

## BOOK REVIEW

BUTTERFLIES AND MOTHS OF NEWFOUNDLAND AND LABRADOR, THE MACROLEPIDOPTERA by Ray F. Morris. 1980. Agriculture Canada, Research Branch, Publication 1691. 407 pp., 40 text figs., 34 col. pls. Obtainable from Canadian Government Publishing Centre, Supply and Services Canada, Hull, Quebec K1A 0S9. \$US 18.00, \$CAN 15.00.

This attractively bound and well illustrated volume is a treatment of about 55 species of butterflies and 488 moths reported from Newfoundland and Labrador, giving scientific and common names, distribution, flight period, information on immature stages, 34 colored plates showing almost every species, about 30 distribution maps, a check list, and a glossary of terms. The introduction consists of a short history of lepidopterological studies in the region and of sections on geography and climate, basic anatomy, development, and collecting of Lepidoptera. Keys and descriptions for identification are not included and mostly are not needed, as colored illustrations usually serve this purpose well for the larger Lepidoptera. The book deserves recognition as the first fully color-illustrated guide intended to cover all macrolepidoptera occurring in any state or province of North America. For the illustrations alone it is a bargain that no one interested in Canadian macrolepidoptera will want to miss. The quality of the plates is variable but mostly good; the quality of many of the specimens used for the photography could have been better. Typography is excellent, and there are almost no printing errors except a disconcerting omission of commas from numbers of four or more digits (e.g., 103 600 km<sup>2</sup> on page 16). I noted only one misspelled name; "*paralis*" should read *parilis* (p. 174), and one *lapsus* in a plant name: *Viburnum* in error for *Vaccinium* (p. 92).

Of particular interest are records of two European noctuids reported from North America for the first time. These are *Agrochola lota* (Clerck) and *Acrionicta auricomma* (F.).

The book does suffer from a variety of shortcomings that should be discussed in some detail because of its potential biogeographic importance in documenting the fauna of one of the more interesting areas in North America. Morris does not seem to appreciate the geographical nature of subspecies, because in at least six instances he reports the occurrence of different subspecies of the same species in Newfoundland. All the *Papilio glaucus* would surely have to be subspecies *canadensis*. The black female reported from Newfoundland by Clark & Clark, cited by Morris, is in the U.S. National Museum. It is very old (Oberthür collection) and probably mislabelled. The only ringlet in Newfoundland is *Coenonympha tullia mcisaaci* (the two specimens as figured are female and male of *mcisaaci*), and all *Callophrys augustinus* must surely be subspecies *helenae*. Similarly, one would think that there should be only one subspecies of *Nymphalis milberti*, *Carsia sororiata*, and *Dysstroma hersiliata*. However, *N. milberti viola* is said to be concentrated mainly in the southern part of the island and nominate *milberti* to be more prevalent northward. If this observation is correct, then nominate *milberti* may be moving in from the mainland through Labrador and diluting the endemic subspecies *viola*. Nominate *Anomogyna perquiritata* is reported from Labrador and subspecies *beddeci* from Newfoundland. But *perquiritata* was described from the White Mountains, New Hampshire, and I cannot see that New Hampshire material differs from *beddeci* in any significant way. I regard the latter as a junior synonym.

I noted the following misstatements. Under *Oeneis jutta* (p. 45), how could Möschler have reported *terraenovae* from Labrador in 1860 when this subspecies was not described until 1935? The species of *Vanessa* (p. 58) do not hibernate as adults or pupae but are annual immigrants from much farther south, probably not overwintering anywhere in Canada. The currently accepted family name for *Ctenucha* is Ctenuchidae rather than Amatidae (p. 78). Morris (p. 138) refers to my account of *Leucania comma* in Newfoundland as unpublished when indeed it was published (1963, Can. Entomol. 95:105-107).

Considering that about 542 species are involved, errors of identification are few.

However, identification problems of several kinds have found their way into the work. Sometimes the determinations of previous authors are accepted without question. Thus the records of *Boloria chariclea* are almost certainly based on misidentifications of *B. titania*. The former is a high arctic tundra species that would not be expected in Newfoundland. *Anomogyna fabulosa* is treated as two species, being included both under its correct name and as *A. sincera*. The latter is a palearctic species with which the nearctic *fabulosa* was confused before being described as distinct in 1965. The record of *Schrankia turfosalis* is based on a misidentification of one of the similar North American species, and the correct generic name for this group is *Hypenodes* Doubleday. Three species of *Hypenodes*, *H. fractilinea* (Sm.), *H. palustris* Fgn., and *H. sombrus* Fgn., are known from Newfoundland, but none is listed. *Alypia octomaculata* should have been deleted from the list or verified, as it is almost certain that the original record was based on misidentified specimens of *A. langtoni*. Confusion of these two species in the north where both might occur has become almost a tradition, but it should be noted that the hosts of *octomaculata* (Vitaceae) are absent from Newfoundland. Similarly, it would have been better to have disposed of *Utetheisa idae* in the introduction or a footnote instead of giving it formal listing as though it were really a part of the fauna. As Morris tells us, *U. idae* was described from Swain's Island, Newfoundland, in error for Swain's Island, Samoa.

Other misidentifications are simple errors of the author or of those who did identifications for him. The following should be noted: *Polia leomegra*, described from Newfoundland, and *P. carbonifera*, from Alberta, refer to forms of the same species that should have been listed as *leomegra*. As it turns out, however, both are now regarded as synonyms of *P. rogenhoferi*, and the *rogenhoferi* that he lists was described in 1980 as a new species, *P. propodea* McCabe, too late for inclusion in Morris's book. *Hypphantria cunea* and *H. textor* are generally regarded as one species, although Morris lists both. One is left guessing as to how he distinguished them. His figure of *cunea* on plate 10 is the immaculate form that has been regarded as *textor*, and his figure of *textor* appears to be *Spilosoma congrua*, not otherwise known from Newfoundland but possibly present. On plate 26 the figures of *Malacosoma americanum* (Figs. 1, 2) and *M. dissstria* (Figs. 3, 4) are reversed. Pl. 28, Fig. 9, shows a specimen of *Dysstroma truncata* (not listed) as *D. walkerata*, although Fig. 10 is correctly determined as *walkerata*. The latter is the peculiar black and white subspecies that occurs there. The species illustrated as *Thera contractata* (Pl. 28, Fig. 16) is *T. juniperata* (L.), an introduced palearctic species now widely distributed in the Northeast. The report of *T. otisi* is puzzling because the illustration (Pl. 28, Fig. 17) really does look more like that species than like *contractata*. Otherwise, I would dismiss it as a probable misidentification of *contractata*, which I have collected in Newfoundland myself. Pl. 31, Fig. 6, shows an aberrant specimen that I would not recognize as *Anacamptodes vellivolata*, although it may be one. Pl. 31, Fig. 14, appears to show a specimen of *Homochlodes lactispargaria*, not *H. fritillaria* as stated. Fig. 15 on the same plate shows the summer form of *Plagodis phlogosaria*, which would not be expected to occur in Newfoundland where there is no second brood. Only the spring form shown in Fig. 16 should be present. Differentiation between nominate *Metarranthis duaria* and its supposed northern subspecies, *septentrionaria*, is unsatisfactory because both were described from Canada. Whatever name is used, the Newfoundland population is certainly of the usual northern type and variable, as the species is everywhere. The U.S. National Collection has Newfoundland specimens even darker than that shown on Pl. 32, Fig. 2, the "subspecies" said not to occur there. The specimen shown on Pl. 29, Fig. 25, as *Perizoma busaliata* is not that species but *P. grandis* Hulst. Both species occur in Newfoundland. Pl. 29, Fig. 32, shows what appears to be a specimen of *Hydrelia condensata* (Gn.) rather than *inornata*, the latter name being a synonym of *lucata* (correctly identified in Fig. 31). Inasmuch as *Cerastis tenebrifera* does not occur in Nova Scotia, I question the records from Newfoundland and think it more likely that they were based on misidentified specimens of the closely similar *Metalepsis fishi*. The species of *Hyppa* reported as *indistincta* appears to be what I have identified from Newfoundland as *H. brunneicrista* Sm.; at least it almost exactly matches material

of the latter species from Alberta. The type of *indistincta* in the U.S. National Museum is something different. Pl. 33, Fig. 3, shows a specimen of *Estigmene acrea arizonensis* Roths. that must have come from the western U.S. In choosing an example for illustration, the author apparently overlooked the fact that eastern males, including those from Newfoundland, always have yellow hindwings.

The one most irritating feature of the book is its failure to indicate the geographical source of the illustrated specimens, especially those representing rare or doubtfully identified species. Obviously, some of those shown are from Newfoundland or Labrador, but many are not, and the permanent visual evidence that might have been afforded by the inclusion of label data in the legends is needlessly lost. Illustrations of the following species are among many for which specimen data would have been of considerable interest: *Speyeria atlantis* (does not look like subspecies *canadensis*); *Spilosoma congrua* (identified as *Hyphantria textor*); *Arctia caja* (not the arctic subspecies that occurs in Labrador); *Agrotis volubilis* (figure correctly identified as *volubilis*, but is the specimen from Newfoundland? I had supposed, perhaps incorrectly, that *A. musa* replaces *A. volubilis* there); *Agrotis obliqua* (questionable record of a western species); *Amathes c-nigrum* (now *Xestia* spp.) (very pale hindwings; looks like a European specimen); *Cerastis tenebrifera* (questionable record); *Cucullia asteroides* (the figured specimen is this species, but its presence in Newfoundland is unlikely); *Lithophane lepida* (not the brightly marked form that one would expect in Newfoundland; looks like southern subspecies *adipel* Benj.); *Trichoptlexia exornata* (figure does not appear to agree with the very large, distinctly marked form common in Newfoundland); *Platysenta sutor* (a southern species that occurs only as a casual immigrant northward); *Epizeuxis aemula* (appears to be the true *aemula*, although all Newfoundland material that I have seen belongs to a different, closely related species); *Itame argillacearia* (not in Nova Scotia); *Itame exauspicata* (not in Nova Scotia); *Agrochola lota*; and *Acronicta auricoma* (new North American records).

Another criticism concerns the way in which life history information is cited. The statement, "Details of the immature stages in Newfoundland and Labrador are not available," appears frequently, thus implying that such information, when given, is original or from some local source. Obviously, this is not so. I found no evidence in the introduction or elsewhere that any Lepidoptera were reared in connection with this project and concluded that the data were gleaned from many sources. I noted two conspicuous instances of misleading host information. Wax myrtle (*Myrica cerifera*) is an impossible host for any *Rheumaptera* species (p. 239) because it is a southern shrub that grows only where these moths do not occur. They do feed on *Myrica gale* and *M. pennsylvanica*. In the discussion of *Papilio brevicauda* (pp. 33, 34), what has long been recognized as the major host plant is not mentioned. This is a seashore umbel, *Ligusticum scoticum*, whole stands of which sometimes may be decimated by larvae of this butterfly. The plants cited, *Heracleum* and *Angelica*, seem to be secondary hosts that are not much used where *Ligusticum* is available.

Although Morris searched the literature extensively for Newfoundland and Labrador records, he overlooked a few. *Psychophora phocata* (Möschler) was described from Labrador. *Hydriomena exculpata nanata* McD. is represented from Hopedale, Labrador by a paratype in the Canadian National Collection (and there are specimens from Newfoundland in the British Museum (Nat. Hist.)). Covell (1970, Trans. Amer. Entomol. Soc. 96:145) reported *Scopula limboudata* (Haw.) from Grand Lake, Newfoundland. *Anomogyna homogena conditoides* Benj. was originally described from a large series from Salmonier, on the Avalon Peninsula. Forbes (1954, Cornell Exp. Stn. Mem. 329:249) mentioned a specimen of an unidentified *Merolonche* species from Hopedale, Labrador. Although the location of that specimen is unknown to me, I verified the presence of such a species by collecting *Merolonche ursina* Sm. (otherwise a Rocky Mountain species) in southwest Newfoundland. In a paper on host records that I published in 1975 (U.S. Dept. Agric. Tech. Bull. 1521), several species are mentioned from Newfoundland, and two of these are not reported by Morris. The larva of *Papaipema harrisi* (Grt.) was collected from stems of cow parsnip, *Heracleum lanatum*, at Millville,

Codroy Valley, and *Homochlodes lactispargaria* (Wlk.) was reared on braken fern, *Pteridium aquilinum*, from a female collected at the same place.

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