



**Volume 29 Number 1**

**April 2016**

## **Annual General Meeting for the Beaverhill Bird Observatory at the University of Alberta.**

Come and see how BBO works as it heads into its' 32nd year of operation as the oldest bird banding and monitoring station in Alberta. Where do we get our money? Hear first-hand from the Treasurers report. Who serves on the Board and wants to serve with these dedicated individuals? Meet them and vote in the new executive. Come see how you can volunteer, learn about birds, and gain experience with this bird conservation organization.

**Date and time:** April 25 7:00 - 7:30 pm,  
with a regular executive meeting to follow.

**Location:** Weldwood Room, 812 General Services Building,  
University of Alberta

**Cost:** Free; snacks and drinks provided.

**Contact:** If you are interested in becoming involved with BBO board please contact Geoff Holroyd; [chair@beaverhillbirds.com](mailto:chair@beaverhillbirds.com), cell 587-783-9188.

**The Beaverhill Bird Observatory's Annual  
BIG Birding Breakfast is June 4th this year.**



*Ruby-Crowned Kinglet (Regulus calendula) by Gerald Romanchuk*

On Saturday June 4th, 2016, celebrate the return of migrant songbirds from their wintering grounds by visiting the Beaverhill Bird Observatory for the **BIG BIRDING BREAKFAST.**

Enjoy a breakfast of crepes, bacon and more. The chef for the day is bird expert Janos Kovacs. Walk the net lanes with the observatory staff, learn how and why birds are banded and learn about the birds of our area. Give you and your kids a dose of Vitamin N (Nature) while you get up close and personal with our feathered friends as they are banded and released! Nature walks and activities and crafts for kids are planned.

Mist netting and banding run from **5 am to 11 am, Breakfast is between 7 and 11 am, Saturday June 4.** The guided nature walk will be at 9 am. Cost is \$20 per person (children 12 and under free). Pre-registration and payment are required by going to [www.beaverhillbirds.com](http://www.beaverhillbirds.com) starting in early May.

## The Banding Lab Opened Early!

BBO is lucky to have three experienced banders returning this spring. Kevin Methuen, Emily Cicon and Meghan Jacklin have all banded more than one season at BBO. The Board decided to extend the banding season, starting 1 April, to capture species that were not being covered adequately to meet the criteria set out by the Canadian Migration Monitoring Network, and Bird Studies Canada who crunches our spring and fall songbird data. Species such as American Tree Sparrow and Dark-eyed Junco arrive early especially in this year's early Wood frogs, Plains Garter snake and Mourning Cloak Butterfly were already seen at BBO on 2 April. BBO volunteer Irene Crosland has been birding the area on a regular basis, reporting her findings on eBird.com so check it out.



Head Biologist Kevin Methuen recently celebrated his Birthday at BBO (after work); Flocks of the American Tree Sparrow (photo thanks to Gerald Romanchuk) can be seen flying through the trees at BBO and their song is one of the first to greet us in the spring.



At press time, we learned that Alberta Conservation Association will provide BBO with a financial contribution that will greatly help fund our 2016 activities. Thank you to ACA for their ongoing support of BBO's activities.

Jonathan DeMoor, BBO's Biologist in 2015, has accepted a full time biologist position at Elk Island National Park. Congratulations, Jonathan, and we hope to see you out at the banding lab this summer. Following is Jonathan's final report to BBO with summaries of the fall banding.

# Beaverhill Bird Observatory Fall Report 2015

By Jonathan DeMoor

## Executive Summary

The Beaverhill Bird Observatory's fall songbird migration monitoring was conducted by Head Biologist Jonathan DeMoor, and Assistant Biologists Emily Cicon and Meghan Jacklin. Migration monitoring was conducted from August 1<sup>st</sup> to October 10<sup>th</sup>, with banding taking place on all but eight days in this period. Staff opened 13 nets daily and recorded 1641 captures of 58 species, for an overall capture rate of 36.6 birds per 100 net-hours. Monitoring of Northern Saw-whet Owls was conducted by Meghan Jacklin and volunteer banders from September 10 to November 16 and resulted in the capture of a record high number of owls, 504 captures. Additional monitoring and maintenance projects were completed by staff, board members, and volunteers and the annual Steaks and Saw-whets event drew over 100 visitors to the lab over two evenings.

## Migration Monitoring

Migration monitoring was conducted at the lab from August 1<sup>st</sup> to October 10<sup>th</sup> with some additional netting occurring until October 18<sup>th</sup>. Whenever possible, thirteen nets were opened, including five "old" nets: 2, 2X, 8, 9, and 9X, and all eight "new" nets established in 2014: 50, 51, 52, 52, 54, 55, 56, and 57 (see 2014 Annual Report for more details on the new nets).

Due to relatively warm, dry weather only eight days of banding were missed during the standard migration monitoring period due to weather and three extra days of banding were conducted October 13, 14, and 18. As a result, more net-hours were accumulated than in any other year since 2000 with a total of 4477.5 net hours over the full season (32% higher than the average since 2000), and 4321.5 of a possible 5538 (78%) during the standard period (Table 1). Later in the season, nets were often opened after sunrise to allow the temperature to rise above 0 °C and/or closed early due to wind.

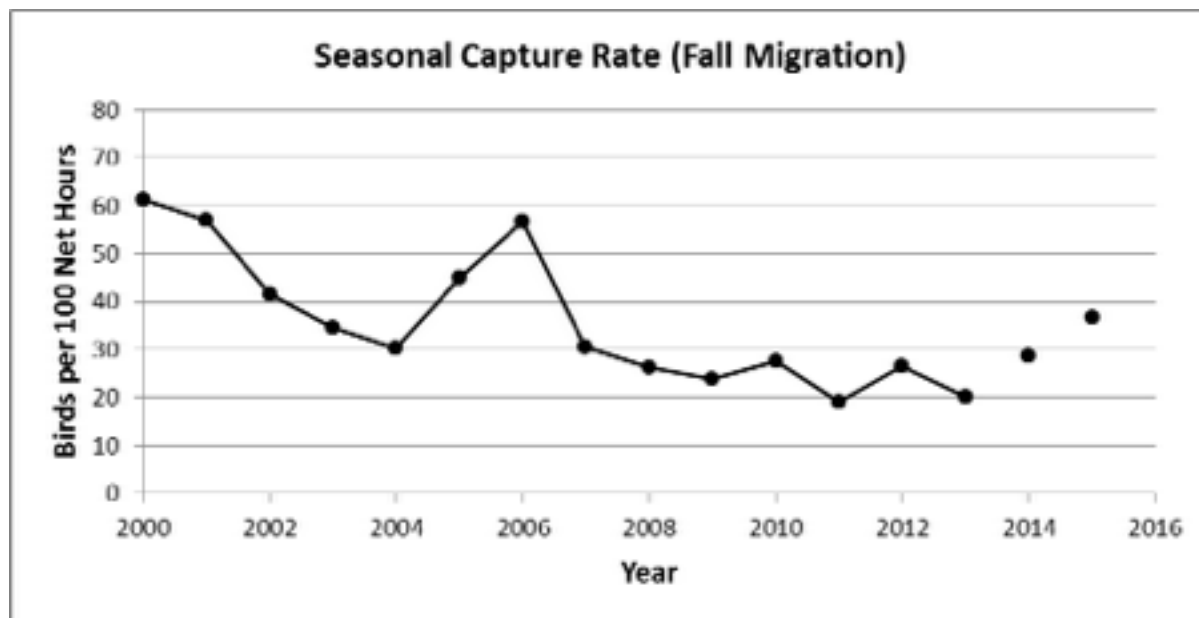
**Table 1. Numbers of captures, mist-netting effort, capture rates, and number of species caught during fall migration monitoring at the Beaverhill Bird Observatory since 2000.**

	2000	2001	2002	2003	2004	2005	2006	2007
Total Captures	1740	2095	1734	1315	975	1256	1969	1079
Birds Banded	1433	1758	1464	1093	818	1089	1525	952
Net hours (NH)	2843	3679	4174	3818	3229	2787	3476	3534
Capture Rate (birds/100 NH)	61.2	57.0	41.5	34.4	30.2	45.1	56.6	30.5
Species Captured	55	56	62	57	60	59	63	52

	2008	2009	2010	2011	2012	2013	2014	2015
Total Captures	892	875	880	701	978	631	738	1641
Birds Banded	723	718	708	589	776	628	618	1393
Net hours (NH)	3400	3671	3190	3678	3683	3144	2565	4478
Capture Rate (birds/100 NH)	26.2	23.8	27.6	19.1	26.6	20.1	28.8	36.6
Species Captured	58	51	60	53	57	45	46	58

A total of 1641 bird captures were recorded, of which 1391 were newly banded. Of the 248 recaptures, 34 were returns of birds banded at BBO in previous seasons, and there were no recaptures of birds banded at other stations (i.e. foreign recaptures) (Table 2). Species diversity was slightly above average, with 58 species captured (average is 55; Table 1).

The overall capture rate for spring migration was 36.3 birds captured per 100 net-hours, which is above the average for the past ten years (Figure 1). However, it is not possible to compare this number directly, due to the use of a combination of previously-established “old” nets and the more productive “new” nets established in 2014.



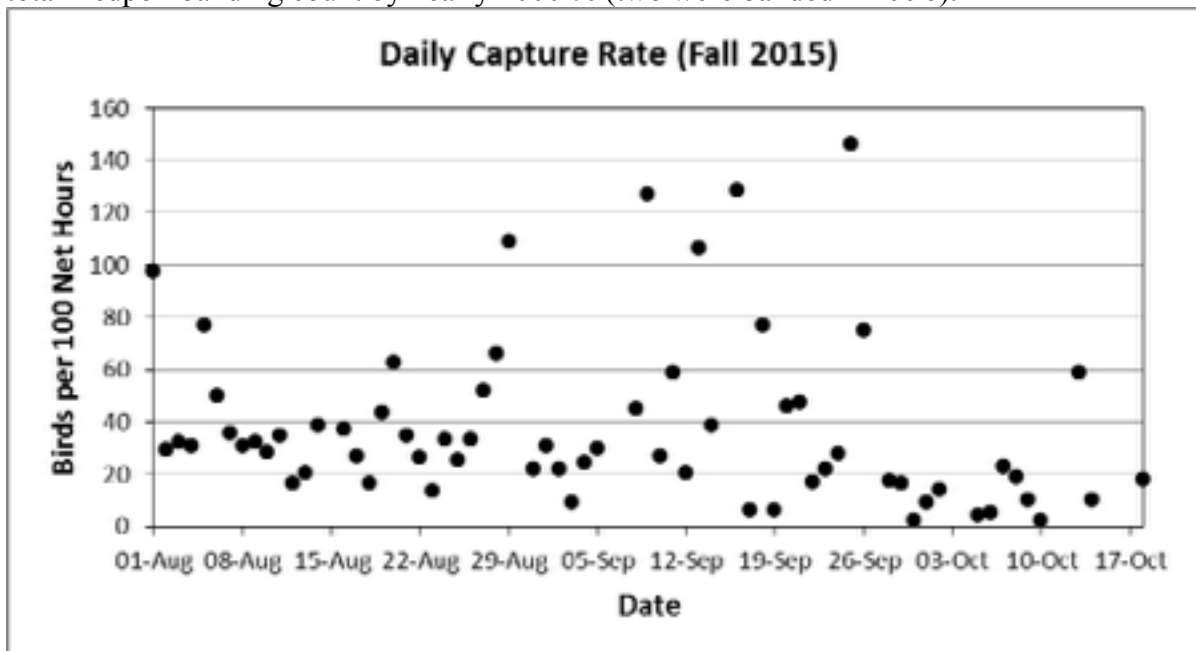
**Figure 1. Capture rates during fall migration monitoring at the BBO since 2000**

The daily capture rate was highly variable throughout the season with busy days often followed by relatively slow days (Figure 2). This pattern seems to be influenced largely by weather, with birds moving through under favourable conditions (dry, warm, wind from the north). The month of September had the majority of busy days, with the peak capture rate of 146.2 birds per 100 net hours occurring on Sept 25<sup>th</sup> when nets were open for just three hours but recorded 57 captures as a strong wind blew in from the

north-west mid-morning. There were three days where >80 captures were recorded. Daily capture rates fell quickly following the peak, to a minimum of approximately 10-20 birds/100 NH which were mostly recaptures of resident birds.

The five most commonly captured species were Yellow-rumped (Myrtle) Warbler (272 individuals captured 281 times, representing 17% of the total number of captures), Least Flycatcher (228 individuals captured 250 times, or 15% of the total captures), Black-capped Chickadee (71 birds caught 172 times, 10% of captures), Orange-crowned Warblers (132 birds caught 140 times, 9% of captures), and Tennessee Warbler (64 birds caught 87 times, 5% of captures). These top five species accounted for 57% of the total number of captures. Full details of the number, and type, of captures per species are presented in Table 2.

Several notable captures include: the first White-winged Crossbill banded at BBO, Nashville and Cape May Warblers which are both at the far western extent of their range at BBO, and a flock of Common Redpolls that hung around the lab for a couple days before hitting our nets all at once, increasing BBO's total Redpoll banding count by nearly 2000 % (two were banded in 1996).



**Figure 2. Daily capture rates during fall migration monitoring at the BBO in 2015**

A standard census route was conducted every day except for May 6, and combined with other incidental observations and the daily banding totals to derive a Daily Estimated Total (DET) of the number and species, of birds migrating through the Beaverhill Natural Area. The most commonly detected species included Snow Goose (32,145 detections on 11 days), Greater White-fronted Goose (4005 detections on 11 days), American Crow (3309 detections on 38 days), Canada Goose (1011 detections on 42 days), and Black-capped Chickadees (791 detections on 69 days). Overall, 46,175 detections were recorded of 113 species during the fall migration period.

**Table 2. Total number and type of capture per species during 2015 fall migration monitoring at Beaverhill Bird Observatory (BBO). Repeat captures were banded in 2015 at BBO, Return captures were banded at BBO in a previous year, Foreign captures were banded at a location other than BBO, and other captures were caught in a mist net but released un-banded.**

Species	Individuals	Captures					Total
		New	Repeat	Return	Foreign	Other	
Hairy Woodpecker	4	3		1			4
Downy Woodpecker	8	7	9	1			17
Yellow-Bellied Sapsucker	2	2					2
Eastern Phoebe	4	4					4
Yellow-Bellied Flycatcher	5	5					5
Alder Flycatcher	41	41	2				43
Least Flycatcher	228	223	22	5			250
Purple Finch	1	1					1
White-Winged Crossbill	1	1					1
Common Redpoll	37	37					37
American Goldfinch	12	8	2	4			14
Le Conte's Sparrow	1	1					1
White-Crowned Sparrow	20	20					20
White-Throated Sparrow	22	22					22
American Tree Sparrow	31	31	3				34
Chipping Sparrow	2	2					2
Clay-Colored Sparrow	36	32	2	4			38
Slate-Colored Junco	45	45	4				49
Song Sparrow	12	12					12
Lincoln's Sparrow	14	14	1				15
Swamp Sparrow	2	2					2
Fox Sparrow	6	6	2				8
Rose-Breasted Grosbeak	2	2					2
Cedar Waxwing	4	4	1				5
Red-Eyed Vireo	10	10					10
Philadelphia Vireo	3	3					3
Warbling Vireo	36	35	11	1			47
Blue-Headed Vireo	4	4					4
Black-And-White Warbler	3	3	1				4

Species	Individuals	Captures					Total
		New	Repeat	Return	Foreign	Other	
Nashville Warbler	2	2					2
Orange-Crowned Warbler	132	132	8				140
Tennessee Warbler	64	63	23	1			87
Cape May Warbler	1	1					1
Yellow Warbler	30	25	1	5			31
Myrtle Warbler	272	272	9				281
Magnolia Warbler	17	17					17
Blackpoll Warbler	12	12					12
Western Palm Warbler	14	14					14
Ovenbird	19	19					19
Northern Waterthrush	12	12					12
Mourning Warbler	6	6					6
Macgillivray's Warbler	4	4					4
Common Yellowthroat	3	3					3
Wilson's Warbler	14	14					14
Canada Warbler	3	3					3
American Redstart	44	44					44
Gray Catbird	2	2	2				4
House Wren	13	12		1			13
Brown Creeper	1	1					1
White-Breasted Nuthatch	4	3	2	1			6
Red-Breasted Nuthatch	5	5					5
Black-Capped Chickadee	71	62	101	9			172
Golden-Crowned Kinglet	3	3					3
Ruby-Crowned Kinglet	45	45	6				51
Gray-Cheeked Thrush	2	2					2
Swainson's Thrush	18	18					18
Hermit Thrush	17	17	1				18
American Robin	1		1	1			2
<b>Total</b>	<b>1427</b>	<b>1393</b>	<b>214</b>	<b>34</b>	<b>0</b>	<b>0</b>	<b>1641</b>



## Owl Monitoring

2015 was a big year for Northern Saw-whet Owl monitoring at BBO. We recorded a record 504 Saw-whet Owl captures, tallied our single busiest night on record with 29 owls captured on the night of October 16, and captured the most owls ever during a Steaks and Saw-whets night with 23 captures on the night of October 3<sup>rd</sup>.

Four nets were opened with a Saw-whet Owl audio lure playing on every night possible from September 10 to November 16, with a total of 57 nights of monitoring of a possible 68. From October 20 to November 16 an additional two nets were opened with a Boreal Owl audio lure. The overall capture rate of 8.26 captures per night was more than double the average capture rate in the previous 13 years (3.6 captures per night; Figure 3). Nightly capture rates rose early in the season and peaked in early to mid-October (Figure 4). Other captures include three Long-eared Owls and a single Boreal Owl.

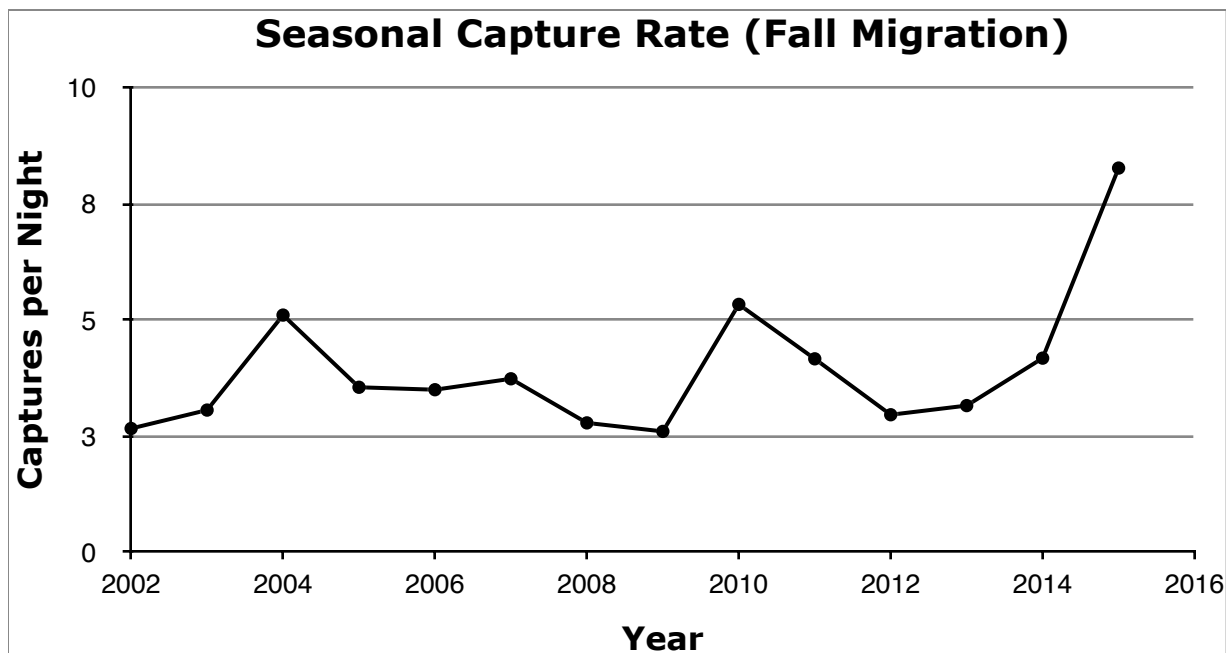
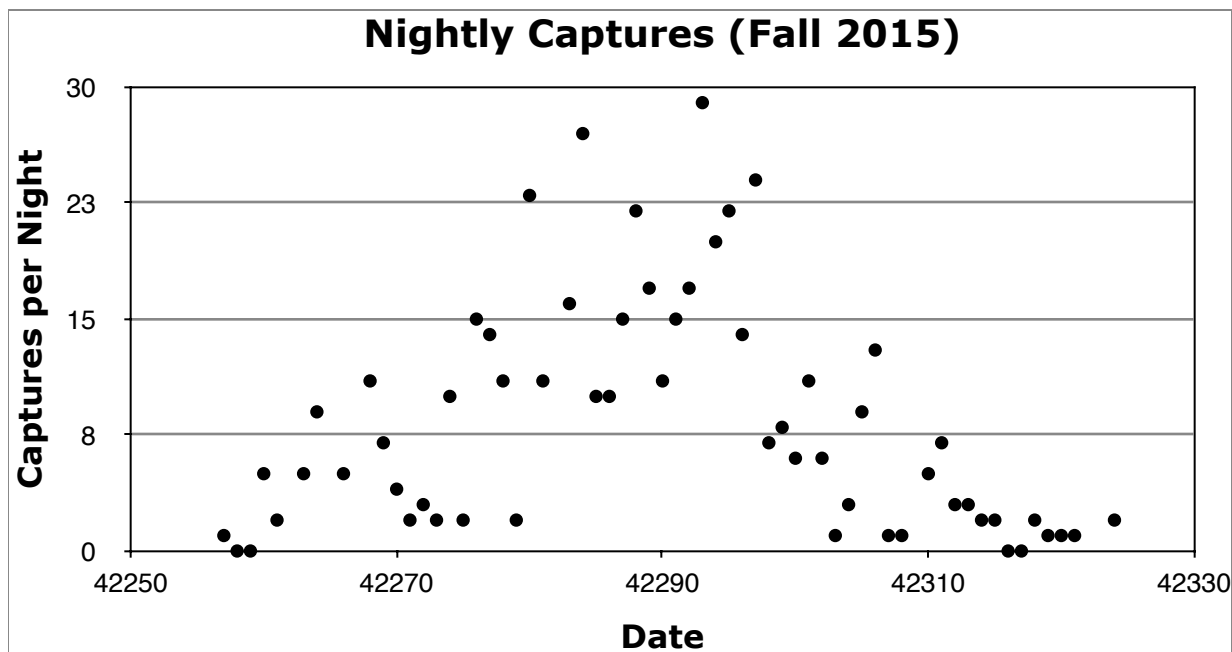


Figure 3. Captures per night of Northern Saw-whet Owls at the BBO since 2002



**Figure 4. Nightly captures of Saw-whet Owls at the Beaverhill Bird Observatory in 2015**

### **Outreach & Interpretation**

With both the daytime migration monitoring and nighttime owl monitoring programs running for most of the season there was plenty of opportunity for the public to come to the Observatory and observe staff in action.

Large groups (10-30 visitors) came out most Friday and Saturday nights during owl monitoring, including groups from the University of Alberta Chapter of The Wildlife Society, Augustana University, the Friends of Elk Island, the University of Alberta Outdoors Club, the Pathfinders Club, the Tofield School and Public Library, and many smaller groups of interested birders who came out on their own.

The annual Steaks and Saw-whets fundraiser event was a great success, with over fifty people attending each night. A vast quantity of delicious food and warm drink was consumed, and guests were able to get a close-up look at the research done by BBO staff and learn about the range of BBO programs.

The reach of the Beaverhill Bird Observatory on social media, and Facebook in particular, continued to increase this fall. The BBO Facebook page had 636 “Likes” as of November 30th, and this number continues to gradually but steadily increase (Figure 5). Staff and volunteer board members posted 53 updates to the page in September, October, and November.



**Figure 5. Number of Likes for the Beaverhill Bird Observatory Facebook Page**

### Other Activities

In mid-August, with the help of some volunteers from the U of A, installed three Autonomous Recording Units (ARUs) in different areas of the Beaverhill Natural Area. ARUs are all-weather audio recorders with highly sensitive microphones that are programmed to record on defined schedules. The primary objective of the ARUs was to collect recordings of the flight calls of songbirds migrating over the Natural Area during the night. Many bird species migrate at night when the risk of predation is much lower and the air is calmer. Once the data collected (>5000 10 minute recordings!) is analysed, it will be interesting to see how the results compare with mist-netting captures.

In September a small but hearty group of volunteers assisted staff and board members install several hundred meters of new fence along the north-east corner of the Natural Area in an effort to prevent cattle from adjacent private property from coming into the Natural Area where they inevitably impact the wetlands and damage nets and nest boxes.

Another group of volunteers came out in late November to help staff and board members accomplish another daunting task: organizing and combing through hard-copy data from the past 32 years of banding at BBO to search out bits and pieces of banding data that has gone missing over the years. A great deal of progress was made on this goal, and we even had some fun doing it! By February 2016 we had found records of 1318 banded birds that had not been reported previously.

### Acknowledgements

As always, there is a long list of people to thank for their assistance, encouragement, and company this fall. Thank you to Emily Cicon and Meghan Jacklin who assisted with the songbird migration monitoring and to Meghan again who was the head owl bander this season. Special thanks to BBO board members Geoff Holroyd, Helen Trefry, and Jim Beck who came out so many nights at the start of the owl monitoring program to get staff trained up and the saw-whet season on its feet, and filled it later in the season. Thanks too to the dedicated volunteers who came out regularly in the mornings to assist with the rushes of fall migrants (and to keep us company on the slow mornings). Of course, a big thank-you to the volunteers who came to help with our various work projects—we were able to accomplish so much more with your

assistance. And finally, thank you to all the visitors who dropped by the lab—it's always a pleasure to share our work with you.

## Winter Outreach and Educational Programming

Emily Cicon and Meghan Jacklin kept “Ray”, BBO’s mascot Northern Saw-whet Owl and “the Colonel” (Gord Court’s Barred Owl) busy this winter. They visited schools in the Edmonton area during the months of January and February, giving over 50 talks. Ray was also used for a variety of other presentations and events.



About 200 people attended the Wizards of the Forest Forest Owl event at the Hastings Lake Hall for Family day. It was hosted by the Beaverhill Bird Observatory and the Bookmobile staff (Shell Funding). Lisa Laschowski admires the “Colonel” while Ray takes a higher viewpoint on Kieran Kelly. (photos by Helen Trefry).

## BBO Initiates Young Ornithologist Program

In 2016 BBO will initiate a Young Ornithologist program. This program will give High School aged students (ages 15-18) the opportunity to spend a week learning what it is like to be a field bander and biologist. They will spend a week at the BBO banding lab in August, the beginning of fall migration, learning about many aspects of bird monitoring and bird conservation. Food, accommodation and field trips will be provided. If you know of anyone keen on birds, contact [helentrefry@gmail.com](mailto:helentrefry@gmail.com).

## BBO Intern Program and Grad studies

In 2015, BBO hosted eight interns that were sponsored by the SCiP program (Serving Communities Internship Program; [www.joinscip.ca](http://www.joinscip.ca) ). Congratulations and thanks to interns Drew Priddle, Jordan Nakonechny, Martijn Dieleman, Robert MacLean, Steven Griffith, Nikki Paskar, Cala Jorgensen and Danielle Simard, to mentors Emily Cicon, John Acorn and Geoff Holroyd, and to the BBO organizer Laurie Hunt. The Beaverhill Bird Observatory will be hosting interns for 2016 to fill positions related to monitoring tree swallows, house wrens, bird census grids and lepidopterans. A report from one of our keen

Interns is included below, as well as a summary from one of the two University of Alberta graduate students using the tree swallows in the BBO grids as part of their studies.

## **Butterfly Monitoring in the Beaverhill Natural Area**

Summer 2015

Nikki Paskar

### **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.



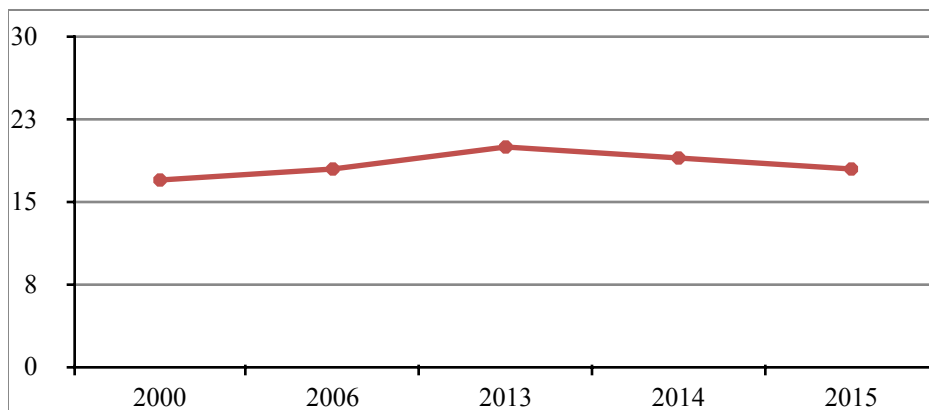
Figure 1. Map of the Pollard transects. Transect 1 is in green and Transect 2 is in purple.

## Results

Species	Ju n 6	Ju n 21	Ju n 27	Jul 4	Jul 11	Jul 18	Au g 8	Au g 16	Au g 23	Au g 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.

Many thanks to our funders including Alberta Conservation Association, Shell Environmental Fund, Nature Canada's Labatiuk Fund, Canada Summer Jobs Program, TD Friends of the Environment, Edmonton Community Foundation, Bird Studies Canada's Baillie Fund, personal donations and Alberta Casino funds. These funds and volunteer contributions are vital to the operations of the bird observatory.

### **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**

Special thanks to John Acorn for mentoring me throughout the project, Steve Anderson for teaching me butterfly handling skills, and Loney Dickson for assisting me in the field. This study could not have been done without the funding from the Serving Communities Internship Program (SCiP). Thanks to the Beaverhill Bird Observatory for coordinating the position.

### **Future Studies**

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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## **The effects of environmental pollution on coloration of tree swallows: evaluating the potential of remote monitoring.**

Colleen Cassady St. Clair & Natalia Lifshitz (PhD student) University of Alberta

Ornamental traits, and particularly coloration, of birds are known to function as reliable indicators of individual condition and quality to potential mates, while consistently reflecting environmental conditions. Therefore, we propose the use of ornamental color as an indicator of exposure to pollution, instead of other more invasive current methods. The purpose of our study is to advance such a diagnostic technique using tree swallows (*Tachycineta bicolor*) as a model species, as they have been the subjects of extensive study of both sexual selection and toxicology stemming from pollution. They reliably indicate exposure to chemical contaminants via several physiological and reproductive parameters, while demonstrating quality via the colour, hue, and brightness of their feathers.

We advanced our investigation in 2015 by comparing coloration of swallows nesting in a storm-water wetland complex in Edmonton (Roper Pond) and exposed to urban pollution, to swallows nesting in a protected natural area ~ 80 km east (Beaverhill Lake), using reflectance spectrometry. Our preliminary results are consistent with our prediction that feather colouration would be reduced at the urban site. Males there were less blue than the birds measured at the natural area. So for this season, we will increase our sample size by adding 2 new sites (one polluted; Fulton Marsh and one protected; Big Lake), in order to get color measures over a gradient of pollution. To evaluate if differences in coloration can be monitored via cameras remotely, we will construct a quantitative model that correlates photographic metrics to paired measures of colour taken with the spectrometric techniques. Additionally, if there are enough breeding pairs per site, we will perform a cross fostering experiment where we will swap whole broods of eggs between a polluted and an unpolluted site and compare condition and success of those chicks with the ones that didn't move sites. If performed, this experiment will help us understand if the effects of pollution are merely due to environmental quality or if there is a parental influence during egg production (genes and egg quality).

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**The BBO Casino is July 13 and 14. To Vounteer: [helentrefry@gmail.com](mailto:helentrefry@gmail.com)**