ABS ACTA BIOLOGICA SIBIRICA
A journal on the biodiversity of Siberia and the adjacent lands

Acta Biologica Sibirica 12: 911–980 (2026)
doi: 10.5281/zenodo.21758807
http://journal.asu.ru

RESEARCH ARTICLE

Enhancing knowledge of non-target tortricid fauna via pheromone monitoring of the quarantine fruit pest *Grapholita molesta* (Lepidoptera: Tortricidae) in Russia

Margarita G. Kovalenko[1], Evgeny N. Akulov[2], Julia A. Lovtsova[1], Svetlana V. Nedoshivina[3], Irina A. Mikhailova[4], Natalia N. Karpun[5, 6], Natalia I. Kirichenko[1, 4, 7]

1 *All-Russian Plant Quarantine Center, Bykovo, Moscow Oblast, Russia*
2 *Centre for Agriproducts Quality Assurance, Krasnoyarsk Branch, Krasnoyarsk, Russia*
3 *Zoological Institute of Russian Academy of Sciences, St. Petersburg, Russia*
4 *Sukachev Institute of Forest, Siberian Branch of the Russian Academy of Sciences, Federal Research Center "Krasnoyarsk Science Center SB RAS", Krasnoyarsk, Russia*
5 *Saint Petersburg State Forest Technical University, St. Petersburg, Russia*
6 *Research Centre the Subtropical Scientific Centre of the Russian Academy of Sciences, Sochi, Russia*
7 *Institute of Ecology and Geography, Siberian Federal University, Krasnoyarsk, Russia*

Corresponding authors: Natalia I. Kirichenko (nkirichenko@yahoo.com)

Academic editor: R. Yakovlev | Received 22 April 2026 | Accepted 14 July 2026 | Published 4 August 2026

http://zoobank.org/DEDF9539-9939-4AC3-AE4D-B45D3F46BE97

Citation: Kovalenko MG, Akulov EN, Lovtsova JA, Nedoshivina SV, Mikhailova IA, Karpun NN, Kirichenko NI (2026) Enhancing knowledge of non-target tortricid fauna via pheromone monitoring of the quarantine fruit pest *Grapholita molesta* (Lepidoptera: Tortricidae) in Russia. Acta Biologica Sibirica 12: 911–980. https://doi.org/10.5281/zenodo.21758807

Abstract

The oriental fruit moth, *Grapholita molesta* (Busck, 1916), is an East Asian fruit pest that has spread to both hemispheres causing significant economic losses. In some countries, including Russia, it is considered a quarantine species which occurrence and spread are monitored using pheromone traps. However, these traps also attract or accidentally capture other tortricid moths. Here we present the first comprehensive overview of tortricids detectable in traps baited with the synthetic sex pheromone of *G. molesta*. During 15 years (2010–2019 & 2021–2025) we conducted field studies in 21 Russian administrative regions to identify non-target tortricids during *G. molesta* monitoring. Additionally, we performed a literature search for Eurasia to document tortricid species caught in traps with the syn-

thetic pheromone of *G. molesta*. Based on our observations and literature data, altogether 117 tortricid species have been recorded in *G. molesta* pheromone traps in Eurasia. Our Russian records accounted 57 species (over 45,000 individuals), of which only 27 have been previously reported in the literature, and 30 species (i.e., 53%) are recorded for the first time from *G. molesta* pheromone traps. Three species – *Grapholita funebrana* and *Cnephasia stephensiana* (caught in 13 regions each) and *Grapholita inopinata* (nine regions), previously known from Russia, were the most common species present in the traps across the country in our study. Nineteen species represent new regional records in Russia, including *Pammene luculentana* (new to the European part of Russia), *Pammene luedersiana* (new to the Asian part of Russia and the Asian continent), *Enarmonia minuscula* – new to Siberia, and 15 species new to administrative regions of the country. This article highlights how pheromone monitoring of *G. molesta* can document non-target species – their abundance and occurrence frequency – and uncover species previously unknown in Russian regions.

Keywords
Pheromone monitoring, oriental fruit moth, non-target species, diversity, abundance, regularity, novel regional records, pests, Russia, Europe, Asia

Introduction

The oriental fruit moth *Grapholita molesta* (Busck, 1916) (Lepidoptera: Tortricidae) is a pest affecting a wide range of economically important fruit crops – peaches, apples, quinces, pears, plums, cherries, apricots, and nectarines (Rosales: Rosaceae) (Hari & Penzes 2010; Witzgall et al. 2010; Amat et al. 2021). Recently it was found attacking a phylogenetically distant fruit plant, *Litchi chinensis* (Sapindaceae: Sapindales), in Brasil (Souza et al. 2023).

The economic impact of *G. molesta* is considerable: in heavily infested orchards, yield losses can be significant (from 20 to 90% depending on crop and management practices), and global economic damage is estimated in millions of dollars annually. Thus, as a consequence, infestations of *G. molesta* are associated with substantial agricultural losses and increased management costs in fruit-producing regions worldwide (Reis et al. 1988; Kanga et al. 2003; Anon 2014; Ma et al. 2023).

Native to East Asia, *G. molesta* is believed to originate from China (Wei et al. 2015; Yang et al. 2016), from where it has spread extensively through international trade and the movement of plant material. Over the past century, the species invaded North and South America, Europe, Africa, and Oceania (Danilevsky & Kuznetsov 1968; Shutova 1980; Byun et al. 2012; Kirk et al. 2013; Biosecurity Australia 2026; Biosecurity New Zealand 2026; EPPO 2026), demonstrating a strong capacity for adaptation to diverse climatic conditions. Its invasive potential remains high, with continued detections in new areas and expansion within previously colonized regions (Akulov et al. 2013).

In several countries, including Russia, *G. molesta* is classified as a quarantine pest, necessitating strict phytosanitary control and monitoring (Federal Service for Veterinary and Phytosanitary Supervision 2025, 2026). One of the primary tools

for detection and population assessment is the use of pheromone traps baited with synthetic sex pheromone of *G. molesta*. Such monitoring programs are widely used in Europe, North America, and Asia, where they have proven to be highly effective for early detection, population dynamics studies, and decision-making in integrated pest management systems (Akulov et al. 2013; Knight et al. 2015; Preti et al. 2020; Kim & Heo 2026).

At the same time, pheromone-based monitoring may generate valuable by-catch data: traps designed for *G. molesta* frequently capture non-target tortricid species, some of which may respond to similar or shared pheromone components (Mizukoshi 2006; Jung et al. 2012). This side effect provides an additional opportunity to study the diversity, distribution, and phenology of related Tortricidae species (Velcheva 2000; Hrudova 2003; Akulov & Kirichenko 2014; Zheng et al. 2016; Jakubikova et al 2016; Pražanova & Šefrova 2024).

In Russia, monitoring of *G. molesta* using pheromone traps is carried out across regions, especially where commercial fruit production is concentrated (Shutova 1980; Abasov & Atanov 2011; Akulov et al. 2013; Akulov & Kirichenko 2014). While performing monitoring of *G. molesta* (Akulov et al. 2013, 2014, 2025), we kept sampling and documenting associated tortricids in pheromone traps, which has provided new insights into species composition and distribution.

Thus, in the present study we provide a comprehensive review of tortricid species recorded in *G. molesta* pheromone traps in Russia over the last 15 years, integrating our data with published records from Eurasia (mostly European countries). We discuss the implications of pheromone monitoring for exploring non-target tortricid fauna. Additionally, we report novel regional records and assess their relative abundance, thereby contributing to a broader understanding of tortricid biodiversity in agroecosystems.

Materials and methods

Study period and regions in Russia. Our study was conducted in Russia during 2010–2025 (except 2020, due to COVID-19 restrictions). Overall, 21 administrative regions were monitored (listed in an approximate order from west to east): Smolensk (study year 2025), Moscow (2025), Rostov (2025) Oblasts, Stavropol (2021), Krasnodar Krais (2025), Kirov (2023) Oblast, Chuvashia (2025), Udmurtia (2024) Republics, Perm Krai (2023), Orenburg (2023), Kemerovo (2021), Omsk (2022), Tomsk (2021), Novosibirsk Oblasts (2021), Altai Krai (2022), Altai Republic (2022), Krasnoyarsk Krai (2010–2018), Khakassia Republic (2011, 2025), Irkutsk Oblast (2023), Buryatia Republic (2024), Primorsky Krai (2019). The details on sampled points and dates are given in the list of collected material in the species essays below.

We followed the administrative-geographical zoning of the country in accordance to the system given in the Catalogue of Lepidoptera of Russia (Sinev et al. 2019). This edition and its newest online version (Catalogue 2026) provide the

most up-to-date species distribution data for the country. We covered the following 15 administrative-geographical zones, i.e. region 7 – European southern taiga region (studies administrative units: Udmurtia Republic, Kirov Oblast); 8 – European Central region (Smolensk and Moscow Oblasts); 10 – Middle Volga region (Chuvashia Republic); 11 – Volga-Don region (Rostov Oblast); 13 – West Caucasus region (Stavropol and Krasnodar Krais); 16 – Middle Ural region (Perm Krai); 17 – South Ural region (Orenburg Oblast); 19 – Middle Ob region (Tomsk Oblast); 20 – South-West Siberian region (Omsk Oblast, Altai Krai – the Kulunda Steppe only); 22 – Krasnoyarsk region (Krasnoyarsk Krai, Khakassia Republic); 23 – Pre-Altai region (Kemerovo and Novosibirsk Oblasts, Altai Krai); 24 – Gorno-Altai region (Altai Republic); 26 – Predbaikalie region (Irkutsk Oblast); 27 – Pribaikalie region (Buryatia Republic); 40 – Primorsky region (Primorsky Krai) (Fig. 1).

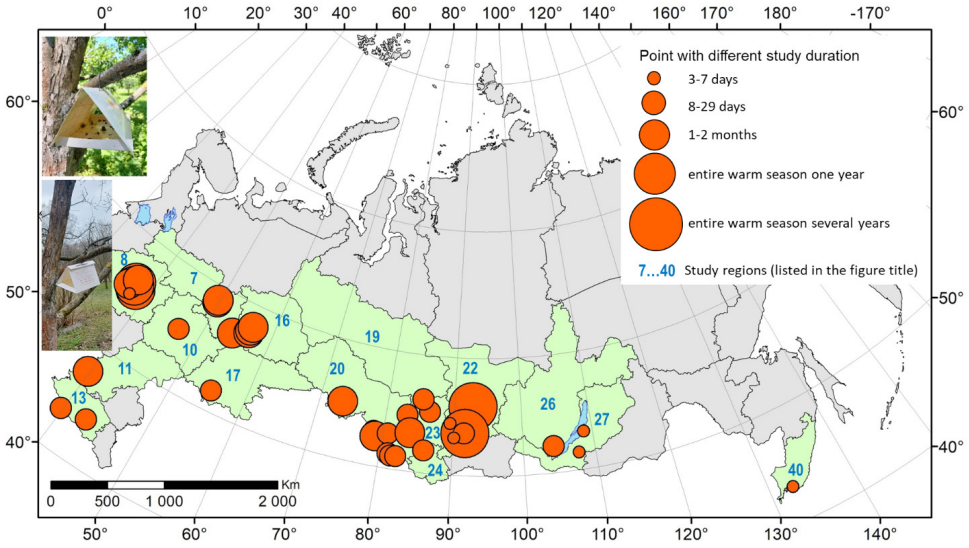

Figure 1. The study regions in Russia in 2010–2025. The regions colored in green involved in the study: region **7** – European southern taiga region; **8** – European Central Region; **10** – Middle Volga region; **11** – Volga-Don region; **13** – West Caucasus region; **16** – Middle Ural region; **17** – South Ural region; **19** – Middle Ob region; **20** – South-West Siberian region; **22** – Krasnoyarsk region; **23** – Pre-Altai region; **24** – Gorno-Altai region; **26** – Predbaikalie region; **27** – Pribaikalie region; **40** – Primorsky region.

Field sampling. The delta-shape pheromone traps with stick inner surface produced by the All-Russian Plant Quarantine Center (VNIIKR) were involved in the study. As an attractant, a synthetic sex pheromone of the oriental codling moth *G. molesta* (i.e., the composition of Z8-dodecenyl acetate, E8-dodecenyl acetate, and Z8-dodecenol) was used. The traps were deployed on fruit trees (at a height up to 2 m) in orchards, botanical gardens, private gardens, planting at dachas etc. Overall, 41 localities were surveyed (Fig. 1, orange circles) in 15 administrative-geographical

zones. In each locality, from one to five pheromone traps were placed. The period of trapping varied from three days up to the whole vegetation period (i.e., from late April to late October) and during several years (Fig. 1). In the latter case, the traps were replaced every two weeks. Long-term observations were carried out in mother regions of some coauthors, i.e. in Moscow Oblast (whole vegetation season of 2025) and in Krasnoyarsk Krai (vegetation seasons of 2010–2018 and 2021–2024). Overall, 2658 pheromone traps were used in the study. The pheromone traps with captures insects (glued to the inner surface of the traps) were transported to All-Russian Plant Quarantine Center (FGBU 'VNIIKR', Bykovo, Moscow Oblast) and its former branch in Krasnoyarsk for identification.

Data analysis, species identification, photographing. Species identification was performed on male genitalia and/or wing pattern and coloration. The wings were studied only in the individuals which stayed on the glued surface of traps by the dorsal side upwards. In most cases, the abdomens of males were detached for genital study. Male genitalia were prepared according to described methods (Golub et al. 2021; Kovalenko et al. 2024)

The moth specimens were photographed with a Canon EOS 6D digital SLR camera (Japan, Canon) with a Canon MP-E 65 mm f/2.8 1-5X Macro lens (Japan, Canon). Images of the genitalia structures were taken using hardware and software complex based on a stereo microscope Nexcope NSZ818 (China, Nexcope). In both cases, stacking approach was applied, with up to 180 frames taken at different focal planes. These image stacks were processed in the software Zerene Stacker (Version 1.04 Build T2024-11-18-1210). Resultant images were further corrected in Adobe Photoshop 2021.

Species classification. The species documented in Russia were classified using two parameters: species abundance (A) and regularity in catches (R). Species abundance was assessed as a maximum number of individuals caught in the trap over a two-week period during the study period. Following categories were used for abundance: A – mass abundance (75 individuals or more); B – intermediate abundances (from 25 to 74 individuals); C – low abundance (from 10 to 24 individuals); D – extremely low abundance (less than 10 individuals); E – unspecified abundance category (for congeneric species, which many specimens had shabby or damaged wings in the traps and which males were tricky to distinguish by genitalia characters from congeners. Thus, it was not possible to reliably estimate the abundance of such species).

Species regularity in catches: 1 – regular species (those detected in at least three different regions of its range, in different dates and years; for widespread species, the records had to be frequent from both the European and Asian parts of its range; for narrow-range species, the records had to be frequent in one locality within the species range and the species had to be detected in different years, or if survey in a region was conducted for only one year, the species had to be detected frequently during its flight period); 2 – irregular species (those detected at a moderate frequency in one to two regions of its range; widespread species felt in this category

if they were detected in more than two regions of its range, but only in the European or Asian parts); 3 – rare species (those detected onse or twice during whole observation period in one-two localities).

Due to the heterogeneity of the study periods in different regions, a comparative analysis of quantitative species indicators between regions was not performed.

Literature review. We analyzed available literature on capturing tortricids in the traps with the synthetic sex pheromone of *G. molesta* in Europe and Asia, including early studies performed in the Russian Federation. The literature search was conducted on the Internet (primarily ResearchGate database) and in the libraries of various scientific organizations. As a result of the literature review, we took into account all non-target tortricids documented in the traps with *G. molesta* pheromone retrieved from various literature sources (Chambón & Daguilar 1974; Sziraki 1978; Hrdý et al. 1979a, 1979b, 1989, 1994; Rozinskaya 1980; Dulo & Shvanda 1980; Kipiani 1980; Kurbatov 1980; Smetnik 1980; Arutyunova 1980; Komarova et al. 1983; Popovich 1984; Gummel 1988; Rubio et al. 1990; Kudina & Misyurenko 1991; Ostrauskas 1999; Velcheva 2000; Hrudova 2003, 2005; Mizukoshi 2003, 2006; Tanaka et al. 2007; Olenici, et al. 2007; Hari & Penzes 2010; Danilenko & Pimenov 2015, 2017; Zheng et. al. 2017; Jakubikova et al. 2016; Pražanová & Šefrová 2024).

The species list of non-targeted tortricids was compiled and compared with the species list built on our data obtained across Russia for the last 15 years (2010–2025). The number of common species (in our records and literature), the number of species recorded only in literature but not in our observations, and the number of catches in study were estimated. We defined the species novelty for the regions of Russia though checking the most updated data on the species ranges in the Catalogue of Lepidoptera of Russia (Sinev et al. 2019).

Results

1. Non-targeted tortricids captured in Russia in 2010–2019 & 2021–2025

1.1. Taxonomic analysis

During the 15-year-study which was performed in 21 regions of Russia, altogether 45,676 specimens of non-target species of the family Tortricidae were captured in the traps baited with the synthetic sex pheromone of *G. molesta*. They were identified to 57 species (Table 1), belonging to two subfamilies and seven tribes: Cnephasini, Archipini (Tortricinae subfamily), Lobesiini, Eucosmini, Enarmoniini, Olethreutini, and Grapholitini (Olethreutinae subfamily) (Fig. 2).

The Grapholitini tribe was dominant in terms of species diversity in our catches (24 species, 42% of the total number of species caught in our traps) (Fig. 2). It was followed by Olethreutini (13 species, 23%), Eucosmini (11 species, 19%), Archipini (4 species, 7%), Enarmoniini (3 species, 5%), Lobesiini and Cnephasini (by 1 species, or 2% each).

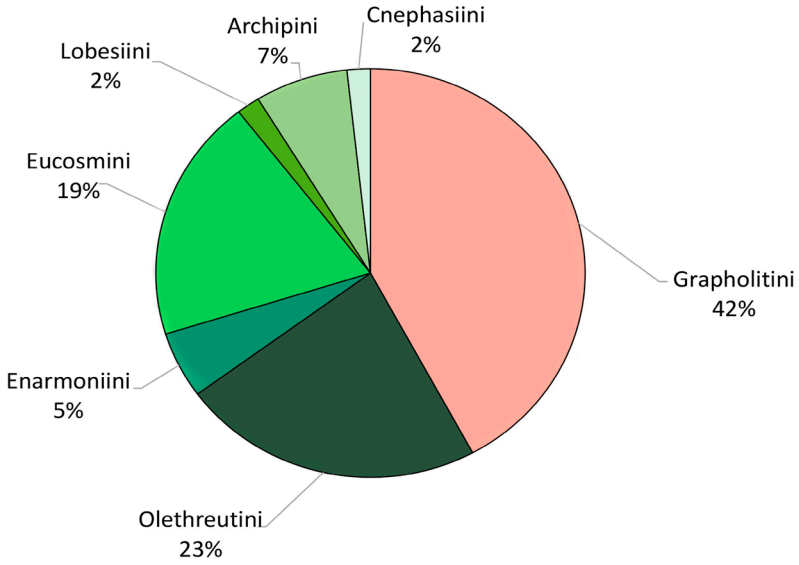

Figure 2. The ratio of tortricid species from different tribes collected from the traps baited with the synthetic sex pheromone of *Grapholita molesta* in Russia in 2010–2019 & 2021–2025.

1.2. Species categorization

Grapholita inopinata, *G. funebrana*, and *Cnephasia stephensiana* were the most abundant species in our catches. They were detected in most studied regions of Russia regularly and, thus, they were assigned to the category A1 (Table 1).

The following six species, *Grapholita rosana*, *G. andabatana*, *Pammene obscurana*, *P. gallicana*, *P. insulana*, and *P. luculentana*, were classified as regular species with moderate abundance (B1) in catches. We also tentatively assigned *Pammene blockiana*, for the first time detected in Russia in 2025 (Kovalenko et al. 2025), to the cahegory B1, a species with moderate abundance and regular presence in catches. The following species were attributed to the category C1 (low abundance and regular presence in the catches): *Grapholita janthinana*, *G. tenebrosana*, *Celypha rosaceana*, *Epiblema scutulana*, *E. cirsiana*, and to the category D1 (extremely low abundance and regular presence in the catches): *Pammene aurana*, *P. luedersiana*, *P. fasciana*, *P. suspectana*, *P. argyrana*, and *Apotomis infida*.

The remaining 35 species were assigned to the categories of low to extremely low abundance and irregular or rare presence in catches (i.e., the categories C2, D2, D3). Two tortricids (*Eucosma apocrypha* and *E. clarescens*) were assigned to the cahegory E2 with unspecified abundance and irregular presence in the catches.

The tortricids of the category D3 (species with extremely low abundance and rare catches) dominated in the catches (42% of all species caught in Russia during 15-year period) (Fig. 3).

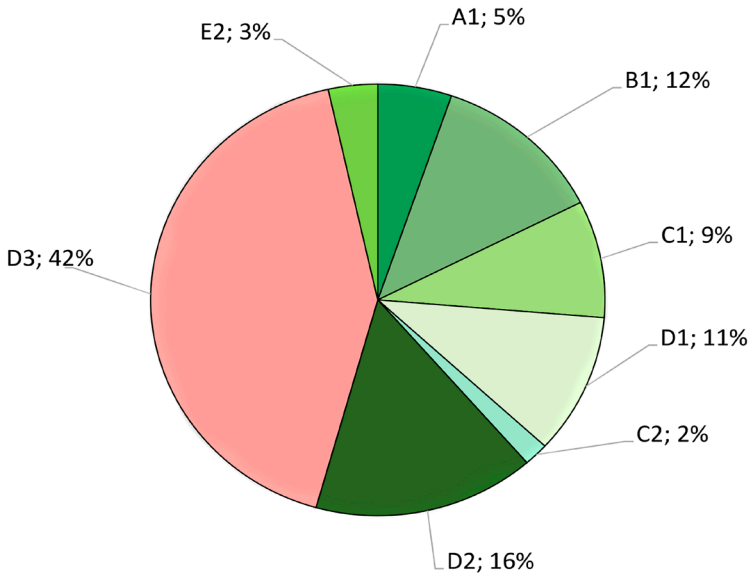

Figure 3. The ratio of tortricids from different categories, as per species abundance and regularity in catches, in the traps baited with the synthetic sex pheromone of *Grapholita molesta* in Russia in 2010–2019 & 2021–2025. Species categories: A1 – mass abundance and regular presence in catches; B1 – intermediate abundance and regular presence in catches; C1 – low abundance but regular presence in catches; D1 – extremely low abundance but regular presence in catches; C2 – low abundance and irregular presence in catches; D2 – extremely low abundance and irregular presence in catches; D3 – extremely low abundance and rare presence in catches; E2 – unspecified abundance and irregular presence in catches.

They were followed by the species from the following categories: D2 – species with extremely low abundance and irregular catches (16%); B1 – species with intermediate abundance and regular catches (12%); D1 – species with extremely low abundance but regular catches (11%); C1 – species with low abundance but regular catches (9%); A1 – species with mass abundance and regular catches (5%), E2 – species with unspecified abundance and irregular catches (3%); C2 – species with low abundance and irregular catches (2%).

1.3. Novel records

Overall, 30 out of the 57 tortricid species recorded in *G. molesta* traps were documented for the first time (i.e., they had never previously been reported in traps baited with synthetic sex pheromone of this pest in the literature) *Ancylis badiana*, *A. obtusana*, *Argyroploce roseomaculana*, *Clepsis rurinana*, *Celypha flavipalpana*, *Cydia pactolana*, *Dichrorampha aeratana*, *D. simpliciana*, *Enarmonia minuscula*,

Epiblema sarmatana, *Epinotia cinereana*, *Eucosma apocrypha*, *Eu. clarescens*, *Eu. balatonana*, *Eu. cana*, *Eu. metzneriana*, *Eu. porphyrana*, *Grapholita cotoneastri*, *Gypsonoma minutana*, *Lobesia reliquana*, *Olethreutes captiosanus*, *Orthotaenia undulana*, *Pammene clanculana*, *P. obscurana*, *P. luculentana*, *P. luedersiana*, *Phiaris dissolutana*, *Pristerognatha penthinana*, *Ptycholoma lecheana*, and *Syndemis musculana*. Thus, such species account 53% of all tortricid species captured in *G. molesta* traps during our study in Russia. The most frequently captured species were *Grapholita inopinata* (recorded in nine regions of Russia), *Grapholita funebrana* and *Cnephasia stephensiana* (in 13 regions each).

Among the non-targeted tortricids, 18 out of 57 species (33%) were new to 12 regions of Russia (Fig. 4). The largest number of new records came from three regions: 7 tortricids were recorded as new species for Krasnoyarsk Krai (region 22), 7 species were new for the Middle Ural region (region 16), and six species were new for the European southern taiga (region 7) (Fig. 4). In the remaining eight regions, between one to four species represented novel regional records.

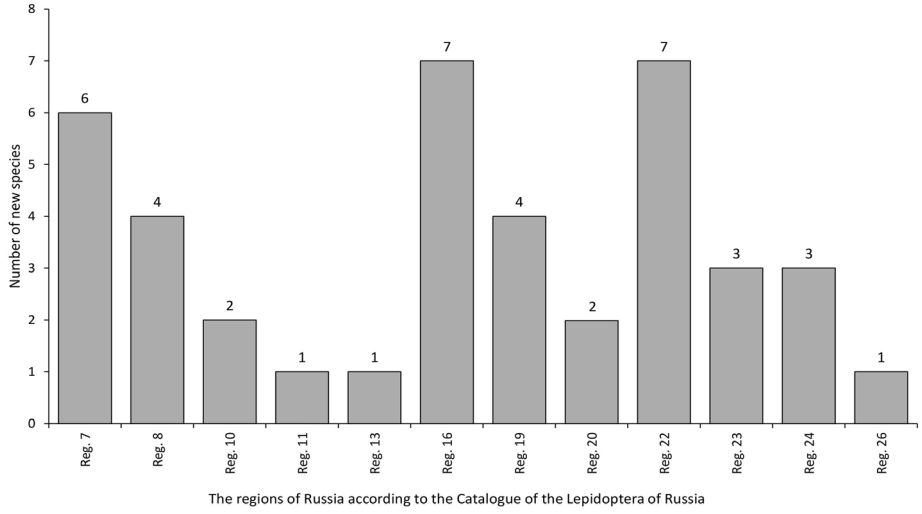

Figure 4. Number of species representing new records for the regional fauna in Russia. Regions (listed in an approximate order from west to east): Reg. 7 – European southern taiga region; Reg. 8 –European Central Region; Reg. 10 – Middle Volga region; Reg. 11 – Volga-Don region; Reg. 13 – West Caucasus region; Reg. 16 – Middle Ural region; Reg. 19 – Middle Ob region; Reg. 20 – South-West Siberian region; Reg. 22 – Krasnoyarsk region; Reg. 23 – Pre-Altai region; Reg. 24 – Gorno-Altai region; Reg. 26 – Predbaikalie region. Note that the total number of species in the graph exceeds 19 (the number of novel regional records in our study), as the same species was sometimes new to more than one region.

Among 18 novel tortricid species, three species were recorded for the first time in the macroregions of Russia (European or Asian parts) or in the Asian continent in whole.

Pammene luculentana represents a new record for European Russia based on our catches in Smolensk Oblast (European Central region, region 8) and the Chuvash Republic (Middle Volga region, region 10). Notably, this species is also new for Krasnoyarsk Krai (region 22), where it was found in significant numbers in pheromone traps and was assigned to category B1, whereas its abundance in European Russia was extremely low. *Pammene luedersiana* is a new record for the Asian part of Russia based on catches in Krasnoyarsk and Minusinsk (Krasnoyarsk Krai, region 22), which also represents the first species documentation for Asia as a whole. In addition, this species was recorded in our catches from several localities in European Russia, specifically in Moscow and Smolensk Oblasts (region 8) and the Chuvash Republic (region 10). *Enarmonia minuscula* is a new record for Siberia based on our catches in Krasnoyarsk and Minusinsk (Krasnoyarsk Krai, region 22).

The remaining 16 species are not new to the macroregions of Russia (i.e., the European or Asian parts), but they represent novel records for specific regions within these macroregions (Table 1; also see species essays). These include *Grapholita funebrana*, *G. rosana*, *G. janthinana*, *G. andabatana*, *G. tenebrosana*, *Pammene gallicana*, *P. obscurana*, *P. aurana*, *P. insulana*, *P. clanculana*, *P. suspectana*, *Celypha rosaceana*, *Apotomis infida*, *Argyroploce roseomaculana*, *Epiblema scutulana*.

The records of *Pammene blockiana*, a species new to Russia, and *Grapholita inopinata*, a species new to European Russia and several regions of Asian Russia, were published in our recent studies (Akulov et al. 2025; Kovalenko et al. 2025). Because both tortricid species were also captured as non-target species in traps baited with the synthetic pheromone of *G. molesta* during our monitoring in Russia, we mention them in the present paper; however, they are not listed as novel records.

Table 1. Non-target tortricid species detected in traps baited with the synthetic sex pheromone of *G. molesta* in Russia from 2010–2018 & 2021–2025. Species recorded for the first time in traps with the *G. molesta* pheromone are highlighted in bold

No	Species	Distribution in Russia – regions (indicated by numbers) known prior to our study† // [novel records in Russia]	Abundance (A–E) and regularity (1–3) of species in our catches in Russia¥	World distribution, including records from Russia
1	*Cnephasia stephensiana*	1, 4, 7–11, 13, 14, 16, 17, 20, 22–24, 26, 27, 36–40	A1	Europe, Russia (from European part to the Kuril Islands), Asia Minor, China, Japan, North Africa, North America

No	Species	Distribution in Russia – regions (indicated by numbers) known prior to our study† // [novel records in Russia]	Abundance (A–E) and regularity (1–3) of species in our catches in Russia¥	World distribution, including records from Russia
2	*Grapholita inopinata*	16*, 19, 20, 22, 23*, 24*, 26*, 27, 28, 36, 37, 40	A1	Russia (from Perm Krai to Primorsky Krai), China, Japan
3	*Grapholita funebrana*	1, 4, 8–15, 17, 20, 22, 27, 28, 36–40 // [7 (Kirov, Udmurtia), 16 (Perm), 23 (Novosibirsk and Altai Krai), 24 (Altai Republic)]	A1	Europe, Russia (from European part to the Kuril Islands), Asia Minor, Iran, Afghanistan, Transcaucasia, Middle Asia, Kazakhstan, China, the Korea Peninsula, Japan, North Africa
4	*Grapholita rosana*	22, 23, 26, 28, 36–40 // [24 (Altai Republic)]	B1	Russia (from Southern Siberia to the Kuril Islands), Japan
5	*Grapholita andabatana*	8, 10, 17, 22, 23, 26 // [7 (Kirov), 16 (Perm), 19 (Tomsk), 24 (Altai Republic)]	B1	From Europe, across Russia (from European part to Eastern Siberia), to Japan
6	***Pammene luculentana***	26, 40 // [8 (Smolensk), 10 (Chuvashia), 22 (Krasnoyarsk)]	B1	Finland, Russia (European part – Central and Middle -Volga regions, Eastern Siberia) and Primorsky Krai), Eastern Kazakhstan
7	***Pammene obscurana***	1–5, 7, 8, 10, 11, 17, 20, 21, 23, 24, 26, 28, 36, 37 // [16 (Perm), 22 (Krasnoyarsk)]	B1	From Western Europe, across Russia (from European part to Lower Amur region), to Japan; Northern Kazakhstan, Mongolia
8	*Pammene gallicana*	1, 3, 4, 6, 8, 24, 36, 37, 39, 40 // [7 (Kirov), 16 (Perm), 19 (Tomsk), 20 (Altai Krai, Omsk), 22 (Krasnoyarsk)]	B1	From Western Europe, across Russia, to the Kuril Islands
9	*Pammene insulana*	1, 3, 4, 8, 10, 11, 17, 20, 22, 23, 26, 28, 36, 37 // [7 (Udmurtia)]	B1	From Western Europe, across Russia, to the Korean Peninsula; Asia Minor, Transcaucasia, China
10	*Pammene blockiana*	No data // 13 (Sochi)**	B1	Southern Europe, south of European Russia, West Asia (Turkey)
11	*Grapholita tenebrosana*	2–4, 6, 8–11, 13–15, 17, 22***, 38, 39 // [7 (Udmurtia), 23 (Novosibirsk)]	C1	From Western Europe, across Russia, to the Kuril Islands; Asia Minor, Transcaucasia, Kazakhstan, Japan

No	Species	Distribution in Russia – regions (indicated by numbers) known prior to our study† // [novel records in Russia]	Abundance (A–E) and regularity (1–3) of species in our catches in Russia¥	World distribution, including records from Russia
12	*Pammene fasciana*	1, 4, 8–11, 13, 15	C1	Europe, European Russia, Asia Minor, Iran
13	*Celypha rosaceana*	4, 7–13, 15–17, 22, 28 // [20 (Omsk, Altai Krai)****, 23 (Kemerovo, Altai Krai)]	C1	Europe, Russia (from European part to Eastern Siberia), Kazakhstan, Mongolia
14	*Epiblema scutulana*	1, 3–15, 17, 20, 22–24, 31, 36, 37, 40 // [16 (Perm)]	C1	From Western Europe, across Russia, to Primorsky Krai; Kazakhstan
15	*Epiblema cirsiana*	2, 4, 6–9, 11, 13, 16, 17, 20, 22–24, 36, 37, 40	C1	From Western Europe, across Russia, to Primorsky Krai; Kazakhstan
16	*Grapholita janthinana*	4, 9, 11, 13–15 // [7 (Udmurtia, Kirov), 8 (Moscow), 16 (Perm)]	D1	Europe, Russia (European part), Asia Minor, Transcaucasia, Uzbekistan
17	*Pammene aurana*	2–10, 17, 18, 20, 22–24, 28, 38 // [16 (Perm), 19 (Tomsk), 26 (Irkutsk)]	D1	From Western Europe, across Russia, to Sakhalin
18	***Pammene luedersiana***	4, 6, 11 // [8 (Moscow, Smolensk), 10 (Chuvashia), 22 (Krasnoyarsk)]	D1	Europe, Russia (European part, Eastern Siberia – Krasnoyarsk Krai only)
19	*Pammene suspectana*	1, 9, 15 // [8 (Moscow, Smolensk), 11 (Rostov), 13 (Stavropol)]	D1	Europe, Russia (European part), NW Africa
20	*Pammene argyrana*	1, 4, 8–11, 14, 15	D1	Europe, Russia (European part)
21	*Apotomis infida*	2–4, 6–8, 10, 16–18, 22, 23, 27, 28, 31, 32, 37, 40 // [19 (Tomsk)]	D1	Western Europe, Russia (from European part to Primorsky Krai), North America
22	***Enarmonia minuscula***	36, 37, 40 // [22 (Krasnoyarsk)]	C2	Russia (Asian part – from Krasnoyarsk to Primorsky Krai), China, Korean Peninsula
23	***Eucosma balatonana***	8, 10, 17, 20, 22–24, 26, 28	D2	Europe, Russia (from the European part to Transbaikalia), Kazakhstan
24	*Epiblema foenella*	1, 3–4, 6–11, 13–17, 19, 20, 22–26, 28, 36–40	D2	From Western Europe, across Russia, to the Kuril Islands; Taiwan, Northern India

No	Species	Distribution in Russia – regions (indicated by numbers) known prior to our study† // [novel records in Russia]	Abundance (A–E) and regularity (1–3) of species in our catches in Russia¥	World distribution, including records from Russia
25	***Pammene clanculana***	2–6, 8, 17, 18, 24, 26, 28, 36 // [22 (Krasnoyarsk)]	D2	From Europe, across Russia, to the Middle Amur region
26	*Apotomis lineana*	1, 4, 7, 8, 10, 11, 15, 17, 22, 23, 26–28, 36–38, 40	D2	From Western Europe, across Russia, to Sakhalin; Kazakhstan, Mongolia, China
27	*Celypha striana*	1–4, 6–17, 20, 22–24, 26–28, 36, 37, 40	D2	From Western Europe, across Russia, to the Korean Peninsula; Transcaucasia, Kazakhstan, Mongolia, China
28	***Pristerognatha penthinana***	4, 8–11, 17, 22, 23, 37–40	D2	From Western Europe, across Russia, to the Kuril Islands; Transcaucasia, the Korean Peninsula, Japan
29	***Eucosma metzneriana***	4, 6–15, 17, 20, 22, 23, 26–28, 36, 37, 40	D2	From Western Europe, across Russia, to Japan; Transcaucasia, Middle Asia, Kazakhstan, Mongolia, China, the Korean Peninsula
30	*Pammene rhediella*	1, 4, 7, 8, 10, 11, 13–15	D2	Europe, Russia (European part), Asia Minor, Transcaucasia, Turkmenistan
31	***Epiblema sarmatana***	8, 10, 11, 17, 20, 22, 28, 36, 40	D2	From Europe, across Russia to Primorsky Krai; Kazakhstan
32	*Archips rosana*	1, 3, 4, 6–17, 19, 20, 22–24, 26, 27, 36–38, 40	D3	Europe, Russia (from European part to Sakhalin), Asia Minor, Middle East, Transcaucasia, Iraq, Iran, Middle Asia, Kazakhstan and North America
33	***Clepsis rurinana***	1, 3, 4, 6–8, 10, 11, 13, 16, 17, 19, 20, 22–28, 33, 34, 36–40	D3	From Western Europe, across Russia, to the Kuril Islands; Asia Minor, Transcaucasia, Iran, Kazakhstan, Northern India, Nepal, Mongolia, China, the Korean Peninsula, Japan

No	Species	Distribution in Russia – regions (indicated by numbers) known prior to our study† // [novel records in Russia]	Abundance (A–E) and regularity (1–3) of species in our catches in Russia¥	World distribution, including records from Russia
34	***Syndemis musculana***	1–13, 15, 17, 19, 20, 22–24, 26–28, 34, 36–40	D3	Europe, Russia (from European part to the Kuril Islands), Transcaucasia, Kazakhstan, China, the Korean Peninsula, Japan, North America
35	***Ptycholoma lecheana***	1, 3, 4, 6–17, 20, 22–28, 36–40	D3	From Europe, across to Russia, to the Kuril Islands; Asia Minor, Kazakhstan, China, the Korean Peninsula, Japan
36	***Lobesia reliquana***	1, 3, 4, 6–11, 13, 15, 20, 22–24, 26–28, 31, 36–40	D3	From Western Europe, across Russia, to the Kuril Islands; Transcaucasia, Kazakhstan, China, the Korean Peninsula, Japan
37	***Grapholita cotoneastri***	9, 10, 22, 27	D3	Russia (European part – Central and Middle Volga regions, Eastern Siberia – Krasnoyarsk Krai and Buryatia)
38	*Pammene germmana*	1, 3, 4, 6, 8–11, 13, 15, 22, 23, 36, 37, 39, 40	D3	From Europe, across Russia, to the Kuril Islands; Asia Minor, Transcaucasia, China, the Korean Peninsula, Japan
39	*Pammene nemorosa*	37, 40	D3	Russian Far East (Lower Amur region and Primorsky Krai), China, the Korean Peninsula, Japan
40	***Dichrorampha aeratana***	3, 4, 6, 8–11, 13, 17, 20, 22, 23, 26, 27, 36, 38–40	D3	From Western Europe, across Russia, to the Kuril Islands
41	***Dichrorampha simpliciana***	1, 3, 4, 6–11, 16, 17, 20, 22–26, 28, 34, 36–38	D3	From Western Europe, across Russia, to Sakhalin
42	***Cydia pactolana***	1, 2, 4, 6, 8, 10, 11, 17, 22, 26–28, 37, 40	D3	Northern and Central Europe, Russia (from the European part to Primorsky Krai), Japan
43	***Orthotaenia undulana***	1–11, 13–17, 19, 20, 22–28, 32–34, 38	D3	From Europe, across Russia (from European part to Sakhalin); Asia Minor, Kazakhstan, North America

No	Species	Distribution in Russia – regions (indicated by numbers) known prior to our study† // [novel records in Russia]	Abundance (A–E) and regularity (1–3) of species in our catches in Russia¥	World distribution, including records from Russia
44	***Eudemis porphyrana***	3, 4, 6, 8–11, 13, 15, 17, 22–24, 27, 28, 36–40	D3	From Western Europe, across Russia, to the Kuril Islands; Transcaucasia, China, the Korean Peninsula, Japan
45	***Olethreutes captiosanus***	20, 22–28, 36–40	D3	Russia (from Western Siberia to the Kuril Islands), China, the Korean Peninsula, Japan
46	***Celypha flavipalpana***	1, 4, 7–13, 15, 17, 20, 22–28, 36, 37, 40	D3	From Western Europe, across Russia, to the Korean Peninsula; Mongolia, China
47	***Phiaris dissolutana***	1–3, 6–8, 10, 19, 21–24, 33, 36–38	D3	From Europe, across Russia, to Sakhalin; North Korea
48	*Syricoris lacunana*	1–11, 13–18, 20–28, 32, 33, 38	D3	Western Europe, Russia (from European part to Sakhalin); Transcaucasia, Asia Minor, Mongolia
49	*Syricoris siderana*	4, 7, 8, 10, 11, 20, 22, 24, 27, 28, 31, 36–40	D3	Western Europe, Russia (from European part to the Kuril Islands), Northern Kazakhstan, Mongolia, China, Korea, Japan, North America
50	***Argyroploce roseomaculana***	2, 4, 6, 8, 17, 24, 26, 36, 37 // [22 (Krasnoyarsk)]	D3	From Western Europe, across Russia, to Lower Amur region
51	***Ancylis badiana***	1–17, 20, 22–28, 31, 34, 36–40	D3	From Europe, across Russia, to the Kuril Islands; Asia Minor, Transcaucasia, Mongolia, China, the Korean Peninsula, Japan, North America
52	***Ancylis obtusana***	4, 8–11, 14, 17, 20, 22, 23, 26, 38, 40	D3	From Western Europe, across Russia, to Sakhalin; Asia Minor, Kazakhstan, the Korean Peninsula, Japan
53	***Gypsonoma minutana***	1, 4, 7–17, 20, 22–26, 28, 36, 37, 40	D3	From Western Europe, across Russia, to Japan; Asia Minor, Transcaucasia, Iran, Afghanistan, Middle Asia, Kazakhstan, Mongolia, China, the Korean Peninsula

No	Species	Distribution in Russia – regions (indicated by numbers) known prior to our study† // [novel records in Russia]	Abundance (A–E) and regularity (1–3) of species in our catches in Russia¥	World distribution, including records from Russia
54	***Epinotia cinereana***	4, 6–8, 10, 17, 20, 22–24, 28, 36, 37	D3	From Western Europe, across Russia, to Lower Amur region
55	***Eucosma cana***	1, 3, 4, 6–11, 13–17, 20, 22–24, 26, 34, 36–40	D3	From Western Europe, across Russia, to the Kuril Islands; Asia Minor, Middle Asia, Kazakhstan, China, Japan
56	***Eucosma apocrypha***	8, 10, 11, 17, 20, 22, 24, 25, 36, 38, 40	E2	Russia (from the European part to Sakhalin); Kazakhstan, Kyrgyzstan, Mongolia, China
57	***Eucosma clarescens***	11, 17, 22, 28, 36	E2	Russia (from the European part to the Middle Amur region), Kazakhstan, Mongolia

Notes: † The regions are listed according to the system given in the Catalogue of the Lepidoptera of Russia (Sinev et al. 2019); Published in: *Akulov et al. (2025), **Kovalenko et al. (2025); ***Akulov et al. (2014), ****Omsk (20 region) is listed as questionable (Sinev et al. 2019). ¥ Abundance categories: A – mass (>75 ind.); B – intermediate (25–74); C – low (10–24); D – extremely low (<10); E – unspecified (damaged specimens preventing reliable identification); Regularity categories: 1 – regular (recorded frequently in ≥3 regions, in different years; for narrow-range species – frequent in one locality over multiple years); 2 – irregular (moderate frequency in 1–2 regions); 3 – rare (1–2 records total).

2. Non-targeted tortricids in Russia (2010–2019 & 2021–2025) vs. early records in Europe and Asia

Based on literature survey which we performed for Europe and Asia, we came across of notes of 87 non-target tortricids detected in traps with the synthetic pheromone of *G. molesta* in 1974–2024 (Table 2, species essays). Among them, 27 species are common with our records in Russia in 2010–2019 & 2021–2025. Taking into account that we recorded 30 tortricid species in *G. molesta* traps for the first time, altogether with literature data the list of non-target tortricid species detected in traps baited with the synthetic sex pheromone of *G. molesta* comprises 117 species. These species belong to 46 genera and two subfamilies: Tortricinae (28 species) and Olethreutinae (89 species).

When our data are combined with those published in the literature, the proportional representation of species from different tribes in catches shows a similar result to that obtained from the analysis of our data alone (Figs 2, 5). In the summarized analysis, the most represented tribe was Grapholitini (38% of tortricid

species in traps), followed by Olethreutini (17%) and Eucosmini (16%) (Fig. 5). The contribution of Archipini (Tortricinae) was 12%. The contribution of the remaining tribes did not exceed 5%. Additionally, four tribes, Ramapesiini, Chlidanotini, Cochylini, and Tortricini (Tortricinae), recorded in literature, were absent in our catches.

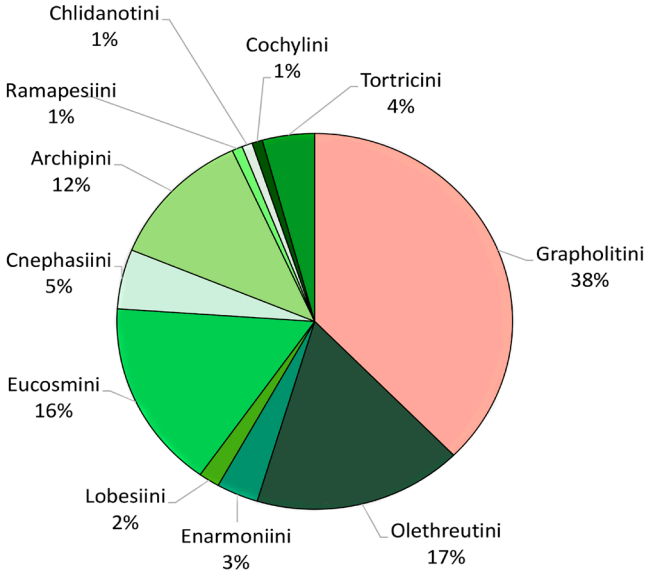

Figure 5. The ratio of tortricid species from different tribes collected from traps baited with the synthetic sex pheromone of *Grapholita molesta*: summary of our data with those from literature (the references are listed in Methods).

The genus *Pammene* exhibited the highest species diversity in catches: 28 species of this genus were recorded in traps, of which 10 were detected both in our study and in literature, four exclusively in our study, and 14 in literature (Fig. 6). The genus *Grapholita* was represented by nine species in trap catches, all belonging to the subgenus *Aspila*. Of these, six species (*Grapholita inopinata*, *G. funebrana*, *G. tenebrosana*, *G. janthinana*, *G. andabatana*, and *G. rosana*) were detected both in our study and in literature, *G. cotoneastri* exclusively in our study and two (*G. lobarzewskii* and *G. dimorpha*) in literature. The genus *Eucosma* was represented by seven species recorded in traps, *Cnephasia* by six, *Epiblema* by five, *Celypha*, and *Hedya* by four each, *Dichrorampha*, *Archips*, *Cydia*, and *Pandemis* by three each, *Syricoris*, *Ancylis*, *Enarmonia*, *Pristerognatha*, *Lobesia*, *Apotomis*, and *Notocelia* by two each, and the remaining 28 genera included one species each recorded in traps.

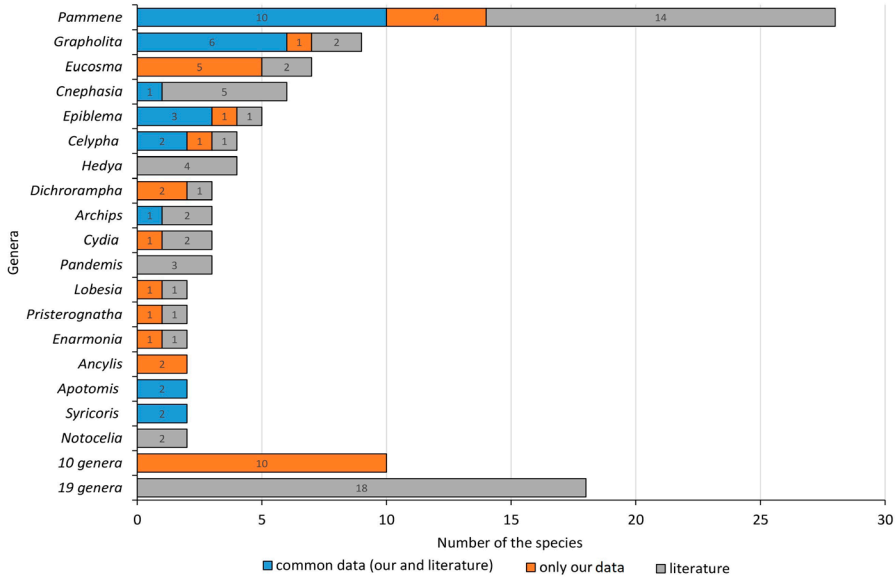

Figure 6. Taxonomic diversity of tortricids detected in traps baited with the synthetic sex pheromone of *Grapholita molesta*: the combination of our data with those from literature.

Table 2. Non-targeted tortricid species reported in the literature in traps baited with the synthetic sex pheromone of *G. molesta* in Europe and Asia

No	Species	Countries of detection and literature sources
	Tortricinae	
	Species reported in literature, but not recorded in our catches in Russia	
1	*Cnephasia alticolana* (Herrich-Schaffer, 1851)	Romania (Olenici et al. 2007), Czech Republic (Pražanová & Šefrová 2024)
2	*Cnephasia genitalana* (Pierce & Metcalfe, 1922)	Czech Republic and Slovakia (Hrdý et al. 1979a, 1994)
3	*Cnephasia ecullyana* (Real, 1951)	Czech Republic (Pražanová & Šefrová 2024)
4	*Cnephasia pumicana* (Zeller, 1847)	France (Chambón & Daguilar 1974), Spain (Rubio et al. 1990)
5	*Cnephasia sedana* (Constant, 1884)	Spain (Rubio et al. 1990)
6	*Aleimma loeflingiana* (Linnaeus, 1758)	Ukraine (Kudina & Misyurenko 1991)
7	*Argyrotaenia ljungiana* (Thunberg, 1797)	Czech Republic and Slovakia (Hrdý et al. 1979b)
8	*Pandemis cerasana* (Hubner, 1786)	Moldova (Rozinskaya 1980), Czech Republic (Hrudova 2003, 2005)
9	*Pandemis dumetana* (Treitschke, 1835)	Hungary (Sziraki, 1978), Former USSR (Komarova et al. 1983)

No	Species	Countries of detection and literature sources
10	*Pandemis heparana* (Denis & Schiffermuller, 1775)	France (Chambón & Daguilar 1974), Former USSR (Komarova et al. 1983)
11	*Adoxophyes orana* (Fischer v. Roslerstamm, 1834)	Czech Republic (Hrudova 2003, 2005)
12	*Archips podana* (Scopoli, 1763)	Former USSR (Komarova et al. 1983), Ukraine (Kudina & Misyurenko 1991)
13	*Archips xylosteana* (Linnaeus, 1758)	Czech Republic and Slovakia (Hrdý et al. 1979b), Former USSR (Komarova et al. 1983)
14	*Cacoecimorpha pronubana* (Hubner, 1799)	Czech Republic (Jakubikova et al. 2016)
15	*Dichelia histrionana* (Frolich, 1828)	Romania (Olenici et al. 2007)
16	*Neocalyptis angustilineana* Walsingham 1900	Japan (Mizukoshi 2006)
17	*Olindia schumacherana* (Fabricius, 1787)	Romania (Olenici et al. 2007)
18	*Acleris holmiana* (Linnaeus, 1758)	Ukraine (Kudina & Misyurenko 1991)
19	*Isotrias hybridana* (Hubner, 1817) 1870	Hungary (Sziraki 1978); Czech Republic and Slovakia (Hrdý et al. 1989)
20	*Paramesia gnomana* (Clerck, 1759)	Hungary (Sziraki, 1978)
21	*Tortrix viridana* (Linnaeus, 1758)	Czech Republic and Slovakia (Hrdý et al. 1979b), Moldova (Rozinskaya 1980), Former USSR (Komarova et al. 1983)
22	*Eupoecilia ambiguella* (Hübner, 1796)	Czech Republic and Slovakia (Hrdý et al. 1979b)
23	*Philedonides lunana* (Thunberg, 1784)	Bulgaria (Velcheva 2000)
	Species reported in literature and identified in our catches in Russia	
24	*Cnephasia stephensiana* (Doubleday, 1849)	Hungary (Sziraki 1978), Czech Republic and Slovakia (Hrdý et al. 1979a, 1979b, 1989, 1994; Jakubikova et al. 2016, Pražanová & Šefrová 2024), Moldova (Rozinskaya 1980), Ukraine (Smetnik 1980), Former USSR (Komarova et al. 1983), Primorsky Krai of Russia (Gummel 1988), Lithuania (Ostrauskas 1999), Bulgaria (Velcheva 2000), Japan (Mizukoshi 2003, 2006), Romania (Olenici et al. 2007), Stavropol Krai (Danilenko & Pimenov 2015, 2017)
25	*Archips rosana* (Linnaeus, 1758)	Czech Republic (Hrudova 2003, 2005)
	Olethreutinae	
	Species reported in the literature, but not recorded in our catches in Russia	
26	*Dichrorampha petiverella* (Linnaeus, 1758)	Bulgaria (Velcheva 2000)
27	*Cydia pomonella* (Linnaeus, 1758)	Georgia (Kipiani 1980), Moldova (Rozinskaya 1980), Former USSR (Komarova et al. 1983), Lithuania (Ostrauskas 1999), Czech Republic (Jakubikova et al. 2016)

No	Species	Countries of detection and literature sources
28	*Cydia pyrivora* (Danilevsky, 1947)	Moldova (Rozinskaya 1980), Former USSR (Komarova et al. 1983)
29	*Grapholita lobarzewskii* (Nowicki, 1860)	Czech Republic (Jakubikova et al. 2016)
30	*Grapholita dimorpha* Komai, 1979	Japan (Mizukoshi 2003, 2006)
31	*Pammene albuginana* (Guenee, 1845)	France (Chambón & Daguilar 1974), Hungary (Sziraki 1978), Spain (Rubio et al. 1990), Ukraine (Kudina & Misyurenko 1991), Bulgaria (Velcheva 2000), Czech Republic (Jakubikova et al. 2016)
32	*Pammene amygdalana* (Duponchel, 1842)	Bulgaria (Velcheva 2000), Czech Republic (Jakubikova et al. 2016)
33	*Pammene aurita* (Razowski, 1991)	Romania (Olenici et al. 2007)
34	*Pammene gallicolana* (Lienig & Zeller, 1846)	Hungary (Sziraki 1978), Bulgaria (Velcheva 2000), Romania (Olenici, et al. 2007), Czech Republic (Pražanová & Šefrová 2024)
35	*Pammene giganteana* (Peyerimhoff, 1863)	France (Chambón & Daguilar 1974), Hungary (Sziraki 1978), Crimea (Kurbatov 1980), Ukraine (Dulo & Shvanda, 1980; Kudina & Misyurenko 1991), Former USSR (Komarova et al. 1983), Spain (Rubio et al. 1990), Bulgaria (Velcheva 2000)
36	*Pammene orientana* Kuznetzov, 1960	Japan (Mizukoshi 2006)
37	*Pammene querceti* (Gozmany, 1957)	Hungary (Sziraki 1978)
38	*Pammene regiana* (Zeller, 1849)	Hungary (Sziraki 1978)
39	*Pammene spiniana* (Duponchel, 1843)	Hungary (Sziraki 1978), Lithuania (Ostrauskas 1999), Bulgaria (Velcheva 2000), Czech Republic (Jakubikova et al. 2016; Pražanová & Šefrová 2024)
40	*Pammene splendidulana* (Guenee, 1845)	Hungary (Sziraki 1978), Ukraine (Kudina & Misyurenko 1991)
41	*Pammene trauniana* (Denis & Schiffermuller, 1775)	Ukraine (Kudina & Misyurenko 1991)
42	*Pammene tauriana* (Kuznetsov, 1960)	Crimea (Kurbatov 1980)
43	*Pammene christophana* (Möschler, 1862)	Ukraine (Kudina & Misyurenko 1991)
44	*Pammene pulchella* Amsel, 1935	Ukraine (Kudina & Misyurenko 1991)
45	*Strophedra nitidana* (Fabricius, 1794)	Ukraine (Smetnik 1980)
46	*Celypha rurestrana* (Duponchel, 1843)	Hungary (Sziraki 1978)
47	*Hedya dimidiana* (Clerck, 1759)	Romania (Olenici et al. 2007)
48	*Hedya nubiferana* (Haworth, 1811)	Hungary (Sziraki 1978), Ukraine (Dulo & Shvanda, 1980), Stavropol Krai (Danilenko & Pimenov 2015, 2017), Czech Republic (Pražanová & Šefrová, 2024)
49	*Hedya salicella* (Linnaeus, 1758)	Former USSR (Komarova et al. 1983), Ukraine (Kudina & Misyurenko 1991)

No	Species	Countries of detection and literature sources
50	*Hedya pruniana* (Hubner, 1799)	Czech Republic and Slovakia (Hrdý et al. 1979b, 1989; Jakubikova et al. 2016, Pražanová & Šefrová, 2024), Former USSR (Komarova et al. 1983), Ukraine (Kudina & Misyurenko 1991), Bulgaria (Velcheva, 2000), Stavropol Krai (Danilenko & Pimenov 2015, 2017)
51	*Retinia perangustana* (Snellen, 1883)	Romania (Olenici et al. 2007)
52	*Pristerognatha fuligana* (Denis & Schiffermuller, 1775)	Former USSR (Komarova et al. 1983), Bulgaria (Velcheva 2000)
53	*Eucosma lacteana* (Treitschke, 1835)	Primorsky Krai of Russia (Gummel 1988)
54	*Eucosma tundrana* (Kennel, 1900)	Former USSR (Komarova et al. 1983)
55	*Zeiraphera isertana* (Fabricius, 1794)	France (Chambón & Daguilar 1974)
56	*Notocelia rosaecolana* (Doubleday, 1850)	Czech Republic (Hrudova 2003, 2005)
57	*Notocelia roborana* ([Denis & Schiffermüller], 1775)	Czech Republic (Hrudova 2005)
58	*Rhopobota naevana* (Hubner, 1817)	Former USSR (Komarova et al. 1983), Primorsky Krai of Russia (Gummel 1988), Lithuania (Ostrauskas 1999)
59	*Spilonota ocellana* (Denis & Schiffermuller, 1775)	North Ossetia (Arutyunova 1980), Ukraine (Kudina & Misyurenko 1991), Czech Republic (Hrudova 2003, 2005)
60	*Epiblema junctana* (Herrich-Schaffer, 1856)	Crimea (Kurbatov 1980)
61	*Enarmonia formosana* (Scopoli, 1763)	Czech Republic and Slovakia (Hrdý et al. 1979a, 1994; Hrudova 2005), Moldova (Rozinskaya 1980), North Ossetia (Arutyunova 1980), Ukraine (Dulo & Shvanda 1980; Kudina & Misyurenko 1991), Former USSR (Komarova et al. 1983), Stavropol Krai (Danilenko & Pimenov 2015, 2017)
62	*Lobesia botrana* (Denis & Schiffermuller, 1775)	North Ossetia (Arutyunova 1980); Former USSR (Komarova et al. 1983)
	Species reported in the literature and identified in our catches in Russia	
63	*Grapholita inopinata* (Heinrich, 1928)	Japan (Mizukoshi 2006; Tanaka et al. 2007)
64	*Grapholita funebrana* (Treitschke, 1835)	France (Chambón & Daguilar 1974), Hungary (Sziraki 1978, Hari and Penzes, 2010), Czech Republic and Slovakia (Hrdý et al. 1979b, 1989, 1994; Jakubikova et al. 2016, Hrudova 2003, 2005; Pražanová & Šefrová, 2024), Ukraine (Dulo & Shvanda 1980; Smetnik 1980; Kudina & Misyurenko 1991), Moldova (Rozinskaya 1980; Smentik 1980), Azerbaijan (Smentik 1980), Georgia (Smetnik 1980, Kipiani 1980), Crimea (Kurbatov 1980, Smetnik 1980), Former USSR (Komarova et al. 1983), Krasnodar (Popovich 1984), Spain (Rubio et al. 1990), Lithuania (Ostrauskas 1999), Bulgaria (Velcheva 2000), Romania (Olenici et al. 2007), China (Zheng et al. 2017), Stavropol Krai (Danilenko & Pimenov 2015, 2017)

No	Species	Countries of detection and literature sources
65	*Grapholita tenebrosana* (Duponchel, 1843)	France (Chambón & Daguilar 1974), Hungary (Sziraki 1978), Czech Republic and Slovakia (Hrdý et al. 1979a, 1979b, 1994), Moldova (Rozinskaya 1980), Crimea (Kurbatov 1980), Krasnodar (Smetnik 1980), Former USSR (Komarova et al. 1983), Krasnodar (Popovich 1984), Ukraine (Kudina & Misyurenko 1991), Lithuania (Ostrauskas 1999), Bulgaria (Velcheva 2000), Japan (Mizukoshi 2003, 2006), Romania (Olenici et al. 2007), Stavropol Region (Danilenko & Pimenov 2015, 2017)
66	*Grapholita rosana* (Danilevsky, 1968)	Former USSR (Komarova et al. 1983), Primorsky Krai of Russia (Gummel 1988)
67	*Grapholita janthinana* (Duponchel, [1835])	Hungary (Sziraki 1978), Ukraine (Kudina & Misyurenko 1991), Czech Republic (Jakubikova et al. 2016)
68	*Grapholita andabatana* (Wolff, 1957)	Japan (Mizukoshi 2006)
69	*Pammene insulana* (Guenee, 1845)	Hungary (Sziraki 1978), Former USSR (Komarova et al. 1983); Ukraine (Kudina & Misyurenko 1991); Bulgaria (Velcheva 2000)
70	*Pammene fasciana* (Linnaeus, 1761)	Hungary (Sziraki 1978), Former USSR (Komarova et al. 1983), Czech Republic and Slovakia (Hrdý et al. 1989, 1994; Jakubikova et al. 2016), Bulgaria (Velcheva 2000), France (Chambón & Daguilar 1974), Spain (Rubio et al. 1990)
71	*Pammene blockiana* (Herrich-Schäffer, 1851)	Sochi (Kovalenko et al. 2025)
72	*Pammene gallicana* (Guenee, 1845)	Hungary (Sziraki 1978), Moldova (Rozinskaya 1980), Former USSR (Komarova et al. 1983), Ukraine (Kudina & Misyurenko 1991); Lithuania (Ostrauskas 1999)
73	*Pammene suspectana* (Lienig & Zeller, 1846)	Hungary (Sziraki 1978), Czech Republic and Slovakia (Hrdý et al. 1979b, 1994; Jakubikova et al. 2016; Pražanová & Šefrová 2024), Former USSR (Komarova et al. 1983), Krasnodar (Popovich 1984), Ukraine (Smetnik 1980; Kudina & Misyurenko 1991), Lithuania (Ostrauskas 1999), Romania (Olenici et al. 2007), Stavropol Krai (Danilenko & Pimenov, 2015, 2017)
74	*Pammene aurana* (Fabricius, 1775)	Hungary (Sziraki 1978), Czech Republic (Jakubikova et al. 2016), Crimea (Kurbatov 1980), Former USSR (Komarova et al. 1983)
75	*Pammene argyrana* (Hübner, [1799])	France (Chambón & Daguilar, 1974), Hungary (Sziraki 1978), Crimea (Kurbatov 1980), Ukraine (Kudina & Misyurenko 1991), Spain (Rubio et al. 1990), Bulgaria (Velcheva 2000), Czech Republic (Jakubikova et al. 2016)
76	*Pammene rhediella* (Clerck, 1759)	Former USSR (Komarova et al. 1983), Ukraine (Kudina & Misyurenko 1991)

No	Species	Countries of detection and literature sources
77	*Pammene germmana* (Hubner, 1799)	Former USSR (Komarova et al. 1983), Lithuania (Ostrauskas 1999)
78	*Pammene nemorosa* Kuznetzov, 1968	Primorsky Krai of Russia (Komarova et al. 1983; Gummel 1988); Japan (Mizukoshi 2003, 2006)
79	*Celypha rosaceana* (Schlager, 1847)	Moldova (Rozinskaya 1980), Former USSR (Komarov et al. 1983), Ukraine (Kudina & Misyurenko 1991), Lithuania (Ostrauskas 1999), Czech Republic (Jakubikova et al. 2016), Stavropol Krai (Danilenko & Pimenov, 2015, 2017)
80	*Celypha striana* (Denis & Schiffermuller, 1775)	Spain (Rubio et al. 1990), Czech Republic and Slovakia (Hrdý et al. 1979a, 1979b, 1994; Pražanová & Šefrová 2024), Lithuania (Ostrauskas 1999)
81	*Apotomis infida* (Heinrich, 1926)	Ukraine (Dulo & Shvanda 1980); Former USSR (Komarova et al. 1983)
82	*Apotomis lineana* (Denis & Schiffermuller, 1775)	Hungary (Sziraki 1978), Former USSR (Komarova et al. 1983), Ukraine (Kudina & Misyurenko 1991)
83	*Syricoris lacunana* ([Denis & Schiffermüller], 1775)	Hungary (Sziraki 1978); Former USSR (Komarova et al. 1983)
84	*Syricoris siderana* (Treitschke, 1835)	Former USSR (Komarova et al. 1983)
85	*Epiblema scutulana* (Denis & Schiffermuller, 1775)	Hungary (Sziraki 1978), France (Chambón & Daguilar 1974), Czech Republic and Slovakia (Hrdý et al. 1979a, 1979b, 1994; Hrudova 2005; Pražanová & Šefrová 2024), Moldova (Rozinskaya 1980; Smetnik 1980), Former USSR (Komarova et al. 1983), Spain (Rubio et al. 1990), Ukraine (Kudina & Misyurenko 1991), Bulgaria (Velcheva 2000), Romania (Olenici et al. 2007), Stavropol Krai (Danilenko & Pimenov 2015, 2017)
86	*Epiblema cirsiana* (Zeller, 1843)	Czech Republic (Jakubikova et al. 2016)
87	*Epiblema foenella* (Linnaeus, 1758)	France (Chambón & Daguilar 1974), Ukraine (Dulo & Shvanda 1980; Kudina & Misyurenko 1991), Former USSR (Komarova et al. 1983), Lithuania (Ostrauskas 1999)

In earlier publications, the taxon *Cnephasia alternella* was frequently cited, often without author attribution or supporting diagnostic evidence (Chambón & Daguilar 1974; Sziraki 1978; Rubio et al. 1991 etc.). In subsequent literature such references sometimes interpreted as *Tortricodes alternella* ([Denis & Schiffermüller], 1775) (Pražanová & Šefrová, 2024). Based on genitalia illustrations in Sziráki (1978), this name clear refers to *Cnephasia stephensiana* (Doubleday, 1849), while the name used by Rubio et al. (1991) for *C. alternella* probably corresponds to *C. incertana* (Treitschke, 1835). Some authors also report *C. wahlbomiana* L. in high abundance (up to 27.5% of all tortricids; Dulo & Shvanda 1980). However, due to the absence of genitalia illustrations or reliable diagnostic characters, the species identity remains uncertain. Based on our collecting experience, these records most

likely refer to *C. stephensiana*. Consequently, such records are considered doubtful and excluded from Table 2.

The number of non-target tortricid species differed from country to country (Fig. 7). Their highest number was recorded in Russia (67 species), followed by Czech Republic and Slovakia (37), Ukraine (29), Hungary (25), France (21), Bulgaria (18), Romania (12), Lithuania (12), Moldova (11), Spain (10) and Japan (10) (Fig. 7).

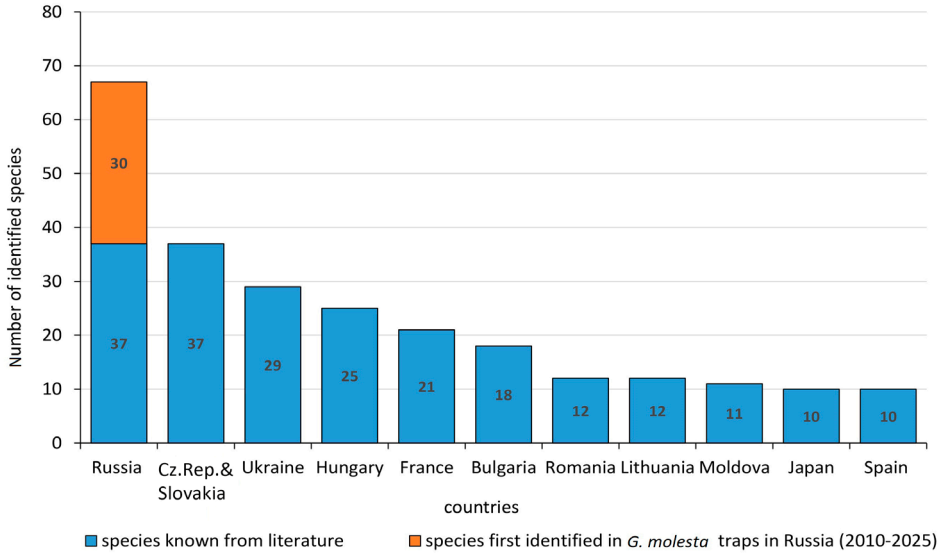

Figure 7. Number of non-targeted tortricid species recorded in traps baited with the *G. molesta* pheromone in different countries: summary of our data with those from literature.

The list of non-target Tortricids found in traps with the synthetic sex pheromone of *G. molesta* in Russia in 2010–2019 & 2021–2025

Subfamily Tortricinae

Tribe Cnephasiini

***Cnephasia stephensiana* (Doubleday, 1849)**
Fig. 8.1

Material examined. RUSSIA, **Irkutsk Oblast**, Irkutsk 52.2997 N, 104.2354 E, 429 m a.s.l., 01-12.VI.2023, 18 males, staff of the VNIIKR (Irkutsk Branch) coll. | **Khakassia Republic**, Abakan. 53.6721 N, 91.5295 E, 254 m a.s.l., 53.6658 N, 91.5390 E, 20.VII-12.VIII.2011, 253 m a.s.l., 28 males, Akulov E. coll.; Shirinsky District,

Efremkino vill. vicinity, 54.4674 N, 89.4474 E, 22.VII.2025, 1 male, Kovalenko M.G. coll.; Askizsky District, Kazanovka vill. vicinity, 53.2270 N, 90.0895 E, 1.VIII.2025, 2 males, Kovalenko M.G. coll.| **Krasnoyarsk Krai**, Krasnoyarsk, 55.9711 N, 92.7487 E, 245 m a.s.l., 56.0345 N, 92.7394 E, 240 m a.s.l., 26.VII-13.IX.2010, 16 males, ibidem, 22.VI-25.VIII.2011, 177 males, ibidem, 01.VII-28.IX.2013, 43 males, ibidem, 17.VI-29.VII.2014, 355 males, ibidem, 11.VI-20.VIII.2015, 697 males, ibidem, 15.VI-03.VIII.2016, 412 males, ibidem, 21.VI-26.VII.2017, 210 males, ibidem, 20.VI-01.VIII.2018, 263 males, Akulov E. coll.; Minusinsk district, Minusinsk, 53.6748°N, 91.6715°E, 255 m a.s.l., 53.7135 N, 91.6466 E, 248 m a.s.l., 10-26.VIII.2010, 6 males, ibidem, 10.VI-11.VIII.2011, 37 males, ibidem, 01-15.VII.2013, 8 males, ibidem, 01.VIII-15.VIII.2014, 11 males, ibidem, 11.VI-23.VII.2015, 135 males, ibidem, 08.VI-13.VII.2016, 77 males, ibidem, 14.VI-05.VII.2017, 38 males, ibidem, 20.VI-25.VII.2018, 26 males, Akulov E., Medvedenko A. coll.; Nazarovo district, Krasnaya Polyana settl. 55.9507 N, 90.6633 E, 251 m a.s.l., 12-26.VI.2010, 19 males, ibidem, 15-23.VII.2013, 3 males, VNIIKR staff (Krasnoyarsk Branch) | **Kemerovo Oblast**, Mariinsk district, Mariinsk, private garden, 55.2854 N, 86.3745 E, 134 m a.s.l., 03–18.VII.2021, 1 male, A. Otteva coll. | **Altai Krai**, Zavyalovsky district, Glubokoe vil. 52.9902 N, 80.6840 E, 162 m a.s.l., 11-26.VI.2022, 5 males; Loktevsky district, Ustyanka settlement, 51.1439 N, 81.5947 E, 271 m a.s.l., 15-25.VII.2022, 1 male; Georgievka settl., 51.1397 N, 81.5077 E, 262 m a.s.l., 15-25.VII.2022, 2 males; Barnaul, 53.3468 N, 83.7769 E, 230 m a.s.l., 11.VI-25.VII.2022, 38 males, Snigireva L. coll. | **Altai Republic**, Gorno-Altaysk, 51.9578 N, 85.9606 E, 302 m a.s.l., 11-26.VI.2022, 1 male, Snigireva L. coll. | **Novosibirsk Oblast**, Novosibirsk district, Krasnoobsk settl., 54.9353 N, 83.0283 E, 99 m a.s.l., 15-25.VI.2021, 2 males, Tomoshevich M. coll. | **Omsk Oblast**, Omsk, 54.8840 N, 73.3339 E, 75 m a.s.l., 10.VI-13.VII.2022, 84 males, Terebilov. A. coll. | **Perm Krai**, Perm Kondratovo vil. 57.9759 N, 56.1066 E, 97 m a.s.l., 22.VI-07.VII.2023, 21 males; Perm municipal district, Stolbovo territory, the community of private gardens "Posad", 57.6007 N, 56.3464 E, 75 m a.s.l., 08.VII-07.VIII.2023, 8 males; Merkushevo vil. 57.8466 N, 56.4243 E, 148 m a.s.l., 22.VI-21.VII.2023, 11 males; Dobryansky municipal district, Gari vil., 58.1765 N, 56.5508 E, 120 m a.s.l., 23.VI-23.VII.2023, 2 males; Shemeti vill. 58.3512 N, 56.2432 E. 177 m a.s.l., 22.VI-21.VII.2023, 5 males, Sokolova I. coll. | **Kirov Oblast**, Kirov, 58.6394 N, 49.7478 E, 114 m a.s.l., 26.VII-27.VIII.2023, 13 males; Yuryansky district, Zagar'e settl., 58.8165 N, 49.6178 E, 177 m a.s.l., 26.VII-04.IX.2023, 1 male, Korobeynikova L. coll. | **Orenburg Oblast**, Orenburg, 51.7682 N, 55.0970 E, 95 m a.s.l., 20.VI-04.VII.2023, 259 males, Mineeva E. coll. | **Udmurt Republic**, Votkinsk district, Fertiki vill., 56.9644 N, 54.0443 E, 98 m a.s.l., 01-14.VI.2024, 13 males Ermolaev I. coll. | **Moscow Oblast**, Ramensky district, Bykovo, 55.6396 N, 38.0961 E, 24.VI.2025-7.VII.2025, 4 males, ibidem 7.VII.2025-18.VII.2025, 3 males, ibidem, 18.VII.2025-4.VIII.2025, 1 male, Kovalenko M.G. coll.; Mytishchinsky District, Trudovaya, 56.1373 N, 37.5096 E, 13.VII.2025-29.VII.2025, 3 males, Lovtsova J.A. coll.; Moscow, Main Botanical Garden of Academy of Sciences, 55.8418 N, 37.6018 E, 17.VI.2025-30.VI.2025, 2 males, ibidem, 30.VI.2025-17.VII.2025, 14

males, ibidem, 17.VII.2025-7.VIII.2025, 2 males, Kovalenko M.G. coll.; Odintsovsky district, Novoshihovo, 55.6990, 36.7793, 21.VI.2025-28.VI.2025, 1 male, ibidem, 28.VI.2025-9.VII.2025, 13 males, ibidem, 9.VII.2025-15.VII.2025, 9 males, ibidem, 15.VII.2025-22.VII.2025, 1 male, Kovalenko M.G. coll.

Distribution. The species is known from Europe, Asia Minor, China, Japan, North Africa, North America (Mizukoshi 2006; Sinev & Nedoshivina 2016; Acheampong 2018). In Russia it has been recorded from the European part to Kuril Islands (Sinev et al. 2019). New findings: 20 (Altai Krai).

Host plants. Polyphagous. The caterpillar feeds on various herbaceous plants, but more often on Asteraceae, Fabaceae, Umbelliferae, Euphorbiaceae (Kuznetsov 1978). The species damages *Cannabis*, *Brassica oleracea*, *Papaver*, *Zea mays*, *Fragaria*. Occasionally on woody plants: *Fraxinus*, *Rosa*, *Sorbus*, *Genista*. Younger caterpillars mine leaves, and then live in folded leaves (Kuznetsov 1978). In Canada it is known as a pest of *Medicago* (Acheampong 2018), in Europe damage to peas and beans has been reported (Carter 1984).

Detection in pheromone traps according to literature data. Hungary (Sziraki 1978), Czech Republic and Slovakia (Hrdý et al. 1979a, 1979b, 1989; Jakubikova et al. 2016, Pražanová & Šefrová 2024), Moldova (Rozinskaya 1980), Ukraine (Smetnik 1980), Former USSR (Komarova et al. 1983), Primorsky Krai of Russia (Gummel 1988), Czech Republic and Slovakia (Hrdý et al. 1994), Lithuania (Ostrauskas 1999), Bulgaria (Velcheva 2000), Japan (Mizukoshi 2003, 2006), Romania (Olenici et al. 2007), Stavropol Krai (Danilenko & Pimenov 2015, 2017).

Figure 8. Species with mass abundance and regular catches (A1). **1** – *Cnephasia stephensiana*, Moscow, Main Botanical Garden of Academy of Sciences; **2** – *Grapholita funebrana*, Moscow Oblast, Bykovo; **3** – *Grapholita inopinata*, Krasnoyarsk Krai, Krasnoyarsk.

Tribe Archipini

Syndemis musculana (Hubner, 1799)

Material examined. RUSSIA, **Krasnoyarsk Krai**, Krasnoyarsk, 55.9711°N, 92.7487 E, 245 m a.s.l., 56.0345 N, 92.7394 E, 240 m a.s.l., 04-11.VI.2015, 1 male, ibidem, 01-08.VI.2016, 1 male, Akulov E. coll.

Distribution. The species is known from Europe, Transcaucasia, Kazakhstan, China, the Korean Peninsula, Japan and North America (Sinev & Nedoshivina

2016). In Russia it has been recorded from the European part to the Kuril Islands (Sinev et al. 2019).

Host plants. Polyphagous, feeds on leaves of many plants. The species is harmful to *Betula* and *Quercus* (Alford 2012), apple trees (Carter 1984; Blommers et al. 1988), conifers (seedlings in nurseries) (Carter 1984).

Detection in pheromone traps according to literature data. We haven't found any detection of this species in pheromone traps in the scientific literature.

***Clepsis rurinana* (Linnaeus, 1758)**
Fig. 9.7

Material examined. RUSSIA, **Krasnoyarsk Krai**, Krasnoyarsk, 55.9711 N, 92.7487 E, 245 m a.s.l., 56.0345 N, 92.7394 E, 240 m a.s.l., 22-29.VI.2016, 2 males, Akulov E. coll.

Distribution. The species is known from Western Europe, Asia Minor, Transcaucasia, Iran, Kazakhstan, Northern India, Nepal, Mongolia, China, the Korean Peninsula, Japan (Sinev & Nedoshivina 2016). In Russia it has been recorded from the European part to the Kuril Islands (Sinev et al. 2019).

Host plants. Polyphagous (Kuznetsov 1978).

Detection in pheromone traps according to literature data. We haven't found any detection of this species in pheromone traps in the scientific literature.

***Ptycholoma lecheana* (Linnaeus, 1758)**

Material examined. RUSSIA, **Krasnoyarsk Krai**, Krasnoyarsk, 55.9711 N, 92.7487 E, 245 m a.s.l., 56.0345 N, 92.7394 E, 240 m a.s.l., 08-15.VI.2016, 1 male, Akulov E. coll.

Distribution. The species is known from Europe, Asia Minor, Kazakhstan, China, the Korean Peninsula and Japan (Sinev & Nedoshivina 2016). In Russia it has been recorded from the European part to the Kuril Islands (Sinev et al. 2019).

Host plants. Polyphagous, known as a garden pest (Carter 1984).

Detection in pheromone traps according to literature data. We haven't found any detection of this species in pheromone traps in the scientific literature.

***Archips rosana* (Linnaeus, 1758)**

Material examined. RUSSIA, **Krasnoyarsk Krai**, Krasnoyarsk, 55.9711 N, 92.7487 E, 245 m a.s.l., 56.0345 N, 92.7394 E, 240 m a.s.l., 02-09.VII.2015, 1 male, Akulov E. coll.

Distribution. The species is known from Europe, Middle East, Asia Minor, Transcaucasia, Iraq, Iran, Middle Asia, Kazakhstan and North America (Sinev & Nedoshivina 2016). In Russia, it is distributed from the European part to Sakhalin (Sinev et al. 2019).

Figure 9. Species with low abundance and irregular catches (C2), some species with extremely low abundance and irregular catches (D2) and some species with extremely low abundance and rare catches (D3). **1** – *Cydia pactolana*; **2** – *Pammene rhediella*; **3** – *Dichrorampha aeratana*; **4** – *Celypha striana*; **5** – *Apotomis lineana*; **6** – *Pristerognatha penthinana*; **7** – *Clepsis rurinana*; **8** – *Epiblema sarmatana*; **9** – *Enarmonia minuscula*; **10** – *Epiblema sarmatana*; **11** – *Lobesia reliquana*. The species under numbers **1**, **3**, **5**, **7**, **9**–**11** were sampled in Krasnoyarsk Krai, Krasnoyarsk; **2**, **8** – in Rostovskaya Oblast, 1300 km railway station; **4**, **6** – in Moscow, Main Botanical Garden of Academy of Sciences.

Host plants. Polyphagous, damaging more than 100 plant species from more than 30 families. It damages garden, forest and park crops. Caterpillars gnaw out buds, and then at older ages they weave leaves together with ovaries into clumps (Kuznetsov 1978).

Detection in pheromone traps according to literature data. Czech Republic (Hrudova 2003, 2005).

Subfamily Olethreutinae

Tribe Grapholitini

***Grapholita inopinata* (Heinrich, 1928)**
Fig. 8.3

Material examined. 31,962 specimens (see details in Akulov et al. 2025).

Distribution. The most recent data on the geographical distribution of *G. inopinata* are presented in our recent paper (Akulov et al. 2025). The species is widespread in China and Japan. In Russia it has been recorded from the Perm Krai to Primorsky Krai (Sinev et al. 2019; Akulov et al. 2025). The species has not been recorded in Europe until recently, aside from an accidental interception of a single individual in Finland (EPPO 2026), which was not followed by any evidence of its establishment. We have recorded the species in European Russia (Perm Krai) (Akulov et al. 2025).

Host plants. The species is an East Palearctic pest of fruit crops, mostly apples (*Malus* spp., Rosaceae), but capable of attacking pears and other fruit crops from the subfamily Amygdaloideae (Kuznetsov 1978, 1986, 2005; Danilevsky & Kuznetsov 1968).

Detection in pheromone traps according to literature data. Japan (Mizukoshi 2006; Tanaka et al. 2007).

Comments. We strongly believe that the species is established in European Russia, as males were consistently trapped in private gardens with apple trees in a village on the outskirts of Perm city. This location is remote from fruit markets and warehouses, where accidental introductions of fruit pests through imported fruits may occur (Akulov et al. 2025).

***Grapholita funebrana* (Treitschke, 1835)**
Fig. 8.2

Material examined. RUSSIA, **Irkutsk Oblast**, Irkutsk 52.2997 N, 104.2354 E, 429 m a.s.l., 12.VI-04.VII.2023, 301 males, staff of the VNIIKR (Irkutsk Branch) coll. | **Khakassia Republic**, Abakan. 53.6721 N, 91.5295 E, 254 m a.s.l., 53.6658 N, 91.5390 E, 13.VII-04.VIII.2011, 253 m a.s.l., 106 males, Akulov E. coll. | **Krasnoyarsk Krai**, Krasnoyarsk, 55.9711 N, 92.7487 E, 245 m a.s.l., 56.0345 N, 92.7394 E, 240 m a.s.l.,

26.VII-13.IX.2010, 4 males, ibidem, 22.VI-10.X.2011, 9 males, ibidem, 16.VIII-03.X.2012, 7 males, ibidem, 04.VI-13.IX.2013, 53 males, ibidem, 17.VI-23.IX.2014, 23 males, ibidem, 11.VI-20.VIII.2015, 27 males, ibidem, 15.VI-21.IX.2016, 115 males, ibidem, 14.VI-13.IX.2017, 30 males, ibidem, 20.VI-26.IX.2018, 224 males, Akulov E. coll.; Minusinsk district, Minusinsk, 53.6748 N, 91.6715 E, 255 m a.s.l., 53.7135 N, 91.6466 E, 248 m a.s.l., 27.VIII-14.IX.2010, 2 males, ibidem, 28.VI-25.VIII.2011, 118 males, ibidem, 04.IX-03.X.2012, 7 males, ibidem, 01.VIII-15.VIII.2014, 82 males, ibidem, 04.VI-10.IX.2015, 70 males, ibidem, 01.VI-14.IX.2016, 41 males, ibidem, 31.V-06.IX.2017, 25 males, ibidem, 13.VI-05.IX.2018, 41 males, Akulov E., Medvedenko A. coll. | **Altai Krai**, Slavgorod, 52.9971 N, 78.6487 E, 117 m a.s.l., 18-28.VI.2022, 54 males; Kulunda vil., 52.5638 N, 78.9465 E, 139 m a.s.l., 18.VI.-21.VII.2022, 111 males; Zavyalovsky district, Glubokoe vil. 52.9902 N, 80.6840 E, 162 m a.s.l., 11-26.VI.2022, 44 males; Rubtsovsky district, Veseloyarsk settl., 51.2829 N, 81.1081 E, 232 m a.s.l., 11-26.VI.2022, 14 males; Loktevsky district, Ustyanka settl., 51.1439 N, 81.5947 E, 271 m a.s.l., 15-25.VII.2022, 51 males; Georgievka settl., 51.1397 N, 81.5077 E, 262 m a.s.l., 15-25.VII.2022, 67 males; Zmeinogorsk district, Zmeinogorsk, 51.1539 N, 82.1985 E, 369 m a.s.l., 11-21.VI.2022, 49 males; Barnaul, 53.3468 N, 83.7769 E, 230 m a.s.l., 11.VI-25.VII.2022, 132 males, Snigireva L. coll. | **Altai Republic**, Gorno-Altaysk, 51.9578 N, 85.9606 E, 302 m a.s.l., 11-26.VI.2022, 3 males, Snigireva L. coll. | **Novosibirsk Oblast**, Novosibirsk, 54.8208 N, 83.1058 E, 158 m a.s.l., 54.9353 N, 83.0283 E, 99 m a.s.l., 15-25.VI.2021, 166 males, Tomoshevich M. coll. | **Omsk Oblast**, Omsk, 54.8840 N, 73.3339 E, 75 m a.s.l., 10.VI-13.VII.2022, 293 males, Terebilov. A. coll. | **Perm Krai**, Perm Kondratovo vil. 57.9759 N, 56.1066 E, 97 m a.s.l., 22.VI-07.VII.2023, 12 males; Perm municipal district, Stolbovo territory, the community of private gardens "Posad", 57.6007 N, 56.3464 E, 75 m a.s.l., 08.VII-07.VIII.2023, 33 males; Merkushevo vil. 57.8466 N, 56.4243 E, 148 m a.s.l., 22.VI-21.VII.2023, 15 males; Dobryansky municipal district, Gari vil., 58.1765 N, 56.5508 E, 120 m a.s.l., 23.VI-23.VII.2023, 4 males, Sokolova I. coll. | **Udmurt Republic**, Votkinsk district, Fertiki vill., 56.9644 N, 54.0443 E, 98 m a.s.l., 01-30.VI.2024, 237 males Ermolaev I. coll. | **Kirov Oblast**, Kirov, 58.6394 N, 49.7478 E, 114 m a.s.l., 26.VII-27.VIII.2023, 20 males; Yuryansky district, Zagar'e settl., 58.8165 N, 49.6178 E, 177 m a.s.l., 26.VII-04.IX.2023, 13 males, Korobeynikova L. coll. | **Orenburg Oblast**, Orenburg, 51.7682 N, 55.0970 E, 95 m a.s.l., 20.VI-04.VII.2023, 364 males, Mineeva E. coll. | **Stavropol Krai**, Pyatigorsk, 44.0430 N, 43.0124 E, 44.0487 N, 42.9845 E, 530 m a.s.l., 31.V-07.VI.2021, 226 males, Akulov E., Danilenko E. coll. | **Moscow Oblast**, Ramensky district, Bykovo, 55.6396 N, 38.0961 E, 13.V.2025-30.V.2025, 56 males, ibidem, 30.V.2025-11.VI.2025, 106 males, ibidem, 11.VI.2025-24.VI.2025, 32 males, 24.VI.2025-7.VII.2025, 45 males, ibidem, 7.VII.2025-18.VII.2025, 24 males, ibidem, 18.VII.2025-4.VIII.2025, 59 males, ibidem, 4.VIII.2025-15.VIII.2025, 44 males, ibidem, 15.VIII.2025-29.VIII.2025, 14 males, ibidem, 29.VIII.2025-15.IX.2025, 23 males, ibidem, 15.IX.2025-30.IX.2025, 4 males, Kovalenko M.G. coll.; Mytishchinsky district, Trudovaya, 56.1373 N, 37.5096 E, 27.V.2025-1.VI.2025, 1 male, ibidem, 1.VI.2025-13.VI.2025, 25 males,

ibidem, 13.VI.2025-26.VI.2025, 8 males, ibidem, 26.VI.2025-13.VII.2025, 2 males, ibidem, 13.VII.2025-29.VII.2025, 22 males, ibidem, 29.VII.2025-10.VIII.2025, 21 males, ibidem, 10.VIII.2025-17.IX.2025, 6 males, ibidem, 17.IX.2025-1.X.2025, 1 male, Lovtsova J.A. coll.; Moscow, Main Botanical Garden of Academy of Sciences, 55.8418 N, 37.6018 E, 13.V.2025-2.VI.2025, 7 males, ibidem, 2.VI.2025-17.VI.2025, 8 males, ibidem, 17.VI.2025-30.VI.2025, 1 male, ibidem, 30.VI.2025-17.VII.2025, 1 male, ibidem, 17.VII.2025-7.VIII.2025, 5 males, ibidem, 7.VIII.2025-21.VIII.2025, 1 male, 21.VIII.2025-9.IX.2025, 2 males, Kovalenko M.G. coll.; Odintsovsky district, Novoshihovo, 55.6990, 36.7793, 21.VI.2025-28.VI.2025, 4 males, ibidem, 28.VI.2025-9.VII.2025, 9 males, ibidem, 9.VII.2025-15.VII.2025, 15 males, ibidem, 22.VII.2025-28.VII.2025, 11 males, ibidem, 28.VII.2025-5.VIII.2025, 4 males, ibidem, 5.VIII.2025-13.VIII.2025, 15 males, ibidem, 13.VIII.2025-17.VIII.2025, 4 males, ibidem, 17.VIII.2025-23.VIII.2025, 1 male, Kovalenko M.G. coll.; Dmitrovskiy district, Oruďevo, 56.4319, 37.5245, 17.V.2025-19.VII.2025, 13 males, Sharapova A.V., Lovtsova J.A. coll.; Stupinskiy district, Semyonovskoe, 55.0587, 37.7591, 19.VII.2025, 1 male, Kuz'mina O.V., Lovtsova J.A. coll.

Distribution. Transpalearctic (Sinev & Nedoshivina 2016). In Russia it has been recorded from the European part to the Far East (Sinev et al. 2019). New findings: 7 (Kirov, Votkinsk), 16 (Perm), 23 (Novosibirsk and Altai Krai), 24 (Altai Republic) (this paper).

Host plants. The caterpillar feeds on *Prunus* (Rosaceae): plums *Prunus* spp., *P. armeniaca*, *P. avium*, *P. cerasifera*, *P. cerasus*, *P. japonica*, *P. maximowiczii*, *P. spinosa*, *P. persica*, *P. tomentosa*, etc. (Danilevsky 1958; Carter 1984; Riolo et al. 2010; Agroecological Atlas 2026).

Detection in pheromone traps according to literature data. France (Chambón & Daguilar 1974), Hungary (Sziraki 1978, Hari & Penzes, 2010), Czech Republic, Slovakia (Hrdý et al. 1979b, 1989, 1994; Jakubikova et al. 2016, Hrudova 2003, 2005; Pražanová & Šefrová, 2024), Ukraine (Dulo & Shvanda 1980; Smetnik 1980; Kudina & Misyurenko 1991), Moldova (Rozinskaya 1980; Smentik 1980), Azerbaijan (Smentik 1980), Georgia (Smetnik 1980, Kipiani 1980), Crimea (Kurbatov 1980, Smetnik 1980), Former USSR (Komarova et al. 1983), Krasnodar (Popovich 1984), Spain (Rubio et al. 1990), Lithuania (Ostrauskas 1999), Bulgaria (Velcheva 2000), Romania (Olenici et al. 2007), China (Zheng et al. 2017), Stavropol Krai (Danilenko & Pimenov 2015, 2017).

***Grapholita tenebrosana* (Duponchel, 1843)**
Fig. 10.5

Material examined. RUSSIA, **Krasnoyarsk Krai**, Krasnoyarsk, 55.9711 N, 92.7487 E, 245 m a.s.l., 56.0345 N, 92.7394 E, 240 m a.s.l., 10-24.VII.2010, 2 males, ibidem, 05-15.VII.2011, 2 males, 19-26.VIII.2013, 1 male, ibidem, 01-25.VII.2014, 5 males, ibidem, 04.VI-10.IX.2015, 14 males, ibidem, 08.VI-31.VIII.2016, 78 males, ibidem, 07.VI-30.VIII.2017, 99 males, ibidem, 20.VI-12.IX.2018, 102 males, Akulov E.

coll.; Minusinsk district, Minusinsk, 53.6748 N, 91.6715 E, 255 m a.s.l., 53.7135 N, 91.6466 E, 248 m a.s.l., 08.VI-27.VII.2016, 10 males, ibidem, 26.VI-02.VIII.2017, 1 male, ibidem, 06.VI-12.IX.2018, 7 males, Akulov E., Medvedenko A. coll. | **Novosibirsk Oblast**, Novosibirsk 54.8208 N, 83.1058 E, 158 m a.s.l., 15-25.VI.2021, 1 male, Tomoshevich M. coll. | **Udmurt Republic**, Votkinsk district, Fertiki vill., 56.9644 N, 54.0443 E, 98 m a.s.l., 01-30.VI.2024, 2 males Ermolaev I. coll. | **Stavropol Krai**, Pyatigorsk, 44.0430 N, 43.0124 E, 44.0487 N, 42.9845 E, 530 m a.s.l., 31.V-07.VI.2021, 2 males, Akulov E., Danilenko E. coll. | **Moscow Oblast**, Ramensky district, Bykovo, 55.6396 N, 38.0961 E, 13.V.2025-30.V.2025, 1 male, ibidem, 30.V.2025-11.VI.2025, 11 males, ibidem, 11.VI.2025-24.VI.2025, 5 males, ibidem, 7.VII.2025-18.VII.2025, 1 male, ibidem, 15.VIII.2025-29.VIII.2025, 3 males, ibidem, 29.VIII.2025-15.IX.2025, 1 male, Kovalenko M.G. coll.; Mytishchinsky district, Trudovaya, 56.1373 N, 37.5096 E, 27.V.2025-1.VI.2025, 1 male, 1.VI.2025-13.VI.2025, 5 males, ibidem, 13.VI.2025-26.VI.2025, 1 male, Lovtsova J.A. coll.; Odintsovsky district, Novoshihovo, 55.6990, 36.7793, 21.VI.2025-28.VI.2025, 1 male, Kovalenko M.G. coll.

Distribution. The species is known from Europe, Asia Minor, Transcaucasia, Kazakhstan, Japan (Sinev & Nedoshivina 2016), but in Russia it has been recorded only from the European part to the Southern Urals and in the Far East (Sinev et al. 2019). In 2014, *G. tenebrosana* was recorded for the first time in Krasnoyarsk Krai (Akulov et al. 2014). New findings: 7 (Votkinsk), 23 (Novosibirsk) (this paper).

Host plants. The caterpillar feeds on the fruits of the genus *Rosa* and *Sorbus aucuparia* (Rosaceae) (Kuznetsov 1978; Razowski 2001).

Detection in pheromone traps according to literature data. France (Chambón & Daguilar 1974), Hungary (Sziraki 1978), Czech Republic and Slovakia (Hrdý et al. 1979a, 1979b, 1994), Moldova (Rozinskaya 1980), Crimea (Kurbatov 1980), Krasnodar (Smetnik 1980), Former USSR (Komarova et al. 1983), Krasnodar (Popovich 1984), Ukraine (Kudina & Misyurenko 1991), Lithuania (Ostrauskas 1999), Bulgaria (Velcheva 2000), Japan (Mizukoshi 2003, 2006), Romania (Olenici et al. 2007), Stavropol Region (Danilenko & Pimenov 2015, 2017).

***Grapholita rosana* (Danilevsky, 1968)**
Fig. 11.1

Material examined. RUSSIA, **Irkutsk Oblast**, Irkutsk 52.2997 N, 104.2354 E, 429 m a.s.l., 01-12.VI.2023, 1 male, staff of the VNIIKR (Irkutsk Branch) coll. | **Buryatia Republic**, Baikal Lake, Maximikha vill., 53.2609 N, 108.7354 E, 1.VII.2024, 10 males, Kovalenko M.G. coll. | **Khakassia Republic**, Abakan. 53.6721 N, 91.5295 E, 254 m a.s.l., 53.6658 N, 91.5390 E, 13.VII-04.VIII.2011, 253 m a.s.l., 106 males, Akulov E. coll.; Askizsky District, Kazanovka vill. vicinity, 53.2270 N, 90.0895 E, 1.VIII.2025, 1 male, Kovalenko M.G. coll. | **Krasnoyarsk Krai**, Krasnoyarsk, 55.9711 N, 92.7487 E, 245 m a.s.l., 56.0345 N, 92.7394 E, 240 m a.s.l., 10-25.VIII.2010, 2 males, ibidem, 16.VIII-03.X.2012, 1 male, ibidem, 01.VII-28.IX.2013, 4 males, ibidem, 11.VI-19.VIII.2014, 48 males, ibidem, 18.VI-23.VII.2015, 26 males, ibidem,

08.VI-20.VII.2016, 58 males, ibidem, 31.V-13.IX.2017, 119 males, ibidem, 06.VI-01.VIII.2018, 61 males, Akulov E. coll.; Minusinsk district, Minusinsk, 53.6748°N, 91.6715°E, 255 m a.s.l., 53.7135 N, 91.6466 E, 248 m a.s.l., 18.VII-11.VIII.2011, 6 males, ibidem, 04-16.VIII.2012, 1 male, ibidem, 04.VI-09.VII.2015, 97 males, ibidem, 01.VI-06.VII.2016, 23 males, ibidem, 14.VI-02.VIII.2017, 6 males, ibidem, 06.VI-04.VII.2018, 5 males, Akulov E., Medvedenko A. coll. | **Altai Krai**, Rubtsovsky district, Veseloyarsk settl., 51.2829 N, 81.1081 E, 232 m a.s.l., 11-26.VI.2022, 1 male; Loktevsky district, Ustyanka settl., 51.1439 N, 81.5947 E, 271 m a.s.l., 15-25.VII.2022, 1 male; Barnaul, 53.3468 N, 83.7769 E, 230 m a.s.l., 18.VI-08.VII.2022, 7 males, Snigireva L. coll. | **Altai Republic**, Gorno-Altaysk, 51.9578 N, 85.9606 E, 302 m a.s.l., 11-26.VI.2022, 1 male, Snigireva L. coll. |

Distribution. The species is distributed from Southern Siberia to the Kuril Islands (Kuznetsov 2005; Sinev et al. 2019), new findings: 24 (Altai Republic) (this paper); Japan (Hokkaido) (An Identification Guide of Japanese Moths 2026).

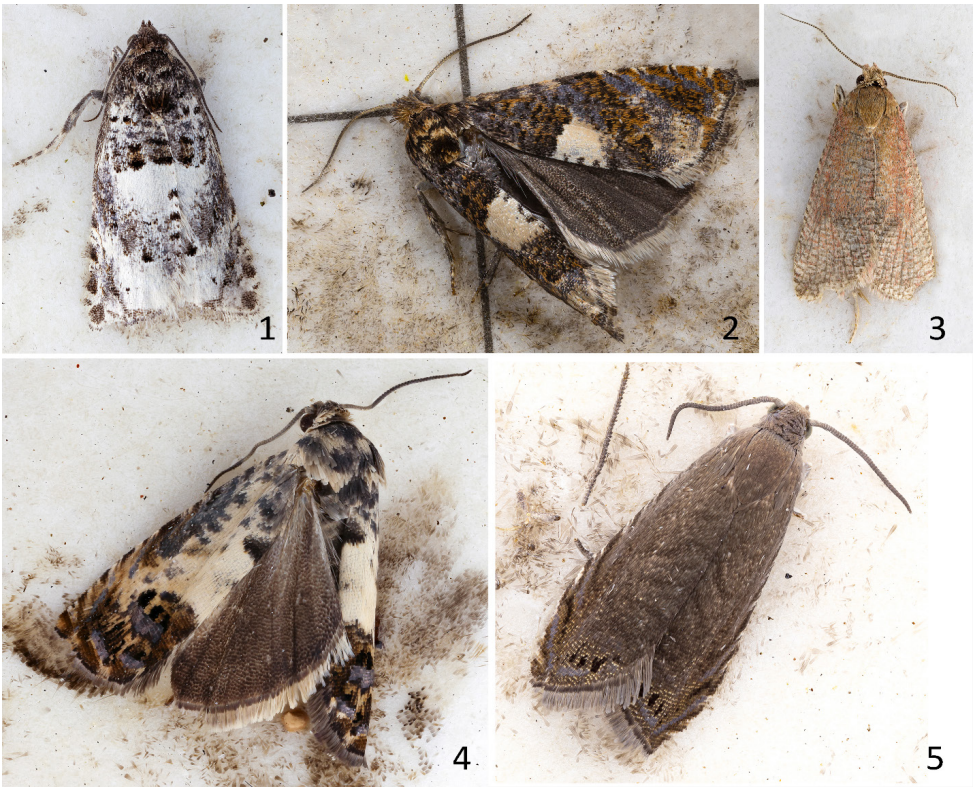

Figure 10. Species with low abundance but regular catches (C1). **1** – *Epiblema scutulana*; **2** – *Epiblema cirsiana*; **3** – *Celypha rosaceana*; **4** – *Pammene fasciana*; **5** – *Grapholita tenebrosana*. The species under numbers **1**, **5** were collected in Moscow Oblast, Bykovo; **2**, **4** – in Moscow, Main Botanical Garden of Academy of Sciences; **3** – in Smolensk Oblast, Trudilovo vill. vicinity.

Host plants. The caterpillar feeds on the fruits of the genus *Rosa* (Kuznetsov 2005).

Detection in pheromone traps according to literature data. Former USSR (Komarova et al. 1983), Primorsky Krai of Russia (Gummel 1988).

***Grapholita janthinana* (Duponchel, [1835])**
Figs 12.6, 13.6

Material examined. RUSSIA, **Kirov Oblast**, Yuryansky district, Zagar'e settl., 58.8165 N, 49.6178 E, 177 m a.s.l., 26.VII-04.IX.2023, 1 male, Korobeynikova L. coll. | **Udmurt Republic**, Votkinsk district, Fertiki vill., 56.9644 N, 54.0443 E, 98 m a.s.l., 01-30.VI.2024, 8 males Ermolaev I. coll. | **Moscow Oblast**, Ramensky district, Bykovo, 55.6396 N, 38.0961 E, 11.VI.2025-24.VI.2025, 1 male, ibidem, 7.VII.2025-18.VII.2025, 3 males, Kovalenko M.G. coll.; Mytishchinsky district, Trudovaya, 56.1373 N, 37.5096 E, 1.VI.2025-13.VI.2025, 1 male, ibidem, 26.VI.2025-13.VII.2025, 6 males, ibidem, 13.VII.2025-29.VII.2025, 4 males, Lovtsova J.A. coll.; Moscow, Main Botanical Garden of Academy of Sciences, 55.8418 N, 37.6018 E, 17.VI.2025-30.VI.2025, 2 males, Kovalenko M.G. coll.; Odintsovsky district, Novoshihovo, 55.6990, 36.7793, 28.VI.2025-9.VII.2025, 1 male, Kovalenko M.G. coll.; Stupinskiy district, Semyonovskoe, 55.0587, 37.7591, 17.V.2025-19.VII.2025, 1 male, Kuz'mina O.V., Lovtsova J.A. coll.

Distribution. Europe, Asia Minor, Transcaucasia, Uzbekistan (Razovski 2003); Russia (European part) (Sinev et al. 2019). New findings: 7 (Votkinsk, Kirov), 8 (Moscow), 16 (Perm) (this paper).

Host plants. *Crataegus*, *Prunus*, *Sorbus*, *Mespilus* (Kuznetsov 1978; Razowski 2001). Apple pest in Europe (Paulen & Kobolka, 2018).

Detection in pheromone traps according to literature data. Hungary (Sziraki 1978), Ukraine (Kudina & Misyurenko 1991), Czech Republic (Jakubikova et al. 2016).

***Grapholita andabatana* (Wolff, 1957)**
Fig. 11.2

Material examined. RUSSIA, **Irkutsk Oblast**, Irkutsk 52.2997 N, 104.2354 E, 429 m a.s.l., 12.VI-04.VII.2023, 1 male, staff of the VNIIKR (Irkutsk Branch) coll. | **Krasnoyarsk Krai**, Krasnoyarsk, 55.9711 N, 92.7487 E, 245 m a.s.l., 56.0345 N, 92.7394 E, 240 m a.s.l., 26.VII-13.IX.2010, 2 males, ibidem, 21-28.VII.2011, 1 male, ibidem, 12-20.VIII.2013, 3 males, ibidem, 01.VII-05.VIII.2014, 34 males, ibidem, 18.VI-03.IX.2015, 26 males, ibidem, 08.VI-03.VIII.2016, 52 males, ibidem, 27.VI-08.VIII.2017, 7 males, ibidem, 06.VI-11.VIII.2018, 31 males, Akulov E. coll.; Minusinsk district, Minusinsk, 53.6748°N, 91.6715°E, 255 m a.s.l., 53.7135 N, 91.6466 E, 248 m a.s.l., 27.VIII-14.IX.2010, 3 males, ibidem, 22.VI-11.VIII.2011, 6 males, ibidem, 08.VII-05.VIII.2013, 7 males, ibidem, 01.VI-14.IX.2016, 12 males, Aku-

lov E., Medvedenko A. coll. | **Khakassia Republic**, Abakan. 53.6721 N, 91.5295 E, 254 m a.s.l., 53.6658 N, 91.5390 E, 01-12.VIII.2011, 253 m a.s.l., 1 male, Akulov E., Danilenko E. coll. | **Tomsk Oblast**, Tomsk district, Belousovo vil., private garden, 56.3063°N, 85.1833°E, 171 m a.s.l., 15.VI–04.VII.2021, 7 males. Kuleshov D. coll. | **Altai Krai**, Barnaul, 53.3468 N, 83.7769 E, 230 m a.s.l., 11.VI-25.VII.2022, 5 males, Snigireva L. coll. | Altai Republic, Gorno-Altaysk, 51.9578 N, 85.9606 E, 302 m a.s.l., 11-26.VI.2022, 3 males, Snigireva L. coll. | **Novosibirsk Oblast**, Novosibirsk 54.8208 N, 83.1058 E, 158 m a.s.l., 15-25.VI.2021, 1 male, Tomoshevich M. coll. | **Perm Krai**, Perm Kondratovo vil. 57.9759 N, 56.1066 E, 97 m a.s.l., 22.VI-21.VII.2023, 110 males; Perm municipal district, Stolbovo territory, the community of private gardens "Posad", 57.6007 N, 56.3464 E, 75 m a.s.l., 08.VII-07.VIII.2023, 147 males; Merkushevo vil. 57.8466 N, 56.4243 E, 148 m a.s.l., 22.VI-21.VII.2023, 26 males; Dobryansky municipal district, Gari vil., 58.1765 N, 56.5508 E, 120 m a.s.l., 23.VI-23.VII.2023, 145 males; Shemeti vill. 58.3512 N, 56.2432 E. 177 m a.s.l., 22.VI-21.VII.2023, 181 males, Sokolova I. coll. | **Kirov Oblast**, Yuryansky district, Zagar'e settl., 58.8165 N, 49.6178 E, 177 m a.s.l., 26.VII-04.IX.2023, 1 male, Korobeynikova L. coll. | **Moscow Oblast**, Ramensky district, Bykovo, 55.6396 N, 38.0961 E, 24.VI.2025-7.VII.2025, 1 male, Kovalenko M.G. coll.; Mytishchinsky district, Trudovaya, 56.1373 N, 37.5096 E, 1.VI.2025-13.VI.2025, 2 males, ibidem, 13.VI.2025-26.VI.2025, 18 males, ibidem, 26.VI.2025-13.VII.2025, 20 males, ibidem, 10.VIII.2025-17.IX.2025, 1 male, Lovtsova J.A. coll.; Moscow, Main Botanical Garden of Academy of Sciences, 55.8418 N, 37.6018 E, 2.VI.2025-17.VI.2025, 1 male, ibidem, 17.VI.2025-30.VI.2025, 1 male, ibidem, 30.VI.2025-17.VII.2025, 1 male, Kovalenko M.G. coll.; Odintsovsky district, Novoshihovo, 55.6990, 36.7793, 21.VI.2025-28.VI.2025, 1 male, Kovalenko M.G. coll.; Stupinskiy district, Semyonovskoe, 55.0587, 37.7591, 17.V.2025-19.VII.2025, 1 male, Kuz'mina O.V., Lovtsova J.A. coll.

Distribution. The species is known from Europe and Japan (Kuznetsov 2005). In Russia, it has been recorded from the European part to the Irkutsk region (Sinev et al. 2019). New findings: 7 (Kirov), 16 (Perm), 19 (Tomsk), 24 (Altai Republic) (this paper).

Host plants. Caterpillars damage the fruit of *Sorbus aucuparia* (Rosaceae) (Kuznetsov 2005).

Detection in pheromone traps according to literature data. Japan (Mizukoshi 2006).

Grapholita cotoneastri (Danilevsky, 1968)

Material examined. RUSSIA, **Krasnoyarsk Krai**, Minusinsk district, Minusinsk, 53.6748 N, 91.6715 E, 255 m a.s.l., 53.7135 N, 91.6466 E, 248 m a.s.l., 27.VIII-09.IX.2010, 5 males, Akulov E., Medvedenko A. coll.

Distribution. The species is known only from Russia and found in 9, 10, 22 and 27 regions (Sinev et al. 2019).

Host plants. The caterpillar feeds on the fruits of the genus *Cotoneaster* (Rosaceae) (Kuznetsov 1978, 2005).

Detection in pheromone traps according to literature data. We haven't found any detection of this species in pheromone traps in the scientific literature.

***Pammene insulana* (Guenee, 1845)**
Fig. 11.3

Material examined. RUSSIA, **Irkutsk Oblast**, Irkutsk 52.2997 N, 104.2354 E, 429 m a.s.l., 01-12.VI.2023, 7 males, staff of the VNIIKR (Irkutsk Branch) coll. | **Krasnoyarsk Krai**, Krasnoyarsk, 55.9711 N, 92.7487 E, 245 m a.s.l., 56.0345 N, 92.7394 E, 240 m a.s.l., 04-18.VI.2015, 3 males, ibidem, 25.V-22.VI.2016, 97 males, ibidem, 24.V-21.VI.2017, 103 males, ibidem, 30.V-11.VII.2018, 133 males, Akulov E. coll.; Minusinsk district, Minusinsk, 53.6748 N, 91.6715 E, 255 m a.s.l., 53.7135 N, 91.6466 E, 248 m a.s.l., 31.V-01.VI.2016, 41 males, ibidem, 24-31.V.2017, 4 males, ibidem, 16.V-13.VI.2018, 14 males, Akulov E., Medvedenko A. coll. | **Udmurt Republic**, Votkinsk district, Fertiki vill., 56.9644 N, 54.0443 E, 98 m a.s.l., 01-14. VI.2024, 5 males Ermolaev I. coll. | **Chuvashia Republic**, Prisurskiy Nature Reserve, 55.0060 N, 46.6964 E, 27.IV.2025-11.V.2025, 3 males, ibidem, 11.V.2025-25.V.2025, 40 males, Kornilov coll.

Distribution. The species is known from Western Europe, Asia Minor, Transcaucasia, China, the Korean Peninsula (Sinev & Nedoshivina 2016). In Russia it has been recorded from the European part to the Lower Amur region (Sinev et al. 2019). New findings: 7 (Votkinsk) (this paper).

Host plants. The caterpillars feed on leaves of *Betula* (Betulaceae) and in Cynipoidea galls on *Quercus* (Fagaceae) (Kuznetsov 1978).

Detection in pheromone traps according to literature data. Hungary (Sziraki 1978), Former USSR (Komarova et al. 1983); Ukraine (Kudina & Misyurenko 1991); Bulgaria (Velcheva 2000).

***Pammene luculentana* (Kuznetsov, 1962)**
Figs 11.7, 13.2

Material examined. RUSSIA, **Krasnoyarsk Krai**, Krasnoyarsk, 55.9711 N, 92.7487 E, 245 m a.s.l., 56.0345 N, 92.7394 E, 240 m a.s.l., 27.05-04.VI-2015, 1 male, ibidem, 25.V-15.VI.2016, 164 males, ibidem, 17.V-21.VI.2017, 87 males, ibidem, 30.V-13. VI.2018, 147 males, Akulov E. coll.; Minusinsk district, Minusinsk, 53.6748°N, 91.6715°E, 255 m a.s.l., 53.7135 N, 91.6466 E, 248 m a.s.l., 18.V-08.VI.2016, 18 males, ibidem, 31.V-14.VI.2017, 15 males, ibidem, 17.V-27.VI.2018, 266 males, Akulov E., Medvedenko A. coll. | **Smolensk Oblast**, Smolenskiy district, Trudilovo vill. vicinity, 54.6295 N, 31.9664 E, 27.IV.2025-10.V.2025, 1 male, Rivanenkov S.L. coll. | **Chuvashia Republic**, Prisurskiy Nature Reserve, 55.0060 N, 46.6964 E, 27.IV.2025-11.V.2025, 1 male, Kornilov coll.

Distribution. Geographical distribution is poorly studied. The species has been recorded in Finland and in the mountains of Eastern Kazakhstan (Sinev & Nedoshivina 2016). In Russia, it is known from the Irkutsk Oblast' and Primorsky Krai (Sinev et al. 2019). New findings: 8 (Smolensk), 10 (Chuvashia), 22 (Krasnoyarsk) (this paper).

Host plants. The species is observed in Rosaceae thickets (Kuznetsov 1978). The caterpillar probably feeds on *Prunus padus* and *Rubus idaeus* (Kuznetsov 2005).

Detection in pheromone traps according to literature data. We haven't found any detection of this species in pheromone traps in the scientific literature.

Figure 11. Species with intermediate abundance and regular catches (B1). **1** – *Grapholita rosana*; **2** – *Grapholita andabatana*; **3** – *Pammene insulana*; **4** – *Pammene obscurana*; **5** – *Pammene blockiana*; **6** – *Pammene gallicana*; **7** – *Pammene luculentana*. The species under number **1** was collected in Khakassia Republic, Kazanovka vill. vicinity; **2** – in Moscow Oblast, Bykovo; **3**, **4** were collected in Chuvashia Republic, Prisurskiy Nature Reserve; **5** – in Krasnodar Krai, Sochi; **6** – in Krasnoyarsk Krai, Krasnoyarsk; **7** – Smolensk Oblast, near Trudilovo vill.

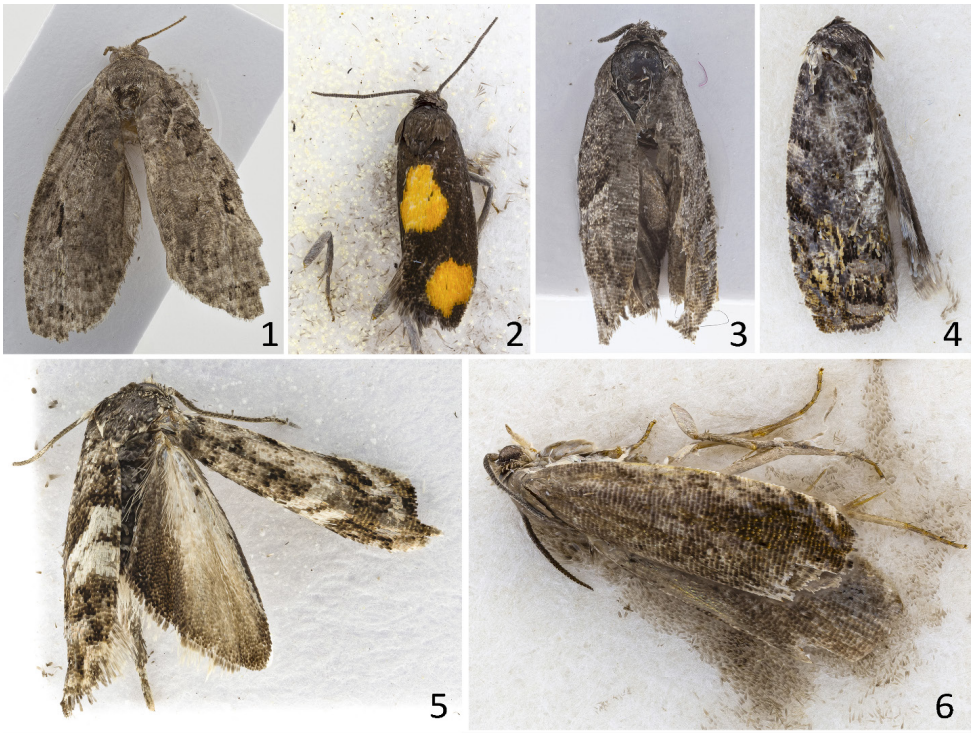

Figure 12. Species with extremely low abundance but regular catches (D1). **1** – *Apotomis infida*; **2** – *Pammene aurana*; **3** – *Pammene luedersiana*; **4** – *Pammene suspectana*; **5** – *Pammene argyrana*; **6** – *Grapholita janthinana*. The species under number **1**, **4**, **6** were collected in Moscow Oblast, Bykovo; **2** – in Moscow Oblast, Trudovaya; **5** – Moscow, Main Botanical Garden of Academy of Sciences; **3** – in the Chuvashia Republic, Prisurskiy Nature Reserve.

***Pammene obscurana* (Stephens, 1834)**
Figs 11.4, 13.4

Material examined. RUSSIA, **Irkutsk Oblast**, Irkutsk 52.2997 N, 104.2354 E, 429 m a.s.l., 01-12.VI.2023, 1 male, staff of the VNIIKR (Irkutsk Branch) coll. | **Krasnoyarsk Krai**, Krasnoyarsk, 55.9711 N, 92.7487 E, 245 m a.s.l., 56.0345 N, 92.7394 E, 240 m a.s.l., 10.VI-22.VII.2014, 187 males, ibidem, 27.V-02.VII.2015, 74 males, ibidem, 25.V-22.VI.2016, 598 males, ibidem, 17.V-12.VII.2017, 444 males, ibidem, 30.V-11.VI.2018, 86 males, Akulov E. coll.; Minusinsk district, Minusinsk, 53.6748°N, 91.6715°E, 255 m a.s.l., 53.7135 N, 91.6466 E, 248 m a.s.l., 18-25.VI.2015, 3 males, ibidem, 18.V-29.VI.2016, 38 males, ibidem, 17.V-28.VI.2017, 73 males, ibidem, 23.V-04.VI.2018, 23 males, Akulov E., Medvedenko A. coll. | **Novosibirsk Oblast**, Novosibirsk district, Krasnoobsk settl., 54.9353 N, 83.0283 E, 99 m a.s.l., 15-25. VI.2021, 2 males, Tomoshevich M. coll. | **Perm Krai**, Perm Kondratovo vil. 57.9759

N, 56.1066 E, 97 m a.s.l., 22.VI-06.VII.2023, 1 male, Sokolova I. coll. | **Udmurt Republic**, Votkinsk district, Fertiki vill., 56.9644 N, 54.0443 E, 98 m a.s.l., 01-14. VI.2024, 1 male, Ermolaev I. coll. | **Moscow Oblast**, Ramensky district, Bykovo, 55.6396 N, 38.0961 E, 15.IV.2025-28.IV.2025, 1 male, ibidem, 29.IV.2025-12.V.2025, 1 male, ibidem, 13.V.2025-30.V.2025, 5 males, Kovalenko M.G. coll.; Mytishchinsky district, Trudovaya, 56.1373 N, 37.5096 E, 27.V.2025-1.VI.2025, 4 males, Lovtsova J.A. coll. | **Smolensk Oblast**, Smolenskiy district, Trudilovo vill. vicinity, 54.6295 N, 31.9664 E, 27.IV.2025-10.V.2025, 1 male, ibidem, 10.V.2025-1.VI.2025, 1 male, Rivanenkov S.L. coll. | **Chuvashia Republic**, Prisurskiy Nature Reserve, 55.0060 N, 46.6964 E, 27.IV.2025-11.V.2025, 2 males, Kornilov coll.

Distribution. The species is known from Western Europe, Northen Kazakhstan, Mongolia and Japan (Sinev & Nedoshivina 2016). In Russia it has been recorded from the European part to the Lower Amur region (Sinev et al. 2019). New findings: 16 (Perm), 22 (Krasnoyarsk) (this paper).

Host plants. The caterpillar feeds in the catkins of *Betula* (Betulaceae) (Kuznetsov 1978).

Detection in pheromone traps according to literature data. We haven't found any detection of this species in pheromone traps in the scientific literature.

***Pammene blockiana* (Herrich-Schäffer, 1851)**
Fig. 11.5

Material examined. 48 specimens (see details in Kovalenko et al. 2025)

Distribution. *P. blockiana* is known from Mediterranean region of southern Europe. It was recorded in France, Italy, former Yugoslavia (Razowski 2003), Slovenia, Croatia (Šumpich et al. 2022), Greece (Crete) (Huemer 2025), Cyprus (Moraiti et al. 2019), and Turkey (Koçak & Kemal 2009). In Razowski (2003), Germany is mentioned, although the confirmations from this country are lacking (Gaedike 2017; Lepiforum 2026). Earlier records from Transcaucasia (Caradja 1916) require confirmation. Kuznetzov (1978) listed *P. blockiana* for the Black Sea coast without specifying the countries, likely referring to regions outside Russia, as no verified records from Russia existed until now. Our study documents the species on the Black Sea cost of Russia, specifically in Sochi, for the first time (Kovalenko et al. 2025).

Host plants. *Cupressus sempervirens*, *Juniperus excelsa*, and *J. foetidissima* (Kuznetsov 1978; Razowski 2003; Moraiti et al. 2019).

Detection in pheromone traps according to literature data. The moths were captured in pheromone traps with synthetic sex pheromone of *Cydia pomonella* in France (Chambón 1994). Our recent work (Kovalenko et al. 2025) provides data on the first record of *P. blockiana* males being attracted to traps baited with the synthetic sex pheromone of *G. molesta*.

***Pammene fasciana* (Linnaeus, 1761)**
Fig. 10.4

Material examined. RUSSIA, **Stavropol Krai**, Pyatigorsk, 44.0430 N, 43.0124 E, 44.0487 N, 42.9845 E, 530 m a.s.l., 31.V-03.VI.2021, 1 males, Akulov E., Danilenko E. coll. | **Moscow**, Main Botanical Garden of Academy of Sciences, 55.8418 N, 37.6018 E, 2.VI.2025-17.VI.2025, 2 males, Kovalenko M.G. coll. | **Smolensk Oblast**, Smolenskiy district, Trudilovo vill. vicinity, 54.6295 N, 31.9664 E, 1.VI.2025-14. VI.2025, 1 male, Rivanenkov S.L. coll. | **Krasnodar Krai**, Sochi, garden of the Subtropical Scientific Centre of the Russian Academy of Sciences, 43.5722 N, 39.7519 E, 77 m a.s.l., 16–28.05.2025, 15 males, Lovtsova J.A., Kovalenko M.G. coll.

Distribution. The species is known from Europe, Asia Minor, Iran (Kuznetsov 1978; Razowski 2003). In Russia it has been recorded in the European part and in the Western Caucasus (Sinev et al. 2019).

Host plants. The caterpillars cause damage by destroying acorns of *Quercus robur* and fruit of *Castanea*. Less commonly in the galls of *Andricus foecundatrix* on *Quercus* (Kuznetsov 1978).

Detection in pheromone traps according to literature data. Hungary (Sziraki 1978), Former USSR (Komarova et al. 1983), Czech Republic and Slovakia (Hrdý et al. 1989, 1994; Jakubikova et al. 2016), Bulgaria (Velcheva 2000), France (Chambón & Daguilar 1974), Spain (Rubio et al. 1990).

***Pammene gallicana* (Guenee, 1845)**
Figs 11.6, 13.3

Material examined. RUSSIA, **Khakassia Republic**, Abakan. 53.6721 N, 91.5295 E, 254 m a.s.l., 53.6658 N, 91.5390 E, 03-12.VIII.2011, 253 m a.s.l., 2 males, Akulov E. coll. | **Krasnoyarsk Krai**, Krasnoyarsk, 55.9711 N, 92.7487 E, 245 m a.s.l., 56.0345 N, 92.7394 E, 240 m a.s.l., 14-21.VIII.2011, 13 males, ibidem, 16.VIII-03.X.2012, 1 male, ibidem, 04.VI-20.VIII.2013, 4 males, ibidem, 17.VI-29.VII.2014, 34 males, ibidem, 11.VI-09.VII.2015, 33 males, ibidem, 08.VI-21.VIII.2016, 33 males, ibidem, 06.VI-22.VIII.2017, 138 males, ibidem, 20.VI-26.IX.2018, 154 males, Akulov E. coll.; Minusinsk district, Minusinsk, 53.6748 N, 91.6715 E, 255 m a.s.l., 53.7135 N, 91.6466 E, 248 m a.s.l., 27.VIII-14.IX.2010, 16 males, ibidem, 15.VI-25.VIII.2011, 39 males, ibidem, 09-16.VIII.2012, 7 males, ibidem, 07.VII-05.VIII.2013, 25 males, ibidem, 01.VIII-15.VIII.2014, 48 males, ibidem, 04.VI-10.IX.2015, 73 males, ibidem, 06.VII-17.VIII.2016, 48 males, ibidem, 12.VII-30.VIII.2017, 109 males, ibidem, 13.VI-22.VIII.2018, 239 males, Akulov E., Medvedenko A. coll. | **Tomsk Oblast**, Tomsk district, Belousovo vil., private garden, 56.3063 N, 85.1833 E, 171 m a.s.l., 15.VI–04.VII.2021, 9 males. Kuleshov D coll. | **Altai Krai**, Slavgorod, 52.9971 N, 78.6487 E, 117 m a.s.l., 18-28.VI.2022, 1 male, Snigireva L. coll. | **Omsk Oblast**, Omsk, 54.8840 N, 73.3339 E, 75 m a.s.l., 10.VI-13.VII.2022, 7 males, Terebilov. A. coll. | **Perm Krai**, Perm Kondratovo vil. 57.9759 N, 56.1066 E, 97 m a.s.l., 06-21.

VII.2023, 1 male; Perm municipal district, Stolbovo territory, the community of private gardens "Posad", 57.6007 N, 56.3464 E, 75 m a.s.l., 23.VII-07.VIII.2023, 1 male; Shemeti vill. 58.3512 N, 56.2432 E. 177 m a.s.l., 10-24.VII.2023, 1 male, Sokolova I. coll.

Distribution. The species is distributed from Western Europe to the Kuril Islands (Kuznetsov 2005; Sinev & Nedoshivina 2016). In Russia it has been recorded from the European part to the Far East (Sinev et al. 2019). New findings: 7 (Kirov), 16 (Perm), 19 (Tomsk), 20 (Altai Krai, Omsk), 22 (Krasnoyarsk) (this paper). A new species for the fauna of Khakassia Republic.

Host plants. The caterpillar feeds on the seeds of various Umbelliferae: *Heracleum sphondylium*, *Angelica sylvestris*, *Daucus carota*, *Pastinaca sativa*, *Thysselinum palustre* and *Peucedanum* (Kuznetsov 2005).

Detection in pheromone traps according to literature data. Hungary (Sziraki 1978), Moldova (Rozinskaya 1980), Former USSR (Komarova et al. 1983), Ukraine (Kudina & Misyurenko 1991); Lithuania (Ostrauskas 1999).

***Pammene suspectana* (Lienig & Zeller, 1846)**
Figs 12.4, 13.5

Material examined. RUSSIA, | **Moscow Oblast**, Ramensky district, Bykovo, 55.6396 N, 38.0961 E, 13.V.2025-30.V.2025, 1 male, Kovalenko M.G. coll. | **Smolensk Oblast**, Smolenskiy district, Trudilovo vill. vicinity, 54.6295 N, 31.9664 E, 10.V.2025-1.VI.2025, 6 males, Rivanenkov S.L. coll. | **Rostovskaya Oblast**, Neklinovskiy district, 1300 km railway station, 47.5725 N, 39.7529 E, 20.IV.2025-4.V.2025, 3 males, ibidem, 4.V.2025-18.V.2025, 1 male, ibidem, 11.V.2025-25.V.2025, 2 males, Kasatkin D.G. coll. | **Stavropol Krai**, Pyatigorsk, 44.0430 N, 43.0124 E, 44.0487 N, 42.9845 E, 530 m a.s.l., 31.V-07.VI.2021, 3 males, Akulov E., Danilenko E. coll.

Distribution. Western palaearctic species (Razowski 2003). In Russia, it has been recorded in Kaliningrad, European Central Black Earth region and in Crimea (Sinev et al. 2019). New findings: 8 (Moscow, Smolensk), 11 (Rostov), 13 (Pyatigorsk) (this paper).

Host plants. The caterpillars are present under the bark of *Fraxinus excelsior* (Kuznetsov 1978), but it is still not known for sure if they feed there (Lepiforum 2026).

Detection in pheromone traps according to literature data. Hungary (Sziraki 1978), Czech Republic and Slovakia (Hrdý et al. 1979b, 1994; Jakubikova et al. 2016; Pražanová & Šefrová 2024), Former USSR (Komarova et al. 1983), Krasnodar (Popovich 1984), Ukraine (Smetnik 1980; Kudina & Misyurenko 1991), Lithuania (Ostrauskas 1999), Romania (Olenici et al. 2007), Stavropol Krai (Danilenko & Pimenov 2015, 2017).

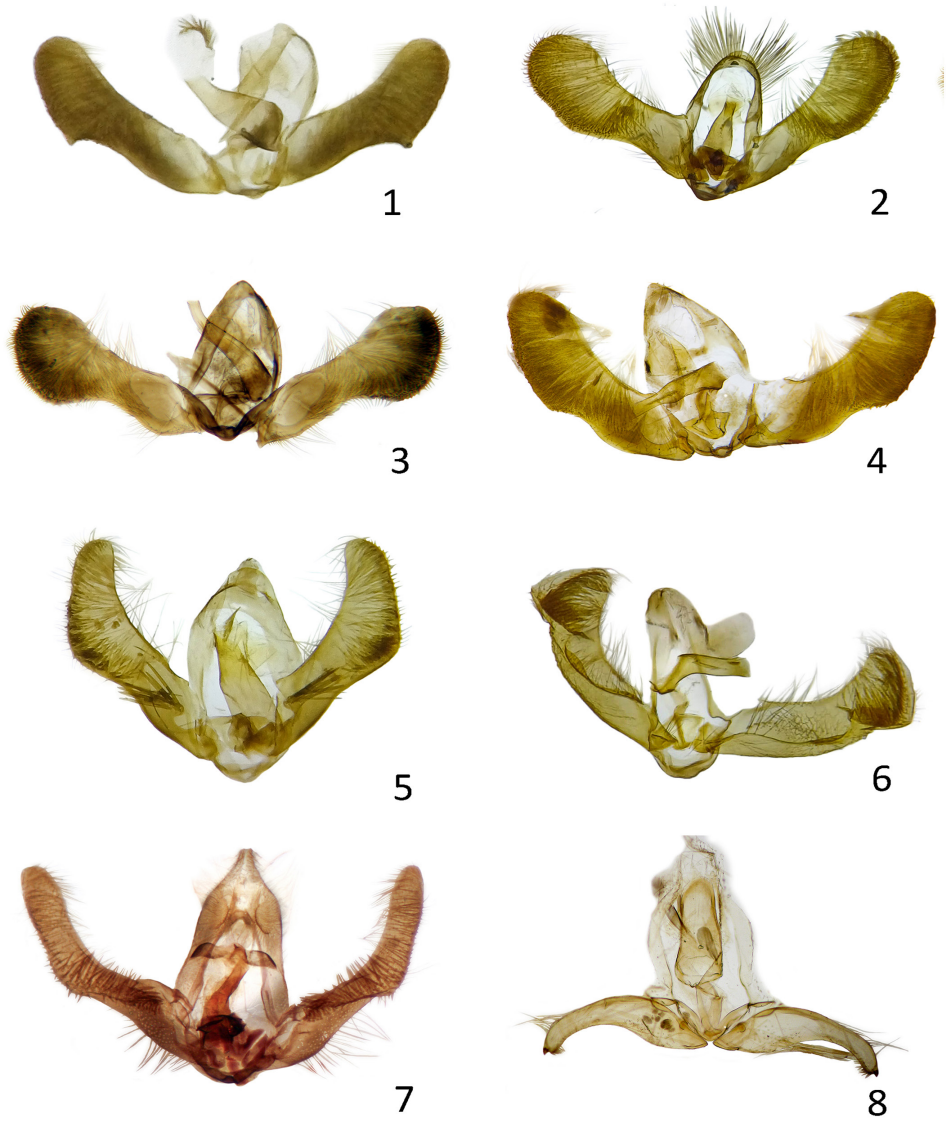

Figure 13. Male genitalia of some Tortricidae species detected in the traps baited with the synthetic sex pheromone of *G. molesta*. **1** – *Pammene luedersiana*, Moscow, Main Botanical Garden of Academy of Sciences; **2** – *Pammene luculentana*, Chuvashia Republic, Prisurskiy Nature Reserve; **3** – *Pammene gallicana*, Krasnoyarsk Krai, Krasnoyarsk; **4** – *Pammene obscurana*, Krasnoyarsk Krai, Krasnoyarsk; **5** – *Pammene suspectana*, Rostovskaya Oblast, 1300 km railway station; **6** – *Grapholita janthinana*, Moscow, Main Botanical Garden of Academy of Sciences; **7** – *Argyroploce roseomaculana*, Krasnoyarsk Krai, Krasnoyarsk; **8** – *Enarmonia minuscula*, Krasnoyarsk Krai, Krasnoyarsk.

***Pammene aurana* (Fabricius, 1775)**
Fig. 12.2

Material examined. RUSSIA, **Irkutsk Oblast**, Irkutsk 52.2997 N, 104.2354 E, 429 m a.s.l., 12-24.VI.2023, 1 male, staff of the VNIIKR (Irkutsk Branch) coll. | **Krasnoyarsk Krai**, Krasnoyarsk, 55.9711 N, 92.7487 E, 245 m a.s.l., 56.0345 N, 92.7394 E, 240 m a.s.l., 01-12.VII.2011, 2 males, ibidem, 01-22.VI.2014, 7 males, ibidem, 18.VI-23.VII.2015, 10 males, ibidem, 15.VI-14.IX.2016, 23 males, ibidem, 07.VI-19.VII.2017, 44 males, ibidem, 13.VI-05.IX.2018, 26 males, Akulov E. coll.; Minusinsk district, Minusinsk, 53.6748 N, 91.6715 E, 255 m a.s.l., 53.7135 N, 91.6466 E, 248 m a.s.l., 06-13.VI.2015, 1 male, ibidem, 01.VI-06.VII.2016, 6 males, ibidem, 19.VII-09.VIII.2017, 3 males, Akulov E., Medvedenko A. coll. | **Kemerovo Oblast**, Kuzbass, Kemerovo district, Urmanay vil., private garden, 55.2854 N, 86.3745 E, 164 m a.s.l., 17.VI–03.VII.2021, 2 males; Mariinsk district, Mariinsk, private garden, 55.2854°N, 86.3745°E, 134 m a.s.l., 03–18.VII.2021, 2 males, A. Otteva coll. | **Tomsk Oblast**, Tomsk district, Belousovo vil., private garden, 56.3063°N, 85.1833°E, 171 m a.s.l., 15.VI–04.VII.2021, 10 males. Kuleshov D. coll. | **Altai Krai**, Barnaul, 53.3468 N, 83.7769 E, 230 m a.s.l., 26.VI-08.VII.2022, 3 males, Snigireva L. coll. | **Novosibirsk Oblast**, Novosibirsk 54.8208 N, 83.1058 E, 158 m a.s.l., 15-25.VI.2021, 2 males, Tomoshevich M. coll | **Omsk Oblast**, Omsk, 54.8840 N, 73.3339 E, 75 m a.s.l., 10.VI-13.VII.2022, 2 males, Terebilov. A. coll. | **Perm Krai**, Perm Kondratovo vil. 57.9759 N, 56.1066 E, 97 m a.s.l., 22.VI-07.VII.2023, 3 males, Sokolova I. coll. | **Moscow Oblast**, Ramensky district, Bykovo, 55.6396 N, 38.0961 E, 24.VI.2025-7.VII.2025, 3 males, Kovalenko M.G. coll.; Mytishchinsky district, Trudovaya, 56.1373 N, 37.5096 E, 27.V.2025-1.VI.2025, 1 male, ibidem, 1.VI.2025-13.VI.2025, 3 males, ibidem, 13.VI.2025-26.VI.2025, 2 males, Lovtsova J.A. coll.; Odintsovsky district, Novoshihovo, 55.6990, 36.7793, 21.VI.2025-28.VI.2025, 3 males, Kovalenko M.G. coll.

Distribution. The species is widespread from Western Europe to Transbaikalia, known from Kuznetsk Alatau and Sakhalin (Danilevsky & Kuznetsov 1968; Sinev & Nedoshivina 2016; Sinev et al. 2019). New findings: 16 (Perm), 19 (Tomsk), 26 (Irkutsk) (this paper).

Host plants. The caterpillar on seeds of the genus *Heracleum* (Umbelliferae) (Kuznetsov 1978).

Detection in pheromone traps according to literature data. Hungary (Sziraki 1978), Czech Republic (Jakubikova et al. 2016), Crimea (Kurbatov 1980), Former USSR (Komarova et al. 1983).

***Pammene luedersiana* (Sorhagen, 1885)**
Figs 12.3, 13.1

Material examined. RUSSIA, **Krasnoyarsk Krai**, Krasnoyarsk, 55.9711 N, 92.7487 E, 245 m a.s.l., 56.0345 N, 92.7394 E, 240 m a.s.l., 04-11.VI.2015, 1 male, ibidem, 25.V-15.VI.2016, 11 males, ibidem, 17.V-07.VI.2017, 10 males, ibidem, 30.V-13.VI.2018,

5 males, Akulov E. coll.; Minusinsk district, Minusinsk, 53.6748°N, 91.6715°E, 255 m a.s.l., 53.7135 N, 91.6466 E, 248 m a.s.l., 04-11.VI.2015, 1 male, Akulov E., Medvedenko A. coll. | **Moscow Oblast**, Ramensky district, Bykovo, 55.6396 N, 38.0961 E, 15.IV.2025-28.IV.2025, 1 male, Kovalenko M.G. coll.; Mytishchinsky district, Trudovaya, 56.1373 N, 37.5096 E, 15.IV.2025-27.V.2025, 2 males, ibidem, 27.V.2025-1.VI.2025, 1 male, Lovtsova J.A. coll.; Moscow, Main Botanical Garden of Academy of Sciences, 55.8418 N, 37.6018 E, 17.IV.2025-30.IV.2025, 1 male, Kovalenko M.G. coll. | Smolensk Oblast, Smolenskiy district, Trudilovo vill. vicinity, 54.6295 N, 31.9664 E, 27.IV.2025-10.V.2025, 6 males, Rivanenkov S.L. coll. | **Chuvashia Republic**, Prisurskiy Nature Reserve, 55.0060 N, 46.6964 E, 27.IV.2025-11.V.2025, 8 males, Kornilov coll.

Distribution. It's found in Europe (Mutanen & Pretorius 2007). In Russia the species is known from the European part (Sinev et al. 2019). The websites Lepiforum.org and Insectamo.ru contain photographs of *P. luedersiana* moths from the Moscow region (photos by I.G. Ustyantsev and A.G. Ponomarev), but without images of the genitals. New findings: 8 (Moscow, Smolensk), 10 (Chuvashia), 22 (Krasnoyarsk) (this paper).

Host plants. The caterpillar feeds on *Myrica gale* (Myricaceae), *Rhododendron tomentosum* and *Vaccinium uliginosum* (Ericaceae) (Razowki 2001; Lepiforum 2026).

Detection in pheromone traps according to literature data. We haven't found any detection of this species in pheromone traps in the scientific literature.

***Pammene argyrana* (Hübner, [1799])**
Fig. 12.5

Material examined. RUSSIA, **Moscow Oblast**, Ramensky district, Bykovo, 55.6396 N, 38.0961 E, 15.IV.2025-28.IV.2025, 1 male, ibidem, 29.IV.2025-12.V.2025, 1 male, Kovalenko M.G. coll.; Moscow, Main Botanical Garden of Academy of Sciences, 55.8418 N, 37.6018 E, 17.IV.2025-30.IV.2025, 10 males, ibidem, 30.IV.2025-13.V.2025, 14 males, Kovalenko M.G. coll. | **Chuvashia Republic**, Prisurskiy Nature Reserve, 55.0060 N, 46.6964 E, 11.V.2025-25.V.2025, 3 males, Kornilov coll.

Distribution. Europe (Razowski 2003). In Russia it is distributed in the European part (Sinev et al. 2019).

Host plants. Caterpillars live in *Cynipoidea galls* on Quercus (Fagaceae), in particular in the galls of *Biorhiza pallida* (Kuznetsov 1978; Razowski 2001).

Detection in pheromone traps according to literature data. France (Chambón & Daguilar, 1974), Hungary (Sziraki 1978), Crimea (Kurbatov 1980), Ukraine (Kudina & Misyurenko 1991), Spain (Rubio et al. 1990), Bulgaria (Velcheva 2000), Czech Republic (Jakubikova et al. 2016).

***Pammene clanculana* (Tengstrom, 1869)**

Material examined. RUSSIA, **Krasnoyarsk Krai**, Krasnoyarsk, 55.9711 N, 92.7487 E, 245 m a.s.l., 56.0345 N, 92.7394 E, 240 m a.s.l., 26.VII-13.IX.2010, 4 males, ibidem, 07-12.VII.2011, 1 male, ibidem, 13-20.VIII.2015, 1 male, ibidem, 25.V-21.IX.2016, 17 males, ibidem, 14.VI-12.VII.2017, 5 males, ibidem, 27.VI-04.VII.2018, 1 male, Akulov E. coll.; Minusinsk district, Minusinsk, 53.6748 N, 91.6715 E, 255 m a.s.l., 53.7135 N, 91.6466 E, 248 m a.s.l., 01-15.VII.2013, 3 males, ibidem, 25.05-01.VI.2016, 1 male, ibidem, 14.VI-12.VII.2017, 3 males, ibidem, 13.VI-12.IX.2018, 8 males, Akulov E., Medvedenko A. coll.

Distribution. The species occurs in Europe (Lepiforum 2026). In Russia it has been recorded from the European part to the Middle Amur region (Sinev et al. 2019). New findings: 22 (Krasnoyarsk) (this paper).

Host plants. The caterpillar feeds in the catkins of *Betula nana* (Betulaceae) (Kuznetsov 1978) and probably other species of *Betula* (Kuznetsov 2005).

Detection in pheromone traps according to literature data. We haven't found any detection of this species in pheromone traps in the scientific literature.

***Pammene rhediella* (Clerck, 1759)**
Figs 9.2, 14

Material examined. RUSSIA, **Rostovskaya Oblast**, Neklinovskiy district, 1300 km railway station, 47.5725 N, 39.7529 E, 20.IV.2025-4.V.2025, 2 males, Kasatkin D.G. coll. | **Chuvashia Republic**, Prisurskiy Nature Reserve, 55.0060 N, 46.6964 E, 27.IV.2025-11.V.2025, 1 male, Kornilov coll.

Distribution. Europe, Asia Minor, Transcaucasia, Turkmenistan (Razowski 2003). In Russia it is distributed in the European part (Sinev et al. 2019).

Host plant. Caterpillars live in the fruits of *Pyrus*, *Sorbus*, *Prunus*, *Malus*, *Crataegus* (Rosaceae) (Gratwick 1992; Razowski 2003; Lepiforum 2026).

Detection in pheromone traps according to literature data. Former USSR (Komarova et al. 1983), Ukraine (Kudina & Misyurenko 1991).

Comments. In pheromone traps with catches from the Rostov region, bud scales of *Prunus* sp. (*P. domestica* or *P. spinosa*) were found attached next to the moths. The striking similarity in coloration between the moth's forewings and the bud scales – predominantly brown with a pale reddish marginal stripe – is could represent an example of mimicry (Fig. 14).

***Pammene germmana* (Hubner, 1799)**

Material examined. RUSSIA, **Krasnoyarsk Krai**, Krasnoyarsk, 55.9711 N, 92.7487 E, 245 m a.s.l., 56.0345 N, 92.7394 E, 240 m a.s.l., 01-15.VI.2016, 4 males, Akulov E. coll.

Distribution. The species is known from Europe, Asia Minor, Transcaucasia, China, the Korean Peninsula and Japan (Sinev & Nedoshivina 2016). In Russia it has been recorded from the European part to the Kuril Islands (Sinev et al. 2019).

Host plants. The caterpillar feeds in the fruit of *Prunus* (plums) and *Crataegus* (Rosaceae), it is recorded also in the shoots of *Quercus* (Kuznetsov 2005).

Detection in pheromone traps according to literature data. Former USSR (Komarova et al. 1983), Lithuania (Ostrauskas 1999).

Figure 14. A possible case of mimicry: the moth *Pammene rhediella* with its forewings and bud scales of *Prunus* sp. (*P. domestica* or *P. spinosa*) (both are predominantly brown with a pale reddish marginal stripe).

Pammene nemorosa Kuznetzov, 1968

Material examined. RUSSIA, **Primorsky Krai**, Shkotovsky district, Anisimovka village, 43.17 N, 132.7897 E, 241 m a.s.l., 30.V.2019, 6 males.

Distribution. The species known from the Lower Amur region and Primorsky Krai (Sinev et al. 2019), China, Korean Peninsula, Japan (Sohn et al. 2015).

Host plants. The caterpillars feed in buds and acorns of *Quercus dentata* and *Q. serrata* (Fagaceae) (Komai 1999).

Detection in pheromone traps according to literature data. Primorsky Krai of Russia (Komarova et al. 1983; Gummel 1988); Japan (Mizukoshi 2003, 2006).

***Cydia pactolana* (Zeller, 1840)**
Fig. 9.1

Material examined. RUSSIA, **Krasnoyarsk Krai**, Krasnoyarsk, 55.9711 N, 92.7487 E, 245 m a.s.l., 56.0345 N, 92.7394 E, 240 m a.s.l., 13-20.VI.2018, 1 male, Akulov E. coll.

Distribution. The species is known from Northern and Central Europe and from Japan (Hokkaido) (Sinev & Nedoshivina 2016). In Russia it is distributed from the European part to Primorsky Krai (Sinev et al. 2019).

Host plants. The caterpillar feeds in the phloem of *Picea abiens* (Pinaceae) (Kuznetsov 1978, Heliövaara et al. 2018).

Detection in pheromone traps according to literature data. We haven't found any detection of this species in pheromone traps in the scientific literature.

***Dichrorampha simpliciana* (Haworth, 1811)**

Material examined. RUSSIA, **Krasnoyarsk Krai**, Minusinsk district, Minusinsk, 53.6748°N, 91.6715°E, 255 m a.s.l., 10.VIII.2010, 1 male, Akulov E., Medvedenko A. coll.

Distribution. The species has been recorded in Western Europe (Sinev & Nedoshivina 2016). In Russia, it is distributed from the European part to Sakhalin (Sinev et al. 2019).

Host plants. The caterpillar feeds in the roots and lower part of the stems of *Artemisia vulgaris* (Asteraceae) (Kuznetsov 1978; Razowski 2001).

Detection in pheromone traps according to literature data. We haven't found any detection of this species in pheromone traps in the scientific literature.

***Dichrorampha aeratana* (Pierce & Metcalfe, 1915)**
Fig. 9.3

Material examined. RUSSIA, **Krasnoyarsk Krai**, Krasnoyarsk, 55.9711 N, 92.7487 E, 245 m a.s.l., 56.0345 N, 92.7394 E, 240 m a.s.l., 18-25.VI.2015, 1 male, Akulov E. coll.

Distribution. The species is known from Western Europe (Sinev & Nedoshivina 2016). In Russia, it is distributed from the European part to the Kuril Islands (Sinev et al. 2019).

Host plants. The caterpillar feeds in the roots and lower parts of stems of *Leucanthemum vulgare*, *Tanacetum vulgare* (Asteraceae) (Razowski 2001; Lepiforum 2026).

Detection in pheromone traps according to literature data. We haven't found any detection of this species in pheromone traps in the scientific literature.

Tribe Olethreutini

***Celypha rosaceana* (Schlager, 1847) (Fig. 10.3)**

Material examined. RUSSIA, **Khakassia Republic**, Abakan, 53.6721 N, 91.5295 E, 254 m a.s.l., 53.6658 N, 91.5390 E, 21.VI-12.VIII.2011, 253 m a.s.l., 3 males, Akulov E. coll. | **Krasnoyarsk Krai**, Krasnoyarsk, 55.9711 N, 92.7487 E, 245 m a.s.l., 56.0345 N, 92.7394 E, 240 m a.s.l., 30.VII.2010, 1 male, ibidem, 05-30.VII.2011, 12 males, ibidem, 08.VII-28.IX.2013, 3 males, ibidem, 15-29.VII.2014, 4 males, ibidem, 18.VI-23.VII.2015, 10 males, ibidem, 22-29.VI.2016, 1 male, ibidem, 28.VI- 05.VII.2017, 1 male, ibidem, 27.VI-18.VII.2018, 1 male, Akulov E. coll.; Minusinsk district, Minusinsk, 53.6748 N, 91.6715 E, 255 m a.s.l., 53.7135 N, 91.6466 E, 248 m a.s.l., 10.VIII-14.IX.2010, 3 males, ibidem, 15.VI-10.VIII.2011, 9 males, ibidem, 01.VIII-15.VIII.2014, 1 male, ibidem, 11.VI-30.VII.2015, 16 males, ibidem, 01-08.VI.2016, 1 male, ibidem, 21.VI-12.VII.2017, 5 males, ibidem, 13.VI-25.VII.2018, 7 males, Akulov E., Medvedenko A. coll. | **Kemerovo Oblast**, Kuzbass, Kemerovo district, Urmanay vil., private garden, 55.2854 N, 86.3745 E, 164 m a.s.l., 17.VI–03.VII.2021, 1 male, A. Otteva coll. | **Altai Krai**, Kulunda vil., 52.5638 N, 78.9465 E, 139 m a.s.l., 16-28.VI.2022, 1 male; Loktevsky district, Ustyanka settl., 51.1439 N, 81.5947 E, 271 m a.s.l., 15-25.VII.2022, 1 male; Georgievka settl., 51.1397 N, 81.5077 E, 262 m a.s.l., 15-25.VII.2022, 3 males; Zmeinogorsk district, Zmeinogorsk, 51.1539 N, 82.1985 E, 369 m a.s.l., 11-21.VI.2022, 1 males; Snigireva L. coll. | **Omsk Oblast**, Omsk, 54.8840 N, 73.3339 E, 75 m a.s.l., 10.VI-13.VII.2022, 4 males, Terebilov. A. coll. | **Perm Krai**, Perm Kondratovo vil. 57.9759 N, 56.1066 E, 97 m a.s.l., 22.VI-07.VII.2023, 13 males; Perm municipal district, Stolbovo territory, the community of private gardens "Posad", 57.6007 N, 56.3464 E, 75 m a.s.l., 08.VII-07.VIII.2023, 25 males; Merkushevo vil. 57.8466 N, 56.4243 E, 148 m a.s.l., 22.VI-21.VII.2023, 28 males; Dobryansky municipal district, Gari vil., 58.1765 N, 56.5508 E, 120 m a.s.l., 23.VI-23.VII.2023; Shemeti vill. 58.3512 N, 56.2432 E. 177 m a.s.l., 22.VI-21. VII.2023, 58 males, Sokolova I. coll. | | **Kirov Oblast**, Yuryansky district, Zagar'e settl., 58.8165 N, 49.6178 E, 177 m a.s.l., 26.VII-04.IX.2023, 13 males, Korobeynikova L. coll. | **Udmurt Republic**, Votkinsk district, Fertiki vill., 56.9644 N, 54.0443 E, 98 m a.s.l., 01-14.VI.2024, 29 males Ermolaev I. coll.; | **Moscow Oblast**, Stupinskiy district, Semyonovskoe, 55.0587, 37.7591, 17.V.2025-19.VII.2025, 1 male, Kuz'mina O.V., Lovtsova J.A. coll.

Distribution. The species is known from Europe, Kazakhstan and Mongolia (Razowski 2003). In Russia it has been recorded from the European part to Transbaikalia (Sinev et al. 2019). New findings: 20 (Omsk, it's listed as questionable in the Catalogue of the Lepidoptera of Russia (Sinev et al. 2019) Altai Krai), 23 (Kemerovo, Altai Krai) (this paper).

Host plants. The caterpillar lives in the roots of *Sonchus arvensis*, *Sonchus asper*, *Taraxacum officinale* (Asteraceae) (Fletcher 1887; Hancock et al. 2015).

Detection in pheromone traps according to literature data. Moldova (Rozinskaya 1980), Former USSR (Komarov et al. 1983), Ukraine (Kudina & Misyurenko 1991), Lithuania (Ostrauskas 1999), Czech Republic (Jakubikova et al. 2016), Stavropol Krai (Danilenko & Pimenov, 2015, 2017).

***Celypha striana* (Denis & Schiffermuller, 1775)**
Fig. 9.4

Material examined. RUSSIA, **Krasnoyarsk Krai**, Krasnoyarsk, 55.9711 N, 92.7487 E, 245 m a.s.l., 56.0345 N, 92.7394 E, 240 m a.s.l., 13-20.VII.2016, 1 male, ibidem, 28.VI-05.VII.2017, 1 male, Akulov E. coll., | **Omsk Oblast**, Omsk, 54.8840 N, 73.3339 E, 75 m a.s.l., 01-13.VII.2022, 1 male, Terebilov. A. coll. | **Moscow,** Main Botanical Garden of Academy of Sciences, 55.8418 N, 37.6018 E, 2.VI.2025-17.VI.2025, 1 male, Kovalenko M.G. coll.; Mytishchinsky district, Trudovaya, 56.1373 N, 37.5096 E, 13.VI.2025-26.VI.2025, 1 male, ibidem, 26.VI.2025-13.VII.2025, 1 male, Lovtsova J.A. coll.

Distribution. The species is known from Western Europe, Transcaucasia, Kazakhstan, Mongolia, China, and the Korean Peninsula (Sinev & Nedoshivina 2016). In Russia it has been recorded from the European part to Primorsky Krai (Sinev et al. 2019).

Host plants. The caterpillar feeds in the roots of *Taraxacum officinale* (Kuznetsov 1978).

Detection in pheromone traps according to literature data. Spain (Rubio et al. 1990), Czech Republic and Slovakia (Hrdý et al. 1979a, 1979b, 1994; Pražanová & Šefrová 2024), Lithuania (Ostrauskas 1999).

***Celypha flavipalpana* (Herrich-Schäffer, 1848)**

Material examined. RUSSIA, **Krasnoyarsk Krai**, Minusinsk district, Minusinsk, 53.6748 N, 91.6715 E, 255 m a.s.l., 53.7135 N, 91.6466 E, 248 m a.s.l., 10.VIII.2010, 3 males, Akulov E., Medvedenko A. coll.

Distribution. The species is known from Western Europe, Mongolia, China, the Korean Peninsula (Sinev & Nedoshivina 2016), in Russia it is found from the European part to Primorsky Krai (Sinev et al. 2019).

Host plants. *Thymus quinquecostatus* (Lamiaceae) is indicated as a food plant for caterpillars (Park 1983). Other sources indicate that the species is polyphagous (Anikin et al. 2006).

Detection in pheromone traps according to literature data. We haven't found any detection of this species in pheromone traps in the scientific literature.

***Apotomis infida* (Heinrich, 1926)**
Fig. 12.1

Material examined. RUSSIA, **Buryatia Republic**, Tarbagatai district, Nadeino vill.,vicinity, 27.VI.2024, 1 male, Kovalenko M.G. coll. |**Krasnoyarsk Krai**, Krasnoyarsk, 55.9711 N, 92.7487 E, 245 m a.s.l., 56.0345 N, 92.7394 E, 240 m a.s.l., 12.VII-13.X.2011, 2 males, ibidem, 07-14.VI.2017, 1 male, ibidem, 13.VI-04.VII.2018, 3 males, Akulov E. coll.; Minusinsk district, Minusinsk, 53.6748°N, 91.6715°E, 255 m a.s.l., 53.7135 N, 91.6466 E, 248 m a.s.l., 23-30.VI.2011, 2 males, ibidem, 01-15. VI.2015, 1 male, Akulov E., Medvedenko A. coll. | **Tomsk Oblast**, Tomsk district, Belousovo village, 56.3063 N, 85.1833 E, 171 m a.s.l., 15.VI-04.VII.2021, 5 males. Kuleshov D. coll. | **Perm Krai**, Perm Kondratovo vil. 57.9759 N, 56.1066 E, 97 m a.s.l., 06-20.VII.2023, 1 male, Sokolova I. coll. | **Udmurt Republic**, Votkinsk district, Fertiki vill., 56.9644 N, 54.0443 E, 98 m a.s.l., 01-14.VI.2024, 3 males Ermolaev I. coll. | **Moscow Oblast**, Ramensky district, Bykovo, 55.6396 N, 38.0961 E, 7.VII.2025-18.VII.2025, 1 male, Kovalenko M.G. coll.

Distribution. The species is reported for Western Europe and North America (Sinev & Nedoshivina 2016). In Russia it is distributed from the European part to Far East (Sinev et al. 2019). New findings: 19 (Tomsk) (this paper).

Host plants. The caterpillar feeds on leaves of *Salix* (Salicaceae) (Kuznetsov 1978).

Detection in pheromone traps according to literature data. Ukraine (Dulo & Shvanda 1980); Former USSR (Komarova et al. 1983).

***Apotomis lineana* (Denis & Schiffermuller, 1775)**
Fig. 9.5

Material examined. RUSSIA, **Irkutsk Oblast**, Irkutsk 52.2997 N, 104.2354 E, 429 m a.s.l., 01-12.VI.2023, 4 males, staff of the VNIIKR (Irkutsk Branch) coll. | **Krasnoyarsk Krai**, Krasnoyarsk, 55.9711 N, 92.7487 E, 245 m a.s.l., 56.0345 N, 92.7394 E, 240 m a.s.l., 10-25.VIII.2010, 6 males, ibidem, 12-25.VIII.2011, 1 male, ibidem, 17.VI-23.IX.2014, 7 males, ibidem, 02-23.VII.2015, 5 males, ibidem, 29.VI-06.VII.2016, 3 males, Akulov E. coll.; Minusinsk district, Minusinsk, 53.6748 N, 91.6715 E, 255 m a.s.l., 53.7135 N, 91.6466 E, 248 m a.s.l., 18-25.VI.2015, 2 males, ibidem, 15-22.VI.2016, 1 male, ibidem, 27.VI-04.IX.2018, 1 male, Akulov E., Medvedenko A. coll.

Distribution. The species is known from Western Europe, Kazakhstan, Mongolia, China (Sinev & Nedoshivina 2016). In Russia it has been recorded from the European part to Sakhalin (Sinev et al. 2019).

Host plants. The caterpillar feeds on leaves of high-stemmed and mostly smooth-leaved willows (Salicaceae) (Kuznetsov 1978; Lepiforum 2026).

Detection in pheromone traps according to literature data. Hungary (Sziraki 1978), Former USSR (Komarova et al. 1983), Ukraine (Kudina & Misyurenko 1991).

***Orthotaenia undulana* (Denis & Schiffermuller, 1775)**

Material examined. RUSSIA, **Krasnoyarsk Krai**, Krasnoyarsk, 55.9711 N, 92.7487 E, 245 m a.s.l., 56.0345 N, 92.7394 E, 240 m a.s.l., 22.VI.2011, 1 male, Akulov E. coll.

Distribution. The species is widespread from Europe to Kazakhstan and in North America (Sinev & Nedoshivina 2016). In Russia it has been recorded from the European part to Sakhalin (Sinev et al. 2019).

Host plants. The caterpillar is polyphagous and lives mainly on the leaves of deciduous trees. It has been recorded, for example, on *Betula pendula* (Betulaceae), *Vaccinium myrtillus*, *Vaccinium vitis-idaea* (Ericaceae), *Sorbus aucuparia*, *Prunus padus* (Rosaceae), *Hippophae rhamnoides* (Elaeagnaceae) (Lepiforum 2026).

Detection in pheromone traps according to literature data. We haven't found any detection of this species in pheromone traps in the scientific literature.

***Phiaris dissolutana* (Stange, 1866)**

Material examined. RUSSIA, **Krasnoyarsk Krai**, Minusinsk, 53.6748 N, 91.6715 E, 255 m a.s.l., 53.7135 N, 91.6466 E, 248 m a.s.l., 10.VIII.2010, 2 males; ibidem 25.VII.2011, 1 male, Medvedenko A. coll.

Distribution. The species is widespread from Europe to North Korea (Sinev & Nedoshivina 2016). In Russia it has been recorded from the European part to Sakhalin (Sinev et al. 2019).

Host plants. The caterpillar is bryophagous, feeds on *Polytrichum* (Polytrichaceae) (Kuznetsov 1978; Razowski 2001).

Detection in pheromone traps according to literature data. We haven't found any detection of this species in pheromone traps in the scientific literature.

***Eudemis porphyrana* (Hübner, 1799)**

Material examined. RUSSIA, **Krasnoyarsk Krai**, Krasnoyarsk, 55.9711 N, 92.7487 E, 245 m a.s.l., 56.0345 N, 92.7394 E, 240 m a.s.l., 25.VI-02.VII.2015, 1 male, ibidem, 12-19.VIII.2018, 1 male, Akulov E. coll.

Distribution. The species is known from Western Europe, Transcaucasia, China, the Korean Peninsula and Japan (Sinev & Nedoshivina 2016). In Russia, it is found from the European part to the Kuril Islands (Sinev et al. 2019).

Host plants. The caterpillar feeds on buds and leaves of *Prunus* spp., *Prunus padus*, *Pyrus*, *Malus*, *Crataegus*, *Aronia* and *Ribes* (Rosaceae) (Kuznetsov 1978; Kuznetsov 1986; Hancock et al. 2015). Occasionally recorded on *Quercus* (Fagaceae) and *Salix* (Salicaceae) (Kuznetsov 1978). On the Lepiforum website (Lepiforum 2026) only *Prunus*, *Pyrus* and *Malus* are considered as reliable.

Detection in pheromone traps according to literature data. We haven't found any detection of this species in pheromone traps in the scientific literature.

***Olethreutes captiosanus* (Falkovitsh, 1960)**

Material examined. RUSSIA, **Krasnoyarsk Krai**, Krasnoyarsk, 55.9711 N, 92.7487 E, 245 m a.s.l., 56.0345 N, 92.7394 E, 240 m a.s.l., 04-11.VI.2015, 1 male, ibidem, 07-14.VI.2015, 1 male, Akulov E. coll.

Distribution. The species is known from China, the Korean Peninsula and Japan (Sinev & Nedoshivina 2016). In Russia, it is distributed from the South-West Siberian region to the Kuril Islands (Sinev et al. 2019).

Host plants. Detritophagous caterpillar feeds on fallen leaves (Byun and Kim 2015).

Detection in pheromone traps according to literature data. We haven't found any detection of this species in pheromone traps in the scientific literature.

***Syricoris lacunana* ([Denis & Schiffermüller], 1775)**

Material examined. RUSSIA, **Krasnoyarsk Krai**, Krasnoyarsk, 55.9711 N, 92.7487 E, 245 m a.s.l., 56.0345 N, 92.7394 E, 240 m a.s.l., 01-12.VII.2011, 1 male, ibidem, 25.VI-02.VII.2015, 1 male, Akulov E. coll.

Distribution. The species is known from Western Europe, Transcaucasia, Asia Minor and Mongolia (Sinev & Nedoshivina 2016). In Russia, it is distributed from the European part to Sakhalin (Sinev et al. 2019).

Host plants. Polyphagous. The caterpillars live in the curled leaves of various plants like *Prunus*, *Rubus*, *Fragaria*, *Spiraea* (Rosaceae), *Vicia* (Fabaceae), *Mentha* (Lamiaceae), *Fagus* (Fagaceae), *Betula* (Betulaceae), *Salix* (Salicaceae), *Atriplex* (Amaranthaceae), *Urtica* (Urticaceae), *Cirsium*, *Matricaria* (Asteraceae) etc. (Kuznetsov 1978).

Detection in pheromone traps according to literature data. Hungary (Sziraki 1978); Former USSR (Komarova et al. 1983).

***Syricoris siderana* (Treitschke, 1835)**

Material examined. RUSSIA, **Krasnoyarsk Krai**, Krasnoyarsk, 55.9711 N, 92.7487 E, 245 m a.s.l., 56.0345 N, 92.7394 E, 240 m a.s.l., 25.VI-02.VII.2015, 1 male, ibidem, 27.VI-04.VII.2018, 2 males, Akulov E. coll.

Distribution. The species is known from Western Europe, Northern Kazakhstan, Mongolia, China, Korea, Japan and North America (Sinev & Nedoshivina 2016). In Russia, it is distributed from the European part to the Kuril Islands (Sinev et al. 2019).

Host plants. The caterpillars live in intertwined leaves on the shoot tips of grass plants of the family Rosaceae as well as *Spiraea* (Kuznetsov 1978).

Detection in pheromone traps according to literature data. Former USSR (Komarova et al. 1983).

***Argyroploce roseomaculana* (Herrich-Schaffer, 1851)**
Fig. 13.7

Material examined. RUSSIA, **Krasnoyarsk Krai**, Krasnoyarsk, 55.9711 N, 92.7487 E, 245 m a.s.l., 56.0345 N, 92.7394 E, 240 m a.s.l., 27.VI-04.VII.2018, 1 male, Akulov E. coll.

Distribution. Western Europe. In Russia it has been recorded from the European part to the Lower Amur region (Sinev et al. 2019). New findings: 22 (Krasnoyarsk) (this paper).

Host plants. Caterpillars live in curled leaves of *Pyrola* spp. and *Orthilia secunda* (Ericaceae) (Kuznetsov 1978; Sobczyk 2024). The species is known from Western Europe (Sinev & Nedoshivina 2016).

Detection in pheromone traps according to literature data. We haven't found any detection of this species in pheromone traps in the scientific literature.

***Pristerognatha penthinana* (Guenee, 1845)**
Fig. 9.6

Material examined. RUSSIA, **Krasnoyarsk Krai**, Krasnoyarsk, 55.9711 N, 92.7487 E, 245 m a.s.l., 56.0345 N, 92.7394 E, 240 m a.s.l., 22.VI.2011, 1 male, ibidem, 21-28. VI.2017, 2 males, Akulov E. coll. | **Moscow**, Main Botanical Garden of Academy of Sciences, 55.8418 N, 37.6018 E, 13.V.2025-2.VI.2025, 2 males, ibidem, 2.VI.2025-17. VI.2025, 2 males, Kovalenko M.G. coll.

Distribution. The species is known from Western Europe, Transcaucasia, the Korean Peninsula, and Japan (Sinev & Nedoshivina 2016). In Russia, it is distributed from the European part to the Kuril Islands (Sinev et al. 2019).

Host plants. The caterpillar feeds in the stems of Impatiens noli-tangere (Balsaminaceae), may burrow into the root (Razowski 2001; Lepiforum 2026).

Detection in pheromone traps according to literature data. We haven't found any detection of this species in pheromone traps in the scientific literature.

Tribe Lobesiini

***Lobesia reliquana* (Hubner, 1825)**
Fig. 9.11

Material examined. RUSSIA, **Krasnoyarsk Krai**, Krasnoyarsk, 55.9711 N, 92.7487 E, 245 m a.s.l., 56.0345 N, 92.7394 E, 240 m a.s.l., 13-20.VI.2018, 1 male, Akulov E. coll.

Distribution. The species is known from Western Europe, Transcaucasia, Kazakhstan, China, Korean Peninsula and Japan (Sinev & Nedoshivina 2016). In Russia it has been recorded from the European part to the Kuril Islands (Sinev et al. 2019).

Host plants. Polyphagous, feeds on leaves and buds of *Betula* and *Fagus*, among other plants (Kuznetsov 1978).

Detection in pheromone traps according to literature data. We haven't found any detection of this species in pheromone traps in the scientific literature.

Tribe Enarmoniini

***Enarmonia minuscula* Kuznetzov, 1981**
Figs 9.9, 13.8

Material examined. RUSSIA, **Krasnoyarsk Krai**, Krasnoyarsk, 55.9711 N, 92.7487 E, 245 m a.s.l., 56.0345 N, 92.7394 E, 240 m a.s.l., 10-29.VI.2014, 66 males, ibidem, 27.V-23.VII.2015, 16 males, ibidem, 22.VI-31.VIII.2016, 20 males, ibidem, 28.VI-05.VII.2017, 3 males, ibidem, 27.VI-04VII.2018, 1 male, Akulov E. coll.; Minusinsk district, Minusinsk, 53.6748°N, 91.6715°E, 255 m a.s.l., 11-18.VI.2015, 1 male, Akulov E., Medvedenko A. coll.

Distribution. The species is known from the Korean Peninsula and China (Sinev & Nedoshivina 2016), in Russia: from Krasnoyarsk to Primorsky Krai. (Sinev et al. 2019). New findings: 22 (Krasnoyarsk) (this paper).

Host plants. Unknown.

Detection in pheromone traps according to literature data. We haven't found any detection of this species in pheromone traps in the scientific literature.

***Ancylis badiana* (Denis & Schiffermuller, 1775)**

Material examined. RUSSIA, **Krasnoyarsk Krai**, Krasnoyarsk, 55.9711 N, 92.7487 E, 245 m a.s.l., 56.0345 N, 92.7394 E, 240 m a.s.l., 24-31.V.2017, 1 male, Akulov E. coll.

Distribution. The species is known from Europe, Asia Minor, Transcaucasia, Mongolia, China, the Korean Peninsula, Japan and in North America (Sinev & Nedoshivina 2016). In Russia it has been recorded from the European part to the Kuril Islands (Sinev et al. 2019).

Host plants. The caterpillar feeds on grassy Fabaceae, especially *Lathyrus*, *Vicia*, *Trifolium* (Kuznetsov 1978).

Detection in pheromone traps according to literature data. We haven't found any detection of this species in pheromone traps in the scientific literature.

***Ancylis obtusana* (Haworth, 1811)**

Material examined. RUSSIA, **Krasnoyarsk Krai**, Minusinsk district, Minusinsk, 53.6748 N, 91.6715 E, 255 m a.s.l., 14-21.VI.2017, 1 male, Akulov E., Medvedenko A. coll.

Distribution. The species is known from Western Europe, Asia Minor, Kazakhstan, the Korean Peninsula and Japan (Sinev & Nedoshivina 2016). In Russia it has been recorded from the European part to Sakhalin (Sinev et al. 2019).

Host plants. The caterpillar feeds on *Frangula* alnus and *Rhamnus cathartica* (Rhamnaceae) (Kuznetsov 1978; Razowski 2001).

Detection in pheromone traps according to literature data. We haven't found any detection of this species in pheromone traps in the scientific literature.

Tribe Eucosmini

***Epiblema scutulana* (Denis & Schiffermuller, 1775)**
Fig. 10.1

Material examined. RUSSIA, **Khakassia Republic**, Abakan. 53.6721 N, 91.5295 E, 254 m a.s.l., 53.6658 N, 91.5390 E, 253 m a.s.l., 13.VII-04.VIII.2011, 2 males, Akulov E. coll. | **Krasnoyarsk Krai**, Krasnoyarsk, 55.9711 N, 92.7487 E, 245 m a.s.l., 56.0345 N, 92.7394 E, 240 m a.s.l., 12.VII.2011, 2 males, ibidem, 20.VIII.2013, 2 males, ibidem, 24.VI-08.VII.2014, 3 males, ibidem, 04.VI-09.VII.2015, 11 males, ibidem, 29.VI-13.VII.2016, 17 males, ibidem, 07.VI-05.VII.2017, 7 males, ibidem, 20.VI-04.VII.2018, 6 males, Akulov E. coll.; Minusinsk district, Minusinsk, 53.6748 N, 91.6715 E, 255 m a.s.l., 53.7135 N, 91.6466 E, 248 m a.s.l., 28.VI-25.VII.2011, 3 males, ibidem, 05.VIII.2013, 1 male, ibidem, 18-25.VI.2015, 4 males, ibidem, 08-29VI.2016, 5 males, ibidem, 26.VII-02.VIII.2017, 1 male, Akulov E., Medvedenko A. coll. | **Omsk Oblast**, Omsk, 54.8840 N, 73.3339 E, 75 m a.s.l., 10.VI-13.VII.2022, 45 males, Terebilov. A. coll. | **Perm Krai**, Perm Merkushevo vil. 57.8466 N, 56.4243 E, 148 m a.s.l., 25.VI-09.VII.2023, 1 male, Sokolova I. coll. | **Orenburg Oblast**, Orenburg, 51.7682 N, 55.0970 E, 95 m a.s.l., 20.VI-04.VII.2023, 36 males, Mineeva E. coll. | **Stavropol Krai**, Pyatigorsk, 44.0430 N, 43.0124 E, 44.0487 N, 42.9845 E, 530 m a.s.l., 31.V-02.VI.2021, 1 male, Akulov E., Danilenko E. coll. | **Udmurt Republic**, Votkinsk district, Fertiki vill., 56.9644 N, 54.0443 E, 98 m a.s.l., 01-30. VI.2024, 27 males Ermolaev I. coll. | **Moscow Oblast**, Ramensky district, Bykovo, 55.6396 N, 38.0961 E, 11.VI.2025-24.VI.2025, 2 males, Kovalenko M.G. coll.

Distribution. The species is widespread from Western Europe to Primorsky Krai (Sinev & Nedoshivina 2016; Sinev et al. 2019). New findings: 16 (Perm) (this paper).

Host plants. The caterpillar on the roots and stems of genera *Carduus*, *Cirsium*, *Arctium*, *Centaurea* (Asteraceae) (Kuznetsov 1978, Razowski 2001).

Detection in pheromone traps according to literature data. Hungary (Sziraki 1978), France (Chambón & Daguilar 1974), Czech Republic and Slovakia (Hrdý et al. 1979a, 1979b, 1994; Hrudova 2005; Pražanová & Šefrová 2024), Moldova (Rozinskaya 1980; Smetnik 1980), Former USSR (Komarova et al. 1983), Spain (Rubio et al. 1990), Ukraine (Kudina & Misyurenko 1991), Bulgaria (Velcheva 2000), Romania (Olenici et al. 2007), Stavropol Krai (Danilenko & Pimenov 2015, 2017).

***Epiblema cirsiana* (Zeller, 1843)**
Fig. 10.2

Material examined. RUSSIA, **Krasnoyarsk Krai**, Krasnoyarsk, 55.9711 N, 92.7487 E, 245 m a.s.l., 56.0345 N, 92.7394 E, 240 m a.s.l., 11-18.VI.2015, 1 male, ibidem, 08-15.VI.2016, 1 male, Akulov E. coll. | **Altai Krai**, Kulunda vil., 52.5638 N, 78.9465 E, 139 m a.s.l., 18.VI-21.VII.2022, 9 males; Zavyalovsky district, Glubokoe vil. 52.9902 N, 80.6840 E, 162 m a.s.l., 11-26.VI.2022, 24 males; Zmeinogorsk district, Zmeinogorsk, 51.1539 N, 82.1985 E, 369 m a.s.l., 11-21.VI.2022, 1 male; Barnaul, 53.3468 N, 83.7769 E, 230 m a.s.l., 11.VI-25.VII.2022, 2 males, Snigireva L. coll. | **Udmurt Republic**, Votkinsk district, Fertiki vill., 56.9644 N, 54.0443 E, 98 m a.s.l., 01-30.VI.2024, 61 males Ermolaev I. coll. | **Moscow Oblast**, Ramensky district, Bykovo, 55.6396 N, 38.0961 E, 13.V.2025-30.V.2025, 2 males, ibidem 30.V.2025-11.VI.2025, 2 males, Kovalenko M.G. coll.; Mytishchinsky district, Trudovaya, 56.1373 N, 37.5096 E, 1.VI.2025-13.VI.2025, 3 males, ibidem, 13.VI.2025-26.VI.2025, 1 male, ibidem, 26.VI.2025-13.VII.2025, 2 males, Lovtsova J.A. coll.; Moscow, Main Botanical Garden of Academy of Sciences, 55.8418 N, 37.6018 E, 13.V.2025-2.VI.2025, 6 males, ibidem, 2.VI.2025-17.VI.2025, 22 males, ibidem, 17.VI.2025-30.VI.2025, 3 males, Kovalenko M.G. coll.; Odintsovsky district, Novoshihovo, 55.6990, 36.7793, 21.VI.2025-28.VI.2025, 1 male, Kovalenko M.G. coll.; Dmitrovskiy district, Oruďevo, 56.4319, 37.5245, 17.V.2025-19.VII.2025, 4 males, Sharapova A.V., Lovtsova J.A. coll.; Stupinskiy district, Semyonovskoe, 55.0587, 37.7591, 19.VII.2025, 1 male, Kuz'mina O.V., Lovtsova J.A. coll.

Distribution. The species is widespread from Western Europe to Primorsky Krai (Sinev & Nedoshivina 2016; Sinev et al. 2019).

Host plants. *Carlina*, *Cirsium*, *Centaurea* (Asteraceae) (Razowski 2001).

Detection in pheromone traps according to literature data. Czech Republic (Jakubikova et al. 2016)

***Epiblema foenella* (Linnaeus, 1758)**

Material examined. RUSSIA, **Krasnoyarsk Krai**, Krasnoyarsk, 55.9711 N, 92.7487 E, 245 m a.s.l., 56.0345 N, 92.7394 E, 240 m a.s.l., 21.VIII-04.IX.2013, 3 males, ibidem, 01-08.VII.2014, 1 male, ibidem, 11-25.VI.2015, 2 males, ibidem, 15.VI-21.IX.2016, 1 male; Minusinsk district, Minusinsk, 53.6748 N, 91.6715 E, 255 m a.s.l., 53.7135 N, 91.6466 E, 248 m a.s.l., 01.VIII-15.VIII.2014, 1 male, ibidem, 25.VI-07.VII.2015, 1 male, Akulov E., Medvedenko A. coll. | **Tomsk Oblast**, Tomsk district, Belousovo village, 56.3063 N, 85.1833 E, 171 m a.s.l., 15.VI-04.VII.2021, 1 male. Kuleshov D. coll. | **Altai Krai**, Zmeinogorsk district, Zmeinogorsk, 51.1539 N, 82.1985 E, 369 m a.s.l., 11-21.VI.2022, 1 male; Snigireva L. coll.

Distribution. The species is widespread from Western Europe to Taiwan, Northern India (Sinev & Nedoshivina 2016). In Russia it has been recorded from the European part to the Kuril Islands (Sinev et al. 2019).

Host plants. The caterpillars feed in the roots and lower part of the stems of *Artemisia* (Asteraceae) (Kuznetsov 1978). *Anthemis tinctoria* (Asteraceae) is also reported as a host plant (Lepiforum 2026).

Detection in pheromone traps according to literature data. France (Chambón & Daguilar 1974), Ukraine (Dulo & Shvanda 1980; Kudina & Misyurenko 1991), Former USSR (Komarova et al. 1983), Lithuania (Ostrauskas 1999).

***Epiblema sarmatana* (Chrystoph, 1882)**
Figs 9.8, 9.10

Material examined. RUSSIA, **Krasnoyarsk Krai**, Krasnoyarsk, 55.9711 N, 92.7487 E, 245 m a.s.l., 56.0345 N, 92.7394 E, 240 m a.s.l., 11.VI-20.VIII.2015, 2 males, ibidem, 15-22.VI.2016, 1 male, Akulov E. coll.; Minusinsk district, Minusinsk, 53.6748 N, 91.6715 E, 255 m a.s.l., 53.7135 N, 91.6466 E, 248 m a.s.l., 28.VI.2011, 2 males, ibidem, 04-12.VI.2015, 1 male, Akulov E., Medvedenko A. coll. | **Rostovskaya Oblast**, Neklinovskiy district, 1300 km railway station, 47.5725 N, 39.7529 E, 11.V.2025-25.V.2025, 3 males, Kasatkin D.G. coll.

Distribution. The species is widespread from Europe to Kazakhstan (Sinev & Nedoshivina 2016; Lepiforum 2026). In Russia it has been recorded from the European part to Primorsky Krai (Sinev et al. 2019).

Host plants. The caterpillar probably feeds on *Chamaecitisus* (Fabaceae) (Anikin et al. 2006).

Detection in pheromone traps according to literature data. We haven't found any detection of this species in pheromone traps in the scientific literature.

***Eucosma balatonana* (Osthelder, 1937)**

Material examined. RUSSIA, **Krasnoyarsk Krai**, Krasnoyarsk, 55.9711 N, 92.7487 E, 245 m a.s.l., 56.0345 N, 92.7394 E, 240 m a.s.l., 10-24.VIII.2010, 6 males, ibidem, 12-27.VII.2011, 2 males, ibidem, 14-20.VIII.2013, 37 males, ibidem, 24.VI-05.VIII.2014, 16 males, ibidem, 25.VI-20.VIII.2015, 26 males, ibidem, 22.VI-27.VII.2016, 19 males, ibidem, 21.VI-19.VII.2017, 38 males, ibidem, 20.VI-01.VIII.2018, 34 males, Akulov E. coll.; Minusinsk district, Minusinsk, 53.6748°N, 91.6715°E, 255 m a.s.l., 53.7135 N, 91.6466 E, 248 m a.s.l., 18.VI-23.VII.2015, 3 males, ibidem, 08.VI-27.VI.2016, 5 males, ibidem, 28.VI-05.VII.2017, 1 male, ibidem, 11.VII-01.VIII.2018, 3 males, Akulov E., Medvedenko A. coll. | **Altai Krai**, Barnaul, 53.3468 N, 83.7769 E, 230 m a.s.l., 26.VI-06.VII.2022, 1 male, Snigireva L. coll. | **Altai Republic**, Gorno-Altaysk, 51.9578 N, 85.9606 E, 302 m a.s.l., 11-26.VI.2022, 5 males, Snigireva L. coll.

Distribution. The species is known from Europe and Kazakhstan (Razowski 2003). In Russia it has been recorded from the European part to Transbaikalia (Sinev et al. 2019).

Host plants. The caterpillar lives in the flowers of *Picris hieracioides* and *Crepis biennis* (Asteraceae) (Svensson 2006).

Detection in pheromone traps according to literature data. We haven't found any detection of this species in pheromone traps in the scientific literature.

***Eucosma metzneriana* (Treitschke, 1830)**

Material examined. RUSSIA, **Krasnoyarsk Krai**, Krasnoyarsk, 55.9711 N, 92.7487 E, 245 m a.s.l., 56.0345 N, 92.7394 E, 240 m a.s.l., 04-11.VI.2015, 1 male, ibidem, 08.VI-06.VII.2016, 2 males, ibidem, 31.V-14.VII.2017, 2 males, Akulov E. coll.; Minusinsk district, Minusinsk, 53.6748 N, 91.6715 E, 255 m a.s.l., 53.7135 N, 91.6466 E, 248 m a.s.l., 25.V-01.VI.2016, 1 male, Akulov E., Medvedenko A. coll.

Distribution. The species is known from Western Europe, Transcaucasia, Middle Asia, Kazakhstan, Mongolia, China, the Korean Peninsula and Japan (Sinev & Nedoshivina 2016). In Russia it has been recorded from the European part to Primorsky Krai (Sinev et al. 2019).

Host plants. The caterpillars feed in the stem galls on *Artemisia absinthium* and *Artemisia vulgaris* (Kuznetsov 1978; Razowski 2001).

Detection in pheromone traps according to literature data. We haven't found any detection of this species in pheromone traps in the scientific literature.

***Eucosma cana* (Haworth, 1811)**

Material examined. RUSSIA, **Krasnoyarsk Krai**, Krasnoyarsk, 55.9711°N, 92.7487 E, 245 m a.s.l., 56.0345 N, 92.7394 E, 240 m a.s.l., 12-27.VII.2011, 1 male, ibidem, 09-16.VI.2015, 1 male, Akulov E. coll.

Distribution. The species is known from Western Europe, Asia Minor, Middle Asia, Kazakhstan, China, Japan (Sinev & Nedoshivina 2016). In Russia, it is found from the European part to the Kuril Islands (Sinev et al. 2019).

Host plants. The caterpillar feeds in the inflorescences of *Carduus*, *Cirsium*, *Centaurea* (Asteraceae) (Kuznetsov 1978; Razowski 2001).

Detection in pheromone traps according to literature data. We haven't found any detection of this species in pheromone traps in the scientific literature.

***Eucosma apocrypha* (Falkovitsh, 1964)**

Material examined. RUSSIA, **Khakassia Republic**, Abakan, 53.6721 N, 91.5295 E, 254 m a.s.l., 13.VII-04.VIII.2011, 1 male, Akulov E. coll. | **Krasnoyarsk Krai**, Krasnoyarsk, 55.9711 N, 92.7487 E, 245 m a.s.l., 26.VII-10.VIII.2010, 3 males, Akulov E. coll.| **Altai Krai**, Georgievka settl., 51.1397 N, 81.5077 E, 262 m a.s.l., 15-25.VII.2022, 1 male; Snigireva L. coll.

Distribution. Kazakhstan, Kyrgyzstan, Mongolia, China (Zhang & Li 2005; Kazenas & Baizhanov 2009). In Russia from the European part to Sakhalin.

Host plants. Caterpillars probably in roots or stems of *Asteraceae* (Kazenas & Baizhanov 2009).

Detection in pheromone traps according to literature data. We haven't found any detection of this species in pheromone traps in the scientific literature.

Comments. It was not possible to identify all specimens found in the pheromone traps as *E. apocrypha* because the forewings of some specimens were significantly damaged, whereas wingspan is an important character allowing differentiation of this species from the closely related *E. clarescens* (Kuznetsov). Thus, the numerical data – the catches of *E. apocrypha* in the traps – were obtained exclusively based on moth specimens with undamaged wings.

***Eucosma clarescens* (Kuznetsov, 1964)**

Material examined. RUSSIA, **Khakassia Republic**, Abakan. 53.6721 N, 91.5295 E, 254 m a.s.l., 13.VII-04.VIII.2011, 1 male, Akulov E. coll. | **Krasnoyarsk Krai**, Krasnoyarsk, 55.9711 N, 92.7487 E, 245 m a.s.l., 22-29.VI.2016, 1 male, Akulov E. coll.; Minusinsk district, Minusinsk, 53.6748 N, 91.6715 E, 255 m a.s.l., 17.V-03. VIII.2016, 1 male, Akulov E., Medvedenko A. coll.

Distribution. CE and SE parts of Europe (Razowski, 2003), Kazakhstan , Mongolia (Kuznetsov 1978). In Russia, it is distributed from the European part to the Middle Amur region.

Host plants. Unknown.

Detection in pheromone traps according to literature data. We haven't found any detection of this species in pheromone traps in the scientific literature.

***Gypsonoma minutana* (Hubner, 1799)**

Material examined. RUSSIA, **Krasnoyarsk Krai**, Krasnoyarsk, 55.9711 N, 92.7487 E, 245 m a.s.l., 30.VII.2010, 4 males.

Distribution. The species is known from Western Europe, Asia Minor, Transcaucasia, Iran, Afganistan, Middle Asia, Kazakhstan, Mongolia, China, the Korean Peninsula, Japan (Sinev & Nedoshivina 2016). In Russia it is distributed from the European part to Primorsky Krai (Sinev et al. 2019).

Host plants. Caterpillars live between intertwined and adjacent to each other leaves of *Populus nigra*, *Populus alba* and *Populus tremula*, less frequently on willows (Salicaceae); very harmful (Kuznetsov 1978; Doğanlar & Döken 1985).

Detection in pheromone traps according to literature data. We haven't found any detection of this species in pheromone traps in the scientific literature.

***Epinotia cinereana* (Haworth, 1811)**

Material examined. RUSSIA, **Krasnoyarsk Krai**, Krasnoyarsk, 55.9711 N, 92.7487 E, 245 m a.s.l., 02.IX-01.X.2011, 2 males, Akulov E. coll. | Minusinsk district, Minusinsk, 53.6748 N, 91.6715 E, 255 m a.s.l., 53.7135 N, 91.6466 E, 248 m a.s.l., 24.VIII.2011, 1 male, Akulov E., Medvedenko A. coll.

Distribution. The species is known in Western Europe (Sinev & Nedoshivina 2016). In Russia it has been recorded from the European part to the Lower Amur region (Sinev et al. 2019).

Host plants. The caterpillar feeds in the catkins of *Populus tremula* (Salicaceae) (Kuznetsov 1978).

Detection in pheromone traps according to literature data. We haven't found any detection of this species in pheromone traps in the scientific literature.

Discussion

In this study, we provide the first comprehensive overview of tortricid species, which we detected in traps baited with the synthetic sex pheromone of *Grapholita molesta*. Based on a 15-year field study (2010–2019 & 2021–2025) in 21 administrative regions across Russia, combined with published records from 1974–2024, we report a total of 117 tortricid species captured in *G. molesta* pheromone traps across Eurasia. This unexpectedly high diversity of non-target tortricids suggests that pheromone traps designed for *G. molesta* can function as effective tools for biodiversity surveillance, complementing traditional collecting methods and revealing faunistic patterns across large spatial and temporal scales.

Species composition and dominant tribes. The tribal diversity observed in our catches showed a clear predominance of the tribe Grapholitini. When our data were combined with literature records, Grapholitini remained the most represented tribe. This finding is consistent with the known affinity of *G. molesta* pheromone components for species within this tribe (The Pherobase 2026).

The dominance of Grapholitini is further supported by the high species richness of the genera *Pammene* and *Grapholita* in trap catches. In the combined dataset, *Pammene* was represented by 28 species, of which 10 were detected both in our study and in the literature, four exclusively in our study, and 14 only in previous reports. *Grapholita* (subgenus *Aspila*) was represented by nine species, with six species common to both our study and the literature (*G. inopinata*, *G. funebrana*, *G. tenebrosana*, *G. janthinana*, *G. andabatana*, and *G. rosana*) (Komarova et al. 1983; Mizukoshi 2006; Tanaka et al. 2007; Jakubikova et al. 2016; Pražanová & Šefrová 2024).

Novel records. Our results clearly demonstrate how effectively traps with synthetic sex pheromone of *G. molesta* can be successfully used as an additional method in the faunistic study. A particularly noteworthy outcome of our study is the first-time documentation of 30 tortricid species in *G. molesta* traps (i.e., previously unreported in pheromone traps for this species in literature), representing 53% of all tortricid species captured during our long-term study in Russia.

Nearly two thirds of these species were additionally found to be new regional records in Russia. Three species deserve special attention as they represent first records for major biogeographic units. *Pammene luculentana* is reported for the first

time from European Russia (Smolensk Oblast and Chuvashia Republic), while also being new for Krasnoyarsk Krai. Prior to our study, this species was known only from Finland, the mountains of eastern Kazakhstan (Sinev & Nedoshivina 2016), and, within Russia, from Irkutsk Oblast and Primorsky Krai (Sinev 2019). Similarly, *Pammene luedersiana* constitutes a new record for the Asian part of Russia and represents the first documentation of this species from Asia as a whole. Previously, *P. luedersiana* was known only from Europe (Mutanen & Pretorius 2007; Lepiforum 2026), including several regions of European Russia (Sinev 2019). Finally, *Enarmonia minuscula* is recorded for the first time from Siberia (Krasnoyarsk Krai), whereas earlier records were restricted to the Russian Far East.

Abundance and frequency patterns. The most frequently captured species in our study were *Grapholita inopinata*, *G. funebrana* and *Cnephasia stephensiana*. These species were classified as category A1 (mass abundance with regular presence). The high abundance of *G. funebrana* in *G. molesta* traps is consistent with previous reports of cross-attraction between these two congeners (Chambón & Daguilar 1974; Pražanová & Šefrová 2024). *Cnephasia stephensiana* has also been reported as a very common non-target species in pheromone traps for *G. molesta*) (Mizukoshi 2006).

The dominance of category D3 species (extremely low abundance with rare catches), which accounted for 42% of all captured species in Russia, suggests that most non-target tortricids are visitors to *G. molesta* traps rather than being specifically attracted. This pattern is typical for pheromone monitoring studies, where the target pheromone may have varying degrees of attractiveness to non-target species, ranging from strong cross-attraction to weak or incidental attraction.

Distribution of non-target species. Our and literature data revealed that the highest number of non-target tortricid species recorded in *G. molesta* traps was in Russia compared to Eastern and Western European countries (Chambón & Daguilar 1974; Sziraki 1978; Hrdý et al. 1979a, 1979b; Rozinskaya 1980; Dulo & Shvanda 1980; Gummel 1988; Rubio et al. 1990; Kudina 1991; Ostrauskas 1999; Velcheva 2000; Olenici et al. 2007). This geographic pattern reflects pheromone monitoring efforts in the countries rather than actual diversity of tortricid faunas in these countries. Indeed, high richness of non-target tortricids recorded in our study in Russia (i.e., 57 species) is a result of long-term study. The Czech Republic, with 37 species, also fits this pattern, which aligns with its long history of pheromone research, articularly studies on non-target tortricid (Hrdý et al. 1979a, 1979b, 1989, 1994, 1997; Hrudova 2003, 2005; Jakubíková et al. 2016; Pražanová & Šefrová 2024).

Implications for species monitoring. Our findings have several practical implications for pest monitoring programs. First, the high number of non-target species captured in *G. molesta* traps demonstrates that pheromone-based monitoring, while highly sensitive for detecting the target pest, is not species-specific. This necessitates careful identification of captured specimens, particularly in regions where multiple *Grapholita* species co-occur. Second, the regular capture of certain non-target species (i.e., *G. funebrana*, *G. inopinata*, *C. stephensiana*) suggests that long-

term monitoring data may provide valuable information on the phenology and relative abundance of these species, contributing to broader faunistic and ecological studies. Third, the discovery of 30 species in Russia not previously known to be attracted to *G. molesta* pheromone, including several new regional and macroregional records, highlights the value of comprehensive, long-term monitoring studies for documenting non-target bycatch and refining our understanding of pheromone cross-attraction.

Conclusion

In summary, our 15-year study performed in 21 regions across Russia, combined with literature review, has substantially expanded the known spectrum of tortricid species captured in traps with the synthetic sex pheromone of *G. molesta*. The total of 117 species from 46 genera and two subfamilies represents the most comprehensive list of non-target tortricids for this pheromone to date. The predominance of Grapholitini species, particularly *Pammene* and *Grapholita*, reflects the phylogenetic proximity of species and the partial overlap in their pheromone compositions. The numerous new records, including three species new to macroregions of Russia (European and Asian parts), underscore the importance of integrating bycatch data from pest monitoring programs into faunistic research. Nevertheless, some adjustments to the pheromone blend and its component concentrations could be beneficial to preserve detection sensitivity for the quarantine pest *G. molesta*.

Acknowledgements

We thank R.A. Lovtsova, T.P. Bush, A.V. Stogova, A.V. Sharapova, S.A. Sharapov, O.V. Kuz'mina, D.A. Moiseev (Moscow Oblast), D.G. Kasatkin (Rostov Oblast), S.L. Rivanenkov (Smolensk Oblast), A.A. Koval' (Chuvashia Republic), A.V. Medvedenko, O.V. Belyakova, A.V. Ulanov (Krasnoyarsk Krai), L.S. Snigireva (Altai Krai), L.A. Korobeynikova (Kirov Oblast), I.V. Sokolova (Perm Krai), D.A. Kuleshov (Tomsk Oblast), I.V. Ermolaev (Udmurt Republic), E.V. Mineeva (Orenburg Oblast), A.V. Terebilov (Omsk Oblast), A.Yu. Otteva (Kemerovo Oblast), E.A. Danilenko (Stavropol Krai) for placing the pheromone traps in their regions as well as collecting and sending us the catches, Budasjkin Yu.I (Crimea Republic), Syachina A.A. (Primorsky Krai), M. Mutanen (Finland) for confirming some tortricids identification, N.G. Todorov (head of the Pheromone Synthesis and Application Department of VNIIKR, Bykovo, Russia) for his cooperation and prompt supply of pheromone traps E.Yu. Embaturova (senior researcher of the Scientific and Methodological Department of Invasive Plant Species of VNIIKR, Bykovo, Russia) for identification of bud scales, and anonymous reviewers for wise comments. The study was performed within the federal task of VNIIKR (no. 1024030100042-9). The contribution of S.V. Nedoshivina by the state research project (no. 125012901042-9).

References

Abasov MM, Atanov NM (2011) Application of pheromones in plant quarantine. In: Informatsionnyj byulleten No 42. Feromony v selskom i lesnom hozyajstve: praktika i perspektivy. Bykovo, 8–11. [In Russian]

Acheampong S (2018) Grey tortrix moth. Pest Alert. Ministry of Agriculture, British Columbia. Available online: https://www2.gov.bc.ca/gov/content/industry/agriculture-seafood/animals-and-crops/plant-health/pest-alerts (accessed on 19 April 2026)

Agroecological Atlas of Russia and Adjacent Countries: Economically Significant Plants, Their Diseases, Pests, and Weeds. Available online: http://www.agroatlas.ru (accessed on 20 January 2026). [In Russian]

Akulov EN, Belyakova OV, Kirichenko NI (2013) Detection of the oriental codling moth in the south of Siberia. Zashchita i karantin rastenij 10: 34–37. [In Russian]

Akulov EN, Kirichenko NI (2014) Mass catches of Manchurian fruit moth in southern Siberia. Zashchita i karantin rastenij 10: 36–40. [In Russian]

Akulov EN, Kovalenko MG, Lovtsova JA, Musolin DL, Kirichenko NI (2025) Western range limit, population density, and flight dynamics of the fruit pest *Grapholita inopinata* (Lepidoptera: Tortricidae) in Russia. Life 15(4): 521. https://doi.org/10.3390/life15040521

Akulov EN, Kirichenko NI, Petko VM (2014) Non-targeted species of *Grapholita* (Lepidoptera, Tortricidae) attracted to synthetic pheromone of oriental fruit moth in southern Siberia. Plant Health Research and Practice 2: 31–50.

Alford DV (2012) Pests of ornamental trees, shrubs and flowers: A colour handbook. 2nd ed. Environment & Agriculture, London, 480 pp.

An Identification Guide of Japanese Moths (2026) Available online: http://www.jpmoth.org/Tortricidae/Olethreutinae/Grapholita_rosana.html (accessed on 11 July 2026) [In Japanese]

Anon (2014) Texas invasive species: oriental fruit moth. Texas State University, San Marcos, USA. Available online: https://www.tsusinvasives.org/home/database/grapholita-molesta (accessed on 20 January 2026).

Amat C, Bosch-Serra D, Avilla J, Escudero Colomar LA (2021) Different population phenologies of *Grapholita molesta* (Busck) in two hosts and two nearby regions in the NE of Spain. Insects 12(7): 612. https://doi.org/10.3390/insects12070612

Anikin VV, Sachkov SA, Zolotuhin VV, Nedoshivina SV, Trofimova TA (2006) Fauna Lepidopterologica Volgo-Uralensis "150 years later": changes and additions. Part 9. Tortricidae. Atalanta 37(3/4): 409–445.

Arutyunova EV (1980) Biological and ecological characteristics of the oriental fruit moth in the North Ossetian ASSR. In: Oriental Fruit Moth. Collection of scientific papers. VNITIKiZR, Moscow, 122–132. [In Russian]

Biosecurity Australia (2010) Final import risk analysis report for fresh apple fruit from the People's Republic of China. Biosecurity Australia, Canberra, 370 pp.

Biosecurity New Zealand (2009) Import risk analysis: pears (*Pyrus bretschneideri*, *Pyrus pyrifolia*, and *Pyrus* sp. nr. *communis*) fresh fruit from China. Ministry for Primary Industries, Wellington, 462 pp.

Blommers L, Helsen HHM, Vaal F (1988) The autumn leafroller: phenology, damage and parasitoids in a Dutch apple orchard. European Journal of Plant Pathology 94(2): 95–103.

Byun BK, Kim DS (2015) Review of genus *Olethreutes* (Lepidoptera, Tortricidae) from North Korea. Journal of Asia-Pacific Biodiversity 8: 95–101. https://doi.org/10.1016/j.japb.2015.02.003

Byun BK, Lee BW, Bae KH, Lee KJ (2012) Review of the genus *Grapholita* (Lepidoptera, Tortricidae) in North Korea. Animal Systematics, Evolution and Diversity 28(4): 291–296. https://doi.org/10.5635/ASED.2012.28.4.291

Butterflies and beetles of the Moscow region (2026). Available online: https://insectamo.ru/(accessed on 11 March 2026) [In Russian]

Caradja A (1916) Beitrag zur Kenntnis der zoogeographischen Verbreitung der Pyraliden und Tortriciden des europäischen Faunengebietes, nebst Beschreibung neuer Formen. Deutsche entomologische Zeitschrift Iris 30: 1–88.

Carter DJ (1984) Pest Lepidoptera of Europe with special reference to the British Isles. Dr W. Junk Publishers, Dordrecht, 473 pp.

Catalogue of the Lepidoptera of Russia (2026) Version 2.6. Electronic source: https://www.zin.ru/publications/books/Lepidoptera_Russia/Catalogue_of_the_Lepidoptera_of_Russia_ver.2.6.pdf (accessed on 10 July 2026).

Chambon JP (1994) Deux tordeuses nouvelles pour la France (Lepidoptera, Tortricidae). Bulletin de la Société entomologique de France 99(4): 395–396.

Chambon JP, Daguilar J (1974) Remarques sur la spécificité de quelques phéromones sexuelles de synthèse: analyse faunistique des tortricidés en vergers. Annales de Zoologie – Écologie animale 6(3): 423–430.

Danilevsky AS (1958) On the species composition of fruit moths (Lepidoptera: Pyralidae, Carposinidae, Tortricidae) harmful to horticulture in the Russian Far East. Entomologicheskoe Obozrenie 37(2): 282–293. [In Russian]

Danilevsky AS, Kuznetsov VI (1968) Insects. Lepidoptera. Tortricidae. Tribe fruit moths (Laspeyresini). In: Fauna of the USSR. Vol. V, Issue 1. Leningrad, 617 pp. [In Russian]

Danilenko EA, Pimenov SV (2015) Monitoring of the oriental fruit moth and analysis of the diversity of the closely related species in the family Tortricidae in the area of sufficient humidity in Stavropol Krai. Plant Health Research and Practice 12: 40–51.

Danilenko EA, Pimenov SV (2017) Time and diversity analysis of Tortricidae moths in the area of sufficient moistening Stavropol Krai. Plant Health Research and Practice 19: 41–47.

Doğanlar M, Döken MT (1985) *Gypsonoma minutana* (Lepidoptera: Olethreutidae) and its natural enemies in eastern Anatolia. Türkiye Bitki Koruma Dergisi 9: 199–206.

Dulo VYu, Shvanda RV (1980) Results of studies on certain methods of using sex attractants in the control of the oriental fruit moth. In: Research in entomology and acarology in Ukraine. Proceedings of the 2nd Congress of the Ukrainian Entomological Society. Academy of Sciences of the Ukrainian SSR, Kyiv, 185. [In Russian]

EPPO Global Database. Available online: http://www.eppo.int (accessed on 01 March 2026).

EPPO Global Database (2026). EPPO Datasheet: *Grapholita inopinata*. Available online: https://gd.eppo.int/taxon/CYDIIN/datasheet (accessed on 01 March 2026).

Federal Service for Veterinary and Phytosanitary Supervision (2025) National report on the quarantine phytosanitary state of the territory of the Russian Federation in 2024. Plant Health and Quarantine 2: 2–16 [In Russian]

Fletcher WHB (1887) On the life history of *Euchromia purpurana* Hw. The Entomologist's Monthly Magazine 24: 134–135.

Gaedike R, Nuss M, Steiner A, Trusch R (2017) Verzeichnis der Schmetterlinge Deutschlands (Lepidoptera). 2. überarbeitete Auflage. In: Entomofauna Germanica. Band 3. Entomologische Nachrichten und Berichte, Beiheft 21. Dresden, 362 p.

Golub VB, Tsurikov MN, Prokin AA (2021) Insect collections: collection, processing and storage of material. 2nd ed. KMK Scientific Press, Moscow, 358 pp. [In Russian]

Gratwick M (1992) Plum fruit moths. In: Gratwick M (Ed.) Crop Pests in the UK. Springer, Dordrecht, 123–125. https://doi.org/10.1007/978-94-011-1490-5_25

Gummel ER (1988) Bioecological revealing of methods for suppressing the numbers of the oriental fruit moth (*Grapholitha molesta* Busck) in Uzbekistan. PhD thesis, Sredneaziatskij orden Trudovogo Krasnogo Znameni nauchno-issledovatelskij institut zashchity rastenij, Tashkent, USSR. [In Russian]

Hancock EF, Bland KP, Razowski J (2015) The moths and butterflies of Great Britain and Ireland. Vol. 5. Part 2. Tortricidae, Olethreutinae. Brill, Leiden & Boston, 377 p., 26 pl.

Hari K, Penzes B (2010) Selectivity of the Oriental fruit moth sex pheromone trap in peach and apricot orchards. International Journal of Horticultural Science 16: 17–20.

Heliövaara K, Tuba K, Poteri M, Vuorinen M (2018) Occurrence of the moth *Cydia pactolana* is associated with the spruce canker fungus *Neonectria fuckeliana*. Scandinavian Journal of Forest Research 33(6): 1–19. https://doi.org/10.1080/02827581.2018.1427791

Hrdý I, Krampl F, Kuldová J, Kalinová B (1997) Occurrence of potential orchard pests *Cydia lobarzewskii* and *C. janthinana* (Lepidoptera: Tortricidae) in the Czech Republic with notes on some other species according to pheromone trapping. Klapalekiana 33: 155–172.

Hrdý I, Krampl F, Kuldova J, Marek J, Šimko K (1979a) Mapovani obaleče vychodniho (*Cydia molesta*) feromonovymi lapaky [Mapping of the Oriental Fruit Moth (*Cydia molesta*) by means of pheromone traps]. Ochrana rostlin 15: 259–269. [In Czech]

Hrdý I, Liška J, Vrkoč J, Hochmut R (1989) New records on sex attractants for males and faunistic comments on moths (Lepidoptera) from Czechoslovakia. Acta Entomologica Bohemoslovaca 86: 252–268.

Hrdý I, Marek J, Krampl F (1979b) Sexual pheromone activity of 8-dodecenyl and 11-tetradecenyl acetates for males of several lepidopteran species in field trials. Acta Entomologica Bohemoslovaca 76: 65–84.

Hrdý I, Marek J, Krampl F, Kuldová J, Barabás L (1994) Distribution of the fruit tree pests *Cydia molesta*, *Cydia funebrana* and *Anarsia lineatella* (Lepidoptera: Tortricidae, Gelechiidae) in former Czechoslovakia as recorded by pheromone traps. Acta Societatis Zoologicae Bohemicae 58: 53–60.

Hrudova E (2003) The presence of non-target lepidopteran species in pheromone traps for fruit tortricid moths. Plant Protection Science 39: 126–131.

Hrudova E (2005) Non-target lepidoptera species found in the pheromone traps for selected tortricid species in 2002 and 2003 years. Acta Universitatis Agriculturae et Silviculturae Mendelianae Brunensis 53: 35–44.

Huemer P, Berggren K, Aarvik L, Rennwald E, Hausmann A, Segerer A, Staffoni G, Aspaas AM, Trichas A, and Hebert PDN (2025) Extensive DNA barcoding of Lepidoptera of Crete (Greece) reveals significant taxonomic and faunistic gaps and supports the first comprehensive checklist of the island's fauna. Insects 16(438): 1–21. https://doi.org/10.3390/insects16050438

Jakubikova K, Kominkova J, Šefrova H, Laštuvka Z (2016) Target and non-target moth species captured by pheromone traps for some fruit tortricid moths (Lepidoptera). Acta Universitatis Agriculturae et Silviculturae Mendelianae Brunensis 64: 1561–1568. https://doi.org/10.11118/actaun201664051561

Jung CR, Ahn JJ, Eom HS, Seo JH, Kim Y (2012) Occurrence of *Grapholita dimorpha* in Korean pear orchards and cross-trapping of its sibling species, *Grapholita molesta*, to a pheromone lure. Korean Journal of Applied Entomology 51(4): 479–484.

Kanga LHB, Pree DJ, van Lier JL, Walker GM (2003) Management of insecticide resistance in oriental fruit moth (*Grapholita molesta*) populations from Ontario. Pest Management Science 59: 921–92. https://doi.org/10.1002/ps.702

Kazenas VL, Baizhanov MKh (2009) Insects of the Korgalzhyn Nature Reserve and adjacent territories. Almaty, 270 pp. [In Russian]

Kim S, Heo S (2026) Long-term and short-term forecasting of oriental fruit moth (*Grapholita molesta*) trap catches from apple orchards in South Korea using time series models. Plants 15(4): 624. https://doi.org/10.3390/plants15040624

Kipiani AA (1980) Oriental fruit moth and control measures in the Georgian SSR. In: Oriental fruit moth. Proceedings collection. VNIITKiZR, Moscow, 104–112. [In Russian]

Kirk H, Dorn S, Mazzi D (2013) Worldwide population genetic structure of the oriental fruit moth (*Grapholita molesta*), a globally invasive pest. BMC Ecology 13: 12.

Knight AL, Barros-Parada W, Bosch D, Escudero-Colomar LA, Fuentes-Contreras E, Hernández-Sánchez J, Yung C, Kim Y, Kovanci OB, Levi A, Lo P, Molinari F, Valls J, Gemeno C (2015) Similar worldwide patterns in the sex pheromone signal and response in the oriental fruit moth, *Grapholita molesta* (Lepidoptera: Tortricidae). Bulletin of Entomological Research 105: 23–31. https://doi.org/10.1017/S0007485314000637

Koçak AÖ, Kemal M (2009) Revised checklist of the Lepidoptera of Turkey. Priamus Supplement 17: 1–253.

Komai F (1999) A taxonomic review of the genus *Grapholita* and allied genera (Lepidoptera: Tortricidae) in the Palaearctic region. Entomologica Scandinavica Supplementum 55: 1–226.

Komarova GF, Gavrilova TM, Kudina ZhD (1983) Methodological guidelines for identifying leafroller moth species caught in pheromone sticky traps based on male genitalia. USSR Ministry of Agriculture, Moscow, 26 pp. [In Russian]

Kovalenko MG, Lovtsova JA, Akulov EN, Shipulin AV, Nedoshivina SV, Gomboc S, Karpun NN, Kirichenko NI (2025) First record of *Pammene blockiana* (Lepidoptera: Tortricidae) in Russia. Plant Protection News (Vestnik Zashchity Rasteniy) 108(4): 264–275. https://doi.org/10.31993/2308-6459-2025-108-4-17454

Kovalenko MG, Lovtsova JA, Streltzov AN (2024) To the knowledge of the fauna of pyraloid moths (Lepidoptera, Pyraloidea) of Belgorod Region. Acta Biologica Sibirica 10: 1087–1101. https://doi.org/10.5281/zenodo.13918005

Kudina ZhD, Misyurenko MP (1991) Application of the oriental fruit moth pheromone for studying the species composition of leafroller moths in different plant communities of the botanical garden. In: Quarantine pests, diseases and weeds. Proceedings of scientific papers. Bykovo, 37–44. [In Russian]

Kurbatov SA (1980) Testing of the oriental fruit moth pheromone in the conditions of the Southern coast of Crimea. Master's thesis, Agricultural Academy named after. K.A. Timiryazeva, Moscow, USSR. [In Russian]

Kuznetzov VI (1978) Family Tortricidae (Olethreutidae, Cochylidae) – leaf rollers. In: Fal'kovich MI, Medvedev GS (Eds) Key to insects of the European part of the USSR. Vol. IV. Part 1. Lepidoptera. Nauka, Leningrad, 193–680. [In Russian]

Kuznetsov VI (1986) Review of codling moths of the subtribe Laspeyresiina (Lepidoptera, Tortricidae) of the southern Far East. In: Ler PA (Ed.) Taxonomy and ecology of Lepidoptera of the Far East of the USSR. Far Eastern Scientific Center of the USSR Academy of Sciences, Vladivostok, 9–25. [In Russian]

Kuznetsov VI (2005) Family Tortricidae (Olethreutidae, Cochylidae). Tribe Grapholitini (Laspeyresiini) – codling moths. In: Ler PA (Ed.) Key to insects of the Russian Far East. Caddisflies and Lepidoptera. Vol. 5. Dalnauka, Vladivostok, 11–146. [In Russian]

Lepiforum EV (2026) Identification of butterflies and their immature stages. Available online: https://lepiforum.org (accessed on 11 March 2026)

Ma A, Zhang H, Ran H, Yang X, Hao J, Zhang J, Li H, Yu Z, Wang X, He XZ, Li J (2023) Prediction of seasonal population dynamics of *Grapholita molesta* (Busck) and *Adoxophyes orana* (Fischer von Röslerstamm) in peach orchards using sex pheromone traps and degree-days and its implications for pest management. Frontiers in Agronomy 5: 1269977. https://doi.org/10.3389/fagro.2023.1269977

Mizukoshi T (2003) Species caught by synthetic sex pheromone trap of oriental fruit moth, *Grapholita molesta* (Busck) (Lepidoptera: Tortricidae), and their seasonal attractant prevalence in Hokkaido. Annals of the Report of Plant Protection, Northern Japan 54: 165–169.

Mizukoshi T (2006) Non-target species caught by synthetic sex pheromone trap of lepidopterous pests on apple trees in Hokkaido. Japanese Journal of Applied Entomology and Zoology 50: 231–239.

Moraiti CA, Kadis C, Papayiannis LC, Stavrinides MC (2019) Insects and mites feeding on berries of *Juniperus foetidissima* Willd. on the Mediterranean island of Cyprus. Phytoparasitica 47(1): 1–7. https://doi.org/10.1007/s12600-019-00718-1

Mutanen M, Pretorius E (2007) Subjective visual evaluation vs. traditional and geometric morphometrics in species delimitation: A comparison of moth genitalia. Systematic Entomology 32: 371–386.

Olenici N, Capuse I, Olenici V, Oprean I, Mihalciuc V (2007) Non-target lepidopteran species in pheromone traps baited with attractants for several tortricid moths. In: Proceedings of the XXIII International Congress of Entomology 50: 185–202.

On approval of a unified list of quarantine objects of the Eurasian Economic Union. Decision of the Council of the Eurasian Economic Commission No. 158 (30 November 2016, as amended 25 January 2023). Federal Service for Veterinary and Phytosanitary Supervision. Available online: https://fsvps.gov.ru/files/edinyj-perechen-karantinnyh-obektov-eajes/ (accessed on 1 April 2026). [In Russian]

Ostrauskas H (1999) The search for oriental fruit moth (*Grapholita molesta*) with pheromone traps. Pheromones 6: 57–60.

Paulen O, Kobolka R (2018) Monitoring of moth pests in apple tree orchard. Acta Horticulturae et Regiotecturae 2: 54–57.

Park KT (1983) Microlepidoptera of Korea. Insecta Koreana 3: 8–24.

Pražanova Ž, Šefrova H (2024) Selectivity and efficiency: Evaluation of synthetic *Grapholita molesta* sexual pheromones. Plant Protection Science 60: 267–277. https://doi.org/10.17221/47/2024-PPS

Preti M, Knight AL, Angeli S (2020) Improved monitoring of *Grapholita molesta* (Lepidoptera: Tortricidae) in stone fruit orchards with a pheromone–kairomone combination lure. Insects 11:412. https://doi.org/10.3390/insects11070412

Popovich VV (1984) Application of synthetic sex pheromone in the control of oriental fruit moth. PhD thesis. Kuban Agricultural Institute, Krasnodar, USSR. [In Russian]

Razowski J (2001) Die Tortriciden (Lepidoptera, Tortricidae) Mitteleuropas. Bestimmung – Verbreitung – Flugstandort – Lebensweise der Raupen. Fr Slamka, Bratislava, 319 pp.

Razowski J (2003) Tortricidae (Lepidoptera) of Europe. Vol. 2. Olethreutinae. Fr Slamka, Bratislava, 301 pp.

Reis FoW, Nora I, Melzer R (1988) Population dynamics of *Grapholita molesta* Busck, 1916, and its adaptation on apple in South Brazil. Acta Horticulturae 232: 204–208. https://doi.org/10.17660/ActaHortic.1988.232.27

Riolo P, Bruni R, Cappella L, Rama F, Isidoro N (2010) Control of the plum fruit moth, *Grapholita funebrana* (Treitschke) (Lepidoptera: Tortricidae), by false-trail following. In: Integrated Fruit Protection in Fruit Crops. IOBC/WPRS Bulletin 54: 401–404.

Rozinskaya EM (1980) Attractiveness of oriental fruit moth *Grapholitha molesta* Busck and other Tortricidae species to pheromones of similar composition. In: Oriental Fruit Moth. Collection of scientific papers. VINITIKIZR, Moscow, 133–136. [In Russian]

Rubio M, Esteban J, Llamas S (1990) Other species captured in synthetic sex pheromone traps of the oriental fruit moth *Grapholita molesta* Busck. Boletín de Sanidad Vegetal Plagas 16: 381–389.

Shutova NN (1980) Oriental fruit moth in the USSR. In: Oriental Fruit Moth. Collection of scientific papers. VINITIKIZR, Moscow, 5–24. [In Russian]

Sinev SYu, Nedoshivina SV (2016) Tortricidae. In: Leley AS (Ed.) Annotated Catalogue of Insects of the Russian Far East. Vladivostok: Dalnauka, Lepidoptera, 193–680. [In Russian]

Sinev SYu, Nedoshivina SV, Dubatolov VV (2019) Tortricidae. In: Sinev SYu (Ed.) Catalogue of Lepidoptera of Russia. 2nd ed. Zoological Institute RAS, St. Petersburg, 120–156. [In Russian]

Smetnik AI (1980) Testing of synthetic sex pheromone of the oriental fruit moth in the USSR. In: Oriental Fruit Moth. Collection of scientific papers. VINITIKIZR, Moscow, 66–79. ([In Russian]

Sobczyk T (2024) Occurrence of wintergreen-specialized leafroller moths *Argyroploce externa* (Eversmann, 1844) and *Argyroploce roseomaculana* (Herrich-Schäffer, 1851) in Upper Lusatia (Lepidoptera, Tortricidae). Mitteilungen Sächsischer Entomologen 43: 1–15.

Sohn JC, Park KT, Cho S (2015) Seven species of Olethreutinae (Lepidoptera: Tortricidae) new to Korea. Journal of Asia-Pacific Biodiversity 8(2): 133–138. https://doi.org/10.1016/j.japb.2015.04.004

Souza JMA, Penso GA, Picoli EAT, Meireles ASM, Henriques IP, Godoi-Junior MA, Martins JVS, Ribeiro LS, Cruz JMFL, Ribeiro WS (2023) First report of *Grapholita molesta* (Busck) (Lepidoptera: Tortricidae) infestation on *Litchi chin-*

ensis Sonn. (Sapindaceae: Sapindales) var. Bengal. Brazilian Journal of Biology 83: e276008. https://doi.org/10.1590/1519-6984.276008

Svensson I (2006) Nordens Vecklare. The Nordic Tortricidae (Lepidoptera, Tortricidae). Entomologiska Sällskapet i Lund, Lund, 349 pp.

Sziraki G (1978) Examination on Tortricid moths trapped by synthetic attractants (Lepidoptera). Folia Entomologica Hungarica 31: 259–264.

Šumpich J, Liška J, Laštůvka Z, Laštůvka A (2022) Motýli a housenky střední Evropy. VI. Drobní motýli II. Academia, Praha, 811 pp. [In Czech]

Tanaka M, Abe K, Ando T, Vang LV (2007) Identification of the sex pheromone secreted by females of *Grapholita inopinata* Heinrich (Lepidoptera: Tortricidae). Research Bulletin of Plant Protection 43: 17–22.

The Pherobase (2026) Database of Insect Pheromones and Semiochemicals. Available online: https://www.pherobase.com (accessed on 11 April 2026)

Velcheva N (2000) Faunistic notes on Tortricidae attracted by synthetic sex phero mones for *Grapholita funebrana* Tr. and *Grapholita molesta* Busck. Plant Science 37: 181–187.

Wei SJ, Cao LJ, Gong YJ, Shi BC, Wang S, Zhang F, Guo XJ, Wang YM, Chen XX (2015) Population genetic structure and approximate Bayesian computation analyses reveal the southern origin and northward dispersal of the oriental fruit moth *Grapholita molesta* (Lepidoptera: Tortricidae) in its native range. Molecular Ecology 24: 4094–4111.

Witzgall P, Kirsch P, Cork A (2010) Sex pheromones and their impact on pest management. Journal of Chemical Ecology 36(1): 80–100. https://doi.org/10.1007/ s10886-009-9737-y

Yang J, Liu ZF, Fan JQ, Wu YP, Ma RY, Fan RJ (2016) Genetic variation and population structure of the oriental fruit moth *Grapholita molesta* in Shanxi, a major pome fruits growing region in North China. Journal of Asia-Pacific Entomology 19(4): 1131–1137.

Zhang AH, Li HH (2005) Catalogue of Eucosmini from China (Lepidoptera: Tortricidae). SHILAP Revista de Lepidopterología 33(131): 265–298.

Zheng Y, Wu RX, Dorn S, Chen MH (2016) Diversity of tortricid moths in apple orchards: Evidence for a cryptic species of Grapholita (Lepidoptera: Tortricidae) from China. Bulletin of Entomological Research: 1–13. https://doi.org/10.1017/S0007485316000973