

*P. marginalis tremblayi* ♀ dorsal

The Taxonomic Report

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*P. marginalis tremblayi* ♀ ventral

The Nomenclatural Status of Ten Names in the Genus *Pieris* (Lepidoptera: Pieridae)

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Abstract: The nomenclatural status of ten names in the genus *Pieris* are reviewed. The dates and locations of publication of *pseudobryoniae* Verity, 1908 and *adalwinda* Fruhstorfer, 1909 are corrected; they are infrasubspecific unavailable names. The names *pseudobryoniae* Barnes and McDunnough, 1916 and *arctica* Barnes and McDunnough, 1916 are newly identified as available species-group names with at least four and six syntypes respectively. A lectotype of *pseudobryoniae* Barnes and McDunnough is selected, with the type locality being Nulato, Alaska; *browni* Eitschberger, 1983 is a subjective synonym. A lectotype of *arctica* Barnes and McDunnough is designated, with the type locality being northern Norway. The name *arctica* Verity, 1911 is an infrasubspecific unavailable name. The date and location of publication of *pseudonapi* Verity, 1909 is corrected; it is an available name with *pseudonapi* Barnes & McDunnough, 1916 a primary homonym. The name *macdunnoughii* Remington, 1954 is the correct and original spelling; Miller and Brown (1981) provide the incorrect subsequent spelling *mcduddoughi*. The name *passosi* Warren, 1968 is an available species-group name. A lectotype for *passosi* is designated; the name *meckya* Eitschberger, 1983 is a subjective synonym. A lectotype is designated for *pallidissima* Barnes and McDunnough, 1916. The name *angelika* Eitschberger, 1981 is a *nomen nudum*, but *angelika* Eitschberger, 1983 is an available name. We suggest placing two taxa as subspecies of *P. angelika*, resulting in the combinations *P. angelika sheljuzhkoi* Eitschberger, 1983 and *P. angelika schintlmeisteri* Eitschberger, 1983. The publication date of Ulf Eitschberger's *Systematische untersuchungen am Pieris napi-bryoniae-komplex (s. l.) (Lepidoptera, Pieridae)* is determined to be sometime in December 1983, nominally placed as 31 December 1983.

Additional key words: butterfly, nomenclature, margined white, arctic white.

INTRODUCTION

The North American populations of butterflies in the genus *Pieris* have had numerous species- and subspecies-level names applied to them through history. This paper focuses on the nomenclatural status of ten names potentially applicable to North American *Pieris*, and establishes the date of publication of Ulf Eitschberger's book *Systematische untersuchungen am Pieris napi-bryoniae-komplex (s. l.) (Lepidoptera, Pieridae)*. A few minor taxonomic issues are also addressed. The "available" names identified in this paper will be used during future taxonomic revisions, as part of determining the valid name for each taxon.

The provisions of the *International Code of Zoological Nomenclature* (International Commission on Zoological Nomenclature (ICZN) 1999; henceforth referred to as the "Code") are the basis for nomenclatural conclusions. The Code is not "law", but is the carefully codified recommendations of a respected worldwide group of taxonomists. In this review we apply Code provisions to ensure that future scientific discussions can be based on internationally accepted criteria.

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ANALYSIS OF THE NAMES

1. *PSEUDOBRYONIAE* VERITY, 1908

Kudrna (1983) catalogued (p. 60) this name as:

***pseudobryoniae* (fm) – *Pieris napi frigida pseudobryoniae* Verity, 1908 – 010:
146 – [U.S.A.]: Alaska: Nulato; Scandinavia: [N. Norway]: Finmark.**

where the “(fm)” indicates that Kudrna considered the taxon to be an infrasubspecific form. We agree with Kudrna's conclusion but the nomenclatural saga of the word “*pseudobryoniae*” does not end there, as detailed below.

Verity described *Pieris napi* var. *frigida* form *pseudobryoniae* on page 146 [publication date 31 Jan 1908¹] of Verity (1905-1911), with the phrase

“certains exemplaires se rapprochent cependant de *bryoniae* par leurs nervures larges et diffuses et meritent le nom de *pseudobryoniae* (fig. 36 et 37).”

This can be translated to English as

“Certain examples nevertheless compare themselves to *bryoniae* by their wide and diffuse veins and merit the name of *pseudobryoniae* (fig. 36 and 37).”

The species level taxonomy of “*Pieris napi*” and the variety “*frigida*” are clearly stated by Verity, and he indicates that the name *pseudobryoniae* applies only to certain individual examples of var. *frigida*. The name *pseudobryoniae* Verity, 1908 is therefore infrasubspecific, and is not available under the Code, Article 10.2:

“10.2. Availability of infrasubspecific names. An infrasubspecific name is not available [Art. 45.5] from its original publication, unless it was published before 1961 for a “variety” or “form” and is deemed to be available under Art. 45.6.4.1. If an author uses a name, previously published at infrasubspecific rank, in a way which makes it available for a species or subspecies, that author thereby establishes it as a new name and it takes his or her authorship [Art. 45.5.1] (see also Articles 23.3.4 and 50.3.1)”

Several other Articles are cited in Article 10.2. Article 45.5 includes the statement that “A fourth name published as an addition to a trinomen automatically denotes an infrasubspecific entity”. Article 45.6.4.1 is only applicable if the name is deemed by the Code to not be infrasubspecific under Article 45.6.4, which is not the case for *pseudobryoniae* Verity, 1908. The application of Articles 45.5.1, 23.3.4 and 50.3.1, which deal with the consequences of a later author using an infrasubspecific name at the subspecies or species level, are not relevant to the availability of

¹ Publication dates for parts of Verity (1905-1911) are provided by Kudrna (1983), which is in part based on Verity (1914).

pseudobryoniae Verity, 1908, as discussed in the next section. Therefore, the name *pseudobryoniae* Verity, 1908 is an infrasubspecific name not available for taxonomic use under the Code.

Verity's figures of two specimens of *pseudobryoniae*, with the associated figure captions were published on 30 Apr 1909 as Plate XXXII Figures 36, 37. Neither specimen of *pseudobryoniae* Verity, 1908 was identified as the "type" in the original description. However, Verity (1905-1911) starts with an *Index* to all taxa in the work; the *Index* has the publication date of 31 Oct 1911. The explanatory heading on page XIII of the *Index* is shown in Figure 1, and the entry on page XXVIII for the species *Pieris napi*, subspecies *frigida*, race *arctica*, form *pseudobryoniae* is shown in Figure 2. The explanatory heading for the *Index* (Fig. 1) states that an asterisk, as in "XXXII, 37*", specifies that figure 37 is of the "type" specimen. Therefore, this index entry is the designation, by Verity in 1911, of the specimen illustrated in his Plate XXXII Figure 37 (Fig. 4, 5) as the "type" of form *pseudobryoniae*.

INDEX SYSTÉMATIQUE ET TABLEAU SYNOPTIQUE

DE LA VARIATION ET DE LA DISTRIBUTION GÉOGRAPHIQUE

GENRE

espèce

sous-espèce

race

forme (morpha)

aberration

aberration abortive ou strictement pathologique

La première colonne contient le tableau de la nomenclature, la deuxième l'index du texte, la troisième celui des planches et des figures, la quatrième le tableau de la distribution géographique. – (* indique que l'exemplaire figure est le type; indique que l'exemplaire figure est un co-type).

Figure 1. Heading to the *Index* (Verity 1905-1911).

frigida	146 et 333		Rég. arctique paléarct. et néarct., Sibérie orient.
arctica	334	XXXII, 31-33 (32 *) et 36-37 ;	Rég. arctique [type: Scandinavie sept.].
pseudobryoniae	146	XXXII, 37 * [XLVII, 16 *-17	
kamtschadalis	146 et 333	XXXII, 30 et 34-35	Kamtschatka
vitimensis	167 et 332	XLIX, 11 *	Transbaikalie [type: Witim].
pseudoleracea	146	XXXII, 38 *	Labrador.
♀ vivida	333		

Figure 2. *Index* entry for *pseudobryoniae* (Verity 1905-1911).

[the phrase "[XLVII, 16 *-17" pertains to the previous line of the legend, taxon *arctica*]

Verity's index + text + illustrations that were published on 31 October 1911 are all part of the same work, therefore the index is part of the original descriptions of the new taxa that were named at that time. Use of the asterisk to indicate "type" is "holotype" designation for the new taxa published 31 October 1911. However, this particular "type" was designated in 1911, three years after the 1908 description of the taxon. Hence it would be the designation of a "lectotype" by Verity, *if* the Code applied to an infrasubspecific name (which it does not). This "lectotype" is a specimen from "Finmark, Scandinavie", which is the type locality. According to Kudrna (1983), "Finmark" corresponds to northern Norway. However, this "lectotype" designation by Verity was actually without meaning because it was preceded by a "lectotype" designation by Fruhstorfer (1909), as discussed below. In any case the "lectotype" designation is moot, because *pseudobryoniae* Verity, 1908 is an infrasubspecific name and hence is unavailable under the Code; hence terms such as "lectotype" are not actually applicable.

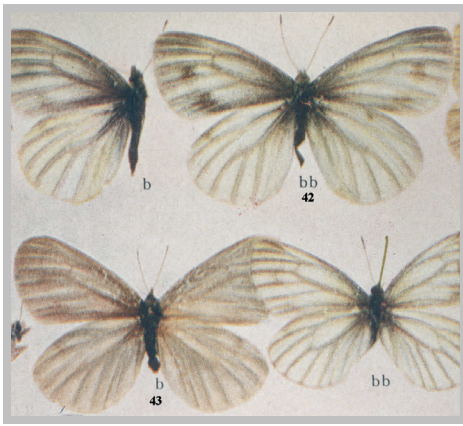


Figure 3. Plate VI, Figures 42bb and 43b of Wright (1905).



Figure 4. Figures 36 and 37 from Plate XXXII (Verity, 1905-1911).

30.	<i>P. napi</i> , L. var. <i>frigida</i> , Scudd.	♂ (Kamtchatka)	[coll. Deckert]	146
31.	Id.	♂ (Ile d'Yesso, Japon)	[coll. de Joannis]	146
32.	Id.	♂ (Norvège sept.)	[coll. Stephanelli]	146
33.	Id.	♂ (Nulato, Alaska)	[coll. de Joannis]	146
34.	Id.	♂ Revers (Kamtchatka)	[coll. Obth.]	146
35.	Id.	♀ (Kamtchatka)	[coll. Deckert]	146
36.	Id.	♀ (Nulato Alaska)	[coll. de Joannis]	146
37.	Id.	♀ (Finmark, Scandinavie)	[coll. Obth.]	146

Figure 5. Legends for Plate XXXII, Figures 30 to 37 (Verity, 1905-1911).

2. ADALWINDA FRUHSTORFER, 1909

Fruhstorfer (1909), after seeing Plate 32 of Verity (1905-1911) that was published on 30 Apr 1909 (see above), determined that Verity's two illustrated specimens represent two separate taxa:

"Unter dem Namen *pseudobryoniae* vereigt Verity pag. 146 und t. 32 f. 36 und 37 zwei heterogene Rassen aus Alaska (Type) und Finnmarken. Letztere ist viel größer und steht natürlich der alpinen *bryoniae* O., namentlich der f. *obsoleta* Rober viel näher als der nordamerikanischen Polarform. Für unsere nordische Rasse, charakterisiert durch seisslichere Grundfarbe und im distalen Teil der Vorderflügel viel dunklere braune Flecke führe den Namen *adalwinda* ein."

This can be translated to English as:

"Under the name *pseudobryoniae* Verity, page 146 and Plate 32 Figures 36 and 37, is combined two heterogeneous races from Alaska (Type) and Finland. The latter is much larger and stands naturally much closer to the alpine *bryoniae* O., namely f. *obsoleta* Röber, than to the North American polar form. For our northern race, characterized through whitish ground colour and in the distal part of the forewings much darker brown spots, is given the name *adalwinda*."

Fruhstorfer (1909) designates the specimen illustrated in Verity's Figure 36 (from Nulato, Alaska) as the "type" of *pseudobryoniae* Verity, 1908. This "type" is the first "lectotype" of *pseudobryoniae*, with publication date priority over the "lectotype" designation of Verity (1911), which was discussed above. This is of no importance, given that *pseudobryoniae* Verity, 1908 is an unavailable infrasubspecific name.

Fruhstorfer (1909) called *pseudobryoniae* Verity a "race" from Alaska, and he clearly considers *pseudobryoniae* Verity to have the same taxonomic rank as what he names as race *adalwinda*. A "race" named at that time is equivalent to "subspecies" under Article 45.6 of the Code **unless** there is clear evidence to the contrary. There are two pieces of information that provide such contrary evidence. First, in the remainder of his paper Fruhstorfer (1909) proceeds to describe four new subspecies in the genus *Pieris*, using the headings "*Pieris napi leovigilda* nov. subsp.", "*Pieris napi nesis* nov. subsp.", "*Pieris rapae micipsa* nov. subsp." and "*Pieris rapae lysicles* nov.

subspec.” He therefore clearly and consistently used the genus-species-subspecies trinomial concept, with explicit use of the term “subspecies” in contrast to his previous use of “race”. Second, Fruhstorfer references race *pseudobryoniae* Verity in the same taxonomic context as when he names race *adalwinda*, and hence the taxonomic placement of *pseudobryoniae* and *adalwinda* is that used by Verity – as a quadrinomial infrasubspecific taxon. These two lines of evidence demonstrate that Fruhstorfer deliberately and consistently uses the term subspecies in a trinomial name, and used “race” for *pseudobryoniae* and *adalwinda* as a quadrinomial infrasubspecific taxon.

The names *pseudobryoniae* and *adalwinda* Fruhstorfer, 1909 are therefore not available as species-group names because they are infrasubspecific names. We leave it to other taxonomists to decide whether to apply to the International Commission on Zoological Nomenclature to take action to conserve the name *adalwinda* Fruhstorfer, 1909 in the interest of nomenclatural stability, as recommended by Kudrna (1986).

3. *PSEUDOBRYONIAE* BARNES AND MCDUNNOUGH, 1916

Barnes and McDunnough (1916) reviewed the North American *Pieris*, and stated:

“In the extreme north [of North America] three distinct forms are separable; in the inland Arctic region (Barren Plains) we have the form *arctica* Verity with strongly blackish marked veins on the underside in both sexes and on the upper side in the ♀; there is however no suffusion of black and the markings are clear cut; we figure a ♂ and ♀ from Chatanika, Alaska (Figs. 6, 7). Along the Alaskan coast we meet with the form *pseudobryoniae* Verity which is what has been considered until recently to be *bryoniae* Ochs., a race now restricted to the Alps of Europe; Wright’s figures (Butt. W. Coast Pl. VI, Fig. 43b and 42bb) are typical of the variation of the ♀. On the numerous islands of the Behring Sea and Alaskan coast the form *hulda* Edw., is found in which the secondaries on the under side are almost totally suffused with greenish in the ♂ sex, leaving only dashes of yellowish ground color; the ♀’s are usually less suffused and on the upper side are intermediate between *arctica* and *pseudobryoniae*; we figure a ♂ underside and ♀ upperside (Figs. 8, 9)”.

They do not illustrate *pseudobryoniae*, however in the figure captions they treat *arctica* and *hulda* as subspecies names. Furthermore they state that “along the Alaskan coast” Wright’s figures “are typical of the variation [of *pseudobryoniae*]”. They clearly considered *pseudobryoniae* to be a geographic subspecies that occurs along at least part of the Alaskan coast, at the same taxonomic level as subspecies *arctica* and subspecies *hulda*. In this paragraph they are using the word “form” with the generalized meaning of “phenotype”, not “form” in the taxonomic sense.

This is relevant in relation to Code Article 45.5.1:

“45.5.1 A name that has infrasubspecific rank under the provisions of this Article cannot be made available from its original publication by any subsequent action (such as "elevation in rank") except by a ruling of the Commission. When a subsequent author applies the same word to a species or subspecies in a manner that makes it an available name [Arts. 11-18], even if he or she attributes authorship of the name to the author of its publication as an infrasubspecific name, that subsequent author thereby establishes a new name with its own authorship and date.”

The first sentence means that an infrasubspecific name can only be elevated in rank through a ruling of the Commission.

- (a) therefore *pseudobryoniae* Verity cannot be “elevated in rank” by Barnes and McDunnough (1916); and
- (b) the action taken by Barnes and McDunnough (1916) is the establishment of a new name, not the elevation of Verity’s name.

The second sentence says that:

- (a) the same word that was used for the infrasubspecific name can be used by a new author, to establish a new name;
- (b) the establishment of the new name must conform to Articles 11-18; and
- (c) it is irrelevant whether the new author thinks he is using someone else’s species-group name.

The name *pseudobryoniae* Barnes and McDunnough, 1916 meets the requirements of Articles 11-18, of which Articles 13-18 are not relevant. All the provisions of Article 11 are met. For Article 12, Barnes and McDunnough (1916) do not provide even the slightest hint of a description or definition. However, Barnes and McDunnough

provide a clear indication by bibliographic reference to specific illustrations in a specific publication by Wright (Article 12.2.7); therefore the specimens represented by those illustrations, reproduced in Figure 3, are syntypes of *pseudobryoniae* Barnes and McDunnough, 1916 and the name is available through that indication. The relevant parts of Article 12 are:

Article 12. Names published before 1931.

12.1. Requirements. To be available, every new name published before 1931 must satisfy the provisions of Article 11 and must be accompanied by a description or a definition of the taxon that it denotes, or by an indication.

12.2. Indications. For the purposes of this Article the word "indication" denotes only the following:

12.2.1. a bibliographic reference to a previously published description or definition even if the description or definition is contained in a work published before 1758, or that is not consistently binominal, or that has been suppressed by the Commission (unless the Commission has ruled that the work is to be treated as not having been published [Art. 8.7])

12.2.7. the proposal of a new genus-group name or of a new species-group name in association with an illustration of the taxon being named, or with a bibliographic reference to such an illustration, even if the illustration is contained in a work published before 1758, or in one that is not consistently binominal, or in one that has been suppressed by the Commission (unless the Commission has ruled that the work is to be treated as not having been published [Art. 8.7])

The reference to "*pseudobryoniae* Verity" in the above quotation is not a clear indication in itself. However, the first line of the Barnes and McDunnough's (1916) treatment of *Pieris napi* states: "Verity has lately (Rhop. Pal. Vol. I) dealt at considerable length with the various races and forms of this species; we offer the following remarks as to the arrangement of our North American races as it is probable that Verity's work is inaccessible to the majority of American entomologists". Hence, Barnes and McDunnough gave an adequate bibliographic reference for *pseudobryoniae* and Article 12.2.1 is applicable. Therefore the two specimens on which the name *pseudobryoniae* Verity was based (Figure 4) are also syntypes of *pseudobryoniae* Barnes and McDunnough, 1916 and the name is also available through that indication.

Barnes and McDunnough (1916) also imply that they examined other specimens that they considered to be *pseudobryoniae*, if so, those specimens are also syntypes (Article 72.4.1). The location of these syntypes, if they are identifiable, is unknown to us.

Therefore *pseudobryoniae* Barnes and McDunnough, 1916 is an available name, and the syntypes are the two specimens illustrated by Verity (1905-1911), plus the two specimens illustrated by Wright (1905), plus any other specimens (identity and location unknown) that Barnes and McDunnough examined and considered to be *pseudobryoniae* (Article 72.4.1).

The type series of *pseudobryoniae* of Barnes and McDunnough likely contains more than one taxon (Eitschberger 1983), therefore a lectotype needs to be designated to provide both taxonomic clarity and foster nomenclatural stability. We therefore designate the specimen illustrated in Plate 32 Figure 36 of Verity (1905-1911), reproduced here in Figure 4, as the lectotype of *Pieris napi pseudobryoniae* Barnes and McDunnough, 1916, with the type locality being Nulato, Alaska. This is consistent with historical, although irregular, use of the name *pseudobryoniae*, with various authors attributed to it.

In our opinion, *Pieris marginalis browni* Eitschberger, 1983 (Type Locality: Seward Peninsula, Alaska) is a junior subjective synonym of *Pieris napi pseudobryoniae* Barnes and McDunnough, 1916. Eitschberger (1983, p. 349) recognized that Plate 32 Fig. 36 represented his taxon *browni*, but did not recognize the availability of the name *pseudobryoniae* Barnes and McDunnough, 1916.

After Barnes and McDunnough (1916), other authors also used the word *pseudobryoniae* as a subspecies-level name and, through indication to Verity (1905-1911), met the Code requirements for to make the name available with their new authorship and date (e.g. dos Passos 1965). These later uses of the name are not available names, because the author of a name is the person who first publishes it (Article 50); in this case Barnes and McDunnough (1916).

4. *ARCTICA* VERITY, 1911

Kudrna (1983) catalogued (p. 60) this name as:

arctica (ra) – *Pieris napi frigida arctica* Verity, 1911 – 020:334 – Scandinavia: [N. Norway]; Finmark – Müller & Kautz (1939): *Pieris arctica* [nec Verity], species.

where the “(ra)” indicated that Kudrna considered the taxon to be an infrasubspecific race. We agree with Kudrna’s conclusion but, as with *pseudobryoniae*, the nomenclatural saga of the word “arctica” does not end there.

Verity described *Pieris napi* var. *frigida* race *arctica* on page 334 [publication date 31 Oct 1911] of Verity (1905-1911), with the sentences:

“Je crois qu’il serait utile de distinguer la race arctique d’Europe par le nom de **arctica** afin d’éloigner une fois pour toutes la confusion engendrée par le fait que cette race n’a pas été distinguée de celle des Alpes. Mes figures 32 et 33 (Pl. XXII [sic – actually XXXII] auxquelles j’ajoute deux autres types de ♀♀ (Pl. LXVII, fig. 16 et 17) donneront une idée exacte de cette race et la comparaison du ♂ (fig. 32) avec le ♂ alpin (fig. 25) l’en distingue bien.”

This can be translated to English as

“I believe that it would be useful to distinguish the Arctic race of Europe by the name of **arctica** in order to dispel for once the whole confusion generated by the fact that this race has not been distinguished from the one of the Alps. My figures 32 and 33 (Pl. XXII [sic – actually XXXII]), to which I add two other typical ones (Pl. LXVII, fig. 16 and 17), will give an exact idea of this race and its comparison (Fig. 32) with the alpine one (fig. 25) will distinguish it well.”

The species level taxonomy of “*Pieris napi*” and the variety “*frigida*” are clearly stated by Verity, and he indicates that the name *arctica* applies to a race within variety *frigida*. Variety *frigida* is of subspecies rank, by Article 45.6.4 of the Code. The name *arctica* Verity, 1911 is therefore infrasubspecific. This interpretation agrees with the listing in the *Index* (with the same publication date), which also has *arctica* as a fourth order name (Fig. 2, 4). The “holotype” is designated in Verity’s *Index* as Plate XXXII Figure 32, with three “paratypes” (Verity’s Plate XXXII Fig. 33 and Plate LXVII Figs. 16, 17).

A possible concern with this interpretation is Verity’s Plate LXVII and its legends for figures 16 and 17 (Fig. 6 below), which appears to create the name *P. napi* var. *arctica* Verity, 1911. In isolation this *arctica* name is specifically defined as being of subspecies rank by the Code (Article 45.6.4), however the Article includes the qualifying phrase “**unless the author also expressly gave it infrasubspecific rank, or the content of the work unambiguously reveals that the name was proposed for an infrasubspecific entity, in which case it is infrasubspecific.**” Verity’s *Index*, the text on page 334, and Plate LXVII were all published together on 31 October 1911; hence they constitute a single work. The *Index* and the text on page 334 provide the required evidence that Verity was giving a fourth order (infrasubspecific) rank to the name *arctica*.

The above evidence demonstrates that the name *arctica* Verity, 1911 is infrasubspecific and therefore is not available under the Code (Article 10.2).

- | | |
|---|------------------|
| 16. <i>P. napi</i> , L. var. <i>arctica</i> , Verity ♀ (Saltdalen, Norvège sept.) | [e coll. Murray] |
| 17. Id. ♀ (Laponie) | [e coll. Leech] |

Figure 6. Plate LXVII legends for *arctica* (Verity 1905-1911)

5. *ARCTICA* BARNES AND McDUNNOUGH, 1916

Barnes and McDunnough (1916) reviewed North American *Pieris*, and stated:

“In the extreme north [of North America] three distinct forms are separable; in the inland Arctic region (Barren Plains) we have the form *arctica* Verity with strongly blackish marked veins on the underside in both sexes and on the upper side in the ♀; there is however no suffusion of black and the markings are clear cut; we figure a ♂ and ♀ from Chatanika, Alaska (Figs. 6, 7).”

The name *arctica* Barnes and McDunnough, 1916 meets the requirements of Articles 11-18, of which Articles 13-18 are not relevant. All the relevant provisions of Article 11 are met. For Article 12, Barnes and McDunnough (1916) provide a definition and figures of two syntypes from Chatanika, Alaska. However, they also provide an indication to Verity's original description, including the figures, through the same mechanism discussed above in Section 3 for *pseudobryoniae*. Therefore the specimens represented by the Verity's illustrations for his *arctica* are also syntypes of *arctica* Barnes and McDunnough, 1916.

Barnes and McDunnough (1916) also imply that they examined other specimens that they considered to be *arctica*; if so, those specimens are also syntypes (Article 72.4.1). Their identity and present location is unknown.

Therefore *arctica* Barnes and McDunnough, 1916 is an available name, and the syntypes are the four specimens illustrated by Verity (1905-1911), plus the two specimens illustrated by Barnes and McDunnough (1916), plus any other specimens (identity currently unknown) that Barnes and McDunnough examined and considered to be *arctica* (Article 72.4.1).

The locations from which the six known syntypes of *arctica* Barnes and McDunnough originate range from Scandinavia to Alaska, and more than one taxon is likely represented; hence designation of a lectotype is required for taxonomic clarity and to stabilize the nomenclature for on-going revisions of the genus *Pieris*. Barnes and McDunnough (1916) considered the name *arctica* to be represented by the "types" of the unavailable name *arctica* Verity. Therefore, we designate the lectotype of *arctica* Barnes and McDunnough, 1916 to be the specimen represented by Plate XXXII Figure 32 of Verity (1905-1911). This is the specimen designated as the "holotype" of *arctica* Verity and shown above (Fig. 4), with the type locality being "Norvège sept.", which is "Scandinavia: N. Norway" according to Kudrna (1983).

It could be argued that the "holotype" of *arctica* Verity is automatically the holotype of *arctica* Barnes and McDunnough. This would certainly be the case if *arctica* Verity was an available name being replaced by another name due to homonymy. However, the circumstance of a name being available through indication of the description of an infrasubspecific name is not addressed by the Code. Hence, designation of a lectotype that is the same as the putative holotype under an alternative interpretation of the Code (with which we disagree) achieves the objective of nomenclatural stability.

The name *arctica* Barnes and McDunnough, 1916 is the available name for the European populations to which the unavailable name *adalwinda* Fruhstorfer, 1909 is presently applied.

After Barnes and McDunnough (1916), other authors also used the word *arctica* as a subspecies-level name and, through indication to Verity (1905-1911), met the Code requirements for to make the name available with their new authorship and date (e.g. dos Passos 1965). These later uses of the name are not available names, because the author of a name is the person who first publishes it (Article 50); in this case Barnes and McDunnough (1916).

6. *PSEUDONAPI* VERITY

Kudrna (1983, p. 60) catalogued this name as:

**pseudonapi (ra) – *Pieris melete melete pseudonapi* Verity, 1911 – 010:330 – Japan:
Yezo [= Hokkaido]: Ichikiri.**

where the "(ra)" indicated that Kudrna believed that Verity had described the taxon with the rank of "race", and that the taxon is infrasubspecific and the name is not available (the reasoning behind this conclusion is doubtful in the context of the Code, but does not need to be discussed here). This conclusion suggested that the name *pseudonapi* Barnes and McDunnough, 1916 had been incorrectly determined to be a homonym by Remington (1954), who replaced it with the name *macdunnoughii*. However, Kudrna's conclusion was incorrect because the text on page 330 of Verity (1905-1911) was not the actual original description of *pseudonapi*.

Verity's Plate LIX and the associated figure legend (Figures 7 and 8 below) were published on 31 Jan 1911. The plate and figure legend together are a valid original description (Code Articles 12.1 and 12.2.7), and that description has date priority over the 31 Oct 1911 text description on page 330 of Verity. The legend for Plate LIX Figures 13-17 used the term "var." (variety) to indicate the rank of *pseudonapi*, which the Code specifically states must be considered to be equivalent to subspecies rank (Article 45.6.4), in the absence of clear evidence to the contrary – as

in this case. The name *pseudonapi*, Verity, 1909 is therefore available, and the specimens represented by Verity's Plate LIX Figures 13-17 are the syntypes.

The name *pseudonapi* Barnes & McDunnough, 1916 is therefore a primary homonym of *pseudonapi*, Verity, 1911, validly replaced by *macdunnoughii* Remington, 1954.

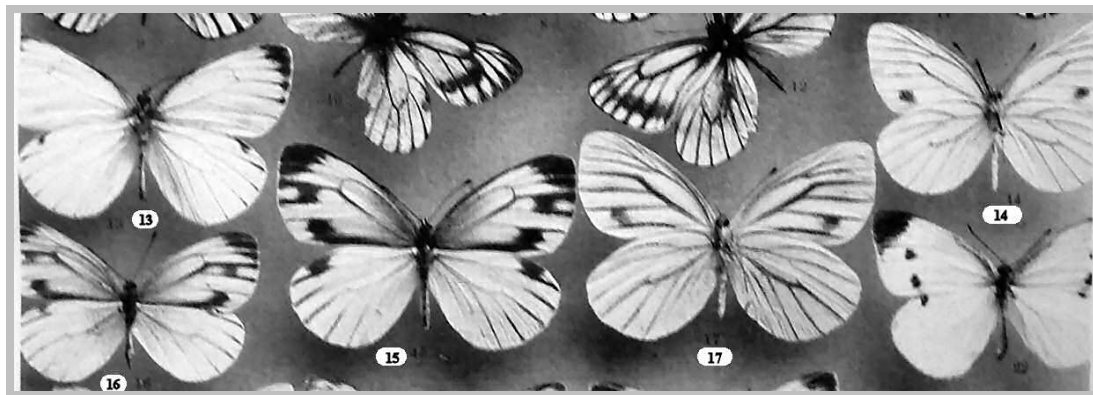


Figure 7. Copy of the figures of the syntypes of *P. melete* var. *pseudonapi* (Verity, 1905-1911, Plate LIX) Figure numbers re-typed for clarity. Figure legends shown above (Figure 7).

13.	<i>P. melete</i> , Mén. var. <i>pseudonapi</i> , Verity ♂ (Ichikishiri, Yesso, Japon)
14.	Id. ♂ Revers (Ichikishiri, Yesso, Japon)
15.	Id. ♀ (Ichikishiri, Yesso, Japon)
16.	Id. ♀ (Ichikishiri, Yesso, Japon)
17.	Id. ♀ Revers (Ichikishiri, Yesso, Japon)

Figure 8. Copy of the figure captions for *P. melete* var. *pseudonapi* from Verity's Plate LIX

7. *MACDUNNOUGHII* REMINGTON, 1954

The action of Remington (1954) in replacing the North American name *pseudonapi* McDunnough, 1916 was correct, because of homonymy, although he cited the wrong date and location (1911, p. 330) for the original description of *pseudonapi* Verity (1 Jan 1911, Plate LIX Figures 13-17; see above). Regardless of the publication date, *pseudonapi* McDunnough, 1916 is a primary homonym of the available name *pseudonapi* Verity, 1911, and hence a new name such as *macdunnoughii* was required to replace it.

The spelling *macdunnoughii*, used by dos Passos (1964), was exactly the same as appeared in the original description by Remington (1954). It therefore could not be an "unjustified emendation" (Code Article 33.2.3) as stated by Miller and Brown (1981) in the note for their checklist entry "*mcdunnoughi*": "[Note] 259. Unjustifiably emended to "*macdunnoughi*" [sic] by dos Passos, Mem. Lepid. Soc. (1): 40 (1964)."

Miller and Brown (1981) use the spelling *mcdunnoughi*; which has two spelling changes from the original description – a change of "mac" to "mc" and a change of double "ii" to single "i". The relevant sections of the Code are:

33.2. Emendations. Any demonstrably intentional change in the original spelling of a name other than a mandatory change is an "emendation", except as provided in Article 33.4.33.2.1. A change in the original spelling of a name is only to be interpreted as "demonstrably intentional" when in the work itself, or in an author's (or publisher's) corrigenda, there is an explicit statement of intention, or when both the original and the changed spelling are cited and the latter is adopted in place of the former, or when two or more names in the same work are treated in a similar way.

33.2.2. The correction of an incorrect original spelling in accordance with Article 32.5 is a "justified emendation", and the name thus corrected retains the authorship and date of the original spelling [Art. 19.2].

33.2.3. Any other emendation is an "unjustified emendation"; the name thus emended is available and it has its own author and date and is a junior objective synonym of the name in its original spelling; it enters into homonymy and can be used as a substitute name, but

33.2.3.1. when an unjustified emendation is in prevailing usage and is attributed to the original author and date it is deemed to be a justified emendation.

33.3. Incorrect subsequent spellings. Any subsequent spelling of a name different from the correct original spelling, other than a mandatory change or an emendation, is an "incorrect subsequent spelling"; it is not an available name and, like an incorrect spelling [Art. 32.4], it does not enter into homonymy and cannot be used as a substitute name, but

33.3.1. when an incorrect subsequent spelling is in prevailing usage and is attributed to the publication of the original spelling the subsequent spelling is deemed to be a correct original spelling.

33.4. Use of -i for -ii and vice versa, and other alternative spellings, in subsequent spellings of species-group names. The use of the genitive ending -i in a subsequent spelling of a species-group name that is a genitive based upon a personal name in which the correct original spelling ends with -ii, or vice versa, is deemed to be an incorrect subsequent spelling, even if the change in spelling is deliberate; the same rule applies to the endings -ae and -iae, -orum and -iorum, and -arum and -iarum.

The change to a single "i" was clearly an incorrect subsequent spelling under Article 33.4. The change from "mc" to "mac" in "*macdunnoughii*" was not a "demonstrably intentional change" (Article 33.2), because there was not "an explicit statement of intention" through the (incorrect) statement by Miller and Brown that the original spelling using "mac" in *macdunnoughii* was incorrect. That could be a reasonable assumption to be deduced from the (incorrect) reference to an unjustified emendation, but they do not explicitly make that statement – they could have been referring only to the use of the double "ii". The spelling changes by Miller and Brown were therefore an "incorrect subsequent spelling" under Code Article 33.3, *unless* the "incorrect subsequent spelling is in prevailing usage". We have seen no evidence in the literature that the incorrect spelling is in prevailing usage.

However, there is the question of whether the spelling *macdunnoughii* was a deliberate change of "Mc" to "mac" when Remington based the spelling on the surname McDunnough. The relevant part of the Code reads:

32.5. Spellings that must be corrected (incorrect original spellings).

32.5.1. If there is in the original publication itself, without recourse to any external source of information, clear evidence of an inadvertent error, such as a *lapsus calami* or a copyist's or printer's error, it must be corrected. Incorrect transliteration or latinization, or use of an inappropriate connecting vowel, are not to be considered inadvertent errors.

32.5.1.1. The correction of a spelling of a name in a publisher's or author's corrigendum issued simultaneously with the original work or as a circulated slip to be inserted in the work (or if in a journal, or work issued in parts, in one of the parts of the same volume) is to be accepted as clear evidence.

Examples. If an author in proposing a new species-group name were to state that he or she was naming the species after Linnaeus, yet the name was published as *ninnaei*, it would be an incorrect original spelling to be corrected to *linnaei*. *Enygmophyllum* is not an incorrect original spelling (for example of *Enigmatophyllum*) solely on the grounds that it was incorrectly transliterated or latinized.

It can be argued that, in parallel to the Code example, the statement in the paper that the taxon was named after McDunnough is sufficient evidence of a *lapsus calami* when the name was spelled "*macdunnoughii*". However, in the example given by the Code for a species named after Linnaeus, the incorrect spelling was not part of latinization but was a simple typographical error. In contrast, the changing of "Mc" to "mac" is part of the latinization of the word "McDunnough" to "*macdunnoughii*", as indicated by a 1964 Code (International Commission on Zoological Nomenclature 1964) recommendation (Appendix D, p. 109):

“21. Personal names bearing prefixes should be treated as follows in forming zoological names:
(a) The prefixes "Mac", "Mc", or "M" should be spelled "mac" and united, as in *maccooki* (McCook), *macoyi* (M'Coy).”

Incorrect latinization is specifically stated to be not considered an inadvertent error, and in this case the spelling change was clearly correct latinization by the standard of the day. As a point of interest, the same requirement is still present in the modern *International Code of Botanical Nomenclature*. The requirement has been dropped from the modern Zoological Code, but there is also nothing forbidding such latinization. In any case, the original spelling was clearly the result of latinization at the time; hence Article 32.5.1 forbids considering it to be an inadvertent error.

The spelling *macdunnoughii* Remington, 1954 is therefore the correct, as well as the original, spelling.

8. *PASSOSI* B. WARREN, 1968

Warren (1968) described *Pieris passosi* as a “hybrid species”, consisting of a population that he considered to be the result of hybridization between *P. oleracea* Harris, 1829 and *P. hulda* W.H. Edwards, 1869. A small number of “pure” examples of the parental species were also present at the type locality, with one specimen of each being identified as such by Warren. The type specimens are syntypes, because Warren explicitly chose not select a holotype, and comprise 17 males and 9 females in the collection of C.F. dos Passos (now part of the American Museum of Natural History collection). Warren incorrectly called the type specimens “paratypes”, rather than “syntypes”. The type locality is Palmer, Alaska, which is south of Anchorage. The relevant Code articles to determine the availability of the name *passosi* are:

Article 1. Definition and Scope

1.3 Exclusions. Excluded from the provisions of the Code are names proposed

1.3.3 for hybrid specimens as such (for taxa which are of hybrid origin see Article 17.2);

Article 17. Names found to denote more than one taxon, or taxa of hybrid origin, or based on parts or stages of animals or on unusual specimens. The availability of a name is not affected even if

17.1. it is found that the original description or name-bearing type specimens(s) relates to more than one taxon, or to parts of animals belonging to more than one taxon; or

17.2. it is applied to a taxon known, or later found, to be of hybrid origin (see also Article 23.8);

Article 23.8. Application to species-group names established on hybrids. A species-group name established for an animal later found to be a hybrid [Art. 17] must not be used as the valid name for either of the parental species, even if it is older than all other available names for them. Such a name may enter into homonymy. For names based on taxa which are of hybrid origin see Article 17.2.

Definitions:

as such. Being strictly what has been cited (e.g. "a photograph as such" is an illustration on light-sensitive paper, not one printed in a work).

hybrid, n. The progeny of two individuals belonging to different taxa. For the treatment of names given to hybrids and to taxa of hybrid origin see Articles 1.3.3, 17, 23.8.

The interpretation of Code Article 1.3 is critical, because it determines whether the name *passosi* is covered by the provisions of the Code, or excluded. Excluded from the provisions of the Code are “names proposed for hybrid specimens as such”; included in the Code are all names proposed for specimens that the author did not consider to be hybrids *as defined by the Code*. Warren did not apply the name *passosi* to specimens that he considered were “the progeny of two individuals belonging to different taxa”, in this case *Pieris oleracea* and *P. hulda*. He considered that hybridization between *oleracea* and *hulda* had resulted in the new species *passosi*, and that the parents of the specimens he examined were other individuals of the species *passosi*. In modern genetic language, the specimens were not F1 hybrids (progeny of different taxa), but were F2, F3, etc. hybrids (progeny of other hybrids, not different taxa). A name falls under the Code, and is not excluded through the provisions of Code Article 1.3, if the author explicitly treats the population as a taxon, not just as a number of individual specimens (Philip Tubbs, International Commission on Zoological Nomenclature, pers. comm.).

Note that Articles 17.2 and 23.8 provide for the case where the author treated the specimen(s) as representing a taxon, not being hybrid(s), but it is later determined that the types are hybrid specimens. In that case the name is an available name under the Code, but, quite logically, cannot be used as a valid name for either parent taxon because it equally represents both.

Extracts from the original description of *P. passosi* demonstrate that Warren treated the specimens as representing a taxon:

“We know several long established hybrid species of *Pieris*, but *P. passosi* gives us one such hybrid in what must be a relatively early stage of development, for the parental species are still present.”

And further on he describes his interpretation of reproduction in the population:

“... hybrids mating with other hybrids of differing characters, on occasions back-crossing to one or other parent race only to be back-crossed again to some hybrid form.”

Code Article 1.3 excludes individual hybrid *specimens* (= individuals) from the mandate of the Code; they are the equivalent of aberrations or other abnormal individuals that do not form a self-perpetuating population. A *taxon* of hybrid origin is specifically not excluded, because it forms a self-perpetuating population. Article 17 explicitly states that names applied to a *taxon* “known to be of hybrid origin” can be available, which reinforces this interpretation. The name *passosi* B. Warren, 1968 therefore falls under the provisions of the Code, and, because the provisions of Articles 11 and 12 are met, is an available name.

The type series of *Pieris passosi* includes at least three taxa – *P. oleracea* (T. Harris, 1829), *P. marginalis meckya* Eitschberger, 1983, and *P. angelika* Eitschberger, 1983 (Eitschberger 1983). We borrowed the syntypes of *Pieris passosi* from the American Museum of Natural History (AMNH), together with a nearly equal number of non-syntypes from near Palmer, Alaska that were also from the dos Passos collection, for a total of 41 specimens. One of the syntypes of *Pieris passosi*, illustrated in Figure 6 of Warren (1968), is missing. There are 15 males and 12 females either labeled as paratypes (= syntypes) of *passosi* or identifiable as having been figured by Warren, rather than the 17 males and 9 females stated by Warren. There is strong sexual dimorphism in the wing pattern of *Pieris* from the Palmer area; hence it is unlikely that Warren incorrectly determined the sex of any specimens. However, about half of the paratype labels were apparently attached at a later date, and two of Warren’s figured “paratypes” lack paratype labels; hence some of the specimens labeled as paratypes may not have been actually part of Warren’s type series. In addition to the three species already mentioned, one specimen appears to be *P. marginalis hulda*, although this may be an extreme variant of *P. meckya*. The type series of *P. passosi* consists of specimens of at least three taxa; hence Warren’s confusion is hardly surprising.

We designate as lectotype of *Pieris passosi* B. Warren, 1968 the specimen shown with its labels in Figure 9, to promote nomenclatural stability and taxonomic clarity. This is the “paratype” (= syntype) specimen represented by Plate IV Figure 5 of Warren (1968); the lectotype is demonstrably from the syntype series because it was illustrated by Warren. This specimen is the same taxon as *Pieris marginalis meckya*, and hence *meckya* Eitschberger, 1983 is a subjective synonym of *passosi*. The remaining syntypes are now paralectotypes that no longer have any nomenclatural significance; paralectotype labels have not been attached due to the uncertainty of the original syntype status of some of the specimens. The lectotype has been returned to the AMNH.



Figure 9. Syntype of *Pieris passosi*

Scale larger than life-size; forewing span = 42 mm.

9. *PALLIDISSIMA* BARNES & McDUNNOUGH, 1916

Barnes and McDunnough (1916) described the taxon *pallidissima* with the words:

“In Utah we meet with a second generation (July, August) which is extremely pale, being practically immaculate in both sexes on both sides; the underside is tinged with pale yellow on secondaries and apex of primaries and the ♀ on the upperside of primaries shows faint traces of upper black spot; it is a further development of *castoria* apparently differing from both this form and *pallida* in the reduction of the black spots in the ♀; we propose the name *PALLIDISSIMA* for the race and figure the type ♂ and ♀ from Provo, Utah (Figs. 4, 5, 10).”

The captions for the figures of *pallidissima* are clearly in trinomial form, with *pallidissima* treated as a subspecies (Plate VI, Figs. 4, 5, 10), as shown in Figure 10.

- | | | | |
|----------|---|--------------|-----------------------|
| Fig. 3. | <i>Pieris napi pseudonapi</i> B. & McD. | Paratype, ♀ | Silverton, Colo. |
| Fig. 4. | <i>Pieris napi pallidissima</i> B. & McD. | Type, ♂ | Provo, Utah. |
| Fig. 5. | <i>Pieris napi pallidissima</i> B. & McD. | Type, ♀ | Provo, Utah. |
| Fig. 6. | <i>Pieris napi arctica</i> Verity. | ♂ | Chatanika, Alaska. |
| Fig. 7. | <i>Pieris napi arctica</i> Verity. | ♀ | Chatanika, Alaska. |
| Fig. 8. | <i>Pieris napi hulda</i> Edw. | ♀ | Pribilof Is., Alaska. |
| Fig. 9. | <i>Pieris napi hulda</i> Edw. | ♂, underside | Pribilof Is., Alaska. |
| Fig. 10. | <i>Pieris napi pallidissima</i> B. & McD. | ♂, underside | Provo, Utah. |

Figure 10. captions for the figures of *Pieris napi pallidissima*

The phrasing of the text could be misinterpreted, without close examination, to indicate that *pallidissima* was named as the summer form of the Utah populations; this was the interpretation of Remington (1954). However, the use of the word “race”, combined with the format of the captions of the figures, makes it clear that *pallidissima* was named as a geographically defined group of populations – a subspecies – that is characterized by the appearance of the summer generation.

Miller and Brown (1981) and Pelham (2008) asserted that there is a holotype of *pallidissima*. However this is impossible because (1) no holotype was explicitly designated in the original description, and (2) the name is based on more than one specimen and hence holotype designation by monotypy does not apply (Article 73.1). The specimens in the type series therefore are all syntypes.

If the taxonomic decision is made that the Utah and Colorado populations of *Pieris marginalis* are the same taxon, as suggested by authors such as Remington (1954) and Warren (1968), then *macdunnoughii* Remington, 1954 may become a subjective synonym of *pallidissima* Barnes & McDunnough, 1916. Given the taxonomic uncertainty related to *Pieris* populations in western North America; we consider it essential to have a clear and objective standard of reference for the name *pallidissima*. We therefore designate the specimen illustrated in Plate VI Figure 4 of Barnes and McDunnough (1916) to be the lectotype of the name *pallidissima*.

10. *ANGELIKA* EITSCHBERGER, 1983

The name *Pieris angelika* was first proposed by Eitschberger (1981). When translated to English, the original text reads:

“4) *Pieris angelika angelika* n. spec.

This species so far has gone under the unjustified name of *Pieris napi pseudobryoniae* auct. (not VERITY, 1908) The populations from Alaska and Northwestern Canada I hereby call *Pieris angelika angelika* n. spec. after the name of my wife, who not only suffers Entomology, but is rather actively involved in promoting and supporting my work. Of this species, there are so far, from diverse localities in the above named regions nearly 200 males and females in the coll. EITSCHBERGER-STEINIGER. Further material is at hand from various private and museum collections. Exact analysis and description of this species follows in the earlier mentioned revision. But in order to already determine the species at this time, a few black and white photographs shall be shown here. These specimens, as well as all other taxa of the *napi*-

bryoniae group, will later be shown on a number of color plates in the revision. Even though there is no recognizable subspecific tendency in the available material, and therefore all examples at hand are treated as species material (exact listing follows later), I would like to designate the vicinity of Elsa and Keno (Canada, Yukon) as the type locality. With this, possible arguments and uncertainties should be avoided in case *angelika* n. spec. is not monotypic.”

The Code requires that, for a name proposed after 1930, a description, definition or bibliographic reference must be provided (Article 13). Eitschberger (1981) provided illustrations, but did not provide even a single phrase of description, definition, or bibliographic reference. The name *angelika* Eitschberger, 1981 is therefore a *nomen nudum*, as stated by Kudrna & Geiger (1985), Pelham (2008) and others. The relevant Code Articles are:

Article 13. Names published after 1930.

13.1. Requirements. To be available, every new name published after 1930 must satisfy the provisions of Article 11 and must

13.1.1. be accompanied by a description or definition that states in words characters that are purported to differentiate the taxon, or

13.1.2. be accompanied by a bibliographic reference to such a published statement, even if the statement is contained in a work published before 1758, or in one that is not consistently binominal, or in one that has been suppressed by the Commission (unless the Commission has ruled that the work is to be treated as not having been published [Art. 8.7]), or

13.1.3. be proposed expressly as a new replacement name (*nomen novum*) for an available name, whether required by any provision of the Code or not.

However, two years later Eitschberger (1983) did provide a description of *Pieris angelika*, and met all the Code requirements to make the name available. The name *angelika* Eitschberger, 1983 is therefore an available name, as stated by Kudrna & Geiger (1985), Pelham (2008) and others. The original description is too long to repeat here.

It is worth noting that two Siberian subspecies attributed to *Pieris bryoniae* by Eitschberger (1983) are, in our opinion, actually subspecies of *Pieris angelika*. The species is therefore a “Beringian” species that during the last glacial period was likely spread through much of the ice-free area that extended from the Yukon and Alaska into eastern Siberia (= Beringia), with a land connection where the Bering Strait is now present. The synonymy is:

***Pieris angelika* Eitschberger, 1983**

- a. ssp. *angelika* Eitschberger, 1983
TL: Keno (el. 4600 feet), Yukon, Canada
- b. ssp. *schintlmeisteri* Eitschberger, 1983
TL: Jakutia, Tommot, Russia
- c. ssp. *sheljuzhkoi* Eitschberger, 1983
TL: Omsukchan, Magadan Gebeit, Russia

Code Article 24.1 requires that the name *angelika* Eitschberger, 1983, proposed as a species-level name, take precedence over *sheljuzhkoi* Eitschberger, 1983 and *schintlmeisteri* Eitschberger, 1983 which were both proposed as subspecies.

11. PUBLICATION DATE OF EITSCHBERGER’S BOOK *SYSTEMATISCHE UNTERSUCHUNGEN AM PIERIS NAPI-BRYONIAE-KOMPLEX (S. L.) (LEPIDOPTERA, PIERIDAE)*

Ulf Eitschberger described many new taxa in his monumental two volume work **Systematische untersuchungen am *Pieris napi-bryoniae-komplex (s. l.) (Lepidoptera, Pieridae)***. The book is dated “1983”, and, according to the author (U. Eitschberger, pers. comm.), all copies were printed, bound and ready for distribution by mid-December, 1983. In mid-December, 1983 Eitschberger placed one copy on display in a public university library, and distributed additional copies to his brother and to E. J. Reissinger (U. Eitschberger, pers. comm.). Further distribution of the book started in February 1984. The issue is whether distributing three copies constitutes “publication”, or whether publication occurred upon recommencing further distribution of the book in February 1984.

Reissinger (1986).summarized this as:

1. Publikationsdatum (pp. 47-48). Eitschbergers Publikation is zwar für 1983 datiert, ist Ende dieses Jahres auch schon in der Zoologischen Universität Bonn zur Einsicht öffentlich ausgelegt worden, die Abgabe und der Versand aller beiden Bände und damit einer allgemeinen Öffentlichkeit zugänglich gemacht, erfolgte ab 4.II.1984. Dies is somit das gültige Datum – the true date of publication according to the International Code of Zoological Nomenclature (ICZN), Article 21 and 22.

This can be translated to English as:

1. Publication date (pp. 47-48). Eitschberger's publication is dated 1983; it was already displayed for public viewing at the end of the year in the Zoological University of Bonn. The delivery and shipping of both volumes, and thus general public accessibility, took place starting 4.II.1984. This is therefore the valid Datum – the true date of publication according to the International Code of Zoological Nomenclature (ICZN), Article 21 and 22.

Note that Reissinger mentions one copy of the book placed on display, but failed to mention the copy given to himself and to Eitschberger's brother. The reason for this is unclear; perhaps he considered it irrelevant.

The 1964 edition of the Code, which was in force when Reissinger published his opinion, states:

Article 9. What does not constitute publication. – None of the following acts constitutes publication within the meaning of the Code:
(6) mere deposit of a document in a library.

Therefore, under the 1964 Code, **if** only the one copy had been deposited in the library, it would not have constituted publication. That restriction no longer exists in the Code, although it suggests how to interpret parts of the current Code. In any case we now know that there were additional copies distributed to the public and hence the restriction actually never applied. However the issue is compliance with the present Code, and it is the 'date of publication' that is relevant; not the act of 'publication'. The present Code glossary states:

Definition:

date of publication, n. Of a work (and of a contained name and nomenclatural act): the date on which copies of the work become available by purchase or free distribution. If the actual date is not known, the date to be adopted is regulated by the provisions of Article 21.2-7.

The criteria of 'delivery and shipping' and 'general public accessibility' used by Reissinger (1986) are not Code criteria for establishing date of publication. The Code only requires that copies 'become available', and it has been established that copies were in fact available in December 1983. Distribution commenced in December 1983, with three copies actually distributed, and the commencement of distribution is the normal 'proof' that a book is available for distribution. However, it is worth noting that the Code does not require *actual* distribution for date of publication; in theory at least, a publication could be available for distribution but no-one chooses to obtain a copy.

Ulf Eitschberger (pers. comm. Jan. 2009) does not remember the exact date, after 25 years, on which he commenced distribution of the book with the first three copies, other than it was well before the end of December. Therefore the date of availability is here set as 31 December 1983, consistent with Article 21.3.1.

21.2. Date specified. The date of publication specified in a work is to be adopted as correct in the absence of evidence to the contrary.

21.3. Date incompletely specified. If the day of publication is not specified in a work, the earliest day on which the work is demonstrated to be in existence as a published work is to be adopted as the date of publication, but in the absence of such evidence the date to be adopted is

21.3.1. the last day of the month, when month and year, but not day, are specified or demonstrated, or

21.3.2. the last day of the year when only the year is specified or demonstrated.

We are not aware of any other taxonomic publication regarding the genus *Pieris* in December 1983; therefore further refinement of the date is unnecessary, even if possible.

Notes regarding Eitschberger (1983):

- 1) Kudrna and Geiger (1985), Shapiro (1985), and Ferris (1989) claimed that some of the many names proposed by Eitschberger (1983) were *nomen nuda*, on the grounds that they failed to meet the Code requirement for a “definition or description”. We have examined the text for all of the new taxa in Eitschberger (1983), and there is clearly a description accompanying every name. The names all meet the remaining requirements of the Code, and hence are all available names. This has generally been accepted by this date, and hence we do not further discuss the issue.
- 2) The taxon *tremblayi* Eitschberger was spelled incorrectly as “*tremblay*” by Kudrna and Geiger (1985), which is an “incorrect subsequent spelling” and is not an available name under Code Article 33.3.
- 3) Eitschberger stated in a footnote that his taxon *guppyi* was a patronym for “Cyril S. Guppy”, this was an error for “Crispin S. Guppy”.
- 4) Eitschberger did not include the collector’s name for many of the specimens he listed as having examined. Most of the British Columbia, Yukon, and Alaska specimens for 1976 and 1977 listed as being in the Eitschberger-Steiniger collection were collected by Crispin S. Guppy. In many cases Guppy retained part of the series collected at each site; for new taxa these retained specimens are not paratypes because Eitschberger did not examine them.

12. SUMMARY OF CONCLUSIONS

1. The name *pseudobryoniae* Verity, 1908 is an unavailable infrasubspecific name.
2. The name *adalwinda* Fruhstorfer, 1909 is an unavailable infrasubspecific name, with the publication date corrected from 1911 to 1909.
3. The name *pseudobryoniae* Barnes and McDunnough, 1916 is newly identified as an available species-group name, with at least four syntypes. A lectotype is designated, with the type locality being Nulato, Alaska. The name *browni* Eitschberger, 1983 is a subjective synonym of *pseudobryoniae* Barnes and McDunnough, 1916.
4. The name *arctica* Verity, 1911 is an unavailable infrasubspecific name.
5. The name *arctica* Barnes and McDunnough, 1916 is newly identified as an available species-group name, with at least six syntypes. A lectotype is designated, with the type locality being northern Norway. It is the available name for the populations to which the unavailable name *adalwinda* Fruhstorfer, 1909 is presently applied.
6. The name *pseudonapi* Verity, 1909 is determined to be an available species-group name. The correct original description is identified and the date of publication corrected to 1909, from 1911. There are five syntypes from the type locality of Jesso, Japan [= Hokkaido]. The name *pseudonapi* Barnes & McDunnough, 1916 is therefore a primary homonym of *pseudonapi* Verity, 1909, validly replaced by *macdunnoughii* Remington, 1954.
7. The name *macdunnoughii* Remington, 1954 is the correct and original spelling as it appears in Remington (1954); the spelling *macdunnoughii* by dos Passos (1964) is correct and is not an “unjustified emendation” as asserted by Miller and Brown (1981). Miller and Brown (1981) provide the incorrect subsequent spelling *mcdunnoughi*.
8. The name *passosi* Warren, 1968 is an available species-group name, with 26 syntypes from the type locality of Palmer, Alaska. The syntypes consist of specimens from at least three species. A lectotype is designated to fix the name to a specific taxon, with *meckya* Eitschberger, 1983 a subjective synonym of *passosi*.
9. The name *pallidissima* Barnes & McDunnough, 1916 is an available species-group name. A lectotype is designated – the specimen illustrated in Plate VI Figure 4 of Barnes and McDunnough (1916) – to fix the name to a specific specimen as the basis for a later taxonomic decision regarding possible synonymy of *pallidissima* and *macdunnoughii* Remington, 1954.
10. The name *angelika* Eitschberger, 1981 is a *nomen nudum*, but *angelika* Eitschberger, 1983 is an available name. Two Siberian taxa are suggested to be subspecies of *P. angelika*, rather than being subspecies of *P. bryoniae*, resulting in the combinations *P. angelika sheljuzhkoi* Eitschberger, 1983 and *P. angelika schintlmeisteri* Eitschberger, 1983.

11. The publication date of Eitschberger's *Systematische untersuchungen am Pieris napi-bryoniae-komplex (s. l.) (Lepidoptera, Pieridae)*, and hence the date of publication of the new taxa described within, is **31 December 1983**. Three copies of the book were distributed during December 1983, demonstrating the Code requirement of availability for distribution on or before that date. All the new names proposed in Eitschberger (1983) have descriptions sufficient to meet the requirements of the Code for available names, contrary to Kudrna and Geiger (1985), Shapiro (1985), and Ferris (1989).

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