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**MOTHS OF THE DOUGLAS LAKE REGION
(EMMET AND CHEBOYGAN COUNTIES),
MICHIGAN: IV. GEOMETRIDAE (LEPIDOPTERA)¹**

Edward G. Voss²

ABSTRACT

An account, with known flight periods indicated, of 165 species of Geometridae concludes listing of the "macrolepidoptera" from the northern tip of the Lower Peninsula of Michigan. About 44% of these are previously unreported for the region, and 12 species are previously unreported for Michigan in earlier lists for the state.

The Geometridae are a rather large and distinctive family of Lepidoptera, the larvae variously known as inchworms, measuring worms, loopers, cankerworms, or geometers. Such names derive from the looping walk that results from an absence of prolegs at the middle of the caterpillar, which brings the legs from the rear end up to the thoracic legs; it then straightens out the resulting loop by extending the fore part of the body.

In 1915, Welch listed 23 species of this family from the Douglas Lake region. Moore (1955) included 98 species from Emmet and Cheboygan counties. The present list includes 165 species from these two counties, which share the northern tip of the Lower Peninsula of Michigan. This increase of 617% from the 1915 list has been exceeded only in the Noctuidae (Voss 1981, 1984) and similarly results not so much from expansion of the "region" around the University of Michigan Biological Station to include all of two counties as it does from an increase in the number of collectors and greater alertness to the diversity of Lepidoptera. Nevertheless, numerous additional species may be expected in the future.

The format of this annotated list varies only slightly from that of previous installments (Voss 1970, 1981, 1984). With only a few duly noted exceptions, the nomenclature, author citations, sequence, and numbers follow the latest checklist (Hodges et al. 1983). For ease of cross-reference and recognition of synonymy, the number from the previous checklist (McDunnough 1938) is given in parentheses at the end of each annotation. The counties from which each species has been collected are followed by the earliest and latest dates of capture for adults in the two-county region. For the rarest species, usually when there is a single collection, the year is generally added along with whatever additional data are available. County names in parentheses represent published reports (Moore 1955) which I have been unable to substantiate from specimens in the collections examined. These collections, with abbreviations for the institutional ones, are cited under Acknowledgments. Only two species

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(6299 and 6815) are included solely on the basis of published reports that cannot be verified or disposed of.

The present list concludes presentation of the traditional "macrolepidoptera" from the region. In 1944 I made my first collections associated with definite dates and localities in the neighborhood of the family cottage in Mackinaw City, situated in Emmet County just west of the Cheboygan County line. Starting in 1949, I have spent a part of most summers at the University of Michigan Biological Station (referred to in the list as UMBS) on Douglas Lake in Cheboygan County, about 20 miles south of Mackinaw; University property extends on the west nearly to Pellston. Many fine specimens (in UMMZ) were collected, chiefly in the 1930's, by Max M. Peet on the northeast side of Burt Lake, scarcely over three miles from the Station campus. So most records on which this list is based have come from a relatively small portion of the total region, and from near the county line.

A broad sketch of the vegetation in the area is in the third installment of this moth list (Voss 1984). Unfortunately, I have not yet been able to pursue as I would have liked the matter of relationship between the flora and its lepidopterous visitors, whether larvae or adults.

Unless explicitly indicated to the contrary, all mention herewith of larval food plants is not original from this region, but is based on reports in literature (e.g. Prentice 1963, Ferguson 1975, McGuffin 1958-1988, Morris 1980, Bolte 1990). Such plants are sometimes mentioned when a species occurs in a very restricted habitat, is rare although food plants are common, has a particularly interesting food plant, or otherwise seems to warrant comment. Host plants are rarely mentioned for species that feed on diverse taxa. It is clear that abundance of adults is often not related to abundance of larval food plants. *Semiothisa* is an especially diverse genus for species ranging from very narrow host specificity to rather broad tastes.

In the annotations, I have tried to account for all previously published reports for the region, whenever the synonymy is not obvious or the reports are based on misidentifications. Only a few comments on useful identification features are offered. There are several works helpful in determining specimens and clarifying synonymy, besides the treatments cited for particular genera or other groups. McGuffin's *Guide to the Geometridae of Canada* (1967-1988) is well illustrated in color, with keys, and covers all subfamilies except Larentiinae (of which *Eupithecia* is beautifully treated by Bolte 1990). Forbes (1948) also has keys. Covell (1984) is reasonably complete for our area, nomenclaturally up to date, well illustrated, and provided with helpful hints on identification. Holland's classic *Moth Book* (1903) is still sometimes useful for color illustrations, and so are the plates in Morris (1980).

Subfamily Archiearinae

6256. *Archiearis infans* (Mösch.). Cheboygan: 22 April. Taken only by Nielsen. Donahue and Newman (1967) observed this species in Otsego County (immediately south of Cheboygan Co.) puddling at a damp area by a bog, where it was heavily preyed upon by a song sparrow. (4023)

Subfamily Ennominae

6261. *Heliomata cycladata* G. & R. Cheboygan: 15 June-6 July. Although Moore (1955) listed this attractive moth only from the southern Lower Peninsula, it is frequently taken at light at UMBS, where its preferred larval food plant, black locust (*Robinia pseudoacacia*), has been well established since the late 1940's. (4662)
6270. *Protitame virginalis* (Hulst). Emmet, Cheboygan: 20 June-14 Aug. Frequent, as might be expected for a species whose larvae feed on aspens (*Populus* spp.), and often found at light. (4785)

6272. *Eumacaria latiferrugata* (Wlk.). Emmet, Cheboygan: 18 June–24 July. (4774)
6273. *Itame pustularia* (Gn.). Emmet, Cheboygan: 3 July–18 Aug. Note that this is not *Itame pustularia* (Hbn.) of Moore (1955), which is *E. latiferrugata* (above). The present species was listed by Moore as *Physostegania pustularia* Gn., following the 1917 Barnes and McDunnough checklist. (4663)
6274. *Itame ribearia* (Fitch). Cheboygan: 17 July 1937. A single male (UMMZ) collected by Peet at light at Burt Lake. (4746)
6278. *Itame evagaria* (Hulst.). Emmet: 18 June–7 Aug. Listed by Moore (1955) only from the southern Lower Peninsula. I have collected it at light, including gasoline lantern in Mud Lake bog (Inverness Tp.). (4750)
6279. *Itame occiduaria* (Pack.). Emmet, Cheboygan: 18 July–4 Aug. This western species seems to have been collected only rarely in the Great Lakes region. Covell (1970b) cites it from a single Wisconsin locality, in Oneida County, the same county as cited by Ferguson (1953). I collected a male 4 Aug. 1947 (MSU) at incandescent light at Mackinaw City, on a warm, cloudy night that also produced such rarities as *Euxoa manitobana* McD. and *Cryptocala acadensis* (Bethune). The only Michigan record given by Moore (1955) is based on a specimen (UMMZ) from Douglas Lake collected 18 July 1934 [no collector stated]. The only other Michigan specimen I have seen is from Schoolcraft County (MSU). (4749)
6282. *Itame argillacearia* (Pack.). Cheboygan: 25 June–18 July. I took three males during the day at Mud Lake bog in Inverness Tp.; also comes to light. Listed by Moore (1955) as *I. inceptaria*. The larvae are reported to feed on *Vaccinium*. (4748)
6283. *Itame sulphurea* (Pack.). Emmet, Cheboygan: 2 July–11 Aug. Most specimens, including all females, have been taken in bogs (Mud Lake, Inverness Tp.; Galloway Lake, Carp Lake Tp.), by day or at light. Some males have been taken at mercury vapor light and UV light near UMBS and some are diurnal. The strikingly dimorphic yellow females are much less often taken than males. Larval food plants are reported as *Vaccinium* spp. and *Myrica gale*. (4751)
6286. *Itame brunneata* (Thunb.). Cheboygan: 21 June–15 July. (4752)
6291. *Itame loricaria* (Evers.). Emmet, Cheboygan: 2–18 July. Taken at light in 1950 (Voss) and 1937 (Peet, UMMZ). (4797)
6299. *Itame coortaria* (Hulst.). Cheboygan: Reported only by Moore (1955). (4756)
6303. *Itame subcessaria* (Wlk.). Cheboygan: 15 July 1950. I took one fresh male at light at UMBS. Not previously reported from Michigan. (4754)
6321. *Epilis truncataria* (Wlk.). Cheboygan: 14 May. A diurnal moth of heathy areas where its larval food plant grows, *Arctostaphylos uva-ursi* (bearberry). More common than collections indicate, but here and in neighboring areas, flies in May and early June. Often placed in the genus *Isturgia*. (4658)
6326. *Semiothisa aemulataria* (Wlk.). Emmet, Cheboygan: 1–26 July. Listed by Moore (1955) only for the southern Lower Peninsula. Unlike some species of the genus, the larvae of this species and the next feed on a number of deciduous trees (Prentice 1963). (4665)
6330. *Semiothisa ulsterata* (Pears.). Emmet, Cheboygan: 30 June–15 July. (4664)
6340. *Semiothisa minorata* (Pack.). Emmet, Cheboygan: 25 June–3 Aug. The larvae feed on pines (*Pinus* spp.), with one report from spruce (*Picea* sp.) (Prentice 1963). (4670)
6341. *Semiothisa bicolorata* (F.). Cheboygan: 30 June–5 July. The specimens are a good match with McGuffin's figures (1972, figs. 71 & 72); according to Ferguson (in litt.) this is in fact a new species, allied to the next, with larvae on jack pine. Listed by Moore (1955, as *Macaria bicolorata*) from Chippewa, Schoolcraft, and Iosco counties. (4673)
6342. *Semiothisa bisignata* (Wlk.). Emmet, Cheboygan: 13 June–5 Aug. Apparently our commonest species in this genus. It is another conifer feeder, principally on white pine. (4671)
6343. *Semiothisa sexmaculata* (Pack.). Cheboygan: 17 July–11 Aug. I have two specimens; the July one was taken at light at UMBS and the Aug. one at light in Mud Lake bog (Inverness Tp.). Previously reported for Michigan (Newman & Nielsen 1973, Ferguson (1974) only from the southern Lower Peninsula. The larval food plant is tamarack. (4687)
6347. *Semiothisa pinistrobata* Fgn. Emmet, Cheboygan: 27 June–18 July. The larvae of this

- recently (1974) described species feed on white pine, *Pinus strobus*. Ferguson reported it only from the southern Lower Peninsula.
6349. *Semiothisa banksianae* Fgn. Cheboygan: 5–19 July. The larvae feed only on jack pine, *Pinus banksiana*. Although more widespread northward, the only eastern U. S. record for this species known to Ferguson (1974) was from Schoolcraft County; he predicted that it might prove to be more common.
6351. *Semiothisa oweni* (Swett). Emmet, Cheboygan: 23–30 June. The larvae feed on tamarack, *Larix laricina*. Previously reported from Michigan only from Atlanta [Montmorency Co.] by Ferguson (1974). Three specimens in UMMZ include two females taken at Burt Lake at light by Peet in 1937 and one male taken at Douglas Lake in 1934 by G. M. Grant; these are the basis of Moore's report (1955) of *S. granitata* (Gn.) from Cheboygan County. (A fourth specimen det. by Moore as *granitata* is probably *pinistrobata* according to Balogh. *S. granitata* as now understood ranges east and south of the Great Lakes.) My only specimen (like the above, det. Balogh) was taken at incandescent light at Mackinaw City. Covell (1970b) lists a single Wisconsin locality. (4681)
6361. *Semiothisa orillata* (Wlk.). Emmet, Cheboygan: 30 June–15 Aug. The larvae feed only on white-cedar, *Thuja occidentalis*.
- I note that *S. eremiata* (Gn.) was reported from Emmet County by Moore (1955), but no specimen has been found on which this report might be based. The only reported larval food plant seems to be goats-rue (*Tephrosia ambigua*), but the only species of that genus in Michigan (*T. virginiana*) does not range north of the middle of the Lower Peninsula (Voss 1985). Reports of *S. eremiata* from northern Michigan are probably in error. Furthermore, my only specimen determined by Newman as this moth is in fact *Scopula ancillata*, and some MSU specimens are similarly misidentified. (4712)
6386. *Semiothisa ocellinata* (Gn.). Cheboygan: 24 June–18 Aug. Included here are specimens determined by Newman as *S. nigricomma* Warr. Like *Heliomata cycladata* (6261), the principal larval food plant is black locust, relatively recently established on the UMBS campus; absence of any records prior to 1956 is thus understandable. (4723)
6396. *Semiothisa neptaria* (Gn.). Emmet, Cheboygan: 5–12 Aug. My only specimen, a male (but lacking abdomen) was taken at incandescent light at Mackinaw City in 1945 (det. Balogh). A specimen in UMMZ from Douglas Lake was collected by J. Leonard at light in 1932. The larvae of this and the next two species are reported principally if not entirely on poplars and willows. (4725)
6397. *Semiothisa mellistrigata* (Grt.). Emmet, Cheboygan: 1–31 July. (4726)
6405. *Semiothisa gnophosaria* (Gn.). Emmet: 12–26 June. (4738)
6431. *Hesperumia sulphuraria* Pack. Emmet, Cheboygan: 9–15 July. My only specimen (a female) was taken at light in Pellston in 1950. A male (UMMZ) is from Mud Lake, by C.F. Farrell. Apparently not common in the state; Moore (1955) cited only Chippewa, Cheboygan, and Oscoda counties. These are evidently the same three localities shown in the map by Rindge (1974). Similarly, Covell (1970b) and Rindge indicate only two Wisconsin localities. Although the larval food plants are often stated (e.g. by Covell 1984) to be New Jersey tea (*Ceanothus*) and snowberry (*Symphoricarpos*), both quite local in the Douglas Lake region, the actual host range apparently includes a great diversity of trees and shrubs including even conifers (McGuffin 1977a). (4801)
6436. *Ematurga amitaria* (Gn.). Emmet, Cheboygan: 28 May–6 July. The few extant specimens are mostly from Mud Lake bog (Inverness Tp.). Doubtless in other bogs and more common early in the season (as it is in other northern Michigan counties). Moore's 28 May specimens (UMMZ; cf. Moore 1922) are from Cecil. The adults are diurnal and the larvae (cranberry spanworm) are reported from a number of peatland trees and shrubs. I took one specimen 18 June 1946 sunning on a dirt road south of Mackinaw City. (4802)
6570. *Aethalura intertexta* (Wlk.). Emmet, Cheboygan: 26 June–17 July. My only specimen (det. Balogh) is from incandescent light at Mackinaw City in 1946. Collected by Peet (UMMZ) at Burt Lake in 1938. (4945)
6583. *Anacamptodes ephyriaria* (Wlk.). Cheboygan: 19–29 July. One specimen was taken at UV light at UMBS in 1988 (Scholtens) and another from 1935 is in the UMBS collection. I

- have never collected the species myself. Scholtens also reared a specimen on common St. John's-wort (*Hypericum perforatum*) and it emerged 15 July 1990. (4916)
6588. *Iridopsis larvaria* (Gn.). Emmet, Cheboygan: 18 June–14 July. (4912)
6590. *Anavitrinella pampinaria* (Gn.). Emmet, Cheboygan: 12 June–6 July. The generic name was spelled as given here when published by McDunnough (1922); the spelling in Hodges et al. (1983) is presumably a typographic error. (4908)
6597. *Ectropis crepuscularia* (D. & S.). Emmet, Cheboygan: 20 June–13 July. (4946)
6598. *Protoboarmia porcelaria* (Gn.). Emmet, Cheboygan: 23 June–3 Aug. (4875)
6620. *Melanolophia canadaria* (Gn.). Emmet, Cheboygan: 29 May–3 July. Reported by Moore (1955) only from Oscoda and Washtenaw counties, but apparently not rare in the Douglas Lake region. (4856)
6621. *Melanolophia signataria* (Wlk.). Emmet, Cheboygan: 23 May–26 June. (4857)
6637. *Eufidonia convergaria* (Wlk.). Cheboygan: 30 June 1968. My only specimen (det. Balogh) was taken at mercury vapor light at UMBS. The larvae are known from pines. (4803a)
6639. *Eufidonia discopilata* (Wlk.). Cheboygan: 25 June 1934. One female (UMMZ) taken at Mud Lake by C. F. Farrell; determined by Moore as *E. notataria discopilata* and included by him (1955) under *E. notataria*. (4804)
- 6640a. *Biston betularia cognataria* (Gn.). Emmet, Cheboygan: 20 June–8 Aug. I have seen no melanic specimens of the pepper-and-salt moth from this area, but do have two melanic males collected in Oceana County 3–15 July 1944 (mapped by Owen 1961); such males were also collected in Oceana County by Metzler in 1965 and 1966, and in Otsego County by Newman in 1962. (4968)
6654. *Hypagyrtis unipunctata* (Haw.). Cheboygan: 21 June–21 July. (4809)
6665. *Erannis tiliaria tiliaria* (Harr.). Emmet: 17 Sept. – 14 October. My specimens were all taken at lighted windows at Mackinaw City (and hence are all males, the females being wingless). Not mapped from this region by Rindge (1975), who notes that the subspecies in the Pacific Northwest feeds rarely on conifers. Larvae of our subspecies, although called the "Linden looper" and named for linden or basswood (*Tilia*) defoliate many deciduous forest, shade, and garden trees and shrubs (Prentice 1963, Talerico 1978). (4964)
6666. *Lomographa semiclarata* (Wlk.). Emmet, Cheboygan: 14 May–21 June. A diurnal species, sometimes common in yards or along roadsides, pausing at damp spots. Both this and the next species were long placed under the later generic name *Bapta* (see Rindge 1979). (4605)
6667. *Lomographa vestaliata* (Gn.). Emmet, Cheboygan: 27 June–20 July. My specimens were all taken at light, although the species is said also to be diurnal. (4606)
6677. *Cabera erythemaria* Gn. Cheboygan: 4 July 1936. One male (UMMZ) collected by Peet at Burt Lake. Of four specimens collected by me in Emmet and Cheboygan counties and identified as *Deilinia erythemaria* by Newman, one is clearly *Protitame virginialis*; the front of the head is white except for a narrow black transverse line just below the bases of the antennae. The other three are *C. variolaria*; the front of the head is yellowish brown upwards (white below), the palpi are short, and the wings are white with no trace of lines. (See Rindge 1956, p. 23; McGuffin 1981, p. 32.) In *C. erythemaria* the front of the head is yellowish brown throughout, the palpi are longer, and the wings have weak but evident lines. (4614)
- 6678 *Cabera variolaria* Gn. Emmet, Cheboygan: 10 June–2 Sept. (4612)
6724. *Euchlaena serrata* (Drury). Emmet, Cheboygan: 3–21 July. (4994)
6726. *Euchlaena obtusaria* (Hbn.). Emmet, Cheboygan: 23 June–25 July. The specimens may represent the more northern *E. muzaria* (Wlk.), not distinguished by McGuffin (1981). (4995)
6728. *Euchlaena effecta* (Wlk.). Emmet, Cheboygan: 20 June–22 July. (4996)
6729. *Euchlaena johnsonaria* (Fitch). Emmet, Cheboygan: 5–25 July. (4997)
6731. *Euchlaena madusaria* (Wlk.). Emmet: 30 June 1945. Moore (1955) lists only Iosco and Oscoda counties, and only the former is in UMMZ. My specimen is a male taken in the morning at Mackinaw City where an incandescent light had burned the previous night. (5000)

6734. *Euchlaena marginaria* (Minot). Emmet, Cheboygan: 29 May–17 June. I took one male and one female in 1946 at incandescent light at Mackinaw City. Cantrall took a male (UMMZ) at light at Douglas Lake in 1939. The pm. line on the hind wings encloses a distinct loop; the metathoracic tibiae of the males are only slightly swollen. (5002)
6737. *Euchlaena tigrinaria* (Gn.). Emmet, Cheboygan: 16 June–1 July. All specimens are males, with very swollen metathoracic tibiae (cf. McGuffin 1981). The pm. line on the hind wings has at most an indistinct loop. My specimens were originally determined by Newman as *E. pectinaria* (D. & S.), which is not to be expected in Michigan. (5005)
6739. *Euchlaena irraria* (B. & McD.). Emmet, Cheboygan: 24 June–18 July. (5006)
6740. *Xanthotype urticaria* Swett. Emmet, Cheboygan: 1 July–7 Aug. Frequent at light; rarely diurnal. The dates are those for males, which can usually be determined without dissection by brushing some scales from the ventral part of the end of the abdomen, where the aedeagus is generally visible as a truncate organ bidentate at its apex (cf. figures in Rindge 1978, p. 11; McGuffin 1981, fig 179h). Females which may be this species have been captured as late as 13 Aug. (5010)
6743. *Xanthotype sospeta* (Drury). Emmet, Cheboygan: 25 June–14 Aug. The aedeagus is more or less spoonlike, without teeth, and can generally be seen without dissection, as above (cf. Rindge 1978, p. 11; McGuffin 1981, fig. 179e). (5007)
6753. *Pero honestaria* (Wlk.). Emmet, Cheboygan: 13–15 Aug. (5072)
6755. *Pero morrisonaria* (Hy. Edw.). Emmet, Cheboygan: 21 June–2 July. My specimens were originally named by Newman as *P. marmoratus* (Grossb.) [= *P. hubneraria* (Gn.)], but can be referred here by the greatly swollen 8th sternite of the male abdomen (cf. Poole 1987). Moore's listing (1955) of *P. marmoratus* from Cheboygan County is likewise based on specimens (UMMZ) of *P. morrisonaria*. The larvae of this species are reported most commonly on conifers (Prentice 1963), whereas those of the preceding feed on deciduous trees and shrubs. (5080)
6763. *Nacophora quernaria* (J. E. Smith). Cheboygan: 4 July 1937. One male (UMMZ) collected by Peet at light at Burt Lake. Hence, listed by Moore (1955) for Cheboygan (as well as other) counties, although not mapped by Rindge (1961, p. 109) for Michigan. (4953)
6796. *Campea perlata* (Gn.). Emmet, Cheboygan: 24 June–15 Aug. (5015)
6797. *Ennomos magnaria* Gn. Emmet, Cheboygan: 29 July–9 Sept. (5170)
6798. *Ennomos subsignaria* (Hbn.). Emmet, Cheboygan: 30 June–12 Aug. Apparently quite rare in the region, although the larvae (elm spanworm) have sometimes been an important defoliator of deciduous trees in areas east of Michigan. (5059)
6804. *Petrophora subaequaria* (Wlk.). Emmet, Cheboygan: 23 May–27 June. I have never taken this diurnal species myself; specimens are at MSU and in the Scholtens collection. This is one of the few species whose larvae feed on bracken fern (*Pteridium aquilinum*), and it should therefore be more common in this area, where bracken is so abundant. (5025)
6807. *Tacparia detersata* (Gn.). Emmet: 27 May–7 July. Apparently uncommon. My only specimen is a female taken at Mackinaw City 7 July 1945 at incandescent light. R. and K. Dreisbach (MSU) and G. Balogh have collected the species 27 May. The only reported larval food plants are diverse: alder and tamarack (McGuffin 1987). Both this species and the preceding were long placed in *Apaecasia* until the correct genus was noted by Rupert (1949), who stated that *T. detersata* was apparently missing in the central and western U. S. Moore (1955) listed only six counties, all in northern Michigan but including neither Emmet nor Cheboygan; Covell (1970b) indicated only three locations in Wisconsin. (5023)
6812. *Homochlodes fritillaria* (Gn.). Emmet, Cheboygan: 27 May–6 July. Rupert (1949) and McGuffin (1987) have not treated *H. lactispargaria* (Wlk.) as a distinct species, although Ferguson (in Hodges et al. 1983) does so, and he has noted (Ferguson 1983) that Morris (1980, pl. 31 fig. 14) shows *lactispargaria*, not *fritillaria*. The white spots on our specimens are less prominent than usually figured and the markings are not as dark as in Rindge (1986, fig. 5). Two specimens were taken at UV light by Scholtens at UMBS 25 June and 6 July. Two specimens (MSU) collected 27 May 1960 in Emmet County by R. and K. Dreisbach could be *lactispargaria*, which is an early spring species (Ferguson, in litt.). These taxa are among the relatively few species with larvae on bracken and other ferns, and yet the moths are apparently uncommon in our area. (5022)

6815. *Gueneria similaria* (Wlk.). (Cheboygan): Moore (1955) lists this county for the species (as *G. basiaris* [Wlk.]) only on the basis of Welch (1915), whose specimen has not been located. The only reported larval food plant is a fern (*Dryopteris*), so the report is reasonable. (5016)
6819. *Metanema inatomaria* Gn. Emmet, Cheboygan: 27 May–11 Aug. A rather common and attractive moth at light. (5054)
6820. *Metanema determinata* Wlk. Emmet, Cheboygan: 26 June–25 July. (5055)
6821. *Metarranthis warnerae* (Harv.). Emmet, Cheboygan: 20 June–3 July. (5048)
6822. *Metarranthis duaria* (Gn.). Emmet: 27 May–22 June. My only specimen is a female taken at incandescent light at Mackinaw City in 1945. R. and K. Dreisbach (MSU) and G. Balogh took the species on 27 May in 1960 and 1990 respectively. The pm. line is much less sharp in this species than in the preceding, and is broken where it crosses the veins. Two specimens of mine, both males, determined as this species by Newman I refer to *M. warnerae*, with strong dark shading before the pm. line, which is continuous. (5050)
6825. *Metarranthis indeclinata* (Wlk.). Cheboygan: 1 July 1950. My only specimen is a pale female which was flying by day in a cedar swamp area ("Reese's Bog"). McGuffin (1987) includes this species in *M. hypochraria* (H.-S.), but others treat it as distinct (the spelling of the latter in Hodges et al. 1983 is presumably a typographic error). (5046a)
6832. *Metarranthis obfirmaria* (Hbn.). Cheboygan: 9 or 10 May 1987. A specimen in the collection of Dana Gring, taken near Indian River, was examined by Scholtens and Nielsen at a meeting of The Ohio Lepidopterists, and is apparently the only record from the region. (5052)
6834. *Cepphis decoloraria* (Hulst). Cheboygan: 30 June–3 Aug. Apparently not common in the state. My only specimen was taken 30 June 1950 by Glenn Peterjohn (no locality other than county); three others (UMMZ) were taken at light at Burt Lake by Peet. The larvae have been reported only on *Rubus* spp., "preferring blackberry to raspberry" (Forbes 1948, Ferguson 1975). (5029)
6835. *Cepphis armataria* (H.-S.). Cheboygan: 24 June–4 July. Several specimens (UMMZ) collected by Peet 1936–1937 at Burt Lake. (5028)
6836. *Anagoga occiduaria* (Wlk.). Cheboygan: 3 July 1937. One specimen (UMMZ) collected by Peet at light at Burt Lake. (5042)
6838. *Probole amicaria* (H.-S.). Emmet, Cheboygan: 20 June–2 July. (5043)
6840. *Plagodis serinaria* H.-S. Emmet: 23 May–12 June. Two specimens, the June one taken by Nielsen in 1983 and in his collection, the May one by Newman in 1957 (MSU). (5031)
6841. *Plagodis kuetzingi* (Grt.). Cheboygan: 27 June–11 July. (5031)
6842. *Plagodis phlogosaria* (Gn.). Emmet: 23 May–21 June. (5040)
6844. *Plagodis alcoalaria* (Gn.). Emmet, Cheboygan: 19 May–18 July. (5038)
6863. *Caripeta divisata* Wlk. Emmet, Cheboygan: 14 June–27 July. The hosts for this and other species in the genus are conifers. (5125)
6864. *Caripeta piniata* (Pack.). Cheboygan: 24 June–26 July. (5126)
6867. *Caripeta angustiorata* Wlk. Emmet, Cheboygan: 14 June–5 Aug. (5128)
6884. *Besma endropiaria* (G. & R.). Cheboygan: 24–25 June. One male, taken in 1969 at mercury vapor light at UMBS, and one female, taken by Scholtens at UV light in 1990. McGuffin (1987) follows Capps (1943) in treating this taxon as a subspecies of the next. Forbes (1948) keeps them distinct, noting key differences, and they are so listed by Ferguson in Hodges et al. (1983). (5144)
6885. *Besma quercivoraria* (Gn.). Cheboygan: 27 June 1969. One female, taken at mercury vapor light at UMBS. Since the larvae of this species and the preceding feed on species of maple, oak, and birch, it is surprising that the moths are not more common. Among the few Michigan counties listed for each (as *Ellopiia endropiaria* and *Metanema quercivoraria*), Moore (1955) included neither Emmet nor Cheboygan. (5145)
6888. *Lambdina fiscellaria* (Gn.) Emmet, Cheboygan: 23 Aug.–14 Sept. I have seen only three specimens: one (UMMZ) taken by Moore in 1921 at Waugoshance Island and cited by him (1922) from Emmet County; one (UMMZ) taken in 1937 by Peet at light at Burt Lake; and one taken in 1989 by Scholtens at UMBS. The larva (hemlock looper) is an important defoliator of conifers in some regions, but evidently not here. (5146)
6898. *Cingilia catenaria* (Drury). Cheboygan: 6–13 Sept. Collected by Scholtens at Mud Lake

- bog (Inverness Tp.) and by Rawson at Black Lake (UMMZ). There is also a pair of specimens in the UMBS collection from Mud Lake, labeled "Pupated before viii-18-41 Emerged June 20 '42"; the labels also say "Chamidaphne Looper" suggesting that leatherleaf (*Chamaedaphne calyculata*) may be a previously unreported host. The moth (chain-dotted geometer) is doubtless more common than the few records indicate; although it is a conspicuous diurnal flyer, it must be overlooked by collectors who do not venture much into bogs in the fall. I have found the adults in Luce County bogs 1 Sept.—14 Oct. (5152)
6906. *Nepytia canosaria* (Wlk.). Cheboygan: 14 Aug—11 Sept. Specimens are in the MSU, UMMZ, and Scholtens collections. The larvae feed on conifers and one would expect so distinctive and attractive a moth to have been collected more often than it has. Moore (1955) lists two upper Peninsula counties and six Lower Peninsula ones. My only specimen is a male taken at a gasoline lantern in Luce County 22 Aug. 1989. (5109)
6912. *Sicya macularia* (Harr.). Emmet, Cheboygan: 5 July—19 Aug. (5161)
6941. *Eusarca confusaria* Hbn. Emmet, Cheboygan: 8 July—1 Aug.. (5184)
6963. *Tetracis crocallata* Gn. Emmet, Cheboygan: 26 June—2 July. (5197)
6964. *Tetracis cachexiata* Gn. Emmet, Cheboygan: 16 June—6 July. (5198)
6965. *Eugonobapta nivosaria* (Gn.). Cheboygan: 6-24 July. Taken only by Scholtens at UMBS in 1985 and 1988. (4991)
6966. *Eutrapela clemataria* (J. E. Smith). Emmet, (Cheboygan): 20-24 June. (5199)
6982. *Prochoerodes transversata* (Drury). Emmet, Cheboygan: 1 July—28 Aug. (5211)
6987. *Antepione thisoaria* (Gn.). Emmet, Cheboygan: 24 June—10 July. The sexes are dimorphic, as well shown by Holland (1903, pl. 45), where the male (fig. 17) and female (fig. 18) bear different names—both of which are now considered synonyms of *thisoaria* (5200)
7009. *Nematocampa limbata* (Haw.). Emmet, Cheboygan: 22 July—12 Aug. My only specimen was taken in Aug. at incandescent light at Mackinaw City in 1945. Scholtens took one in July 1990 at UV light at UMBS. Evidently rare. (5044)

Subfamily Geometrinae

7048. *Nemoria mimosaria* (Gn.). Cheboygan: 29 May 1939. One male (UMMZ), taken by Cantrall at light at Douglas Lake. (4048)
7058. *Synchlora aerata* (F.). Emmet, Cheboygan: 1-29 July. My specimens have all been referred by Balogh to ssp. *albolineata* Pack., extending slightly south its limit in Michigan as stated by Ferguson (1985, p. 85) to be Iron County, in the western Upper Peninsula. (4070)
7071. *Chlorochlamys chloroleucaria* (Gn.). Emmet, Cheboygan: 16 June 27 Aug. (4095)
7084. *Hethemia pistasciaria* (Gn.). Emmet, Cheboygan: 10 June—9 July. Taken at light and also flushed from grass during the day. (4087)
7085. *Mesothea incertata* (Wlk.). Emmet, Cheboygan: 14-26 May. Collected by Scholtens in the jack pine plains south of Indian River and by Stinson (MSU) in Emmet County. Besides the diurnal habit and earlier flight period, this species can be distinguished from the preceding by the shallowly pectinate (not simple) antennae of the male and the smaller eyes (Ferguson 1985). Ferguson notes that this boreal species is the only one in its subfamily with an exclusively northern distribution. (4089)

Subfamily Sterrhinae

7114. *Idaea demissaria* (Hbn.). Emmet, Cheboygan: 3 July—8 Aug. (4180)
7132. *Pleuroprucha insulsaria* (Gn.). Cheboygan: 30 June—9 Aug. I have one male taken in August at mercury vapor light at UMBS in 1964; Scholtens took two females at UV light at the Station, one in August and one in June. (4206)
7139. *Cyclophora pendulinaria* (Gn.). Cheboygan: 13 June—18 Aug. Listed by Welch (1915, as *Cosymbia lumenaria* [Hbn.]); his undated specimen is in UMMZ. Also taken by Scholtens, but never by me. (4211)
7146. *Haematopis grataria* (F.). Emmet, Cheboygan: 11 July—1 Aug. A pretty little yellow

- and pink moth, the "chickweed geometer" from some of the larval food plants, often diurnal but also attracted to light (taken at carbon arc light and gasoline lantern). (4204)
7157. *Scopula cacuminaria* (Morr.). Emmet: 22 July 1945. I have one female, found in Mackinaw City on the wooden post of an incandescent streetlight. Moore (1955) recorded this species only from the southern Lower Peninsula, but Covell (1970a) cited and illustrated a specimen from Ramona [Newaygo Co.], somewhat farther north. (4140)
7159. *Scopula limboundata* (Haw.). Emmet, Cheboygan: 30 June–14 Aug. A very common species and an extremely variable one as well illustrated by Covell (1970a, figs 80–82), McGuffin (1967, figs. 26–32), and others. (4149)
7162. *Scopula ancillata* (Hulst.). Emmet: 28 June–12 Aug. I have four specimens, all taken at incandescent light in 1945 at Mackinaw City. The only previously published Michigan record seems to be from Schoolcraft County (Covell 1970a, p. 153), although there are specimens in MSU from other counties. (See also remarks under 6361 above.) Michigan is on the eastern edge of the range for this species. (4147)
7164. *Scopula junctaria* (Wlk.). Emmet, Cheboygan: 25 June–29 July. Taken at lights. (4148)
7165. *Scopula quadrilineata* (Pack.). Cheboygan: 20 June 1989. Two specimens (det. Balogh) taken by Scholtens as diurnal flyers in a clearing near UMBS. Previously unreported from Michigan except for citation of the state in the original description (Packard 1876); however, Covell (1970a) notes that what he has seen of the type series is mixed and he did not see any Michigan specimens. (4143)
7169. *Scopula inductata* (Gn.). Emmet, Cheboygan: 18 June–8 Sept. (4158)

Subfamily Larentiinae

7182. *Dysstroma citrata* (L.). Cheboygan: 23 Aug. 1937. One male (UMMZ) taken by Peet at light at Burt Lake. This specimen was determined by Moore as *D. truncata* (Hufn.), so is the basis for his listing the latter for Cheboygan County. The correct identification has been made by Balogh. (4416)
7189. *Dysstroma hersiliata* (Gn.). Cheboygan: 30 June–7 July. Larvae have been reported on currant (*Ribes*). (4420)
7196. *Eulithis diversilineata* (Hbn.). Emmet, Cheboygan: 4 Aug.–5 Sept. Only two specimens: the August one by Scholtens at UV light at UMBS in 1990; the September one by me at incandescent light at Mackinaw City in 1945. (4401)
7197. *Eulithis gracilineata* (Gn.). Cheboygan: 24 July–23 Aug. This frequent species and the preceding are not well contrasted in recent literature; the figures by Packard (1876, pl. 8, figs 53 & 54) are helpful. Larvae of both species feed on members of the grape family (Vitaceae). (4401f)
7199. *Eulithis propulsata* (Wlk.). Cheboygan: 9 July 1989. One specimen (det. Balogh) taken at UV light by Scholtens at UMBS. Not previously reported for Michigan. McGuffin (1958) lists only *Ribes* as host. (4402)
7201. *Eulithis testata* (L.). Emmet, Cheboygan: 3 July–30 Sept. The larvae are rather broad feeders on woody plants (McGuffin 1958). (4403)
7203. *Eulithis molliculata* (Wlk.). Emmet: 12–29 Aug. One specimen from each date in 1945, at incandescent light at Mackinaw City. The larvae are reported on ninebark, *Physocarpus opulifolius*, a common calciphile shrub in the region (McGuffin 1977b). (4404)
7206. *Eulithis explanata* (Wlk.). Cheboygan: 5 July–12 Aug. The larva are reported on blueberries, *Vaccinium* spp. (Covell 1984), and the pupae have been found on conifers (Prentice 1963). (4406)
7208. *Eulithis serrataria* (B. & McD.). Cheboygan: 21 July 1989. One specimen (det. Balogh) taken at UV light by Scholtens at UMBS. This is yet another new species for the state. (4408)
7210. *Eustroma semiatrata* (Hulst.). Cheboygan: 26 July 1951. One female, taken at light at UMBS. Reported for Michigan (including this record) by Newman and Nielsen (1973), but earlier reported (as *E. nubilita* [Pack.]) by Welch (1915), whose undated Douglas Lake specimen is in UMMZ. A handsome and rather boreal species, with larvae reported on fireweed (*Epilobium*). (4398)

7216. *Plemyria georgii* Hulst. Emmet: 13 Aug. 1945. I took one male of this northern species at incandescent light at Mackinaw City; determined by Balogh in 1988. First reported from Michigan by Newman and Nielsen (1973) from four other northern counties. Listed by Covell (1970b) from only one location in Wisconsin. (4412)
7218. *Thera contractata* (Pack.). Emmet: 9 July–30 Sept. The usual larval host is juniper (McGuffin 1958). (4431)
7235. *Hydriomena divisaria* (Wlk.). Cheboygan: 27 June 1969. I have a single specimen (det. Balogh 1990), taken at mercury vapor light at UMBS. The larvae of this uncommon species feed on conifers, whereas alder is the preferred host of the next species. (4484)
7236. *Hydriomena renunciata* (Wlk.). Emmet, Cheboygan: 12 June–3 Aug. A rather common moth. Included here, as determined by Balogh, are all my specimens placed by Newman (1973–1975) as *frigidata* and as *divisaria* (except for the single *divisaria* cited above). Moore (1955) reported only *renunciata* from Cheboygan County (no *Hydriomena* from Emmet), presumably including the old listing by Welch of *autumnalis* (cf. discussion by McDunnough 1954, p. 275). (4485)
7285. *Triphosa haesitata* (Gn.). Emmet: 27 May 1960. Four specimens (MSU) collected by R. and K. Dreisbach. (4244)
7291. *Hydria prunivorata* (Fgn.). Emmet, Cheboygan: 27 June–6 Aug. Our male specimens of *Hydria* are this species, with more or less triangular uncus as figured by Ferguson (1955); females are presumably the same, although the very similar *H. undulata* (L.) could occur.
7293. *Rheumaptera hastata* (L.). Emmet, Cheboygan: 25 May–24 June. A diurnal species, often seen in early summer flitting about the edges of woods. Dates given are for males, which can rather easily be distinguished from *R. subhastata* (Nolcken) by the distinctive sacculus (described by McGuffin 1973), visible ventrally with a little brushing away of a few scales. Females, presumably of the same species, are on the wing until mid-July. I took one female 13 July at the flowers of nine-bark (*Physocarpus opulifolius*), and have seen what presumably was this species visiting the flowers of mountain maple (*Acer spicatum*) in Luce County. In Alaska this species has been a serious defoliator of paper birch (*Betula papyrifera*), as described and well illustrated by Werner and Baker (1977); overall, the larvae are rather general feeders. The amount of white on the wings is quite variable, so that differentiation from *R. subhastata* on the basis of pattern is unreliable. The latter species was mapped by McGuffin (1973) from the tip of the Lower Peninsula. However, the specimen (MSU), determined by McGuffin, on which this map dot is obviously based bears a label clearly reading "Mackinaw [sic] Co." and should therefore have been mapped from the other side of the Straits, in Mackinac County. (4573)
7307. *Mesoleuca ruficillata* (Gn.). Cheboygan: 27 June 1969. I took one female at mercury vapor light at UMBS. A memorandum in some primitive field notes indicates that a specimen taken 29 June 1944, presumably at Mackinaw City in Emmet County, was lost. For a species whose larvae are reported on bracken and blackberries—both common in the area—this is a remarkably rare species. (4546)
7312. *Spargania magnoliata* Gn. Emmet, Cheboygan: 7 July–22 Aug. The larvae feed on members of the evening-primrose family (Onagraceae). (4555)
7316. *Perizoma basaliata* (Wlk.). Emmet, Cheboygan: 19 July–13 Aug. (4575)
7329. *Anticlea vasiliata* Gn. Emmet 12–27 May. Listed by Moore (1955) only from three counties in the southern Lower Peninsula. My only specimen was taken in 1951 during the day on Waugoshance Point. In MSU are two specimens collected 27 May 1960 by R. and K. Dreisbach. The larvae are known to feed on raspberry (*Rubus*) (Morris 1980). (4587)
7368. *Xanthorhoe labradorensis* (Pack.). Cheboygan: 10–13 Aug. One female at mercury vapor light (in 1965) at UMBS is probably the same species as a male at UV light (in 1989) at the same place (Scholtens) and confirmed by Balogh in 1990. (This taxon is not the same as early misapplication of *labradorensis*, for which McDunnough published *packardata* in 1945 [Canad. Entomol. 77:65].) Moore (1955) listed Cheboygan County for *X. designata* Hufn., based on the listing by Welch (1915, as *Gypsochroa designata*), but what was once called *designata* is now to be called *labradorensis* and Welch's undated specimen (UMMZ) has been determined as this by Balogh. (4511)

- 7370a. *Xanthorhoe abrasaria congregata* (Wlk.). Cheboygan: 4 Aug. 1973. Nielsen reports one specimen in his collection. (4530a)
7371. *Xanthorhoe iduata* (Gn.). Cheboygan: 9 July 1934. One male (UMMZ) taken at Mud Lake (Inverness Tp.) by C.F. [Farrell]. (4527)
7388. *Xanthorhoe ferrugata* (Cl.). Emmet, Cheboygan: 24 June–15 Aug. (4517)
7390. *Xanthorhoe lacustrata* (Gn.). Emmet, Cheboygan: 18 June–19 Aug. Species of *Xanthorhoe*, including this one, have been implicated in the pollination of blunt-leaved orchid, *Habenaria obtusata*, in northern Lower Michigan (Crawford Co.) and northern Wisconsin (Stoutamire 1968; Thien & Utech 1970). This is an orchid usually pollinated by mosquitoes. (4509)
7394. *Epirrhoe alternata* (Müller). Cheboygan: 14 Aug. 1989. Scholtens collected a female at UV light at the Biological Station. Moore (1955) merely cited Welch (1915, as *Rheumaptera sociata*), whose specimen cannot be found. My only specimen is from Oceana County, 22 July 1944. The larvae are reported only from bedstraw (*Galium*), of which several species are common in the region. (4551)
- 7399a. *Euphyia unangulata intermediata* (Gn.). Cheboygan: 24 June 1959. One female at mercury vapor light at UMBS. (4558)
7414. *Orthonama obstipata* (F.). Emmet, Cheboygan: 12 June–24 Aug. A very common little moth. The sexes are dimorphic. Larvae found by Sandy Beadle have been reared by Scholtens on the endangered Michigan monkey-flower, *Mimulus glabratus* var. *michiganensis*—a previously unreported host plant and host family (Scrophulariaceae). (4535)
7416. *Orthonama centrostrigaria* (Woll.). Emmet, Cheboygan: 13 June–24 October. The latest date in my records was 15 July until Nielsen reported taking this species in October. (4559)
7419. *Hydrelia lucata* (Gn.). Emmet: 25 June–16 July. The wings of this species are more or less uniformly marked with grayish scales. According to Ferguson (in litt.), *inornata* is a later name for the same species. *H. condensata* (Wlk.) has prominent pure white medial and terminal areas on the forewings (and in older literature is often listed and illustrated as “*lucata*”); it should be expected in the Douglas Lake region, as a nice series was collected (UMMZ) by Moore at light at St. Ignace, just across the Straits of Mackinac, 5 June–12 July 1927. (4594)
7423. *Hydrelia albifera* (Wlk.). Emmet, Cheboygan: 8 June–28 July. My only specimen was taken at incandescent light at Mackinaw City. Cheboygan County specimens (UMMZ) are from Burt Lake and Cheboygan; also listed by Welch (1915). One would expect this species to be common, since the larvae are reported on red-osier (*Cornus stolonifera*) (McGuffin 1958), a very common shrub in the region. (4597)
7430. *Trichodezia albovittata* (Gn.). Cheboygan: 5 July 1984. One specimen (Scholtens); also listed by Welch (1915) and hence by Moore (1955). A black-and-white diurnal very different from *Rheumaptera*, with which I have seen it flying elsewhere in Michigan. (4235)
7440. *Eubaphe mendica* (Wlk.) Emmet, Cheboygan: 19 June–12 Aug. A common moth at light throughout the region. (4599)
7445. *Horisme intestinata* (Gn.). Emmet, Cheboygan: 12 June–13 Aug. (4393)
7449. *Eupithecia palpata* Pack. Cheboygan: 23 June 1934. Collected at Douglas Lake by G.M. Grant (UMMZ), determined by Bolte. Listed for the county by Moore (1955), as “determined by Swett,” but there is no Swett label on the pin. The larvae feed on conifers (Bolte 1990). (4287)
7474. *Eupithecia miserulata* Grt. Emmet, Cheboygan: 9 June–5 July. (4266)
7487. *Eupithecia subfuscata* (Haw.). Emmet: 18 June–14 July. Evidently our commonest species, as it is in other areas. The larvae are known from many hosts. (4276, as *castigata*)
7491. *Eupithecia fletcherata* (Tayl.). Cheboygan: 15 Aug. 1937. Collected at light at Burt Lake by Peet (UMMZ). Not previously reported from Michigan; determined by Bolte. (4280)
- 7518a. *Eupithecia intricata taylorata* Swett. Emmet: 28 June–13 July. Two specimens at incandescent light at Mackinaw City (det. Bolte). Not previously reported from Michigan, although the larvae feed primarily on white-cedar and junipers, and one would expect the

- species to be more common. Bolte (1990) includes *E. gibsonata* Tayl. in this species. (4320, 4322)
7528. *Eupithecia assimilata* Doubleday. Cheboygan: [date illegible]. One specimen (UMMZ) collected by Peet at Burt Lake and determined by Bolte. Following Bolte (1990), this is the species listed in Hodges et al. (1983) as *E. fumosa* (Hulst). This specimen was determined by Moore as *E. coagulata* (see below). (4330)
7529. *Eupithecia absinthiata* (Cl.). Emmet, Cheboygan: 28 June–9 Aug.. I have one specimen collected in 1945 at incandescent light at Mackinaw City, and Balogh took one specimen in Aug. of 1986 in Cheboygan County. Bolte (1990) included *E. coagulata* Gn. in this species, but Moore's listing (1955) of *coagulata* from Cheboygan County is to be referred to the previous species. This is a species of which the larvae are flower feeders. (4336)
7533. *Eupithecia cretaceata* (Pack.). Emmet: 6 Aug 1945. One specimen at incandescent light at Mackinaw City (det. Bolte). Previously unreported from Michigan. Since the usual larval food plant, false hellebore (*Veratrum*) does not occur in the state, the host in this area is presumably the closely related white camas (*Zigadenus glaucus*). An allied species, *E. zygaeniata*, of Texas, feeds on *Z. nuttallii*. The wingspread of *E. cretaceata* is twice as large as in any other Michigan species. (4350)
7538. *Eupithecia gelidata* Mösch. Cheboygan: 27 June 1932. Collected by Peet (UMMZ) at Burt Lake. The only Michigan record listed by Moore (1955) is clearly based on this specimen, which has been confirmed by Bolte. (Moore stated that it was determined by McDunnough but did not include the question mark that appears on the determination label. The species was not cited from Michigan by McDunnough [1949].) The larvae of this northern circumpolar moth are mostly found on Labrador-tea (*Ledum*). (4333)
7540. *Eupithecia perfusca* (Hulst). Cheboygan: 10 July 1985. One specimen collected by Scholtens at UV light at UMBS (det. Bolte). Not previously reported from Michigan. The larvae are usually on amentiferous woody plants. (4335)
7551. *Eupithecia interruptofasciata* Pack. Emmet, Cheboygan: 10 Aug. – 18 Sept. Two specimens taken by Scholtens in 1989 at UV light at UMBS. I took one at light in Mackinaw City in 1977. The material has been determined by Bolte, who includes North American records of *E. pusillata* (D. & S.) here and notes that the larvae are usually found on *Juniperus communis*, common juniper. (4342a)
7575. *Eupithecia mutata* Pears. Cheboygan: 9 July 1989. Two specimens (Scholtens) taken at UV light at UMBS and determined by Bolte. Previously reported from Michigan only from Chippewa County (Newman & Nielsen 1973). The larvae of this species are usually in the cones of white spruce, *Picea glauca*. (4367)
7594. *Eupithecia anticaria* Wlk. Emmet, Cheboygan: 27 May – 18 July. I took two specimens 1945–1950 at light in July at Mackinaw City (det. Bolte). Balogh collected the species in Cheboygan State Park in May 1990. Reported by Moore (1955) only from Mackinac County and the Beaver Islands. This is another species of which the larvae feed on flowers (rather than leaves) of various plants. (4389)
7605. *Eupithecia ravocostaliata* Pack. Cheboygan: 25 May 1990. Collected by Balogh at Cheboygan State Park. (4383)
7640. *Lobophora nivigerata* Wlk. Emmet, Cheboygan: 23 May – 14 Aug. Several of my specimens were referred by Newman to *L. montanata* Pack., a species reported from two Upper Peninsula counties by Moore (1922). Insofar as my specimens are males, they all have hair pencils on the metathoracic tibiae. Hulst (1896), in describing a new genus (*Tallegeda*) for *montanata*, declared that it differed from *Lobophora* in the absence of such hair pencils. The larvae of *nivigerata* feed on quaking aspen, *Populus tremuloides*, and other woody plants. (4226)
7648. *Dyspteris abortivaria* (H.-S.). Cheboygan: 21 June – 7 July. Rarely taken at light. I have not collected the species so far north, but there are specimens in the Scholtens and UMMZ collections. The larvae feed on members of the grape family (Vitaceae). (4234)

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My specimens of Geometridae were all (insofar as then collected) in the hands of the late John H. Newman prior to publication of Newman and Nielsen's 1973 list of moths new to Michigan, but many of the records were not noted in that paper. My specimens (primarily subfamilies other than Ennominae) not checked by Newman before his retirement, plus more recent specimens and puzzles from other collections, were generously examined since 1988 by George Balogh, who has also commented on an early draft of the manuscript and supplied some records from his own collection. Douglas C. Ferguson has commented very helpfully on the manuscript. M. C. Nielsen supplied several additional records from his collection. Brian G. Scholtens, who has collected at UMBS since 1984, has contributed in a major way through his discriminating collecting, aid in identification, and cheerful encouragement. Klaus Bolte has kindly named almost all the available *Eupithecia* specimens. The collections of the University of Michigan Museum of Zoology (UMMZ), Michigan State University Entomological Museum (MSU), and University of Michigan Biological Station (UMBS) have been freely made available. I have collected 76% of the 165 species listed and have them in my personal collection (at Mackinaw City). When the only specimens from the region are in other collections, they are indicated. (about 50% of the species are in the Scholtens collection, 55% in UMMZ and 24% in UMBS.) I am grateful to all those who have determined specimens, provided access to collections, and suggested improvements in the manuscript. The University of Michigan Biological Station has generously supported publication.

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