Beaverhill Bird Observatory Butterfly Survey: Summer 2016

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Introduction

The Beaverhill Bird Observatory (BBO), located in the Beaverhill Natural Area (BNA) eastof Tofield, has been a location to find a variety of butterflies since 1977 (Flockhart, 2002; Thormin, 1977). The natural area is situated within a variety of habitats from aspen parkland, pastures, wetlands, and mixed grasslands (Flockhart, 2002). This variety within the natural area provides opportunity for different kinds of wildlife including insects to be found. With these different habitats in and around Beaverhill Lake, it is important to monitor the changes in the environment such as the butterfly species. Monitoring the butterfly species in the area over many years can help track the changing habitats in the BNA and the corresponding wildlife.

This report addresses the butterflies seen during the months of May and June 2016 as a Serving Communities Internship Program (SCIP) internship at the BBO. The objective of the survey was to provide updated information on butterflies at the BBO. The research question for this survey is firstly, what are the species present in the BNA during May and June; and secondly, are they similar with previous years? Using Pollard walks, a method to count butterflies in an area, around the BBO, the butterflies were identified and recorded. Results, caveats and suggestions for further study on the butterfly monitoring are discussed. With this information, further knowledge of the diversity at the BBO can be used for other research related to these insects.

Methods

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From May 18, 2016 to June 18, 2016, a Pollard walk survey was conducted once a week to count the butterflies present at the BBO. The observer of the Pollard walk was the author, and on June 18, 2016, the observer was accompanied by a volunteer. Figure 1 shows the route taken for both loops of the Pollard walks throughout the natural area, the same routes taken on Pollard walks at BBO in previous years. On the Pollard walk, any butterfly within visible distance of the observer was to be counted. The Pollard walk took between 1 to 2 hours, depending on how many butterflies were caught and identified along the trails. The trails of the loop were BBO Boulevard, Long-eared Owl Lane, Short-Eared Owl Street, Duck Drive, Harrier Highway, and Flicker Freeway. The weather conditions in order for the Pollard walk to be conducted were above 10ºC, mostly sunny with no precipitation, and wind speed being less than 4 on the Beaufort scale. The survey was conducted between the hours of 10 am to 5pm. These conditions for the Pollard walks used the parameters set by former butterfly monitoring observers at the BBO (Vehring, 2014).

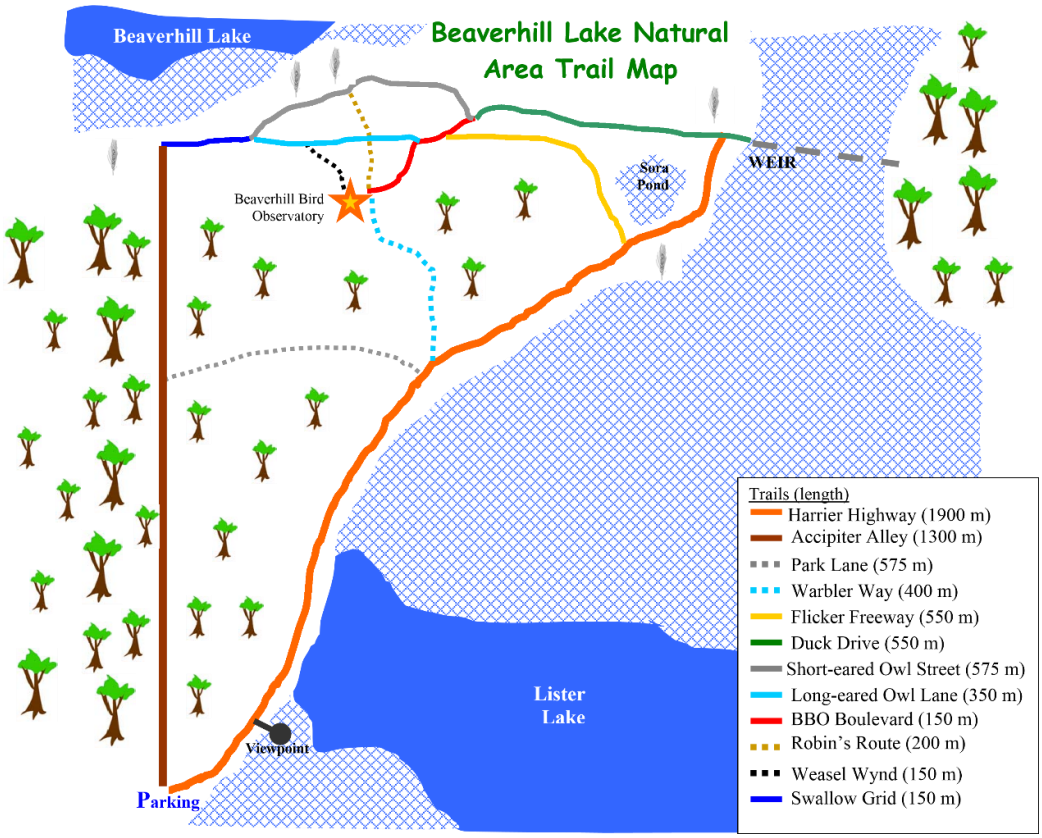

Figure 1. Pollard walk in relation to trails and location of BBO near Tofield, Alberta, in 2016.

At the beginning of each walk, the date, time, temperature, wind speed, and cloud cover were recorded at the BBO laboratory. The equipment used to record these conditions was the Wireless LaCrosse Technology Temp Station, Model: CA85169. The wind speed and cloud cover were judged using the Beaufort scale as well as estimating the cloud cover by the observer's own judgement.

Butterflies were identified visually using the *Butterflies of North America* (Brock & Kaufman, 2003), as well as *Alberta Butterflies* by Bird et al. (1995). Confirmation of species was assisted by John Acorn through the digital images taken during Pollard walks. The data from all of the Pollard walks were compiled into an Excel spreadsheet, which was used to know the total species identified from each walk.

Results

During the five Pollard walks conducted during May and June, a total of 80 butterflies of 13 different species were counted (Figures 2 and 3).

Butterfly species	18-May	24-May	31-May	07-Jun	18-Jun	Total species
Cabbage White	3					3
Mustard White	3					3
Clouded Sulphur	2			3	1	6
Common Alpine			5	5		10
Red-disked Alpine						0
Common/ Inornate Ringlet				1		1
Silvery Blue	2	2		1	4	9
Spring Azure	2				1	3
Western Blue	2					2
Greenish blue	4	1	3	10	10	28
Canadian Tiger Swallowtail			4	3	1	8
Northern Crescent				2	3	5
Hobomok Skipper				2		2

Figure 2. Total butterfly species counted and identified on each Pollard walk at the BBO, near Tofield, AB in May and June 2016.

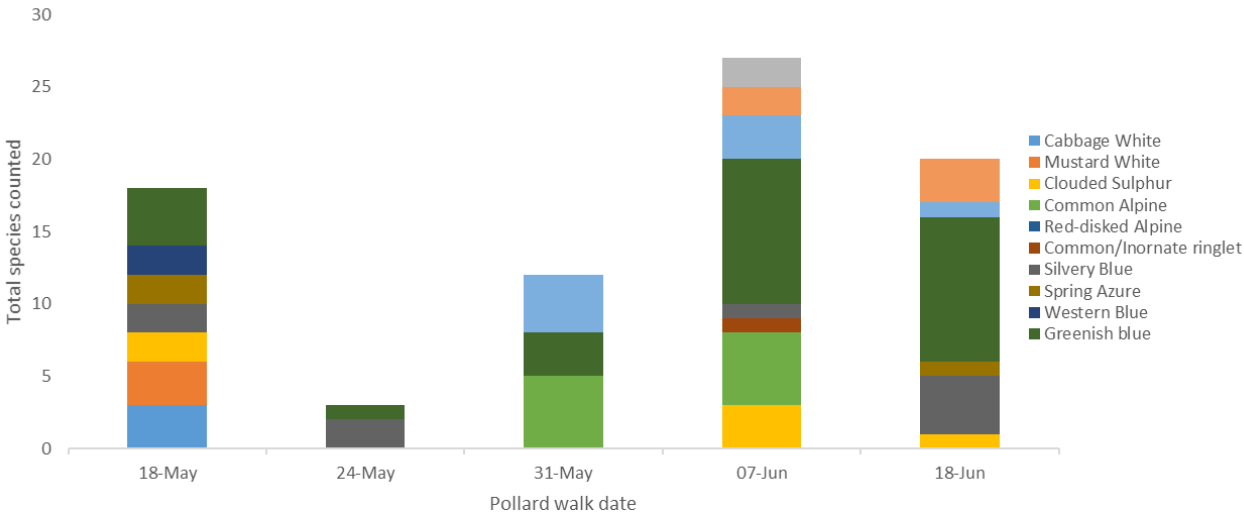

Figure 3. Total butterfly species counted and identified on each Pollard walk at the BBO, near Tofield, AB in May and June 2016.

Discussion

The Pollard walks conducted in May and in June over the summer of 2016 contributed to the knowledge of butterfly species at the BBO. The data compiled from this summer can be compared with the butterfly survey from 2013, published in 2014, which updated the species present at the BBO (Andersen & Roberto-Charron, 2014). Although Andersen and Roberto-Charron conducted Pollard walks more times during the summer than the 2016 term, the walks conducted in May and June can be used to compare. Figure 4 compares the total butterflies counted from 2013 to 2016.

Butterfly species	2013	2016
Hobomok skipper	1	2
Canadian Tiger Swallowtail	14	8
Spring Azure	1	3
Silvery blue	0	9
Western blue	0	2
Greenish blue	0	28
Northern pearl crescent	8	5
Green comma	1	0
Milberts tortoiseshell	1	0
Mourning Cloak	3	0
Common/Inorante Ringlet	0	1
Red-disked Alpine	11	0
Common Alpine	0	10
Cabbage white	0	3
Mustard white	0	3
Clouded sulphur	0	6

Figure 4. Comparison of the butterfly species identified at the BBO between May and June in2013 and 2016 Butterfly surveys at the BBO.

This comparison shows that some species were present in the past year, but not this year, while other species have appeared since past years. Notably, Greenish Blues were not present in 2013, whereas they were among the most common in 2016. Furthermore, Red-disked Alpines were present in 2013, whereas in 2016 there were none- but instead Common Alpines were

present. These high counts of some species and absence of others between the 2013 and 2016 surveys can be due to some butterfly species emerging earlier in the year and the Pollard walks not being conducted in time to catch the early species.

These surveys can contain errors, however, in how often the Pollard walks were conducted and also for how long the Pollard walks were conducted. More Pollard walks were done in May-June 2016, and thus more butterflies were identified and different species noted. In 2013, only 4 Pollard walks were conducted in May-June, and only 40 were identified. Of those 40, there were only 8 different species. When taking into account the increased amount of Pollard walks in the 2016 year, the increased richness of species is explained.

Caveats

This survey contains some faults that may limit the conclusiveness of this report. The Pollard walks were conducted in the early months of summer only, causing there to be gaps in the species recorded for the months of July and August. July is a month in which the observer can count the highest amount of butterflies, so missing that month leaves out conclusive information about the species present at the BBO in summer (Vehring, 2014). Another source of error was the accuracy in which the butterflies were identified. The observer is an amateur butterfly observer, relying heavily upon field guide and photo confirmation. During the Pollard walks, some of the butterflies seen could not be identified because they were either not caught in time to be observed, or a picture failed to be taken to be looked at later for identification purposes. This happened at times during the walk when there were too many butterflies to catch at once, or the observer was busy taking pictures of one already. Only butterflies identified correctly with photos and confirmation from the *Alberta Butterflies* (Bird et al., 1995) and John Acorn were recorded in the report.

Future Work

Butterfly surveys conducted at the BNA can provide information about further butterfly knowledge at the BNA. Conducting Pollard walks more frequently can help provide more knowledge about the butterfly species present during the summer, and at which points in the summer are the most crucial to conduct Pollard walks the most often. Making sure to have consistent Pollard walks in the beginning of the season, could lead to more accurate representations of the species present or missing from the former years in 2013 and 2016. Continuing to have at least once a week Pollard walks from May until August will provide more consistent data for the butterflies present. It will be important to be consistent in July-August because this season will provide increased number of butterflies to be counted. In order to account for butterflies that could not be caught or identified confidently by sight, a column in the observer's logbook titled 'Unidentified' will help for more accurate information on how many butterflies were present at BNA each day.

Not only could butterfly surveys provide information about insects, but also about the changing environments around BBO. Beaverhill Lake was once a lake, but now is an area of varying habitats of grassland, mixed deciduous wood, brush, and wetland (Thormin, 1977). Having the surveys recorded of butterflies along with other bird and animal species present at the BNA, can show the effects of climate change and changing biodiversity in the BNA (Andersen & Roberto-Charron, 2014).

Conclusions

A butterfly survey was conducted at the Beaverhill Natural Area using the Pollard walk method weekly during the months of May and June in 2016. The Pollard walks were used to

determine which species were present in the BNA and if those species correlate with previous years. Through the butterflies being identified with credible books and resources and then recorded, results for the survey could be determined. A total of 80 butterflies were identified, including 13 different species. These numbers were greater than the 2013, in which there were fewer butterflies identified at this time and also fewer individual species as well. Errors in the survey as well as possibilities to further this research was discussed.

Acknowledgements

Thank you to John Acorn for teaching butterfly catching and identifying techniques and providing past resources from the BBO. Steve Andersen for instructing on how to conduct the Pollard walks along the trails at the BBO and also for more butterfly catching techniques. The staff at the BBO, specifically to Kevin Methuen, for providing resources about the BBO and equipment for mosquito protection that was needed to conduct the Pollard walk efficiently. Laurie Hunt, for providing the opportunity to be involved at the BBO. Serving Communities Internship Program (SCIP) must be thanked as well for providing the funds for the research to be continued. Geoff Holroyd and John Acorn assisted by editing earlier drafts of this report.

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