Nepticula repentiella n. sp. (Lepidoptera, Nepticulidae).

By
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Genus.

Nepticula Heyd. (sensu Beirne 1945 p. 201).

Species.

N. repentiella n. sp.

Male.

See fig. 1. Al. exp. 4.0—5.5 mm. Antennae $^3/_5$.

Head brownish, collar and antennal eyecaps yellowish white. Antennae blackish. Thorax dark grey. Abdomen blackish grey.

Forewings dark grey, on apical area a blotch of coarse black scales with a violet gloss. No pronounced transverse band, but frequently at $^2/_3$ a number of colourless transparent scales, giving that portion of the wing a lighter appearance. Cilia grey, at dorsum dark, at termen lighter, in some specimens apical cilia yellowish. Hindwings grey.

Neuration see fig. 13.

Genitalia see fig. 7. Valvae comparatively broad at apex, apical hooks (style and cuiller) small, strongly inwardly-curving. Inner surfaces of valvae set with long hairs. Uncus bilobed, excavation deep, each lobe terminating in two protrusions of almost equal size. Cornuti one pair of very strong spines, two pair of strong spines, a bunch of long slender spines curved at point, some small spines, and a plate.

Female.

Se fig. 2. Al. exp. 4.7—5.4 mm. Antennae $^2/_5$.

Head, collar, antennal eyecaps, and colour of antennae as in male. Thorax yellow. Abdomen grey, anal tuft lighter.

Forewings shining yellowish, on apical area a black, violet tinting spot, more extended and much more distinct than in male. Cilia at dorsum grey, at termen light grey at base, otherwise yellow. Hindwings grey.

Ovipositor protruding. Body and genitalia see fig. 14.

Cocoon.

Size and shape as usual in the genus, colour dark or light brown. Attached to fallen leaves, or moss etc.

Larva.

Shining amber-coloured. More like *N. obliquella* Hein. than *N. salicis* Stt. Head (see figs. 15—16) strongly pigmented. Eyes forewards directed (in *salicis* sidewards).

Contents of central part of intestinal tube brown (in *salicis* green).

In the mine the larva lies dorsum upwards.

Egg.

Cemented to the underside of the leaf, normally close to the mid-rip, and covered by the long silky hairs of the leaf, thus difficult to observe.

Mine.

The mine starts as a narrow gallery (fig. 3), often running alongside the edge of the leaf (fig. 6), afterwards terminating in an irregular blotch, occupying a large portion of the leaf (figs. 4—5). The black excrement lies in the gallery compact, in the blotch in irregular heaps.

Food plant.

Salix repens L.

Appearance.

Numerous specimens observed in late third of May, swarming in late afternoon sunshine, or taken by sweeping the bushes of Salix repens. Larvae found in late September and first in October (author leg.).

Biotope.

Sandy open grounds where heather and dwarf sallow grow.

Localities.

Denmark: Fanø (at the west coast of Jutland), Asserbo (North Sealand).

Material examined.

Total 54 specimens (39 males, 15 females) including 31 specimens taken as adults, 23 specimens bred from larvae.

Type material.

Holotype (♂) and allotype (♀) are in the collection of the Zoological Museum of Copenhagen. Paratypes are in the collections of the Humboldt University Museum in Berlin, the British Museum (Natural History) in London, Dr. J. Klimesch in Linz (Austria), Mr. A. G. Carolsfeld-Krausé in Copenhagen, and of the author.

Salix feeding Nepticulidae.

N. repentiella n. sp. can hardly be confused with any other previously known Salix feeding species.

The almost unicolourous ground colour of the forewing — so different in the two sexes, dark grey in male, yellowish in female — together with a black patch of violet tinting scaling at apex makes the species easily recognizable. The hair tuft on the head is darker than in the other species, in freshly emerged specimens brownish, in some of the captured males dark grey.

As appears from the illustrations on plate III the male genitalia of *N. repentiella* n. sp. approaches those of *N. vimineticola* Frey (fig. 8) and of *N. salicis* Stt. (fig. 9). The differences in shape of the valvae, cornuti, etc. appear from the illustrations. The shape of the two lobes of the uncus also separates *N. repentiella* from the related species in the group.

Besides *N. repentiella* n. sp. the known Salix feeding species are: —

1. *salicis* Stt.

A well known species, illustrated by e. g. Stainton

(1855 pl. 2) and Klimesch (1951 pl. 10). Forewings with white, rarely inconspicuous, transverse band. Head reddish brown or yellow. Male genitalia see fig. 9. Food plant Salix caprea, cinerea, etc. Mine a short wound gallery, terminating in a blotch. (*Nepticula* Heyd. sensu Beirne).

2. *auritella* Skala.

Unsatisfactorily defined, by E. M. Hering (in litt.) supposed conspecific with *N. salicis* Stt. The illustration of the genitalia published by Skala (1939 p. 128) is poor. Bred from Salix aurita.

3. *arbusculae* Klim.

Close to *N. salicis* Stt., illustrated by Klimesch (1951, pl. 10). Transverse band in forewings broad, white. Hair tuft on head in male dark brown, mixed with reddish hairs, in female yellow. Food plant alpine species of Salix, e. g. arbuscula, glabra, reticulata, and retusa. Mine similar to that of *salicis* Stt. (*Nepticula* Heyd. sensu Beirne).

4. *vimineticola* Frey.

Although most carefully described by Frey (1856 p. 382—383) this species has puzzled several authors. Its identity has been definitely established by E. M. Hering (1943 p. 276—277). Forewings with narrow, little conspicuous, yellowish transverse band. Ground colour light brownish, peppered with dark coarse scales. Cilia shining yellowish. Head yellowish red. Both sexes alike. Food plant Salix viminalis and eleagnos. Mine (according to description by Frey (l. c.) and illustration by Sorhagen-Strand (1922 pl. 3), not controlled by the author) a long, rather straight gallery, not combined with a blotch. (*Nepticula* Heyd. sensu Beirne).

Note: — *"N. vimineticola"* treated by Petersen (1930 p. 72, fig. 102) as well as the published Danish finds (Larsen 1916 p. 278, 1927 p. 183) — and probably the Swedish (Benander 1946 p. 70, 1953 p. 47) and Finnish (Hackman etc. 1950 p. 30) finds too — have to be referred to *N. obliquella* Hein. The illustration of the genitalia of

an English specimen, published by Beirne (1945 p. 215) seems to correspond with the illustration of the genitalia of a paratype from Frey's collection, shown in the present paper (fig. 8). Klimesch (1946 p. 166) gives a good illustration of the male genitalia of a specimen of *N. vimineticola* Frey from Austria.

5. *pallidiciliella* Klim.

A distinct species. According to Klimesch (1946 p. 165—166) similar to *N. vimineticola* Frey. Wings more monotonous in colour, cilia less shining yellow. Head ferruginous-yellow. Valva narrow, terminating in a long, inwardly-curving, pointed style. Gnathos arms connating, just split at ends. Mine combined, blotch occupying half of the leaf, containing excrement placed in a regular line. In leaves of Salix purpurea. (*Nepticula* Heyd. sensu Beirne).

6. *obliquella* Hein.

Often confused with *N. salicis* Stt. and *N. vimineticola* Frey. Recognizable by e. g. the shape of the valvae and the close approach of gnathos arms at base (see fig. 10). Forewings with distinct, curved, narrow, white fascia. Head reddish-yellow. Feeds preferably in leaves of Salix viminalis etc., but also of various sallows. Mine a rather long, straight gallery, terminating in an oblong blotch. (*Nepticula* Heyd. sensu Beirne).

Note: — "*N. obliquella*" as figured by Petersen (1930 fig. 98) does not belong to this species, its identity has not been established, and the preparation does not seem to exist any more (vide Hering 1943 p. 277).

7. *uniformis* Hein.

A doubtful species. According to Heinemann (1871 p. 210, 1877 p. 730) very similar to *N. ruficapitella* Hw. Head ferruginous-yellow. Tibia and tarsus of middle legs yellow (in *repentiella* grey). Bred from Salix caprea. Described in 1871 and not refound. The old material seems lost.

8. *wockeella* Hein.

A doubtful species. According to Heinemann (1871 p. 223, 1877 p. 770) close to *N. cryptella* Stt. Head reddish-yellow. Bred from Salix alba. Described in 1871, and not refound. The original material (2 specimens) seems lost.

9. *dewitziella* Sorh.

Described by Sorhagen (1885 p. 284—285) as close to *N. wockeella* Hein. Head light ferruginous-yellow. Bred from Salix caprea. Not refound since 1884. A doubtful species.

10. *nivenburgensis* Preiss.

A distinct species. As appears from the illustration published by Hering (1943 p. 275) the cornuti consist of two large, strongly sclerotised, cup-shaped formations, and a spine. (*Stigmella* sensu Beirne).

11. *intimella* Zell.

A distinct species. Forewings blackish with a whitish dorsal spot. Head ferruginous-orange. Mine a blotch containing two walls of excrement. On Salix caprea, fragilis etc. Illustration of the male genitalia of a Danish specimen see fig. 12. (*Dechtiria* Beirne).

12. *Nepticula n. sp.*

On my request Dr. P. Benander has been kind enough to send me for dissection a *Nepticula sp.* ♂, bred on 30th July 1941 from a larva which he had taken on 11th July 1941 mining a leaf of Salix repens at Listerlandet (Blekinge in Sweden). The specimen had been ignored until Dr. Benander rearranged his collection of Nepticulids in late 1953.

The genitalia of this specimen differ from those of the other known species of this group, and the specimen belongs to an undescribed species. (*Nepticula* Heyd. sensu Beirne).

Related species.

One species, not belonging to the Salix feeding group, viz. *N. myrtillella* Stt. — feeding on Vaccinium — is closely related to some of the species of the group, especially to *N. salicis* Stt. The genitalia of a Danish specimen are illustrated in fig. 11.

Nomenclature.

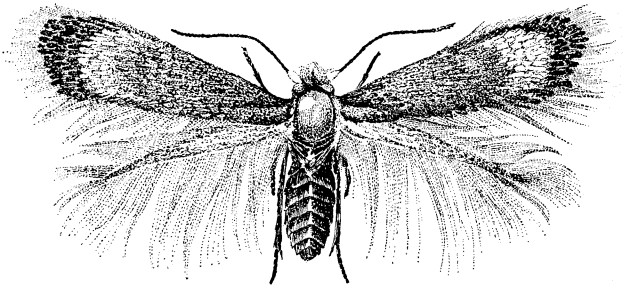
The well established genus name *Nepticula* Heyd. (1843) has recently by some authors been dropped in favour of the older name *Stigmella* Schr. (1802), and consequently the family name *Nepticulidae* has been changed into *Stigmellidae*.

The validity of Schrank's name seems somewhat doubtful, but even if that was not the case, a change like this of a universally used name for a genus, so often mentioned in the literature, into a name which has not been in use for a period of 132 years seems most difficult to accept.

Miscellaneous.

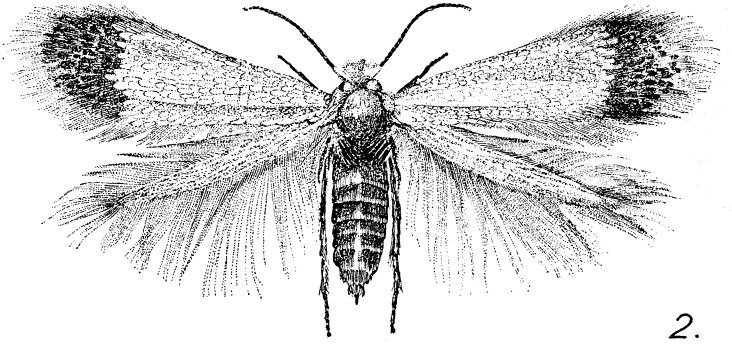
The author took the first imago of *N. repentiella* on the isle of Fanø on June 21st 1948, and afterwards found several adult specimens at Asserbo on May 19th 1951, May 17th and 22nd 1952, May 18th, 20th and 24th 1953. Searching for the larva led to success on September 20th and October 4th 1953.

Breeding of *N. repentiella* proved very easy. A number of larvae were collected on October 4th 1953. Some of them, destined for anatomic study, were kept indoors. One of these pupated, and an imago emerged already first in November of the same year (less than a month after the larva had been taken). The remainder of the cocoons were kept in the cold. 4 specimens, transferred to a warm room on November 15th 1953, emerged in the period December 28th 1953—January 1st 1954, and



1.

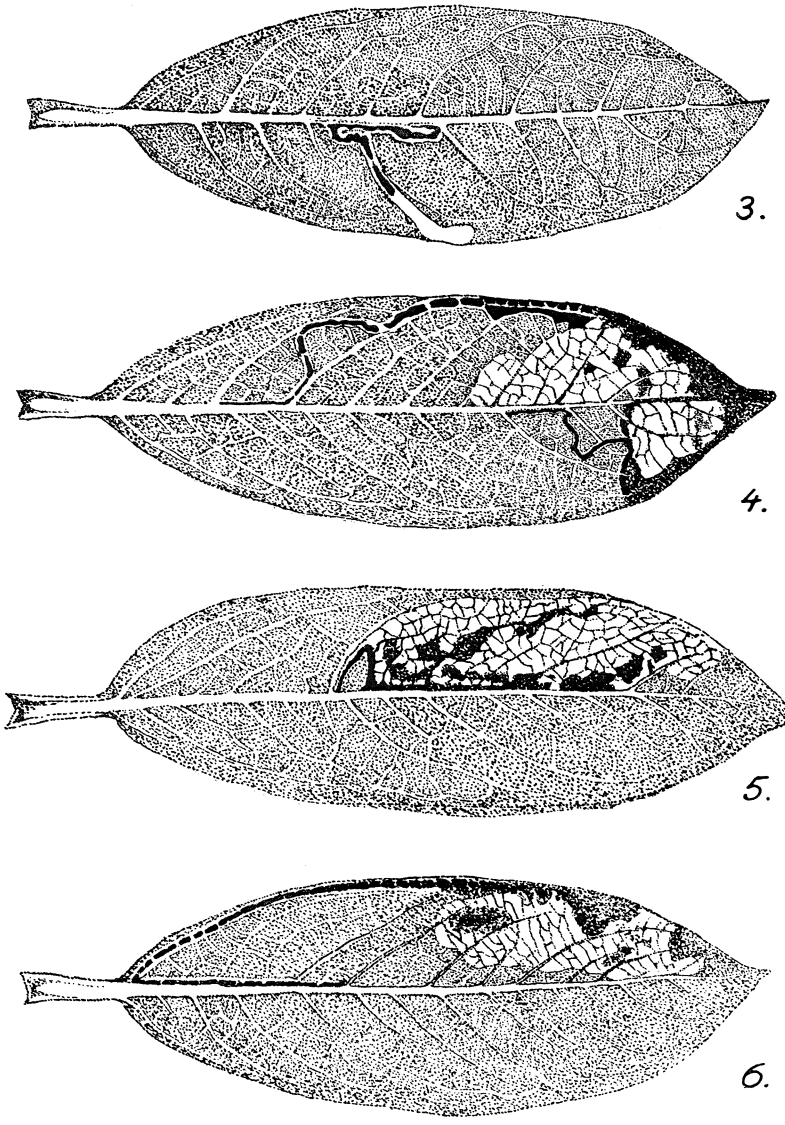
♂



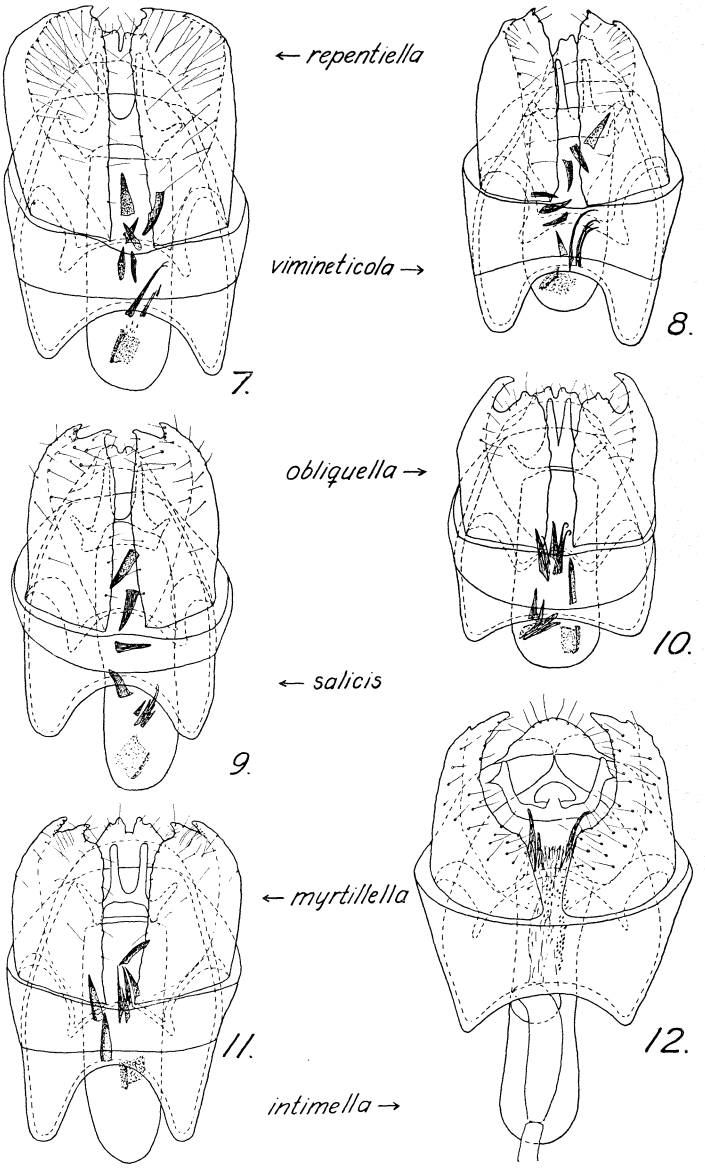
2.

♀

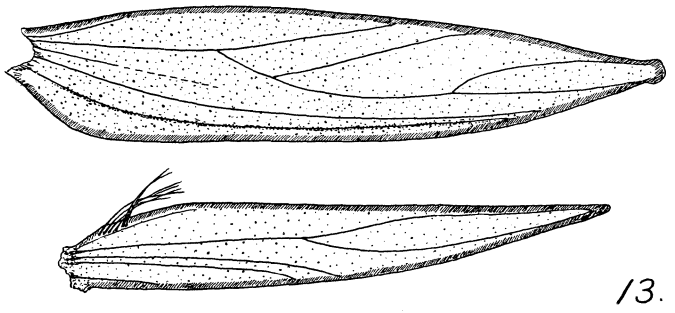
Nepticula repentiella n. sp. Fig. 1: male, fig. 2: female. (× 20).

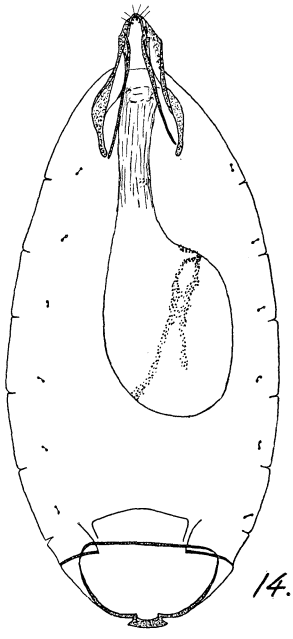


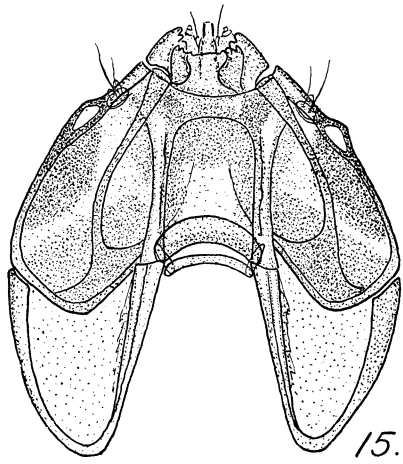
Figs. 3–6: Leaves of Salix repens mined by *Nepticula repentiella* n. sp. (× 4).

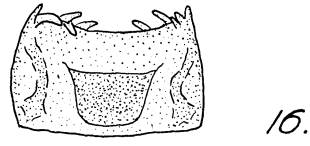


Figs. 7—12: Male genitalia of species of *Nepticula* (× 130).









Nepticula repentiella n. sp. Fig. 13: Wings (scales removed) (× 30). — Fig. 14: Female body (scales removed) (× 30). — Fig. 15: Head of larva (× 150). — Fig. 16: Labrum of larva (× 400).

18 specimens, having been taken into the room on April 27th 1954, bred between April 27th and May 10th 1954.

Not a single of the larvae were infested.

Acknowledgments.

I wish to express my sincere thanks to Professor E. M. Hering for generous assistance in various ways, e. g. by enabling me to examine the entire material of *Nepticula vimineticola* Frey — including 6 paratypes — preserved in the Berlin Museum. Further to Dr. J. Klimesch for valuable comments and for animating me to search for larvae on Salix repens, to my friend Dr. P. Benander for sending me the Swedish specimen mentioned on p. 87 (no. 12), to Mr. A. G. Carolsfeld-Krausé for anatomic study of the specimen from 1948 and of the larvae, and to my wife, Mrs. Malle Wolff, who accompanied me on the excursions and collected several of the mines.

Preparations.

The preparation, illustrated in fig. 8 is made by Professor E. M. Hering, in figs. 15—16 by Mr. Carolsfeld-Krausé, and in the remainder by the author.

Illustrations.

Illustrations figs. 1—2—3—4—5—6 are drawn by Mr. Poul Larsson, figs. 15—16 by Mr. Carolsfeld-Krausé, the remainder by the author.

The cornuti are drawn in full line even if concealed by other parts of the genitalia.

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