

Papilio hermione Linnaeus, type species of *Hipparchia* Fabricius (Lepidoptera, Satyrinae): restoring stability to the application of these names

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Abstract. This paper discusses three problems concerning the Woodland Grayling, *Hipparchia fagi* Scopoli, 1763, with respect to the identity and application of the junior name *Papilio hermione* Linnaeus, 1764. In 1977, the late Otakar Kudrna designated a specimen of the Rock Grayling, *Hipparchia alcyone* [Denis & Schiffermüller], 1775, to become the lectotype of *Papilio hermione* – as a result of which *hermione* supplanted *alcyone* as the senior epithet for this species. Because *P. hermione* is the nominal type species of *Hipparchia* Fabricius, 1807, Kudrna’s action rendered this a genus based on a misidentified species. Third, while a majority of lepidopterists have ignored Kudrna’s action and continue to apply the name *H. alcyone* to the Rock Grayling, and still regard *P. hermione* as a junior subjective synonym of *H. fagi*, the formal nomenclature for the Rock Grayling has become unstable because a large minority have nonetheless accepted Kudrna’s lectotype designation and all that follows from it. It is demonstrated here that no syntypes of *Papilio hermione* (or *Papilio fagi*) have survived; consequently, Kudrna’s lectotype designation for *P. hermione* is invalid. By designation of a single specimen of the Woodland Grayling as neotype for both *P. fagi* and *P. hermione*, the two names are rendered objectively synonymous, thereby restoring stability to the species name for the Rock Grayling (as *Hipparchia alcyone*), and to the application of *Papilio hermione* (= *Hipparchia fagi*) as nominal type species of the generic name *Hipparchia*.

Introduction

For over 200 years, *Papilio hermione* Linnaeus, 1764, was universally regarded as a synonym of *Papilio fagi* Scopoli, 1763 – the ‘Woodland Grayling’. The first to make this association was Linnaeus himself, in the 12th edition of “Systema Naturae”, published in 1767. Subsequently, Butler (1868b) validly selected *P. hermione* as the (nominal) type species of *Hipparchia* Fabricius, 1807. Butler made this designation accepting that *P. hermione* was a subjective synonym of *P. fagi*. Scopoli’s name was not among the long list of species included by Fabricius (1807) in his new genus, and was thus ineligible, in its own right, for formal selection.

All was well and stable, apart from two small upsets (detailed later), until the late Otakar Kudrna (1977) designated a specimen of the ‘Rock Grayling’ – then long known as *Hipparchia alcyone* ([Denis & Schiffermüller], 1775) – as a lectotype for *Papilio hermione*. This

was an erroneous designation – with trebly unfortunate consequences, as we elaborate below. However, having said that, Kudrna’s action was not totally unreasonable, as it seems to be the case that Linnaeus muddled together three, or even more species of graylings (*sensu lato*) – and the implication of Butler’s type species designation was not appreciated at the time of Kudrna’s publication.

Below we set out the history of this matter, why Kudrna’s lectotype designation is invalid, the problem of the retrospective misidentification of the type species of *Hipparchia*, the sources of material on which *Papilio hermione* and *Papilio fagi* were based, and offer an objective means to end the continuing instability in the application of Linnaeus’s name – based on designation of a single specimen as neotype for both *P. hermione* and *P. fagi*.

The history of *Papilio hermione* Linnaeus, 1764

The name *Papilio hermione* was based on a specimen or specimens in the collection of Queen Louisa Ulrika (1720–1782) of Sweden, who had asked Linnaeus to catalogue her collections housed at Drottningholm Palace; the name was published by Linnaeus in 1764 (Fig. 1). Three years later, Linnaeus (1767: 773) listed *Papilio fagi* Scopoli, 1763 (Fig. 2) as a synonym of *P. hermione*. Over the following two centuries, the synonymy of these two names for the Woodland Grayling was accepted by most workers. However, some (e.g. Fabricius 1793: 232/3, and Turton 1806: 32) continued to use Linnaeus’s name without any reference to *fagi* [Note however that Aurivillius (1882: 81/82) suggested that Turton’s usage represents a misidentification of *Chazara briseis* (Linnaeus, 1764)]. Others (e.g. Doubleday 1845: 130; Kirby 1871: 86, 705), while explicitly accepting the synonymy, were slow to adopt Scopoli’s *fagi* as the senior name. At that time, priority was less rigidly applied than today.

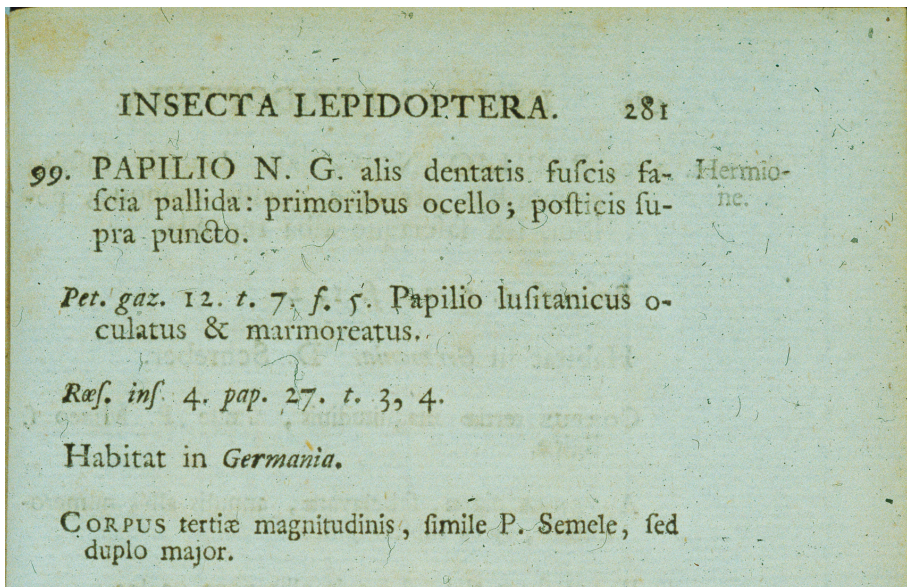


Figure 1. Linnaeus’ synoptic references for *P. hermione* in 1764.

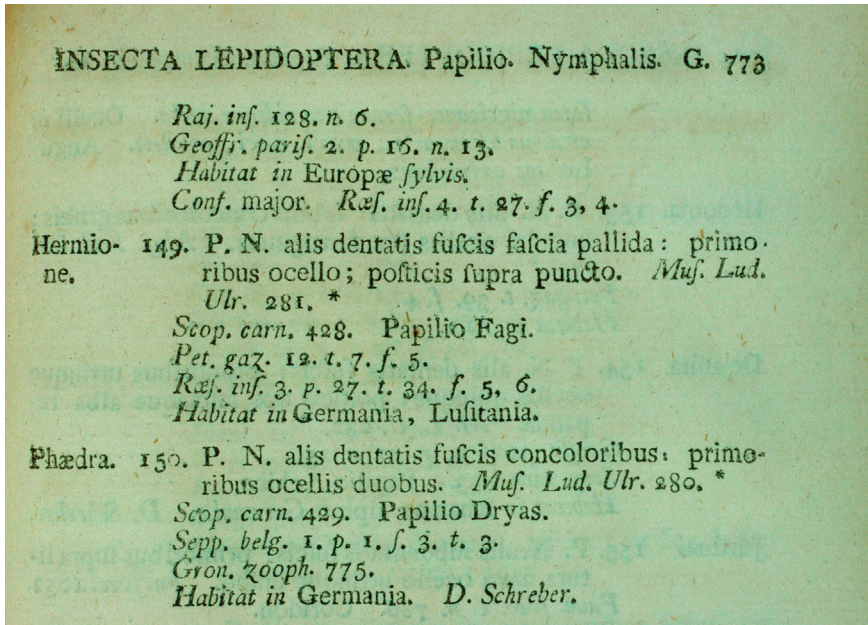


Figure 2. Linnaeus' synoptic references for *P. hermione* in 1767.

Recognising that there were two rather similar grayling species, the Woodland Grayling and the usually smaller Rock Grayling, [Denis and Schiffermüller] (1775), acting as first revisers (ICZN 1999: Article 24.2), accepted that *P. fagi* was applicable to the larger species and proposed the name *Papilio alcyone* for the smaller Rock Grayling. Although the description of *P. fagi* by Scopoli is not definitive (Verity 1913: 158), his associated figure (Fig. 3) is clearly discernible as the larger Woodland Grayling. This nomenclatural synonymy remained stable until Hoffmannsegg (1804) realised that Cramer (1775) had used the specific epithet *Papilio alcyone* for a completely different butterfly, the pierid currently known as *Catopsilia pyranthe* (Linnaeus, 1758).

This discovery was largely ignored at first, the nomenclatural synonymy remaining stable, until Hemming (1943) highlighted this problem and suggested that *Papilio aelia* Hoffmannsegg, 1804, should replace *alcyone* [Denis & Schiffermüller] as the name for the Rock Grayling. This was accepted by Verity (1953) and Forster and Wohlfahrt (1955). However, for the sake of nomenclatural stability, the International Commission for Zoological Nomenclature (ICZN) subsequently decided that the publication of [Denis and Schiffermüller] (1775) should be considered to predate that of Cramer (1775) (Opinion 516, 1958); thus, stability was restored and *Hipparchia alcyone* remained the accepted name for the Rock Grayling.

Stability was, however, once again upset by the designation of a lectotype for the name *Papilio hermione* by Kudrna (1977: 27) in his revision of the genus *Hipparchia*. Unfortunately, Kudrna decided to go against the then prevailing usage and designated a specimen of *H. alcyone* with a label 'hermione' on the pin in Linnaeus's handwriting. This designation was both unnecessary and invalid, as *hermione* was not then in use, and the specimen designated was not a syntype – as it has to be under the 'code' (ICZN 1999: Article 74.2). When this designation was challenged

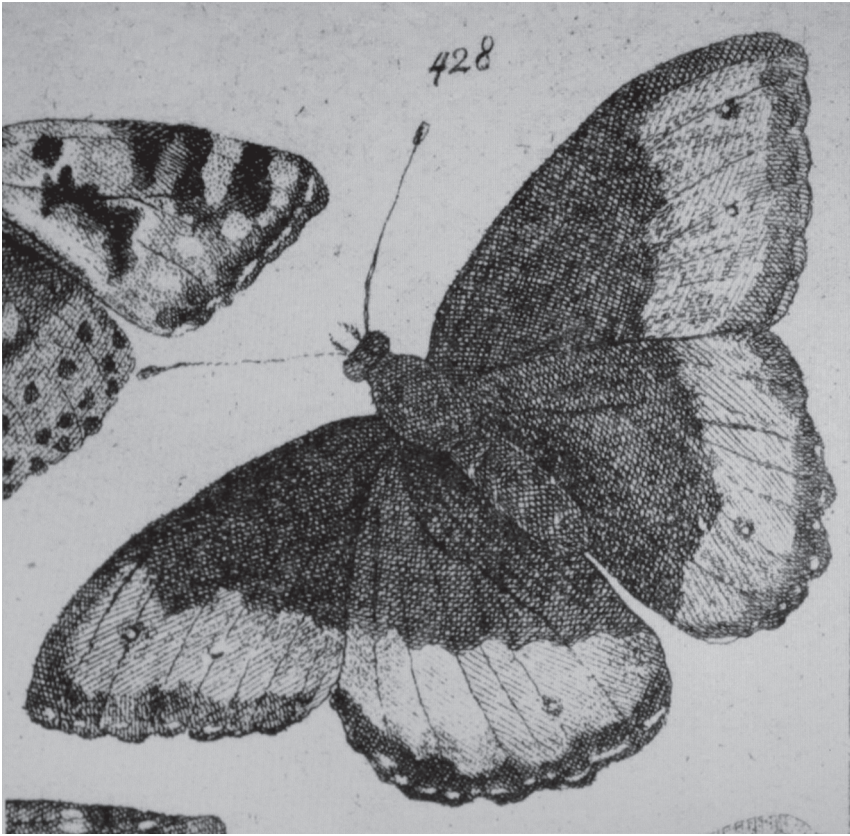


Figure 3. Scopoli's figure of *Papilio fagi*, confirming the identity of his original description published in 1763, this figure was published some time prior to 1785 (Higgins 1963).

by Higgins and Riley (1978), it was suggested by Kudrna (1984) that the specimen could have been removed by Linnaeus from Queen Ulrika's collection (which would place it as a syntype) and added it to his own. There is no proof whatsoever for this contentious statement. A label on a pin has no nomenclatural status, as it is well-known and appreciated that labels can be moved, removed, acquired and placed on the pins of other specimens (Brown 1968: 85; Honey and Scoble 2001: 331). The suggestion by the late Ahmet Ömer Koçak (1983: 168) that the name *hermione* Linnaeus, 1764, should be treated as a *nomen dubium*, because of the apparent lack of any syntypes, which in some ways would seem very reasonable, was not accepted by Kudrna (1984: 234).

What species could Queen Ulrika's *P. hermione* specimens have represented?

Brown (1968: 77) stated that Carl Clerck (1759 & 1764) was commissioned by Linnaeus to paint the butterflies in Queen Ulrika's collections for the sake of posterity, knowing the fragility of butterflies. The two volumes of published paintings were examined but no painting of *Papilio hermione* was found. Brown also stated that there were some unpublished and unbound paintings held by the Library of the Swedish Academy of Sciences in Stockholm; this was confirmed by Maria Dahlbäck (see acknowledgements). The first author visited the Library and examined

these paintings; however, unfortunately, they did not yield a painting of the butterfly named *hermione* either.

Whilst in Sweden, the remnants of the Queen's collection in Uppsala were examined; there was definitely no specimen of *hermione* extant, consistent with the observations of Carl Peter Thunberg (1743–1828), who listed the specimens in the Queen's collection when it arrived at Uppsala in 1803 (Fig. 4; see also Aurivillius 1882).

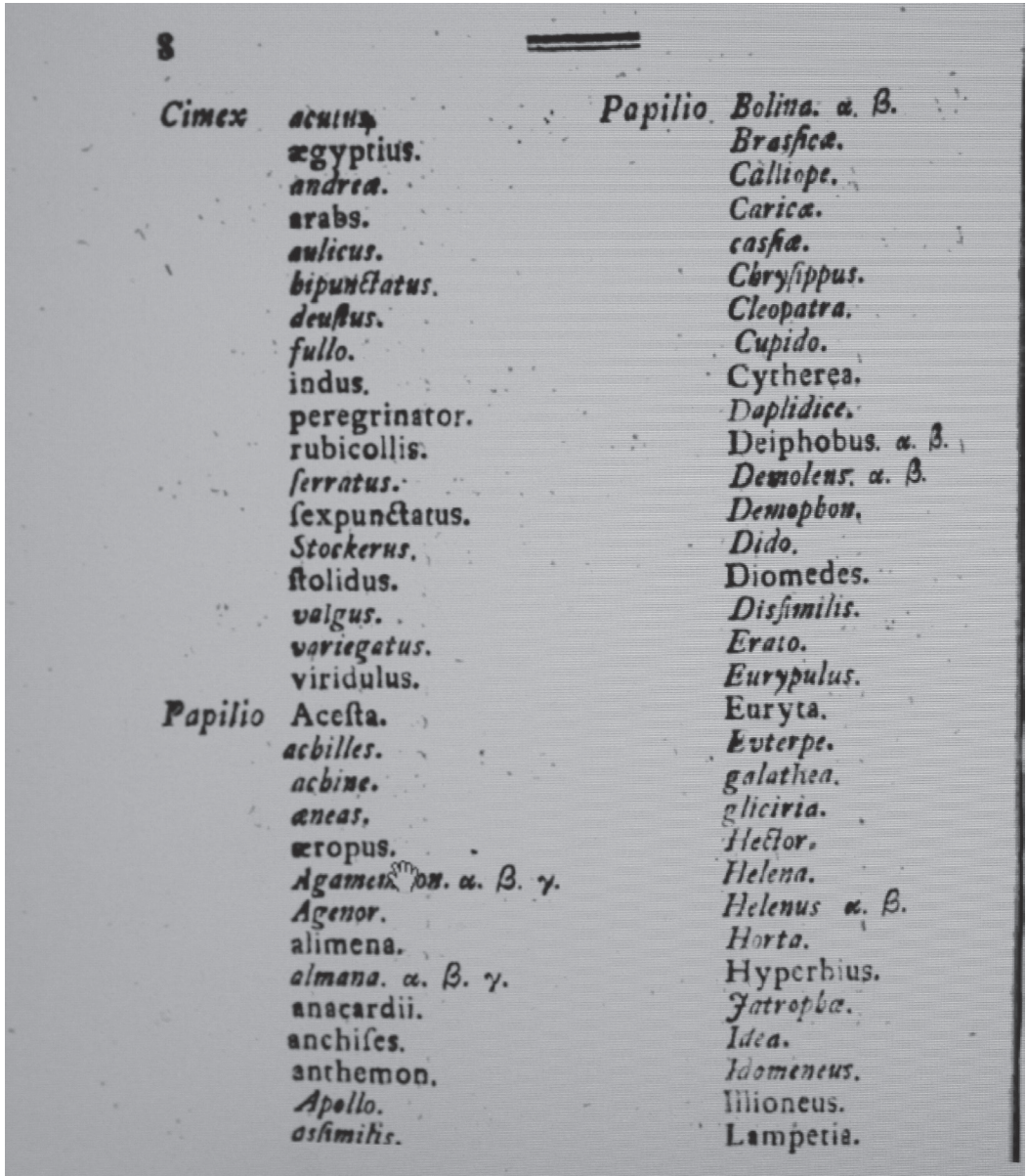


Figure 4. Page 8 of Thunberg (1804), showing section A–L of his alphabetic listing of *Papilio* specimens in Queen Ulrika's collection at the time of its arrival in Uppsala: *Hermione* is not included.



Figure 5. The series of *Papilio hermione* in C.P. Thunberg's collection in Uppsala, all identifiable as *Hipparchia fagi* (Scopoli, 1763).

The entomological collections of Uppsala University also include Thunberg's own collection, in which he used the names of his mentor (Linnaeus), rather than possibly more appropriate (i.e. earlier) names. Four butterflies included under 'hermione' (Fig. 5; 3♂♂, 1♀) are all considered to be *Hipparchia fagi* originating from old German populations (D. Jutzeler, pers. comm. to first author); Linnaeus (1764: 281) gave 'Germania' as the 'habitat' [type locality] for *Papilio hermione*.

On this slender basis it would seem more likely that Queen Ulrika's specimen or specimens of *P. hermione* represented the species known today as *Papilio fagi* Scopoli, rather than any other grayling butterfly.

Why Kudrna’s lectotype designation is invalid

The following points relate to the lectotype designation of Kudrna (1977: 27):

- Linnaeus (1764) based the name *Papilio hermione* on a butterfly specimen or specimens present in the collection of Queen Ulrika of Sweden (see above).
- Linnaeus also cited illustrations by James Petiver (1702, p. 12, pl. 7, fig. 5) and August Johann Rösel von Rosenhof (1761, pl. 27, figs 3, 4; Fig. 1). According to Honey and Scoble (2001: 331), these represent *Hipparchia fidia* (Linnaeus, 1767) (currently known as *Pseudotergumia fidia*) and *Brintesia circe* (Fabricius, 1775), respectively. According to John Chainey (MS), the Petiver material no longer exists, while, according to Horn and Kahle (1936, p. 228), the insect collection of Rösel von Rosenhof is missing (“verschollen”).
- Queen Ulrika’s collection fell into neglect following her death in 1782 (Honey and Scoble 2001: 285).
- The Queen’s collection was bequeathed by King Gustav to Uppsala University in 1803 and was catalogued by Carl Peter Thunberg (one of Linnaeus’s ‘Apostles’ – well-thought of students) on its arrival in Uppsala in 1804, by which time Linnaeus was dead (deceased 1778).
- There was no specimen of *P. hermione* present in the Queen’s collection in 1804 (see Fig. 4) and any original specimens must have been a casualty of the aforementioned neglect (see also above).
- There is no credible evidence to suggest that any of the *Hipparchia* specimens in the Linnaean Society of London collection could have come from Queen Ulrika’s collection (see above).
- In conclusion, there are no syntypes available for selection of a lectotype for the name *Papilio hermione* Linnaeus; consequently, Kudrna’s (1977) designation is invalid.

A second problem created by Kudrna’s lectotype designation

Fabricius (1807, pp. 281/2) evidently included 119 species in his new genus *Hipparchia*, explicitly listing nine of these but without indicating a type: *Papilio hermione*, *P. fauna*, *P. maera*, *P. ligea*, *P. epiphron*, *P. galathea*, *P. pilosellae*, *P. hyperanthus*, and *P. rumina*. With the exception of the last (a papilionid), all represent members of the Nymphalidae: Satyrinae, although only two are now included in the genus *Hipparchia* as currently circumscribed: *P. hermione* and *P. fauna*. The first person to make a valid designation of one of these names to be the type species of *Hipparchia* was Butler (1868b, p. 50), who stated “Typical Species *Hipparchia Fagi* (*Hermione*).” As *Papilio fagi* was not included in Fabricius’s list, the only possible interpretation of Butler’s cryptic statement is that he selected *Papilio hermione* – but in the firm belief that it represented the same taxon as the senior name *Papilio fagi* Scopoli, based no doubt and, as presented above, on Linnaeus’s (1767) own synonymy.

An issue affecting this type species designation was clarified by Cowan (1985), who realised that Butler published two papers in the same year that dealt with *Hipparchia*: one in February (Butler 1868a) and the second in July (Butler 1868b). Hemming (1967: 220), while correctly indicating that Butler had selected *Papilio hermione* as type species, incorrectly cited the February paper, not the later work. Koçak (1983: 167) and Kudrna (1984: 229) were thus misled or failed to appreciate that Butler’s later publication was the relevant source. As a result, because the first of these papers (Butler 1868a: 194) did not mention or associate *P. hermione* with *Hipparchia fagi*, they rejected

Butler's designation, on the grounds that *Papilio fagi* Scopoli, 1763, was not one of the species listed by Fabricius (1807). However, as Cowan made clear, and as indicated above, Butler's (1868b) later selection of '*Hipparchia Fagi (Hermione)*' is valid.

Kudrna's (1977) action, because it broke the synonymy of *P. fagi* and *P. hermione* accepted by Linnaeus (1767) and, critically, Butler (1868b), rendered *Hipparchia* a genus based on a misidentified type species (ICZN 1999, Article 70.3). Rejecting Kudrna's action, together with selection of a single neotype to make *P. hermione* and *P. fagi* objective synonyms (see below), preserves application of the genus *Hipparchia* – as the nominal type species, *Papilio hermione* Linnaeus, is thus now objectively the same taxon as represented by the earlier-established nominal species, *Papilio fagi* Scopoli.

Scopoli's butterflies

None of Scopoli's collection of butterflies is known to have survived; they were almost certainly all lost when his house in Idrija caught fire. A statement by Soban (2005) on the life of Scopoli reports as follows: "Similar misfortunes accompanied him in Idrija where he was to remain for 15 years. He again lost everything in a fire which destroyed his home and all of his family." Thus there are no syntypes of *Papilio fagi* either.

Neotype designation

As there is no surviving type material for the nominal taxa *Papilio hermione* and *P. fagi*, we hereby designate a single specimen of *Hipparchia fagi* (Scopoli, 1763) as neotype for both. The specimen originates from the Austrian state of Styria, a general region where the original material of *P. hermione* ('Germania') and *P. fagi* (Carniola = Krain) could well have come from. In 18th century Europe, Germany consisted of multiple 'Electorates' and 'Kingdoms', including the Archduchy of Austria. Carniola, itself formerly part of the Archduchy, comprised most of present day Slovenia and small areas of Croatia and Italy, and extended north-east as far as Styria, in the southern border region of modern Austria.

The neotype is a fresh male from Kreuzberg (Styria = Steiermark), showing the wing characters typical of the species almost universally known by the name *Hipparchia fagi*. Deposited in the Tiroler Landesmuseum, Innsbruck, Austria (TLMF), the labels on the pin are as follows: on off-white paper printed black: "U. Leutschach Stmk./Kreuzberg – Kleingr[aben]./17.VI 1979 [in purple]/leg. Habeler" [in black]; on black edged white paper printed in black: "TLMF/ Innsbruck/ Slg. H. Habeler/2017-010"; on light blue paper printed in black: "DNA Barcode/TLMF Lep 22537"; on red paper printed in black: "NEOTYPE/ *Papilio fagi* Scopoli 1763 and/ *Papilio hermione* Linnaeus, 1764/ Designated Russell and Vane-Wright/2021. Current species name: / *Hipparchia fagi* (Scopoli, 1763)". The basic data are thus:

Neotype: AUSTRIA • ♂; Styria, Kreuzberg; 400 m a.s.l.; 17 Jun. 1979; H. Habeler leg.; DNA Barcode/TLMF Lep 22537; TLMF ID no.: 1867722.

Kreuzberg is located about 6 km north of the Slovenian border, and 3 km north of Leutschach in southern Austria, where it rises to 633 m. Kleingraben refers to a valley or small river. The specimen is figured upperside and underside, together with the labels on the pin (Fig. 6A–C, respectively). A specimen of this species was chosen for two reasons: firstly Linnaeus himself made the synonymy

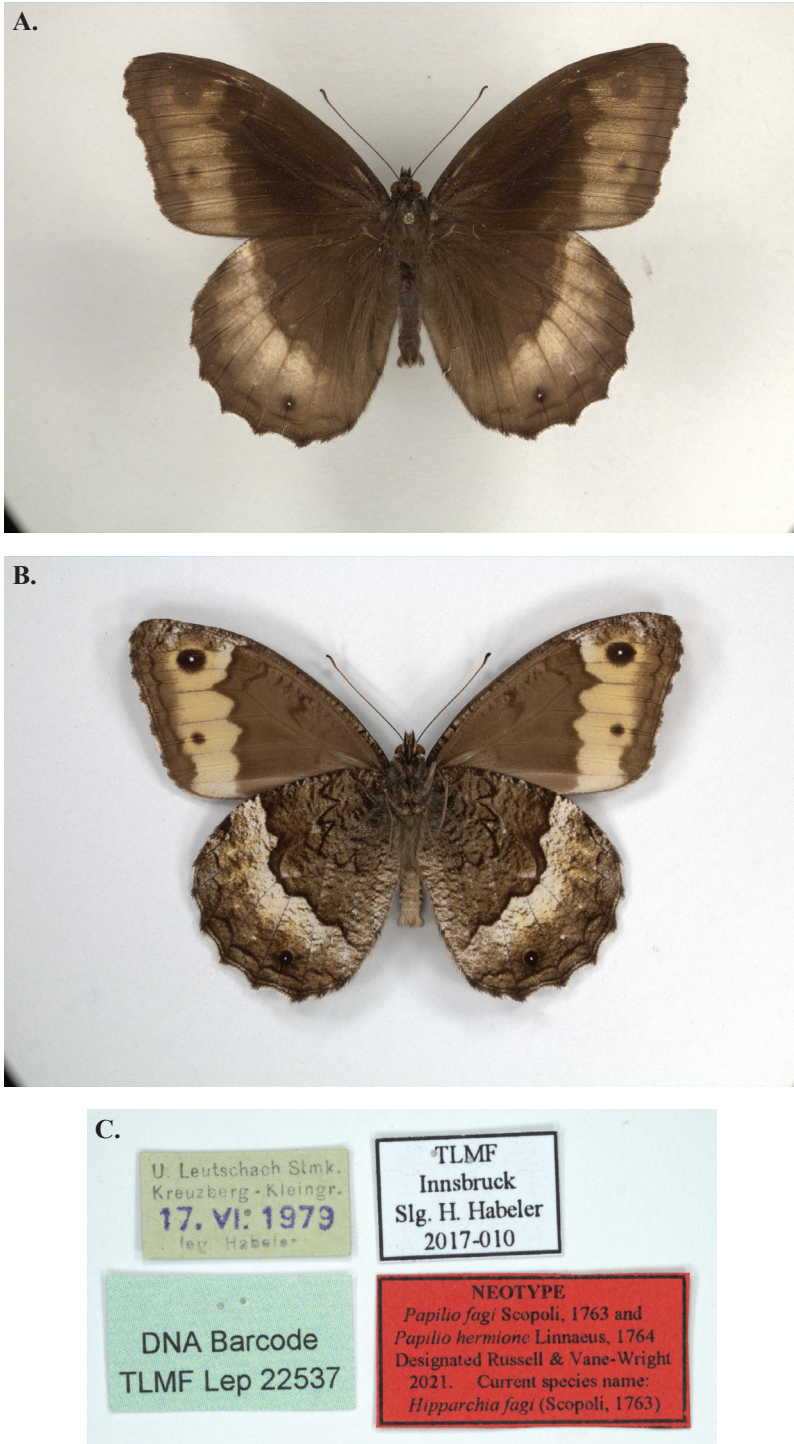


Figure 6. A. Neotype of *Papilio hermione* and *P. fagi*, upperside; B. Neotype of *Papilio hermione* and *P. fagi*, underside; C. Neotype of *Papilio hermione* and *P. fagi*, specimen labels.

in 1767 and, secondly, because this action will reinstate nomenclatural stability by making *P. hermione* an objective junior synonym of *H. fagi*, a synonymy that was almost consistently accepted for over 200 years until destabilised by Kudrna (1977).

A third need for re-establishing the synonymy

Further evidence for the necessity to re-establish this synonymy and thus stability can be seen from the appendices, which include: first, a list of 62 works (including a website) by authors who ignored Kudrna's (invalid) lectotype designation and placed *H. hermione* as a synonym of *H. fagi* (Appendix 1) and, secondly, 26 publications and websites that accepted the lectotype designation by Kudrna (1977) and placed *H. alcyone* as a synonym of *H. hermione* (Appendix 2).

A further consequence of this neotype designation is that the senior name for the Rock Grayling will be re-established as *Hipparchia alcyone* [Denis & Schiffermüller, 1775], a name which a majority of authors still adopt today in preference to '*hermione*' sensu Kudrna (see Appendix 1). Note also, however, the issue of separation of *Hipparchia genava* (Fruhstorfer, 1908) from *H. alcyone* at species level (Jutzeler 2021).

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Appendix 1

A list of publications after 1977 and a website which have ignored the lectotype designation by Kudrna, 1977 and continued to use *Hipparchia alcyone* for the ‘Rock Grayling’ as opposed to *H. hermione*, and/or continue to synonymise *H. hermione* with *H. fagi*.

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Appendix 2

A list of publications or websites in which the authors accepted Kudrna's designation and used the name *H. hermione* for the 'Rock Grayling'.

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<http://www.eurobutterflies.com>
<http://www.pyrgus.de/> (as a synonym of *H. alcyone*!!)
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