INVERTEBRATES

RECORDS OF THE BALTIMORE CHECKERSPOT BUTTERFLY IN MANITOBA

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Introduction

The Baltimore Checkerspot, also known simply as the Baltimore, is a strikingly marked, eastern North American butterfly (Fig. 1, see inside front cover, top) that reaches its northwestern range limit in southeastern Manitoba.[4,5,7] Like the Baltimore Oriole, its black-and-orange markings recall the armorial colours of the Baltimore family, one-time colonial officials in what is now the state of Maryland. The butterfly's distribution is closely linked to that of the preferred larval food plant Turtlehead *(Chelone glabra)*. When fully grown and in bloom, Turtlehead is a conspicuous plant with large, white flowers that often stands above the surrounding vegetation (Fig. 2). It may not reach full height, however, until after the peak Baltimore flight period. It is therefore advantageous to identify Turtlehead in late summer and then search for larvae and adult butterflies the following year. Preferred habitats are often described as grassy marshes and wet meadows, sometimes within forested regions.

Manitoba Distribution

Just two Manitoba localities for the Baltimore, substantiated by three specimens, are mentioned in The *Butterflies of Manitoba*.[4] Additional records have expanded the known occurrence to six well-separated areas, some including multiple sites, all within about 100 km north of the U.S. border and 80 km west of the Ontario boundary. Most of the additional records were obtained either (a) during surveys of the butterfly fauna of southeastern Manitoba forests by ARW and co-workers in 1982 and 2001 or (b) by targeted surveys of known Turtlehead localities along Provincial Road (PR) 308 south of East Braintree in 1991 and 2009

Figure 2. Turtlehead (Chelone glabra) *blooms south of East Braintree, MB, 9 July 1991.* *Peter Taylor*

by PT and several fellow naturalists. The 1991 search followed the discovery of Turtlehead plants in bloom at several roadside sites on 1 September 1990.[8] This article documents all the records, some of which have been published previously but in fragmentary fashion.[4,5,8–11] The following list is organized by the six areas mentioned above, in chronological order of discovery. Localities are given with sufficient precision for regional mapping without disclosing the exact coordinates of potentially sensitive colonies.

Agassiz Provincial Forest (nominally 50° 0' N, 96° 9' W) — Two specimens at The Manitoba Museum (MM), # 29393 and # 29394, were collected by P. Klassen on 12 July 1974; exact coordinates are unknown.

Sandilands Provincial Forest (nominally 49° 22' N, 96° 7' W) — MM specimen # 29391 was collected by C.S. Quelch on 7 July 1977; exact coordinates are unknown.

Habitats for these first two records were "a sandy area adjoining wet forest" and "black spruce bog", although it is not clear to which site each description applies.[4]

Near Wampum Provincial Forest (49° 06' N, 95° 49' W) — Several adults were observed by ARW in the first week of July 1982, although no butterflies were collected. In 2001, Baltimore butterflies were observed by ARW and student assistants in the vicinity of Wampum Provincial Forest on 20 June (five individuals), and 28 June (six individuals), with two specimens being collected from the 20 June group. Butterflies were found frequenting lower, wet areas of shaded trails within Jack Pine *(Pinus banksiana)* forests at locations ranging from approximately 49° 02' N, 95° 48' W to 49° 10' N, 95° 50' W. Butterflies were observed as individuals flying alone and did not appear to be part of a specific colony. Although "colonies" could have been close by, dense forest hampered the ability to follow individuals through the undergrowth. These sightings were located approximately 6 to 15 km north of the Manitoba-Minnesota international border. The sandy Jack Pine habitat was identified as Manitoba forestry class V24 according to the Manitoba Forest Ecosystem Classification (FEC) for Manitoba.[12]

PR 308 south of East Braintree (five sites at or near 49° 28' N, 95° 4' W) — Two individuals were found and photographed about 3.3 km apart by PT, R. Zach, and M. and F. Vogel on 7 July 1991. Three individuals were found and photographed by PT within a 6.4-km stretch of road on 9 July 1991.[8] Five individuals were collected by P. Klassen on 12 July 1991, and are now MM specimens # 29392 and # 29395 to 29398. None was found in extensive searches on 13 and 30 July 2008, but three were found together and photographed at one site within the same stretch of road on 12 July 2009 (PT, A. Aug, L. de March, D. Dodgson, N. Schmidt, R. Zach), and one was photographed there on 18 July 2009 (L. de March, D. Dodgson, G. Budyk). A mating pair was observed at the same location the following day, 19 July 2009 (L. de March, B. de March). All of these observations were made along a highway right-of-way through moist, mixed-wood habitats, with scattered occurrence of Turtlehead in the roadside vegetation.

"Big Rock" area, southeast of River Hills (approximately 50° 3' N, 95° 59' W) — One worn but easily identified individual was observed along a cut line through black spruce – tamarack bog by PT and R. Zach on 22 July 2000.

Whiteshell Provincial Park (three sites between 49° 50' and 49° 58' N,

95° 21' and 95° 31' W) — The first site was located off Highway 44 in an area with gravel pits and ponds, the second site was located near the junction of Highway 44 and PR 307 in a rocky meadow surrounded by Jack Pine, and the third site was located along PR 307 in a marshy area. Five individuals were observed at these sites between 10 July and 30 July 2001. No specimens were collected. The sites were characterized according to the FEC system as Balsam Poplar Hardwood and Mixed-wood (V1), Jack Pine Conifer (V24), and Red Pine Mixed-wood (V12).[12]

Behaviour

Much of the observed behaviour was typical of many butterflies, for example, basking on gravel roads, resting in grassy roadside vegetation, and visiting roadside flowers such as thistles and Spreading Dogbane *(Apocynum androsaemifolium)*, which are popular nectar sources for many butterflies and other insects. Relative to most other nymphalid butterflies, however, Baltimores are unusually unwary and easy to photograph and capture, even by hand. This unwariness is probably linked to the chemical defence derived from Turtlehead plants, as well as the insect's warning coloration, as noted by Bowers.[1]

Turtlehead plants furnish the caterpillars with chemicals known as iridoid glycosides, in particular catalpol, which provide them and eventually the adult butterflies with protection against predators.[1,6] Caterpillars reared on Turtlehead are unpalatable and emetic to birds, but if, as probably happens in Manitoba, they feed on alternate food plants during later stages of development after overwintering, this effect is lost.[1]

Despite the general impression of sluggishness, it seems that Baltimores must be capable of sustained flight in order to establish isolated colonies, given the spotty distribution of Turtlehead, especially near the range limits of both species. Indeed, Brussard and Vawter found a high level of genetic variability within small colonies of Baltimores, which was best explained by some level of gene flow between colonies.[2] Belying their sluggish nature, two of the three Baltimores seen south of East Braintree on 12 July 2009 engaged in a vigorous, towering chase flight up to treetop height, recalling the pugnacious behaviour of Red Admirals and some other nymphalid species.

Discussion

The records reported here indicate that Baltimores are more widespread in Manitoba than was previously known, though still restricted to the southeastern portion of the province. Repeat sightings of several individuals at the same localities near Wampum and East Braintree, after intervals of many years, are particularly important because they could indicate the presence of persistent colonies, rather than occasional immigrants. Nevertheless, numbers appear to be low, and we do not recommend any change of provincial conservation status; the Baltimore is one of ten butterfly species considered "possibly at risk" in Manitoba.[3]

It is possible that the Baltimore is undergoing a range expansion linked to climate change; therefore, future observations beyond the limits of these records should be anticipated.[10,11] In particular, Whiteshell Provincial Park has received attention from several lepidopterists since the 1950s, and the 2001 records at three localities are therefore suggestive of range expansion.[4] Given the new records (earliest, 20 June; latest, 30 July), the flight period in Manitoba probably extends from late June to late July with considerable year-to-year

variations. The earliest records are from the most southerly locations, with the late July records being from sites almost 100 km farther to the north. Warmer temperatures at the southerly Wampum Provincial Forest sites could cause earlier adult emergence in comparison to the more northerly sites. Careful timing is therefore vital for a successful search.

The overall Baltimore distribution in Manitoba corresponds closely to that of the Turtlehead. Based on herbarium records at The Manitoba Museum, Turtleheads occur mostly in forested regions south of the Trans-Canada Highway and well east of the Red River valley. We are aware of a few additional sight records, northward to Seven Sisters Falls (50° 7' N, 96° 1' W). It is possible that range expansion of the Baltimore is facilitated to some degree by the linear distribution of Turtlehead along some roadsides, notably along PR 308. Turtlehead was not noted at the Wampum and Whiteshell sites, but vegetation was only inventoried directly along the survey transects.

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Birth, life, and death -- each took place on the hidden side of a leaf.

-Toni Morrison