

MOTHS CAUGHT IN PHEROMONE TRAPS FOR SOUTHERN ARMYWORM (*SPODOPTERA ERIDANIA* CR.), FALL ARMYWORM (*S. FRUGIPERDA* SM.), AND EGYPTIAN COTTON LEAFWORM (*S. LITTORALIS* BSD.) (NOCTUIDAE, LEPIDOPTERA) DURING 1999–2001 IN LITHUANIA

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Abstract. Quarantine species were not caught in pheromone traps in Lithuania: *Spodoptera eridania* in 1999, *S. frugiperda* – in 2000, and *S. littoralis* – in 2001. Moths of 18 species and five families were caught in pheromone traps for *Spodoptera eridania*, of 29 and 11 families – in traps for *S. frugiperda*, and of 28 species and nine families – in traps for *S. littoralis*. During the investigation some rare for Lithuania species (*Anarsia lineatella*, *Argyresthia sorbiella*, *Ochsenheimeria vacculella*, *Cydia lunulana*, *Myelois circumvoluta*, *Pristerognatha fuligana*, *Mesapamea didyma*, *Opigena polygona*, *Allophyes oxyacanthae*, and *Xanthia gilvago*) were trapped and their new distribution localities detected. Moths caught in pheromone traps most frequently were described.

Key words: quarantine species, southern armyworm, fall armyworm, Egyptian cotton leafworm, distribution

INTRODUCTION

Southern armyworm (*Spodoptera eridania*), fall armyworm (*S. frugiperda*), and Egyptian cotton leafworm (*S. littoralis*) are included in the European (CAB 1997) and Lithuanian (MoA 2000) quarantine pest lists. These species have not been recorded in Lithuania (Kazlauskas 1984; Ivinskis 1993, 1999).

The aim of this work was to search for *S. eridania*, *S. littoralis*, and *S. frugiperda* in fields of Lithuania, the latter – in greenhouses, too, and identify moths caught in pheromone traps for those *Spodoptera* species.

MATERIAL AND METHODS

Forty eight Delta traps with pheromone dispensers (L 063) for *S. eridania* (AgriSense, USA) were used in 1999, 110 Delta traps with pheromone dispensers (SPFR) for *S. frugiperda* (Pherobank, Netherlands) – in 2000, and 55 Delta traps with pheromone dispensers (SPOLIL) for *S. littoralis* (Trifolio-M GmbH, Germany) – in 2001 in Lithuania. Durability of pheromone attractivity was guaranteed for six weeks after the placement of dispensers. One dispenser was used in each trap. Pheromone traps were fixed by inspectors from

Lithuanian State Plant Protection Service in the fields and greenhouses 0.5–1 m above the ground, at the level of cultivated plants, and checked from July to August. Traps for southern armyworm were set in 33 localities of 22 administrative districts in the fields with such crops as potato, stock beet, sugar beet, haricot, bean, pea, maize, and rape. Traps for fall armyworms were placed in two habitats: 86 traps – in 59 localities of 35 administrative districts in the fields with such crops as potato, cabbage, onion, haricot, bean, pea, stock beet, sugar beet, maize, alfalfa, clover, and perennial grasses; 24 traps – in 14 localities of nine administrative districts in greenhouses with such ornamental and vegetable plants as *Celosia*, *Chrysanthemum*, *Dianthus*, *Eustoma*, *Rosa*, *Verbena*, aubergine, cucumber, capsicum, and tomato. Traps for Egyptian cotton leafworms were set in 44 localities of 31 administrative district in the fields with such cultivated plants as potato, cabbage, cucumber, haricot, carrot, tomato, beet, maize, clover, and alfalfa.

Administrative districts are abbreviated as follows: Alt – Alytus, An – Anykščiai, Ig – Ignalina, J – Jonava, Jr – Jurbarkas, Kš – Kaišiadorys, K – Kaunas, Kd – Kėdainiai, Kl – Klaipėda, Kp – Kupiškis, Kr – Kretinga, L – Lazdijai, M – Marijampolė, Ml – Molėtai, Mž – Mažeikiai, Pn – Panevėžys, Ps – Pasvalys, Pl – Plungė, Pr – Prienai, Rd – Radviliškis, Rs – Raseiniai, Rk –

Rokiškis, Sk – Skuodas, Šlč – Šalčininkai, Šl – Šiauliai, Šll – Šilalė, Šlt – Šilutė, Šr – Širvintos, Šv – Švenčionys, Trg – Tauragė, Tl – Telšiai, Tr – Trakai, Uk – Ukmergė, Ut – Utena, Vr – Varėna, Vlk – Vilkaviškis, V – Vilnius, Z – Zarasai.

About 20 abdomens of each group of similarly sized moths were taken from insert, if catches were abundant. Genitalia were prepared by the standard method (Komarova *et al.* 1983; Ivinskis 1996). Moth species were identified by special keys (Bradley *et al.* 1979; Calle 1982; Zagulyaev *et al.* 1978, 1986; Gershenson *et al.* 1981; Kostrowicki 1956, 1959, 1983; Błeszyński 1960, 1965, 1966; Merzheevskaya 1971; Mochida 1973; Razowski 1990; Smetnik *et al.* 1986; Todd & Poole 1980). The list of species is added in the same order as in the Karsholt and Razowski (1996).

Relative species frequency (%) was calculated as a ratio of the number of localities where a certain species was recorded to the number of all the localities investigated.

RESULTS AND DISCUSSION

Moths were caught in 43 traps for *S. eridania* from 32 localities of 21 administrative district. The list of species with a reference number of specimens, districts, localities, crops in the fields, the number of traps set, and the total number of traps fixed on the same crop are presented in Annex I.

The highest relative species frequencies were recorded for *Hoplodrina octogenaria* (87.9%), *H. blanda* (72.7%), and *Cucullia umbratica* (15.2%), whereas for the other species they were low (3.0–12.1%). *Opigena polygona* and *Allophyes oxyacanthae* – rare noctuids in Lithuania (Kazlauskas 1984; Ivinskis 1993) – were caught and a few new their distribution localities discovered (Fig. 1). Another rare for Lithuania species – *Myelois circumvoluta* – was found in one new distribution locality in a new district (Fig. 2). *S. eridania* was not trapped.

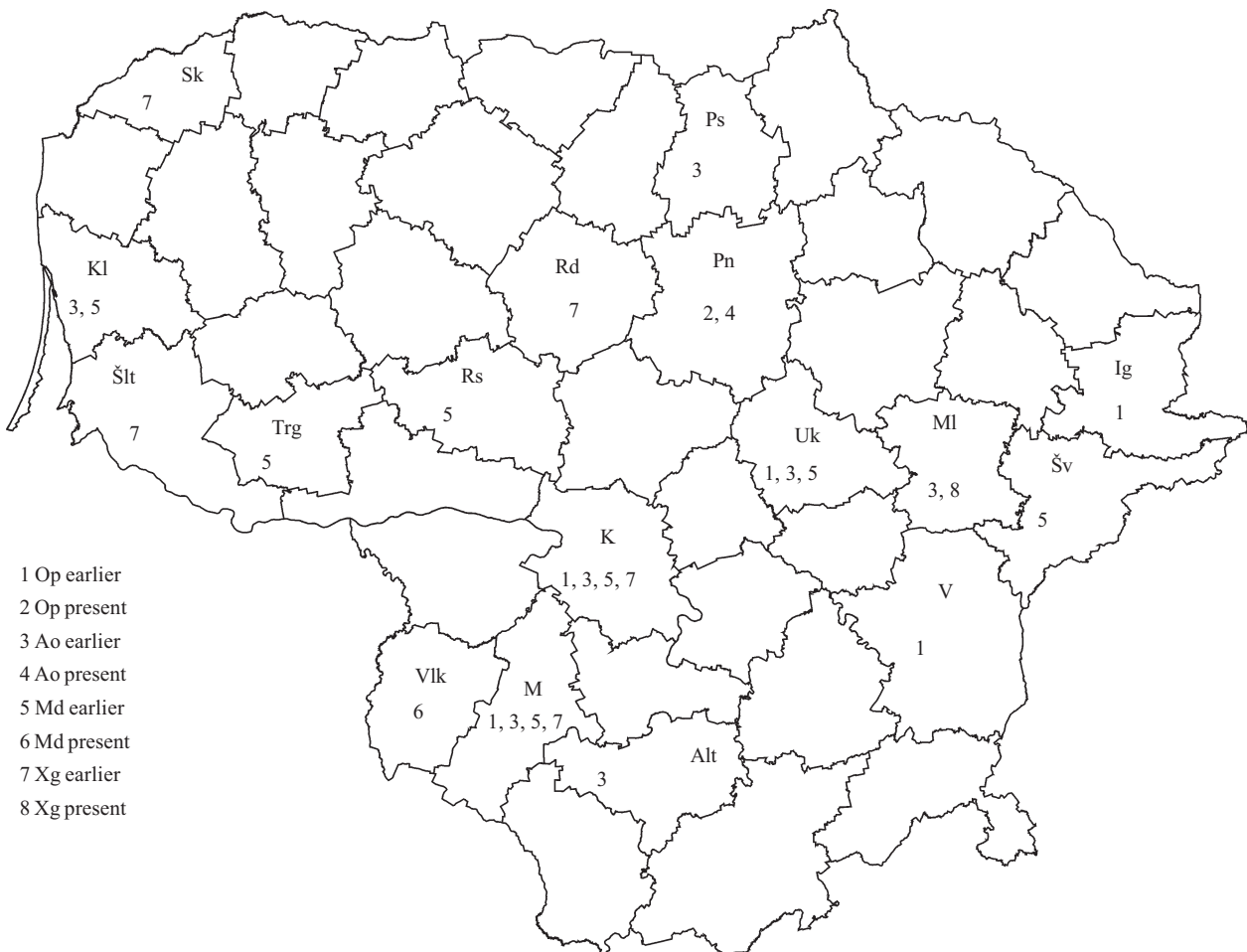


Figure 1. Distribution of *Opigena polygona* (Op), *Allophyes oxyacanthae* (Ao), *Mesapamea didyma* (Md), and *Xanthia gilvago* (Xg) in Lithuania. The data include earlier reported findings (Ivinskis 1993; Dapkus 1995; Švitra 1995; Ostrauskas 2001b; Ostrauskas *et al.* 2002) and results of the present study.



Figure 2. Distribution of *Anarsia lineatella* (Al), *Argyresthia sorbiella* (As), *Ochsenheimeria vacculella* (Ov), *Pristerognatha fuligana* (Pf), and *Myelois circumvoluta* (Mc) in Lithuania. The data include earlier reported findings (Ivinskis 1993; Ostrauskas 2001a, b; Ostrauskas *et al.* 2002) and results of the present study.

Moths were caught in 84 traps for *S. frugiperda* in the fields of 57 localities (33 administrative districts) and in nine traps for the same moth species in greenhouses of seven localities (six districts). The data are presented in Annex II.

The highest relative species frequencies were recorded for *Cucullia umbratica* (79.7%), *Coleophora artemisicolella* (74.6%), *Coleophora obscenella* (18.6%), *Plutella xylostella* (18.6%), and for the other species they were low (1.7–11.9%). Some rare for Lithuania species were caught, and a few new their distribution localities discovered (Prüffer 1947; Ivinskis 1993; Dapkus 1995; Švitra 1995; Ostrauskas 2001a, b; Ostrauskas *et al.* 2002): *Anarsia lineatella* (two localities in two administrative districts), *Argyresthia sorbiella* (2 in 2), *Ochsenheimeria vacculella* (1 in 1), *Cydia lunulana* (6 in 3), *Pristerognatha fuligana* (1 in 1), *Mesapamea didyma* (1 in 1), and *Xanthia gilvago* (1 in 1). Their distribution is illustrated in Figures 1–3. *S. frugiperda* was not trapped either in the fields or the greenhouses.

Moths were caught in 27 traps for *S. littoralis* from 24 localities of 19 administrative districts. The data are presented in Annex III.

The recorded relative species frequencies were low for *Plutella xylostella* (9.1%), *Hydraecia micacea* (9.1%), *Xestia c-nigrum* (6.8%), *Mesoligia furuncula* (4.5%), and *Amphipoea oculea* (4.5%) and even lower for the other species (2.2%). *S. littoralis* was not trapped.

CONCLUSIONS

1. The quarantine pest *Spodoptera eridania* was not recorded during the investigation in 1999, *S. frugiperda* – in 2000, and *S. littoralis* – in 2001. They have never been recorded in Lithuania.
2. Relative frequencies of *Hoplodrina octogenaria*, *H. blanda*, and *Cucullia umbratica* caught in pheromone traps for *S. eridania* and of *Cucullia umbratica*, *Coleophora artemisicolella*, *Coleophora obscenella*,



Figure 3. Distribution of *Cydia lunulana* (Cl) in Lithuania. The data include earlier reported findings (Prüffer 1947; Ivinskis 1993; Ostrauskas 2001b; Ostrauskas *et al.* 2002) and results of the present study.

and *Plutella xylostella* caught in pheromone traps for *S. frugiperda* were high in Lithuania.

3. During 1999–2001, the following rare species were trapped in Lithuania: *Anarsia lineatella* (its two new distribution localities in two new administrative districts were discovered), *Argyresthia sorbiella* (2 and 2), *Ochsenheimeria vacculella* (1 and 1), *Cydia lunulana* (6 and 3), *Myelois circumvoluta* (1 and 1), *Pristerognatha fuligana* (1 and 1), *Mesapamea didyma* (1 and 1), *Opigena polygona* (1 and 1), *Allophytes oxyacanthae* (1 and 1), and *Xanthia gilvago* (1 and 1).

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**PIETINIO DYKRINUKO (*SPODOPTERA ERIDANIA* Cr.),
KUKURŪZINIO DYKRINUKO (*S. FRUGIPERDA* Sm.) IR
AFRIKINIO DYKRINUKO (*S. LITTORALIS* Bsd.) –
NOCTUIDAE, LEPIDOPTERA – FEROMONŲ
GAUDYKLĖMIS SUGAUTI DRUGIAI LIETUVOJE
1999–2001 METAIS**

H. Ostrauskas

SANTRAUKA

Karantininės rūšys *Spodoptera eridania* Lietuvos laukuose 1999 metais, *S. frugiperda* – laukuose ir šiltnamiuose 2000 metais bei *S. littoralis* – laukuose 2001 metais nesugautos. Šie pelėdgalviai Lietuvoje apskritai neregistruoti. Gaudyklėmis su šių pelėdgalvių feromonais sugautos retos mūsų krašto drugių rūšys (*Anarsia lineatella*, *Argyresthia sorbiella*, *Ochsenheimeria vacculella*, *Cydia lunulana*, *Myelois circumvoluta*, *Pristerognatha fuligana*, *Mesapamea didyma*, *Opigena polygona*, *Allophyes oxyacanthae*, *Xanthia gilvago*), kurių paplitimas Lietuvoje papildytas naujomis vietovėmis. Nurodytos dažniausios drugių rūšys, pakliuvusios į tirtų *Spodoptera* genties pelėdgalvių feromonų gaudyklės.

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Annex I. Moths caught in pheromone traps for *Spodoptera eridania* during 1999 in Lithuania.

Family, species	Number of specimens	District	Locality	Crop	Number of traps in which moths were found	Total number of traps used
Ethmiidae						
<i>Exaeretia allisella</i> St.	1	M	Salaperaugis	various vegetables	1	1
Tortricidae						
<i>Dichrorampha simpliciana</i> Hw.	1	V	Trakų Vokė	pea, potato	1	2
<i>Dichrorampha petiverella</i> L.	1	M	Salaperaugis	various vegetables	1	1
Pyralidae						
<i>Myelois circumvoluta</i> Frc.	2	Ig	Dūkštas	various vegetables	1	1
Geometridae						
<i>Chiasmia clathrata</i> L.	1	An	Ažuožeriai	various vegetables	1	2
<i>Timandra comae</i> Sch.	1	Šr	Družai	potato, rape	1	2
	1	V	Vaidotai	potato	1	1
	1	Vr	Aukštakalnis	potato	1	2
<i>Xanthorhoe montanata</i> D. et S.	1	An	Ažuožeriai	various vegetables	1	2
Noctuidae						
<i>Diachrysis chrysitis</i> L.	1	Šv	Adutiškis	potato	1	2
<i>Macdunnoughia confusa</i> Sph.	1	Šv	Adutiškis	potato	1	2
<i>Autographa gamma</i> L.	1	Šv	Adutiškis	potato	1	2
<i>Cucullia umbratica</i> L.	2	K	Babtai	sugar beet	1	1
	1	Kl	Vėžaičiai	potato	1	1
	1	M	Trakėnai	various vegetables	1	1
	1	Sk	Aleksandrija	potato	1	1
	1	Vr	Aukštakalnis	potato	1	2
<i>Hoplodrina octogenaria</i> Gz.	1	Alt	Gluosninkai	maize	1	2
	11	Alt	Gluosninkai	sugar beet	2	2
	3	An	Ažuožeriai	various vegetables	1	2
	1	K	Raudondvaris	maize	1	1
	4	K	Babtai	sugar beet	1	1
	22	Kl	Vėžaičiai	potato	1	1
	10	L	Lazdijai	various vegetables	2	2
	7	M	Sasnavą	potato	1	1
	11	M	Salaperaugis	various vegetables	1	1
	16	M	Trakėnai	various vegetables	1	1
	2	Pr	Strielčiai	potato	1	1
	4	Šl	Kuršėnai	potato	1	1
	7	Šlė	Šalčininkai	various vegetables	1	1
	11	Šlė	Milvydai	potato	1	1
	4	Šv	Adutiškis	potato	1	2
	3	Šv	Medišionys	various vegetables	1	1
	29	Šr	Družai	potato, rape	2	2
	4	Tr	Alešiškės	potato	1	1
	6	Tr	Varliškės	stock beet	1	1
	13	Uk	Laibiškiai	potato	2	2
	12	Ut	Utena	various vegetables	1	1
	8	Ut	Užpaliai	various vegetables	1	1

Annex I continued

Family, species	Number of specimens	District	Locality	Crop	Number of traps in which moths were found	Total number of traps used
<i>Hoplodrina octogenaria</i> Gz.	1	V	Lavoriškės	potato	1	2
	7	V	Savičiūnai	potato	1	1
	8	V	Trakų Vokė	pea, potato	2	2
	3	V	Vaidotai	potato	1	1
	1	Vr	Aukštakalnis	potato	1	2
	1	Vr	Druskininkai	various vegetables	1	2
	1	Vlk	Kybartai	various vegetables	1	2
	3	Vlk	Rumokai	sugar beet	1	1
<i>Hoplodrina blanda</i> D. et S.	2	Alt	Gluosninkai	maize	2	2
	2	Alt	Gluosninkai	sugar beet	1	2
	2	An	Ažuožeriai	various vegetables	1	2
	14	Ig	Dūkštas	various vegetables	1	1
	4	K	Babtai	sugar beet	1	1
	1	K	Raudondvaris	maize	1	1
	7	Kl	Vėžaičiai	potato	1	1
	13	L	Lazdijai	various vegetables	2	2
	6	M	Salaperaugis	various vegetables	1	1
	8	M	Sasnavą	potato	1	1
	4	M	Trakėnai	various vegetables	1	1
	5	Pr	Strielčiai	potato	1	1
	3	Šl	Kuršėnai	potato	1	1
	2	Šlė	Milvydai	potato	1	1
	2	Šlė	Šalčininkai	various vegetables	1	1
	9	Šr	Družai	potato, rape	2	2
	1	Šv	Medišionys	various vegetables	1	1
	3	Tr	Alešiškės	potato	1	1
	7	Tr	Varliškės	stock beet	1	1
	8	Ut	Utena	various vegetables	1	1
	6	Ut	Užpaliai	various vegetables	1	1
	9	V	Savičiūnai	potato	1	1
	3	V	Trakų Vokė	pea, potato	2	2
10	V	Vaidotai	potato	1	1	
4	Vlk	Rumokai	sugar beet	1	1	
<i>Allophyes oxyacanthae</i> L.	1	Pn	Karsakiškis	various vegetables	1	1
	1	Ps	Narteikiai	various vegetables	1	1
<i>Mythimna pallens</i> L.	1	Alt	Gluosninkai	maize	1	2
	1	Vr	Aukštakalnis	potato	1	2
<i>Axylia putris</i> L.	2	Alt	Gluosninkai	maize	2	2
	1	Pr	Strielčiai	beans, haricot	1	1
	1	Šv	Adutiškis	potato	1	2
	1	Vlk	Kybartai	various vegetables	1	2
<i>Opigena polygona</i> D. et S.	1	Pn	Karsakiškis	various vegetables	1	1
<i>Agrotis exclamatoris</i> L.	1	Šr	Družai	potato, rape	1	2

Annex II. Moths caught in pheromone traps for *Spodoptera frugiperda* during 2000 in Lithuania.

Family, species	Number of specimens	District	Locality	Agro-landscape	Crop	Number of traps in which moths were found	Total number of traps used	
Tineidae								
<i>Nemapogon variatella</i> Cl.	1	J	Juškonys	Field	maize	1	1	
Ypsolophidae								
<i>Ochsenheimeria vacculella</i> F. v. Rsl.	1	Alt	Punia	Field	cabbage	1	3	
Plutellidae								
<i>Plutella xylostella</i> L.	2	Alt	Gluosinkai	Field	maize	2	3	
	1	Alt	Punia	Field	cabbage	1	3	
	1	J	Juškonys	Field	maize	1	1	
	3	Jr	Žindaičiai	Field	pea	2	3	
	2	M	Meškučiai	Field	cabbage	1	1	
	4	MŽ	Balėnos	Field	maize	2	2	
	6	Pl	Vatušiai	Field	cabbage	1	1	
	1	Rd	Pakalniškiai	Field	white clover	1	2	
	2	Šl	Daugėlaičiai	Field	cabbage	1	2	
	2	Šll	Šiauduva	Field	red clover	1	2	
	1	Vlk	Rumokai	Field	clover	1	2	
	Yponomeutidae							
	<i>Argyresthia sorbiella</i> Tr.	2	Tr	Kaliakiemiai	Field	potato, cabbage, onion	1	1
1		Trg	Tauragė	Greenhouse	tomato	1	1	
Depressariidae								
<i>Agonopterix heracliata</i> L.	1	Šr	Družai	Field	onion, cabbage	1	1	
<i>Depressaria daucella</i> D. et S.	1	Uk	Laibiškiai	Field	various vegetables	1	2	
Coleophoridae								
<i>Coleophora deauratella</i> Ln. et Zll.	1	Rs	Gintaučiai	Field	alfalfa, clover	1	1	
<i>Coleophora obscenella</i> H.-S.	1	Alt	Daugai	Field	cabbage	1	1	
	3	Ig	Dūkštas	Field	various vegetables	1	1	
	3	Ig	Kuzmiškė	Field	various vegetables	1	1	
	1	Kš	Šakniai	Field	potato	1	1	
	3	Ps	Levaniškis	Field	potato, stock beet	1	1	
	2	Ps	Levaniškis	Field	perennial grasses	1	1	
	1	Rk	Rokiškis	Field	potato, ornamental trees	1	1	
	34	Sk	Narvydžiai	Greenhouse	tomato	1	2	
	1	Sk	Truikiniai	Field	various vegetables	1	1	
	2	Šlč	Papiškės	Field	potato, cabbage, onion	1	1	
	2	Šlt	Tarvydai	Field	various vegetables	1	1	
	1	Šv	Medišionys	Field	various vegetables	1	1	
	<i>Coleophora artemisicolella</i> Br.	8	Alt	Gluosinkai	Field	maize	3	3
		19	Alt	Daugai	Field	cabbage	1	1
		11	Alt	Punia	Field	cabbage	2	3
		18	Ig	Dūkštas	Field	various vegetables	1	1
		5	Ig	Kuzmiškė	Field	various vegetables	1	1
9		J	Juškonys	Field	maize	1	1	
9		K	Kaniūkai	Field	sugar beet	1	1	

Annex II continued

Family, species	Number of specimens	District	Locality	Agro-landscape	Crop	Number of traps in which moths were found	Total number of traps used	
<i>Coleophora artemisicolella</i> Br.	17	Kp	Noriūnai	Field	potato	1	1	
	11	Kp	Skverbai	Field	potato	1	1	
	2	Kš	Gudiena	Field	stock beet	1	1	
	12	Kš	Šakniai	Field	potato	1	1	
	21	M	Meškučiai	Field	cabbage	1	1	
	12	M	Meškučiai	Field	onion	1	1	
	2	MI	Apankiškiai	Field	various vegetables	1	1	
	10	Mž	Balėnos	Field	maize	2	2	
	24	Pn	Breiviškiai	Field	potato, carrot	1	1	
	3	Pn	Panevėžys	Greenhouse	roses	1	1	
	9	Pn	Upytė	Field	maize	1	1	
	21	Pr	Rūdupis	Field	potato, beans	2	2	
	23	Ps	Joniškėlis	Field	potato	1	1	
	4	Ps	Levaniškis	Field	potato, stock beet	1	1	
	19	Ps	Levaniškis	Field	perennial grasses	1	1	
	5	Ps	Narteikiai	Field	potato	1	1	
	7	Rd	Pakalniškiai	Field	stock beet	3	3	
	22	Rd	Pakalniškiai	Field	white clover	1	2	
	4	Rd	Pakalniškiai	Field	red clover	1	1	
	18	Rd	Pakalniškiai	Field	maize	4	4	
	21	Rk	Bajorai	Field	potato, flowers	1	1	
	6	Rk	Rokiškis	Field	potato, ornamental trees	1	1	
	7	Rs	Gintaučiai	Field	alfalfa, clover	1	1	
	19	Rs	Saugai	Field	maize	1	1	
	19	Rs	Žaigynys	Field	cabbage, beet	1	1	
	1	Sk	Truikiniai	Field	various vegetables	1	1	
	2	Šl	Daugėlaičiai	Field	cabbage	2	2	
	11	Šlč	Papiškės	Field	potato, cabbage, onion	1	1	
	4	Šlč	Žagarinė	Field	onion, cabbage	1	1	
	15	Šv	Cirkliškis	Field	various vegetables	2	2	
	5	Šv	Medišionys	Field	various vegetables	1	1	
	7	TI	Degaičiai	Greenhouse	chrysanthemum, pink	1	1	
	8	TI	Degaičiai	Greenhouse	pelargonium, petunia	1	1	
	3	TI	Micaičiai	Greenhouse	tomato, capsicum	1	1	
	5	Tr	Kaliakiemiai	Field	potato, cabbage, onion	1	1	
	1	Uk	Laibiškiai	Greenhouse	tomato, cucumber	1	1	
	18	Vlk	Putinai	Field	maize	1	1	
	3	Vlk	Rumokai	Field	clover	2	2	
	1	Z	Degučiai	Field	various vegetables	1	1	
	24	Z	Nečeskai	Field	various vegetables	1	1	
	<i>Coleophora granulatella</i> Zll.	3	Alt	Daugai	Field	cabbage	1	1
		1	Rs	Žaigynys	Field	cabbage, beet	1	1
		11	Šlč	Papiškės	Field	potato, cabbage, onion	1	1

Annex II continued

Family, species	Number of specimens	District	Locality	Agro-landscape	Crop	Number of traps in which moths were found	Total number of traps used
<i>Coleophora granulatella</i> Zll.	1	Tr	Kaliakiemiai	Field	potato, cabbage, onion	1	1
	1	Tr	Šventininkai	Field	various vegetables	1	1
	1	Z	Degučiai	Field	various vegetables	1	1
Gelechiidae							
<i>Mentzneria lappella</i> L.	2	J	Juškonys	Field	maize	1	1
	3	J	Normainiai	Field	sugar beet	1	1
	4	Kd	Dotnuva	Field	maize	1	1
	1	Kd	Dotnuva	Field	sugar beet	1	1
	3	Kš	Šakniai	Field	potato	1	1
	1	Ps	Narteikiai	Field	potato	1	1
	6	Rd	Pakalniškiai	Field	maize	3	4
	1	Tr	Kaliakiemiai	Field	potato, cabbage, onion	1	1
<i>Bryotropha terrella</i> D. et S.	1	Šv	Medišionys	Field	various vegetables	1	1
<i>Gelechia rhombella</i> D. et S.	1	Ps	Joniškėlis	Field	potato	1	1
	1	Rk	Rokiškis	Field	potato, ornamental trees	1	1
	1	Šv	Cirkliškis	Field	various vegetables	1	2
<i>Chionodes distinctella</i> Zll.	1	Šlč	Papiškės	Field	potato, cabbage, onion	1	1
<i>Scrobipalpa atriplicella</i> F. v. Rsl.	1	Mž	Balėnos	Field	maize	1	2
	2	Rs	Saugai	Field	maize	1	1
<i>Anarsia lineatella</i> Zll.	1	Rk	Rokiškis	Field	potato, ornamental trees	1	1
	1	Rs	Gintaučiai	Field	alfalfa, clover	1	1
Tortricidae							
<i>Celypha rosaceana</i> Schl.	1	Alt	Gluosninkai	Field	maize	1	3
<i>Pristerognatha fuligana</i> D. et S.	1	Alt	Punia	Field	cabbage	1	3
<i>Rhopobota naevana</i> Hb.	1	Rk	Rokiškis	Field	potato, ornamental trees	1	1
<i>Epiblema sticticana</i> F.	1	Tl	Kalnėnai	Field	perennial grasses	1	1
<i>Cydia compositella</i> F.	1	Šll	Šiauduva	Field	red clover	1	2
<i>Cydia lunulana</i> D. et S.	1	K	Kaniūkai	Field	sugar beet	1	1
	1	Kš	Šakniai	Field	potato	1	1
	2	M	Meškučiai	Field	cabbage	1	1
	1	M	Meškučiai	Field	onion	1	1
	1	Ps	Levaniškis	Field	perennial grasses	1	1
	1	Rs	Gintaučiai	Field	alfalfa, clover	1	1
Pterophoridae	5	Vlk	Rumokai	Field	clover	2	2
	<i>Emmelina monodactyla</i> L.	3	Ps	Narteikiai	Field	potato	1
Pyralidae							
<i>Pyrausta obsoletalis</i> Mnn.	1	Šll	Šiauduva	Field	red clover	1	2
<i>Pyralis farinalis</i> L.	1	Kp	Noriūnai	Field	potato	1	1
<i>Hypsopygia costalis</i> F.	1	Rk	Bajorai	Field	potato, flowers	1	1
<i>Crambus perlella</i> Sc.	1	Z	Nečeskai	Field	various vegetables	1	1

Annex II continued

Family, species	Number of specimens	District	Locality	Agro-landscape	Crop	Number of traps in which moths were found	Total number of traps used	
Noctuidae								
<i>Cucullia umbratica</i> L.	38	Alt	Gluosninkai	Field	maize	3	3	
	5	Alt	Daugai	Field	cabbage	1	1	
	34	Alt	Punia	Field	cabbage	2	3	
	4	Ig	Dūkštas	Field	various vegetables	1	1	
	5	Ig	Kuzmiškė	Field	various vegetables	1	1	
	12	J	Juškonyš	Field	maize	1	1	
	23	J	Normainiai	Field	sugar beet	1	1	
	22	Jr	Žindaičiai	Field	pea	3	3	
	13	K	Kaniūkai	Field	sugar beet	1	1	
	8	K	Muniškiai	Field	maize	1	1	
	2	Kd	Dotnuva	Field	maize	1	1	
	6	Kd	Dotnuva	Field	sugar beet	1	1	
	8	Kp	Noriūnai	Field	potato	1	1	
	3	Kp	Skverbai	Field	potato	1	1	
	10	Kš	Gudiena	Field	stock beet	1	1	
	6	Kš	Šakniai	Field	potato	1	1	
	12	M	Meškučiai	Field	cabbage	1	1	
	7	M	Meškučiai	Field	onion	1	1	
	8	MI	Svistapolis	Field	various vegetables	1	1	
	12	Mž	Balėnos	Field	maize	2	2	
	4	Mž	Balėnos	Field	perennial grasses	1	1	
	13	Pl	Vatušiai	Field	onion	1	1	
	5	Pl	Vatušiai	Field	cabbage	1	1	
	4	Pn	Breiviškiai	Field	potato, carrot	1	1	
	1	Pr	Rūdupis	Field	potato, beans	1	2	
	3	Ps	Joniškėlis	Field	potato	1	1	
	1	Ps	Levaniškis	Field	perennial grasses	1	1	
	15	Ps	Narteikiai	Field	potato	1	1	
	17	Rd	Pakalniškiai	Field	maize	4	4	
	11	Rd	Pakalniškiai	Field	stock beet	3	3	
	11	Rd	Pakalniškiai	Field	white clover	2	2	
	10	Rd	Pakalniškiai	Field	red clover	1	1	
	5	Rk	Bajorai	Field	potato, flowers	1	1	
	6	Rk	Rokiškis	Field	potato, ornamental trees	1	1	
	10	Rs	Gintaučiai	Field	alfalfa, clover	1	1	
	6	Rs	Saugai	Field	maize	1	1	
	<i>Cucullia umbratica</i> L.	7	Rs	Žaigynys	Field	cabbage, beet	1	1
		19	Šl	Daugėlaičiai	Field	cabbage	2	2
		4	Šlč	Papiškės	Field	potato, cabbage, onion	1	1
		1	Šlč	Žagarinė	Field	onion, cabbage	1	1
		13	Šll	Šiauduva	Field	red clover	2	2
		1	Šlt	Tarvydai	Field	various vegetables	1	1
2		Šr	Družai	Field	onion, cabbage	1	1	
16		Šv	Cirkliškis	Field	various vegetables	2	2	
3		Tl	Kalnėnai	Field	perennial grasses	1	1	

Annex II continued

Family, species	Number of specimens	District	Locality	Agro-landscape	Crop	Number of traps in which moths were found	Total number of traps used	
<i>Cucullia umbratica</i> L.	7	Tr	Kaliakiemiai	Field	potato, cabbage, onion	1	1	
	3	Tr	Šventininkai	Field	various vegetables	1	1	
	8	Uk	Laibiškiai	Field	various vegetables	2	2	
	1	Uk	Laibiškiai	Greenhouse	tomato, cucumber	1	1	
	3	Ut	Utena	Field	various vegetables	1	1	
	10	Vlk	Putinai	Field	maize	1	1	
	24	Vlk	Rumokai	Field	clover	2	2	
	7	Vlk	Slabadaai	Field	maize	1	1	
	6	Z	Degučiai	Field	various vegetables	1	1	
	10	Z	Nečeskai	Field	various vegetables	1	1	
	<i>Cucullia tanacetii</i> D. et S.	3	Šr	Družai	Field	potato, cabbage, onion	1	1
	<i>Hoplodrina octogenaria</i> Gz.	1	Jr	Žindaičiai	Field	pea	1	3
	<i>Cosmia trapezina</i> L.	1	Kš	Šakniai	Field	potato	1	1
1		Ml	Apankiškiai	Field	various vegetables	1	1	
<i>Xanthia icteritia</i> Hfn.	1	Alt	Punia	Field	cabbage	1	3	
<i>Xanthia gilvago</i> D. et S.	1	Ml	Apankiškiai	Field	various vegetables	1	1	
<i>Mesapamea didyma</i> Esp.	1	Vlk	Rumokai	Field	clover	1	2	
<i>Discestra trifolii</i> Hfn.	1	Rd	Pakalniškiai	Field	stock beet	1	3	
<i>Axylia putris</i> L.	1	Mž	Balėnos	Field	maize	1	2	
	1	V	Vilnius	Greenhouse	tomato	1	1	
<i>Xestia baja</i> D. et S.	1	Kr	Tinteliai	Field	various vegetables	1	1	
	1	Kr	Kartena	Field	various vegetables	1	1	
	2	Ml	Apankiškiai	Field	various vegetables	1	1	
	2	Sk	Truikiniai	Field	various vegetables	1	1	
	1	Sk	Šakaliai	Field	various vegetables	1	1	
	1	Šlt	Laučiai	Field	various vegetables	1	1	
	1	Šlt	Tarvydai	Field	various vegetables	1	1	
	1	Šlt	Juknaičiai	Field	various vegetables	1	1	
	1	Šv	Cirkliškis	Field	various vegetables	1	2	
	1	Ut	Utena	Field	various vegetables	1	1	
	<i>Agrotis exclamationis</i> L.	1	Kš	Šakniai	Field	potato	1	1
	<i>Agrotis clavis</i> Hfn.	1	Rs	Gintaučiai	Field	alfalfa, clover	1	1

Annex III. Moths caught in pheromone traps for *Spodoptera littoralis* during 2001 in Lithuania.

Family, species	Number of specimens	District	Locality	Crop	Number of traps in which moths were found	Total number of traps used
Tineidae						
<i>Monopis monachella</i> Hb.	1	Ig	Dūkštas	various vegetables	1	1
Plutelliidae						
<i>Plutella xylostella</i> L.	1	Alt	Alovė	potato	1	1
	1	Rs	Žaiginys	alfalfa, maize, cabbage, haricot	1	1
	1	Sk	Luknės	potato	1	1
	1	Vlk	Putinai	potato	1	2
Depressariidae						
<i>Agonopterix heracliiana</i> L.	1	Tl	Janapolė	haricot, cabbage, cucumber	1	1
Oecophoridae						
<i>Hofmannophila pseudospretella</i> St.	1	V	Trakų Vokė	potato, cabbage, cucumber, haricot	1	1
Gelechiidae						
<i>Gelechia rhombella</i> D. et S.	1	Tl	Janapolė	potato	1	1
<i>Scrobipalpa atriplicella</i> F. v. Rsl.	3	Rk	Miegonys	various vegetables	1	1
Tortricidae						
<i>Endothenia ericetana</i> Hmph. et Wst.	1	Trg	Griežpelkiai	cabbage	1	1
<i>Celypha rosaceana</i> Schl.	1	Šlt	Tarvydai	potato	1	1
<i>Dichrorampha simpliciana</i> Hw.	14	V	Daniliškės	potato	1	1
Pyralidae						
<i>Plodia interpunctella</i> Hb.	1	Kš	Žiežmariai	various vegetables	1	1
<i>Scoparia pyralella</i> D. et S.	12	Rs	Žaiginys	alfalfa, maize, cabbage, haricot	1	1
<i>Chrysoteuchia culmella</i> L.	9	Rs	Žaiginys	alfalfa, maize, cabbage, haricot	1	1
<i>Agriphila selasella</i> Hb.	1	Alt	Alovė	potato	1	1
<i>Catoptria permutatellus</i> H.-S.	2	Rs	Žaiginys	alfalfa, maize, cabbage, haricot	1	1
<i>Udea lutealis</i> Hb.	4	Ig	Kaniūkai	clover	1	1
<i>Loxostege sticticalis</i> L.	1	K	Muniškiai	carrot, potato, red beet	1	1
Nymphalidae						
<i>Inachis io</i> L.	1	Šlt	Piktupėnai	potato	1	2
<i>Aglais urticae</i> L.	1	M	Triobiškiai	maize	1	2
Noctuidae						
<i>Cucullia umbratica</i> L.	1	Kl	Dreverna	potato	1	1
<i>Parastichtis ypsilon</i> D. et S.	1	Šr	Družai	cabbage	1	1
<i>Apamea</i> sp.	2	Šlt	Piktupėnai	potato	1	2
<i>Apamea lateritia</i> Hfn.	1	M	Triobiškiai	maize	1	2
<i>Mesoligia furuncula</i> D. et S.	1	Pn	Ragainė	various vegetables	1	1
	1	V	Trakų Vokė	potato, cabbage, cucumber, haricot	1	1
<i>Mesapamea secalis</i> L.	1	Šlt	Piktupėnai	potato	1	2
<i>Amphipoea oculea</i> L.	1	Alt	Alovė	potato	1	1
	1	M	Guobai	maize	1	2
<i>Hydraecia micacea</i> Esp.	2	Alt	Alovė	potato	1	1
	1	Ml	Juodiškiai	various vegetables	1	1
	2	Pn	Ragainė	various vegetables	1	1
	1	Sk	Luknės	potato	1	1
<i>Lacanobia oleracea</i> L.	1	Tr	Šventininkai	potato	1	1
<i>Tholera cespitis</i> D. et S.	1	Ut	Radeikiai	various vegetables	1	1
<i>Xestia c-nigrum</i> L.	1	Alt	Alovė	potato	1	1
	2	Alt	Daugai	potato, cucumber, haricot	1	1
	2	M	Guobai	maize	1	2