

Tortrix unitana Hübner, a Distinct Species (Lepidoptera, Tortricidae).

By
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During a visit to Bure sø, Grib skov in the north of Sealand on July the 3rd, 1960, I noticed in the grass a few specimens of "*Tortrix paleana* Hb." in a worn condition. This being one of our most common tortricides, I wondered why I had not seen this species earlier in the year. Therefore, I took a single specimen with me for later examination.

A comparison of this specimen, a male, with my specimens of *T. paleana* showed slight differences in the appearance, and especially in the genitalia: the aedeagus differed to such an extent that it could not be considered merely an individual variation.

In the course of the winter months I examined the genitalia of a greater number of specimens, most of them borrowed from the Zoological Museum of Copenhagen, the remainder from various private collections. The difference in the aedeagus proved to be a consistent feature, and I thus consider the two "forms" of *paleana* to be different species.

Nomenclature.

The name *paleana* Hb. (Hübner, 1793, p. 8, and pl. 30) has been given with a brief, but correct description: "der strohgelbe Wickler", and this undoubtedly refers to the common species "always" called *paleana*. Hübner (1796—99, pl. 25, fig. 157, and pl. 41, fig. 258) also used the name *flavana* for this species.

In this later publication, however, Hübner (op. cit., pl. 19, fig. 123) himself showed a picture of a specimen (male), which must belong to the "new" species. The name is *unitana* (Hb.). Hübner later (1825, no. 123) placed it as synonymous to *viburniana* Schiff., which is the same species as *viburniana* F. In the author's opinion this determination is erroneous, the species shown really being identical with the "new" one. Unfortunately, Hübner did not select types. The drawing mentioned, however, shows a much larger species with much broader fore-wings than those of *viburniana*. Furthermore, the fore-wings are devoid of markings; a feature seldom met with in *viburniana* F. Hübner also showed (1796—99, pl. 27, fig. 173) a real *viburniana* (female) which he named *rhubana*. Therefore, I consider the correct name of the "new" species to be *Tortrix unitana* Hb.

Obraztsov (1955, p. 210) followed Hübner, and added that the name is "non bin.". This, however, the author do not agree with, though Hübner (op. cit.) did not divide the families into genera. In place of this, he used a system of "subfamily"-names, which are placed at the top of each plate.

I originally considered the name of the new species to be *icterana* Fröl. However, Frölich (1828, p. 68) described *T. icterana* as follows: "alis anticis obtusis sulphureis nitidis, subtus fuscis, posticis fuscis subtus cinereis". This is undoubtedly a description of *Tortrix paleana* Hb. He correctly stated it as being a synonym of "*T. flavana*, Hüb. Tort. T. 41 f. 258.". This figure (Hübner, 1796—99) shows an example of *T. paleana* Hb. with dark hind-wings. Therefore, the name *icterana* Fröl. indicates the dark form of *paleana*, which is most commonly met with in many places.

The name *viridana* has been confused with these species by Frölich (1828, p. 17), who placed it as a synonym of the species *flavana* (Hübner, 1796—99, pl. 25, fig. 157). The figure shows a female of *T. paleana* with light hind-wings.

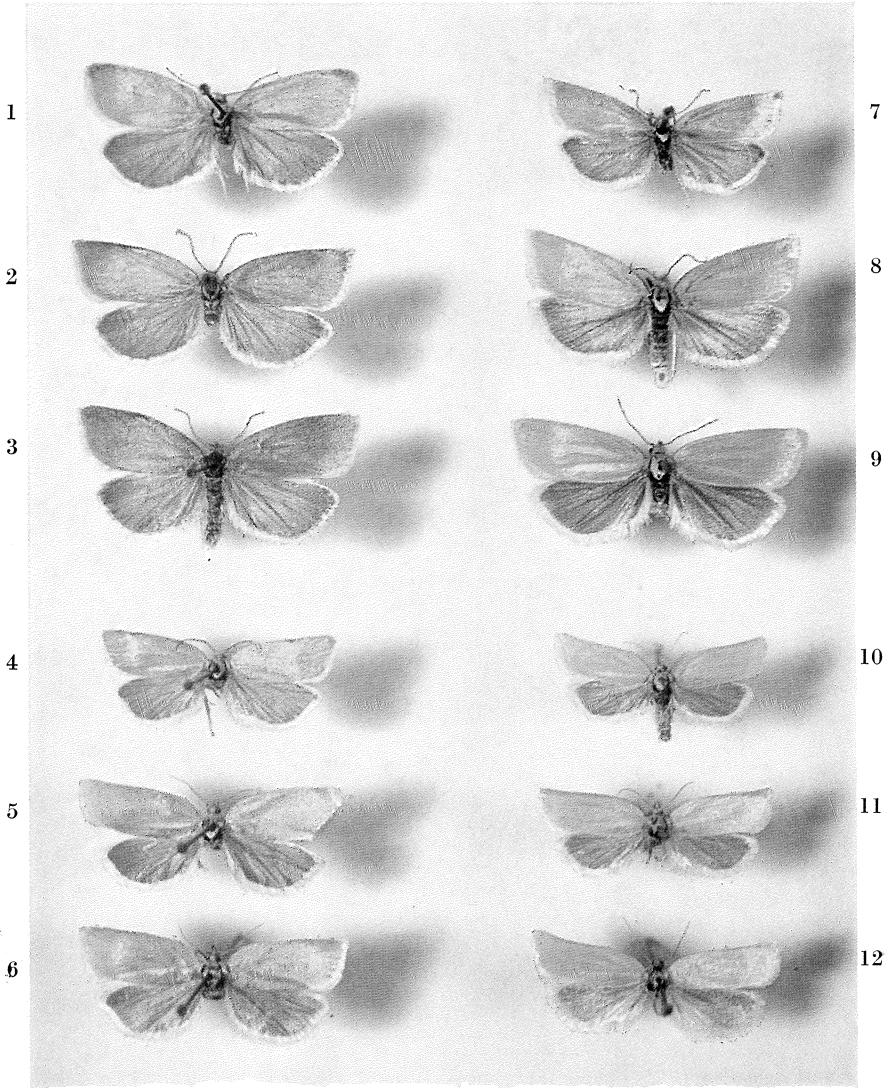
The names of some subspecies of *paleana*, given by Toll (1951) probably all belong to *unitana* Hb. They are: *fumatana*, *pseudoviburniana*, *carpathica*, *fischeri*, and *raebeli* Toll.

Appearance.

Tortrix unitana Hb. is rather difficult to separate from the closely related *T. paleana* Hb., but it is often recognisable by its darker colour and more edged wing-form, see fig. 1—12.

The male *unitana* has a wing-form very similar to that of *paleana* — see figs. 13 and 15 — with the exception that the base of the costa in the fore-wings is slightly more curved, and the wing itself a little broader. Moreover, the size of the male is, on an average, only a little larger than that of *paleana*. The alar expanse is about 23 mm in both species.

The colour of the fore-wings in both species is dark grey. The grey is darker in *unitana*, but with a light cover of more or less olive-yellow scales, giving the appearance of a dirty olive to a dark olive-grey colour. In *paleana* there is a heavy cover of whitish or yellow scales, giving a clear white to yellow appearance — occasionally, bright greenish-grey. Specimens in poor condition may have fore-wings as dark a grey as those of *unitana*.

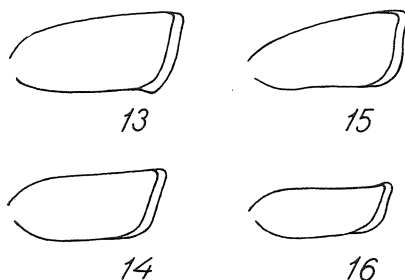


Figs. 1-6: *Tortrix unitana* Hb. — 1-3: males, 4-6: females.
Figs. 7-12: *Tortrix paleana* Hb. — 7-9: males, 10-12: females.

Natural size $\times 1\frac{1}{2}$.

The hind-wings in *unitana* are mostly dark grey — darker than those in the dark form of *paleana*.

Females of *unitana* are often easily distinguishable from those of *paleana* as they are only slightly smaller than the male and have a similar wing-form, see fig. 14. Females of *paleana* (fig. 16) are usually much smaller than the male, and the fore-wings are more slender and more curved. The alar expanse is about 22 mm in *unitana*, 20 mm in *paleana*.



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Figs. 13—16: Right fore-wing ($\times 2$) of *Tortrix unitana* Hb. — 13: male, 14: female, and of *T. paleana* Hb. — 15: male, 16: female.

As in the males, the colour of the fore-wings is grey with a cover of light scales. In *unitana*, the scales are whitish or yellowish, with a slight olive tinge; in *paleana* the scales are yellow.

The hind-wings in the female *unitana* are dark grey, as in the male.

Genitalia.

The main reason for considering *unitana* to be a different species from *paleana* is the male genitalia. Though the differences are small, they have proved to be constant in the material I have dissected.

Fig. 17 shows the male genitalia of *T. unitana*, fig. 21 those of *paleana*. As the figures show, most parts of the genitalia are identical or show only minute differences in the two species.

The aedeagus of *unitana*, however, is very different from that of *paleana*. Figs. 18—19 and 22—23 show two examples from each species, the upper side turned to the right.

The aedeagus itself is short and thick, of an almost uniform thickness in *unitana*; in *paleana* it is thick at the base, but becomes more slender towards the end. The end forms an angle

of about 45° to the axis of the aedeagus in *unitana*, and in *paleana* forms almost a right angle when seen from the side.

The end of the aedeagus in *unitana* has a stout process on the underside, which is absent in *paleana*. This has earlier been overlooked since *paleana* has a more or less stout process on the upper side near the end; its actual position may be difficult to ascertain if the aedeagus, when in a genital slide, is not placed in profile. In *unitana* the process forms an angle of about 45° to the axis of the aedeagus, and points downwards and backwards, while in *paleana*, it is placed almost at right angles to the axis and points upwards to the left.

Both species have a strongly sclerotized area on the upper side of the aedeagus. In *unitana* the area is crenated only, while in *paleana* there are usually one or more strong processes present also.

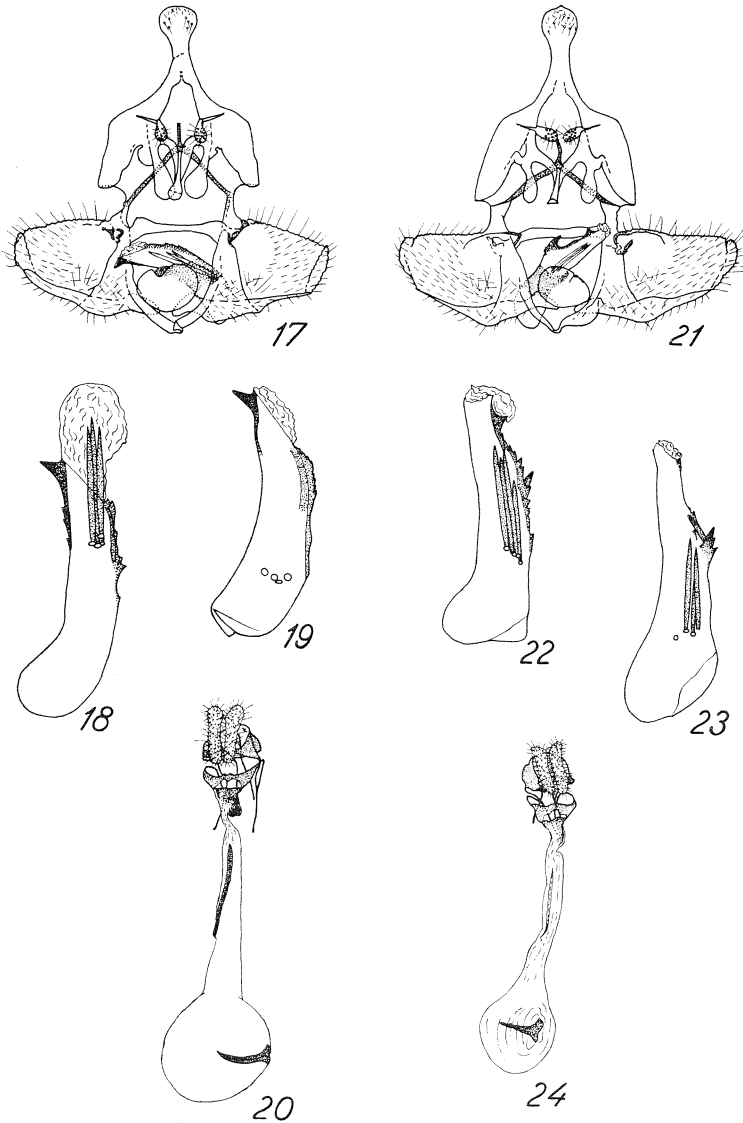
The number of cornuti is about three in both species; I have seen 3—4 in *unitana*, 2—5 in *paleana*. In both species they are deciduous, but they often, though interrupted, remain in the aedeagus after copulation.

Mr. E. Jäckh of Bremen who worked on the same problem a few years ago, was unable to find specific differences — either in the male or in the female genitalia. He was kind enough to send me some of his material, viz. photographs of the genital slides made during his study of the problem. His material agreed with mine. However, a few photographs were difficult or impossible to determine owing to the aedeagus being wrongly placed for the purpose of examining details.

The greater part of this material refers to ssp. *fischeri* Toll. according to the determination given by Mr. Jäckh. Ssp. *fischeri* is a "subspecies" of *T. unitana*, and so are in all probability the four other subspecies mentioned. In the author's opinion it is superfluous to set up subspecies-names in this case, because the difference seems to be very little between specimens of *unitana* from different localities. Toll was, of course, in good faith; he did not know the difference between *paleana* and *unitana*.

The description and drawing given by Pierce (1922, p. 8, and pl. 3) both belong to *paleana* Hb.

The drawing shown by Hannemann (1961, p. 17, fig. 22 a) refers to *unitana* Hb.



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Figs. 17—24: Genitalia of *Tortrix unitana* Hb. — 17: male ($\times 20$), 18—19: male, aedeagus ($\times 40$), 20: female ($\times 10$), and of *T. paleana* Hb. — 21: male ($\times 20$), 22—23: male, aedeagus ($\times 40$), 24: female ($\times 10$).

Unfortunately, I have not been able to find definite differences between *unitana* and *paleana* in the female genitalia. As mentioned, the appearance of the female *unitana* is different from that of *paleana*, and in this respect I am confident that my material has been correctly divided.

Only the strongly sclerotized area at the end of the ductus bursae shows a slight difference: in *unitana* it is, on an average, more sclerotized and unsymmetrical than in *paleana* — see figs. 20 and 24.

The long sclerotized band in ductus bursae may sometimes be absent in *paleana*. However, I have not observed this to be the case in *unitana*. The signum is very variable both in *unitana* and in *paleana*.

I am unable to determine the description and drawing given by Pierce (loc. cit.); in all probability they refer to *paleana*.

Biology.

The early stages of *unitana-paleana* taken as one species are well-known, but a redescription is undoubtedly necessary in order to find out which detail belongs to which species.

There is no doubt that both species feed on several kinds of small plants, and that the caterpillars are fully grown in spring.

In Denmark the moth of *unitana* is out from the beginning of June to the beginning of July. *T. paleana* flies from the end of June to the end of August.

The dates for the examined material are shown in the following table. The two specimens of *paleana* from the beginning of June were captured in 1961, a very early year in Denmark.

Species	June			July			August	
	1—10	11—20	21—30	1—10	11—20	21—31	1—10	11—31
<i>unitana</i>	1	11	15	2	0	0	0	0
<i>paleana</i>	2	0	2	17	27	17	7	6

Number of specimens. Danish material.

Most of the Danish material of *unitana* was collected in rather temperate localities, moors etc., whereas *paleana* is most commonly met with in meadows and fields. The material examined of *unitana*-specimens from more southern parts of Europe originates from mountain-localities.

Distribution.

In my material there are *unitana* specimens from several localities in Denmark. These are: Allerød, Asserbo, Bure sø, Bøllemose, Folehave skov, Fortunen, Fredensborg, Grønholt, Jyderup, Jægerspris, Lyngby mose, Lystrup hegn, Ryget, and Rådvad — all these localities are situated in the north of Sealand. Other localities include Færgemark on the island of Lolland, and Hald egeskov and Ulveskoven in Jutland. Finally, Mr. N. L. Wolff informs me that he has taken *unitana* in Bastemose on the island of Bornholm.

Though *T. paleana* has been taken in nearly all localities in Denmark where collecting has taken place, I have specimens from only one of the localities mentioned for *unitana*. This is in Asserbo, where, however, there are areas suitable for both species.

From Sweden, I examined two specimens (females) probably being *unitana* (from Skåne: Österslöv, and Åsele lappmark: Vilhelmina Kittelfjäll).

In the material collected by Mr. Jäckh, there are photographs of male *unitana*-genitals from Austria (Hohe Tauern: Gr.-Glockner; Niederoesterreich: Karlstiff; Steiermark: Hochschwab; Tyrol: Innsbruch, Kranebitter-Klam, Valsertal, and Vennatal), France (Hautes Fagnes: Baraque-Michel), Germany (Württemberg: Stuttgart-Rohr), U. S. S. R. (Leningrad: Oredesk?), and Yugoslavia (Herzegovina: Vucija).

Acknowledgements.

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The material used for the examination, including genital slides, has been returned to the donators; the greater part being in the collection of the Zoological Museum of Copenhagen.

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Anmeldelse.

Anker Nielsen: **Insektstater**. 94 sider. København 1962. E. Munksgaards Forlag. Pris kr. 8.00.

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