New data on the distribution and biology of tineid moths (Lepidoptera: Tineidae) associated with forest habitats

Xavier DOBRZAŃSKI¹, Tomasz JAWORSKI²

¹ ul. Odrzańska 17/5, 50-113 Wrocław, e-mail: tawulec@o2.pl

² Zakład Ochrony Lasu, Instytut Badawczy Leśnictwa, Sękocin Stary, ul. Braci Leśnej 3, 05-090 Raszyn, e-mail: t.jaworski@ibles.waw.pl

ABSTRACT: The paper presents data on the distribution of 24 species of tineid moths in Poland. The data were obtained based on a few methods of collecting of moths, mainly with use of artificial light and rearing of adults from decaying wood and bracket fungi inhabited by larvae. Nearly a dozen of species were recorded from particular regions of Poland for the first time. The study also revealed the new aspects of biology and ecology of a few species.

KEY WORDS: faunistics, biological diversity, Microlepidoptera, clothes moths, fungus moths, bracket fungi, dead wood.

Introduction

Tineidae (Lepidoptera: Tineidae) constitutes a moth family abundantly represented in the world, distinguishable from among other taxa with original biology and habitat preferences (ROBINSON 2009). Its caterpillars – depending on a given subfamily – are mycetophages, lichenophages, keratophages, or saproxylophages, yet they more rarely feed on living plant parts. The majority of species inhabit old deciduous forests, where a high species diversity of arboreal fungi and rich ornitofauna are maintained. Forest areas that are economically intensively exploited are usually characterised with a low diversity of Tineidae, as the removal of dying and

hollowy trees leads to the elimination of potential habitats for the development of these insects.

A significant part of the keratophagous Tineidae underwent a strict synantrophisation – this refers particularly to the genus *Tinea*, whose representatives often inhabit exclusively within human areas where they grow on products made out of wool, skin, or various organic remains (feathers, animal hair, animal carcasses) (OPHEIM 1965). On the other hand, the representatives of the families Scardiinae and Nemapogoninae are associated almost entirely with the forest habitat, where their larvae grow in a decaying wood and the pericarp of arboreal fungi (ZAGULAJEV 1964, 1973, JAWORSKI & all. 2011, 2014).

Considering their rather small sizes, difficulties in identification, and a relatively low artificial light sensitivity of imagines, a state of knowledge on the bionomics and distribution of tineid moths in the area of Poland is relatively poor. The aim of the studies was to raise knowledge on the subject of the distribution and biology of Tineidae in the area of Poland, especially in the Opole and Lower Silesia Voivodeships, from where few faunistic data had been hitherto known.

Material and methods

The research was conducted in the years 2009-2015 in selected deciduous forest complexes in the southern, southwestern, and northern Poland. A primary method for data collection was collecting moths with the use of an artificial light. Imagines were lured to the source of light in the form of incandescent-mercury MIX lamp with the power of 160W, sometimes supplemented with a UV fluorescent tube with the power of 8W (records marked with *a.l.*). A part of the records concerns specimens found on tree barks or collected while in flight with the aid of a butterfly net. Moreover, a collection of larvae and a moth rearing were performed (records marked with *e.l.*). To this end in the spring period, the pericarps of arboreal fungi and tree fragments bearing traces of caterpillar foraging (molded feces and corridors made out of them at the surface of pericarps or in rotting wood) were collected, and subsequently rearing was continued in plastic containers at room temperature.

A few backyard woodsheds were inventoried, in which moles developed in a rotting, mycelium-covered wood. Majority of Tineidae specimens were identified based on their external traits, using the available literature (cf. ZAGULAJEV 1960, 1964, 1973, 1979, GAEDIKE 2015). Specimens damaged or difficult to identify (especially from the genus *Nemapogon*) were identified taking into account the structure of their reproductive organs. Fungi were identified based on the available literature (DOMAŃSKI & all. 1967), and some specimens were handed over to a specialist for identification. Moth nomenclature was adopted after the Fauna Europaea project, and the faunistic status of specific species was determined according to "The Distrubution Atlas of Butterflies in Poland" (BUSZKO & NOWACKI 2000). The species distribution on the European and world scale was adopted after the Tineidae monograph (ZAGULAJEV op. cit.). Particular sites were ascribed with UTM's grid reference system. A digit preceded with a slash in the date of a capture signifies the decade of a given month. The gathered specimens are stored in the private collection of the first author.

List of identified species

MEESSIINAE

Agnathosia mendicella (DENIS & SCHIFFERMÜLLER, 1775)

- XS64 Janików, 23 III 2012, 4 exx., e.l.

- DA65 Sromowce Niżne, 3 V 2014, 5 exx., e.l.

A forest species widely distributed in Europe, Caucasus, and Transcaucasia; however, rarely encountered. In Poland, recorded from the northeastern part of the country, as well as from Lesser Poland and Upper Silesia. In the research, the species classified as new for the Lower Silesia Voivodeship. The development of larvae takes place in arboreal fungi – in literature, *Fomitopsis rosea* is the most often cited (JAWORSKI & all. 2014). Within the framework of the studies, imagines were reared from the pericarp of the *Daedalea quercina*, and, for the first time, of the *Bjerkandera adusta*.

Infurcitinea albicomella (STAINTON, 1851)

- XS64 Janików, 30 VI 2015, 1ex., a.l.

A species known from the majority of European countries, and moreover from Turkey and Georgia (GAEDIKE 2015). In the past in Poland, it was recorded merely from Lower the Silesia Voivodeship (BUSZKO & NOWACKI 2000). Its biology is poorly studied. HECKFORD (1992) reared imagines from this species out of larvae foraging on fallen leaves of the *Cotoneaster microphyllus* and the *Quercus ilex*. The author's (HECKFORD 2011) later observations suggest, however, that larvae have no particular trophic requirements and can develop in miscellaneous plant remains. The data on the larval development on rock and arboreal lichens requires confirmation (ZAGULAJEV 1979). Based on the available data on the subject of the species' habitat demands, one can assume that it prefers rocky and stony places of a xerothermic character (ZAGULAJEV *idem*, BENGTSSON & all. 2008).

Infurcitinea ignicomella (ZELLER, 1852)

- DA65 Sołtysie Skały, 13 VII 2014, 1 ex., a.l.

A species associated with warm coniferous forests and rocks (ZAGULAJEV 1979). In Europe, widely distributed. In Poland, it has been recorded from a few regions – most of the observations has a historic character. Its caterpillars develop on arboreal or rock lichens. The species rarely encountered, yet in Poland, it is one of the more often reported representatives of the genus *Infurcitinea*. Its larvae are difficult to spot and their development takes place in pipe-like cocoons (HECKFORD 1992).

Stenoptinea cyaneimarmorella (MILLIÈRE, 1854)

- WS55 Ostrzyca Proboszczowicka, 10 VI 2014, 1 ex., a.l.

A species widely distributed in Europe and the Middle East. In Poland, it was recorded in the past from the Lower Silesia and West Pomerania Voivodeships, and today from the Mazovia, Great Poland, and Podlachia (JAWORSKI & all. 2011, 2014). Encountered in old parks, as well as in deciduous and mixed forests. In literature, it is often stated that its caterpillars forage in rotting wood and arboreal fungi (ZAGULAJEV 1979); however, some reports demonstrate a connection of the species with arboreal lichens (BENGTSSON & all. 2008).

NEMAPOGONINAE

Archinemapogon yildizae KOÇAK, 1981

- XS64 Janików, 10 X 2014, 10 exx., e.l.
- BB93 Tuły, 2/III 2015, 1 ex., e.l.

A species distributed from Western Europe to Western Siberia. In Poland, recorded from the entire area of the country. In research, it was reported for the first time from the Opole Voivodeship. Its caterpillars develop in pericarps of numerous kinds of arboreal fungi such as *Inonotus radiatus*, *Ischnoderma benzoinum* or *Fomes fomentarius* (JAWORSKI & all. 2011, 2014), as well as in decaying wood of deciduous trees (*Quercus*, *Prunus*) (ZAGULAJEV 1964). During the research, moths were reared from the pericarps of a *Daedalea quercina* and a *F. fomentarius*.

Nemapogon clematella (FABRICIUS, 1781)

- WS42 Jagniątków, 25 VII 2013, 1 ex., a.l.
- DA65 Sołtysie Skały, 13 VII 2014, 1 ex., a.l.
- DA65 Sromowce Niżne, 2 V 2014, 1 ex.

A species proliferated in the country and in Europe, yet it is observed individually. In Poland, the majority of records has a historical character. It is connected with deciduous forests, where it develops in the rotting wood of deciduous trees (mainly *Corylus*), inhabited by the fungus *Hypoxylon fuscum* (JAWORSKI & all. 2014). The occurrence of this species in the environs of Sromowce Niżne was evidenced based on the appearance of a characteristic feeding ground on a hazel branch covered with pericarps of the *H. fuscum*.

Nemapogon cloacella (HAWORTH, 1828)

- XS64 Janików, 2/III 2015, 2 exx., e.l.
- CA40 Ustroń, 9 VI 2009, 1 ex.
- XS56 Wrocław-Wojnów, 2/I 2012, 1 ex., e.l.

A species often encountered and widely distributed in Poland and Europe; recently recorded also from North America (LANDRY & all. 2013). It is encountered in forests, where it forages on different kinds of arboreal fungi such as the *Bjerkandera adusta*, the *Inonotus* sp., the *Polyporus* sp. and others (ZAGULAJEV 1964). The specimen from Wrocław was reared from the pericarp of a *Phellinus robustus*. A species can also be a typical synanthrope, growing in dead organic matter of plant origin – larvae develop then in food products or inhabit stored wood.

Nemapogon granella (LINNAEUS, 1758)

- VU46 Bielinek 15 VII 2010, 1 ex., a.l.
- XS64 Janików, 10 X 2014, 2 ex., e.l.; idem, 1/VII 2013, numerous, a.l.
- BA99 Ligota Dolna 11 VI 2010, 1 ex., a.l.
- WS28 Tomisław, 2/VII 2011, numerous.

- XS45 Wrocław-Ołtaszyn, 2/VII 2012, numerous.
- XS37 Wrocław-Rędzin, 17 V 2010, numerous.
- XS46 Wrocław-Stare Miasto, 23 V 2012, 1 ex.
- XS56 Wrocław-Wojnów, 30.03.2013, 1 ex., e.l.

A species widely distributed in the country and Europe, often occurring numerously. In research, it was recorded for the first time from the area of the Opole Voivodeship. It develops on many fungus species and dead organic matter; encountered both in forests and synanthropic environments. The literature on the subject provides as host species such fungi as the *Polyporus* sp. (ZAGULAJEV 1964), *Laetiporus sulphureus*, *Armillaria mellea*, *Inonotus radiatus* (BUSZKO 1996). During the rearing, imagines hatched from pericarps of the *L. sulphureus*, *Phellinus robustus*, *Piptoporus betulinus* and *Stereum* sp. During the research, the foraging of the species in dried fungus pericarps from the genus *Boletus* sp. was noted. Imagines evince an afternoon-evening activity and tend to be lured to artificial light sources. At the sites in the environs of Wrocław, moths flying around hollows of old oaks were encountered.

Nemapogon variatella (CLEMENS, 1859)

- WS28 Tomisław, 6 VII 2011, 1 ex., a.l.

A species distributed from Western Europe to Transcaucasia. In Poland, it is encountered in the whole country, though there is a lack of data from part of the voivodeships. In research, it was reported for the first time from the Lower Silesia Voivodeship. It tends to be mistaken with *N. granella* specimens, thus in order to conduct a proper identification, the comparison of the reproductive organ is recommended, especially when it comes to species with an indistinct wings pattern. *N. variatella* inhabits mixed and deciduous forests, individually growing trees, parks, and tree storages, where it develops on different fungus species (JAWORSKI & all. 2014).

Nemapogon koenigi CĂPUȘE, 1967 (= *N. wolffiella* KARSHOLT & NIELSEN, 1976)

- WS64 Wojcieszów, 9 VII 2011, 1 ex.

A species proliferated from Western Europe to Caucasus, though it is encountered individually and seldomly. In Poland, it has been recorded hitherto from the Lower Silesia Voivodeship (BĄKOWSKI & LARSSON 2011), the Warmian-Masurian Voivodeship, Lesser Poland (BUSZKO & NOWACKI 2000), and Podlachia (JAWORSKI & all. 2014). Its caterpillars develop in rotting wood (BĄKOWSKI & LARSSON 2011). A specimen from Lower Silesia was collected during evening hours in a birch coppice while in flight.

Nemaxera betulinella (FABRICIUS, 1787)

- DA65 Sromowce Niżne, 3 V 2014, 10 exx., e.l.

The distribution range of a species reaches from Western Europe to Siberia. In Poland, it is encountered in the area of the whole country. It is connected with deciduous forests and pars. Its caterpillars develop on arboreal fungi and rotting wood (ZAGULAJEV 1964, JAWORSKI & all. 2014). Imagines were reared from wood covered with *Bjerkandera adusta* pericarps. Mature moths fly to an artificial light source.

Neurothaumasia ankerella (MANN, 1867)

- XS64 Janików, 2/VI-1/VII 2013, individually, a.l.
- WS28 Tomisław, 30 VI 2011, 3 exx., a.l.
- XS46 Wrocław-Stare Miasto, 5 VII 2010, 1 ex.
- XS56 Wrocław-Wojnów, 10 VIII 2009, 1 ex., a.l.

A species distributed in Europe, North Africa, Middle East and Caucasus, (PETERSEN & GAEDIKE 1996, ZAGULAJEV 1964). In Poland, it is known mainly from the southwestern and western part of the country. It grows an develops in warm forests and on isolated old oaks. Its caterpillars exist in rotten wood emerged after the foraging of beetle larvae from the families Cerambycidae and Buprestidae (JAWORSKI & all. 2011).

Imagines fly to an artificial light source; they can be also found on oak barks and felled tree branches, and sometimes also in woodsheds.

Triaxomasia caprimulgella (STAINTON, 1851)

- XS46 Wrocław-Stare Miasto, 16 VI 2015, 1 ex.

A species known almost from the whole Europe (GAEDIKE 2015). In Poland, the last reports on its occurrence come from the Warmian-Masurian and Lubuskie (BUSZKO & NOWACKI 2000), as well as Mazovian Voivodeships (JAWORSKI & all. 2011). Its biology is not sufficiently studied; however, its caterpillars most probably develop on arboreal fungi and rotting wood (GAEDIKE 2015). A specimen from Wrocław was found on the bark of a rotting black poplar. A new species to the Lower Silesia Voivodeship. Triaxomera fulvimitrella (SODOFFSKY, 1830)

- XS64 Janików, 11 V 2012, 1 ex., a.l.
- WS61 Opawa, 15 VI 2013, 1 ex.

A species widely distributed in Europe and the western part of Asia. In Poland, it is known from a few voivodeships, usually encountered individually. Its caterpillars develop in rotting wood of deciduous trees (*Betula, Fagus, Quercus, Corylus*) and on arboreal fungi (*Fomes fomentarius, Stereum rugosum*) (ZAGULAJEV 1964, JAWORSKI & all. 2011, 2014). At the Bornholm Island (Ro, 2-6 VI 2012, 2 exx., leg. X. DOBRZAŃSKI), newly hatched *T. fulvimitrella* specimens were observed next to ecdyses on the bark of a Swedish whitebeam (*Sorbus intermedia*). From private observations, it transpires that imagines evince afternoon and evening activities – they fly small distances around tree trunks.

Triaxomera parasitella (HÜBNER, 1796)

- XS64 Janików, 10 X 2014, 3 exx., e.l.
- XS45 Wrocław-Ołtaszyn, 9 V 2009, 1 ex.
- XS37 Wrocław-Rędzin, 17 V 2010, 1 ex.

A species distributed from Western Europe, Middle East, to Transcaucasus. Recently, it was also recorded from North America (LANDRY & all. 2013). In Poland, it was reported from the area of the whole country, though usually encountered individually. Caterpillars develop in rotting wood of deciduous trees and on arboreal fungi such as *Phellinus robustus*, *Fomes fomentarius*, *Stereum rugosum* (JAWORSKI & all. 2011, 2014). Adult moths can be encountered on the bark of old trees; they sometimes fly also to an artificial light source.

PERISSOMATICINAE

Haplotinea insectella (FABRICIUS, 1794)

- WS28 Tomisław, 27 VII 2011, numerously.
- XS56 Wrocław-Wojnów, 11 VI 2010, 1 ex.

A species with a Holarctic range. In Poland reported from the majority of the voivodeships. Its caterpillars forage on organic dead matter of various origin – from decaying fungi and wood, through grain, to remains gathered in bird nests (ZAGULAJEV 1979, BUSZKO 1996). During the course of the research, the species was observed very often in woodsheds, which

can on the one hand point to its preferences as regards synanthropic environments, and on the other its trophic connections with rotting wood. The moths evince afternoon-evening activity – UV snares hung at a site of its abundant occurrence turned out ineffective for the species in question.

SCARDIINAE

Montescardia tessulatellus (ZELLER, 1846)

- XS64 Janików, 20 III 2012, 3 exx., e.l.
- XS41 Skalice, 20 III 2012, 1 ex., e.l.
- DA65 Sromowce Niżne, 3 V 2014, 2 exx., e.l.
- WS64 Wojcieszów, 27 VII 2012, 1 ex., a.l.

A Eurasian species, widely distributed. In Poland, the known sites of this species are situated mainly in the southern and eastern part of the country. It is most often encountered individually and much less often than the similar *Morophaga choragella*. The larvae develop in rooting wood and on different arboreal fungus species (ZAGULAJEV 1973, JAWORSKI & all. 2014). In rearing, moths were obtained from pericaprs of *Daedalea quercina*, *Piptoporus betulinus* i *Bjerkandera adusta*.

Morophaga choragella (DENIS & SCHIFFERMÜLLER, 1775)

- XR77 Olszak, 1 VIII 2009, 2 exx., a.l.
- CF92 Siekierki, 2 VI 2010, 1 ex., a.l.
- XS56 Wrocław-Wojnów, 30 III 2013, >20 exx., e.l.

A species of Palaearctic range, widely distributed and generally common. In Poland, it has been reported from the area of the whole country, except for the Opole Voivodeship. The larvae develop on different fungus species such as the *Laetiporus sulphureus*, *Phellinus igniarius*, *Daedalea quercina*, *Ganoderma applanatum* i innych (BUSZKO 1996, JAWORSKI & all. 2014). In rearing, moths were obtained from *L. sulphureus* ang *Phellinus robustus*. The species often inhabit numerously larger fungi pericarps – from one pericarp, dozens of imagines sometimes hatch.

TINEINAE

Monopis fenestratella (HEYDEN, 1863)

- XS64 Janików, 30 VI 2015, 1 ex., a.l.

A species distributed in the northern and middle Europe. In Poland, it was reported relatively recently from the Podlasie (ŠUMPICH & all. 2011), the Kuyavian-Pomeranian and the Łódz (JAWORSKI & all. 2011, 2012), as

well as the Mazovian Voivodeships (T. JAWORSKI – unpublished data). A keratophagical species – moths were reared from the remains of animal origin, gathered in hatching shelters of a tawny owl (*Strix aluco*), as well as from the pellet of this owl (JAWORSKI & all. idem). Data on the relation between the species with dead wood is erroneous. Moths are sometimes lured to an artificial light source. The new species to the the Lower Sileia Voivodeship.

Monopis laevigella (DENIS & SCHIFFERMÜLLER, 1775)

- WS61 Opawa, 15 VI 2013, 1 ex.
- WS28 Tomisław, 6 VII 2010, 1 ex., a.l.
- XS46 Wrocław-Stare Miasto, 4 V 2012, 1 ex.

A species of a Palaearctic range, it occurs also in the western part of North America. In Poland, widely distributed and encountered often. The larvae forage on keratin remains (feathers, animal hair) gathered in bird nests and tree hollows. They develop also in the pellet of predatory birds. During the research on the moth fauna of hatching shelters of the tawny owl (*Strix aluco*), the species was the most numerous representative of Tineidae (JAWORSKI & all. 2012). The moths often fly to the source of an artificial light source.

Monopis monachella (HÜBNER, 1796)

- XS64 Janików, 6 VII 2011, 1 ex., a.l.
- XR77 Olszak, 1 VIII 2009, 1 ex., a.l.
- CF92 Siekierki, 4 VII 2011, 1 ex., a.l.
- DA65 Sołtysie Skały, 14 VII 2015, 1 ex., a.l.
- WS64 Wojcieszów, 7 VII 2012, 1 ex., a.l.
- XS45 Wrocław-Ołtaszyn, 11 VIII 2009, 1 ex., a.l.
- XS56 Wrocław-Wojnów, 10 VIII 2009, 1 ex., a.l.

A cosmopolitan species, in Poland widely distributed. Its larvae develop from organic dead matter of animal origin – for example, in bird nests, pellets of predatory birds; sometimes encountered in utility rooms (ZAGULAJEV 1960). The species new to the Opole Voivodeship.

Monopis obviella (DENIS & SCHIFFERMÜLLER, 1775)

- XS64 Janików, 30 VI 2015, 2 exx., a.l.
- XR77 Olszak, 1 VIII 2009, 1 ex., a.l.

A species widely distributed in Europe and Middle East. In Poland, it has been reported from the majority of voivodeships. Its larvae develop in

bird nests and on remains of animal origin (ZAGULAJEV 1960). The species new to the Opole Voivodeship.

Monopis weaverella (SCOTT, 1858)

- XS23 Góra Radunia, 23 V 2012, 2 exx., a.l.
- XS64 Janików, 11 V 2012, 1 ex., a.l.
- CF92 Siekierki, 2 VI 2010, 1 ex., *a.l.*
- WS64 Wojcieszów, 27 VII 2012, 1 ex., a.l.

A species proliferated from the western Europe to the Ural Mountains. In Poland, it has been recorded from the majority of the voivodeships. It is known from forest habitats and it rarely occurs in synanthropic environments. The species new to the Pomeranian Voivodeship.

Niditinea striolella (MATSUMURA, 1931)

- XS23 Góra Radunia, 16 VI 2013, 1 ex., a.l.

A species is characterized by a Euroasian type of distribution. In Poland, it was recorded for the first time relatively not long ago (BUSZKO & PAŁKA 1992) and hitherto recorded from a few voivodeships – Lubusz, Kuyavian-Pomeranian, Łódź (JAWORSKI & all. 2012), Subcarpathian, and Warmian-Masurian. Contrary to the synanthropic *N. fuscella* (LINNAEUS, 1758), with which it shares a large external similarity, the moth is connected with forest habitats. Its larvae develop in bird nests. It infrequently flies to an artificial light source. It is significantly easier to demonstrate its presence based on rearing (JAWORSKI et. al 2012).

Discussion

In comparison to other moth families, the state of knowledge on the biology and distribution of Tineidae in the area of Poland is little. It results from the generally lesser attention being devoted to the so-called minute moths, to which the group Lepidoptera belongs, as well as from the difficulties in collecting materials and problems related to a taxonomic identification of part of the species. In recent years, a few and more extensive publications regarding Tineidae emerged (cf. BUSZKO 1996, JAWORSKI & all. 2011, JAWORSKI & all. 2014), in which the aspects of biology and ecology of part of the species were presented. Complex studies on national moles still remain a rarity. An example of a place with a relatively well-studied fauna of Tineidae is the Białowieża Forest, from where nearly 80% of saproxylic moles known from the area of Poland was

recorded, as well as species that had been never recorded from the country (JAWORSKI & all. 2014).

Not only can the recognition of species composition and a knowledge on biology and habitat preferences of selected Tineidae species be used in faunistic publications, but also during the evaluation of selected nature areas. For example, the presence of such species as *Scardia boletella* (FABRICIUS, 1794) in the environment indicates the area's high degree of original natural preservation, including a continuity of dead wood indispensable for the development of larvae of the species in question (JONSELL & NORDLANDER 2002, FRITZ 2004).

As for the occurrence of *Agnathosia mendicella* with a high probability indicates a presence on a given area of a rare arboreal fungus, the *Fomitopsis rosea*, in whose pericarps the larvae of this mole develop (KOMONEN & all. 2011). Tineidae can also lend itself as an interesting object in a research concerning connections between different animal groups; among others, mutualistic relations between Tineidae and some owl species were demonstrated, in whose nests these insects facilitate the decay of dead organic matter (JALAVA 1980, NASU & all. 2012).

A lack of records of common and widely distributed Tineidae species in the area of the Opole and Pomeranian Voivodeships results most probably from a little interest being devoted to this moth family by entomologists working on mentioned areas. In the rest of the voivodeships, a large number of records have a historical character.

In order to examine more in-depth the distribution and biology of the national mole species, the intensification of field work is required.

Acknowledgements

The Authors would like to thank PhD Andrzej SZCZEPKOWSKI (SGGW in Warsaw) for identifying a part of the arboreal fungus species, and Dr Tomasz BLAIK and MSc Ewelina MYŚKÓW (the Wrocław University) for their help during the field work.

SUMMARY

The family Tineidae (tineid moths) is represented by numerous species of Microlepidoptera. Most of the species are characterized by their unusual life history and habitat requirements. The caterpillars are – depending on the subfamily – mycophagous, lichenophagous, keratophagous, or saproxylophagous, and very rarely feed on the green parts of living plants. The vast majority of the species within this family is associated with

deciduous forests, nevertheless, some taxa – especially within the subfamily Tineinae – are adapted to living in the vicinity of humans, where they feed on a variety of materials made of skin, wool etc. (e.g. feather, fur, remains of dead animals). Due to small size, difficulties in identification, and relatively low sensitivity to artificial light, the knowledge on the distribution and biology of this family is relatively low.

The aim of this study was to increase the knowledge on the distribution and biology of Tineidae in Poland, particularly in the provinces of Opole and Lower Silesia. The study data were mainly obtained based on the collection of adult moths with the use of artificial light and by rearing of moths from decaying wood and tree fungi inhabited by their larvae. Some specimens were also captured while resting on tree trunks or by an entomological net. The specimens were identified based on their external features or genitalia morphology.

As a result, the presence of 24 species was recorded, including almost a dozen of species new for the particular regions of Poland. Namely, *Agnathosia mendicella*, *Nemapogon variatella*, *Triaxomasia caprimulgella*, and *Monopis fenestratella* were recorded as new species for the Lower Silesian Voivodeship, *Archinemapogon yildizae*, *Nemapogon granella*, *Morophaga choragella*, *Monopis monachella*, and *Monopis obviella* were new species for the Opole Voivodeship, and *Monopis weaverella* was recorded for the first time inthe Pomeranian Voivodeship.

In Poland, the studies on Tineidae are relatively scarce and only few papers have been devoted exclusively to this family of Lepidoptera. The presence of a few species in historical localities requires confirmation due to the lack of any studies in decades. Some new species might also be recorded as new for the fauna of Poland, as suggested by their current geographic distribution.

REFERENCES

- BĄKOWSKI M., LARSSON M. 2011: Nowe stanowisko Nemapogon wolffiella Karsholt et Nielsen, 1976 (Lepidoptera: Tineidae) odłowionego w Polsce do pułapki feromonowej. Wiadomości Entomologiczne, **30** (3): 192.
- BENGTSSON B., JOHANSSON R., PALMQVIST G. 2008: Nationalnyckeln till Sveriges flora och fauna. Fjärilar: Käkmalar- säckspinnare. Lepidoptera: Micropterigidae – Psychidae. Artdatabanken, SLU, Uppsala.
- BUSZKO J. 1996: Mole (Tineidae, Lepidoptera) zasiedlające huby i gniazda ptaków w rezerwacie Las Piwnicki. Acta Universitatis Nicolai Copernici, Biologia, **96**: 49-55.
- BUSZKO J., NOWACKI J. 2000: The Lepidoptera of Poland. A Distributional Checklist. Polish Entomological Monographs, 1: 1-178.

DOMAŃSKI S., ORŁOŚ H., SKIRGIEŁŁO A., 1967: Grzyby. Tom III. PWN, Warszawa.

- FRITZ Ö. 2004. Jättesvampmal Scardia boletella i Halland betydelsen av isolering, habitatareal och beståndshistorik. [Scardia boletella in Halland, SW Sweden – the importance of isolation, habitat area and stand history]. Entomologisk Tidskrift, 125 (4): 147-160.
- GAEDIKE R. 2015: Tineidae I (Dryadaulinae, Hapsiferinae, Euplocaminae, Scardiinae, Nemapogoninae and Meessiinae). Microlepidoptera of Europe 5. Brill, LeidenBoston. 308 ss.

- HECKFORD R.J. 1992: Discovery of the larva of *Infurcitinea albicomella* (HerrichSchaeffer) (Lepidoptera: Tineidae) in the British Isles. Entomologist's Gazette, **43**: 99-100.
- HECKFORD R.J. 2011: *Infurcitinea albicomella* (Stainton, 1851) (Lepidoptera: Tineidae), a second Devon locality. Entomologist's Gazette, **62**: 282.
- JALAVA J. 1980: Tineidae (Lepidoptera) from nests of the Ural Owl (*Strix uralensis* Pall.). Notulae Entomologicae, **60**: 96-100.
- JAWORSKI T., GRYZ J., BUSZKO J. 2011: *Monopis fenestratella* (Heyden, 1863) (Lepidoptera, Tineidae) new records from Poland, with notes on species biology. Fragmenta Faunistica, **54** (2): 149-151.
- JAWORSKI T., GRYZ J., KRAUZE-GRYZ D. 2012: Skrzynki lęgowe puszczyków (*Strix aluco* L.) jako środowisko występowania niektórych gatunków motyli (Lepidoptera). Wiadomości Entomologiczne, **31** (1): 17-22.
- JAWORSKI T., HILSZCZAŃSKI J., PLEWA R. 2011: Nowe stanowiska saproksylicznych Tineidae i Oecophoridae (Lepidoptera) w Polsce. Wiadomości Entomologiczne, 30 (4): 229-236.
- JAWORSKI T., HILSZCZAŃSKI J., PLEWA R., SZCZEPKOWSKI A. 2014: Fungus moths (Lepidoptera, Tineidae) of the Białowieża Forest. Polish Journal of Entomology, 83 (1): 5-21.
- JONSELL M., NORDLANDER G. 2002. Insects in polypore fungi as indicator species: a comparison between forest sites differing in amounts and continuity of dead wood. Forest Ecology and Management, **157** (1-3): 101-118.
- LANDRY J.F., NAZARI V., DEWAARD J.R., MUTANEN M., LOPEZ-VAAMONDE C., HUEMER P., HEBERT P.D. 2013. Shared but overlooked: 30 species of Holarctic Microlepidoptera revealed by DNA barcodes and morphology. Zootaxa, **3749**: 1-93.
- KOMONEN A., SIITONEN J., MUTANEN M. 2011: Insects inhabiting two old-growth forest polypore species. Entomologica Fennica, **12**: 3-12.
- NASU Y., MURAHAMA S., MATSUMURO H., UEDA K., HIROWATARI T., YOSHIYASU Y. 2012: Relationships Between Nest-Dwelling Lepidoptera and Their Owl Hosts. Ornithological Science, **11** (2): 77-85.
- OPHEIM M: 1965-1966. The Norwegian species of *Niditinea* Petersen, 1957 and *Tinea* Linnaeus, 1758 (Lep., Tineidae). Norsk Entomologisk Tidsskrift, **13**: 52-60.
- PETERSEN G, GAEDIKE R. 1996: Revision der Gattung *Neurothaumasia* LE MARCHAND, 1934 (Insecta: Lepidoptera: Tineidae). Entomologische Abhandlungen. Staatliches Museum für Tierkunde Dresden, **57** (13): 283-294.
- ROBINSON G.S. 2009. Biology, distribution and diversity of tineid moths. Southdene Sdn Bhd, Kuala Lumpur and Natural History Museum, London. 143 ss., 16 pl.
- ŠUMPICH J., LIŠKA J., DVOŔÁK I. 2011: Contribution to knowledge of the butterflies and moths (Lepidoptera) of north-eastern Poland with a description of a new tineid species from the genus *Monopis* Hübner, 1825. Polish Journal of Entomology, **80** (1): 83-116.
- ZAGULAJEV A.K. 1960: Tineidae, podsemejstvo Tineinae. Fauna SSSR, IV, 3. Leningrad.
- ZAGULAJEV A.K. 1964: Tineidae, podsemejstvo Nemapogoninae. Fauna SSSR, IV, 2. Leningrad.
- ZAGULAJEV A.K. 1973: Tineidae, podsemejstvo Scardiinae. Fauna SSSR, IV, 4. Leningrad.

ZAGULAJEV A.K. 1979: Tineidae, podsemejstvo Meessiinae. Fauna SSSR, IV, 6. Leningrad.