

## The Demise of the Mazarine Blue *Cyaniris semiargus* in Great Britain

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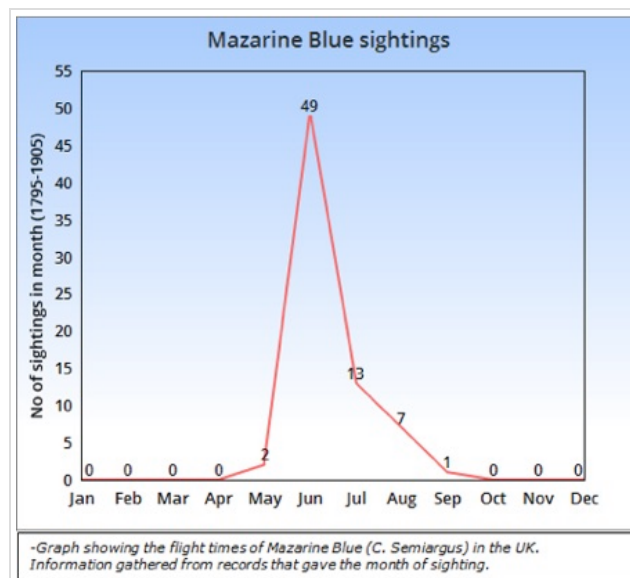
**Abstract:** This article explores various causes for the extinction of the Mazarine Blue (*Cyaniris semiargus*) in Great Britain. It differs from past articles by elaborating upon changes in distribution and flight period (illustrated appropriately) in order to provide a clearer understanding into the possible reasons behind, and pace of, the butterfly's demise.

### Introduction

Fascinated with the causes of extinction of Lepidoptera in Great Britain, including the Mazarine Blue (*Cyaniris semiargus*), it became immediately clear to me, whilst researching available literature, that there was some uncertainty surrounding the cause of the demise of this insect.

Its life history in the UK has never been fully documented and we will probably never know the exact lifecycle of this butterfly from when it was resident in England and Wales; the majority of our understanding derives from colonies still present elsewhere in Europe. The previous and most widely documented habitat of this butterfly included meadows and grassland containing its primary larval foodplant, Red Clover (*Trifolium pratense*). Based on an analysis of old records and notes, Andrews (2014) added that the species was also known to be present in 'woody situations abounding in grass' (Morris, 1853) with other larval foodplants, such as Thrift (*Armeria maritime*), described.

We can see from historic records (that provide the date of sighting or capture) when the species flew during the summer months in Great Britain, as collated in Figure 1. Peak emergence occurred in June and July but, in some years, individuals were noted as early as May and as late as September. It appears that the butterfly was widely believed to have been a univoltine species, with its phenology suggesting that it was able to produce a second brood in suitable years, as it does on the continent where up to three broods are produced in some years.



**Figure 1 - A summary, by month, of Mazarine Blue sightings**

The uncertainty and lack of detail of the demise of the Mazarine Blue was a result of both its rarity as well as the speed at which the butterfly disappeared from our shores, just over 150 years after it was first discovered. This fast and dramatic decline, resulting in large distribution contractions, was also seen in other butterflies (Burton, 1975), such as the native Large Blue (*Maculinea arion*) and the Black-veined White (*Aporia crataegi*). Recent revelations by Andrews (2014) not only highlighted the butterfly's historic appearance in woodland but also showed that it survived until at least 1905 in the north of Wales.

### A local rarity from the start

From the very first works describing the British Butterflies, the Mazarine Blue has always been considered a species of great rarity and is one of the species listed in John Ray's *Historia Insectorum* (Ray, 1710). Believed to be the first description of the butterfly, Ray's text is not very detailed or precise, leading to suspicions that Ray was actually referring to the Small Blue (*Cupido minimus*) or the Silver-studded Blue (*Plebejus argus*).

In *The Papilios of Great Britain*, Lewin (1795) describes the 'Dark Blue', labelling it *Cimon*. Lewin wrote, "this is a very rare butterfly with us" and gives an account of his first sightings, "... in August, 1793, I took two or three of the butterflies, flying in a pasture field at the bottom of a hill near Bath". Clearly the butterfly was not, at this time, well known to British enthusiasts, but sightings of it would soon become more frequent. There have been several hundred sightings over the years, with many of the more recent almost certainly the result of deliberate releases or immigration from the continent. The likelihood of native specimens still surviving to the present day is negligible given the lack of sightings in the past century. In the last 70 years alone, only 2 sightings have been recorded (See Table 5).

The growth in the number of records, especially during the 19th Century, is most likely due to a corresponding increase in the number of naturalists who documented their sightings, especially when they came across known rarities, rather than an increase in the population.

### Strongholds in Southern Central and Southwest England

Only a small number of these butterflies were seen in Britain in the 1700s, and subsequent attention focused on Glanvilles Wootton, Dorset; a village that was widely known amongst butterfly enthusiasts and an area that had turned up many interesting records. These have included a number of Continental Swallowtail (*Papilio machaon gorganus*) sightings between the years 1808 and 1816 by J.C. Dale (Dale, 1890). One well-known resident of Glanvilles Wootton, James Charles Dale (1791-1872), began to write of the sometimes large and thriving colony of Mazarine Blue around his home. Documentation began in June 1808 when Dale was just 17 and the colony of *semiargus* was obviously already well established. Nobody can provide information on when the butterfly first occurred in the area but who is to say whether the species had been present there for many years before?

Tables 1, 2 and 3 show records of the species in several of Dale's pasture meadows where the butterfly was once present. Sadly the number of individual butterflies seen was not recorded (no sightings is shown with "-").

**Table 1 - Dates of Dale's Sightings from Mullett's Long Ground (Glanvilles Wootton)**

Year	June	July	August
1808	22, 26, 27	-	-
1811	-	24	-
1812	-	12	-
1813	11, 12, 16	-	-
1814	-	4, 25	1
1815	10, 12, 21, 23, 26	-	-
1816	13, 16	8, 9	-
1818	12	-	-
1819	11, 15, 19, 22, 23, 27	-	-
1821	29, 30	-	-
1822	18	-	-
1823	25	-	-
1825	15, 18	-	-
1828	26	-	-
1830	9, 29	-	-
1831	14, 22	-	-
1834	7, 11	-	-
1835	15, 17	-	-
1836	-	4	-
1837	13	-	-
1839	5, 12	-	-

**Table 2 - Dates of Dale's Sightings from Mullett's Copse (Glanvilles Wootton)**

Year	June	July	August
1820	-	1	-

**Table 3 - Dates of Dale's Sightings from Long's Mead (Glanvilles Wootton)**

Year	June	July	August
1820	19	-	-

As the tables show, butterflies were seen in the pasture meadows (that the Dale family owned) between 1808 and 1839, including years of apparent scarcity or absence. Years with no records are interspersed with years of seeming abundance.

The immediate meadows surrounding Dale's property were not the only ones home to *C. semiargus*. The nearby hill-fort known as Dungeon Hill, an area of meadow and grassland, was also listed with a record on 17th June 1820 by J.C. Dale but, again, no number of specimens was given. Even earlier, in 1814, a single specimen was taken by L. Denny on 4th August in nearby Middlemarsh (Brown, 1980), around 2km away from the Glanville Wootton colony.

Slightly further afield, but still within Dorset, sightings are given from Sherborne (Westwood, 1841) and Powerstock and Hazelbury Bryan (Dale, 1890) but there is uncertainty regarding the precise location of these records. There is also a record from Lodors, Dorset on the 27th July 1811 (numbers unknown) (Brown, 1980). Even more intriguing are the sightings from Parley Common/Heath in East Dorset where Dale recorded adults in 1816 and 28th May 1833 (Newman, 1871). Perhaps these butterflies had dispersed from the main colony in Glanvilles Wootton in search of new habitat, had simply wandered away from the stronghold, were blown by chance to a new area or were in fact from other discrete populations close by.

It certainly seems that along the south there was a 'belt' of colonies stretching from west Dorset through south Hampshire and the Isle of Wight. J.C. Dale lists the butterfly in Ringwood and Brockenhurst (Newman, 1871). Heslop (1955) explained that it seemed likely that a

colony in the Avon valley near Ringwood survived in the vicinity until the early decades of the nineteenth century.

Charles William Dale (1852-1906), James Dale's son, includes details of his father's notes in the book *The History of our British Butterflies* (Dale, 1890) where the species is said to have occurred 'in profusion'. Mentioned within this, Dale states Glamorganshire as a stronghold and records support this with the majority of later sightings reported from this location.

## A Dramatic Decline

The dramatic decline of the Mazarine Blue is quite intriguing, which I believe to be the result of a number of factors working together. Similarities with other butterfly declines in this country can be noted, as I discuss below.

Even in the apparent stronghold of Dorset, the butterfly vanished rapidly and there were no more sightings there after 1839 according to J.C Dale (Dale, 1890) who also mentions that the butterfly slipped away from known sites in Somerset and Gloucestershire around 1849. The species vanished from Cambridgeshire during the 1850s, with the last known specimens captured by C. Albert Beadan in 1858 (Newman, 1871). The decline accelerated and *semiargus* disappeared from Glamorganshire in 1877 and Pembrokeshire in 1883 (Coleman, 1901). The last English locality was North Lincolnshire, where the species held on until c.1903. Sadly, not long after, the butterfly vanished entirely from the UK after the last two specimens were caught by G.B Kershaw in Llanbedrog, 1905 (Andrews, 2014).

The deterioration in the numbers of Mazarine Blue over such a short period, and its decline in numerous strongholds, is unusual and many theories try to give an explanation.

A number of now extinct UK species went into decline during the first half of the 19th century and some believe this was due to a series of poor summers and severe winters where many contracted their ranges considerably (Burton, 1975). To find out more on these seasonally adverse weather conditions, I carried out research into the weather and climate of the early 1800s. Table 4 correlates the absence of butterfly sightings in Dorset (from J.C. Dale) with the previous winter's weather in the south of England, where available (netweather, 2015).

**Table 4 - Correlation of years of no sightings with conditions during the previous winter**

Year of Absence	Conditions during the previous winter
1824	-
1826	Ice on the Thames
1827	-
1829	A cold year. Continuous frost throughout January. The summer was wet, and quite cold. Over an inch of snow fell in early October, although where isn't certain, most likely to be London. 6 inches fell in London and the South in late November. Northerly and easterly gales. 1829-30: Severe winter. Continuous frost from the 23rd to 31st December, 12th to 19th January, and 31st January to 6th February. Ice on the Thames from late December.
1832	-
1833	-
1838	Severe frost of January 1838 (a 2 month frosty period). 20th January saw temperatures as low as -16C in London, accepted as the coldest recorded here of the 19th century. -20C recorded at Blackheath, and -26C at Beckenham, Kent. The temperature at Greenwich was -11C at midday! The Thames froze over.
1840-1841	-

The weather in the United Kingdom is widely considered to be unique in the world (Winterman, 2013), certainly in Europe with conditions continuously changing in a matter of hours with the potential for unseasonable weather throughout the year. Great Britain is an island that sits largely exposed between the vast Atlantic Ocean, the solid landmass of continental Europe, the Arctic Ocean and the North Sea. Our weather is controlled by five air masses (Arctic Maritime, Polar Maritime, Tropical Maritime, Polar Continental and Tropical Continental) and the jet stream that passes overhead. As climate change has progressed, the extreme weather we receive has become increasingly frequent (Winterman, 2013).

Since the Mazarine Blue overwinters in the larval stage, the famously erratic weather patterns of Britain (in particular the successions of extreme weather conditions; harsh winters or cold summers, interspersed with years of unusually mild temperatures) could have had a negative effect on the population. This could be the reason for a number of gaps in J.C. Dale's sightings. For example, there are no records for 1838, a year where the preceding winter was referred to as 'severe' with temperatures of -26C being recorded in Beckenham in Kent (netweather, 2015).

The notorious but natural climate of Great Britain cannot, however, be the sole cause of the Mazarine Blue's disappearance, for it is clear that the species was able to survive in much the same conditions over the previous two hundred years, or thereabouts. On the continent, where the butterfly still occurs (and, on occasion, in large numbers) the conditions are seemingly similar. Climate cannot, therefore, be the sole factor for the extinction of our native colonies.

The United Kingdom has lost some 98% of its native wildflower meadows and grassland along with many other habitats suitable for this butterfly, partly due to the intensification of farming practices (Harrabin, 2014). The increased use of herbicide and pesticide has reduced biodiversity, removing both the pests but also the harmless and beneficial species (Harrabin, 2014).

Red Clover (*T. pratense*), the insect's main larval foodplant, was once common on British farmland with the plant grown as a nitrogen fixer whilst the fields were left fallow. This provided ideal egg-laying conditions and also stepping-stones between colonies. As farming technology improved, much of these areas were mown during harvest to such an extent that immature stages of the butterfly - eggs, larvae and pupae - were likely destroyed. The increased use of artificial nitrogen fixers led to the reduction of Red Clover farming for more productive crops such as wheat, with general intensification drastically reducing suitable habitat (Harrabin, 2014). The butterfly would have been lured into seemingly suitable egg-laying conditions only for the immature stages to be destroyed later in the season.

The years of extreme weather conditions likely had an effect on the butterfly's population size, as it does today on our remaining native

species. The reduction in numbers may have led to local extinction in some areas where the species had been maintaining itself in very small numbers. However, in my opinion, the root cause of the extinction of the Mazarine Blue was the widespread destruction of habitat that lead to a loss of suitable breeding sites. The constant and increasing depletion of traditional habitat would subsequently result in a reduction in numbers of the butterfly. This fragmentation between sites could also have been a major disadvantage to the species which, from the numbers recorded, appears to have been present in England and Wales in small, distinct colonies that were previously able to interact with one another through a linked landscape. Over the generations, isolated colonies would also feel the effect of interbreeding in a weakened gene pool, making the colony more susceptible to disease and consequently unable to survive the increasingly wet and humid winters where disease is more likely to have a significant impact.

### Was 1905 the year of extinction?

It was widely believed that the Mazarine Blue died out around June 1903 in Lincolnshire (SE7803) until the revelation of the two specimens from North Wales in 1905 (Andrews, 2014). Was this really the end of this insect in Britain?

After months of research and examination of records, I believe the butterfly may have survived unrecorded for a much longer period. Although not widely noted in previous literature, I have come to the conclusion that the butterfly could well have still been flying up until 1921, sixteen years later than the previous watershed. Many will automatically assume that I am talking of the numerous singular sightings since 1905, which are almost certainly migrants, or releases of captive bred stock. Let's examine the evidence: Table 5 lists sightings within the UK since the year 1900: (-) = No known data.

**Table 5 - Sightings within the UK since the year 1900**

Year	Date	Location	Number Seen	Notes
1901	-	Gorleston-on-sea	3	Possibly Genuine
1902	16th July	Beachy Head, Eastbourne	1	Migrant/Release
1903	June	Epworth, Lincolnshire (SE7803)	-	Thought to be last genuine English specimens.
1905	13th Aug and 2nd Sep	Llanbedrog, Wales	2	Thought to be last genuine British specimens.
1908	-	Mortimer, Berkshire	1	Collected by Mr.Fonseca and confirmed by A.E Hudd (The Entomologist. Volume v.51 1918).
1916	-	Northeast Bristol/Gloucestershire border	1	Heslop was 'familiar' with the site
1917	-	Eastbourne	1	Migrant/Release
1920	-	Barnhill Quarry, (ST78)	-	Proposed/possible Genuine Colony
1921	-	Close to the city of Bristol	1	Proposed/Possible Genuine Colony
1934	-	Fowey, South Cornwall	1 (Male)	E.B Ford (Butterflies 1945)-Release/Migrant
1958	-	Rogate	1	Migrant/Release
1998	-	SK58 (Grid Ref)	1	Migrant/Release

It is very likely that there have been more migrants or releases throughout the 20th and 21st century but, to most enthusiasts, this species would simply appear as another blue butterfly and go unrecorded. On their own, these single sightings provide, of course, little evidence of a genuine surviving colony. However, in volume 67 (1955) of *The Entomologist's Record and Journal of Variation* I stumbled across an interesting entry. The enthusiast and entomologist I.R.P. Heslop (1904-1970) writes "*In the Bristol area itself I have no doubt a colony of the species ... survived at least until 1921*". Rumours obviously sparked excitement and he even goes on to say that their occurrence in previous years had "*caused not only much local movement but the permanent disruption of some colonies*".

Heslop received two specimens of *C. semiargus* from the area; both records feature in Table 5. One was from northeast Bristol towards the Gloucestershire border, collected in 1916 from a site he was "*familiar with*". The other was brought to him by a "*school-fellow ... fresh-killed in his tin*" in 1921. The boy was not able to give the exact site location but it was close to the city of Bristol (Heslop, 1955). These exciting accounts by a respected entomologist raise the real question as to whether the Mazarine Blue had indeed survived in a quiet corner of Bristol or Gloucestershire for up to sixteen years after it was thought, by most, to have disappeared.

So why there has been little or no mention of these sightings in recent times? The accounts by Heslop were published back in 1955 in *The Entomologist's Record & Journal of Variation*, which many entomologists may have since forgotten, or may have dismissed the sightings as migrants or releases. This is always a possibility but did these migrants or releases become resident for a number of years?

After some investigation there are, indeed, hints at possible locations, but the exact details are not given so there is some uncertainty. One of these possible sites was situated approximately 12km north east of Bristol. The site, Barnhill Quarry (ST78), is one of the sites listed in 1920 from records supplied by Natural England; however, the number of sightings or name of recorder is not given. The Barnhill Quarry site still exists but is no longer used for quarrying. The site is predominantly rough fields based on carboniferous limestone, a habitat known to be suitable for the Mazarine Blue. The Barnhill Quarry record is also intriguing since it sits, chronologically, between the two specimens given to Heslop at a nearby location, although it is possible that the two latter records are in fact, the same one with a slight confusion over dates.



**Figure 2 - Barnhill Quarry in 1929, 8 years after the record: Rough grassland habitat is visible with meadows very likely in surrounding fields, perhaps with Red Clover growing in the farmers' fields**

Photo © <http://www.britainfromabove.org.uk>

One must not forget the 1793 specimens taken on 'a hill near Bath' by Lewin (Lewin, 1795), the city being only approximately 16km away. It is likely that there were unrecorded colonies between Bath and Gloucester. It is only the Bristol Channel that would have separated the proposed colonies near Bristol with the stronghold of Glamorganshire in South Wales and miles of interspersed suitable habitat between Dorset and Bath.

### Chances of a re-colonisation

As discussed earlier, one of the primary causes of the extinction of this butterfly was most likely the loss and dramatic alteration of habitat, much of which will not be restored, at least not to its original condition. Natural re-colonisation from migrant butterflies is also unlikely today, as the sparsely distributed colonies in Europe continue to decline throughout much of their range.

Artificial introduction could theoretically be possible in areas of suitable habitat with plenty of foodplant; research was carried out with regard to the feasibility of such a reintroduction (UNESCO, 2009). Dorset, a historical stronghold, still has some moist flower-rich meadows abundant with Red Clover, particularly in the Blackmoor Vale area and, if enough livestock was to be released over a number of years, the idea is feasible so long as the habitat is managed sympathetically. However, unless experts can figure out exactly why the butterfly vanished from Britain in the first place, and why it continues to decline in the rest of Europe, then a reintroduction attempt would be futile and therefore inadvisable.

The absence of a colony of this species in the United Kingdom has continued for at least the last 94 years and the chance of the butterfly re-establishing itself naturally within our shores is now unlikely. The face of Britain has also changed greatly since the Mazarine Blue was first recorded; available habitat has both diminished and fragmented as farming practices and technology continue to advance.





Figure 3 - The author has created an [interactive map](#) of Mazarine Blue sightings

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## Bibliography

- Andrews, P. (2014) *New Perspectives on the Mazarine Blue (Cyaniris semiargus) in the British Isles* [Online]. Available from <http://www.dispar.org/reference.php?id=90> [Accessed 03 December 2014].
- Brown, S.C.S. (1980) *J.C. Dale of Glanvilles Wootton*. Dorset: Dorset Natural History & Archaeological Society, Dorset County Museum.
- Burton, J.F. (1975) *The Effects of Recent Climatic Changes on British Insects*. London: Taylor & Francis.
- Butterfly Conservation, South Wales Branch (2006) *Monmouthshire Moth & Butterfly Group Newsletter* [Online]. Available from <http://www.southwales-butterflies.org.uk/newsletters/MMGNewsletter40October2006.pdf> [Accessed 03 December 2014].
- Butterfly Conservation, West Midlands Branch (1985) *Butterflies of the West Midlands* [Online]. Available from [http://westmidlands-butterflies.org.uk/newsletters/bnl13\\_04.htm](http://westmidlands-butterflies.org.uk/newsletters/bnl13_04.htm) [Accessed 06 December 2014].
- Coleman, W.S. (1860) *British Butterflies*. London: George Routledge and Sons Ltd.
- Coleman, W.S. (1901) *British Butterflies*. London: George Routledge and Sons Ltd.
- Dale, C.W. (1890) *The History of our British Butterflies*. London: John Kempster.
- Essex Field Club (n.d.) *The Essex Field Club* [Online]. Available from <http://www.essexfieldclub.org.uk/> [Accessed 03 December 2014].
- Ford, E.B. (1945) *Butterflies*. London: Collins (New Naturalist).
- Furneaux, W. (1905) *British Butterflies and Moths*. London: Longmans Green and Co..
- Griffiths, G.C. (1918) Notes and Observations - The Mazarine Blue. *Entomologist's Record & Journal of Variation*. 51, p.159.
- Harrabin, R. (2014) *Wildflower meadow protection plan 'backfires'* [Online]. Available from <http://www.bbc.co.uk/news/science-environment-29037804> [Accessed 04 March 2015].
- Heslop, I.R.P. (1955) Notes and Observations - The Mazarine Blue in England. *Entomologist's Record & Journal of Variation*. 67, p.178.
- Kershaw, Colonel S.H. (DSO) (1955) Notes and Observations - The Mazarine Blue. *Entomologist's Record & Journal of Variation*. 67, p.100.
- Kirby, W.E. (n.d.) *Butterflies and Moths of the United Kingdom*. London: George Routledge.
- Lewin, W. (1795) *The Papilios of Great Britain*.
- Morris, Rev. F.O. (1853) *A History of British Butterflies*.
- netweather (2015) *The History of British Winters* [Online]. Available from <http://www.netweather.tv/index.cgi?action=winter-history> [Accessed December 2014].
- Newman, E. (1871) *The Illustrated Natural History of British Butterflies*.
- NBN Gateway (n.d.) *Cyaniris semiargus (Rottemburg, 1775) [Mazarine Blue]* [Online]. Available from <https://data.nbn.org.uk/Taxa/NHMSYS0000502047> [Accessed 04 December 2014].
- Oswald, P.H. (1994) *Nature in Cambridgeshire No. 36* [Online]. Available from <http://www.natureincambridgeshire.org.uk/> [Accessed December 2014].
- Ray, J. (1710) *Historia Insectorum*.
- Salmon, M.A. (2000) *The Aurelian Legacy*. Great Horkeley, Essex: Harley Books.
- South, R. (1947) *The Butterflies of the British Isles*. London: Frederick Warne & Co. Ltd..
- Thomas, J. and Lewington, R. (2010) *The Butterflies of Britain & Ireland*. Gillingham, Dorset: British Wildlife Publishing.
- UNESCO (2009) *The UNESCO strategy for Action on climate change* [Online]. Available from <http://unesdoc.unesco.org/images>

[/0016/001627/162715e.pdf](#) [Accessed December 2014].

- Watson, L. and Dallwitz, M.J. (2008) *British Insects: Butterflies* [Online]. Available from <http://delta-intkey.com/britin/pap/www/cyaniris.htm> [Accessed December 2014].
- Westwood, J.O. (1841) *British Butterflies and their Transformations*. London: William Smith.
- Winterman, D. (2013) *Is the British weather unique in the world?* [Online]. Available from <http://www.bbc.co.uk/news/magazine-24305230> [Accessed 01 March 2015].