

**Adult Butterfly Habitat and Larval Host Plant Survey
of Whites Point, Digby Co., Nova Scotia**

22 August 2005

by

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Introduction: This report presents adult butterfly habitat and larval host plant observations made on a property belonging to Bilcon of Nova Scotia Ltd. situated in the vicinity of Whites Point, Digby Co., Nova Scotia. The property is located on Digby Neck on the northwest-facing slope of North Mountain (Boundary marker at sw corner, at shoreline, N44° 27.326' W66° 9.164'; Approximate nw property boundary at shoreline, N44° 28.563' W66° 7.887'; see Figure 1). The site covers approximately 350 acres composed mainly of boreal forest, and includes a 3 km section of Bay of Fundy shoreline.

An adult butterfly habitat and larval host plant survey was conducted on 22 August, 2005 (Figure 1). The adult butterfly specimens seen were collected using a standard aerial insect net, identified, and released. A list of species observed is included. The site was examined, and potential adult butterfly habitats and larval host plants observed (host plant identification was confirmed using the Plant Survey of White's Cove, as prepared by Ruth E. Newell, Wolfville, Nova Scotia).

In the following report, butterfly species at risk have been identified from two priority lists: 1) species listed as Endangered, Threatened or of Special Concern, by COSEWIC (Committee on the Status of Endangered Wildlife in Canada) 2) species assigned a status Red (At Risk or Maybe at Risk) or Yellow (Sensitive) under the General Status Ranks of Wild Species in Nova Scotia. (A third priority list, the Nova Scotia Endangered Species Act, at this time contains no butterfly species).

Of the nine species listed in the Nova Scotia General Status which are ranked Red or Yellow, only three, the Monarch Butterfly (*Danaus plexippus* L., also ranked by COSEWIC as being of Special Concern), the Satyr Comma (*Polygonia satyrus* W. H. Edws.), and the Hoary Comma (*Polygonia gracilis* G. & R.) have habitats found in the Western region of Nova Scotia. The Mustard White (*Pieris oleracea* Harr.), although listed as Undetermined by the Nova Scotia General Status, has been included in this priority list due to its very limited known geographic distribution in Nova Scotia and the presence of suitable habitat at the Whites Point site.

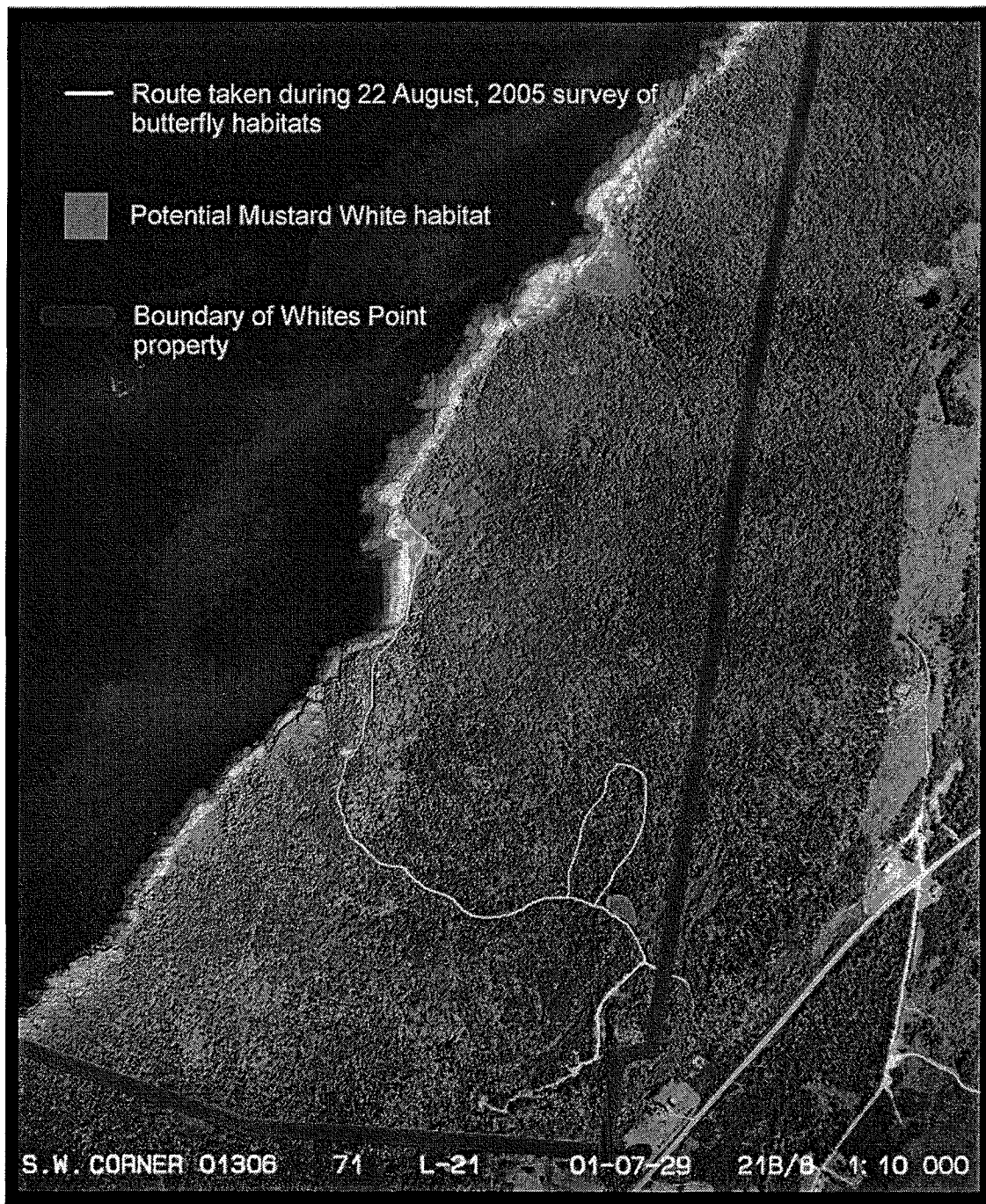


Figure 1. The Whites Point property showing the survey route and potential butterfly habitat identified on 22 August, 2005.

These lists, as well as the comments and conclusions, are based on my nearly 45 years field experience collecting and studying the Lepidoptera in Nova Scotia, literature surveys and a personal database of records taken from private collections throughout the Maritime Provinces, databases from the provincial museums of the Maritimes, the Nova Scotia Department of Natural Resources, Shubenacadie, N.S., the Canadian National Collection, Ottawa, the Peabody Museum, Harvard University, Mass., the Cornell University Collection, New York, the American Museum of Natural History, New York, and the National Museum Collection, Smithsonian Institute, Washington, D.C., as well as information from the Province's Significant Species and Habitats Database and a commissioned search of the ACCDC (Atlantic Canada Conservation Data Centre) database. A recommendation has also been provided.

Systematics used in this report follow those proposed by Layberry, Hall, and Lafontaine (1998). Other literature which has been consulted or cited has been listed in the references.

Butterfly species observed at the Whites Point Property, 22 August, 2005. Although very late in the summer, the following butterfly species were observed:

- 1) *Pieris rapae* (L.) - Cabbage White
- 2) *Colias philodice* Godt. - Clouded Sulphur
- 3) *Lycaena phlaeas americana* (L.) - American Copper
- 4) *Boloria selene atrocostalis* (Huard) - Silver-bordered Fritillary
- 5) *Phyciodes tharos* (Drury) - Pearl Crescent
- 6) *Nymphalis antiopa* (L.) - Mourning Cloak
- 7) *Vanessa cardui* (L.) - Painted Lady
- 8) *Vanessa atalanta* (L.) - Red Admiral

All of the above are common species; 1-3, 7, and 8 are typical of open areas, although the latter two do not overwinter in Nova Scotia (or anywhere in Canada), but migrate here in the spring and vary greatly in seasonal abundance. Species 4 and 5 are common in habitats such as wet meadows and roadside ditches, throughout the province. Species 6 is a common woodland species.

Species at Risk: Although none of the species presented below have been collected or observed at the Whites Point site, their occurrence there is possible because either or both the larval host plant and proper habitat for adults were observed at the site.

***Danaus plexippus* (L.) (Monarch Butterfly).** This species is ranked as of Special Concern by COSEWIC, and as Yellow by the Nova Scotia General Status.

The large, orange and black Monarch Butterfly is North America's most recognized butterfly species. It is best known for its yearly migrations to and from the overwintering sites in the highlands of North-Central Mexico, and the fact that this butterfly is "protected" from predators by the poisonous plant juices absorbed by the larvae from the host plant, milkweed (*Asclepias syriaca* L.)

There has been a sharp decline in adult *D. plexippus* in recent years, which has prompted the concern of both the federal and provincial agencies. There are two main reasons for this decline:

1) destruction of the overwintering sites in Mexico as a result of logging and development; and 2) reduction of milkweed, the larval host plant, through the use of herbicides throughout North America, but especially in the American Midwest (Layberry *et al.* 1998).

Monarch numbers vary from year to year in Nova Scotia. Approximately every 5-10 years the Monarch will become abundant throughout the province from May to October. The last time this occurred was 1999-2001. What causes populations to “spike” like this every few years is not quite clear. However, certain weather conditions may be determining factors (Neil, *in prep.*).

Although adult Monarchs may visit the Whites Point property during the spring and autumn migration periods, the property does not support the milkweeds required by the larvae so breeding would not occur on the property. The nearest areas to Whites Point where breeding Monarchs have been documented are at Bear River and Belliveau Lake, Digby County (Neil *in prep.*).

Relatively little is known of the migration patterns of Monarchs in Nova Scotia. Monarchs are known to migrate long distances over water and spring migrants may arrive in Western Nova Scotia during late May or early June via migration paths through the Gulf of Maine and Bay of Fundy. Along the Bay of Fundy, cleared areas along the top of the North Mountain, including the cutover area at the Whites Point site, provide potential “staging” habitat for arriving spring migrants. These areas harbour the flowering plants that the nectar-feeding adult Monarchs require to replenish the energy reserves used in their long over-water flight before continuing their northward migration. These areas also provide potential habitat for Monarchs that have made landfall farther south and are continuing their northward migration.

Autumn migration of Monarchs in Nova Scotia occurs between late August and October. In 1949, Ferguson (1954) documented movements of Monarchs along the South Shore (Lunenburg County) and Schappart (1996) reports that fall migrants can be quite common along the Bay of Fundy. It would seem likely that many of these autumn migrants might follow a path along the Digby Neck, Long and Brier Islands, similar to migrating birds, although this has not been established. During the autumn migration, goldenrod (*Solidago* sp.) and asters (*Aster* sp.) are important foods for Monarchs and any areas supporting these “old field” species (including Whites Point) could be used by Monarchs.

***Polygonia satyrus* (W. H. Edws.) (Satyr Comma) and *Polygonia gracilis* (G. & R.) (Hoary Comma).** These two species are ranked as Yellow by the Nova Scotia General Status.

These species overwinter as adults, and are on the wing from early April to late October (single generation) (Ferguson 1954; Neil, *in prep.*). Abundance varies but they were considered more common in the past, a fact first noted by Ferguson (*ibid.*). This decrease is probably due to deforestation (Neil, *in prep.*).

As they are a resident forest species, adults should be sought along paths through wooded areas and on the edges of woodland clearings, where they can usually be seen sunning themselves on patches of bare ground. Adults are rarely attracted to flowers, and feed on running sap, carrion, and animal dung. They are easily collected using sugar bait, a mixture of overripe fruit, brown sugar, and alcohol, which is painted on the trunks of trees and allowed to ferment in the sun for a day or two.

P. gracilis could possibly breed at this site, as the larval host plant for this species, gooseberry

(*Ribes hirtellum*), occur s here. The larval host plant of *P. satyrus* is nettles (*Urtica dioica*), which has not been found on the Whites Point property. However, adult *Polygonia* are strong, active flyers, and can travel far in search of food sources.

***Pieris oleracea* Harr. (Mustard White).** This species is listed as Undetermined (Insufficient information to determine status) by the Nova Scotia General Status. However, in my professional opinion, the Mustard White could be considered Yellow (sensitive to human activities or natural events), due to its limited known geographic distribution in this province.

Belt (1864) and Perrin and Russell (1909) both listed the Mustard White as “common”, however, this has changed through the years. Ferguson (1954) listed *P. oleracea* as “seemingly diminishing in numbers and occupying only a part of its former range”. Today, this species is known to occur in Nova Scotia at only three small colonies, one located in western Kings County, one in Pictou County, and one in Cumberland County. The colony in Kings County is under extreme pressure from land development. Single captures have been recorded near Truro (2005), Mount Uniacke (2004), North Alton (2005), the Wentworth Valley (2005), and River Denys, Cape Breton (2004). There is not enough evidence to indicate the presence of colonies at these sites.

There are two main reasons for the decline of the Mustard White in Nova Scotia. The primary one is loss of its woodland habitat due to deforestation, and secondly, the introduction of the invasive, highly competitive Cabbage White (*Pieris rapae* (L.) from Europe into Quebec in the 1860's. This species spread rapidly across this country within the next few decades (Layberry *et al.* 1998).

The Mustard White should be sought during its adult flight period, from June to mid-July (Ferguson *ibid.*; Neil, in prep.), and again (second generation) in late July into September (Ferguson, *ibid.*). Although I have never caught a second generation specimen, a single specimen was collected in the Wentworth Valley in 2005. Adults are found in rich wooded areas or in the open areas near any slow-moving streams where any plants of the Mustard family (*Brassicaceae*), the larval host plant, grow. An ideal habitat for *P. oleracea* was observed along the main access road to the Whites Point property where a shallow, slow-moving stream runs approximately parallel to the path (Figure 1). The habitat is nearly identical to those of the three known colonies of the Mustard White which still survive in this province.

Recommendation

It is recommended that field work be conducted in 2006, at the appropriate times, to verify the presence/absence of these species at risk prior to project development.

References

Literature Cited

- Belt, T. 1864. List of Butterflies Observed in the Neighborhood of Halifax. Proceedings of the Nova Scotia Institute of Science. 1(3); pp.87-92.
- Ferguson, D.C. 1954. The Lepidoptera Of Nova Scotia Part 1: Macrolepidoptera. Nova Scotia Museum of Science Bulletin no. 1.
- Layberry, A.L., P.W. Hall, and J.D. Lafontaine. 1998. The Butterflies of Canada. Toronto. University of Toronto Press.
- Neil, K. The Butterflies of Nova Scotia. (In Preparation).
- Newell, R. E. 2002. Plant Survey of White's Cove Property, Digby Neck, Digby County, Nova Scotia.
- Perrin, J. and John Russell. 1909. Catalogue of Butterflies and Moths collected in the Neighborhood of Halifax and Digby, Nova Scotia. X11 (3): pp.258-290.
- Schappert, P. Distribution, Status and Conservation of the Monarch butterfly, *Danaus plexippus* (L.) in Canada. Report to the Commission for Environmental Cooperation, 393 rue St. Jacques Ouest, Bureau 200, Montreal, Quebec, Canada, H2Y 1N9.

Websites

- Atlantic Canada Conservation Data Centre (ACCDC) www.accdc.com
- Committee on the Status of Endangered Wildlife in Canada (COSEWIC)
www.cosewic.gc.ca/index.htm
- Nova Scotia Endangered Species Act (NSES 1999)
www.gov.ns.ca/natr/wildlife/endngrd/specieslist.htm
- Nova Scotia General Status of Wild Species www.gov.ns.ca/natr/wildlife/genstatus
- Significant Species and Habitat (SigHab) database (Nova Scotia)
www.gov.ns.ca/natr/wildlife/thp/disclaim.htm
- Species at Risk Act (SARA 2003) www.sararegistry.gc.ca/default_e.cfm