

A Re-assessment of the Taxonomical Status of the Populations of *Utetheisa lactea* (Butler, 1884) (Lepidoptera: Erebidae: Arctiinae) on the Outer Islands of the Seychelles

Peter J.C. Russell

Introduction

The Outer (or Coral) Islands of the Seychelles comprise a number of island groups and atolls, which lie between approximately 230 and 1150km to the southwest of Mahé, the main island in the Inner (or Granitic) Islands of the Seychelles (Figure 1). The Outer Islands extend from the Aldabra Atoll in the southwest to Denis Island in the northeast.



Figure. 1: The Seychelles Archipelago
(Taken from the internet. No indication of copyright)

The author visited a number of these coralline atolls and islands in January and February 2017; the rigid inflatable Zodiac from the MV Island Sky set groups ashore, on 11 February, on Île du Sud-Ouest (or South Island) [09° 46'S., 47° 35'E.], which is the third largest (*circa* 3 x 0.25km) island of the Cosmoledo Atoll (Figure 2) and only 6m above sea level.

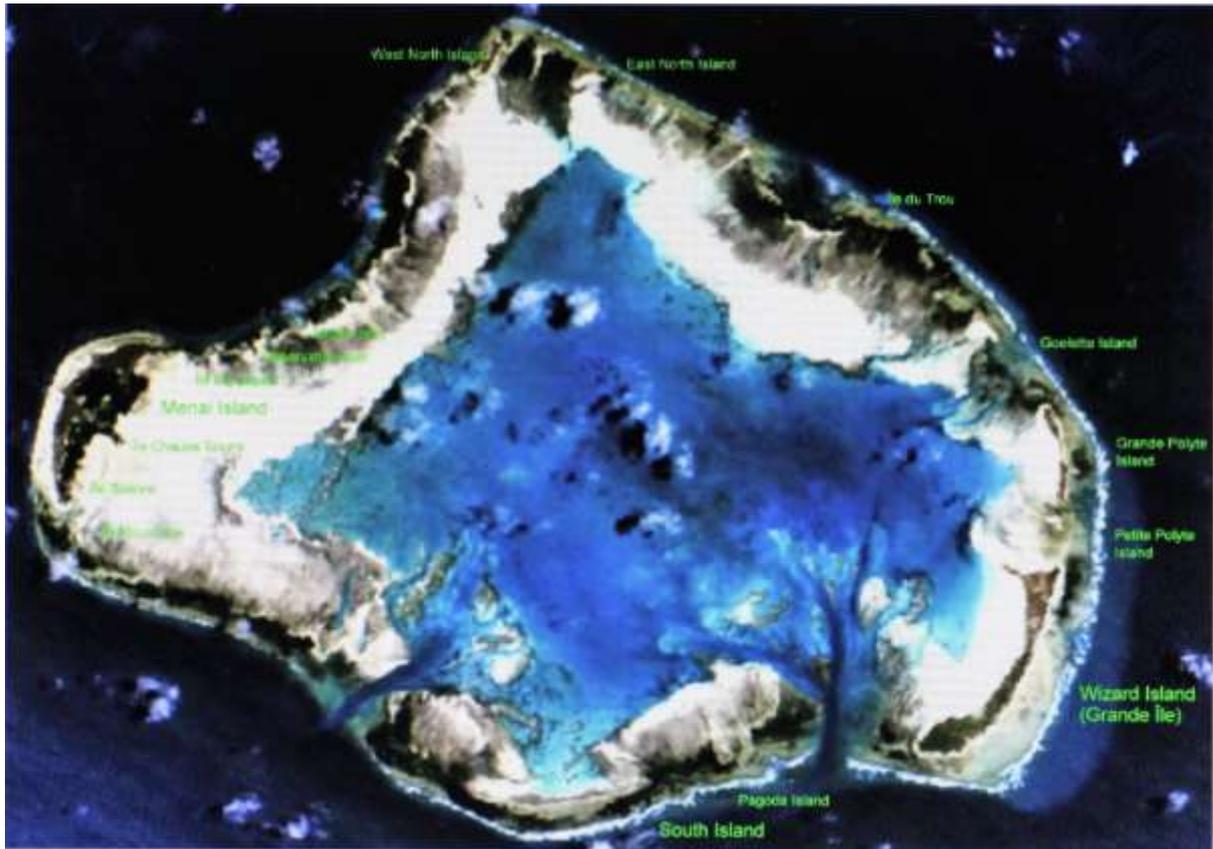


Figure 2: Cosmoledo Atoll with the individual islands named
(Courtesy of Cruisemapper)

The author soon noticed that there were many small moths flying around some bushes just above the tideline, in which both blue and red footed boobies (*Sula nebouxii* Milne-Edwards, 1882 and *Sula sula* (Linnaeus, 1766), respectively) were nesting.

The moths rarely settled for long and being very skittish it was almost impossible to get a photograph of one in focus! However, they were clearly ‘footman moths’, by their slim and rounded wingtips, which folded over across their slim bodies, but without the characteristic red markings of the well-known and widely distributed *Utetheisa pulchella* (Linnaeus, 1758), which was recorded from the Cosmoledo Atoll by Legrand (1966: 165)

Observations

The moths were attracted to particular bushes with in-curved inflorescences, which indicated they were a variety of Heliotrope, later identified as *Heliotropium foertherianum* Diane and Hilger (also known as *Tournefortia argentea* L.f.) (Boraginaceae), known commonly as the octopus bush. Close inspection of these flowers revealed a number of full grown larvae (Figure 3).



Figure 3: U. lactea larva feeding on H. foetherianum, South Island, Cosmoledo Atoll, 11 February 2017

Two larvae were collected in order to facilitate identification of the moths and within a couple of days they had pupated (Figure 4).



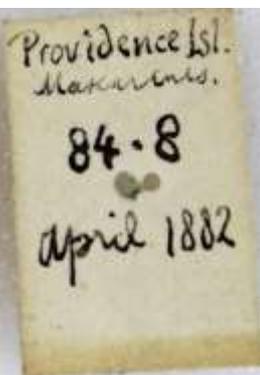
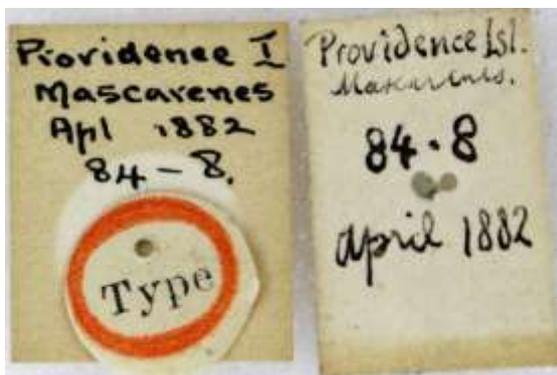
Figure 4: U. lactea pupae resulting from larvae taken at South Island, Cosmoledo Atoll, 17 February 2017

Back in the U.K., both moths emerged but one was crippled; the complete specimen is figured upperside (Figure 5).



Figure 5: *U. lactea*, upperside of adult resulting from larva taken at S. Island, Cosmoledo, emerged 1 March 2017

Close inspection of the adult moths when compared with original descriptions of *Utetheisa* species inhabiting the Seychelles revealed that they were *Utetheisa lactea* (Butler, 1884) (Figures 6A, 6B and 7) [*Deiopeia lactea* Butler, 1884 – Type Locality: Providence Island, a single pair of specimens], which is related to *U. pulchella* (DaCosta, 2010: 128). *U. lactea* is endemic to the outer Islands of the Seychelles and the Glorieuses Islands (Fletcher, 1910: 268). It was first recorded from the Cosmoledo Atoll by Fryer (1912: 6), who recorded a single specimen. Butler’s (1884) final comment: ‘The entire absence of the usual scarlet markings from the upper surface of the wings in this species renders it conspicuously distinct from every *Deiopeia* hitherto described...’, proved to be unfortunate, as will be shown later.



Figures 6A and 6B: *U. lactea lactea* (Butler, 1884) Holotype, Providence Island (NHM London)
(Labels on pin)



Figure 7: *U. lactea lactea* Holotype, Providence Island (NHM London), upperside

Discussion of previous records

From an examination of the early literature, it became obvious that this species is very variable. Hampson (1901: Plate L, Fig. 6) illustrated *U. lactea* for the first time, showing an example with almost no forewing spotting, a white patch in the black apical patch and no discal black spot on the hindwing. The origin of the specimen figured was given as ‘Mascarenes’; although today it is considered that Mauritius, Réunion and Rodrigues form the Mascarene Islands, he obviously was of the opinion that any islands on the Mascarene Plateau, which stretches from east of Madagascar north-westwards, could come under the heading of the Mascarenes. *U. lactea* has never been recorded from the true Mascarene Islands. Hampson (1908: 481-2) suggested that there were two subspecies: ‘subsp. 1: scarlet spots well developed with black spots more or less obsolete’, 2 pairs from Gloriosa (= Glorieuses) & 1♂ from Assomption; ‘subsp. 2: both black and scarlet spots of forewing well developed’, 2♀♀ from Aldabra.

Fletcher (1910: 267-8) described four ‘forms’, based on forewing spotting: firstly the type with almost no spotting; secondly with both red and black spots well developed – subspecies *aldabrensis*; thirdly with a complete lack of red spots, which he called var. *nigrosignata* (Figures 8 and 9); and fourthly a form with a complete lack of black spots – var. *rubrosignata*. From Fletcher’s description of subspecies *aldabrensis*, it is clear that specimens must have both red and black spots present. He noted the similarity of this subspecies to *U. pulchelloides* Hampson, 1907, whilst noting differences: the presence of a

white patch in the anterior black border of the hindwings, the absence of any discal spot on the hindwing, and the unspotted cilia of the forewings.

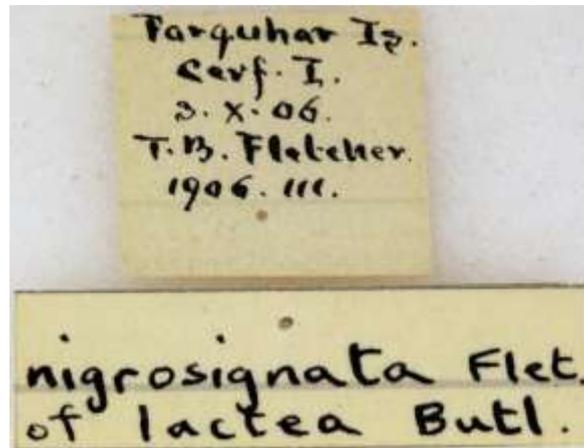


Figure 8: *U. lactea* var. *nigrosignata* Fletcher, 1910, holotype, Cerf Island, Farquhar Archipelago (Labels on pin)



Fig.9: *U. lactea* var. *nigrosignata* Fletcher, 1910 holotype, upperside

The specimens illustrated on BoldSystems¹, originating from Aldabra Atoll, Île Picard (or West Island), March 1986, D. Adamski leg., exemplify the description of *aldabrensis* perfectly, having heavy bright scarlet and black markings on the forewings.

¹ [v3.boldsystems.org/index.php/Public_SearchTerms?query='Utetheisa%20lactea'\[tax\]](http://v3.boldsystems.org/index.php/Public_SearchTerms?query='Utetheisa%20lactea'[tax]). Accessed 3 February 2021.

Fryer (1912: 6) commented that the long series of 'subspecies *aldabrensis*' from Aldabra were 'more or less strongly marked with red and black' and a single specimen from Cosmoledo resembled subsp. *aldabrensis* except that the forewings were 'suffused with light fuscous', a feature of *U. lactea*. He expanded the distribution of this subspecies to include Farquhar, Cosmoledo, Assumption, Providence, Glorieuses to the south and the Amirantes Islands to the north.

Strand (1919: 361) obviously missed the publication by Fletcher (1910) and named the form on Aldabra as var. *aldabrae* Strand, 1919 (Figures 10 and 11);

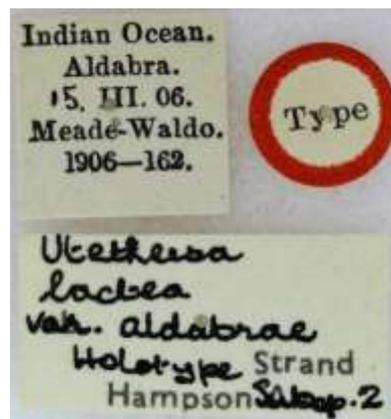


Figure 10: *U. lactea* var. *aldabrae* Strand 1919, holotype, (= *aldabrensis* Fletcher, 1910) Aldabra (Labels on pin)



Figure 11: *U. lactea* var. *aldabrae* Strand, 1919, holotype, upperside

and equated it to Hampson's 'Subsp. 2' (equals Fletcher's subspecies *aldabrensis*) from Aldabra and named var. *assumptionis* Strand, 1919 (Figures 12 and 13); as equivalent to Hampson's 'Subsp. 1' (equals Fletcher's var. *rubrosignata*) from Assomption and Gloriosa.

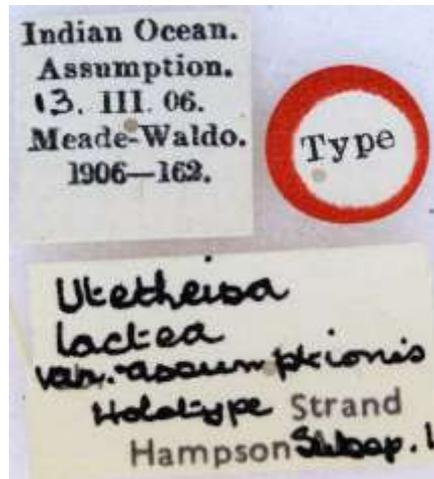


Figure 12: *U. lactea* var. *assumptionis* Strand 1919 holotype (= *rubrosignata* Fletcher, 1910), Assomption Is. (Labels on pin)



Figure 13: *U. lactea* var. *assumptionis* Strand, 1919, holotype upperside

This holotype specimen is an aberration without the usual bilateral symmetry of markings but it is obvious from the left forewing that it equates to var. *rubrosignata*.

Hampson (1920: 510) accepted the subsp. *aldabrensis* and the two varieties of Fletcher (1910) but included specifically Cerf Island (Providence Atoll) under var. *nigrosignata* and Cosmoledo, Assomption and Gloriosa under *rubrosignata* and both Aldabra and Assomption under subsp. *aldabrensis*.

Jordan (1939: 271) reviewed the genus *Utetheisa* and listed those species found in Seychelles; he included *U. lactea* with two subspecies: the nominal one and ssp. *aldabrensis*. He pointed out that Fletcher (1910: 267-8) considered that Hampson (1920: 510) was incorrect in his suggestion that this latter subspecies occurred on Assomption Is.

Legrand (1966: 163-165) appeared to support Fletcher's classification of the various forms insofar as he listed under *U. lactea*, apart from the nominal subspecies, 'morphes *nigrosignata*', subspecies *aldabrensis*, and 'morphes *rubrosignata*'. He indicated that the distribution of *nigrosignata* had yet to be defined as it was only known from two specimens – the type from Providence Is. and a single specimen (ex larva) from Menai Is., Cosmoledo Atoll (the island adjacent to Île du Sud-Ouest or South Island, see Figure 2) The distribution of ssp. *aldabrensis* (figured Plate X: Fig. 11) was given as Aldabra Is., Assomption Is. and Cosmoledo Atoll and a single specimen (island unknown) with 'fond de l'aile plus foncé' [suffused with light fuscous] (cf. Fryer above). The distribution of *rubrosignata* was given as Farquhar, Providence and Cosmoledo, the latter based on a single specimen again from Menai Is. captured during his own expedition in 1959. However, this apparent simplicity was confused by his comments under *U. lactea*: 'La forme typique est caractérisée par l'absence de taches écarlates. Certaines formes sont pratiquement sans taches, même les ordinaires taches noires.' [The typical form is characterized by the absence of scarlet spots. Some forms are practically without spots, even the ordinary black spots.] Legrand (1966: 164) quoted the distribution of *U. lactea* given by Fletcher (1910: 267) as: Providence Is. – of 12 specimens: 7 were without red marks, the other 5 with red marks; Farquhar Archipelago – of 27 specimens: 14 were without red marks, the other 13 having red marks; Marie-Louise Is. (Amirantes Archipelago) – 1 specimen, without comment. However, he did add the following significant information on the distributions of the various colour forms on Île Menai (Cosmoledo Atoll): 1 specimen of form *nigrosignata*, 32 specimens (7 ex larvae on *T. argentea*) of *aldabrensis* and a single specimen of *rubrosignata*; thus there were 3 forms on one island at the time of his visit in 1959.

However, more modern literature appears to consider that the subspecies *aldabrensis* is applicable to all specimens originating from the Aldabra Archipelago or, indeed, from all the Outer Islands. Under *U. lactea aldabrensis*, Goodger and Watson (1995: 21) list Strand's *aldabrae* and *assumptionis* and Fletcher's *nigrosignata* and *rubrosignata* as infrasubspecific names. Likewise, Gerlach and Matyot (2006: 71 and pl. 19) include '*U. lactea assumptionis*' and the morphs *nigrosignata* and *rubrosignata* under *U. lactea aldabrensis*. This is in complete contrast to the description of the subspecies *aldabrensis* by Fletcher (1910). Even the figures of '*Utetheisa lactea aldabrensis*' on Plate 19 of Gerlach and Matyot (2006) do not resemble Fletcher's description of this subspecies: both figures have a discal spot on the hindwing, a feature positively excluded by Fletcher (1910: 268) and not mentioned by Butler (1884). Even their figures of *U. l. lactea* do not have the 'conical white spot' at the apex of the hindwing, a diagnostic feature given by Butler (1884) in his original description.

The various suggested distributions of *U. lactea lactea*, *U. lactea aldabrensis*, *U. lactea* form *rubrosignata*, and *U. lactea* f. *nigrosignata* are summarized in Table 1.

Table 1: The recorded distributions of the ‘subspecies’ and ‘varieties’ of U. lactea on the Indian Ocean Island groups

Island/Subspecies or form	<i>U. lactea lactea</i>	<i>U. lactea aldabrensis</i>	f. <i>rubrosignata</i>	f. <i>nigrosignata</i>
<i>Providence</i>	X [TL]	X	X	X [TL]
<i>Glorieuses</i>		X	X [TL]	
<i>Assomption</i>		X (?)	X [TL]	
<i>Aldabra</i>		X [TL]	X	X
<i>Cosmoledo</i>		X	X	X
<i>Farquhar</i>	X	X	X	
<i>Amarantes</i>	X	X		

(X = present, [TL] = Type Locality)

Conclusion

From Table 1, it can be seen that the two ‘subspecies’ and two ‘varieties’ are spread across eight atolls and islands, with Providence Atoll having all four; Aldabra, Cosmoledo and Farquhar Atolls having three; Assomption, the Glorieuses and Marie-Louise Island in the Amirantes having two. ‘Subspecies’ *aldabrensis* appears to occupy all seven of the islands mentioned; f. *rubrosignata* occupying six; subspecies *lactea* and f. *nigrosignata* having been observed on three. This totally confusing distribution of the so called subspecies and varieties would seem to negate any form of division into subspecies, particularly in view of Fletcher’s choice of the name *aldabrensis* for his subspecies, as his description – well developed black and scarlet spotting – has allowed the subspecies name to be used extensively wherever this well spotted ‘form’ appears. The endemic Indian Ocean Islands *U. lactea* should be considered to be an extremely variable species, having specimens almost devoid of forewing spotting through to those with heavy black and scarlet spotting, with variants having only scarlet or only black forewing spots, most of which can appear on the same atoll, possibly at different times, since the records cited span over a century. The specimens taken by the author on Île du Sud-Ouest (or South Island), Cosmoledo Atoll appear to fit into the *nigrosignata* category. It was noted above that Legrand (1966: 164) took 32 specimens of ‘subsp. *aldabrensis*’, a single specimen of *nigrosignata* (ex larva), and one of f. *rubrosignata* all from the adjacent island of Menai, Cosmoledo Atoll (see Figure 2). This admixture of ‘forms’ of *U. lactea* on a single small island (circa 2.45 Km²) at the same time really precludes the acceptance of subspecific division within this species.

Thus *Utetheisa lactea aldabrensis* Fletcher, 1910 is hereby sunk into synonymy with *U. lactea lactea* (Butler, 1884) – **syn. nov.**, whilst recognizing that the species is very variable in respect of its forewing colour patterns. Extreme variability of forewing patterns in this genus is not uncommon, exemplified by the 40 colour variations of *U. ornatix* (Linnaeus, 1758) shown by Gawne and Hijhout (2019: 915, colour plate).

Acknowledgements

Scott Millar (National Museum of Natural History [Smithsonian], NW Washington, D.C., USA) for providing information on the origins of the *Utetheisa lactea* specimens used in the BoldSystems analysis.

Michelle DaCosta (Wake Forest University, Department of Biology, Winston-Salem, NC 27109, USA) for providing the article on her systematic analysis of the species in the genus *Utetheisa*.

W. John Tennent (Scientific Associate of the Natural History Museum, London) for photographing specimens of *U. lactea* present in the NHM (London) collections.

Alberto Zilli (NHM, London) and Paolo Mazzei (President of the Italian Lepidopterists' Association, Rome, It.) for their useful comments and the latter also for providing copies of relevant literature.

The author would also like to thank the anonymous reviewer, whose comments improved the manuscript.

References

Butler, A.G. (1884). Lepidoptera, p.577, Part 2: Collections from the western Indian Ocean of: *Report on the Zoological collections made in the Indo-Pacific Ocean during the voyage of H.M.S. 'Alert' 1881-2*. Trustees of the British Museum, London 684pp. + 54 b./w. plates.

DaCosta, M.A. (2010). 'Phylogeny of *Utetheisa* s. st. (Lepidoptera: Noctuidae: Arctinae) with comments on the evolution of colour, hind wing scales and origin of New World species'. *Invertebrate Systematics* 24, pp.113-130.

Fletcher, T.B. (1910). 'Lepidoptera exclusive of the Tortricidae and Tineidae, with some remarks on their distribution and means of dispersal among the islands of the Indian Ocean (The Percy Sladen Trust Expedition to the Indian Ocean in 1905)'. *Transactions of the Linnean Society of London* (2) Zool. 13 (1), pp.265–324, pl. 17.

Fryer J.C.F. (1912). 'The Lepidoptera of Seychelles and Aldabra, exclusive of the Orneodidae and Pterophoridae and of the Tortricina and Tineina'. *Transactions of the Linnean Society of London* (2) Zool. 15 (1), pp.1–28, pl. 1.

Gawne, R. and Nijhout, H. (2019). 'Expanding the Nymphalid Groundplan's Domain of Applicability: Pattern Homologies in an Arctiid Moth (*Utetheisa ornatix*)'. *Biological Journal of the Linnean Society* 126, pp.912–924.

Gerlach, J. and Matyot, P. (2006). *Lepidoptera of the Seychelles islands*. Leiden, The Netherlands: Backhuys Publishers, 130pp.

Goodger, D.T. and Watson, A. (1995). *The Afrotropical Tiger-Moths*. Stenstrup, Denmark: Apollo Books, 65 pp.

Hampson, G.F. (1901). 'Catalogue of the Lithosiidae (Arctianae) and Phalaenoididae in the collection of the British Museum'. *Catalogue of the Lepidoptera Phalaenae in the British Museum*, 3: *Utetheisa*, pp. 480-488, plate L: fig. 6.

Hampson, G.F. (1907). 'Descriptions of new genera and species of Syntomidae, Arctiidae, Agaristidae and Noctuidae'. *The Annals and Magazine of Natural History* 19 (111), pp. 221-257.

Hampson, G.F. (1908). 'On the moths collected during the cruise of the Valhalla during the winter of 1905-6 by Mr. E.G.B. Meade-Waldo'. *The Annals and Magazine of Natural History* 1(8th series), pp. 471-492.

Hampson, G.F. (1920). 'Catalogue of the Lithosiidae (Arctianae) and Phalaenoididae in the collection of the British Museum'. *Catalogue of the Lepidoptera Phalaenae in the British Museum*, Supplement II: *Utetheisa*, pp. 509-513.

Jordan, K. (1939). 'On the constancy and variability of the differences between the old world species of *Utetheisa* (Lepid.; Arctiidae)'. *Novitas Zoologicae*, XLI, pp. 251-291.

Legrand, H. (1966). 'Lépidoptères des îles Seychelles et d'Aldabra'. *Mémoires du Muséum national d'Histoire naturelle* (Série A, Zoologie), XXXVII, pp. 1-210.

Strand, E. (1919). 'Arctiidae: subfamily Arctiinae'. In H. Wagner (ed.). *Lepidopterorum Catalogus Pars 22*. Berlin, Germany: W. Junk, 415pp.

Peter Russell completed his BSc., part time, whilst working in the research department of Smith and Nephew. He worked for a PhD. in Marine Littoral Ecology at Hatfield Polytechnic, identifying a new species of cockle, and published a dozen or so articles. His hobby, collecting butterflies, soon turned into a more scientific approach when he discovered a new species for Europe in Sicily, in 2004. Since then he has published almost a hundred articles and book reviews on butterflies (mainly) and moths. He has also carried out research projects, often with others, across Europe from the Atlantic Islands (Azores in the north to Cabo Verde in the south) to the Ural Mountains in Russia.

peterjcrussell@yahoo.co.uk