

November 25, 2014

Progress report for the Israeli Taxonomy Initiation

**Revealing the fauna of the housefly parasitoids in Israel and factors affecting their distribution.**

- Elad chiel, Department of Biology & Environment, University of Haifa-Oranim. Email: [elad\\_c@oranim.ac.il](mailto:elad_c@oranim.ac.il) and [eladchiel@gmail.com](mailto:eladchiel@gmail.com)
- Wolf Kuslitzky, Department of Zoology, Tel-Aviv University. Email: [wkuslitzky@yahoo.com](mailto:wkuslitzky@yahoo.com)

In this study we performed a comprehensive survey to reveal the fauna of pupal parasitoids of the housefly, *Musca domestica*, in Israel.

The survey included 26 locations – dairy-, egg laying- and goat- farms – in various locations throughout Israel, during the fall of 2013 and the spring of 2014 (table 1).

Parasitoids were identified using available keys (Bouček, 1963; Kogan & Legner, 1970; Gibson 2000, 2009). Selected samples were sent to Dr. Gary Gibson (Agriculture and Agri-food Canada, Ottawa, Canada) for confirmation. Some of the specimens were deposited in the scientific collections of the Zoological museum at Tel-Aviv University, Israel.

Main results. A total of 5,032 parasitoids - 1,995 in the fall of 2013 and 3,037 in the spring of 2014 (Tables 2 and 3) - comprised of nine species, were found in this study: *Spalangia cameroni*, *S. endius*, *S. drosophilae*, *S. gemina*, *S. nigroaenea*, *Pachycrepoideus vindemmiae*, *Muscidifurax raptor*, *M. zaraptor* (all these 8 species are Hymenoptera: Pteromalidae) and *Dirhinus giffardii* (Hymenoptera: Chalcididae). This is the northernmost record of *S. gemina* and the first from the Palearctic. This is also the first record of *S. drosophilae* from the Mediterranean basin.

**Table 1.** Details of sampling locations in this study (\* D= dairy farm; E= egg-laying farm; G= goats farm). +/- = sampled / not sampled.

Geographical area	Location	Habitat*	Long.	Lat.	Elev. (m)	Autumn 2013	Spring 2014
Arava (Desert)	Yahel	D	35.126408	30.081071	190	+	+
	Qetura	D	35.063725	29.967817	106	-	+
	Gerofit	D	35.063725	29.939879	140	-	+
	Lotan	G	35.084732	29.988008	125	+	-
	Ne'ot Smadar	G	35.029392	30.048991	400	-	+
Coastal plain (Mediterranean)	Gan Shemuel	D	34.952638	32.452744	30	+	+
	HaBonim	D	34.932125	32.639179	7	-	+
	Ma'agan Mikha'el	D	34.918586	32.561670	10	-	+
	Talme El'azar	G	34.976467	32.444695	40	+	-
	Ofer	G	34.979637	32.624310	130	-	+
Gallilee (Mediterranean)	Moran	D	35.397062	32.914970	313	-	+
	Hazon	E	35.397756	32.906595	493	+	+
	En Kamonim	G	35.435012	32.918397	287	+	+
Jerusalem mountains (Mediterranean)	Ma'ale Hahamisha	D	35.112026	31.819603	833	+	+
	Zor'a	D	34.970512	31.760906	200	-	+
	Ramat Razi'el	E	35.071857	31.776152	723	-	+
	Wind Mt. farm	G	35.085418	31.821545	666	+	+
Western Negev (Desert)	Bet Qama	D	34.761343	31.444309	240	+	+
	Eshbol	E	34.669354	31.444341	170	+	+
	Na'ama ranch	G	34.580047	31.355646	114	+	+
Valleys (Mediterranean)	Yoqne'am Moshava	D	35.111618	32.667900	50	+	+
	Kefar Yehezqel	D	35.361643	32.570783	20	+	+
	Yoqne'am Moshava	E	35.109301	32.668319	50	+	+
	Kefar Yehezqel	E	35.354197	32.573701	42	+	-
	Kefar Yehezqel	G	35.359926	32.564968	6	+	+
	Kefar Yehoshua	G	35.153815	32.676557	53	-	+

Table 2. Amounts of parasitoids collected during fall 2013 sampling period. \* D= dairy farm; E= egg-laying farm; G= goat farm.

Geographical area	Location	Habitat*	<i>S. cameroni</i>		<i>S. endius</i>		<i>S. nigroaenea</i>		<i>S. drosophilae</i>		<i>S. gemina</i>		<i>P. vindemniae</i>		<i>D. giffardi</i>		<i>M. raptor</i>		<i>M. zaraptor</i>		Total	
			♀♀	♂♂	♀♀	♂♂	♀♀	♂♂	♀♀	♂♂	♀♀	♂♂	♀♀	♂♂	♀♀	♂♂	♀♀	♂♂	♀♀	♂♂		
Arava	Yahel	D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	
	Qetura	D	Not sampled																			
	Gerofit	D	Not sampled																			
	Lotan	G	-	-	-	-	24	5	-	-	-	-	-	-	-	1	-	-	-	-	-	30
	Ne'ot Smadar	G	Not sampled																			
Coastal plain	Gan Shemuel	D	-	-	1	4	-	-	6	2	-	-	-	-	-	-	-	-	-	-	13	
	HaBonim	D	Not sampled																			
	Ma'agan Mikha'el	D	Not sampled																			
	Talme El'azar	G	-	-	-	-	-	-	3	-	-	-	-	-	-	-	-	-	-	-	-	3
	Ofer	G	Not sampled																			
Gallilee	Moran	D	Not sampled																			
	Hazon	E	390	327	29	24	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	771
	En Kamonim	G	-	1	15	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	19
Jerusalem mountains	Ma'ale Hahamisha	D	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	2	
	Zor'a	D	Not sampled																			
	Ramat Razi'el	E	Not sampled																			
	Wind Mt. farm	G	-	-	-	-	-	-	-	-	-	-	-	8	10	-	-	-	-	-	-	18
Negev	Bet Qama	D	1						-	-	15	5	53	26	1	-	2		2	-	105	
	Eshbol	E	2	1					26	3	5	0	20	8	-	-	-	-	-	-	65	
	Na'ama ranch	G	-	-	3	0	-	-	1	1	13	4	-	-	-	1		-	-	-	23	
Valleys	Yoqne'am Moshava	D	-	-	-	-	-	-	4	-	-	-	27	8	-	-	-	-	-	-	39	
	Kefar Yehezqel	D	-	-	-	-	-	-	-	-	-	-	126	52	-	-	-	-	-	-	178	
	Yoqne'am Moshava	E	22	10	48	14	-	-	3	1	3	2	12	13	-	-	-	-	-	-	128	
	Kefar Yehezqel	E	-	-	-	-	-	-	1	2	-	-	0	2	-	-	407	187	-	-	599	
	Kefar Yehezqel	G	-	-	-	-	-	-	1	0	-	-	0	1	-	-	-	-	-	-	2	
	Kefar Yehoshua	G	Not sampled																			
																					<b>1,995</b>	

Table 3. Amounts of parasitoids collected during spring 2014 sampling period. \* D= dairy farm; E= egg-laying farm; G= goat farm.

Geographical area	Location	Habitat*	<i>S. cameroni</i>		<i>S. endius</i>		<i>S. nigroaenea</i>		<i>S. drosophilae</i>		<i>S. gemina</i>		<i>P. vindemniae</i>		<i>D. giffardi</i>		<i>M. raptor</i>		<i>M. zaraptor</i>		Total	
			♀♀	♂♂	♀♀	♂♂	♀♀	♂♂	♀♀	♂♂	♀♀	♂♂	♀♀	♂♂	♀♀	♂♂	♀♀	♂♂	♀♀	♂♂		
Arava	Yabel	D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	
	Qetura	D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	
	Gerofit	D	-	-	-	-	-	-	-	-	-	-	4	0	-	-	8	2	-	-	14	
	Lotan	G	Not sampled																		0	
	Ne'ot Smadar	G	-	-	-	-	-	-	-	-	-	-	-	11	1	-	-	-	-	-	-	12
Coastal plain	Gan Shemuel	D	-	-	-	-	-	-	-	-	-	-	8	0	-	-	32	22	-	-	62	
	HaBonim	D	18	10	-	-	-	-	-	-	-	-	62	23	-	-	-	-	-	-	113	
	Ma'agan Mikha'el	D	-	-	-	-	-	-	1	0	-	-	62	31	-	-	26	6	-	-	126	
	Talme El'azar	G	Not sampled																		0	
	Ofer	G			23	3	-	-	7	1	-	-	8	1	-	-	-	-	-	-	-	43
Galilee	Moran	D	3	4	5	5	-	-			-	-	85	34	-	-	538	279	-	-	953	
	Hazon	E	0	1	-	-	-	-	2	0	-	-	18	16	-	-	215	72	-	-	324	
	En Kamonim	G	0	1	-	-	-	-			-	-	9	4	-	-	62	16	-	-	92	
Jerusalem mountains	Ma'ale Hahamisha	D	1	0	-	-	-	-			-	-	24	7	-	-	193	53	-	-	278	
	Zor'a	D	1	4	-	-	-	-			-	-	-	-	-	-	-	-	-	-	5	
	Ramat Razi'el	E	48	52	35	23	-	-	37	25	-	-	24	11	-	-	136	31	-	-	422	
	Wind Mt. farm	G	68	58	44	25	-	-	3	0	-	-	-	-	-	-	0	1	-	-	199	
Negev	Bet Qama	D	-	-	-	-	-	-			-	-	2	0	-	-	54	82	-	-	138	
	Eshbol	E	-	-	-	-	-	-	23	14	-	-	7	10	-	-	0	1	-	-	55	
	Na'ama ranch	G	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	
Valleys	Yoqne'am Moshava	D	-	-	-	-	-	-	-	-	-	-	3	1	-	-	91	14	-	-	109	
	Kefar Yehezqel	D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	
	Yoqne'am Moshava	E	-	-	10	5	-	-	-	-	-	-	48	31	-	-	-	-	-	-	94	
	Kefar Yehezqel	E	Not sampled																		0	
	Kefar Yehezqel	G	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
	Kefar Yehoshua	G	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
																					<b>3,039</b>	

## References

1. **Bouček, Z.** (1963). A taxonomic study in *Spalangia* Latr. (Hymenoptera, Chalcidoidea). *Acta Entomologica Musei Nationalis Pragae* **35**, 429-512.
2. **Gibson G. A. P.** (2000). Illustrated key to the native and introduced chalcidoid parasitoids of filth flies in America north of Mexico (Hymenoptera: Chalcidoidea). <http://www.canacoll.org/Hym/Staff/Gibson/chalkey.pdf>.
3. **Gibson G. A. P.** (2009). Revision of New World Spalangiinae (Hymenoptera: Pteromalidae). *Zootaxa* **2259**:1-159.
4. **Kogan, M. and Legner, E.F.** (1970). A biosystematic revision of the genus *Muscidifurax* (Hymenoptera: Pteromalidae) with descriptions of four new species. *The Canadian Entomologist* **102**, 1268-1290.