

Butterfly Monitoring in the Beaverhill Natural Area

Summer 2015

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Introduction

The Beaverhill Natural Area, located just outside of Tofield, has been a focal point in Alberta for butterfly monitoring for many decades (Thormin, 1977). Several full seasons of butterfly surveys have been conducted, each providing a unique data set that augments our understanding of the richness and abundance of butterflies in the area. In spite of this, however, long-term comparisons are challenging as a result of natural vegetation succession and the effects these shifts have on butterfly populations. The purpose of this study was to contribute further data on the species richness and abundances of butterflies at the Beaverhill Bird Observatory.

Methods

For consistency between years and to maintain a standard for comparison, surveys were conducted as much like previous studies, particularly those of the last two summers, as possible, as recent comparisons will provide a more accurate representation of the current situation. Surveying was done using the Pollard transect method (Pollard 1977), by myself, once per week, with the exception of two occasions where volunteers assisted, and between the hours of 9am and 4pm, granted that conditions were acceptable. As in Anderson's study (Anderson and Roberto-Charron, 2013) and Vehring's study (Vehring, 2014), surveys were not conducted at temperatures below 15 degrees Celsius or in rainy or very windy weather. At the beginning and end of each transect, the date, time, percent cloud cover, wind strength (Beaufort scale), and temperature in degrees Celsius were recorded, as well as any noticeable environmental changes throughout the walks. The

walk was split into two separate transects identical to those in Anderson and Roberto-Charron (2013) and Vehring (2014), and displayed in Figure 1. A total of 10 walks were completed from May 26 – August 29, with 18 species and 510 individuals recorded. Butterflies were recorded as long as they could be accurately identified along the transects, no matter how far from the path. If an individual could not reliably be identified in the field, photographs were taken and properly identified at a later time using Alberta Butterflies (Bird et al. 1995), and to a lesser extent, Field Guide to Butterflies of North America (Kaufman, 2003). The most common species were the Greenish blue, Northern Pearl Crescent, European skipper, Common Wood Nymph, Clouded Sulphur, and Canadian Tiger Swallowtail. Walking slow and including the time it took to capture and record identifications, the walk took approximately 2 hours on average, with day-to-day variation related to the number of butterflies caught.

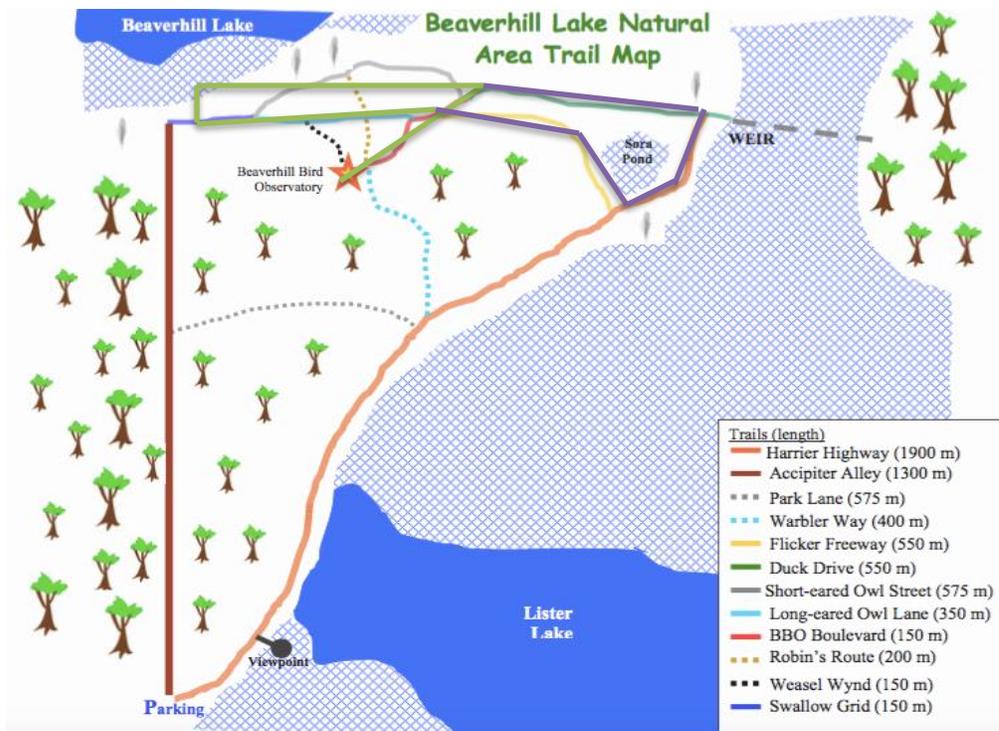


Figure 1. Map of the Pollard transects. Transect 1 is in green and Transect 2 is in purple.

Results

Species	Jun 6	Jun 21	Jun 27	Jul 4	Jul 11	Jul 18	Aug 8	Aug 16	Aug 23	Aug 29	Total
Mourning Cloak	2										2
Canadian Tiger Swallowtail	15	2		1							18
Greenish Blue	6	26		6							92
Common Alpine	8										8
Clouded Sulphur	3				7	13					23
Northern Pearl Crescent	2	27		38	4						71
White Admiral		2		1		3	2				8
Cabbage White		1			3		2	5	1	4	16
Tawny Crescent				1			2	1			4
European Skipper					65	91	6		2		218
Common Ringlet					2	1	3				6
Great Spangled Fritillary					1	2			1		4
Common Wood Nymph						12	9	6	5	4	36
Red Admiral						1					1
Aphrodite Fritillary							1				1
Satyr Comma								2			2
Western White								3	4	1	8
Northern Pearly-eye								1			1

Table 1. The results of the 2015 butterfly surveys at the Beaverhill Bird Observatory

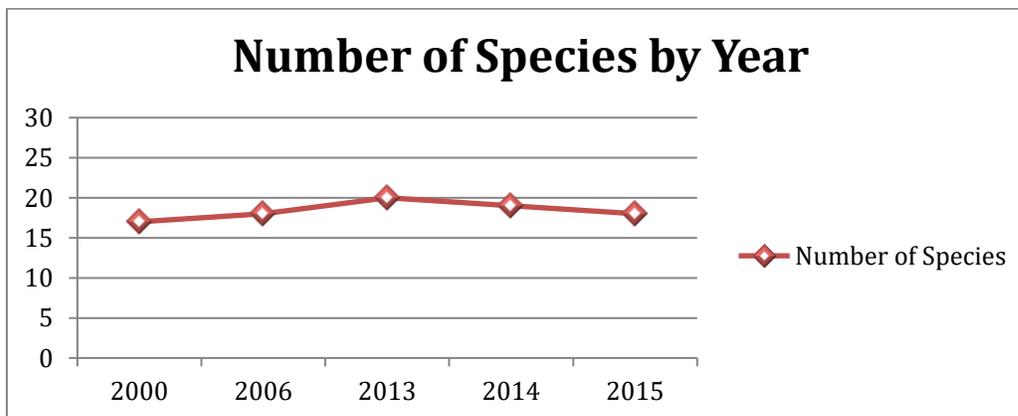


Figure 2. The number of butterfly species by year of the Pollard transect surveys

Discussion

A contributing factor making long term monitoring difficult is vegetation succession over time. Flockhart describes the landscape around the BBO as, “dominated by cultivated land and pastures interspersed with small areas of upland deciduous forest, ponds, mixed grassland, and wetland complexes” and accredits the high number of butterfly species to the undisturbed, mixed habitat (Flockhart, 2002). The inevitable result of the aforementioned lack of disturbance has been the transition from many mixed habitats to a more homogenous environment. In this study for 2015, the environment from the same area was void of ponds and wetlands entirely, dominated mostly by young aspen forest and, to a lesser extent, mixed grassland at the edge of where the lake used to be before drying up. Over time, we would expect to see a slight decline in species richness correlated with the increase in forested land along the Pollard transects, due to the preference for grassy habitats of most Canadian butterfly species. However, based on Figure 2, this does not appear to be the case over this timespan. Figure 2 displays the number of species counted from the beginning of June to the end of August in each year the surveys were conducted. The result is a fairly uniform line with minimal variation between years, with an average of 18.4 and a range of 3. The lack of a decline in the number of species for this time period could be a result of many different things, or a combination of several. The time interval may be too short, or there may be a displacement with new species that have a preference for woodland habitats, such as the Green Comma and the Northern Pearly Eye. Another possibility is that it could be a product of survey discrepancies, such as the missed month of May in several years -

which does not allow for a complete comparison of species numbers for a full season - in conjunction with missed weeks, weather variation, and transect variation.

Caveats

Several factors could have affected the data collected for the 2015 season. The authors' availability was limited to weekends, and combined with the dependency on weather conditions, this resulted in several walks missed throughout the season. The weeks of both July 20 and July 27 were missed, and this consecutive absence of data is a considerable deficiency in the results, as an entire species or more could have come and gone in that time span.

Conclusions

Overall, the results of this year's monitoring were fairly consistent with previous years in terms of the species present, emergence times, and abundances. Further data is needed in this landscape to make meaningful comparisons, and future work in the area is highly recommended.

Acknowledgments

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Future Work

Plenty of opportunity remains in the Beaverhill Natural Area to gather more information into butterfly diversity for the area. While the Pollard walks that have been

done around the observatory have been insightful, it is difficult to accurately make long-term comparisons and draw accurate conclusions with the shift in landscape composition.

An interesting study for the future would be to do a Pollard walk in an area less susceptible to succession, such as the grassy entrance to the BBO, where there is continual disturbance. This would be ideal for longer-term comparisons of species richness and abundance. Another option for future work would be to concentrate on the rarer or new species in the area, such as the Green Comma and Hobomok Skipper, and gather data on their host and nectar preferences.

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