

A new genus and two new species of Tortricidae (Lepidoptera) from the Canary Islands

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Abstract. In this paper the new genus *Willibaldiana* is described. The description of the new genus is based upon material collected at the Island Fuerteventura, part of the archipelago of the Canary Islands, Spain. The material consists of two species both of them new to science. All the material is collected from the same light trap stationed at a summer house at the southern tip of Fuerteventura – Barranco Esquinzo, Jandia. It is rather remarkable to find two new species belonging to the same new genus at the same locality. It is suggested that these taxa are belonging to very old Mediterranean taxa that have survived and developed in the semi desert environment of Fuerteventura. The new genus is placed in Eucosmini after *Clavigesta* Obratzsov, 1946. The names of the two new species are *Willibaldiana paasi* n. sp. and *Willibaldiana schmitzi* n. sp. Holotypes and paratypes are deposited in the author's collection.

Samenvatting. Een nieuw genus en twee nieuwe soorten Tortricidae (Lepidoptera) van de Canarische Eilanden. Het nieuwe genus *Willibaldiana* wordt beschreven, gebaseerd op materiaal verzameld op het eiland Fuerteventura, deel van de Canarische Eilanden, en bestaand uit twee nieuwe soorten voor de wetenschap. Al het materiaal werd verzameld in een lichtval die opgesteld staat in een buitenverblijf op de zuidelijke tip van Fuerteventura – Barranco Esquinzo, Jandia. Het is merkwaardig dat twee nieuwe soorten uit een nieuw genus op dezelfde plaats worden gevonden. Er wordt verondersteld dat ze behoren tot de oude Mediterrane taxa die zich aan de semi-woestijnomgeving van Fuerteventura hebben aangepast. Het nieuwe genus wordt in de Eucosmini geplaatst net achter *Clavigesta* Obratzsov, 1946. De nieuwe soorten zijn: *Willibaldiana paasi* n. sp. en *Willibaldiana schmitzi* n. sp. Holotypes en paratypes staan in de verzameling van de auteur.

Résumé. Un genre nouveau et deux espèces nouvelles de Tortricidae (Lepidoptera) des Îles Canaries. Le nouveau genre *Willibaldiana* est décrit d'après le matériel recueilli sur l'île de Fuerteventura, qui fait partie de l'archipel des Îles Canaries. Ce matériel consiste en deux espèces nouvelles pour la science et fut pris dans un piège lumineux dans la partie méridionale de l'île de Fuerteventura – Barranco Esquinzo, Jandia. Il est remarquable que deux espèces nouvelles appartenant au même genre nouveau soient trouvées dans la même localité. On suppose qu'il s'agit de deux espèces appartenant aux vieux taxa méditerranéens qui se sont adaptées aux conditions semi-désertiques de l'île de Fuerteventura. Le nouveau genre est placé dans la tribu des Eucosmini juste après *Clavigesta* Obratzsov, 1846. Les deux nouvelles espèces sont: *Willibaldiana paasi* n. sp. et *Willibaldiana schmitzi* n. sp. Les holotypes et les paratypes sont gardés dans la collection de l'auteur.

Key words. *Willibaldiana paasi* – *schmitzi* – Descriptions – Faunistics.

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Introduction

The fauna of Microlepidoptera of the Canary Islands, especially the Tortricidae (Klimesch 1987) but also many other groups, have been studied intensively even from the middle of the 19th century. The composition of the fauna is partly endemic and partly influenced by the West African fauna and the South West European fauna. The distance to Cap Juby in Morocco is only about 70 km and thus the strong winds from the Sahara frequently cause rather strong migratory activity on the Islands, especially the easternmost islands Lanzarote and Fuerteventura. Also the landscape on these islands has a strong affinity with the landscape of southern Morocco and western Sahara consisting of dry rocky or sandy coast and inland semi-desert and desert combined with lower rocky or mountainous areas. As a consequence of these geographical factors the level of endemism on the eastern islands is lower than on the western islands (Hacker & Schmitz 1996). Altogether more than 600 Lepidoptera are known from the islands and of these about 200 are endemic (Báez 1998). The present paper describes a new genus and two new species from the island Fuerteventura. Whether those species are endemic to the Island or they can be found elsewhere is due to more profound field research in the neighbouring biogeographically areas.

Both species have been found at the same locality at the south tip Jandia on Fuerteventura. The material has been given to me for investigation by the well-known lepidopterist Willibald Schmitz (Bergisch Gladbach, Germany), who has gathered a very large amount of material from the Canary Islands, especially Fuerteventura.

The author has studied the Tortricid fauna of the Canary Islands during several decades and has been on six collecting trips, including two trips to Fuerteventura, searching these species at the locality in Jandia without success. Species living in arid environments are so dependent on occasional weather conditions that they often just fly in short periods and not every year. Because of the mild climate many Tortricid species can be found around the year at the Canary Islands, which also seems to be the fact for the two new species presented here.

The new taxon *Willibaldiana* gen. n. is suggested to belong to the Eucosmini tribe although molecular examination could reveal other possible solutions to the position of the genus.

Terminology for pattern in forewing, venation and genitalia follows Horak (1999, 2006), Razowski (2002, 2003) and Komai (1999). All material is deposited in the private collection of Knud Larsen.

Systematics

Willibaldiana new genus

Type species: *Willibaldiana paasi* new species

Description. (Figure 1) Labial palp two and a half the diameter of the eye, whitish grey; second segment strongly scaled, spatula shaped; head rough scaled with white greyish tipped scales; antenna fasciculate black and white ringed. Hind tibia whitish with more or less strongly blackish rings narrower closer to the tip of tibia; two pairs of rather long spurs. In hindwing vein M2 is approaching basally to CuA1 and M3 is missing.

Forewing with many fine costal strigula and a costal fold reaching 2/5th of the length; at the tornal area there is a reminiscence of a speculum where the outer line is present but only with a very week line of leaden glistening scales.

Male genitalia (Figure 4). Uncus very week, reduced; socii rather broad, rounded; tegumen broad with slender pedunculi; valva very small and rather weak with a bigger rounded and hairy cucullus; at the dorsal edge of cucullus three long pointed thorns growing in size to the corner of cucullus; aedeagus long, narrow and tipped; it is more strongly sclerotised towards the tip; vinculum strong.

Female genitalia (Figure 6). Papilla analis long and hairy; apophyses rather week and short; ostium very weekly developed or reduced; ductus bursa long, strongly sclerotised from bursa to just before ostium, where it is without sclerotisation and is narrowing; bursa rounded with two small signa and a central area with stronger wrinkles.

Abdomen (Figure 8, *W. schmitzi* n. sp.) has strongly sclerotised spiracles – one at each segment.

Etymology. The genus is named after my good friend and provider of the specimens Willibald Schmitz.



Figs. 1–3. Imagines of *Willibaldiana* species. 1.- *Willibaldiana paasi* n. sp. ♂ Spain: Fuerteventura; 2.- *Willibaldiana schmitzi* n. sp. ♂ Spain: Fuerteventura; 3.- *W. schmitzi* n. sp. ♂ Spain: Fuerteventura. (Photo K. Larsen).

***Willibaldiana paasi* Knud Larsen new species** (Figs. 1, 4, 6)

Type material: Holotype male, Spain: Canary Islands, Fuerteventura, Jandia/ Bco. [Barranco] Esquinzo 25.9–19.10.[20]02, leg. Paas, genital slide 3857♂ Knud Larsen, coll. KL.

Paratypes: Spain: Canary Islands, Fuerteventura, Jandia/ Bco. [Barranco] Esquinzo 1♂ 8.3–8.4.[20]01 leg. Paas, genital slide 2997♂ Knud Larsen; 1♀ 23.7–11.8.[20]02 leg. Paas, genital slide 3859♀ Knud Larsen; 1♂ 9.3–10.4.[20]02 leg. Paas; 2♂ 12–28.2.[20]03 leg. Paas; 1♂ 4–12.3.[20]04 leg. Paas. Paratypes in coll. KL.

Diagnosis. The species differs from the other *Willibaldiana* species by the much smaller size and the more whitish/grey ground colour of the forewing. The drawings are less stretched towards the tip of the wing than in the preceding species. In the male genitalia the species differs by having general smaller genitalia with smaller thorns and the hairs on the cucullus are much less pronounced; aedeagus is more tipped and shorter; socii are bigger and the following species has a short uncus. In the female genitalia the two signa are very small and not funnel shaped. The sclerotised spiracles –

one in each segment of abdomen - are much smaller than in the following species.

Description. Imago. (Figure 1) Wingspan 9–10 mm. Antenna fasciculate, strongly ringed white and black. Labial palp two and a half the diameter of the eye, whitish grey; second segment strongly scaled, spatula shaped; head rough scaled with white greyish tipped scales. Hind tibia whitish with more or less strongly blackish rings narrower closer to the tip of tibia; two pairs of rather long spurs. In hindwing vein M2 is approaching basally to CuA1 and M3 is missing. Ground colour whitish suffused with irregular dark areas and spots and also powdered with very small orange-yellow scales. The basal blotch is dark irregular defined followed by a lighter area before some darker areas which are reminiscent of the median fascia; apical fascia darker irregular spotted. There is a reminiscence of a speculum where just the outer line is present but only with a very week line of leaden glistening scales and at the place for the inner spot there is a bright area. At costa several strigula dark and light and five of them are not divided. Cilia are light grey with a dark dividing line. Hindwing is light grey unicoloured and the fringes are without a dividing line.

Male genitalia. See genus description.

Female genitalia. See genus description.

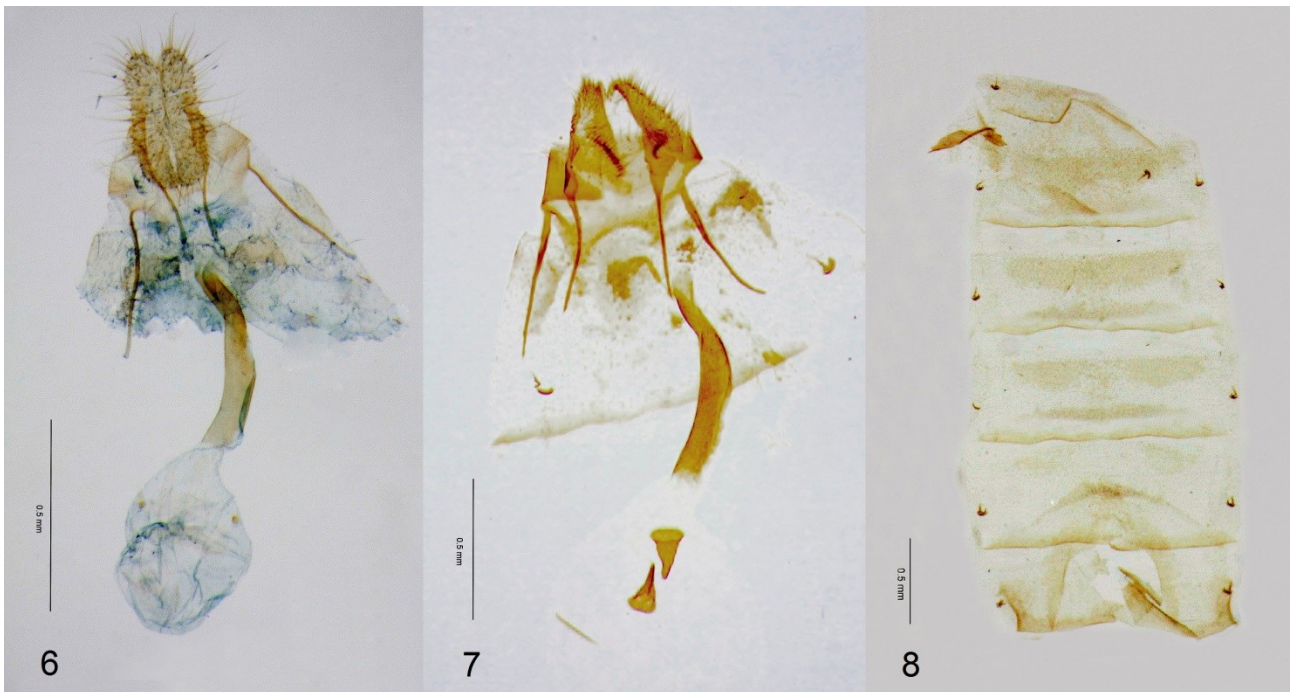
Biology. Only the flight data are known – February to April and again July to August.

Distribution. The species is only known from the type locality. All the specimens were taken in a light trap.

Etymology. The species is named after the kind collector Dr. Paas, Germany.



Figs. 4–5. Genitalia of *Willibaldiana* species. 4.- *Willibaldiana paasi* n. sp. ♂ gen. slide 3857 KL; 5.- *W. schmitzi* n. sp. ♂ gen. slide 3856 KL (Photo T. Garrevoet).



Figs. 6–7. Genitalia of *Willibaldiana* species. 6.- *Willibaldiana paasi* n. sp. ♀ gen. slide 3859 KL; 7.- *W. schmitzi* n. sp. ♀ gen. slide 3858 KL. (Photo T. Garrevoet).

Fig. 8 Abdomen of *Willibaldiana* n. genus, slide 3856 KL *Willibaldiana schmitzi* ♂. (Photo T. Garrevoet).

***Willibaldiana schmitzi* Knud Larsen new species** (Figs. 2, 3, 5, 7, 8)

Type material. Holotype ♂, Spain: Canary Islands, Fuerteventura, Jandia/ Bco. (Barranco) Esquinzo, 25.9–10.10.[20]02 leg. Paas, genital slide 3856♂ Knud Larsen coll. KL.

Paratypes: Spain: Canary Islands, Fuerteventura, Jandia/ Bco. (Barranco) Esquinzo, 1♂ 1♀ 1–19.4.[20]00 leg. Paas, genital slide 2892♀ Knud Larsen; 1♂ 3–

16.10.[20]00 leg Paas, genital slide 2891♂ Knud Larsen; 2♂ 1♀ 7–8.2000 leg Paas, genital slide 3858♀ Knud Larsen; 2♂ 10–29.9.[20]01 leg. Paas; 5♂ 25.9–10.10.[20]02 leg. Paas; 1♀ 1.8–10.9.2005 & 1♂ 15–31.10.2005 leg. Paas. Paratypes in coll. KL.

Diagnosis. The species differs from the other *Willibaldiana* species by the much larger size and the light yellow ground colour of the forewing. The drawings

are stretched towards the tip of the wing and the markings are ochreous to brown. In the male genitalia the species differs by having larger genitalia with many thorns and hairs on the cucullus; aedeagus is longer and slightly curved; socii are nearly absent and there is a short uncus. In the female genitalia the two signa are well developed, funnel shaped. The sclerotized spiracles – one in each segment of abdomen – are pronounced (fig. 8).

Description. Imago. (Figures 2–3) Wingspan 14–15 mm. Antenna are fasciculate, conical ringed ochreous and slightly darker brown. Labial palp twice the diameter of the eye, whitish; second segment strongly scaled, spatula shaped; head rough scaled and ochreous. Hind tibia light ochreous with two pairs of rather long spurs. In hindwing vein M2 is approaching basally to CuA1 and M3 is missing. Ground colour light ochreous suffused with irregular darker areas. The basal blotch is darker, angled and with a subbasal interfascia; a weak and interrupted median fascia plus a postmedian fascia are both pointing towards the tip of the wing. The terminal area irregularly brown spotted and there is a reminiscence of a speculum where the outer line is present but only with a very weak line of leaden glistening scales; the inner spot has many scattered black scales and the inner line of speculum is present as a white stretched dot. At costa several ochreous strigula dark and light and four of them are not divided, but can consist of several very fine strigula and a costal fold reaching 2/5th of the length. Cilia are light ochreous with a black dividing line interrupted in the middle of the termen. Hindwing is light ochreous unicoloured and the fringes are without a dividing line.

Male genitalia (Figure 5). Uncus small, flat and tipped; socii very weak, nearly not present; tegumen broad with slender pedunculi; valva rather short and weak with a rounded and strongly haired cucullus; at the dorsal edge of cucullus three or more long pointed thorns as a part of the area with thorns on cucullus; aedeagus long, equally broad, rounded and weakly sclerotised; vinculum strong.

Female genitalia (Figure 7). Papilla analis triangular, short and hairy; apophyses stronger and rather short; ostium very weakly developed or reduced; subgenital sternite is weak and excavated around ostium; ductus bursa long, strongly sclerotised from bursa to just before ostium, where it is without sclerotisation and is narrowing; bursa rounded with two big funnel shaped signa and some wrinkles near the bursa “neck”.

Biology. Only the flight data are known – April and again July to October.

Distribution. The species is only known from the type locality. All the specimens were taken in a light trap.

Etymology. The species is named after my good friend and provider of the specimens Willibald Schmitz.

Systematic position of *Willibaldiana* new genus

From the first sight, some years ago, it was obvious that these two species were new to science, but the genital characters made it very difficult to find out

whether they could be assigned to an already known genus or whether a new genus should be established. It was also very extreme to see that the two species obviously belonged to the same genus in spite of the differences in imagines, which later turned up to be rather slight. It was only last year that I had the possibility to make a slide of the female of *W. paasi* which convinced me of the close relationship between the two species.

The next question was to find out a reasonable position of the new genus *Willibaldiana*. Many of the characters in the genitalia seem to be less developed or reduced. The basal excavations of the valva and the single scale ring on the segments of the antenna, define the genus into the family Olethreutinae. The opinion is that the characters which follow define the genus to the tribe Eucosmini:

1. The venation of the hindwing with M2 approaching basally to CuA1 and M3 is missing.
2. The presence of socii, although “reduced”, and the slender pedunculi.
3. The shape of the signa in bursa.
4. The general drawings on the forewings, especially with many costal strigula.
5. The presence of a speculum although reduced.

A character against this opinion is the shape of aedeagus which is more like a Grapholitini, but as there are some Eucosmini species with an aedeagus of this type, e.g. *Rhyacionia piniana* (Herrich-Schäffer, 1851), this factor should not dominate the ideas about the taxonomic position. In fact the female genitalia of *R. piniana* have some characters which have affinities to the females of *Willibaldiana*, especially the reduced characters in ostium, etc.

Now, the next question is to define the relationships inside the tribe Eucosmini. To give a proper answer to that question a molecular examination of the species would be preferable, but that is beyond the scope of this paper and beyond the scope of my possibilities. Thus the decision can only be of preliminary character. As there are some affinities with the genus *Salsolicola* Kuznetsov, 1960 both in imagines and male genitalia a relation to this genus should be considered, but there are many more differences. The genus *Rhyacionia* Hübner, 1825 is very diverse in the Mediterranean area with one endemic species in the Canary Islands (Rebel 1896) and the sister group *Clavigesta* Obraztsov, 1946 (Larsen 2010) has its main evolutionary area in the Mediterranean, and this genus also has reduced characters (Obraztsov 1946) like the new genus. I would not be surprised if a more close investigation would reveal a common ancestor to these three genera. A preliminary position of *Willibaldiana* is proposed to be after the genus *Clavigesta* Obraztsov, 1946 as the last genus in Eucosmini.

The number of Tortricidae found on the Canary Islands is 48 (Aarvik 2013). With the two new species the number increases to 50.

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