



Survey of Taylor's Checkerspot and Other Butterflies in the Shawnigan Lake Area (2008)

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January 2009

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Suggested Citation:

Page, N., P. Lilley, J. Miskelly, and M. Connolly. 2009. Survey of Taylor's Checkerspot and Other Butterflies in the Shawnigan Lake Area (2008). Report prepared for B.C. Ministry of Environment by Raincoast Applied Ecology. 6 pp.

ACKNOWLEDGEMENTS

This project was managed by Jennifer Heron (B.C. Ministry of Environment) and funded by the Habitat Stewardship Program for Species at Risk (Environment Canada).

The success of this project depended on the willingness of landowners and land managers to allow access to their properties. Special thanks to Timberwest Forest Corp. and B.C. Hydro for their support of this project.

Rob Knight (B.C. Ministry of Environment) facilitated access to the orthophotos used for habitat identification and mapping.

Cover photo of Western Tailed Blue (*Everes amyntula*) by Michelle Connolly.

1. SUMMARY

This report summarizes the methods and results of a spring 2008 survey of butterflies in the Shawnigan Lake area of southeastern Vancouver Island. The purpose of the survey was to search for Taylor's Checkerspot (*Euphydryas editha taylori*), an endangered butterfly that was found in the area historically. Other butterfly observations were also recorded.

Wandering transects through open habitats were the primary method for identifying the presence and distribution of butterflies. A total of 95.6 km of wandering transects were undertaken between May 4 and May 17, 2008 encompassing 59.3 hrs of field time.

A total of 502 butterfly observations were mapped during the survey encompassing 26 taxa (18 fully-identified species and 8 taxa for which full species identification was not possible). No Taylor's Checkerspot were observed during the survey. The most abundant five butterflies were Western Spring Azure (244; 49% of observations), Sara's Orangetip (49; 10%), Cabbage White (34; 7%), Satyr Angleming (24; 5%), and Brown Elfin (20; 4%). Four observations of Moss' Elfin, a provincially blue-listed species (S2S3), were made at two sites.

2. PURPOSE

The purpose of the survey was to search for Taylor's Checkerspot in the Shawnigan Lake area, and to identify and map the distribution of butterflies. Taylor's Checkerspot is a charismatic butterfly which has declined throughout its range of Oregon, Washington, and southern British Columbia; it is listed as Endangered in Canada (Shepard, 2000). This report is intended to provide a concise summary of the methods and results of the survey. Much of the data are provided as appendices including spatial datasets in Arcview GIS or summarized data in spreadsheets.

3. METHODS

The survey for Taylor's Checkerspot in the Shawnigan Lake area consisted of four components: (1) prioritization of survey sites; (2) public participation in the field survey through community outreach; (3) field surveys using wandering transects; and (4) description and preliminary data analysis. Each is described in more detail below.

Field Survey Priorities. Prior to field surveys, potential habitats were identified in the study area using recent (2005) orthophotos (provided by B.C. Ministry of Environment), Google Earth imagery, and the authors' local knowledge of the area. Potential habitats were defined as grass or forb dominated open areas that are not frequently mowed, cultivated, or used for regular livestock grazing. This included powerline corridors, roadsides, railway corridors, fields, and rock bluffs. Sites within 5 km of the historic Taylor's Checkerspot population (see Appendix 2) were higher priority than sites farther away.

Public Participation in Survey. To supplement the field surveys undertaken by professional biologists and increase awareness of butterfly conservation, we posted a sign showing an image of Taylor's Checkerspot at prominent locations such as restaurants and Canada Post boxes. Some were provided to one of the local private schools. The sign also provided a brief description of Taylor's Checkerspot, and requested observers contact the BC Conservation Data Centre or Jennifer Heron if they observed this species in the area.

Field Surveys – General Description. Field surveys were the primary method for identifying the presence and distribution of Taylor's Checkerspot and other butterflies consisted of wandering transects through open habitats between May 4 and May 17, 2008. Historical records were from May 7 and 20, 1988.

Wandering transects follow no fixed route and meander through a range of habitats and often follow routes of convenience such as roads or open areas. They are an efficient method for identifying butterfly presence and the spatial distribution of butterfly populations when little information is available, but the data collected cannot be used to statistically infer population sizes or, if used over time, for population monitoring.

Landowner Contact. Prior to access to any private lands for the purpose of the survey, landowners were contacted in person, by phone, or by email to discuss the purpose of the survey and request permission for access. Written permission was not generally obtained. Information on Taylor's Checkerspot was provided where appropriate (posters or information sheets) but generally landowner contact was verbal and informal. Landowners were specifically told that the data would be provided to the BC Conservation Data Centre and Parks Canada as part of the project, unless alternate data management requirements were requested or required.

Field Survey Methods. For each wandering transect at each location, the following general information was collected: (1) date and general location; (2) start and end points (GPS points); (3) start + end times; and (5) air temperature and weather (e.g., amount of sun, wind). Transect routes were recording using the tracking function in the handheld GPS (Garmin GPSmap 60) and provided a relatively accurate record of the transect route. Most data was collected during warm, dry and sunny or bright overcast weather between 9 am and 5 pm¹.

Where butterflies were observed, the following data were collected: (1) point location using handheld GPS (typically 5–10 m accuracy); (2) butterfly species and number of individuals observed; and (3) general behavior (flying, perched, sunning, nectaring, mating, territorial behavior). Data was recorded in a recently developed datasheet (SPY form) for use by MOE.

Identification of butterflies was generally undertaken visually without capture or collection. Some species (e.g., anglewings, some skippers, etc.) were often observed in flight and difficult to identify

¹ We generally followed the guidelines of the UK Butterfly Monitoring Scheme, which recommends that surveys be undertaken during dry conditions where temperatures are 13°C or greater if there is at least 60% sunshine, or more than 17°C if overcast.

at a distance. Therefore, not all observations were identified to species. Photographs were taken of representative butterflies to confirm identification. No specimens of any butterfly were collected during the survey.

All adult surveys in 2008 were undertaken together by two of the authors, James Miskelly and Michelle Connolly, under contract to Raincoast Applied Ecology.

Data Analysis. Analyses characterized the general butterfly community (abundance and distribution of species observed), and mapped the location of transects and butterfly observations.

5. RESULTS AND DISCUSSION

Survey Intensity. A total of 95.6 km of wandering transects were undertaken between May 4 and May 17, 2008 encompassing 59.3 hrs of field time. Appendix 1 provides a summary of transect by date, length of time, and observer. Appendix 2 provides a map showing the location of wandering transects.

Summary of Butterfly Observations. A total of 502 butterfly observations were mapped during the survey encompassing 26 taxa, 18 of which were fully-identified species and eight others which could not be identified to species. No Taylor's Checkerspot were observed during the surveys. Appendix 3 lists the species recorded and the number of observations of each species. The most abundant five butterflies, based on total number of visual observations, were Western Spring Azure (*Celastrina echo*) (244; 49% of observations), Sara's Orangetip (*Anthocharis sara*) (49; 10%), Cabbage White (*Pieris rapae*) (34; 7%), Satyr Anglewing (*Polygonia satyrus*) (24; 5%), and Brown Elfin (*Callophrys augustinus*) (20; 4%). Appendix 5 provides a map showing the overall distribution of butterfly observations by species.

Flight Season Weather. May 2008 was slightly warmer than normal (12.5°C mean temperature compared to the long-term average of 11.8°C) and also drier (26.6 mm of precipitation compared to the long-term average of 48.7 mm) (all values from Shawnigan Lake station). There were 13 days warmer than 17°C in May 2008.

Suitable Habitat for Taylor's Checkerspot in the Shawnigan Lake Area. Taylor's Checkerspot was historically found on a BC Hydro utility right-of-way in which *Plantago lanceolata* occurred (Figure 1a and 1b). The right-of-way is now densely vegetated with Scotch broom and other shrubs, and *P. lanceolata* is found only along the margins of the access road. It is no longer suitable for Taylor's Checkerspot. Other sites surveyed included open rock outcrops with native mosses, forbs, and native and non-native grasses, recent logged areas, and agricultural areas dominated by pasture grasses (Figure 1c–f). We did not find any sites where we thought host plant resources were adequate to support Taylor's Checkerspot. *Veronica scutellata* and *Veronica serpyllifolia* were observed occasionally, and *P. lanceolata* and *Plantago major* were relatively common, although seldom abundant, in road margins and weedy fields.



a



b



c



d



e



f

Figure 1. Representative photographs of survey sites: (a and b) BC Hydro utility right-of-way in which Taylor's Checkerspot was found historically; (c) logged area; (d and e) bryophyte dominated rock bluffs, and (f) maintained pasture area. Photos a, b, and f by Nick Page, May 2008; photos c, d, and e by Michelle Connolly, May 2008.

Additional Butterfly Species of Conservation Significance. One species of butterfly tracked by the B.C. Conservation Data Centre was observed during the surveys: Moss' Elfin (*Callophrys mossii mossii*). Moss' Elfin is blue listed (S2S3) and, on southeastern Vancouver Island, is generally associated with dry, rocky slopes, rock outcrops, or rock faces with large patches of *Sedum spathulifolium*, the larval host plant of the species. Four observations of Moss' Elfin were made at two sites, three along logging roads near the summit of Easter Seal/Shawnigan Mountain (May 5) and one at the north end of Oliphant/Spectacle Lake (May 8). Both sites have significant rock outcrop habitat and all observations were on or adjacent to these outcrops.

Public Involvement in Survey. We received one report from an owner of one of the large farms in the Shawnigan Lake area that she had observed Taylor's Checkerspot in a manure pile in early May 2008. This area was surveyed several times and it was most likely Satyr Anglewing.

6. REFERENCES

Shepard, J. H. 2000. Status Report on Taylor's Checkerspot *Euphydryas editha taylori* (Edwards) (Lepidoptera: Nymphalidae) in British Columbia. Report prepared for the Committee on the Status of Wildlife in Canada, Ottawa, ON. 9 pp.

7. APPENDICES

Appendix 1	Transect summary
Appendix 2	Map of survey transects
Appendix 3	Summary of butterfly observations
Appendix 4	Map of butterfly observations by species
Appendix 5	Completed SPY form (digital file only)
Appendix 6	Survey and butterfly photos (digital files only)
Appendix 7	GIS shapefiles for transects and butterfly observations (digital files only)