	0.5	9	0.3
<i>Cheirodes sardoa</i> Gene.	768	24.7	879	26.3
<i>Gonocephalum rusticum</i> Oli.	438	14.1	453	13.6
<i>Gonocephalum setulosum</i> Fald.	566	18.2	607	18.2
<i>Mesomorphus setosus</i> Muls	124	4	151	4.5
<i>Myrmechixenus picinus</i> (Aube.)	379	12.2	352	10.5
<i>Opatropis hispida</i> Brull.	4	0.1	10	0.3
<i>Opatroides punctulatus</i> Brull.	111	3.6	139	4.2

<i>Palorus subdepressus</i> Wall.	259	8.3	259	7.8
Zopheridae	42	0.1	127	0.3
<i>Bitoma siccana</i> pas.	42	100	127	100
Grand total	35715		37397	

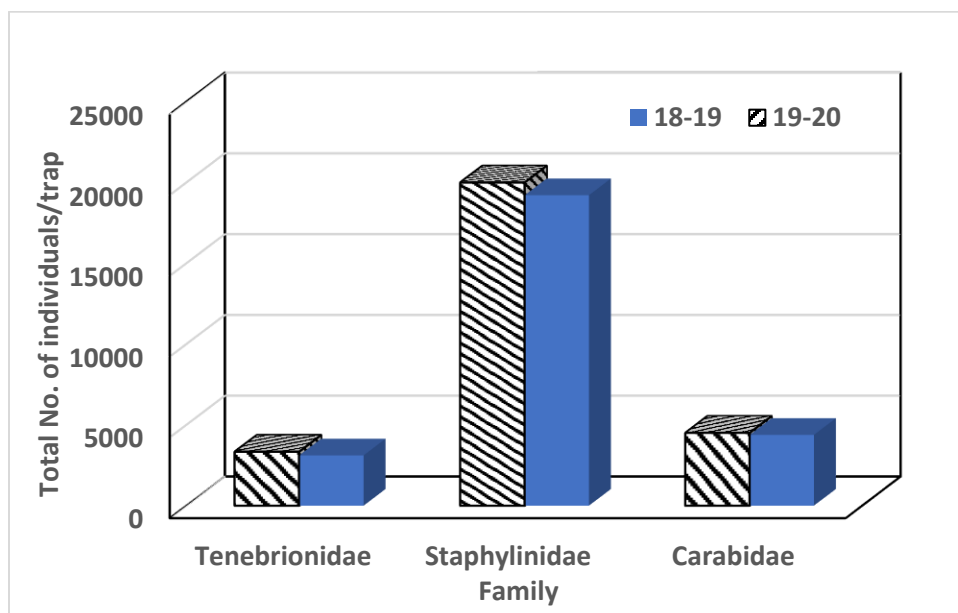


Figure (2): The total numbers of the most abundant coleopterous families at Al-Amria district, Alexandria Governorate caught using light trap during 2018-2019 and 2019-2020.



Figure (3): *Psyllobora renifer* Casey



Figure (4): *Dignomus irroratus* Kieser

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