GORTANIA
Botanica, Zoologia 31 (2009) 137-142 Udine, 30.VI.2010 ISSN: 2038-0402

Peter Huemer

ARGYRESTHIA FRIULII SP. N., A NEW SPECIES FROM THE JULIAN PRE-ALPS, NORTHERN ITALY (LEPIDOPTERA, YPONOMEUTIDAE)

ARGYRESTHIA FRIULII SP. N., UNA NUOVA SPECIE DELLE PREALPI GIULIE, ITALIA SETTENTRIONALE (LEPIDOPTERA, YPONOMEUTIDAE)

Abstract - ***Argyresthia friulii*** sp. n. is described from the Julian Pre-Alps (Friuli Venezia Giulia, Northern Italy). The new species is compared with several related taxa of *Argyresthia* with trophic linkage to *Juniperus*. Diagnostic characters are found in the colour and pattern elements of the forewings and particular in the female genitalia structures. *Argyresthia marmorata* Frey, 1880 is synonymised with *Argyresthia reticulata* Staudinger, 1877.
Key words: Lepidoptera, Yponomeutidae, Argyresthiinae, ***Argyresthia friulii*** sp. n., New species, New synonymy, Julian Pre-Alps, Italy.

Riassunto breve - *Viene descritta la nuova specie* **Argyresthia friulii** *delle Prealpi Giulie (Friuli Venezia Giulia, Italia Settentrionale). La nuova specie viene confrontata con diverse specie affini di* Argyresthia *legate dal punto di vista trofico a* Juniperus. *Sono stati trovati caratteri diagnostici nei disegni e nella colorazione delle ali anteriori, ma in particolare nelle strutture genitali femminili.* Argyresthia marmorata Frey*, 1880 viene messa in sinonimia con* Argyresthia reticulata Staudinger*, 1877.*
Parole chiave: *Lepidoptera, Yponomeutidae, Argyresthiinae,* **Argyresthia friulii** *sp. n., Nuova specie, Nuova sinonimia, Prealpi Giulie, Italia.*

Introduction

Argyresthia is a nearly cosmopolitan genus of Yponomeutidae with altogether at least 150 species (Dugdale et al. 1999) with two subgenera, *Argyresthia* and *Blastotere*. The majority of species has been described from the northern hemisphere and the number of taxa is particularly high in North America where it exceeds 50 species (Heppner & Duckworth 1983), but also from Europe 47 species are reported (fauna.europaea.org). Despite of it's diversity *Argyresthia* has never been revised on a global scale. However, in the Palaearctic region several regional reviews have been published, e.g. from Japan (Moriuti 1965), Russia (Gershenzon 1990), eastern Germany (Friese 1969), Great Britain and Ireland (Agassiz 1996), France and Belgium (Gibeaux 1983) or the former Tyrol (Burmann 1989). Particularly the European fauna is quite well known, though new species have been described until very recently (Baraniak et al. 2003; Gibeaux 1993a [erroneously cited 1992 by several authors, e.g. in fauna europaea; however, according to the cover page of vol. 3, fasc. 4 was published in March 1993], 1993b; Vives Moreno 2001).

Argyresthiinae, a subfamily of Yponomeutidae with the single genus *Argyresthia*, are characterized by some principal autapomorphies: a more or less laterally produced vinculum without sacculus and socii set with peculiar fringed sensilla (Dugdale et al. 1999). Furthermore larval characters and the peculiar upside-down resting position of the adults are typical for the subfamily. *Argyresthia* was formerly divided into two genera, viz. *Argyresthia* with separate, and *Blastotere* with stalked veins R4 and R5 of the forewing (Friese 1969). However, nowadays these two groups are considered as subgenera. The majority of the European fauna belongs to *Argyresthia* s. str., whereas 18 species are combined in the subgenus *Blastotere*. Most of the species of *Argyresthia* can be identified on external characters such as wing pattern and colour but some unicolorous species from the subgenus *Blastotere* are difficult to separate without genitalia dissection. In the genitalia particularly the female signum is of higher diagnostic value, whereas the male specific characters are found in the phallus and its cornuti, partially also in sclerites of the last abdominal segments.

In 2001 a small series of an unknown *Argyresthia* was collected in the Julian Pre-Alps in an area with high endemism. Intensive research proved that this externally easily recognizable species is in fact unnamed and hence it is here described.

Abbreviations

MFSN: Museo Friulano di Storia Naturale, Udine, Italy.
TLMF: Tiroler Landesmuseum Ferdinandeum, Innsbruck, Austria.

Taxonomic part

***Argyresthia friulii* sp. n.**

Material. Holotype ♂: "Italia, Prov. Udine, Monte Canin N, Rif. Gilberti Umg., 1850-1950 m, 29.7.2001 leg. Huemer, TLMF 2009-017 (TLMF)".

Paratypes. Italy: 9 ♂♂, 2 ♀♀, same data as holotype, gen. slides YPO 143 ♀, YPO 145 ♂ (MFSN; TLMF) [4 ♂♂, 1 ♀ without abdomen].

Description

Adult (fig. 1a): Head covered with whitish brush of scales, face covered with adherent greyish scales; labial palpi glossy grey; antenna grey, with weakly developed light rings, scapus whitish; thorax whitish, tegulae yellow grey; legs glossy grey with some white; abdomen grey. Forewing: veins R4 and R5 separate; wingspan 8-9.5 mm (measured to the nearest 0.5 mm); forewing ground colour glossy yellow grey (appearing almost anthracite grey without magnification); first half of dorsum with small whitish line; a broad whitish streak in middle of wing from base to one-third, connected with blotch-like whitish marking from dorsum to middle of wing, a similar dorsal whitish blotch at two thirds prolonged towards subcosta; irregularly shaped, reticulate whitish pattern in terminal area, particularly a double-streak at costa and streaks and spots along termen well developed; few dark grey scales beneath apex; fringes anthracite grey, ligther at terminal area. Hindwing glossy grey, with grey fringes.

Genitalia ♂ (figs. 2a-b). Socius with about 17-18 specialised, broad scales; tegumen ridge-like, subrectangular; valva suboval, apically slightly narrowing, costa with rod-like sclerotized process near base; phallus without denticles, about same length as width between apices of valvae, weakly curved, slender, cornuti consisting of a group of few longer spines and one with short spinules; plate of 8th abdominal segment very small, reversed Y-shaped.

Genitalia ♀ (figs. 3a-b, 4a). Apophyses posteriores short, about twice length of segment VIII; segment VIII weakly sclerotized, plain and without peculiar structures, posterior margin with few setae, anterior margin a strongly sclerotized rim, furcated connection with apophysis anterior; apophyes anteriores with rod-like posterior part along segment VIII, free distal part shorter than segment VIII; antrum funnel-shaped, covered with minute microtrichia; short colliculum at anterior end of antrum; ductus bursae long and narrow; corpus bursae pyriform, membranous; signum a spiny plate with short and spiny, pairy lateral horns, basal plate with about 40 spines posterior of horns and about 25 spines anteriorly.

Diagnosis

Argyresthia friulii sp. n. is somewhat similar to other species of *Argyresthia* with a reticulate forewing pattern, particularly *A. abdominalis* and to a lesser extent *A. reticulata* and *A. dilectella*. However, the greyish appearance of the ground colour of the forewings strongly differs from all these taxa, which are purplish brown to bronze.

The male genitalia of ***A. friulii*** sp. n. differ from *A. abdominalis* (see Gershenzon 1990) and other related taxa by the valva with basal sclerotization and a more slender distal part, the phallus and cornuti and by the particular small sclerite of the abdominal segment. The

Fig. 1 - Adults of *Argyresthia*; a) ***Argyresthia friulii*** sp. n. (holotype) (wingspan 9 mm); b) *A. abdominalis* (wingspan 10 mm).
- *Adulti di* Argyresthia*; a)* **Argyresthia friulii** *sp. n. (olotipo) (apertura alare 9 mm); b)* A. abdominalis *(apertura alare 10 mm).*

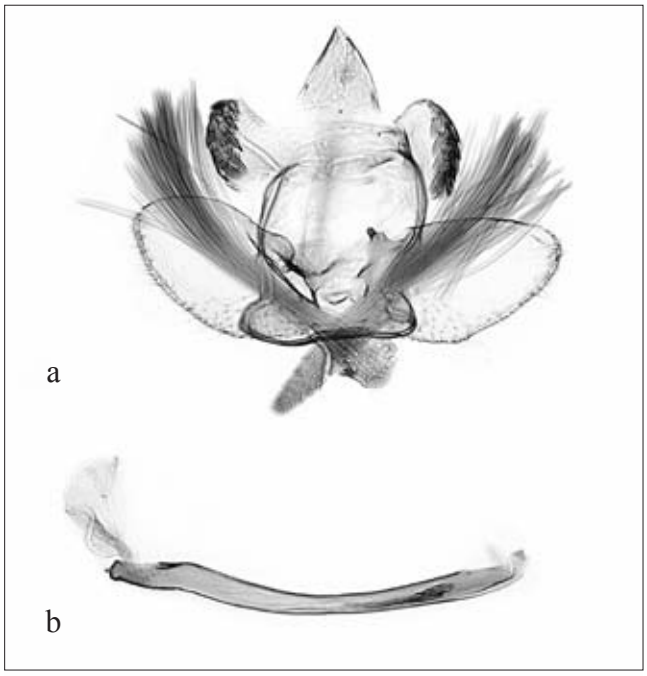

Fig. 2 - Male genitalic structures of ***Argyresthia friulii*** sp. n. (paratype); a) genitalia capsule; b) phallus.
- *Genitali maschili di* **Argyresthia friulii** *sp. n. (paratipo); a) capsula genitale; b) phallus.*

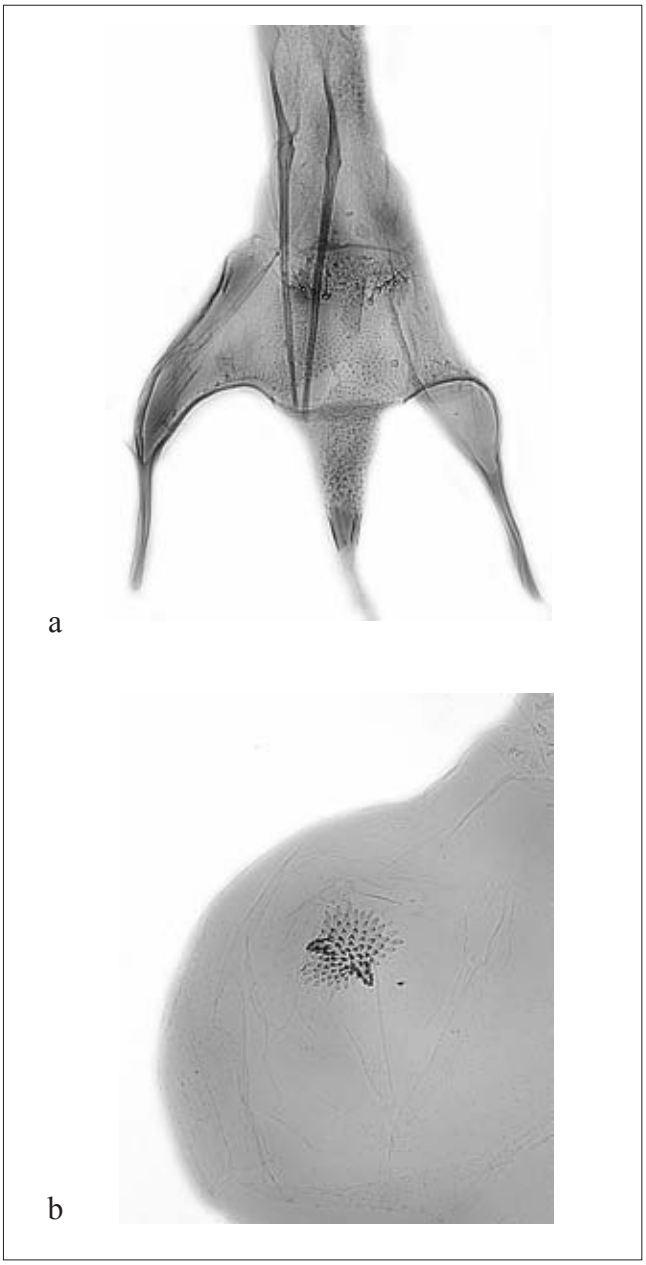

Fig. 3 - Female genitalic structures of ***Argyresthia friulii*** sp. n. (paratype); a) segment VIII; b) signum.
- *Genitali femminili di* **Argyresthia friulii** *sp. n. (paratipo); a) VIII segmento addominale; b) signum.*

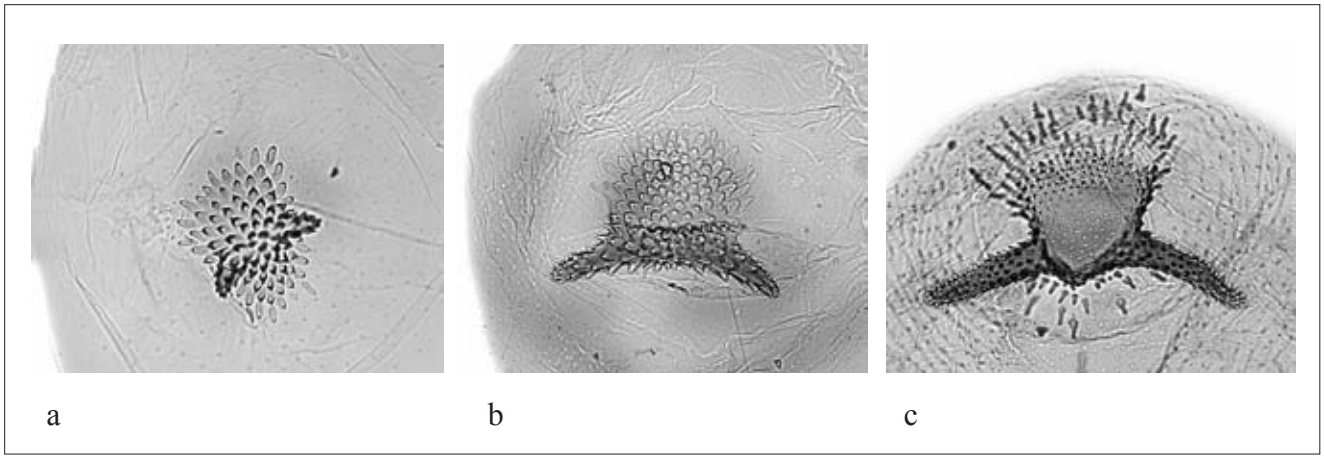

Fig. 4 - Signum of *Argyresthia* (enlarged); a) ***Argyresthia friulii*** sp. n. (paratype); b) *A. abdominalis*; c) *A. dilectella*.
- *Signum in* Argyresthia *(ingrandito); a)* **Argyresthia friulii** *sp. n. (paratipo); b)* A. abdominalis*; c)* A. dilectella.

female genitalia of ***A. friulii*** sp. n. are in general matching other species except of the signum which is smaller (fig. 3, 4a-c) and of different shape. Particulary the very short horn-like processes and the basal plate posterior and anterior of these horns is characteristic. The horns are much longer in other species, or the anterior part of the basal plate is grossly or completely lacking.

Biology

Argyresthia friulii sp. n. occurs on the northern slopes of Monte Canin in north-eastern Italy. The type-locality is a karstified, dolomitic high plateau with scarce and largely fragmented vegetation. The habitat of the new species however, benefits from a predominantly southern exposition and coverage of alpine plants is higher than in the surroundings. The adults have been collected during the day time but no notes have been taken about the microhabitat and nothing is known about the preimaginal stages of the new species and its ecological niche. Related species such as *A. abdominalis* or several European taxa of the subgenus *Blastotere* feed on Cupressaceae and/or Pinaceae. Several of these taxa are related to *Juniperus* and feed either in the fruits or needles. Most probably *Juniperus* is also the natural hostplant of ***A. friulii*** sp. n.

Distribution

At present ***A. friulii*** sp. n. is only known from the north-eastern Alps of Italy (Friuli Venezia Giulia, Prov. Udine, Mte. Canin).

Derivatio nominis

The specific name is the genetiv of a noun and refers to the region of origin of the new species, Friuli.

Remarks - Discussion

Argyresthia friulii sp. n. is one of the externally unmistakable species of the genus which therefore is described here despite of the lack of a generic revision. Furthermore the female genitalia and particularly the signum, a character of high taxonomical value in the genus, are characteristic. Identification of Palaearctic *Argyresthia* is largely based on external characters which usually enable separation of species. However, few unrevised species of the alpine fauna had to be considered with due care. Two taxa from Switzerland described by Frey have never been collected since the original description and it is obvious that all of them belong to other species known under different names.

Argyresthia marmorata was described from two specimens collected by Anderegg in Wallis (Frey 1880). Only two years later the author recognised that this species had been described earlier under the name *A. reticulata* by Staudinger "hat … zuerst beschrieben" [has described firstly] but he didn't mention that he meant *A. marmorata* (Frey 1882). However, in his personal book "Schmetterlinge der Schweiz" Frey with a pencil note attributed *A. marmorata* to *A. reticulata* (Sattler, in litt.). No type-material was traced in The Natural History Museum, London, where the collection of Frey is preserved, but the description and the handwritten note by Frey leave no doubt to the identity. Since *A. marmorata* is still treated as a valid species in European catalogues, I formally synonymise it with *A. reticulata*.

Argyresthia hugueneni was described from a single specimen collected by Anderegg (Frey 1882), probably in Wallis. The detailed diagnsoses proves that this is a species quite different to ***A. friulii*** sp. n., though the identity cannot be stated from the original description alone.

Argyresthia helvetica, described from the Bernina mts. (Switzerland) and compared with *A. abdominalis* by Heinemann (1870) is recently considered as a syonynm of the latter (Burmann 1989), though Friese (1969) suspected that a second species may be hidden in this group. Despite of intensive search no type-material of *A. helvetica* could be examined, but the original description fits quite well to *A. abdominalis* and not to ***A. friulii*** sp. n.

The discovery of a further new species of Lepidoptera in the alpine zone of the Julian Prealps is not really surprising, considering the high amount of endemism in the southeastern Alps (Huemer 1998). Several regionally endemic species which occur sympatrically with ***A. friulii*** sp. n. have been collected on the same occasion, e.g. *Incurvaria triglavensis, Gnorimoschema streliciella hoefneri, Sphaleroptera orientana suborientana, Udea carniolica* and *Psodos spitzi*. Even a new geometrid moth, *Sciadia slovenica*, has been described from the Julian Alps recently (Leraut 2008). Long isolation processes of the southeastern Alps during glacial periods may be responsible for this extradordinary high degree of endemism.

Manoscritto pervenuto il 9.IV.2009 e approvato il 7.IX.2009.

Acknowledgements

The kind support received from Dr. Carlo Morandini, Director of the Museo Friulano di Storia Naturale (Udine), Dr. Maria Manuela Giovannelli and Dr. Paolo Glerean is gratefully acknowledged. Dr. Klaus Sattler and Kevin Tuck (The Natural History Museum, London) gave most valuable information and helped with loans. Photographs of the adults and genitalia were kindly taken by my colleague Stefan Heim.

Bibliography

Agassiz, D.J.L. 1996. Yponomeutidae. In *The Moths and Butterflies of Great Britain and Ireland*, cur. A.M. Emmet, 39-108. Colchester: Harley Books 3.

Baraniak, E., J. Kulfan & J. Patocka. 2003. *Argyresthia tatrica* sp. n. (Lepidoptera, Yponomeutidae, Argyresthiinae) - a new Lepidoptera species feeding on *Larix decidua* in the Tatra Mts. *Mitt. Mus. Nat.kd. Berl., Dtsch. Entomol. Z.* 50: 231-6. Weinheim.

Burmann, K. 1989. Beiträge zur Microlepidopteren-Fauna Tirols. XIII. Argyresthiinae (Insecta: Lepidoptera, Yponomeutidae). *Ber. nat.-med. Verein Innsbruck* 76: 163-7. Innsbruck.

Dugdale, J.S., N.P. Kristensen, G.S. Robinson & M.J. Scoble. 1999. The Yponomeutoidea. In *Handbook of Zoology*, Bd. 4 *Arthropoda: Insecta*, Part 35 *Lepidoptera, moths and butterflies*, Vol. 1 *Evolution, Systematic and Biogeography*, cur. N.P. Kristensen, 119-30. Berlin, New York: Walter de Gruyter.

Frey, H. 1880. *Die Lepidopteren der Schweiz.* Leipzig: Wilhelm Engelmann.

Frey, H. 1882. Zweiter Nachtrag zur Lepidopteren-Fauna der Schweiz. *Mitt. Schweiz. Ent. Ges.* 6: 349-75.

Friese, G. 1969. Beiträge zur Insekten-Fauna der DDR: Lepidoptera - Argyresthiidae. *Beitr. Ent.* 19: 693-752. Berlin.

Gershenzon, Z.S. 1990. Family Argyresthiidae. In *Keys to the Insects of the European Part of the USSR* 4, n. 2, cur. G.S. Medvedev, 456-472. Leiden: E.J. Brill.

Gibeaux, C. 1983. Révision des Argyresthiidae de France et de Belgique et description d'*Argyresthia pruniella granonensis* ssp. nova. *Linneana Belg.* 9: 119-134; 146-162. Brussel.

Gibeaux, C. 1993a. Description de deux Argyresthiinae nouveaux (Lep. Yponomeutidae). *Ent. Gall.* 3: 189-92.

Gibeaux, C. 1993b. Description d'*Argyresthia tarmanni*, espèce nouvelle pour la science d'Autriche (Lep. Yponomeutidae). *Ent. Gall.* 4: 161-2.

Heinemann, H.V. 1870. *Die Schmetterlinge Deutschlands und der Schweiz*, II Abt. *Kleinschmetterlinge*, 2. *Die Motten und Federmotten*. Braunschweig: C.A. Schwetschke and Sohn, Heft 1.

Heppner, J.B., & W.D. Duckworth. 1983. Argyresthiidae. In *Check List of the Lepidoptera of America North of Mexico*, cur. R.W. Hodges. London: E.W. Classey and The Wedge Entomological Research Foundation.

Huemer, P. 1998. Endemische Schmetterlinge der Alpen - ein Überblick (Lepidoptera). *Stapfia* 55: 229-56. Linz.

Leraut, P. 2008. Contribution à l'étude du genre *Sciadia* Hübner, 1822 (Lepidoptera, Geometridae). *Bull. Soc. Ent. Fr.* 113: 177-82. Paris.

Moriuti, S. 1965. Argyresthiidae (Lepidoptera) of Japan. *Bull. Univ. Osaka Pref.*, ser. B 21: 1-50. Osaka.

Staudinger, O. 1877. Neue Lepidopteren des europäischen Faunengebiets aus meiner Sammlung Stettin. *Ent. Ztg.* 38: 175-208. Stettin.

Vives Moreno, A. 2001. Contribución al conociemento de los microlepidópteros de Espana, con la descripción de ocho nuevas species para la Ciencia (Insecta: Lepidoptera). *SHILAP Revta. Lepid.* 29: 165-78. Madrid.

Author's address - Indirizzo dell'Autore:
- Dr. Peter Huemer
Tiroler Landesmuseen-Betriebsgesellschaft m.b.H.
Naturwissenschaftliche Sammlungen
Feldstraße 11a, A-6020 Innsbruck, AUSTRIA
e-mail: p.huemer@tiroler-landesmuseen.at