

A NEW SUBSPECIES OF *LYCAEIDES ARGYROGNOMON*
(LYCAENIDAE) FROM THE EASTERN CANADIAN FOREST ZONE

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It has been recognized for some time that the populations of *Lycaeides argyrognomon* from Southeast Manitoba, Ontario, Minnesota, Wisconsin and (probably) the upper peninsula of Michigan represent an undescribed subspecies distinct from *scudderi* (Edwards) with which they are usually allied. Griewisch (1953) collected long series of *L. argyrognomon* in Oconto and Marinette Counties, Wisconsin 1-15 July 1952, sent samples to Vladimir Nabokov at Harvard for determination, and quoted Nabokov's comments on them as follows:

"The Minnesota thing, which I described and figured, but did not name, because of scantiness of material (Bull. Mus. Comp. Zool., 1949, p. 505, Pl. 5, fig. 54, male, Pequot, Minn.) is a subspecies of *argyrognomon* (Bergstrasser, Tutt), which I now think is sufficiently distinct from the Canadian (north of 50°) *argyrognomon scudderi* (type loc.: The Pas, west of Winnipeg L., Manit.) to warrant a new subspecific name for it. It is this form that your specimens belong to, and you should be congratulated on establishing the interesting Wisconsin range of *argyrognomon*. It comes very near to a point where it should fly together with *melissa samuelis* Nab."

Griewisch later supplied a long Marinette County series of *L. argyrognomon* to Frank Chermock of Baltimore, Maryland. Chermock intended to describe these as an *argyrognomon* subspecies and distributed a number of them as "paratypes" bearing a manuscript name. Chermock and Griewisch are both deceased and for the last 20 years Nabokov has vacillated on doing further work with Lepidoptera. With no other heir apparent to carry on their work, I have assumed the responsibility, with this paper being the result.

The collections of Lepidoptera at my disposal probably contain more ample material in *Lycaeides argyrognomon* from the key areas of Manitoba, Minnesota and Wisconsin than any others. After an examination and study that has lasted three years, I find myself in full agreement with the earlier conclusions that the Eastern Canadian Forest Zone population of *Lycaeides argyrognomon* from southeast Manitoba, western Ontario, northeast Minnesota and northern Wisconsin is sufficiently distinct from *L. argyrognomon scudderi* to deserve its own subspecific name. I take pleasure in naming it in honor of Dr. Nabokov, who first recognized its

distinctness and whose papers on Nearctic *Lycaeides* (1943, 1944, 1949) have provided a background to make this description possible.

***Lycaeides argyrognomon nabokovi* J. Masters, new subspecies**

Male (Fig. 1): The same general appearance associated with all populations of *Lycaeides argyrognomon* but of a larger size and slightly more purplish color than any other. The expanse of one forewing (base to apex) 14 to 17 mm (average 16 mm).

Upperside (Fig. 1): Ground color of wings a vivid violet blue. Melanic margins (0.75 to 1.25 mm wide) not sharply defined on their basal margins. White fringes wide and well pronounced on fresh specimens. Darkened melanic spots, centered in the hindwing cells just basad of the melanic margin, present in some individuals. Scales along forewing veins darkened, especially limbally which gives the impression that their outer ends are swollen.

Underside (not figured): Markings essentially like the female, but with macules not as pronounced and with the orange and metallic elements not as vivid.

Genitalia (not figured): Typical of *L. argyrognomon*. Length of forearm of falx = 0.43 mm. Length of humerulus of falx = 0.32 mm. Length of uncus lobe = 0.33 mm. (Average values for three male paratypes dissected.)

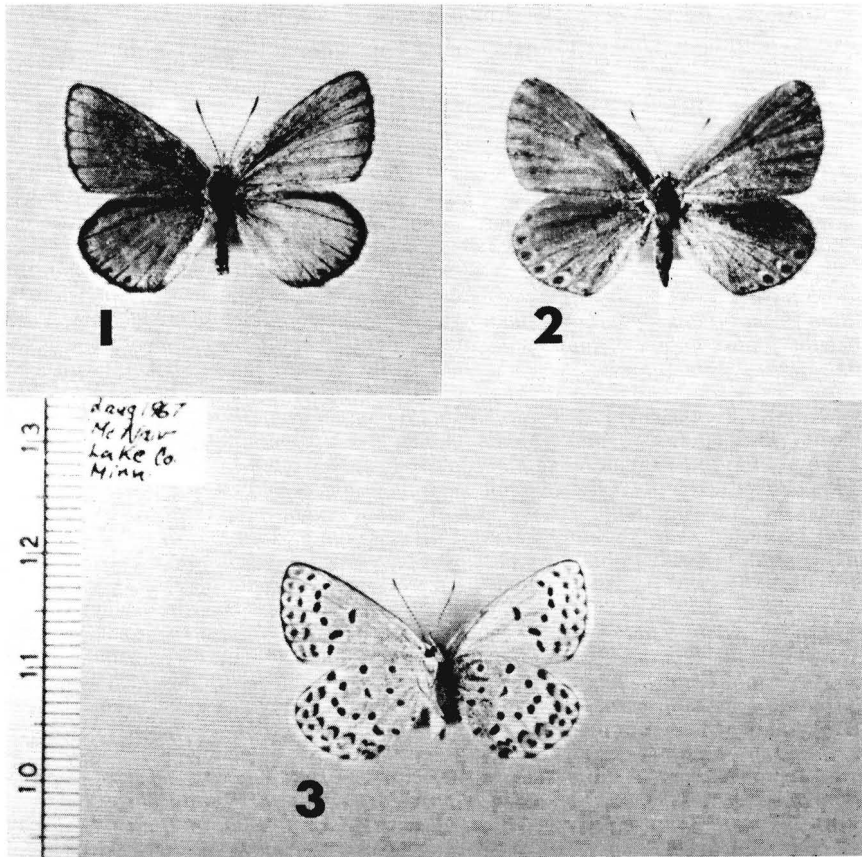
Female (Figs. 2, 3): Differs from male in being considerably more melanic on upper surfaces, confining the violet-blue coloration to the basal areas. The expanse of one forewing (base to apex) 14.5 to 17 mm (average 16 mm).

Upperside (Fig. 2): The purplish-blue coloration confined to the basal third of the forewing and the basal half of the hindwing. Remainder of the wings clouded with melanic scales that have little or no contrast with the borders. White fringes present on fresh specimens. On the hindwings, 4 to 7 oval melanic eye-spots present, centered in the cells near the outer margins, and these usually accompanied by an orange lunule basally. These macules especially prominent in cells Cu_1 and Cu_2 .

Underside of forewings (Fig. 3): The ground color varies from a smoky grey to a bright white—tending to be lighter and whiter than in *L. argyrognomon scudderi*. A narrow melanic margin, thickened at the vein terminals, often extends around the apex to the costal margin. Two rows of submarginal spots, elongated or slightly crescent shaped, although never as dark or as well defined as the post-median spots. Submarginal spots often surrounded by a tint of orange. A row of six very well defined post-median spots, which vary greatly in shape but always baroque and non-uniform in appearance. Post-median macule in cell Cu_1 always largest and conspicuous by its shape and position, being elongated and displaced basally. Post-median spots ringed in white, but contrast with the background color slight and effect not nearly so conspicuous as in *L. argyrognomon scudderi*. One additional macule on the forewing, a large oval or slightly crescent shaped spot at the end of the discal cell.

Underside of hindwings (Fig. 3): Ground color as on the forewings, with relatively little indication of the blue-green overcast that is usually conspicuous in the basal area with other subspecies of *L. argyrognomon*. Margin separated into triangular shaped spots at each vein terminus with only a thin line connecting them. Two rows of submarginal spots surrounded by an orange umbra which, on some specimens, coalesce into an orange band. Inner row characterized by a pronounced crescent shape while the outer row possesses metallic green centers basally, most pronounced in cells 2V, Cu_2 , Cu_1 and M_2 . A widely disjunct row of eight post-median macules, more regular in both shape and size than those on the forewing. Macule at the end of the discal cell crescent shaped and relatively thin and narrow. Three additional macules in the submedian area. All of the median macules ringed with white; however, hardly discernable on some specimens.

Holotype male: Along Forest Road 122 in section 24 of Township 56 N., Range 11 W., Lake County, Minnesota (16 July 1966), J. H. Masters, collector. Type



Figs. 1-3. *Lycaeides argyrognomon nabokovi* new subspecies: 1, male paratype, dorsal view; 2, female paratype, dorsal view; 3, female paratype, ventral view. All three specimens captured at "McNair," Lake County, Minnesota, 8 August 1967 by J. H. Masters. Approximately $1\frac{1}{2}$ times natural size; millimeter scale at lower left.

locality 13 miles north of Two Harbors, near the former refueling stop of "McNair" on the DM & IR railway, now a part of The Superior National Forest. Expanse of forewing 16 mm. To be deposited in Carnegie Museum, Pittsburgh.

Allotype female: Same data as the holotype. Expanse of forewing 16 mm. To be deposited in Carnegie Museum, Pittsburgh.

Paratypes: 58 males, 34 females, same locality as holotype, various dates, July and August 1966, 1967, 1968 and 1970, J. H. Masters and William A. Bergman collectors. Paratypes will be deposited in the collections of the United States National Museum, American Museum of Natural History, Los Angeles County Museum, Museum of Comparative Anatomy at Harvard, Manitoba Museum of Man and Nature, and University of Minnesota. The remainder will, for the present, remain in the author's and W. A. Bergman's private collections.

Other localities: Paratypes were restricted to specimens from the type locality.

Other populations that I consider belonging to this subspecies include specimens from the following localities: **Minnesota:** Echo Trail, near Ely, Saint Louis County; Gunflint Trail, T.64 N., R.1 W., Cook County; near Pengilly, Itasca County; vic. Pequot Lakes, Crow Wing County. **Wisconsin:** near Crivitz, Marinette County; Wambee Lake Area, Oconto County. **Manitoba:** White Shell Provincial Park; Wanipigow River, near Bissett. **Ontario:** The following localities are cited by Riotte (1971) for *Lycaeides argyrognomon*; Armstrong, Favourable Lake, Minaki and Nakina; all of which undoubtedly represent this subspecies.

Lycaeides argyrognomon nabokovi is one of eleven Nearctic subspecies which include *anna* (Edwards), *ricei* (Cross), *lotis* (Lintner), *alaskensis* (Chermock), *scudderi* (Edwards), *aster* (Edwards), *ferniensis* (Chermock), *atrapraetextus* (Field), *sublivens* Nabokov, and *longinus* Nabokov. Descriptions and distributional data for all of these can be found in Nabokov (1949). DosPassos (1964) also includes *kodiak* (Edwards) and *empetri* (Freeman) as subspecies under *argyrognomon*. Nabokov considered *kodiak* as a taxa of uncertain status, probably not belonging to *Lycaeides*; Brown (1970) considered it as a subspecies of *Plebejus saepiolus*. Nabokov considered *empetri* (type locality Cape Breton Island) to be a synonym of *aster*.

In the past, populations of both *Lycaeides argyrognomon nabokovi* and *Lycaeides melissa samuelis* have been confused with *L. scudderi*. The specimens figured by Holland (1931, plate XXX, figs. 48, 49) as *scudderi* are actually *samuelis*. *Lycaeides argyrognomon scudderi* (type locality "between Lake Winnipeg and Cumberland House," Manitoba; Brown, 1970) is now restricted to regions west and north of Lake Winnipeg—it occurs as far south as Riding Mountain. The barrier between *scudderi* and *nabokovi* is Lake Winnipeg and the Red River Valley (the area formerly occupied by glacial Lake Agassiz), which suggests that the two subspecies have been isolated since late in the Pleistocene. Since *nabokovi* is more likely to be confused with *scudderi* than with any other subspecies in the future, it seems pertinent to summarize the differences between the two:

Ground color of ventral surfaces tends to be lighter and whiter in *nabokovi*, which renders the white rings, circling the post-median macules, less distinct. Basal blue-green dusting on ventral hindwing is much less evident on *nabokovi*. The post-median macules on the ventral forewing of *nabokovi* are larger and much more irregular in shape and position than they are in the case of *scudderi*. In the case of *scudderi*, they form an almost uniform row of almost equal-sized spots. The elongated and distorted macule in cell Cu_1 is usually diagnostic of *nabokovi*; in the case of *scudderi*, this macule is much more rounded and regular in appearance. This specimen selected by Brown (1970) as the neotype for *Lycaena scudderi* is an exception to this, having the

macule in Cu_1 elongated very much like *nabokovi*. I have not noted this condition, however, in 30 specimens of *scudleri* that I have examined from Riding Mountain, Duck Mountain and The Pas, Manitoba.

The *Lycaeides argyrognomon aster/empetri* populations, with which *nabokovi* more than likely intergrades at some point, occur in Newfoundland, Nova Scotia, Labrador, Cape Breton Island and northeastern Quebec. Brown (1970) confines *aster* to the Avalon Peninsula of Quebec and relegates populations from other parts of this region to *empetri*. The combined *aster/empetri* populations are small and pale with small, round and well separated macules in the post-median series. The post-median macules are the same size or smaller than the marginal macules, whereas in the case of *nabokovi* they are significantly larger. The *aster/empetri* populations are characterized by considerable blue-green dusting basally on the ventral hindwings, and by very little blue coloration dorsally in the female. There is a probable zone of intergradation between these two forms in eastern Ontario or Quebec.

The only species occurring in the same regions with *nabokovi*, with which it might be confused, is *Lycaeides melissa samuelis*. These two cannot be considered as sympatric, however, as *nabokovi* is confined to Canadian Zone forests while *samuelis* is confined to open prairie regions. The ventral wing margin in *Lycaeides melissa* has a narrow but solid and straight terminal line; while in *Lycaeides argyrognomon*, this line is usually broken into triangular shaped spots at the vein terminals. If this fails to provide a definitive separation of the two species, dissection of the male genitalia will. In *L. melissa* the length of the forearm of the falx is twice as long as the length of the humerus of the falx while in *L. argyrognomon* it is but one and a half times as long.

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