

11 April 2014

© Mark Colvin

Citation: Colvin, M. (2014). *Rearing the Long-tailed Blue - Personal Observations* [Online]. Available from <http://www.dispar.org/reference.php?id=5> [Accessed April 11, 2014].

Rearing the Long-tailed Blue - Personal Observations

Mark Colvin

Abstract: Although the Long-tailed Blue (*Lampides boeticus*) is one of the rarest migrants to the British Isles, it is probably the most-widely distributed Lycaenid in the world. In 2013 they occurred in unprecedented numbers in Sussex. This paper conveys the rearing experiences and thoughts of the author, and makes comparisons with the observations of the late F.W. Frohawk.



Figure I - Long-tailed Blue (male on bramble fruit)

Photo © Mark Colvin

Although the Long-tailed Blue (*Lampides boeticus*) is one of the rarest migrants to the British Isles, it is one of the most-widely distributed Lycaenids in the world, being found throughout southern Europe, Africa, southern Asia, India and Australia, extending eastwards to parts of Oceania including Hawaii. The vast majority of records occurring in the British Isles are from the south of England and the Channel Islands. On the continent, and throughout many parts of its range, this beautiful little butterfly is considered a pest of members of the Leguminosae (Fabaceae or bean family); hence some of its other vernacular names, the Pea Blue or Bean Butterfly.

As a migrant to the British Isles, *L. boeticus* is rarely seen before the second half of July, with the peak of sightings being recorded during August and into September, though records as early as June have been noted (Asher *et al.*, 2001; Emmet and Heath, 1989; Thomas and Lewington, 2010). Historically, it has been recorded as late as 20th November, with a record from Kingswear, south Devon in 1961 (Emmet and Heath, 1989). Records of *boeticus* at other times of the year are undoubtedly linked with accidental foreign imports with fresh produce such as mangetout and sugar snap peas.

2013 was an exciting year for many migrant species, particularly in the southern counties and *L. boeticus* once again appeared in the UK. The first Sussex record was on Thursday, 8th August, when a single female was observed and photographed by Chris Glanfield in a garden in Arundel, West Sussex. Further specimens began to appear in the Rye, Brede and Winchelsea area from 9th August and on the 17th Ralph Hobbs discovered 4 recently hatched eggs at Winchelsea Beach (R. Hobbs, 2013, pers. comms., 18 October). These were located on two different clumps of Broad-leaved everlasting pea (*Lathyrus latifolius*) in gardens about 50 metres apart. On the same day sightings picked up apace elsewhere, with Dave Harris recording 3 females and 1, possibly 2 males, in his back garden in the coastal town of Newhaven, East Sussex (D. Harris, 2013, pers. comm., 19 October).

It was at this point that I became interested and on Tuesday, 20th August, I obtained two small racemes of *L. latifolius*, from the Newhaven area. I inspected each inflorescence in some detail and the only indication of activity I could find was a single, tiny, disc-like ovum, about 0.5mm in diameter (Figure II). It was attached to one of the sepals and showed signs of larval emergence. An intact ovum is depicted in Figure III. This was photographed in Portugal in August 2011. Freshly emerged larvae are extremely small, being scarcely 0.8mm long (Frohawk, 1924).



Figure II - Long-tailed Blue (ovum, shortly after emergence), Newhaven, East Sussex (20 August 2013)

Photo © Mark Colvin



Figure III - Long-tailed Blue (ovum), Portugal 2011

Photo © Peter Eeles

Returning to the Newhaven area on Wednesday, 28th August, I widened my search for the foodplant and found two stands of *L. latifolius* approximately half a mile from the original Newhaven sighting point. A careful inspection of one of the areas revealed *boeticus* activity and two third instar larvae were discovered. My purpose for collecting these samples was to take the opportunity to observe and document, in detail, a rare event on British soil, the development of this globally widespread and common species; though characteristically infrequent migrant to the British Isles.

The two racemes were kept in water to keep them fresh. Both were comprised of numerous developing buds with several opened pink flowers towards their base. From these two racemes four larvae appeared over several days; one mature second and three early third instar. Considering I was only ever aware of a single empty ovum, this raised a couple of questions: (i), 'had there ever been other ova on the two racemes - if so, had they fallen off or been eaten by either the *boeticus* larvae or some other predatory invertebrate?', and (ii), 'had the emerged larvae originated from another raceme and transferred to the two I had collected?'

It is a known fact that the young larvae of certain species of butterfly are cannibalistic and will not only eat their own eggshells but the eggs of their fellow brethren; the Monarch (*Danaus plexippus*) being a well known example. The larvae of many Lycaenids, particularly those species with a propensity to lay large numbers of eggs on a limited food resource, a category in which *boeticus* could be placed, often show a cannibalistic tendency. To shed some further light on these questions, Frohawk (1924) refers, 'Upon hatching, the larva rapidly eats away the crown, making a circular hole, and emerges; it at once becomes very active, crawling rapidly for so tiny an object'. He further goes on to comment 'Soon after hatching, a few entered the calyces and fed upon the base of the petals', and also, 'Other young larvae supplied with broom blossoms, quickly bored into the centre of the buds through the petals, leaving only a minute hole where they entered ...'.

As the first instar larvae either bore directly into the flower via the petals, which may occur beneath the sepals, or as I observed with the second instar, they crawl beneath the folds of the petals heading for their ultimate goal, the reproductive elements of the plant, I tend to feel my first supposition is most likely to be correct, i.e. the ova had fallen off or more likely been eaten by either the *boeticus* larvae or some other predatory invertebrate. It is the reproductive elements of the flower that will eventually be replaced by the hairless, flattened seedpods upon which the third and fourth (final) instar larvae ultimately bore into and feed.

Frohawk (1924) observes, 'The first moult took place within a week after emergence', and, 'After the second moult, thirteen days old, it measures 8mm long, having increased in size enormously during this stage'. He also comments, referring to typical conditions in Britain, 'from the time the egg is laid to the emergence of the imago only occupies about forty-two days'. Cribb (2001) comments, 'at high temperatures the life-cycle is very short, about four weeks from egg to imago'. Although other factors need consideration, e.g. meteorological conditions effecting migration at the end of July, and any 'acceleration' or 'deceleration' effects of captive rearing, this could suggest egg-laying dates of around Thursday, 1st August to Sunday, 4th August for the first four larvae I obtained, and around Wednesday, 7th August and Monday, 12th August for the two larvae obtained on Wednesday, 28th August. This further implies, despite weather conditions not being ideal, that the first migrants to hit Sussex may well have arrived during the latter part of July. A male was recorded from Dawlish Warren National Nature Reserve, Devon, on Friday, 26th July.

As it was impossible to continuously watch the larvae, I was really pleased to witness a mature, though tiny, second instar after it had bored its way, via the petals, into the unopened flower head; the hole being just under 1.75mm in length at its longest point (Figure IV). This occurred on Wednesday, 28th August at around 4.45pm. In addition, the second instar larva having burrowed into the flower bud, carefully turned around and covered the entrance with silk; an observation I have not noticed referred to elsewhere (Figure V). By 7am the following morning the larva had left the flower head, having presumably taken its fill, and had clearly removed the silk shield from its entry point and exited the flower bud.



Figure IV - Larval borehole in *Lathyrus latifolius* flower bud showing second instar larva

Photo © Mark Colvin



Figure V - Larval borehole showing entrance screened in silk

Photo © Mark Colvin

The third instar is described by Frohawk (1924) as follows:

'The ground colour is a pearly whitish, somewhat inclined to a yellowish tinge. There is a medio-dorsal purple-brown band, broken up by the segmental divisions, and by the large honey-gland on the tenth segment, which is unicolourous with the rest of the body. The band begins on the anterior edge of the second segment, and is continuous over the last three segments from the edge of the gland. A double sub-dorsal series of oblique markings, two on each segment, checker the side; these and a broad spiracular band are of a lilac-brown; the black spiracles are encircled with white. A pearl-white lateral band is continuous round both the anterior and posterior segments; this is bordered below by a light brown stripe; the rest of the ventral surface, including the claspers, is pearl-white; the legs black; the head is shining black and small in proportion to the size of the larva before the third moult, and is set on a pale yellow retractile neck, capable of considerable protrusion, but while resting the head is withdrawn under the hood-like anterior segment. The whole of the dorsal surface is rather densely clothed with somewhat short black serrated bristles, slightly curved and sharply pointed, each mounted on a pedestal base bearing minute spines'.

As would be expected, this description is open to some variation but clearly matches most of my own observations, though I would describe the head in this instar as chestnut in colour. I include this detail in full as it clearly demonstrates Frohawk's concern for recording detail accurately, not only in describing every single life stage of *boeticus*, but of all the known British butterflies of the time. Frohawk commenced his personal observations of *boeticus* in 1906, with further personal records in 1912.

All of my third instars fed readily on the fresh seedpods of both Broad-leaved everlasting pea, *Lathyrus latifolius*, and Narrow-leaved everlasting pea, *L. sylvestris*, eating not only the fruits but also parts of the fleshy inner lining of the pod itself. Frohawk (1924) refers, *'if the pod is opened the larva spins a delicate but dense web over the aperture'* and I too noticed this behavior, with the third and fourth instars sealing the opening in the fruit wall (Figures VI and VII); presumably undertaken as a means of defensive action against predatory attack.



Figure VI - Third instar larva in *L. latifolius* seedpod

Photo © Mark Colvin



Figure VII - Fourth instar larva in *L. sylvestris* seedpod

Photo © Mark Colvin

After the third and final moult the larvae continued to eat until nearing pupation, when they appeared restless and wandered prior to pupation and their ultimate transformation. At this stage they had assumed a dull lilac-pink hue (Figure VIII). Having shown signs of pending pupation the previous day, late on Saturday, 31st August the first larva had pupated. This was soon followed by two further larvae pupating on Sunday, 1st September. The fourth larva had now stopped feeding and was showing signs of imminent pupation; which occurred on Monday, 2nd September. The remaining two larvae, from the site I discovered on Wednesday, 28th August, were still actively feeding on *L. latifolius* seedpods on Sunday, 1st September; though had pupated by Friday, 6th and Tuesday, 10th September respectively.



Figure VIII - Dull, lilac-pink fourth instar larva close to pupation

Photo © Mark Colvin

The pupae, which measure between 10mm and 12mm in length, are quite beautiful in appearance. Frohawk (1934) writes, '*The ground colour at first is a pale flesh tint, gradually becoming paler, and when the pupa is mature is a pale creamy-ochreous. A dusky stripe runs down the back, the abdomen is spotted with deep purplish-brown along the sides, and the whole surface is more or less speckled with dark brown. Different individuals vary in the development of the markings; some are only slightly speckled, others are heavily blotched and spotted*'. On the morning of Tuesday, 10th September, the first larva to pupate had become almost entirely dark blue-black in colour, with just a small patch of the rear lower abdomen remaining a dull golden colour; I anticipated emergence soon (Figures IX, X and XI).



FIGURE IX - Pupa day 1

Photo © Mark Colvin



FIGURE X - Pupa day 5

Photo © Mark Colvin



FIGURE XI - Pupa day 10

Photo © Mark Colvin

The following day, Wednesday, 11th September, I worked from home in order to observe the anticipated emergence. The pupa had changed colour once again (Figure XII), losing much of its blue-black colouration and becoming duller in general appearance. I kept a close eye on the pupa, checking it for any change every 10 minutes. Having inspected it at 11.36am I felt something might happen soon. Eight minutes later, at 11.54am, a freshly emerged female sat below the leaf from which the pupa was resting (Figure XIII). She had remained in the pupal stage for 11 days.



FIGURE XII - Pupa just prior to emergence

Photo © Mark Colvin



Figure XIII - Female Long-tailed Blue shortly after emergence (11 September 2013)

Photo © Mark Colvin

The next emergence occurred on Friday, 13th September, with a male emerging at around 10.40am (12 days in pupa), and a female at around 4.45pm, also, surprisingly, 12 days in the pupal stage. On Saturday, 14th September, a second male emerged, this time at around 10am. The remaining two, both males, emerged on Monday, 16th September at 7.45am and Saturday, 21st September at approximately 3pm.

I tried, unsuccessfully, to pair the first four adults, as I was keen to observe and document the ova and first instar larvae. The adults were kept paired in flight cages, from emergence, with sufficient *L. latifolius* flowers as an egg laying medium, along with Fleabane, *Pulicaria dysenterica*, as a source of nectar and sliced fresh apple providing liquid nourishment, to which both males and females readily fed. The two cages were kept outdoors during the day and brought inside into an unheated conservatory at night.

The above activities were undertaken in accordance with Butterfly Conservation's policy. This states that '*any rare butterfly, regardless of stage, should be left in situ for others to enjoy. Where numerous eggs and larval stages are present of a migrant species like the Long-tailed Blue, which are never going to survive the winter, rearing a small number in captivity and releasing back onto the original site is unlikely to cause any harm. The local county butterfly recorder should be informed if that is the case*'. The adults were released back into the wild at Newhaven, East Sussex, on Monday, 23rd September 2013, where they were originally discovered as larvae; the local county butterfly recorder being informed of the exact details (Figure XIV).



Figure XIV - Releasing a male Long-tailed Blue (23 September 2013)

Photo © Colin Knight

In mid-October 2013, the butterfly was still being reported from the north Kent coast, including observations of a mating pair at Minnis Bay, and at least six individual males in Brighton, East Sussex. The last specimen of the season, a male, was recorded on 24th October from the Brighton Downs, the locality where the first British specimen was recorded in July 1859 (Pratt, 2011).

My thanks to Phil Everitt and Peter Eeles for their editorial comments and encouragement.

References

- Asher, J., Warren, M., Fox, R., Harding, P., Jeffcoate, G. and Jeffcoate, S. (2001) *The Millenium Atlas of Butterflies in Britain and Ireland*. Oxford: Oxford University Press, pp.298-299.
- Chevallier, L. H. S. (1952) *Lampides boeticus* Linn. in Surrey. *Entomologist's Record and Journal of Variation*, **64**, pp.274-277.
- Christie, L. (1953) Notes on rearing *Lampides boeticus* Linn. *Entomologist's Gazette*. **4**, pp.202-204.
- Cribb, P. W. (2001). *Breeding the British Butterflies*. Edition 3. Orpington, Kent: The Amateur Entomologists' Society, **18**, pp.49-50.

- Emmet, A. M. and Heath, J. (1989) *The Moths and Butterflies of Great Britain and Ireland*. Colchester, Essex: Harley Books, **7** (1), pp.142-143.
- Frohawk, F. W. (1924) *Natural History of British Butterflies*. London: Hutchinson & Co., **2**, pp.77-82, plate 47, figures 1-17.
- Frohawk, F. W. (1934) *The Complete Book of British Butterflies*. London: Ward, Locke & Co., pp.199-204.
- Howarth, T. G. (1973) (Reprinted 1974). *South's British Butterflies*. London: Frederick Warne & Co Ltd., pp.74-76.
- Massimo, V. (2013) The Forgotten 75%. *Sussex Butterfly Report (2012)*. Sussex Butterfly Conservation, Issue 5, Spring 2013, pp.25-31.
- Pratt, C. R. (2011) *A Complete History of the Butterflies and Moths of Sussex*. Peacehaven, East Sussex: Colin R. Pratt, 2, pp.182-183.
- Smart, P. (1976) *Lampides boeticus* L. (Lep: Lycaenidae) the First Recorded Breeding in Britain. *Entomologist's Record and Journal of Variation*, **88**, pp.87-88.
- Thomas, J. and Lewington, R. (2010) *The Butterflies of Britain & Ireland*. Gillingham, Dorset: British Wildlife Publishing, pp.108-109.
- UK Butterflies. www.ukbutterflies.co.uk [Accessed December 2013].