

CONSIDERATION OF *ARGYRESTHIA GOEDARTELLA* (LINNAEUS, 1758) FORMA *LITERELLA* (HAWORTH, 1828) AND FORMA *SPLENDIDA* REUTTI, 1898 (LEP.: ARGYRESTHIIDAE)

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Abstract

We consider *Argyresthia goedartella* (Linnaeus, 1758) forma *literella* (Haworth, 1828) and note that the purported illustration of that form in *The Moths and Butterflies of Great Britain and Ireland* 3 is in fact of *Argyresthia goedartella* forma *splendida* (Reutti, 1898).

Key words: *Argyresthia goedartella*, f. *literella*, f. *splendida*, error.

Introduction

MG (Gandy, 2014) reported, with a photograph, an unusual individual of an *Argyresthia* species taken at light on 23 July 2012 in his garden located in Hackney, north-east London. The view expressed in his note was that it was likely to be a variation of *A. brockeella* Hübner, ([1813]). The moth was not retained, but he published the image (Plate 1) in the pages of this journal on the off-chance that someone had a specimen with the same markings.

Freed & Heckford (2014) recorded that they each had one moth with similar forewing markings and that dissection of each had confirmed, as suspected, that they were *Argyresthia goedartella* (Linnaeus, 1758) forma *literella* (Haworth, 1828). We now provide the fuller account of this form, as promised in that note.

We have traced further records from which it appears that *A. goedartella* f. *literella* is rare in the British Isles and possibly even rarer in mainland Europe. That or a similar form of another *Argyresthia* species also occurs in Canada. Agassiz (1996: 79–80), in *The Moths and Butterflies of Great Britain and Ireland* 3, describes f. *literella* as having the costa of the forewing entirely white so that there is no complete fascia. The illustration of this form, however, on plate 10, fig. 14 of that publication, does not represent f. *literella* but f. *splendida* Reutti, 1898, a form which is suffused with a brassy colouration and having no white on the forewing. In this article we explore how this error may have come about. We also review the history of publications treating *Tinea literella* Haworth, 1828, as a species until it was recognised as simply a form of *Argyresthia goedartella*.

A history of British publications leading to *Argyresthia literella* being treated as a form of *A. goedartella*

The following does not set out every British publication that treats *literella* as a species before it was recognised as a form of *Argyresthia goedartella*, but we consider that it is representative.

Linnaeus described *Phalaena (Tinea) goedartella* in 1758. Haworth (1828: 571) places *goedartella* in the genus *Tinea*, gives it the vernacular name 'Gødart's' and provides a description. On the previous page he describes *Tinea literella* as a new species, giving it the vernacular name 'The greek-lettered Gold'. Haworth's descriptions are in Latin. He describes, in translation, the forewing of *Tinea goedartella* as silvery golden with three golden fasciæ shaped I V T. The forewing of *A. literella* is given as silvery with three fasciæ, none reaching the costa. Haworth makes clear that he had only seen one example, stating '*Exemplarium unicum solum vidi.*'

Stephens (1834–1835: 252; 253) also treats *goedartella* and *literella* as separate taxa, in the genus *Argyrosetia* Stephens. He provides a brief Latin description of each, followed by a fuller account in English. That of *A. literella* reads:

'Anterior wings silvery, with a golden tinge, with three equidistant golden abbreviated fasciæ resembling Greek letters; the first near the base like an ι ; the second in the middle like an inverted λ , and the third on the posterior angle representing an Ω ; cilia golden-brown: posterior wings lead-coloured, with golden-brown cilia: head and thorax fulvescent.

Slightly variable: in some examples the golden fasciæ are rather more distinct and stouter than in others.

This appears to be a rare species: I possess three fine varieties, two of them Haworth's original specimens [emphasis added] which were captured at Coombe wood: I had previously taken the insect at Darenth in June.'

If Haworth did have two specimens then one is now in the Natural History Museum (BMNH), London (Plate 2). The whereabouts of the other, if extant and if there was another, is unknown. Haworth's specimen is in the main collection and has four labels. The lowest is a barcode label, above that is a rectangular one that reads 'Stephens Coll./Argyresthia/a. literella,/named by Steph.', above that is a label that just reads 'literella' and the uppermost is a BMNH red-rimmed 'HOLO-TYPE.' label. To the right of this specimen is another BMNH red-rimmed 'HOLO-TYPE.' label. Near this is a typed label that reads 'HOLOTYPE/Tinea/literella/Haworth/teste M.S. Parsons, 1998'. The abdomen is in a capsule placed close to the specimen. Plate 3 shows these labels and capsule. Near the specimen is a printed label reading '(syn.) *literella* Haworth'.



Plate 1. *Argyresthia goedartella* (Linnaeus, 1758) f. *literella*, Hackney, London 23.vii.2012. Photo: M. Gandy

Wood (1839: 189; 190) also treats *goedartella* and *literella*, then in the genus *Phalaena*, as good species. Each species is preceded by a number: *P. goedartella* being assigned the number 1307 and *P. literella* 1310. Wood does not describe any species but provides coloured plates of the adults. None of the species illustrated on the plates is assigned a name but instead each is given a number corresponding to the relevant species number in the text. Both *P. goedartella* and *P. literella* are figured on Plate 42. Figures 1307 and 1310 on that plate illustrate *P. goedartella* and *P. literella* respectively, and, as far as we are aware, are the first illustrations of these taxa in the British literature. Figure 1310 is here reproduced as Plate 4, and as can be seen, is a very good depiction of Haworth's specimen shown in Plate 2.

Stainton (1849, Appendix: xvii-xviii) also treats *goedartella* and *literella*, both now in the genus *Argyresthia*, as good species. He describes the forewing of *A. literella* as 'whitish, with a slender golden fascia arising on the inner margin, not far from the base, sloping inwards, and not reaching to the costa; about the middle of the inner margin arises another fascia, which almost immediately becomes furcate, the inner arm of which is parallel to the first fascia, and the outer arm points to the costa a little below the apex, -neither



Plate 2. *Argyresthia literella* (Haworth, 1828), holotype.

Photo: Dr D. C. Lees & S. D. Beavan

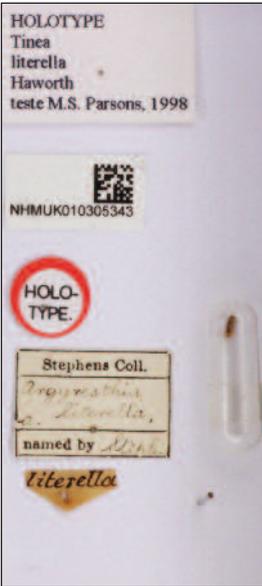


Plate 3 (left). Labels and capsule accompanying *Argyresthia literella* (Haworth, 1828), holotype. Photo: S. D. Beavan



Plate 4 (right). Fig. 1310 on plate 42, in Wood (1839), illustrating *Phalaena literella*. Photo: S. D. Beavan & R. J. Heckford

arm is continued to the costa; towards the anal angle arises a third golden fascia, which, after proceeding half-way, is deflected to the apex, to which it extends: cilia pale fuscous, somewhat golden at the apex.' Stainton comments that *A. literella* differs from *A. goedartella* in the fasciae being narrower and not continued to the costa. He records that this description of *A. literella* was made from Haworth's original specimen (emphasis added), in 'Mr. [J. F.] Stephens' collection.' He continues by stating that 'Mr. Stephens has also a specimen, of his own capture, which he took at Darenth Wood, in June, 1846: this agrees in all the essential characters with Haworth's specimen, but on the costa is a small golden spot, in continuation, as it were, of the first part of the third fascia.' From this it is clear that Stainton was not aware that Stephens apparently had two specimens taken by Haworth. It also appears that 1846, the year given that Stephens took his specimen, is an error because Stephens refers to this in his 1834–1835 publication.

Significantly, Stainton ends his account with the words, 'These two specimens are all I have yet seen. It may be an extraordinary variety of *Goedartella*; but to prove the point one way or other requires more specimens.'

Doubleday (1859) published a list, in columns, of all the then known British Lepidoptera. He also treats *Argyresthia goedartella* and *A. literella* as good species (1859: 32), but clearly shares Stainton's suspicion that *A. literella* may be a form of *A. goedartella* because to the right of name '*Literella*, *Haw.*' are the words '(praec. var. ?)'; the preceding species is *A. goedartella*.

South (1884: 35), however, in an updated list of British Lepidoptera, places '*literella*' as a form of *A. goedartella*, denoting it by the term '*v. literella*', having stated in the Preface (1884: v) that 'Under the common term variety (*v.*) I have included all named forms of species.' Thereafter *A. literella* (Haworth, 1828) has been treated as a junior synonym of *A. goedartella* in the British literature. South's treatment of '*literella*' may well have been based on Wocke (1871: 280) who places it as an aberration of *A. goedartella*.

Consideration of records of *Argyresthia goedartella* f. *literella*

RJH has examined specimens of *Argyresthia goedartella* in the BMNH and has also been in correspondence with colleagues in mainland Europe. It is clear that f. *literella* is rare. The British collection of Lepidoptera in the BMNH has 348 specimens of *A. goedartella* but only two of f. *literella*, all in one drawer. The main collection has 136 specimens, also all in one drawer, but only six of f. *literella*, including Haworth's holotype as well as four specimens, two of each sex, collected by 'Walker', no date recorded, at Esquimalt, Vancouver Island, British Columbia, Canada. There is a species similar to typical *A. goedartella* that occurs in North America: *A. calliphanes* Meyrick, 1913. Lewis & Sohn (2015: 26) state that this has been confused with *A. goedartella*, that it is unclear

whether both species occur in North America and that some Nearctic records of the latter may be due to confusion with the former. Therefore it is possible that Walker's specimens may be a form of *A. calliphanes*. There is also one specimen of f. *literella* in the Museum für Naturkunde, Berlin, Germany, dating from 1911 and examined by MG. There may well be others in other mainland European Museums but we have not attempted to investigate this issue further.

Dr B. Å. Bengtsson has never seen the form in Sweden, Mr O. Karsholt tells us that there are about 375 specimens of *A. goedartella* from Denmark in the Zoological Museum, Natural History Museum of Denmark, Copenhagen, Denmark but there are no specimens of f. *literella* among them and that as he has seen probably thousands of *A. goedartella* over many years in the field, he considers that the form must be extremely rare. Indeed such rarity is shown by the fact that a photograph of a specimen of this form taken in 2007 in Denmark appears in Buhl *et al.* (2013: 77, fig. 3). Dr P. Huemer has never seen this form in any collection in central Europe.

As far as we can trace, the only illustration of *A. goedartella* f. *literella* in the British literature prior to that in Gandy (2014), although as already noted the moth was not determined as such at the time, was over 170 years ago and was provided by Wood (1839: pl. 42, fig. 1310) who treated *literella* as a good species in *Phalaena*. Therefore because of this and in view of the apparent rarity of this form, Plates 5 and 6 illustrate the specimens taken by THF and RJH respectively.

Confusion of *Argyresthia goedartella* f. *literella* and *A. goedartella* f. *splendida* in *The Moths and Butterflies of Great Britain and Ireland 3*

As stated in the Introduction, the illustration of *Argyresthia goedartella* f. *literella* in *The Moths and Butterflies of Great Britain and Ireland 3*: pl. 10, fig. 14 does not agree with the description on p. 80 of that publication. The relevant paragraph on that page deals with variation from the typical form and reads as follows:

‘Variation is frequent and occurs wherever the species is found. In f. *literella* Haworth (fig. 14) the costa is almost entirely white so that no fascia is complete. Sometimes the markings are connected as in *A. brockeella* (Hübner) (fig. 11). Very often the ground colour is suffused brassy so that the pattern is less discernible; f. *splendida* Reutti (fig. 15) is unicolorous brassy.’

Both of the two forms illustrated by figures 14 and 15 on plate 10 are f. *splendida*. Reutti (1898: 295) describes this form as ‘Ganz golden, höchst glänzend, hellere Zeichnung schwach angedeutet’ (Quite golden, extremely sparkling, lighter pattern weakly indicated). Friese (1969: 726–727) reviewed



Plate 5. *Argyresthia goedartella* (Linnaeus, 1758) f. *literella*, Richmond Park, Surrey
20.vii.2010. Photo: T. H. Freed



Plate 6. *Argyresthia goedartella* (Linnaeus, 1758) f. *literella*, Fingle Bridge, Devon
14.vii.1974. Photo: R. J. Heckford

the forms of *A. goedartella*. He observes that f. *literella* was generally misinterpreted. He refers to Haworth's description and Wood's figure, and states that the form where the white ground colour is replaced by golden is f. *splendida* Reutti, 1898. Monochrome figures (Friese, 1969: 727, figs 23–26) are provided of the typical form (fig. 23), an undescribed form (fig. 24), f. *literella* (fig. 25) and f. *splendida* (fig. 26), with all the forms given as aberrations. Figure 26, f. *splendida*, accords well with figure 14 on plate 10 of *The Moths and Butterflies of Great Britain and Ireland 3*.

Prior to *The Moths and Butterflies of Great Britain and Ireland 3*, Agassiz (1987: 7–8) describes both f. *literella* and f. *splendida*, but only illustrates the latter (1987: pl. 1, fig. 17).

The following is a possible reason why figure 14 on plate 10 in *The Moths and Butterflies of Great Britain and Ireland 3* is not of f. *literella* but f. *splendida*. Of the 348 specimens of *Argyresthia goedartella* in the British collection in the BMNH, there are 13 specimens, all taken by W. Rait-Smith, standing under the label 'v. *literella*, *Haw.*' None is f. *literella*; all are of the form depicted by figure 14 on plate 10. Material from the BMNH, as well as other sources, was used for the illustrations of species in the series *The Moths and Butterflies of Great Britain and Ireland*. Therefore because f. *literella* appears to be rare it seems possible that a specimen from the BMNH might have been used to illustrate that form. If the arrangement at that time was the same as the current arrangement, then, because the Rait-Smith specimens were standing under the label 'v. *literella*, *Haw.*' it could well be that one of those was used for figure 14 on plate 10.

Discussion

It is clear that *Argyresthia goedartella* f. *literella* is rare both in the British Isles and mainland Europe. We cannot make any useful assessment of its status in British Columbia, Canada, assuming that Walker's specimens from Esquimalt, Vancouver Island, are *A. goedartella* and not *A. calliphanes*.

Figure 14 on plate 10 of *The Moths and Butterflies of Great Britain and Ireland 3* is not *A. goedartella* f. *literella* but f. *splendida*. This paper illustrates four specimens of f. *literella* including the holotype of *A. literella* (Haworth, 1828).

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