

Notes on the **Holotype** of *Nymphalis antiopa hyperborea* (SEITZ, 1914)

compiled by Joseph Belicek
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hyperborea – *Vanessa antiopa* form nov. *hyperborea* SEITZ, 1914. – 10. Gattung *Vanessa*. [The Genus *Vanessa*.] In SEITZ, A. (ed.) Die Gross-Schmetterlinge der Erde (German edition). Vol. 5, (189) p. 457-458, plate 93 f, figure of one [1] ♀ female [dorsal aspect]. Described from a single, hibernated specimen. Holotype is deposited in the Senckenberg Museum, Frankfurt, Germany. {14.IV.1914}

Original Description: SEITZ, 1914: 457. — 'Eine konstante Veränderung zeigt *antiopa* nicht wie man früher glaubte, in der Form der Vereinigten Staaten (der man den Namen *lintneri* Fitch gaab), sondern nur im allerhöchsten Norden, in Alaska. Von dort liegt mir ein Stück mit sehr lebhaft rotbrauner Oberseite, weißem (nicht abgeflogenem) leicht violett getöntem Rand und auf der Unterseite einer lichten Binde durch die Mitte aller Flügel vor, das ich unter dem Namen **hyperborea** form. nov. (93f) abbilde.' — *For taxonomic purposes the German edition (1914) has a precedence over the English edition (1914). English translation: In Seitz, 1914: 457. 'The uniform distribution of *antiopa* is not what some hoped for earlier, in the US Fitch named form *lintnerii*. From the extreme north, in Alaska, a specimen lies before me with very bright red-brown upper surface, white (not worn) margin slightly tinged with violet and on the under surface a light band across the middle of both wings; I figure it under the name **hyperborea** form. nov. (93 f).'

Type-locality: The simplified term **TL:** 'Alaska' could be highly misleading. Even the wording "allerhöchsten Norden, in Alaska", [extreme north, in Alaska] could be interpreted as meaning **only** the far north of Alaska. But instead, it could be meaning the far north of North America, including Alaska. Nässig, wrote (pers. com.) [edited by me]: (a) "I think that at that time nobody in Germany bothered whether a locality was on one side or on the other of the Canada/Alaska border; the indicated coordinates in red ink [on the larger rectangular label] must not be exact anyway. And when the collector wrote about material "from Alaska", SEITZ would never have looked into an atlas to prove this. I have no idea who wrote these labels. (b) The smaller rectangular label with inscription 'Alaska, Juli, August, zus.[ammen] mit *Oeneis* und *Erebien*' surely is a label from the first receiver [of the specimens] in Germany. It means that this *antiopa* specimen was contained in a package together with series of *Oeneis* and *Erebia* specimens. The English text 'Not common saw only worn forms must have come from an Anglosaxon collector, because SEITZ surely did not write his labels in English (and I suppose that he might have potentially, at times misinterpreted the English text!). I can't tell you about phenology of the Alaska/Yukon populations of *antiopa*. But consider that (a) the type specimen, in my opinion, is NOT really freshly hatched, but already spent some time 'on the wing.' I am not sure whether it is, or is not a hibernated specimen! *N. antiopa* is not very common here [in Germany], so my experience is limited, but the specimen is in better condition than I would expect for a hibernated one; the outer margin is whitish, not yellowish, which could indicate a hibernation), and (b) in my opinion, there is no "hard" indication for a *misdating* July, - although I think that SEITZ could well have generally misinterpreted the details of English text" (Nässig, pers. com.).

Type-material:

SEITZ wrote in German text in his book explicitly about "one specimen" he received from Alaska. Consequently this specimen is a holotype by monotypy. In the text, SEITZ differentiates between "forms" and "aberrations", so his "forma *hyperborea*" might well be interpreted as a valid subspecific name (Nässig, pers. com.).

PELHAM (2008), suggested location for the holotype as "possibly SMNS" [= Staatliche Museum für Naturkunde in Stuttgart, Germany. However, I have found that there are no specimen referable to '*hyperborea*' in Stuttgart or at BMNH in London. In 2009, Dr. Wolfgang Nässig informed me that in the collections at **Senckenberg Museum in Frankfurt**, there is one specimen in the SEITZ's collection. He photographed this specimens for me and the images are reproduced in the following figures (Fig. 1- dorsal aspect, Fig. 2 - ventral aspect, and Fig. 3 - Labels).



Fig. 1. **Holotype** of *Nymphalis antiopa hyperborea*. Dorsal aspect. Wing span 62.3 mm. Flight worn, faded specimen. The very pale margin indicate that this specimen overwintered, note the tear on the right hind wing, near apex (c). The dark peppering, mottling (a) in the pale margin is particularly distinct on the front wings. The row of submarginal *violet-blue* spots is surrounded by dark brown background (d), and the ground coloration is much lighter reddish brown (e). The *violet-blue* hue (b) is characteristic of *hyperborea*. In the ssp. *lintnerii* this hue is turquoise blue. — © 2011 Wolfgang A. Nässig

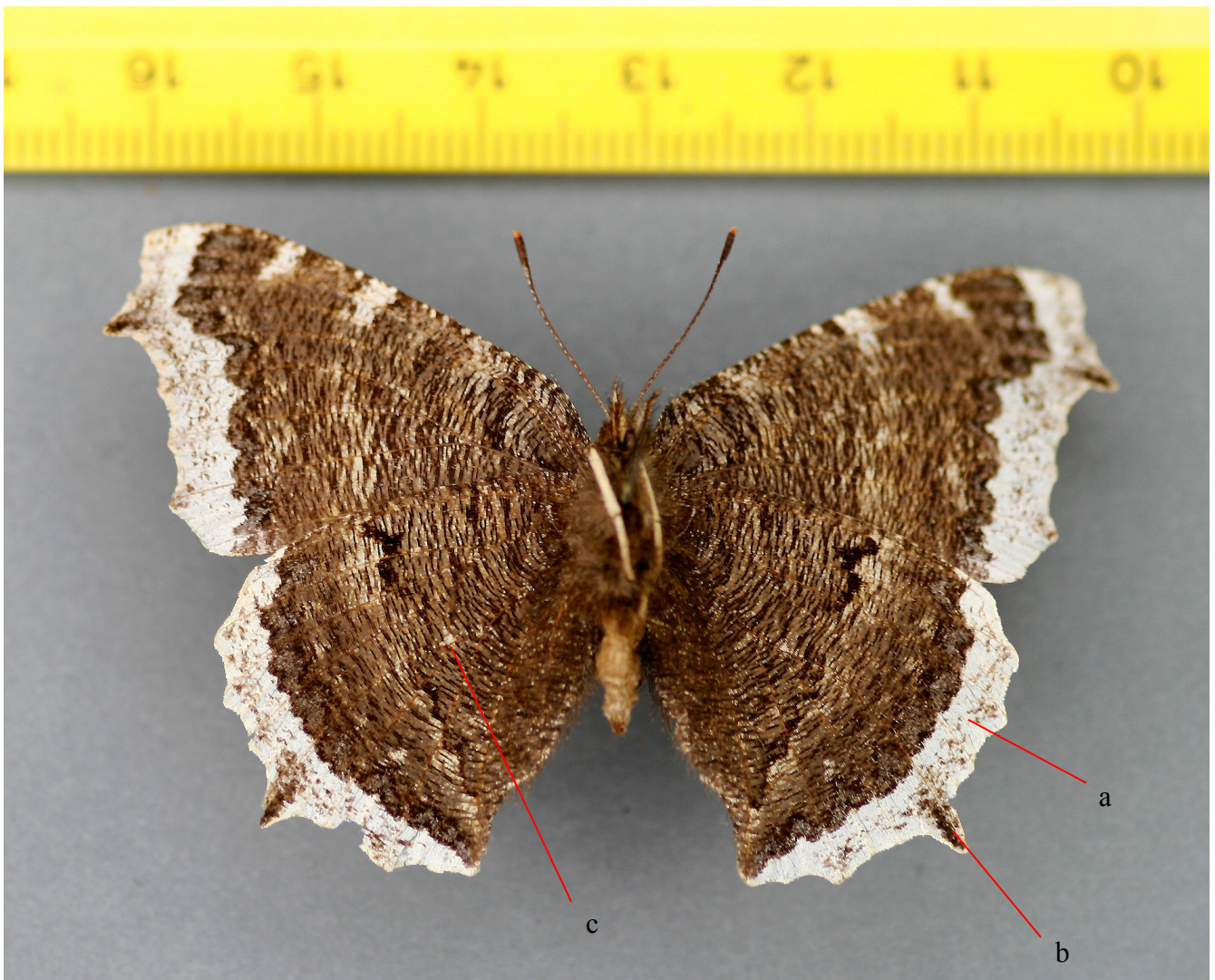


Fig. 2. **Holotype** of *Nymphalis antiopa hyerborea*. Ventral aspect. Wingspan 62.3 mm. Noticeably faded specimen. Note: (a) nearly white marginal band, indicating overwintered specimen; (b) the tail prominently speckled with dark scales; (c) The very small 'comma' marking. © 2011 Wolfgang A. Nässig.

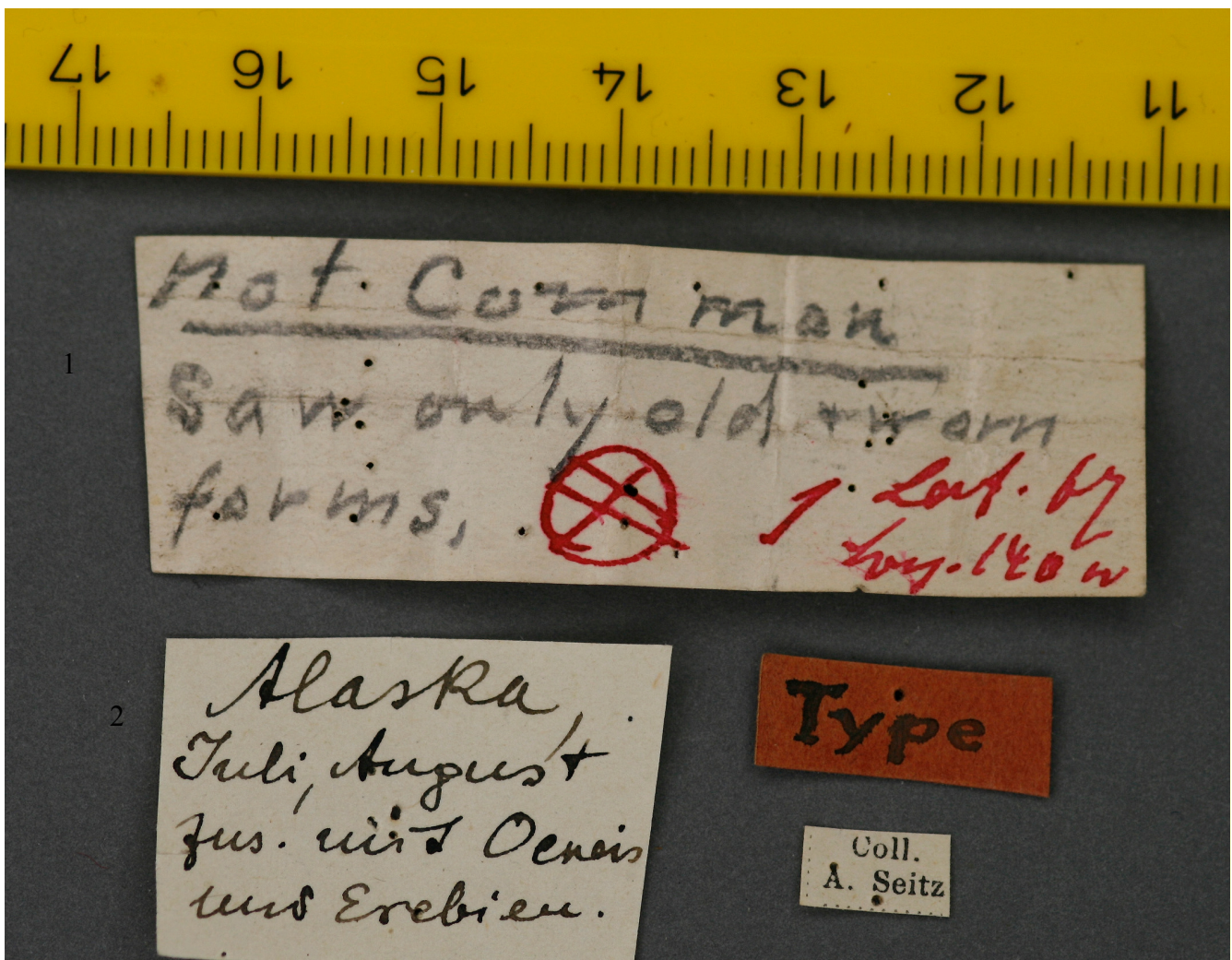


Fig. 3. **Holotype** Labels: *Nymphalis antiopa hyperborea*. — (1) White paper, large rectangular label inscribed in pencil 'not common' & 'saw only worn forms,' & next to it on the right 'double crossed circle drawn in red ink , with inscription: "1 Lat.[itude] 64 [degrees] Long.[itude] 140 [degrees] W[est]."' This would place the locality near Dawson, Yukon (the Alaska/Yukon border is 141 W). *N. antiopa hyperborea* is known from the vicinity of Dawson, which around 1910 was a town of a couple thousand people. This label indicates only worn specimens were seen – that is, the collector saw other specimens, and they were all worn. That is pretty much proof that it was a hibernated specimen (Guppy, pers. com) . — (2) smaller paper label, inscribed in black pen 'Alaska, Juli, August zus[samen] mit Oeneis und Erebieu.' — (3) small, **red paper** label inscribed '**Type**' in black ink; — (4) small white paper label imprinted in black 'Coll. A. Seitz' — **Senckenberg Museum in Frankfurt**. © 2011 Wolfgang A. Nässig.

Systematic Overview:

Nymphalis (Euvanessa) antiopa

antiopa (LINNAEUS, 1758) – Systema Naturae (ed. 10), p. 476-477, no. 112. – Originally described as a new species. Type-locality: Sweden. Originally, none was specified. Subsequently, **TL**: Sweden was selected by VERITY, 1950.

Subspecies:

antiopa antiopa – *Papilio Antiopa* LINNAEUS, 1758: **476-477**. **TL**: Sweden.

antiopa asopos – *Vanessa antiopa asopos* FRUSTORFER, 1909: **94**. – **TL**: Japan.

antiopa borealis – *Vanessa (Euvanessa) borealis* WNUKOWSKI, 1927: **69**. – **TL**: Russia, Jakutia.

antiopa hyperborea – *Vanessa antiopa form hyperborea* SEITZ, 1914: **457**, pl. 93f, fig. – **TL**: 'Alaska'.

antiopa lintnerii – *Vanessa Litnerii* FITCH, 1857: **485**. – **TL**: New York.

Described from an aberrant, *hygiaea*-like specimen. Holotype in the Field Museum in Chicago.

antiopa thomsonii – *Vanessa Thomsonii* BUTLER, 1887: **104**. – **TL**: ?British Honduras,

Described as a new species. Based on an aberrant, *hygiaea*-like specimen. **TL**: originally indicated to be questionably from “?British Honduras” or possibly Guiana. PELHAM (2008), thought TL might possibly be Mexico. – Type-material: according to JOHN E. CHAINEY, (pers. com. 2010), the holotype is in BMNH.

Junior synonyms:

bibla – *Vanessa Bibla* Fabricius, 1938: **112**. [in Bryk] – TL Pennsylvania.

betulae – *Vanessa Betulae* Fabricius, 1938: **111**. [in Bryk] – An unnecessary replacement name, based on larval foodplant.

pompadour – *Papilio Pompadour* Pollich, 1781: **253**. – TL Germany.

morio – *Papilio Morio* Retzius, 1783: **31**. – TL ? Preoccupied by *Papilio morio* Scopoli, 1763.

major – *P.[apilio] antiopa* var. *major* Esper, 1777: **324**. – TL ?

hygiaea – *Euvanessa antiopa* (a) *hygiaea* Dyar, 1902: TL ?

chlapowskia – *Euvanessa antiopa* f. *chlapowskia* Wize, 1917: **5**. TL Poland

creta – *Vanessa antiopa* race *creta* Verity, 1916: **101**. – TL [Italy: Toscana]: Firenze: Cascine, Monte Senario.

Unavailable names:

albomarginata – *Vanessa antiopa* ab. *albomarginata* Lempke, 1936: **263**. An infrasubspecific taxon. Holland.

angustata – *Vanessa antiopa* ab. *angustata* Stauder, 1922: **21**. An infrasubspecific taxon. Germany.

artemis – *Vanessa antiopa* aber. *artemis* Fischer, 1895: **12**. [experimental, an infrasubspecific taxon.]

dorfmeisteri – *Vanessa antiopa* ab. *dorfmeisteri* Fischer, 1902: **49**. An infrasubspecific taxon.

emma – *Vanessa antiopa* ab. *emma* Stephan, 1923: **38**. An infrasubspecific taxon.

epione – *Vanessa antiopa* var. *epione* Fischer, 1895: **9, 12**. An infrasubspecific taxon.

escheri – *Vanessa antiopa* f. *escheri* Gramann, 1920: **69**. An infrasubspecific taxon.

flavomaculata – *Vanessa antiopa* ab. *flavomaculata* Maslowscy, 1923: **128, 134**. An infrasubspecific taxon.

grandis – *Vanessa antiopa* var. ♀ *grandis* nov. var. Ehrmann, 1900: **348**. An infrasubspecific taxon. – Pennsylvania.

grisescens – *Nymphalis antiopa* f. *grisescens* van Oorschot, 1966: **101**. An infrasubspecific taxon.

heppei – *Vanessa antiopa* ab. *heppei* Standfuss, 1895: An infrasubspecific taxon

hippolyta – [*Vanessa antiopa*] ab. Lyman, 1898: index. (p. vii). – [variant spelling of hippolita]

hippolita – [*Vanessa antiopa*] ab. *hippolita* Lyman, 1898: **22** (text). An infrasubspecific taxon.

hygiaea – *Vanessa antiopa* v.[ar] *hygiaea* Heydenreich, 1846: **7**. – A nomen nudum.

hygiaea – *Vanessa* [*Antiopa*] ab. *Hygiaea* Heydenreich, 1851: **7**. An infrasubspecific taxon.
 intermedia – *Euvanessa antiopa* ab. *intermedia* Mezger, 1934: **98**. An infrasubspecific taxon.
 longomaculata – *Nymphalis antiopa* f. *longomaculata* Lempke, 1956: **201**. An infrasubspecific taxon.
 maier – *Antiopa* var. '*maier*' [Esper, 1777:]. – A misspelling. The caption for Fig. 2. of *major* reads maier.
 maior – *maior* Gönner, 1927: **439**. – misspelling of *major*, maier Esper, 1777: **324**.
 nana – *Vanessa antiopa* ab. *nana* Stephan, 1923: **38**. An infrasubspecific taxon.
 obscura – [*Vanessa antiopa*] [= var. *obscura*] Cockerell, 1890: **14**. An infrasubspecific taxon.
 obscura – *Vanessa antiopa* f. *obscura* Gönner, 1928: **459**. An infrasubspecific taxon.
 ochraceoguttata – *Vanessa antiopa* ab. *ochraceoguttata* Hepp, 1937: An infrasubspecific taxon.
 pussilla – *Vanessa antiopa* ab. *pussilla* Strand, 1901: **285**. An infrasubspecific taxon. Norway.
 roederi – *Vanessa antiopa* (var.) *Roederi* Standfuss, 1986: **251**. An infrasubspecific taxon.
 thompsoni – *Nymphalis thompsoni*: Pelham, 2008: **347**. [misspelling of *thomsoni*]
 violescens – *Vanessa antiopa* f. *violescens* Lempke, 1956: **201**. An infrasubspecific taxon.
 virescens – *Vanessa antiopa* f. *virescens* Lempke, 1956: **201**. An infrasubspecific taxon.
 zieglerei – *Vanessa antiopa* f. *zieglerei* Gramann, 1920: **68**. An infrasubspecific taxon.



Fig. 4. *Nymphalis antiopa hyberborea*. Dorsal aspect. Photo: 12 April 2006 Norwottuck Rail Trail, Amherst, Massachusetts. Overwintered specimen. Note the very pale, almost white margin, worn edges of hind wings. Peppering, mottling in the margin is also worn, nonetheless still

noticeably present (particularly on the front wing). The submarginal spots have the characteristic *hyperborea* violet-blue color. The costal, apical pale marking is narrow, wedge shaped. The ground-colour in this specimen is the typical reddish brown. In ssp. *lintnerii* the ground-colour is purplish-brown. © Frank MODEL. Specimen identified by J. BELICEK.



Fig. 5. Eggs. *Nymphalis antiopa hyperborea*. Clusters of eggs laid on *Ulmus americana*, Edmonton, AB, Canada; 24 May 2006. Note particularly the yellow-amber color of the eggs. Each egg has 8-9 longitudinal ribs. As the egg matures, their color changes to purplish-pink. The eggs of the ssp. *lintnerii* do not change color (Harry PAVULAAN, pers. com) © 2006 Joseph BELICEK



Fig. 6. *Nymphalis antiopa* unnamed ssp. 'californica.' Eggs. southern California, Newport Beach. © 1999 Peter J. BRYANT (pjbryant@uci.edu). Note the olive-green color. These are freshly laid eggs. Each egg has 8-9 vertical ribs. The olive-green color of the eggs is unusual for *N. antiopa*. Typical egg color of ssp. *hyperborea* is amber -yellow, or gold-yellow in ssp. *lintnerii*.



Fig. 7. *Nymphalis antiopa antiopa*. Larva. Czech Republic. Photo © Josef HLASEK.
Note the shape of the eight red-orange dorsal spots. The red-orange color is more intense, compared with N. American *N. antiopa hyperborea* (see Fig. 7). The spines are longer and more slender.



Fig. 8. *Nymphalis antiopa hyperborea*. Larva. Alaska, Bonanza Creek Exerimental Forest near Fairbanks, 2005-6-14. Photo © Kenelm PHILIP. Note the shape of the eight reddish-orange dorsal spots. The spines are shorter and stouter, when compared with the European specimen of ssp. *antiopa* (Fig. 6).



Fig. 9. *Nymphalis antiopa* [unnamed ssp. Larva. California. Photo from the internet. Note the shape of the eight orange dorsal spots. The spines are shorter and much stouter, when compared with the European specimen, ssp. *antiopa* (Fig. 6) or ssp. *hyperborea* (Fig. 7).

Discussion:

The Palaearctic taxonomic literature is generally omitted, as this article is focused on the North American taxon *N. antiopa hyperborea*. From the review of the North American taxonomic literature, it is evident that even that our taxonomic knowledge of the Holarctic butterflies has progressed a great deal. Nonetheless, it seems to me, that in spite of this general progress, our knowledge about the biological entity known as the **species** *Nymphalis antiopa* (L.) is still very cursory in detail. Surely, nearly everyone is familiar with the Mourning Cloak butterfly, the Camberwell Beauty, or Spiny Elm caterpillar. But in terms of the species *N. antiopa* and its segregation geographically into races, or about the boundaries and the variability of these segregates is known very little. Could such phenotypic segregates be called geographical races or subspecies? The ICZN Code defines 'subspecies' simply as geographical entities that differ in some way from each other. Anyway, what is a *subspecies*? Could the term be better defined? WILSON & BROWN (1953) reviewed subspecies concept. They state: 'Geographical variation: The subspecies were conceived of as genetically distinct, geographically separate populations belonging to the same species and therefore interbreeding freely at the zones of contact.' However, to my knowledge, there is no documented evidence that any subspecies of *N. antiopa*, be it ssp. *hyperborea* or ssp. *lintnerii* do interbreed. While their geographic ranges overlap in the large area of eastern N. America (sympatry). The named subspecies of *N. antiopa* are listed alphabetically as follows:

***Nymphalis antiopa* (L.):**

antiopa antiopa – *P[apilio] Antiopa* LINNAEUS, 1758: 476-477. – TL: Sweden.

antiopa asopos – *Vanessa antiopa asopos* FRUSTORFER, 1909: 94. – TL: Japan.

antiopa borealis – *Vanessa (Euvanessa) borealis* WNUKOWSKI, 1927: 69. – TL: Russia, Jakutia.

antiopa hyperborea – *Vanessa antiopa* var. *hyperborea* SEITZ, 1913: 457, pl. 93f, fig. – TL: 'Alaska'.

antiopa lintnerii – *Vanessa Litnerii* FITCH, 1857: 485. – Described as a new species. – TL: New York. based on an aberrant, *hygiaea*-like specimen.

antiopa thomsonii – *Vanessa Thomsonii* BUTLER, 1887: 104. – TL: ?British Honduras.

Described as a new species. Based on an aberrant, *hygiaea*-like specimen. TL: originally indicated to be questionably from “?British Honduras” or possibly Guina. PELHAM (2008), thought TL might possibly be Mexico. – Type-material: according to JOHN E. CHAINEY, (pers. com. 2010), the holotype is in BMNH.

For photos of the named ssp. see the German website hosted by Ingo Daniels, which is specifically devoted to *Nymphalis antiopa*, see <http://www.trauermantel.de/>.

Literature Survey:

HENRY SKINNER, (1890). “When the Lepidoptera have been more exhaustively studied, I have no doubt, the results will be interesting, and in a number of species now considered distinct more on account of **difference of locality** than anything else, will be **amalgamated**. It has been noted that the Pacific coast fauna more nearly approach that of Europe than the Eastern, but I do not know that in a species common to both countries a greater similarity has been noticed between the Western specimens and those of Europe than the Eastern. Last summer I had sent to me a number of chrysalids of *Vanessa antiopa* from San Jose, Cal., and when they disclosed the perfect insects, I found them all to be **intergrades** between the specimens found here (Philadelphia) and those of England and Germany. I had previously noticed that the European specimens are also usually **smaller**. The Californian examples are intermediate between Eastern and European as far as the dark **peppering** on the border is concerned, and could be readily picked out from others. I leave it some one else to point out the significance of the observation. Among chrysalids there was one, three or four shades lighter in color, and perhaps also a little larger, which disclosed the rare and interesting variety *hygiaea* Hdrch. (Verz. Eur. Schmett. p. 7, 1851), of which *lintnerii* Fitch (3rd Rep. Trans. N. Y. State Agr. Soc. p. 485, 1956 is a **synonym**. It will be interesting to know whether a very much lighter colored chrysalis is an indication of a coming *hygiaea*. In Mr. COCKERELL'S list of “American Species Representative of European” he omits *Vanessa Californica* and *V. Polychloros*, which are probably one and **the same** thing. It would be interesting to know whether *Californica* produces anything analogous or the same as the varieties of *polychloros*, *testudo* and *pyromelas* given in KIRBY. I do not know of any described variety of the American species *Grapta faunus* and *G. C-album* are undoubtedly identical, as has been pointed out by STRECKER.”

[Comment: The trend to **amalgamate**, i.e. 'lump' the named taxa probably started in North America at about this time. But, W. H. EDWARDS (1877), documented that *Polygonia faunus* and *P. c-album* are two distinct species. Note that ssp. *hygiaea* and ssp. *lintnerii* are not synonyms, but analogue aberrations in two different taxa. As recently as 1990, MILLER & MILLER claimed that *N. californica* is **the same** as *N. xanthomelas*. This is an erroneous interpretation.

DOS PASSOS (1964), MILLER & BROWN (1981), POHL ET AL (2010) name list accepted both ssp. *hyperborea* and ssp. *lintnerii* as valid subspecies of *antiopa*. SHAPIRO (1981), SCOTT (1986) considers ssp. *hyperborea* a valid subspecies. PELHAM (2008) did not accept any valid subspecies in his catalogue, following LAYBERRY ET AL (2009) who synonymized *hyperborea* with *antiopa*.

LAYBERRY et al, (1998) In *Butterflies of Canada*, p. 203, treat *hyperborea* as a synonym of *antiopa*. Subsequently, LAYBERRY (2009) Ontario Lepidoptera, p. 10, states: "The International Code of Zoological Nomenclature (ICZN 1899) defines subspecies simply as geographical entities that differ in some way from each other, and by that definition there can be no doubt that most, if not all Canadian Mourning Cloaks should be referred to as *Nymphalis antiopa hyperborea*. LAYBERRY (2009). 'In The Butterflies of Canada (Layberry et al. 1998) we stated confidently that the Mourning Cloak (*Nymphalis antiopa*) had no subspecies. We mentioned one old name, *hyperborea* (SEITZ, 1914) referring to specimens from northern Canada and Alaska. We had compared far northern specimens with southern Canadian ones, and found no reliable differences in size or colour, so we did not recognize *hyperborea* as a valid subspecies. But we didn't compare either with European specimens. If we had done so, we would have seen what SEITZ saw almost a century ago, that the colours are very different. SEITZ described the colour of the upper surface of *antiopa*, meaning European *antiopa*, as blackish brown, and that of *hyperborea* as a very bright red-brown.'

Present status:

Based on the discovery and subsequent study of the Holotype, and including comparisons with many European and North American specimens, I recognize *N. antiopa hyperborea* as a valid subspecies of *Nymphalis antiopa* (LINNAEUS, 1758). My decision to recognize ssp. *hyperborea* is further supported by the observations made during rearing of both subspecies: the European *N. antiopa antiopa* and the North American ssp. *N. antiopa hyperborea*. See the photographs Fig. 4. — Fig. 9.

Geographic Range:

The subspecies *Nymphalis antiopa hyperborea* is presently known from a large area on the North American continent. Ranging from Alaska, across Canada and the northern tier of states in USA. Southward, specimens are known from North Carolina.

Acknowledgements:

From among the numerous people who helped me with during my extended study of Anglewing butterflies, here I must particularly thank Dr. WOLFGANG A. NÄSSIG from the Entomologie Forschungsinstitut Senckenberg in Frankfurt, Germany for providing the photographs of the holotype. Secondly, I thank to JOHN E. CHAINEY, for checking for me the collections in the British Museum (Natural History) in London, for possible type specimens of *hyperborea* there. Dr. EDWARD M. PIKE from Calgary loaned me over 1000 specimens of Anglewing butterflies from western Canada. In 2005, NORBERT G. KONDLA and I made an expedition to Alaska to collect the *N. antiopa hyperborea*. While in Alaska we visited our mutual friend Dr. KENELM W. PHILIP, in Fairbanks. At his residence we studied his large butterfly collection.

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Any comments, corrections or additions are welcomed.