



Beaverhill Bird Observatory  
2015 Annual Report

January 2016



# Beaverhill Bird Observatory

Spring Report 2015

Jonathan DeMoor

July 2015

## Executive Summary

The Beaverhill Bird Observatory's spring migration monitoring was conducted by Head Biologist Jonathan DeMoor, and Assistant Biologists Emily Cicon and Meghan Jacklin. Migration monitoring was conducted from May 1<sup>st</sup> to June 9<sup>th</sup>, with banding taking place on all but two days in this period. Staff opened 13 nets daily and recorded 810 captures of 45 species, for an overall capture rate of 28.3 birds per 100 net-hours. Various other monitoring and maintenance activities were conducted by staff, and interns and volunteers monitored the Tree Swallow and House Wren nest boxes. Several outreach and interpretation events were organized, hosting nearly 150 visitors to the lab and many more at the off-site Snow Goose festival.

## Migration Monitoring

Migration monitoring was conducted at the lab from May 1<sup>st</sup> to June 9<sup>th</sup>. In general, 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 unusually mild, dry weather only one day of monitoring was missed completely (May 6, due to heavy snowfall), and banding occurred on all but two days (May 6 and May 16). As a result, more net-

hours were accumulated than in any other year since 2000 with a total of 2859 hours out of a possible 3120 (91%) (Table 1).

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

	2000	2001	2002	2003	2004	2005	2006	2007
Total Captures	875	629	950	754	532	276	242	408
Birds Banded	672	472	740	546	424	196	169	318
Net hours (NH)	2330	1756	2569	2219	1809	1570	1615	1813
Capture Rate (birds/100 NH)	37.6	35.8	37.0	34.0	29.4	17.6	15.0	22.5
Species	47	39	55	44	38	32	31	44

	2008	2009	2010	2011	2012	2013	2014	2015
Total Captures	382	500	497	412	459	324	841	810
Birds Banded	288	351	333	241	307	211	561	641
Net hours (NH)	1828	1608	2016	1884	1997	1884	2615	2859
Capture Rate (birds/100 NH)	20.9	31.1	24.7	21.9	23.0	17.2	32.2	28.3
Species	38	39	38	40	39	36	43	45

**A total of 810 bird captures were recorded, of which 641 were newly banded. Of the 169 recaptures, 54 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 above average, with 45 species captured (average is 40) (Table 1).

The overall capture rate for spring migrations was 28.3 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.

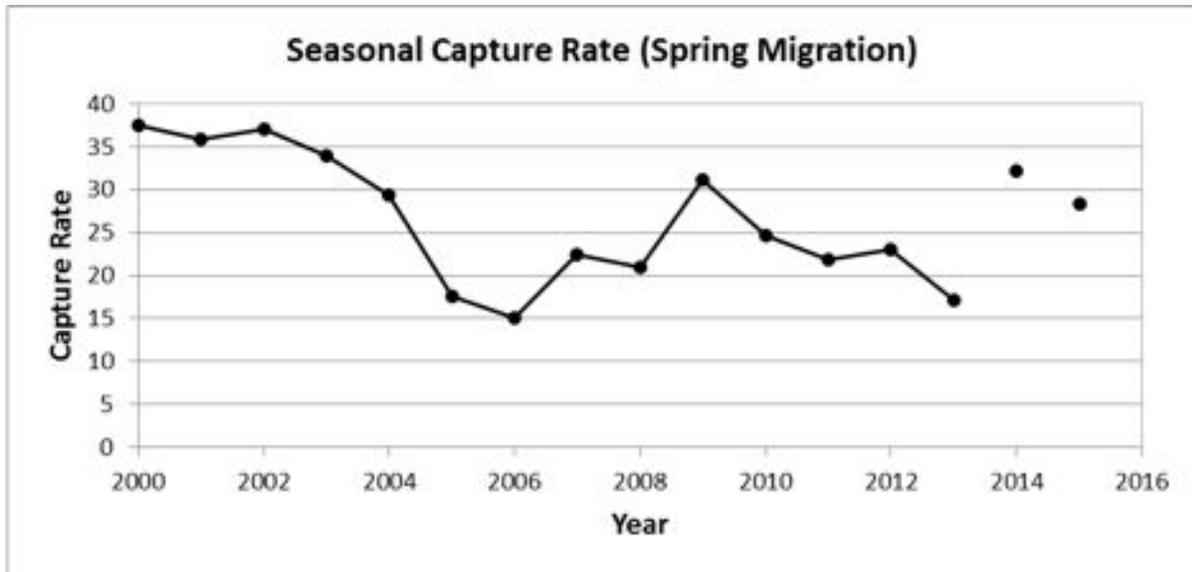


Figure 1. Capture rates during spring migration monitoring at the Beaverhill Bird Observatory since 2000

The daily capture rate increased steadily to a peak on May 25<sup>th</sup> when 56 captures were recorded for a daily capture rate of 72 birds/100 NH (Figure 2). Daily capture rates fell quickly following the peak, to a minimum of approximately 15-20 birds/100 NH.

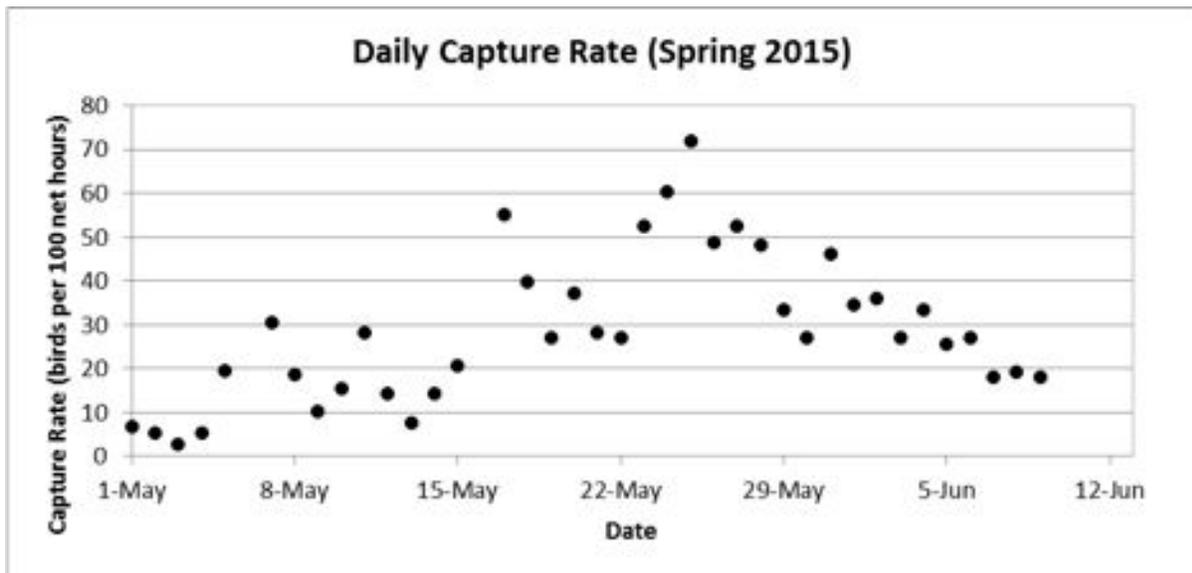


Figure 2. Daily capture rates during spring migration monitoring at the Beaverhill Bird Observatory in 2015

The five most commonly captured species were Least Flycatcher (138 individuals captured 172 times, representing 21% of the total number of captures), Clay-colored Sparrow (110 individuals captured 143 times, or 18% of the total captures), Swainson’s Thrush (74 birds caught 74 times, 9% of captures), Yellow Warbler (54 birds caught 74 times, 9% of captures), and House Wren (51 birds caught 68 times, 8% of captures). These top five species accounted for 66% of the total number of captures. Full details of the number, and type, of captures per species are presented in

Table 2.



**Table 2. Total number and type of capture per species during 2015 spring 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
		Banded	Repeat	Return	Foreign	Other	
Sharp-shinned Hawk	1	1					1
Hairy Woodpecker	2	1	1	1			3
Yellow-bellied Sapsucker	4	3	1	1			5
Ruby-throated Hummingbird	2					3	3
Eastern Phoebe	1	1					1
Yellow-bellied Flycatcher	3	3					3
Alder Flycatcher	16	16					16
Least Flycatcher	138	120	34	18			172
Brown-headed Cowbird	9	6	2	3			11
Baltimore Oriole	3	1	2	2			5
American Goldfinch	10	10					10
Savannah Sparrow	3	3					3
White-crowned Sparrow	2	2					2
White-throated Sparrow	40	40					40
Chipping Sparrow	14	14					14
Clay-colored Sparrow	110	107	32	4			143
Slate-colored Junco	1	1					1
Song Sparrow	3	3					3
Lincoln's Sparrow	16	16	2				18
Rose-breasted Grosbeak	5	4		1			5
Tree Swallow	7	3		4			7
Warbling Vireo	8	7		1			8
Blue-headed Vireo	1	1					1

Orange-crowned Warbler	8	8			8	
Tennessee Warbler	3	3			3	
Yellow Warbler	54	46	20	8	74	
Myrtle Warbler	24	24			24	
Magnolia Warbler	5	5			5	
Chestnut-sided Warbler	1	1			1	
Blackpoll Warbler	6	6			6	
Western Palm Warbler	2	2			2	
Ovenbird	2	2			2	
Northern Waterthrush	4	4			4	
Mourning Warbler	3	3			3	
Common Yellowthroat	2	2			2	
Wilson's Warbler	1	1			1	
American Redstart	13	13			13	
Gray Catbird	7	6		1	7	
House Wren	51	48	15	5	68	
Black-capped Chickadee	6	2	4	4	10	
Wood Thrush	1	1			1	
Gray-cheeked Thrush	15	15			15	
Swainson's Thrush	74	74			74	
Hermit Thrush	4	4			4	
American Robin	9	8	2	1	11	
<b>Total</b>	<b>691</b>	<b>641</b>	<b>115</b>	<b>54</b>	<b>3</b>	<b>810</b>

Several notable captures include: a seven year-old Yellow Warbler first banded in the summer of 2008 as a hatch year bird; a Chestnut-sided Warbler, which is on the far eastern edge of its range and only the 3<sup>rd</sup> record at BBO in recent years; and a Wood Thrush, which is well outside of its normal breeding range in the northeastern US, and only the 8<sup>th</sup> confirmed record of a Wood Thrush in Alberta.



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 type, of birds migrating through the Beaverhill Natural Area. The most commonly detected species included Greater White-fronted Goose (1515 detections on 7 days), Canada Goose (683 detections on 27 days), Sandhill Crane (444 detections on 6 days), Tree Swallow (1278 detections on 29 days), and Least Flycatcher (647 detections on 22 days).

### **Other Banding**

In addition to regular mist-netting and banding for migration monitoring, staff banded Mountain Bluebird chicks at three nest boxes: 1 in the “T” or “spiral” Tree Swallow grid, and two in the “R” boxes along Township Road 510, with a total of 13 chicks banded.

### **Interns & Other Research**

Seven interns started their projects for the year, including: three interns monitoring the Tree Swallow grids, two interns monitoring the House Wren grids, and one intern conducting spot-mapping surveys in the newly established forest breeding bird grid, and one intern surveying butterflies. One additional intern, who completed his internship on May 29, assisted with spring migration and various additional tasks, and submitted a report investigating differences in the arrival times of Yellow-rumped Warblers by age and sex. A PhD student from the University of Alberta came out to monitor several Tree Swallow boxes as part of her study on the effect of pollution on Swallow plumage. Two volunteer board members checked for geolocators on Tree Swallows in the third year of a study to determine the annual

movements of this aerial insectivore in collaboration with the University of Guelph and Bird Studies Canada.

### **Outreach & Interpretation**

With visitors to the lab nearly every day (approximately 50 individuals this spring) across a broad range of age and experience, staff were kept busy with daily interpretation opportunities. Whenever possible, visitors to the lab were encouraged to take advantage of the new \$10 lifetime membership rate to become BBO members.

International Migratory Bird Day was on the 23<sup>rd</sup> of May this year, and BBO staff hosted a group of nearly 30 children and parents organized by Nature Alberta. Activities included a banding demonstration, crafts, and a nature walk.

The annual Big Birding Breakfast was held the following week, on the morning of May 30<sup>th</sup>. Approximately 70 visitors came to the lab to enjoy the crêpes and bacon cooked up by master chef Janos Kovacs, and to learn about the ongoing activities at the lab. Staff banded 21 birds over the course of the morning, which provided ample opportunity for guests to get a close-up experience with a range of songbird species.

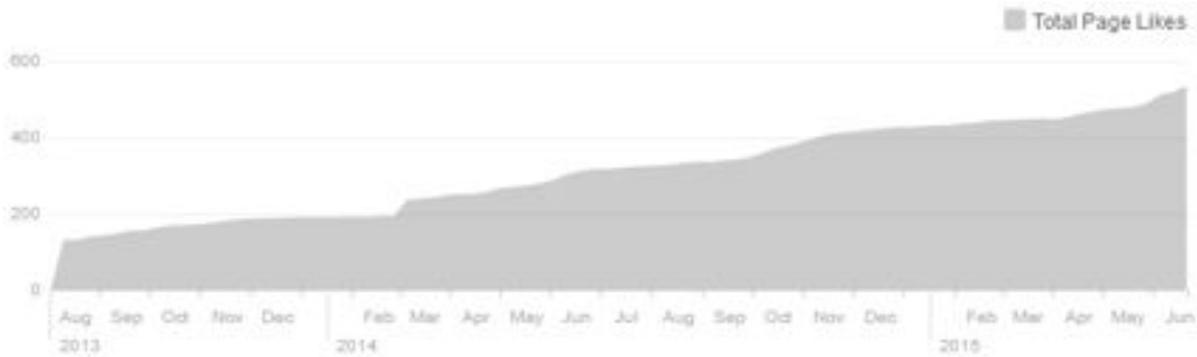


One issue of the Willet was produced by board member Helen Trefry and distributed to members and posted on the BBO website.

The BBO display is prominent at the Tofield Nature Center where BBO's activities are described to the many visitors to this town facility.

The reach of the Beaverhill Bird Observatory on social media, and Facebook in particular, continued to increase this spring. The BBO Facebook page had 536 "Likes" as of June 5<sup>th</sup>, and this number continues to gradually but steadily increase (Figure 3). Staff and two volunteer board members posted 35 updates to the page since March 31. The most popular post was about a Yellow Warbler originally banded in

2008 and recaptured this spring. This post was viewed 2,887 times and was liked, shared, or commented on by 159 people.



**Figure 3. Number of Facebook Likes for the Beaverhill Bird Observatory Page**

### Other Activities

Staff collected vegetation phenology data on the flowering and leaf-out dates of several common plant species around the lab and submitted these data to the PlantWatch project organized by Nature Alberta.

Staff, interns and volunteers also set up bat boxes in the natural area to increase roosting options for little brown bats., repaired Tree Swallow boxes, checked owl boxes, refreshed the signage throughout the natural area, made new ties for all the nets and new washable weighing tubes, created an inventory of bands, and a variety of other maintenance and upkeep tasks around the lab.

### Acknowledgements

Long-time BBO handyman, board member, and raptor bander, Al DeGroot was recognized at the Big Birding Breakfast for his many years of service. Board Chair Geoff Holroyd presented Al with a beautiful American Kestrel print as a token of our appreciation for his efforts to maintain the buildings and the solar power system for over a decade.



As always, there is a long list of people to thank for their assistance, encouragement, and company this spring. Thanks to Al DeGroot, Jeff Manchuk, Helen Trefry, and Geoff Holroyd for their assistance getting the lab up and running. A big thank you to Geoff Holroyd, Jim Beck, Lisa Priestley, and Meaghan Bouchard for covering banding on several occasions so staff could take an occasional day off. Thanks to all the volunteers who came out to help with banding and other tasks around the lab, with special thanks to Victoria Hansen who came out to help for two weeks straight—your help was much

appreciated. And finally, thanks to all the folks who dropped by the lab to visit—it is always a treat to get to share what we are doing out here with you!

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.





Beaverhill Bird Observatory  
Summer Report 2015

Jonathan DeMoor

August 2015

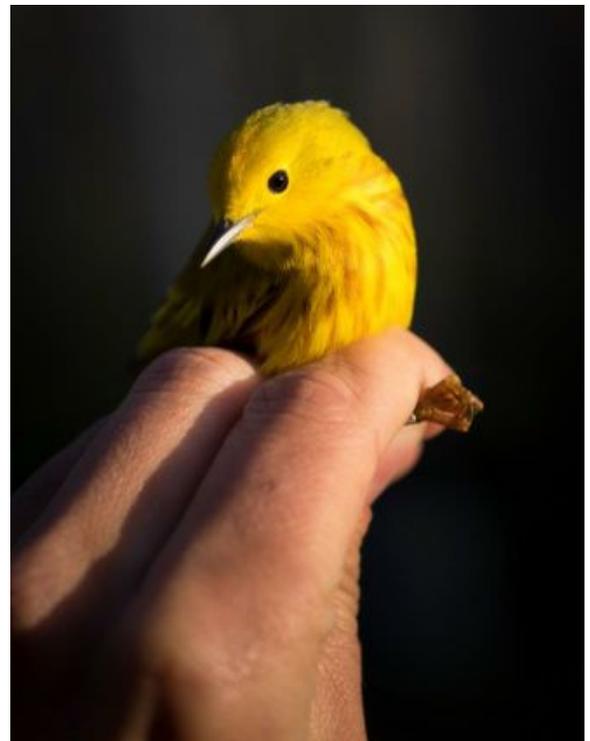
## **Executive Summary**

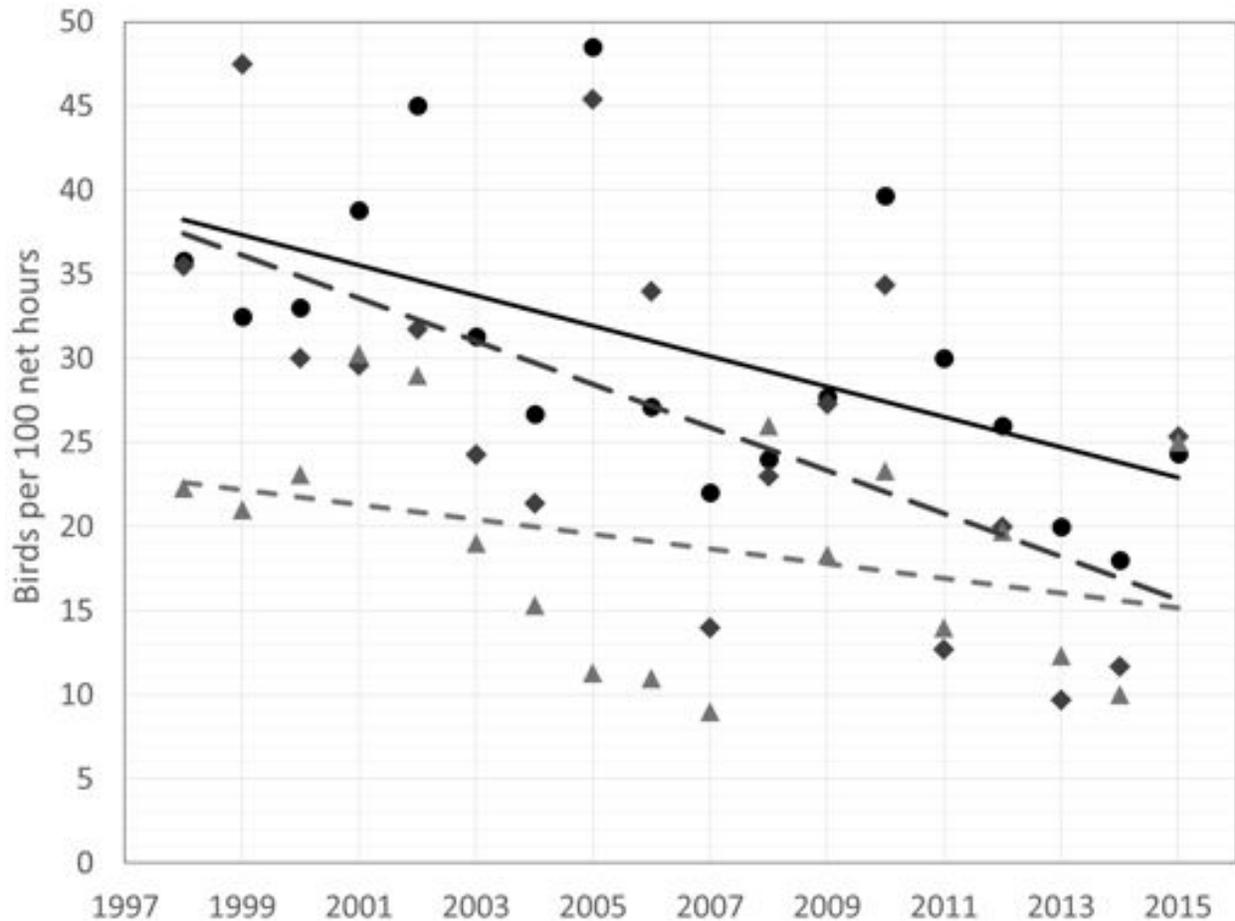
The Beaverhill Bird Observatory summer programs were run by Head Biologist Jonathan DeMoor, and Assistant Biologists Emily Cicon and Meghan Jacklin. Banding activities included three MAPS (Monitoring Avian Productivity and Survivorship) stations, and over 1000 Tree Swallow and House Wren hatchlings banded from nest boxes. Capture rates at the MAPS stations were higher than in recent years, but the species diversity of the birds captured was lower. Five rounds of point counts were conducted at nine stations in each of the three MAPS stations. Staff initiated a new vegetation monitoring program, and sampled the vegetation structure at 110 plots along 500 meter transects crossing the habitat gradient from young forest out to the grassland on the old Beaverhill lakebed. Staff searched for and monitored natural nests and bat boxes, wrote scientific and interpretive articles, and interacted with volunteers and visitors to the lab.

## **Monitoring Avian Productivity and Survivorship**

The Monitoring Avian Productivity and Survivorship (MAPS) program was initiated in 1989 by the Institute for Bird Populations, and is a cooperative effort by banders across Canada and the United States to provide long-term, continuous data on the population demographics of bird species that breed in North America. Mist-netting and banding is the primary data collection method for the MAPS program. The data collected at MAPS stations allow researchers to assess whether observed population changes are due to changes in annual reproductive success (productivity, i.e. how many new birds are fledged in the summer), inter-annual mortality (survivorship, i.e. how many birds survive the winter to return to breed), or both.

The Beaverhill Bird Observatory has been participating in the MAPS program since its pilot year, and currently operates three stations in the Beaverhill Natural Area each year. Prior to the start of the summer season, we conducted an analysis of the capture rates at each of the MAPS stations and made the decision to continue operating all three, despite declining capture rates at each station.





**Figure 4. Capture rates since 1998 at three MAPS (Monitoring Avian Productivity and Survivorship) stations at the Beaverhill Bird Observatory. BLAB station: black circles, WEIR station: dark grey diamonds, PARK station: light grey triangles.**

### *Mist Netting Summary*

Constant effort mist-netting is the main method of data collection for MAPS. At each station we set up ten standard songbird mist nets (12 m long by 2.6 m tall, 30mm mesh) at sunrise and monitored them for 6 hours in each ten day period between June 10 and July 30. Banding only occurred during standard weather conditions with no significant precipitation, temperatures between 0 °C and 27 °C, and wind speed less than 20 km/h. Overall, capture rates were higher than in recent years but species diversity was lower.

### *BLAB Station*

The BLAB station (est. 1989) is located in the area immediately surrounding the BBO banding lab (N53.38055° W112.52737°). The habitat structure is described as young poplar, aspen, and willow adjacent to a riparian habitat. However, due to low lake levels the station is no longer adjacent to a riparian area, and no riparian bird species were captured. We banded at BLAB on June 10 and 23, and July 1, 10, and 21. We made up two hours that were missed on one net (due to necessary repairs) later in the same period, so that all 300 hours of standard effort were completed.



We recorded 73 captures of 49 individual birds, for a capture rate of 24.3 birds per 100 net-hour (b/100 nh). This is a higher capture rate than the past two years, but is close to the average for this station over the past ten years (28.3 b/100 nh, Figure 4). Least Flycatchers were by far the most dominant species captured, accounting for 92% of all captures, and 88% of the individuals caught (Table 3). We captured only six species at the BLAB station, which is 65% lower than the average species diversity caught in the past ten years (average=9.2 species/year), and the lowest species diversity of the three stations this year.

One highlight was the recapture of a Least Flycatcher, pictured here, originally banded in 2013 Veracruz, Mexico—a 4300 km straight-line distance from BBO! We caught this bird last year as well, and she is clearly breeding in the Natural Area.

#### *WEIR Station*

The WEIR station (est. 1994) is located 1.5 km east of the lab (N53.37997° W112.50539°). The habitat structure of the station is described as balsam poplar, aspen and willow adjacent to a riparian habitat. There was sufficient water in Lister Lake this year for this description to remain accurate, however no

riparian species were captured. We banded at WEIR on June 11 and 25, and July 2, 13, and 22 with no hours missed, for a total of 300 net-hours.

We recorded 76 captures of 54 individual birds, for a capture rate of 25.3 birds per 100 net-hours. This is a higher capture rate than any of the past four years, and higher than the average for this station over the past ten years (21.2 b/100 nh, Figure 4). Least Flycatchers were the most common species captured, accounting for 75% of all captures, and 72% of the individuals caught (Table 3). House Wrens were the second most commonly captured species, yet they accounted for only 12% of captures. Species diversity was higher at the WEIR site than the past two years with seven species captured, but this is still lower than the average species diversity at this station over the past ten years (average=9.2 species/year).

#### *PARK Station*

The PARK station (est. 1996) is located 0.5 km south of the lab (N53.37619° W112.52912°). The habitat structure of the station is described as balsam poplar, aspen, and willow with a raspberry and wild rose shrub layer. We banded at the PARK station on June 12 and 26, and July 3, 14, and 23 with no hours missed, for a total of 300 net-hours.

We recorded 75 captures of 55 individual birds, for a capture rate of 25.0 birds per 100 net-hours. This is the highest capture rate recorded at the PARK station since 2002, and 61% higher than the average for this station over the past ten years (15.5 b/100 nh, Figure 4). Least Flycatchers were the dominant species captured, accounting for 83% of all captures, and 78% of the individual birds caught (Table 1). Species diversity at the PARK station was the highest of the three stations this year, with nine species

captured. This is unusual—in 9 of the 10 previous years PARK has had the lowest diversity. This difference is accounted for more by decreased diversity in the other two sites this year, as species diversity at PARK was only 20% higher than the average diversity at this station over the past ten years (average=7.4 species per year).



**Table 3. Total number and type of capture per species during 2015 summer banding programs 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.**

<b>a) BLAB MAPS station</b>		<b>Captures</b>					
<b>Species</b>	<b>Individuals</b>	<b>New</b>	<b>Repeat</b>	<b>Return</b>	<b>Foreign</b>	<b>Other</b>	<b>Total</b>
Least Flycatcher	43	26	29	11	1		67
American Robin	2	2					2
Brown-Headed Cowbird	1		1				1
American Goldfinch	1	1					1
Yellow Warbler	1	1					1
House Wren	1	1					1
<b>Total</b>	<b>49</b>	<b>31</b>	<b>30</b>	<b>11</b>	<b>1</b>		<b>73</b>

<b>b) WEIR MAPS station</b>		<b>Captures</b>					
<b>Species</b>	<b>Individuals</b>	<b>New</b>	<b>Repeat</b>	<b>Return</b>	<b>Foreign</b>	<b>Other</b>	<b>Total</b>
Least Flycatcher	39	30	18	9			57
House Wren	5	5	4				9
Brown-Headed Cowbird	4	2		2			4
Warbling Vireo	2	2					2
American Robin	2	2					2
Yellow-Bellied Sapsucker	1	1					1

Tree Swallow	1	1				1
<b>Total</b>	<b>54</b>	<b>43</b>	<b>22</b>	<b>11</b>		<b>76</b>

<b>c) PARK MAPS station</b>	<b>Species</b>	<b>Individuals</b>	<b>Captures</b>				<b>Total</b>
			<b>New</b>	<b>Repeat</b>	<b>Return</b>	<b>Foreign Other</b>	
	Least Flycatcher	43	33	22	7		62
	Brown-Headed Cowbird	2	2				2
	American Goldfinch	2	2				2
	Warbling Vireo	2	2				2
	Black-Capped Chickadee	2	1	1			2
	Clay-Colored Sparrow	1	1	1			2
	Downy Woodpecker	1	1				1
	White-Breasted Nuthatch	1	1				1
	Hermit Thrush	1	1				1
	<b>Total</b>	<b>55</b>	<b>44</b>	<b>24</b>	<b>7</b>		<b>75</b>

<b>d) BBO lab and nest boxes</b>	<b>Species</b>	<b>Individuals</b>	<b>Captures</b>				<b>Total</b>
			<b>New</b>	<b>Repeat</b>	<b>Return</b>	<b>Foreign Other</b>	
	Tree Swallow	922	879	5	42		926
	House Wren	122	122				122
	Black-Capped Chickadee	7	5	1	1		7
	American Goldfinch	5	5				5
	Mountain Bluebird	5	5				5
	<b>Total</b>	<b>1061</b>	<b>1016</b>	<b>6</b>	<b>43</b>		<b>1065</b>

## Point Counts

We conducted standard 10-minute point count surveys at nine locations at each MAPS station on the same day that banding occurred. Although this data is no longer collected by MAPS program coordinators, they remain a valuable part of the long-term population monitoring of the Beaverhill Bird Observatory. Point count surveys are especially important for monitoring species that are less likely to be trapped in the mist nets.

We recorded 1405 detections of individual birds from 54 species (Table 4). The BLAB station had the highest bird abundance with 573 (40%) detections, followed by WEIR and PARK with 471 (35%) and 361 (25%) detections, respectively. Species diversity was highest in BLAB and WEIR with 39 species detected at both stations, although the species composition differed substantially between these stations. The PARK station had the lowest species diversity with 32 species detected.

At all three stations, Least Flycatchers were the most commonly detected, accounting for 27% of all detections. Overall, Warbling Vireo (9% of detections) and House Wren (8% of detections) were the next-most commonly detected species (Table 4). The BLAB station accounted for the majority of the detections of the next-most commonly detected species: Canada Goose (due to a single flock flying over during the first round), American Goldfinch (due to the presence of feeders near the lab), and Tree Swallow (due to the station's close proximity to the Tree Swallow nest box grid). Brown-headed Cowbird, Black-capped Chickadee, and Yellow Warbler were the next-most commonly detected species that were abundant at all three stations.



**Table 4. Number of detections per species during point count surveys at three MAPS (Monitoring Avian Productivity and Survivorship) stations in 2015 at the Beaverhill Bird Observatory.**

Species	BLAB	WEIR	PARK	Total	Species	BLAB	WEIR	PARK	Total
Pied-billed Grebe		3	1	4	Brown-headed Cowbird	24	22	21	67
Common Loon		1		1	Yellow-headed Blackbird		13		13
Franklin'S Gull	1	3	4	8	Red-winged Blackbird	13	20	11	44
Black Tern		6		6	Baltimore Oriole	8	13	6	27

Mallard			1	1	White-winged Crossbill		1		1
Blue-winged Teal		1		1	American Goldfinch	38	13	25	76
Unknown Duck	1	21		22	Pine Siskin	5	1	5	11
Canada Goose	80	4		84	White-throated Sparrow			2	2
American Bittern	2	2		4	Clay-colored Sparrow	10	6	1	17
Sora	2	4	2	8	Song Sparrow	1	2		3
American Coot	3	17	1	21	Rose-breasted Grosbeak	2	1	2	5
Wilson's Snipe	3	6		9	Tree Swallow	63	8	3	74
Greater Yellowlegs	2	4		6	Cedar Waxwing	6	1	6	13
Lesser Yellowlegs		1		1	Red-eyed Vireo	2	2	2	6
Red-tailed Hawk			1	1	Warbling Vireo	44	36	40	120
Long-eared Owl		2		2	Tennessee Warbler	1		3	4
Ruffed Grouse	1			1	Yellow Warbler	19	21	18	58
Hairy Woodpecker	5			5	Magnolia Warbler	1	1		2
Downy Woodpecker	1	3	3	7	Ovenbird	1			1
Yellow-bellied Sapsucker	3		4	7	Common Yellowthroat		1	1	2
Yellow-shafted Flicker	1		1	2	American Redstart	3			3
Ruby-throated Hummingbird			1	1	House Wren	34	47	31	112
Alder Flycatcher	1			1	White-breasted Nuthatch	2		2	4
Least Flycatcher	144	129	112	385	Black-capped Chickadee	26	16	20	62
Black-billed Magpie		1		1	Swainson'S Thrush	1			1
Blue Jay	1	1		2	Hermit Thrush			1	1
Common Raven	7	12	24	43	American Robin	11	24	6	41
<b>Total detections</b>						<b>573</b>	<b>471</b>	<b>361</b>	<b>1405</b>
<b>Total species</b>						<b>17</b>	<b>19</b>	<b>12</b>	<b>27</b>

## Other Banding

### *Tree Swallows*

Three interns (Drew, Jordan, and Martijn, supervised by Geoff) monitored 205 nest boxes for the presence and development of Tree Swallow nestlings. The monitored boxes were located along the old shoreline north of the lab (older "T" grid, 90 boxes), in the grassland northwest of the weir (newer "S" grid, 50 boxes), and along Township Road 510 just south of the Natural Area ("R" grid, 65 boxes). Interns noted clutch sizes, approximate hatch dates, and nest success rates. Using the dates provided by the interns, we banded as many of the nestlings as possible while they were between 10-12 days old.

Helen Trefry and Geoff Holroyd re-trapped adult Tree Swallows in the spiral grid to determine return rates and particularly retrieve geolocators. They retrieved 13 geolocators for a two year total of 24. Maps and an article will be compiled in cooperation with Bird Studies Canada and University of Guelph.

A University of Alberta graduate student studied biochemistry of nestling swallows on the "S" grid and 30 Tree Swallow nests (15 from Gregg Lake) were supplied to another UofA graduate student for her study of nest parasites.

We also opportunistically banded any adults that we found in the nest boxes while banding nestlings. In total we banded 879 new Tree Swallows, and recorded 47 recaptures of previously banded birds (Table 3).

### *Mountain Bluebirds*

We continued to monitor the three Tree Swallow boxes occupied by Mountain Bluebird pairs, and banded an additional five nestlings in addition to those banded earlier in the spring.

### *House Wrens*

Two interns (Cala and Danielle, supervised by Emily) monitored 99 nest boxes in four grids in the Natural Area. Interns noted clutch sizes, approximate hatch dates, and nest success rates, and collected additional data to use for an analysis on nest site selection. Using the dates provided by the interns, we banded as many of the nestlings as possible while they were between 12-14 days old. We also opportunistically banded any adults that we found in the nest boxes while banding nestlings. In total we banded 122 new House Wrens from the nest boxes (Table 3).

### *Feeder Nets*

We set up two nets near the feeders by the banding lab to use for banding demonstrations and training purposes. We opened these nets for a short time on the 20<sup>th</sup> of June while hosting a group from the Tofield Nature Centre and caught seven Black-capped Chickadees and five American Goldfinches (Table 3).

### **Nest Searches**

We attempted to locate and monitor as many natural nests as possible during the course of our other summer activities. In the end, we found 22 nests from 8 species (Table 5). For each nest we found, we completed a nest record card to be submitted to the Prairie Nest Records Scheme. This data is used to study breeding biology as well as monitor distributional changes and nesting success of birds in the prairie provinces.

**Table 5. Number of nests found per species in the Beaverhill Natural Area in June and July 2015**

<b>Species</b>	<b>Number of nests found</b>
Duck species	3
Northern Saw-whet Owl	1
Downy Woodpecker	1
Least Flycatcher	6
Common Raven	1
Clay-colored Sparrow	1
Yellow Warbler	3
Mountain Bluebird	6

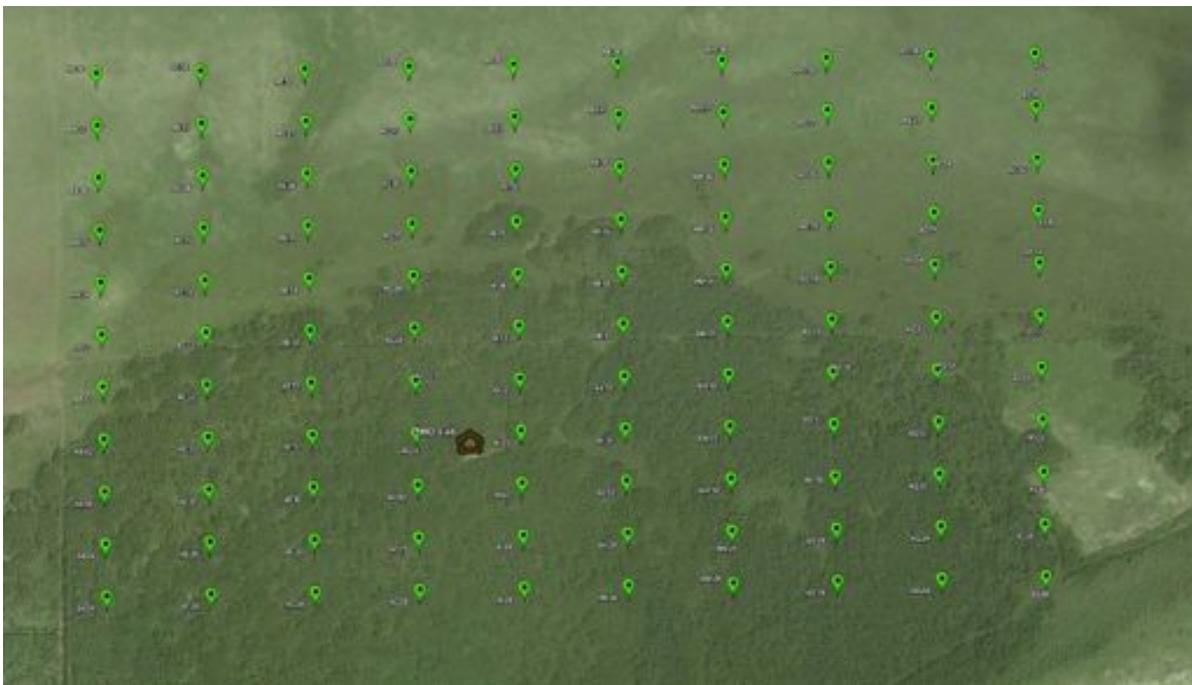


### **Vegetation Monitoring**

Significant habitat change has occurred at BBO since the original net lanes were established over thirty years ago. As the lake receded, and eventually dried up

completely, the habitat in the vicinity of the lab and surrounding the net lanes has progressed from shoreline and willow habitat to young aspen and balsam poplar forest. Unfortunately, this transition has not been well documented, despite being a requirement for Canadian Migration Monitoring Network stations. In June and July 2015, we began to implement a new protocol to make systematic measurements of the vegetation at all current and previous net lane locations, and across the habitat gradient along the old lake shoreline.

We measured vegetation structure and species composition at 110 plots spaced 50 m apart along 10 transects running north-south across the transition from poplar forest through the shrubby transition zone to grassland on the old lakebed (Figure 5). This was a time-consuming and laborious task, and we appreciated the help of the volunteers who came to help out. The data that we collected will be compiled and analyzed over the winter and a preliminary report will be written to summarize our findings.



**Figure 5. Location of 110 vegetation structure measurement plots established and sampled in the Beaverhill Natural Area in July 2015.**

## **Bat boxes**

In early July we installed 6 additional bat boxes in the Natural Area to increase roosting options for little brown bats—a federally listed species—and monitored the boxes for occupancy several times a week, with a total of ten checks. We found bats on nearly half the checks, usually in singles or occasionally in pairs. With the assistance of intern Steven and Geoff, we placed two of the new boxes out in the open, two in small openings in the forest, and two under the closed canopy. Over the winter we will analyze the data to determine if any of these boxes were used preferentially, which will allow us to optimally position any additional bat boxes installed in the future.

## **Outreach and Interpretation**

The number of walk-in visitors to the lab decreased somewhat compared to this spring, but there were still plenty of opportunities to interact with people out for a walk in the Natural Area. We hosted groups from the Tofield Nature Centre, the Clandonald and Tofield schools, and led a nature walk with Nature Alberta's NatureKids club.

The reach of the Beaverhill Bird Observatory Facebook page continued to grow, from 543 people following the page in June to 576 (increase of 33) by the end of August. Staff and volunteer board members posted six updates to the page in June and July.

## **Other Activities**

Between banding rounds and veg surveys we kept busy repairing nets, doing maintenance around the lab, catching up on data entry, and writing reports. Emily and Meghan spent three days banding at a MAPS station in Cypress Hills and three days at the Lesser Slave Lake Bird Observatory (LSLBO) to gain experience in how other stations operate. An intern (Nikki, supervised by John Acorn) conducted eight surveys for butterflies in the Natural Area, and another (Robert, supervised by Geoff Holroyd) conducted spot-mapping surveys in a newly established forest breeding bird grid.

## **Acknowledgements**

We'd like to thank the volunteers and visitors that came out to the lab this summer to help out and provide good company. Special thanks to Robin who came out for ten days of banding and vegetation surveys—your help was very much appreciated!

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, Alberta Casino funds, and personal donations. These funds and volunteer contributions are vital to the operations of the bird observatory.



# Beaverhill Bird Observatory

## Fall Report 2015

Jonathan DeMoor

December 2015

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

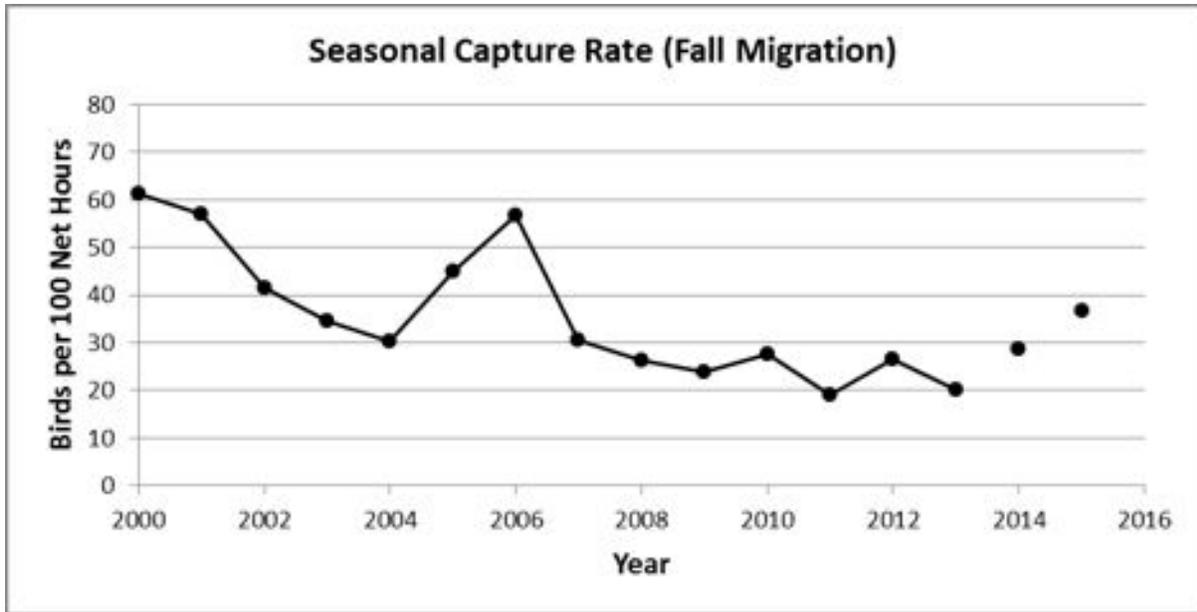
	2000	2001	2002	2003	2004	2005	2006	2007
Total Captures	1740	2095	1734	1315	975	1256	1969	1079
Birds Banded	1433	1758	1464	1093	818	1089	1525	952
Net hours (NH)	2843	3679	4174	3818	3229	2787	3476	3534
Capture Rate (birds/100 NH)	61.2	57.0	41.5	34.4	30.2	45.1	56.6	30.5
Species Captured	55	56	62	57	60	59	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). Species diversity was slightly above average, with 58 species captured (average is 55) (Table 1). 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 7.

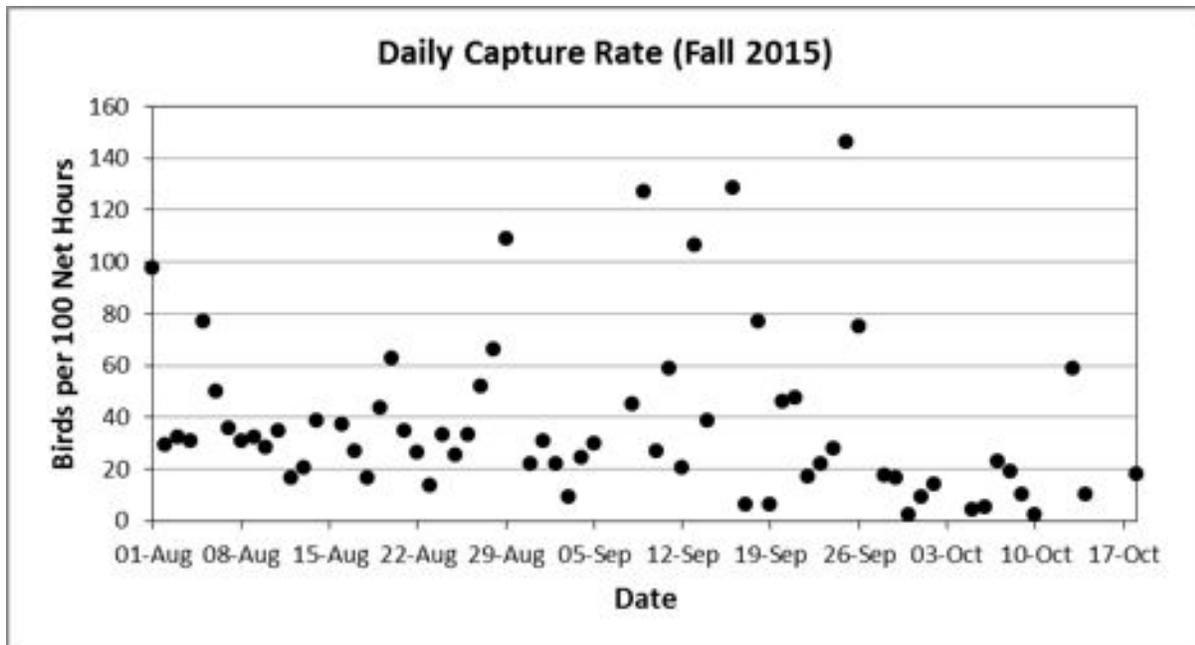
The overall capture rate for spring migration was 36.3 birds captured per 100 net-hours, which is above the average for the past ten years (Figure 1). However, it is not possible to compare this number directly, due to the use of a combination of previously-established “old” nets and the more productive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



**Figure 6. Capture rates during fall migration monitoring at the Beaverhill Bird Oservatory 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 25th 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.





**Figure 7. Daily capture rates during fall migration monitoring at the Beaverhill Bird Observatory in 2015**

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.

**Table 7. 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

Species	Individuals	Captures					Total
		New	Repeat	Return	Foreign	Other	
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
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>

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).

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.

### **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 3rd.

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 8).

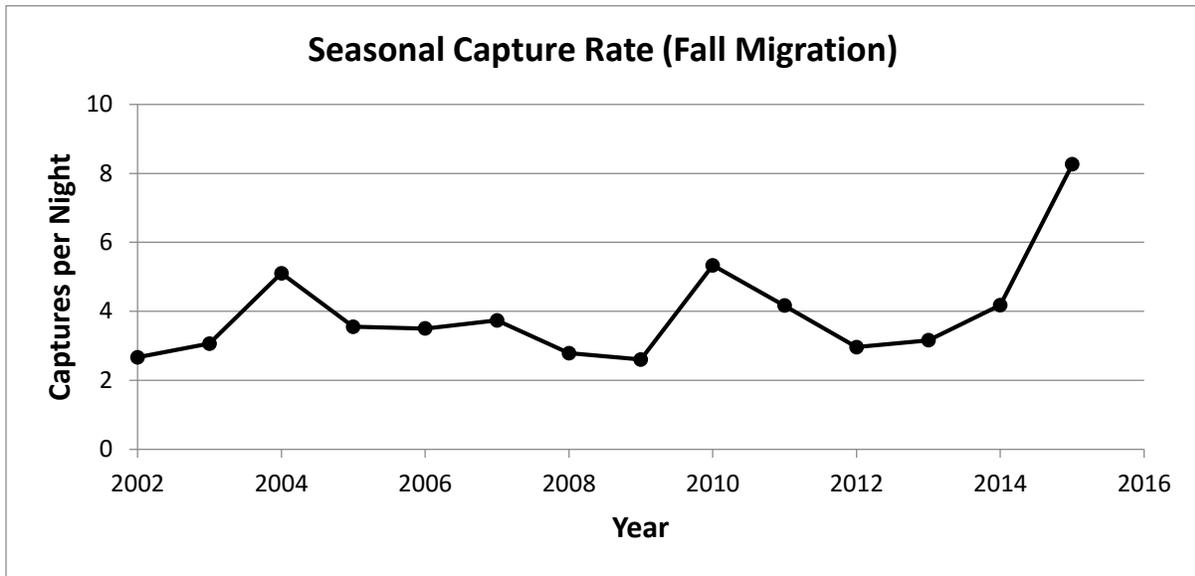


Figure 8. Captures per night of Northern Saw-whet Owls at the Beaverhill Bird Observatory since 2002.

Nightly capture rates rose early in the season and peaked in early to mid-October (Figure 9).

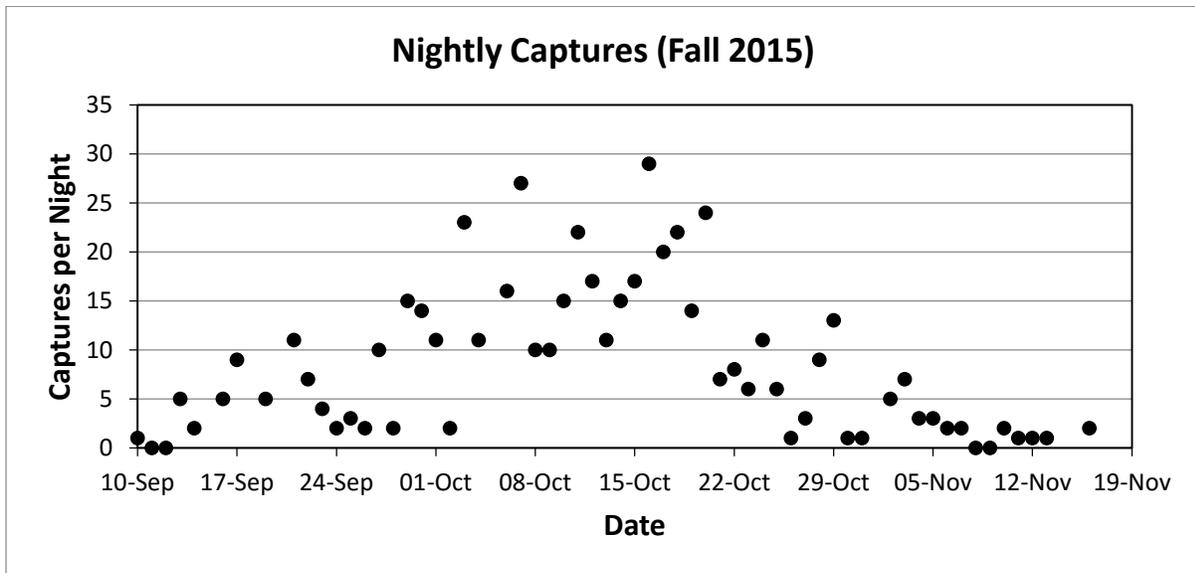


Figure 9. Nightly captures of Saw-whet Owls at the Beaverhill Bird Observatory in 2015.

Other captures include three Long-eared Owls and a single Boreal Owl.

## 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 3). Staff and volunteer board members posted 53 updates to the page in September, October, and November.



**Figure 10. Number of Facebook Likes for the Beaverhill Bird Observatory 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. 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. 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.

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.