

Revision of the genus *Ditula* (Lepidoptera: Tortricidae) with description of a new species

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Abstract. In this paper the genus *Ditula* Stephens, 1829 is revised. The new species *Ditula bartoniana* n. sp. from south west Cyprus is described and the taxon *Ditula saturana* (Turati, 1913) is sunk as a synonym of the common species *Ditula angustiorana* (Haworth, 1828). The species *Ditula joannisiana* (Ragonot, 1888) is discussed but for the moment kept in the genus *Ditula*. The distribution of the genus and the species in the genus is exposed and discussed.

Samenvatting. Revisie van het genus *Ditula* (Lepidoptera: Tortricidae) met beschrijving van een nieuwe soort. Het genus *Ditula* Stephens, 1829 wordt bewerkt. De nieuwe soort *Ditula bartoniana* sp. n. uit Zuidwest-Cyprus wordt beschreven en het taxon *Ditula saturana* (Turati, 1913) wordt gesynonymiseerd met de gewone soort *Ditula angustiorana* (Haworth, 1828). De soort *Ditula joannisiana* (Ragonot, 1888) wordt besproken en voorlopig in het genus *Ditula* behouden. De verspreiding van de het genus *Ditula* en de soorten erin wordt besproken.

Résumé. Révision du genre *Ditula* (Lepidoptera: Tortricidae) et description d'une espèce nouvelle. Le genre *Ditula* Stephens, 1829 est révisé et une espèce nouvelle, *Ditula bartoniana* n. sp., est décrite du sud-ouest de l'île de Chypre. Le taxon *Ditula saturana* (Turati, 1913) est mis en synonymie avec l'espèce commune *Ditula angustiorana* (Haworth, 1828). L'espèce *Ditula joannisiana* (Ragonot, 1888) est discutée et maintenue dans le genre *Ditula* provisoirement. La répartition du genre *Ditula* et de ses espèces est discutée.

Key words. *Ditula bartoniana* – Descriptions – Systematics – Faunistics – Cyprus.

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Introduction

The genus *Ditula* was raised by Stephens (1829: 46) to include 9 species. The type species, *Tortrix angustiorana* Haworth, 1811, type locality United Kingdom, was subsequently designated by Fletcher (1929: 69). Later Guenée, 1845 raised the genus *Batodes* on the basis of *Paedisca dumeriliana* Duponchel, 1836, type locality Russia. The description and the figures of both male and female (Duponchel 1836) define *P. dumeriliana* as a synonym of *D. angustiorana* (Haworth, 1828). Thus the genus name *Batodes* Guenée, 1845 is a junior synonym of *Ditula* Stephens, 1829. Nevertheless, the confusion about those two names has continued until today and only in Fauna Europaea (Aarvik 2013) the normally used combination of genus and species names is correct. A full synonymy of the older genus names can be seen in Obratzov (1954: 224). The first definition of the genus is made by Obratzov (1954) as a detailed description of *D. angustiorana* (Haworth). The most exposed characters are:

Forewing of male with a rather broad costal fold reaching one third of costa and the forewing is broad with evenly rounded costa. In the female, which is larger, the wing shape is more elongate and the ground colour is generally lighter. Hindwing uni-coloured dark brown with lighter fringes.

Male genitalia with a tegumen with broad pedunculi; valva square shaped with a rather broad rounded sacculus; uncus broad and curved with small spines; gnathos strong and pointed; socii very small; aedeagus curved, pointed, with cornuti like a few small thorns; coecum penis is large and caulis is short.

Female genitalia with a funnel shaped, well developed sterigma; ductus bursa slender and long without cestum, but with a small bulge close to ostium; bursa with a dagger-shaped signum with basal lobes. For more details see Obratzov (1954).

Species contained in the genus *Ditula* Stephens, 1829

1. *Ditula angustiorana* (Haworth, 1811); original in *Tortrix* Linnaeus, 1758.
 - rotundana* (Haworth, 1811); original in *Tortrix* Linnaeus, 1758.
 - dumeriliana* (Duponchel, 1836); original in *Paedisca* Duponchel, 1836.
 - saturana* (Turati, 1913) **syn. n.**; original in *Capua* Stephens, 1834.
2. *Ditula bartoniana* n. sp.
3. *Ditula joannisiana* (Ragonot, 1888); original in *Amphisa* Curtis, 1828.

Comments on the species list

D. saturana was described by Turati (1913) in the genus *Capua* on the basis of a single male specimen from Sardinia: Aritzo 30th May, figured on plate B fig. 33. (Turati 1913). The type specimen is probably lost as many of the Turati types are. In Tortricid.net it is stated as unknown (Gilligan *et al.* 2012).

The diagnose of *D. saturana* is based on some visual differences in colour and details in the position of the dividing lines on the forewing. The colour picture on the plate shows a rather dark tortricid moth with wing shape like *D. angustiorana* and an orange area at the wing tip with inwardly a rounded edge exactly like in dark specimens of *angustiorana*. *D. angustiorana* is well known from Sardinia. In the southern part of Corsica I have collected several specimens of *D. angustiorana*. A dark male specimen of those is shown in fig. 1, where the precise orange wing tip is visible. On the basis of these facts *D. saturana* (Turati, 1913) is defined as a new junior subjective synonym of *D. angustiorana* (Haworth, 1828).



Figs 1–3. Imagines of *Ditula* species. 1.– *Ditula angustiorana* (Haworth), ♂ France: Corsica; 2.– *Ditula bartoniana* n. sp. ♂ Cyprus; 3.– *Ditula bartoniana* n. sp. ♀ Cyprus. (Photos E. Baraniak).

D. joannisiana (Ragonot, 1888) was placed by Obratzsov (1954: 226, fig. 229) in the genus *Hastula* Millière, 1857 a synonym to *Avaria* Koçak, 1981. The type species of *Hastula* is *hyerana* (Millière, 1858) of which the genitalia are figured on the same plate as the genitalia figure of *joannisiana* (Rag.). I wonder if this is the reason why *D. joannisiana* (Ragonot, 1888) in Gilligan *et al.* (2012) is sunk into synonymy with *Avaria hyerana* (Millière, 1858). Gilligan does not know how this error has raised (Gilligan pers. comm. 2014).

In Fauna Europaea (Aarvik 2013) the original genus of *joannisiana* is mentioned as *Amphysa* Guenée, 1845, misspelling of *Amphisa* Curtis, 1828 (Razowski 1977) but the latter is the correct original genus name. In Razowski (1993) the misspelled genus name *Amphysa* is again incorrectly used.

This species is very characteristic and with few affinities to other tortricid species. The male antenna is ciliate and the female has slightly reduced forewings. The structure of the male genitalia is unlike the structure in *angustiorana*, especially the gnathos is very well developed. The female genitalia are also very different with a short ductus bursa, no signa and a very strongly developed sterigma. It is possible that these characters would mean that this species should be placed in a genus of its own, but for the present time the species remains in the genus *Ditula*.

***Ditula bartoniana* Knud Larsen new species (Figs 2, 3)**

Type material: Holotype ♂, Cyprus: Nikoklia, 60 m asl, 14–27.iv.2012, leg. I. Barton, genital slide 33458♂ Knud Larsen, coll. Natural History Museum, London (NHM).

Paratypes: 1♂ and 4♀: ♀ Cyprus, Moniatas N. Limassol, 850 m, 23–29.vi.1997, leg. M. Fibiger, A. Madsen, D. Nilsson, P. Svendsen, coll. ZMUC; ♀ Cyprus, Nikoklia, 60 m asl, 14–27.iv.2012, leg. I. Barton, genital slide 33457♀ Knud Larsen, coll. NHM; ♀ Cyprus, Nikoklia, 60 m asl, 14–27.iv.2012, leg. I. Barton, coll. NHM; ♀ Cyprus, Nikoklia, 60 m asl 04.v.2014, I. Barton leg. et coll.; ♂ Cyprus, Paphos District, Oreites Forest, 15.v.2014, 391 m asl Lat. 34.7209623 Long. 32.6292014 I. Barton leg. et coll.

Diagnosis. The species differs from the other *Ditula* species by its larger size, the pale ochreous ground colour with dark diffuse drawings and many fine dark spots. The sexual dimorphism is pronounced with a male with a very broad and black costal fold and a female

which is much larger and with a lighter ground colour and a more diffuse pattern. In the male genitalia the tegumen is shorter with very broad pedunculi; aedeagus shorter and broader. In the female genitalia the main differences are the broader ductus bursa which furthermore is narrowed in the middle and the funnel shaped sterigma is bigger and more pronounced.

Description. Imago (Figs 2, 3). Wingspan 16 mm (male), 19–21 mm (female). Antenna fasciculate grey, reaching one third of the wing. Labial palp short, grey and widening to the tip. Head grey; thorax ochreous yellow. Legs very pale yellow and ringed with light grey. Sexual dimorphism pronounced. Forewing very pale ochreous yellow with darker black and leaden coloured drawings consisting of an interrupted median fascia with darker areas close to dorsum; a dark subapical blotch connected with the subterminal blotch. The complete wing is dotted with smaller dark or leaden coloured dots. At costa there are two very light blotches divided by pale yellow lines hardly visible in the pale ground colour. The fringes are darker orange, terminal with a darker line of black and leaden coloured scales. The hind wings are evenly dark grey and with a blackish dividing line in the fringes. The underside of both wings is dark grey but with light blotches along costa of the fore wing.

Male genitalia (Fig. 4). The complete genital structure is strongly curved and surprisingly difficult to open. Most of the characters are very similar to those in *D. angustiorana* with very small socii. Besides the differences in the size and form of aedeagus, *barthoniana* also has three small cornuti but they are a little bit bigger and stronger.

Female genitalia (Fig. 5). Under the diagnosis the main characters are mentioned but also the lack of a bulge close to ostium should be remarked plus the more narrow and broad colliculum.

Biology. Only the flight data are known – from 14.iv to 29.vi, later at higher altitudes.

Distribution. The species is known from the type locality (Fig. 6) and from two other localities a little higher in the Trodos Mountains on Cyprus.

The type locality is a small village situated on the west side of the lower Diarizos valley, which arises from the south west side of the Trodos Massif. The vegetation is of a semi arid kind with shrub plants, several species of deciduous trees and fruit gardens.

Etymology. The species is named after the collector Ian Barton. He is a very active and skilled collector, who has worked many times at the type locality and surroundings.

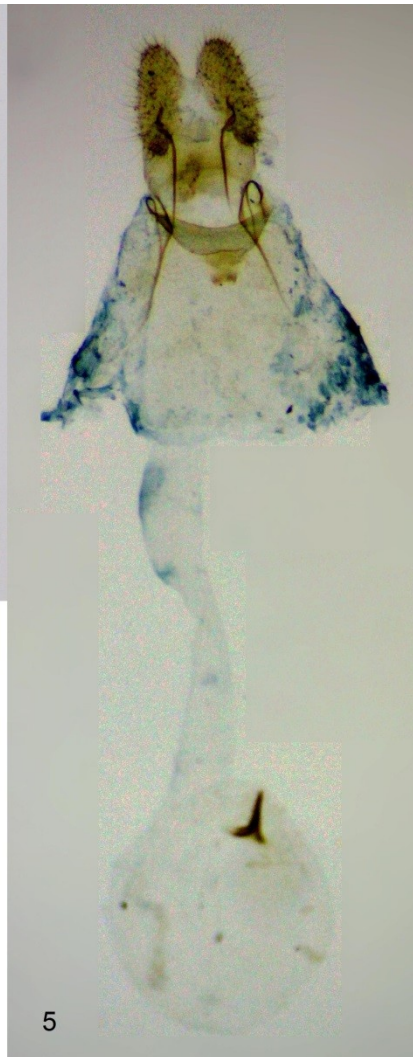
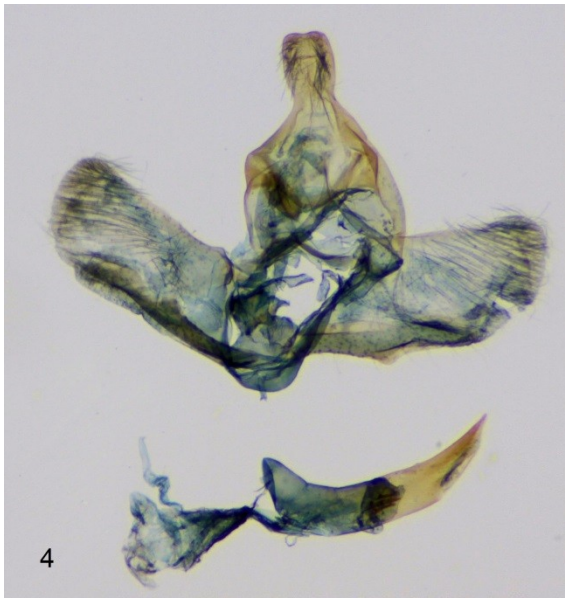


Fig. 4.– Genitalia of *Ditula bartoniana* n. sp. ♂ gen. slide 33458 KL. (Photo E. Baraniak).

Fig. 5.– Genitalia of *Ditula bartoniana* n. sp. ♀ gen. slide 33457 KL. (Photo E. Baraniak).

Discussion

In recent time many new tortricid species have been described from the Mediterranean area. Many of these are very local or with a rather limited distribution area. Some of these species belong to genera which also have a limited distribution and which contain very few species.

The distribution of *D. angustiorana* is West European-Atlantic: from Ireland and Great Britain to North Africa: Tunisia and Morocco and the eastern border runs from Sweden, Denmark (Bornholm) to Germany, Austria, Slovenia and northern and central Italy. It is not found in Eastern Europe, the rest of the Balkan and Greece (Rungs 1979, Blackstein & Karisch 2011, Aarvik 2013). The species is introduced to North America and it is also mentioned from Asia Minor (Barrett 1905 and Razowski 2002), but it is not on the Turkish species list and despite of heavy collecting in Turkey no recent findings are reported. The type locality “Russia” of the synonym *dumeriliana* (Duponchel) is certainly wrong. Duponchel’s definition is based on “Elle nous a été communiqué par M. Boisduval, comme venant de Russie (Duponchel

1836). It is possibly correct that Boisduval has travelled in Russia, but the specimen must be from somewhere else.

Summary of the distribution of *D. angustiorana*: Denmark, Sweden, The Netherlands, Germany, Belgium, Great Britain, Ireland, Luxembourg, France, Spain, Portugal, Corsica, Sardinia, Italy, Switzerland, Austria, Slovenia; in Africa: Tunisia and Morocco; introduced to North America.

Ditula joannisiana (Ragonot) is found in Spain, France and Slovenia (Aarvik 2013).

The new species *D. barthoniana* is endemic to Cyprus and represents an isolated population with the closest representative of the main species of the genus in central Italy.

The distribution of the genus is West European – Mediterranean.

The origin of this genus – and the surprisingly many other small Tortricid genera with this type of distribution – could possibly be traced back to two factors: refuge during the ice ages and possibly also plate tectonics creating the Mediterranean area.



Fig. 6.– Type locality of *Ditula bartionana* n. sp. Diarizos valley, Cyprus. (Photo I. Barton).

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