

The xylophagous beetles (Buprestidae, Lyctidae, Bostrichidae, Anobiidae, Cerambycidae, Scolytidae, Platypodidae) (Coleoptera) collected in the Israeli light trap survey and their association with the major phyto-geographical zones of Israel

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Abstract

During a five-year light trap survey 118 xylophagous beetles: 18 Buprestidae, 3 Lyctidae, 14 Bostrichidae, 37 Anobiidae, 32 Cerambycidae, 13 Scolytidae and 1 Platypodidae species were collected in Israel. This is about 26.7% (118/442) of the currently known Israeli species of these families. Eleven of them are new records for the country (Bostrichidae: *Bostrychoplites zickeli*, Anobiidae: *Gastralus laevigatus*, Cerambycidae: *Alocerus moesiacus*, *Axinopalpis gracilis*, *Xylotrechus smeii*, *Xystrocera globosa*, *Anaesthis anatolica*, *Apomecyna lameerei*, *Crossotus katbeh*, *Deroplia genei*, *Leiopus syriacus*). Thirty-three species were found in an additional phyto-geographical zone in Israel. Twelve species were collected in Israel also in the past only by light traps (Bostrichidae - 2 species, Cerambycidae - 10 species). The zoogeography, distribution, abundance and association to the main five phyto-geographical zones of Israel (Tragacanth, Mediterranean, Irano-Turanian, Saharo-Arabian, Ethiopian) is discussed.

Introduction

In the context of an Israeli-German project to monitor the Israeli insect fauna Coleoptera were recovered from 1999-2003 from a nation wide network of permanent automatic light traps. The results were arranged in a data basis (MÜLLER et al., 2006 in this volume; HAUSMANN, 2005; MÜLLER et al., 2005) and are presently consecutively analyzed. Israel, with 442 species, is known for its diverse fauna of xylophagous beetles (CHIKATUNOV, 1999; 2004). In an area of about 28,000km², presently 110 Cerambycidae and 220 Buprestidae are recorded while at the same time in all Central Asia about 125 Cerambycidae and 300 Buprestidae are known (unpublished data of the authors).

In the present survey, in Israel, only 118 species were identified and analyzed. Considering the present knowledge of the local fauna at least another 10-20 species can be expected to be found in the future.

The presently known Xylophag fauna is dominated by Mediterranean elements (about 75%), about another 10% are Mediterranean-Central Asian, about 10% are wide spread in the Palearctic, Holarctic, Paleo-Tropics or cosmopolitan, while only 5% are eremic with an Arabian, Saharo-Arabian and Saharo-Sindian distribution pattern. In the past most of the surveys based on breeding from collected wood and sweeping vegetation. Light traps were barely used to collect these families.

Results and discussion

Of the known Israeli Anobiidae and Bostrichidae species about two thirds (66%), of the Cerambycidae and Scolytidae species about one third (30.8% - 35.1%), and less than one tenth (8.3%) of the Buprestidae were collected during this light trap survey. All in all about a quarter (118/442) of the species from the seven families

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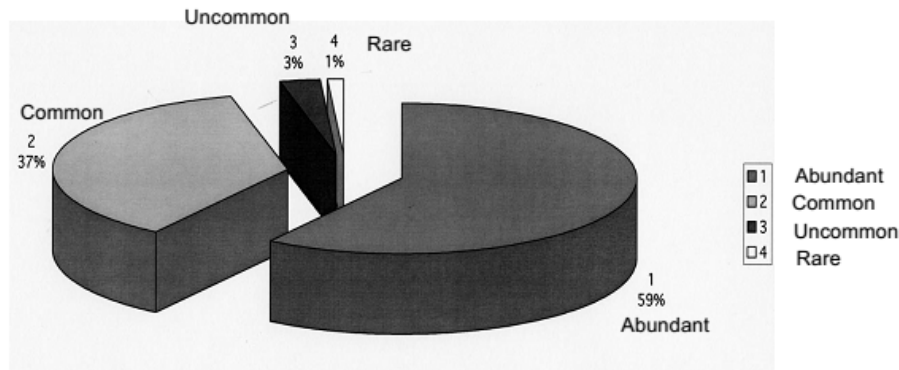
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About half of the species (64/118) which were collected in this survey has a Mediterranean distribution pattern: Circum Mediterranean (18), Southeast Mediterranean (7), Eastern Mediterranean (20), European-Mediterranean (9), Mediterranean-Central Asian (3) and Northeast Mediterranean (7). The other half belongs to Palearctic (15 species), Palearctic (12), Saharo-Arabian (11), Levantine (8), Cosmopolitan (7) and Holarctic (1) distribution pattern.

Xylophag beetles are mainly forest species and like the Phyto-geographical zone in which they are centered, they find in Israel, in the South-East Mediterranean, their southern distribution limit. Many animal and plant species are rare and local at the periphery of their geographic distribution (HENGEFELD & HAECK, 1982; BROWN, 1984), this is also a well known phenomenon for the Israeli Fauna and Flora (COHEN & SHMIDA, 1992; YOM-TOV & TCHERNOV, 1998; MÜLLER et al., 2005a,b; KRAVCHENKO et al., 2005) and even inside the Mediterranean forests zone (which is less than 200km north to south) many animals and plants, including the Xylophag beetles, are either restricted to the northern parts or they become increasingly rare towards the south (MÜLLER et al., 2005c). Out of this reason species with a wide distribution pattern, endemics of the region and eremic elements are over-represented in comparison to the Mediterranean and Palearctic complex in the present survey.

Among the 118 collected species none was extremely abundant and only 24 (20.3%) were abundant, or common in light traps, most of these (22) belong to the families Anobiidae and Bostrichidae, only one species each to Buprestidae (*Acmaeoderella despecta*) and Cerambycidae (*Monocladum unipectinatus*). The bulk (79.7%) of the species was uncommon or rare.

The abundant species (9) comprised about 60%, the common (15) 37%, the uncommon (28) 3% and the rare (66) less than 1% of the total catch (see Graph 1).



Graph 1: The abundance of the xylophagous beetles collected in The Israeli Light Trap Survey.

Occurrence	Total
9 Abundant	60
15 Common	37
28 Uncommon	3
66 Rare	1
Grand Total	118

Tab. 1: The distribution and abundance of the xylophagous beetles collected in this survey and their association with the major phyto-geographical zones of Israel.

N: New record for Israel	R: Rare
n: New record for additional phyto-geographical zone	LT: Collected by light trap during this survey
A: Abundant	X: Collected by other methods not in this survey
C: Common	It: Collected by light trap, but not during this survey
U: Uncommon	V: Collected in Israel only by light traps

nn	Families, subfamilies and species	Extension of distribution	Occurrence	Major Phyto-geographical Zones					Only by Light Trap
				Mediterranean	Irano-Turanian	Saharo-Arabian	Ethiopian	Tragacanth	
	Family BUPRESTIDAE								
	Subfamily Polycestinae								
	1. <i>Acmaeodera crinita</i>	n	R	LT.X					
	2. <i>Acmaeodera pilosellae</i>	n	R	LT.X	LT.X	LT	LT.X		
	3. <i>Acmaeodera pilosellae</i>	n	R	LT.X					
	4. <i>Acmaeoderella despecta</i>	n	C	X	LT	X	X	X	
	Subfamily Chrysochroinae								
	5. <i>Lampetis mimosae</i>	n	R	X	LT.X		X	X	
	6. <i>Sphenoptera asiatica</i>	n	R			LT.X			
	7. <i>Sphenoptera scovitzi</i>	n	R		X	LT	X		
	Subfamily Buprestinae								
	8. <i>Anthaxia myrmidon</i>	n	R	LT.X	X	X	X	X	
	9. <i>Anthaxia olympica</i>	n	R	LT.X	X	X	X	X	
	10. <i>Anthaxia praeclara</i>	n	R	LT.X	X	X	X	X	
	11. <i>Anthaxia sponsa</i>	n	R	LT.X	X	X	X	X	
	12. <i>Chalcogenia halperini</i>	n	R	X	X	X	LT.X		
	13. <i>Melanophila cuspidata</i>	n	R	LT.X	X				
	Subfamily Agrilinae								
	14. <i>Agrilus chionochaetus</i>	n	R		LT.X	X			
	15. <i>Agrilus desertus</i>	n	R		X	LT.X	X		
	16. <i>Agrilus lituratus</i>	n	R	X	X	LT.X			
	17. <i>Coraeus rubi</i>	n	R	X				LT	
	18. <i>Meliboeus halperini</i>	n	R		X	LT.X	X		
	Family LYCTIDAE								
	1. <i>Acantholyctus cornifrons</i>	n	U			LT.X	LT.X		
	2. <i>Lyctus brunneus</i>	n	U	LT.X	LT.X	LT.X	LT.X		
	3. <i>Trogoxylon impressum</i>	n	R	X	LT	X			
	Family BOSTRICHIDAE								
	Subfamily Dinoderinae								
	1. <i>Rhizopertha dominica</i>	n	U	LT.X	LT.X				
	Subfamily Bostrichinae								
	2. <i>Bostrychoplites zickeli</i>	n	R			LT			V
	3. <i>Calopertha truncatula</i>	n	U			LT.It	LT.It		V
	4. <i>Enneadesmus forficula</i>	n	C		X	LT.X	LT.X		
	5. <i>Enneadesmus tripinosus</i>	n	C		LT	LT.X	LT.X		
	6. <i>Heterobostrichus aequalis</i>	n	U	X	LT.X	LT.X	X		
	7. <i>Schistoceros bimaculatus</i>	n	R	LT	X	X	X		
	8. <i>Scobicia chevrieri</i>	n	A	LT.X	LT.X	LT.X	LT.X		
	9. <i>Sinoxylon ceratoniae</i>	n	C	LT.X	LT.X	LT.X	LT.X		

nn	Families, subfamilies and species	Extension of distribution	Major Phyto-geographical Zones					Only by Light Trap
			Occurrence	Mediterranean	Irano-Turanian	Saharo- Arabian	Ethiopian	
	10. <i>Sinoxylon sexdentatum</i>	n	R	X	X	LT	X	
	11. <i>Xyloperthella picea</i>		U	LT.X	LT.X	LT.X	X	
	Subfamily Apatinae							
	12. <i>Apate monachus</i>		A	LT.X	LT.X	LT.X	LT.X	
	13. <i>Phonapate frontalis</i>		A	LT.X	LT.X	LT	LT.X	
	14. <i>Xylomedes coronata</i>		C	LT.X	LT.X	LT	LT.X	
	Family ANOBIIDAE							
	Subfamily Eucradinae							
	1. <i>Clada halperini</i>	n	C			LT	LT.X	
	2. <i>Clada tricostata</i>		C	LT.X	LT.X	LT.X	LT.X	
	Subfamily Ernobiinae							
	3. <i>Ernobius oertzeni</i>		C	LT.X				
	Subfamily Anobiinae							
	4. <i>Gastralus corsicus</i>	n	R	LT.X	LT.X	LT	LT.X	LT.X
	5. <i>Gastralus laevigatus</i>	N	R	LT				
	6. <i>Nicobium castaneum</i>	n	R	LT.X	X	LT	X	
	7. <i>Oligomerus ptilinoides</i>	n	R	X	X	LT		
	8. <i>Stegobium paniceum</i>		U	LT.X	LT.X	LT.X	LT.X	
	Subfamily Xyletininae							
	9. <i>Lasioderma baudii</i>		A	LT.X	LT.X	LT.X	LT.X	
	10. <i>Lasioderma bubalus</i>		R	LT.X	X	X	X	
	11. <i>Lasioderma haemorrhoidale</i>		A	LT.X	LT.X	LT.X	LT.X	
	12. <i>Lasioderma kiesenwetteri</i>	n	C	LT.X	LT.X	LT	LT.X	
	13. <i>Lasioderma punctulatum</i>	n	C	LT.X	LT.X	LT	LT.X	
	14. <i>Lasioderma redtenbacheri</i>		A	LT.X	LT.X	LT.X	LT.X	
	15. <i>Lasioderma serricorne</i>		U	LT.X	LT.X	LT.X	LT.X	
	16. <i>Metholcus phoenicis</i>		C	LT.X				
	17. <i>Metholcus rotundicollis</i>		U	X	LT.X			
	18. <i>Xyletinus bucephallus</i>		A	LT.X	LT.X			
	19. <i>Xyletinus laticollis</i>	n	C	LT.X	LT	X		
	20. <i>Xyletinus leprieuri</i>	n	R		LT.X	LT		
	21. <i>Xyletinus wewalkai</i>		R	LT.X				
	Subfamily Mesocoelopodinae							
	22. <i>Mesocoelopus ingibbosus</i>		R	LT.X				
	Subfamily Dorcatominae							
	23. <i>Priartobium serrifunis</i>		R	LT.X				
	24. <i>Synanobium parmatum</i>	n	R	LT.X	LT.X	LT		
	25. <i>Stagetus elongatus</i>		R	LT.X				
	26. <i>Stagetus dorcatomoides</i>	n	U	LT.X	LT			

nn	Families, subfamilies and species	Extension of distribution	Occurrence	Major Phyto-geographical Zones					Only by Light Trap
				Mediterranean	Irano-Turanian	Saharo-Arabian	Ethiopian	Tragacanth	
	27. <i>Stagetus puncticollis</i>		U	LT.X	LT.X	LT	X		
	28. <i>Stagetus vicinus</i>	n	R	LT.X	LT.X	LT	X		
	Subfamily Ptininae								
	29. <i>Ptinus brunneus</i>	n	R	X		LT.X	LT		
	30. <i>Ptinus damascenus</i>	n	U		X	LT.X		LT	
	31. <i>Ptinus hirsutus</i>	n	R	LT.X		LT		LT	
	32. <i>Ptinus latro</i>	n	R	LT.X	LT.X	LT	X		
	33. <i>Ptinus obesus</i>	n	R	LT.X	LT.X	LT	LT		
	34. <i>Ptinus quadricornis</i>		A	LT.X	LT.X	LT			
	35. <i>Ptinus rugosicollis</i>	n	A	LT.X	LT	LT.X	LT.X	LT.X	
	36. <i>Ptinus variegatus</i>		C	LT.X	LT.X	LT.X	LT.X	LT.X	
	37. <i>Ptinus xylopertha</i>		C	LT.X					
	Family CERAMBYCIDAE								
	Subfamily Prioninae								
	1. <i>Acanthophorus arabicus</i>		R			LT.It	LT.It		V
	2. <i>Macrotoma scutellaris</i>		R	LT.X				X	
	3. <i>Monocladum unipectinatus</i>	n	C			LT	LT.X		
	4. <i>Prionus besicanus</i>		U	LT.X				X	
	5. <i>Rhesus serricollis</i>		R	LT.X					
	Subfamily Aseminae								
	6. <i>Alocerus moesiacus</i>	N	U	LT					V
	7. <i>Arhopalus rusticus</i>		R	LT.X					
	8. <i>Arhopalus syriacus</i>		R	LT.X					
	Subfamily Cerambycinae								
	9. <i>Axinopalpis gracilis</i>	N	R	LT					V
	10. <i>Cerambyx velutinus</i>	n	R	LT.X				LT	
	11. <i>Chlorophorus sartor</i>		R	LT.X	X	X	X		
	12. <i>Clytus rhamni</i>		R	LT.X					
	13. <i>Deilus fugax</i>		R	LT.X	X	X	X	X	
	14. <i>Hesperophanes sericeus</i>		R	LT.X					
	15. <i>Icosium tomentosum</i>		R	LT.X					
	16. <i>Lampropterus femoratus</i>		R	LT.X					
	17. <i>Penichroa fasciata</i>	n	R	LT.X				LT	
	18. <i>Phoracantha semipunctata</i>		R	LT.X		X			
	19. <i>Phymatodes testaceus</i>		U	LT.X				X	
	20. <i>Stromatium fulvum</i>		U	LT.X					
	21. <i>Trichoferus fasciculatus</i>	n	U	LT.X	LT				
	22. <i>Trichoferus griseus</i>		U	LT.X	X				
	23. <i>Xylotrechus smeii</i>	N	U	LT					V

nn	Families, subfamilies and species	Extension of distribution	Major Phyto-geographical Zones					Only by Light Trap	
			Occurrence	Mediterranean	Irano-Turanian	Saharo-Arabian	Ethiopian		Tragacanth
	24. <i>Xystrocera globosa</i>	N	U	LT					V
	Subfamily Lamiinae								
	25. <i>Anaesthesia anatolica</i>	N	U	LT					V
	26. <i>Apomecyna lameerei</i>	N	U		LT	LT			V
	27. <i>Batocera rufomaculata</i>		R	LT.X				X	
	28. <i>Crossotus katbeh</i>	N	R		LT	LT			V
	29. <i>Crossotus strigifrons</i>		R		LT	LT.X	X		
	30. <i>Deroplia genei</i>	N	R	LT					V
	31. <i>Leiopus syriacus</i>	N	R	LT					V
	32. <i>Niphona picticornis</i>		R	LT.X	LT.X			X	
	Family SCOLYTIDAE								
	Subfamily Hylesininae								
	1. <i>Blastophagus piniperda</i>		U	LT.X					
	2. <i>Chaetoptelius vestitus</i>	n	U	LT.X	LT	LT	LT.X	LT.X	
	3. <i>Carphoborus perrisi</i>		R	LT.X					
	4. <i>Hypoborus ficus</i>		R	LT.X					
	5. <i>Hylurgus micklitzii</i>		U	LT.X				X	
	6. <i>Phloeosinus armatus</i>	n	R	LT.X	LT			LT	
	7. <i>Phloeosinus aubei</i>	n	U	LT.X					
	8. <i>Phloeotribus scarabaeoides</i>		U	LT.X					
	9. <i>Tomicus destruens</i>		R	LT.X					
	Subfamily Scolytinae								
	10. <i>Coccotrypes dactyliperda</i>		R	LT.X				X	
	11. <i>Orthotomicus erosus</i>	n	U	LT.X	LT	X			
	12. <i>Pityogenes calcaratus</i>		R	LT.X					
	13. <i>Scolytus rugulosus</i>	n	R	LT.X	LT				
	Family PLATYPODIDAE								
	1. <i>Platypus solidus</i>		R	LT.X	X				

Family	Species on light traps	Total species in Israel	Species (%) on light traps	New zone for Israel	New for Israel
Anobiidae	37	56	66,07	17	1
Bostrichidae	14	21	66,66	3	1
Buprestidae	18	218	8,25	3	
Cerambycidae	32	104	30,76	4	9
Lyctidae	3	3	100	1	
Platypodidae	1	3	33,33		
Scolytidae	13	37	35,13	5	
Total:	118	442	26,69	33	11

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