

Mesapamea secalella REMM, 1983, a new species found in Western Europe

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Abstract

The new species *Mesapamea secalella* REMM, described by H. REMM in 1983 from the USSR : Estonian SSR, is also distributed in Western Europe. The moth's provisional distribution is stated, the external appearance as well as the genitalia of *Mesapamea secalis* (L.) and *Mesapamea secalella* REMM are described, and the nomenclature of *M. secalella* is discussed.

Mesapamea secalis, described by LINNÉ in 1758, is a very variable species with many described aberrations and forms, see for instance TURNER (1926-1935) and HEINICKE (1960).

Entomologists have often considered whether *M. secalis* L. contained more than one species. Genital investigations on *secalis* have so far concluded, that in Europe there was only one species = *Mesapamea secalis* L.

Investigations on the male genital organs of a number of "*secalis* L." from the Estonian SSR of the USSR has however proved that there is a second species : *Mesapamea secalella* REMM, 1983, hidden among *M. secalis* L. The honour for this interesting discovery goes to Dr. H. REMM from Tartu in the Estonian SSR, who has published his discovery in Ent. Obozr. LXII.3. 1983 : 596-600, in the article : "New species of Noctuidae (Lepidoptera) from the USSR". We were informed about REMM's article, (which is written in russian, without english summary) by W. SKWORZOW from Pskow in the USSR, who told us, that *Mesapamea secalella* REMM was found in the Estonian SSR and in the Pskow area of the USSR, together with *Mesapamea secalis* L.

The holotype of *Mesapamea secalella* REMM is from the USSR, Estonian SSR, Bez., Rapla : Hageri, ♂, 27-7-1960. The paratypes are from : Bez.

Parnu, Kanaküla 1 ♂. 15-7-1966, Kingisseppa 1 ♂ 2-8-1967, Island Abruka 3 ♂♂, 26/7-1968. Bez. Valga, Pikasilla, 1 ♂, 20-7-1969 and Bez. Karvere, Porkuni 1 ♂, 27-7-1971.

With this information we started genitalia investigations on several specimens of *M. secalis* ♂♂ from Denmark, Sweden and Finland.

We soon found that *Mesapamea secalella* REMM, was distributed in all three countries.

In Finland, it was noted in the 1970's that some randomly collected samples of *M. secalis* contained exceptionally high proportions of the unicoloured form *nictitans* ESPER, 1788 (MIKKOLA & JALAS, 1979, p. 243). Because the highest frequency (over 70 %) was observed in the city centre of Helsinki, it was thought that this could be a sign of the so-called industrial melanism, but against this theory was the fact that the blackest form *leucostigma* ESPER, 1791 did not show any rise in frequency. Now we know that this apparently conflicting finding was caused by the presence of another species and that a still higher proportion of "*nictitans*" is present in a sample form (cf. Table 1).

Table 1.
Distribution of different forms and *M. secalella* among five Finnish samples of *Mesapamea*.

Number, locality, year and quality of sample	Total indiv.	M. secalis/secalella in males				Total	% <i>secalella</i> in males	Number of females
		f. <i>secalis</i>	f. <i>didyma</i>	f. <i>nictitans</i>	f. <i>leucostigma</i>			
1. Provinces Al, Ab and N, from many years, non-random museum material	55	7/0	16/0	22/1	9/0	54/1	1.8	not counted
2. Ka : Vehkalahti 1953-68, randomly collected museum material	190	6/0	52/0	23/0	9/0	90/0	0	100
3. N : Tammisaari, Jussarö 1977, random sample	147	2/0	35/0	14/5	14/0	65/5	7.1	77
4. N : Tammisaari, Espingskär 1976, random sample	91	1/5	5/5	4/41	1/3	11/54	83.1	26
5. N : Helsinki, city centre 1972,-74, random sample	95	2/1	22/9	9/34	5/2	38/46	54.8	11
Total	578	18/6	130/14	72/81	38/5	258/106	29.1	214

External appearance (figure 1).

Mesapamea secalella REMM is presumably a very variable species, like *Mesapamea secalis* L. and according to our investigations it is very difficult to separate the two species alone on their appearance. However, Remm states in his article, that among the species of *secalella*, there often occurred a smaller plain dark brown form with the white spots in the reniform stigma hardly visible. This form resembles *M. secalis* L. f. *nictitans* ESPER, 1788. However f. *nictitans* ESP. is synonymous with f. *leucostigma* ESPER, 1791 according to HEINICKE (1960).



Figure 1

left	right
<i>Mesapamea secalis</i> L.	<i>Mesapamea secalella</i> REMM
1. Sweden	4. Sweden
2. Sweden	5. Sweden
3. Switzerland	6. Switzerland

On the Island Abruksa, Estonian SSR, specimens of *secalella* were also found, which resembled *M. secalis* f. *oculea* GUENÉE, 1852. However, f. *oculea* Gn. is a synonym of the nominate form of *M. secalis* L. according to HEINICKE (1960).

In this article, the names of the forms of *M. secalis* are used *sensu lato* i.e. they cover both species.

The identification of *M. secalella* from external characters is still far from certain, but some hints can be given : 1. Most specimens of *M. secalella* belong to the form *nictitans* and are usually more unicolorously dark brown and with less white in the reniform stigma than most specimens of this form in *M. secalis*. 2. Correspondingly, f. *didyma* ESPER, 1788 seldom shows such clear contrasts between the outer and median areas of forewing as is typical of the form in *M. secalis*. 3. The ground colour of f. *leucostigma* Esp. is in *M. secalella* not blackish as in *M. secalis*, but very dark brown with a reddish tint. 4. The form *secalis* of *secalella* (should perhaps be called *secalella* !) has often a deeper blackish shadow in the fore part of the forewing and the ground colour often shows a reddish tint.

We emphasize however, that for most forms of *M. secalella*, identical specimens of *M. secalis* can be found, although with a lower frequency (the reddish f. *leucostigma* an exception ?).

In randomly collected series from Finland the proportion of f. *nictitans* from all *M. secalella* is 76 % and that of f. *didyma* only 13 %. In *M. secalis* the situation is reversed, 25 and 56 %, respectively. The frequencies of the nominate forms are about 5 % in both species, but that of f. *leucostigma* 5 % in *M. secalella* but 14 % in *secalis* (Table 1).

The presence of many *M. secalella* in series of *Mesapamea* can be guessed from the unicolorous look, but also from the smaller size.

M. secalella is small or medium-sized among *Mesapamea*. REMM (1983), writes that one of the forewings on *secalella* measures 12,3-14 mm, on the holotype 12,5 mm.

The full wingspan on the specimens of *secalella* and *secalis* we have investigated from Denmark are :

M. secalella : ♂ ♂ between 2,7 cm. and 3,2 cm., average 3,0 cm.

M. secalis : ♂ ♂ between 3,0 cm. and 3,4 cm., average 3,17 cm.

Genitalia (figure 2).

Mesapamea secalella REMM differs from *secalis* in the genitalia, but until now REMM and ourselves have only found differences in the male genital armatures.

David AGASSIZ and Barry GOATER (England) (pers. inf., 1984) have provisionally found differences also in the female genitalia : *M. secalella* REMM has a smaller ostium bursae and a more narrow bursa copulatrix than *M. secalis* (L.). To this we can supply : Looking at the female genitalia on the underside of the abdomen, the swollen of the ostium

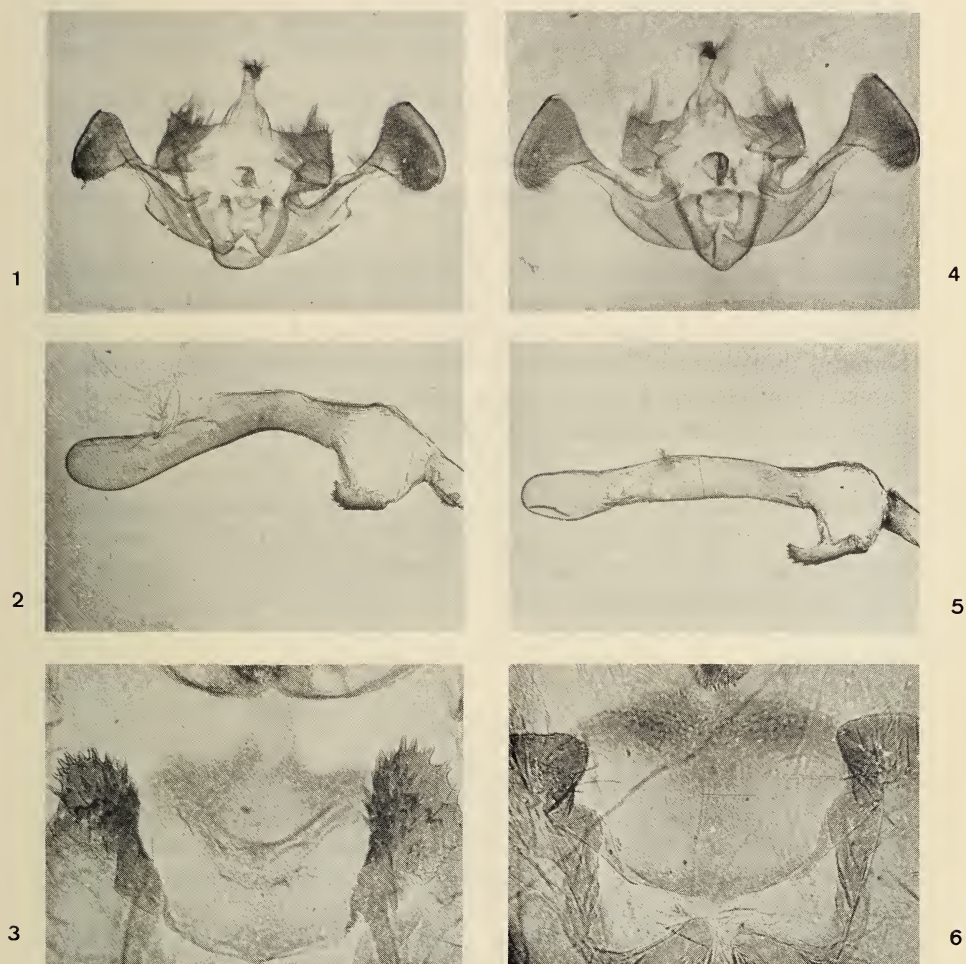


Figure 2

- left
Mesapamea secalis L.
 1. Male armature $\times 10$
 2. Aedeagus with everted vesica $\times 18$
 3. Clavi $\times 60$

- right
Mesapamea secalella REMM
 4. Male armature $\times 10$
 5. Aedeagus with everted vesica $\times 18$
 6. Clavi $\times 60$

bursae on *secalella* is always facing to the left, and on *secalis* always facing to the right. In the next number of "Nota Lepidopterologica" we shall publish photos of the female genitalia of the two species.

The males of *secalella* can be determined by cutting off one valve and controlling the form of the clavus from it or from the one left in the body.

Male : In the prepared state, the clavus is wider on *secalella* than on *secalis*. It is a little chitinised and covered with small fine hairs. The clavus on *secalis* is more strongly chitinised, with small thorns. In *secalella*, it has towards the juxta a characteristic fold below the top (from the ventro-caudal to the dorso-frontal corner).

Another good characteristic can be seen in the aedeagus. The cornutus is broad in *secalis*, but small in *secalella*. Where the structure of the everted vesica turns into a narrow tube, there are many characteristic small cornuti ; these cornuti are absent in *secalis*. Some other differences that can be mentioned are the form of the valve which is wider in *secalis* than in *secalella*, and the aedeagus in *secalis* is rounded, whereas in *secalella* it is more straight.

It can also be mentioned that the following authors picture the genitalia of *M. secalis* L. : PIERCE (1909), NORDSTRÖM & WAHLGREN (1941), HOFFMEYER (1962), FORSTER & WOHLFAHRT (1971), MERZEEVSKAJA (1971), MIKKOLA & JALAS (1979) and BACALLADO (1972).

Distribution

1. *Mesapamea secalella* REMM (figure 3).

In Denmark we have found *secalella* from the following districts : Jutland (NWJ, WJ, NEJ, EJ and SJ), Funen (F), Zealand (NEZ, NWZ and SZ), Falster (LFM) and Bornholm (B) (for the classification of districts see FIBIGER & SVENDSEN, 1981). In Denmark, no particular biotope for *M. secalella* seems to be preferred.

In Sweden *M. secalella* has been found in Scania, Blekinge, Öland, Gotland, Södermanland and Upland.

In Finland a large number of possible *secalella* from inland have been examined. This investigation indicates that the distribution of *secalella* in Finland is limited to the south coast. So far however, only from the province of Nyland.

M. secalella reaches its northern border in the south of Finland, where it is a highly local, but locally frequent species, which seems mostly to inhabit xerotherm biotopes.

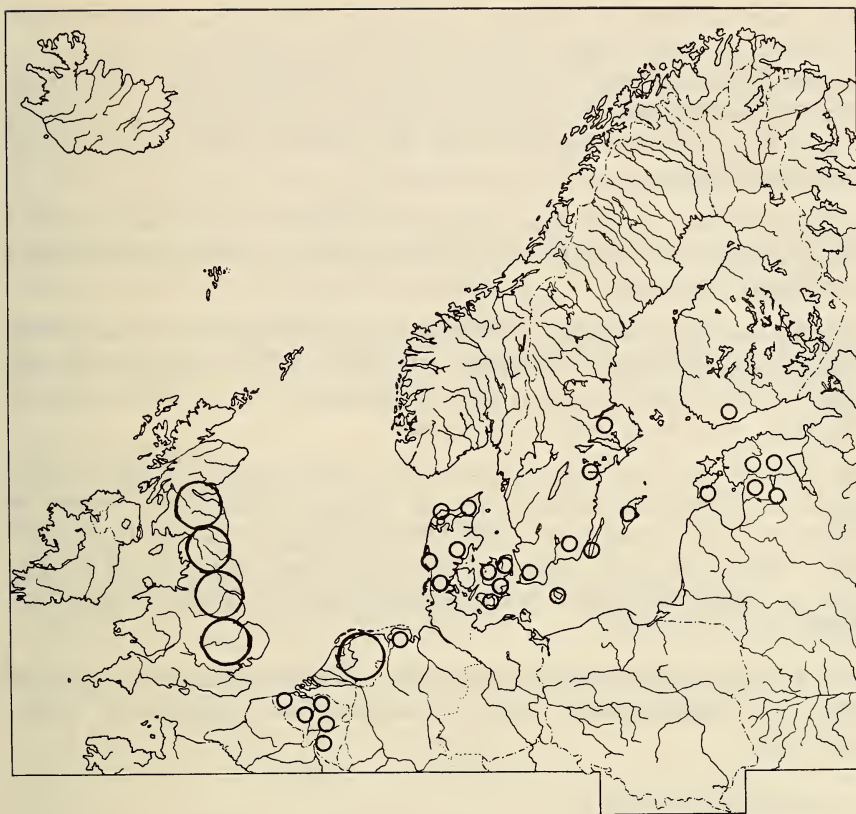


Figure 3
Records of *Mesapamea secalella* from Northwestern Europe.

From Finland, three different kinds of samples of *M. secalis* were controlled for *M. secalella* : Sample no. (1) a part of ordinary museum material, non-randomly collected and selected, (2) the only randomly collected museum material available and (3-5) three samples from a separate, so-called melanism collection, being entirely composed of random material. All these samples are deposited in the Zoological Museum of the University of Helsinki. The ordinary museum material studies (55 males, 23 f. *nictitans*) contained only one *M. secalella*, and no specimens were present in another large collection. (N^{os} 1-2, Table 1). However, from random samples collected in the 1970's (N^{os} 3-5) considerable proportions of *M. secalella* were found. Samples 3 and 4

have been collected in the outer archipelago, the former from a larger, forested, but partly open, rocky island and the latter with 83 % of *M. secalella* from an open and warm, partly cultivated island. The sample from central Helsinki (5), where the number of *M. secalella* also exceeds that of *M. secalis*, was collected from two relatively open park-like places with some gardens.

M. secalella has not yet been discovered in Norway (L. AARVIK in litt.), but the distribution in Denmark indicates, that *M. secalella* could be found in Southern Norway.

Besides Denmark, Sweden and Finland we have found *M. secalella* from Switzerland, Eifenbach, Furkapass, 1 ♂, 11/7-1979 A. MOBERG leg., and also in North-west Germany, Jever/Oldenburg, 1 ♂, 9/7-1947, leg. N. HAARLÖV, coll. Zool. Mus. Copenhagen.

M. secalella has also been found in the eastern parts of England from south to north (by Edinburgh) (B. GOATER, pers. inf., 1984), in Netherlands (B. LEMPKE, pers. inf., 1984), in Belgium (W. DE PRINS, pers. inf., 1984), in Spain (V. SARTO I MONTEYS, pers. inf., 1984) and in France : Pas de Calais, Ardennes, Dordogne and Gard (G. ORHANT, pers. inf., 1984).

The overall distribution for *Mesapamea secalella* REMM, has yet to be resolved. Comprehensive work is awaiting entomologists in several countries.

2. *Mesapamea secalis* L.

Mesapamea secalis L. has been found in the following districts in Denmark : Jutland (NEJ, WJ, EJ, SJ), Funen (F), Zealand (NWZ, SZ), Falster and Mön (LFM) and Bornholm (B).

M. secalis is also distributed in Sweden, Finland and Norway (L. AARVIK pers. inf., 1984) ; DDR, Chemnitz (Karl Marx Stadt), 1 ♂ 9/1-1915 coll. Zool. Mus. Copenhagen ; Poland, Allenstein (Olsztyn), 1 ♂ July 1905. Coll. Zool. Mus. Copenhagen, Switzerland, Fusio, 1 ♂ 9/7-1979 A. MOBERG leg. and Greece (B. SKULE, pers. inf., 1984).

Biology.

About the biology, there is very little to say for the moment, the phenology of *secalella* from the dates of the material examined in the Estonian SSR are from 15/7-2/8, and in Denmark from 28/6-6/8.

Mesapamea secalis L. has been recorded in Denmark from 25/6-19/9.

Nomenclature

Concerning the nomenclature of the species, the situation is rather a mess. HEINICKE (1960) clears up the single synonyms of the forms of *secalis*. However, none of these names are valid as species names.

Whether the correct name of the species should be *secalella* REMM or not, future investigations must solve.

Lectotype designation of *M. secalis* LINNÉ, 1758 will be made later by K. MIKKOLA and D. S. FLETCHER and published in J. Linn. Soc. London.

Below is a list of the usable names which have been used as synonyms to *secalis* and a list of the palaearctic species of the genus *Mesapamea* HEINICKE 1959.

List of synonyms :

<i>Mesapamea secalis</i> (L.).	Type-locality
<i>Phalaena secalis</i> LINNÉ, C.v. 1758, Syst. Nat. (Ed. 10) 1, p. 519.	–
<i>Noctua didyma</i> ESPER, E. J. C. [1788], Eur. Schmett. [4(1)], t. 126, f. 7 ; text [1796] in 4 (1(2)), 1796, p. 378.	Unsere Gegenden [= Erlangen] (text [1796])
<i>Phalaena leucostigma</i> ESPER, E. J. C. [1791], Eur. Schmett. [4(1)], t. 159, f. 7 ; text [1804] in 4 (1(2)), p. 542. [<i>Nec Noctua leucostigma</i> HBN. [1803-08] (= <i>Celaena leucostigma</i> (HBN.))].	Gegend von Lyon (text [1804])
<i>Phalaena lancea</i> ESPER, E. J. C. [1791], Eur. Schmett. [4(1)], t. 174, f. 5 ; text [1805] in 4 (1(2)), p. 663.	Tyrol (text [1805])
<i>Noctua mixta</i> FABRICIUS, J. C. 1794, Ent. syst. 3(2), p. 118.	Italia
<i>Phalaena citrina</i> DONOVAN, E. 1801, Nat. Hist. Brit. Ins. 10, p. 36, t. 340, f. 2.	Britannia
<i>Noctua secalina</i> HÜBNER, J. [1808-09], Samml. eur. Schmett. 4, Noctuae, t. 89, f. 420 ; text [1823], p. 183, as <i>Noctua didyma</i> .	Deutschland (text [1823])
<i>Noctua furca</i> HAWORTH, A. H. [1809], Lep. Brit., p. 209.	Magna Britannia
<i>Noctua rava</i> HAWORTH, A. H. [1809], Lep. Brit., p. 209.	Magna Britannia
<i>Noctua fuscina</i> HAWORTH, A. H. [1809], Lep. Brit., p. 209, as synonym of <i>Noctua furca</i> Haw. [1809].	–
<i>Noctua i-niger</i> HAWORTH, A. H. [1809], Lep. Brit., p. 211.	Magna Britannia

<i>Noctua oculea</i> HAWORTH, A. H. [1809], Lep. Brit., p. 211 [Nec <i>Phalaena oculea</i> L. 1761 (= <i>Amphipoea oculea</i> (L.))].	Magna Britannia
<i>Noctua phoebina</i> HAWORTH, A. H. [1809], Lep. Brit., p. 211, as synonym of <i>Noctua phoebe</i> HAW. [1809].	—
<i>Noctua phoebe</i> HAWORTH, A. H. [1809], Lep. Brit., p. 211.	Magna Britannia
<i>Noctua lugens</i> HAWORTH, A. H. [1809], Lep. Brit., p. 212.	Magna Britannia
<i>Noctua lugensina</i> HAWORTH, A. H. [1809], Lep. Brit. [1809], p. 212, as synonym of <i>Noctua lugens</i> HAW. [1809].	—
<i>Hadena didyma struvei</i> (var.) RAGUSA, E., 1885, Nat. sicil. 4, p. (271-)274.	Castelbuono

The palaearctic species of the genus *Mesapamea* HEINICKE 1959 :

Mesapamea HEINICKE 1959

Deutsche Entomologische Zeitschrift N.F.6. 1959 : p. 100-111.

Type species *Parastichtis moderata* EVERSMAAN, 1843.

1. *Mesapamea secalis* LINNAEUS, 1758.
Syst. Nat. (Ed.10) 1 : 519.
2. *Mesapamea secalella* REMM, 1983.
Ent. Obozr. LXII : 600.
3. *Mesapamea moderata* EVERSMAAN, 1843.
Bull. Mosc. III : 547.
4. *Mesapamea calcirena* PÜNGELER, 1902.
Dt. ent. Z. Iris 15 : 150.
5. *Mesapamea hedeni* GRAESER, 1888.
Berl. ent. Z. 32 : 333.
6. *Mesapamea vaskeni* VARGA, 1979.
Z. Arb. Gem. öst. Ent. 31 : 1.
7. *Mesapamea monotona* HEINICKE, 1959.
Dt. ent. Z. 6 : 106.
8. *Mesapamea evidentis* HEINICKE, 1959.
Dt. ent. Z. 6 : 108.
9. *Mesapamea concinnata* HEINICKE, 1959.
Dt. ent. Z. 6 : 109.
10. *Mesapamea pinkeri* BACALLADO, 1972.
Vieraea Fol. Sc. Biol. Canar. 1972 : 174.
11. *Mesapamea maderensis* PINKER, 1969.
Z. wien. ent. Ges. 54 : 107.

12. *Mesapamea acorina* PINKER, 1969.
Z. wien. ent. Ges. 54 : 112.

With *Mesapamea secalella* REMM, we now have a further example of a species pair to follow, for example : *Theria primaria* (Hw.) and *Theria rupicaprararia* (DEN & SCHIFF.), *Hydraecia micacea* (ESP.), *Hydraecia nordströmi* (HORKE) and *Hydraecia ultima* HOLST, *Amphipyra berbera* RUNGS and *Amphipyra pyramidea* (L.) and *Plusia festucae* (L.) and *Plusia putnami* GROTE.

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