

Albert Creek Bird Banding & Migration Monitoring Station Final Report 2007



Prepared for:

Yukon Environment, Ducks Unlimited Canada, Environment Canada (Canadian Wildlife Service) &
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Albert Creek Bird Banding Station

2007

The 2007 operation of the Albert Creek Bird Banding Station was made possible due to financial contributions from the following organizations.



Environment
Canada

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Cover Photos:

Upper Row (L to R): Cape May Warbler, Northern Waterthrush, Fox Sparrow

Middle Row (L to R): White-winged Crossbill, Yellow-bellied Flycatcher, Cedar Waxwing

Bottom Row (L to R): Swainson's Thrush, Rusty Blackbird, Boreal Chickadee

ABSTRACT

The Albert Creek Bird Banding Station operated during both the spring and fall migration seasons during 2007. This year was the station's seventh consecutive year of operation and this was one of the most productive to date. During the spring, the station operated for 44 days from April 23rd to June 7th. Over this time period, 2,798 birds of 52 species were banded and 129 species were observed. During the fall season, the station was operated for 56 days from July 26th to September 22nd. Over this time period, 2,504 birds of 46 species were banded and 107 species were observed. The station continues to add to the knowledge of migratory birds in the southeast Yukon, primarily for those species found nowhere else in the territory. A number of these species are very rare in the Watson Lake region and the station has been successful in not only observing these species but also banding them. Species such as Western Tanager, Cape May Warbler, Black and White Warbler and Blue Headed Vireo were banded during the 2007 season. Aside from gathering biological data, the station has also been successful in providing a unique educational opportunity for visitors of all ages. The station received a total of 680 volunteer hours by individuals assisting in the operation of the station. In addition, 158 visitor hours took place by individuals not assisting with the stations operation, but touring the area and learning about bird banding and bird migration in general.

TABLE OF CONTENTS

ABSTRACT	3
1.0 INTRODUCTION	5
2.0 METHODS	5
2.1 STUDY SITE.....	5
2.2 GENERAL METHODS	7
3.0 RESULTS	8
3.1 BAND RETURNS	13
3.2 NOTABLE CAPTURES.....	13
3.3 ADDITIONAL STUDIES	17
3.3.1 <i>Rusty Blackbirds</i>	17
3.3.2 <i>Owl Banding</i>	18
3.3.3 <i>Tick Collection</i>	18
3.3.4 <i>Molt Scoring</i>	19
3.3.5 <i>Feather Collection</i>	20
3.3.6 <i>Duck Banding</i>	21
3.4 VISITORS AND VOLUNTEERS	21
4.0 PHOTOS.....	23
5.0 DISCUSSION.....	24
5.1 BAND RETURNS	24
5.2 NOTABLE CAPTURES.....	24
5.3 ADDITIONAL STUDIES	25
5.4 VISITORS AND VOLUNTEERS	26
6.0 CONCLUSION AND RECOMMENDATIONS	26
7.0 ACKNOWLEDGEMENTS	27
APPENDIX 1 –ALBERT CREEK ALL TIME BANDING TOTALS.....	28
APPENDIX 2 – SPRING ESTIMATED TOTAL SUMMARY.....	32
APPENDIX 3 – FALL ESTIMATED TOTAL SUMMARY	33
APPENDIX 4 – SPRING MIGRATION TIMING FIGURES	34
APPENDIX 5 – FALL MIGRATION TIMING FIGURES.....	41
APPENDIX 6 – AGE BREAKDOWN & CATCH RATE FIGURES.....	48

1.0 Introduction

The Albert Creek Bird Banding Station operated during both the spring and fall migrations in 2007. The station completed its seventh year of operation thanks to financial help from several government and non-government agencies including Environment Yukon, Canadian Wildlife Service, Environmental Awareness Fund, Yukon Bird Club and Ducks Unlimited Canada.

The goals of the Albert Creek Bird Banding Station were to:

- Continue to gather baseline information on birds and bird migration in the Liard basin area including specific studies such as feather collecting for stable isotope analysis, color banding, tick collection and molt scoring.
- Provide a setting for the public including school groups to learn about birds and bird migration.
- Provide employment and training opportunities for students and volunteers.
- Provide a unique tourist attraction for the community of Watson Lake.

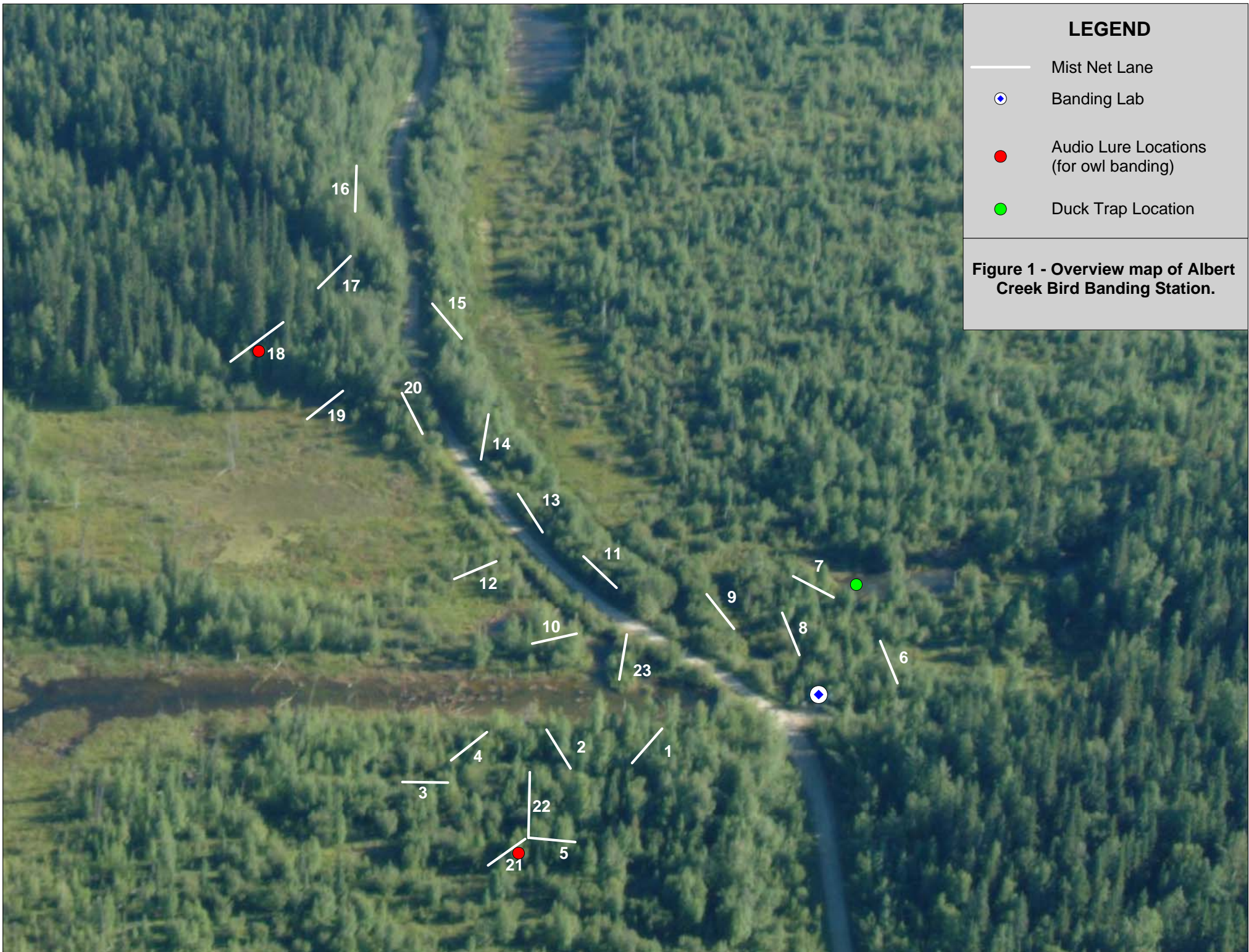
The banding station serves as a method of carrying out research on birds which is shared through an international database. This is due to the possibility of a banded bird being recaptured across international borders. Many of the birds banded at Albert Creek are highly migratory spending the winter months as far south as Central and South America. The station also plays a role in education as a place where the public, volunteers and students can take part in a unique, community based research project.

2.0 Methods

Methods of data collection and mist netting were based upon those of the Canadian Migration Monitoring Network (CMMN).

2.1 Study Site

The bird banding station is located along Albert Creek in the Liard River Valley 15km west of the community of Watson Lake in the southeast region of the Yukon Territory. The majority of the site is composed of a regenerating forest with the marsh being the defining feature of the study site. The area is dominated by willow (*Salix* sp.), alder (*Alnus* sp.) and regenerating white birch (*Betula papyrifera*) with some mature white spruce (*Picea glauca*), trembling aspen (*Populus tremuloides*) and balsam poplar (*Populus balsamifera*) scattered throughout. The under story vegetation within the regenerating portion of the study site consists primarily of red clover (*Trifolium pretense*), fireweed (*Epilobium augustifolium*), yarrow (*Achillea millefolium*), red raspberry (*Rubus idaeus*), prickly rose (*Rosa acicularis*) as well as various grass species (*Poa* sp). Within the stands of mature white spruce, the under story is dominated by various bryophytes and cranberry (*Vaccinium vitis-idea*) with willow, alder and red osier dogwood (*Cornus stolonifera*) scattered throughout.



LEGEND

- Mist Net Lane
- ◊ Banding Lab
- Audio Lure Locations (for owl banding)
- Duck Trap Location

Figure 1 - Overview map of Albert Creek Bird Banding Station.

2.2 General Methods

The 2007 season at the Albert Creek Banding Station was divided into the spring and fall seasons. The spring season began on April 23rd, 2006 and finished on June 7th, 2006. The fall season began on July 26th, 2006 and finished on September 22nd, 2006. Mist nets and ground traps were used for capturing birds during the spring banding season and mist nets were used during the fall season. Ground traps used were 17.5cm by 17.5cm by 17.5cm in dimension. A total of 22 mist nets (plus one demonstration net) were used this year as this number has been set as the standard number to be used in future years of operation.

Mist nets were checked for birds every 15 - 30 minutes (depending on bird activity) and birds caught were placed in holding bags and returned to the banding lab. Birds were banded and the following data was collected if possible:

- Species
- band number
- age and criteria used
- sex and criteria used
- un-flattened wing chord
- weight
- fat score (5 point scale)
- date
- time
- location banded
- bander's initials
- trap used
- net captured in
- molt information
- additional comments
- cap presence and length
- tail length, primary projection, bill size, tarsus (flycatchers only)



Figure 2. Alder Flycatcher caught in a mist net (left), a number of sparrows caught in a baited ground trap (right).

All age and sex determinations were made according to the Identification guide to North American Birds (Pyle 1997). For measuring the wing length a wing ruler was used with 0.5 mm denominations. Some anatomical measures such as tarsus, and cap length were measured using DiaMax calipers.

Birds were processed as quickly as possible and were released if showing signs of stress. Mist nets were closed upon the onset of inclement weather or when too many birds were captured to allow timely

processing. The overall number of net hours per day was variable during both the spring and fall seasons due to inconsistent weather conditions and the amount of manpower available to assist in banding. All birds captured that were previously banded were also processed and had limited information gathered to facilitate a faster release. During the fall banding season, all birds captured were checked for molting feathers and if found to be molting the bird's molt pattern was scored as methods outlined in Ginn and Melville 1983¹.

The weather conditions were recorded twice a day during every day of operation, once at the beginning of the day and once at the end of the day. Information collected at these times included temperature, wind strength, cloud coverage, visibility and precipitation. For every day of the observatory's operation, an estimated daily total was calculated for every species encountered during each day. This calculation done using the following formula; Estimated Total (ET) = # banded + # recaptured + # observed/heard.

3.0 Results

During the spring season, the station was operated¹ for 44 days from April 23rd to June 7th. Over this time period, 2,798 birds of 52 species were banded (Table 2, Figure 3, 4) and 129 species were observed (Table 3). During the fall season, the station was operated for 56 days from July 26th to September 22nd. Over this time period, 2,504 birds of 46 species were banded (Table 2, Figure 3, 5) and 107 species were observed (Table 3). The effort (net hours) and capture per unit effort (birds per net hour) for the 2007 season can be found below in Table 1 as well as Figure 3 and 4. The all time total number of birds banded at Albert Creek to date is in excess of 22,000 birds (Appendix 1).

Table 1. Net hours and capture per unit effort during the spring and fall of 2007.

Season	Birds Captured		Effort		Capture / 100 hours	
	Mist Nets	Ground Traps	Mist Nets	Ground Traps	Mist Nets	Ground Traps
Spring	2453	347	4682	537	52.3	64.7
Fall	2504	NA	6762	NA	39.7	NA
TOTAL	4957	347	11444	537	43.3	64.7

Table 2. Top 10 banded species by age ratio during the spring of 2007.

Species	Number Banded	% Second Year (SY)	% After Second Year (ASY)	% After Hatch Year (AHY)
Wilson's Warbler	369	54.7	43.6	1.6
American Tree Sparrow	345	30.1	53.9	15.9
Slate-colored Junco	334	38.9	59.3	1.8
Yellow Warbler	261	57.9	40.6	1.5
Orange-crowned Warbler	251	47.8	47.8	4.4
Gambel's White-crowned Sparrow	217	35.5	55.8	8.8
Northern Waterthrush	145	53.1	45.5	1.4
Lincoln's Sparrow	120	42.5	40.8	16.7
Yellow-rumped "Myrtle" Warbler	113	59.3	34.5	6.2
Common Yellowthroat	85	51.8	43.5	4.7

¹ Ginn, H.B. and D.S. Melville. 1983. *Moult in Birds*. British Trust for Ornithology Guide Number Nineteen. England.

¹ Days of operation are defined as days where mist netting was conducted. In addition to these days, observations were taken on days where the weather did not allowing mist netting.

Table 3. Top 10 banded species by age ratio during the fall of 2007.

Species	Number Banded	% Hatch Year (HY)	% After Hatch Year (AHY)
Yellow-rumped "Myrtle" Warbler	262	82.4	17.6
Alder Flycatcher	253	82.6	17.4
Northern Waterthrush	248	87.9	12.1
Yellow Warbler	219	72.1	27.9
Common Yellowthroat	217	92.2	7.8
Ruby-crowned Kinglet	184	89.1	10.9
Wilson's Warbler	165	81.8	18.2
Orange-crowned Warbler	151	77.5	22.5
Swainson's Thrush	137	81.0	19.0
American Tree Sparrow	116	83.6	16.4

Table 2. Birds banded during the spring and fall of 2007.

Common Name	Latin Name	AOU Code	Spring Total	Fall Total	Common Name	Latin Name	AOU Code	Spring Total	Fall Total
Alder Flycatcher	<i>Empidonax alnorum</i>	ALFL	28	253	Olive-sided Flycatcher	<i>Contopus cooperi</i>	OSFL	1	
American Pipit	<i>Anthus rubescens</i>	AMPI	1		Orange-crowned Warbler	<i>Vermivora celata</i>	OCWA	251	151
American Redstart	<i>Setophaga ruticilla</i>	AMRE	10	50	Oregon Junco	<i>Junco hyemalis</i>	ORJU	1	
American Robin	<i>Turdus migratorius</i>	AMRO	18	2	Purple Finch	<i>Carpodacus purpureus</i>	PUFI	5	1
American Tree Sparrow	<i>Spizella arborea</i>	ATSP	345	116	Red-breasted Nuthatch	<i>Sitta canadensis</i>	RBNU		1
Belted Kingfisher	<i>Ceryle alcon</i>	BEKI		2	Red-winged Blackbird	<i>Agelaius phoeniceus</i>	RWBL	4	
Black-and-white Warbler	<i>Mniotilta varia</i>	BAWW	1		Ruby-crowned Kinglet	<i>Regulus calendula</i>	RCKI	75	184
Black-capped Chickadee	<i>Poecile atricapillus</i>	BCCH		10	Rusty Blackbird	<i>Euphagus carolinus</i>	RUBL	14	31
Blackpoll Warbler	<i>Dendroica striata</i>	BLPW	57	41	Savannah Sparrow	<i>Passercula sandwichensis</i>	SAVS	71	18
Blue-headed Vireo	<i>Vireo solitarius</i>	BHVI		1	Sharp-shinned Hawk	<i>Accipiter striatus</i>	SSHA	1	4
Boreal Chickadee	<i>Poecile hudsonicus</i>	BOCH		13	Slate-colored Junco	<i>Junco hyemalis</i>	SCJU	334	81
Boreal Owl	<i>Aegolius funereus</i>	BOOW		2	Solitary Sandpiper	<i>Tringa solitaria</i>	SOSA	9	3
Brown-headed Cowbird	<i>Molothrus ater</i>	BHCO	4		Spotted Sandpiper	<i>Actitis macularius</i>	SPSA	1	1
Cape May Warbler	<i>Dendroica tigrina</i>	CMWA	2	3	Swainson's Thrush	<i>Catharus ustulatus</i>	SWTH	55	137
Cedar Waxwing	<i>Bombycilla cedrorum</i>	CEDW		8	Swamp Sparrow	<i>Melospiza georgiana</i>	SWSP	5	21
Chipping Sparrow	<i>Spizella passerina</i>	CHSP	8	3	Tennessee Warbler	<i>Vermivora peregrina</i>	TEWA	21	22
Common Redpoll	<i>Carduelis flammea</i>	CORE	12		Three-toed Woodpecker	<i>Picoides dorsalis</i>	TTWO	1	
Common Yellowthroat	<i>Geothlypis trichas</i>	COYE	85	217	Townsend's Warbler	<i>Dendroica townsendii</i>	TOWA		1
Dusky Flycatcher	<i>Empidonax oberholseri</i>	DUFL		1	Tree Swallow	<i>Tachycineta bicolor</i>	TRES	1	
Fox Sparrow	<i>Passerella iliaca</i>	FOSP	60	9	Unidentified Junco	<i>Junco hyemalis</i>	UDEJ	4	
Gambel's White-crowned Sparrow	<i>Zonotrichia leucophrys gambelli</i>	GWCS	217	10	Varied Thrush	<i>Ixoreus naevius</i>	VATH		3
Golden-crowned Kinglet	<i>Regulus satrapa</i>	GCKI		3	Warbling Vireo	<i>Vireo gilvus</i>	WAVI	7	26
Golden-crowned Sparrow	<i>Zonotrichia atricapilla</i>	GCSP	14	1	Western Tanager	<i>Piranga ludoviciana</i>	WETA	1	2
Gray Jay	<i>Perisoreus canadensis</i>	GRAJ	1	1	White-throated Sparrow	<i>Zonotrichia albicollis</i>	WTSP	14	9
Gray-cheeked Thrush	<i>Catharus minimus</i>	GCTH	13	8	White-winged Crossbill	<i>Loxia leucoptera</i>	WWCR		12
Hammond's Flycatcher	<i>Empidonax hammondi</i>	HAFL	9		Wilson's Snipe	<i>Gallinago gallinago</i>	WISN	1	1
Hermit Thrush	<i>Catharus guttatus</i>	HETH	1	3	Wilson's Warbler	<i>Wilsonia pusilla</i>	WIWA	369	165
Lapland Longspur	<i>Calcarius lapponicus</i>	LALO	1		Yellow Warbler	<i>Dendroica petechia</i>	YWAR	261	219
Least Flycatcher	<i>Empidonax minimus</i>	LEFL	4	14	Yellow-bellied Flycatcher	<i>Empidonax flaviventris</i>	YBFL	1	2
Lincoln's Sparrow	<i>Melospiza lincolni</i>	LISP	120	74	Yellow-bellied Sapsucker	<i>Sphyrapicus varia</i>	YBSA	16	16
Magnolia Warbler	<i>Dendroica magnolia</i>	MAWA	5	38	Yellow-shafted Northern Flicker	<i>Colaptes auratus</i>	YSFL	1	1
Yellow-rumped "Myrtle" Warbler	<i>Dendroica coronata</i>	MYWA	113	262	TOTAL			2798	2504
Northern Waterthrush	<i>Seiurus noveboracensis</i>	NOWA	145	248					

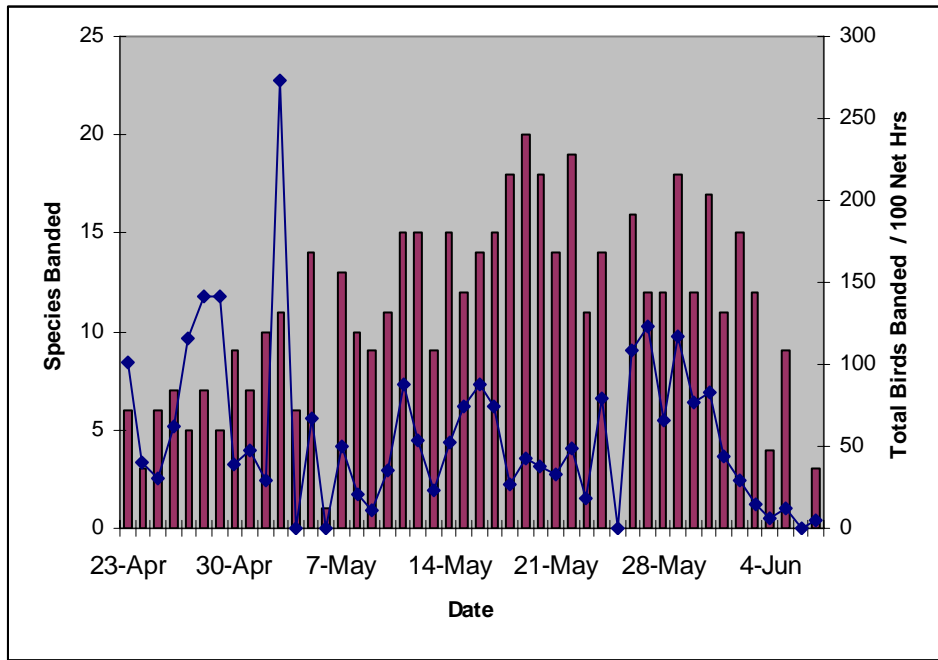


Figure 4. Summary of species banded and birds / 100 net hours during the spring of 2007.

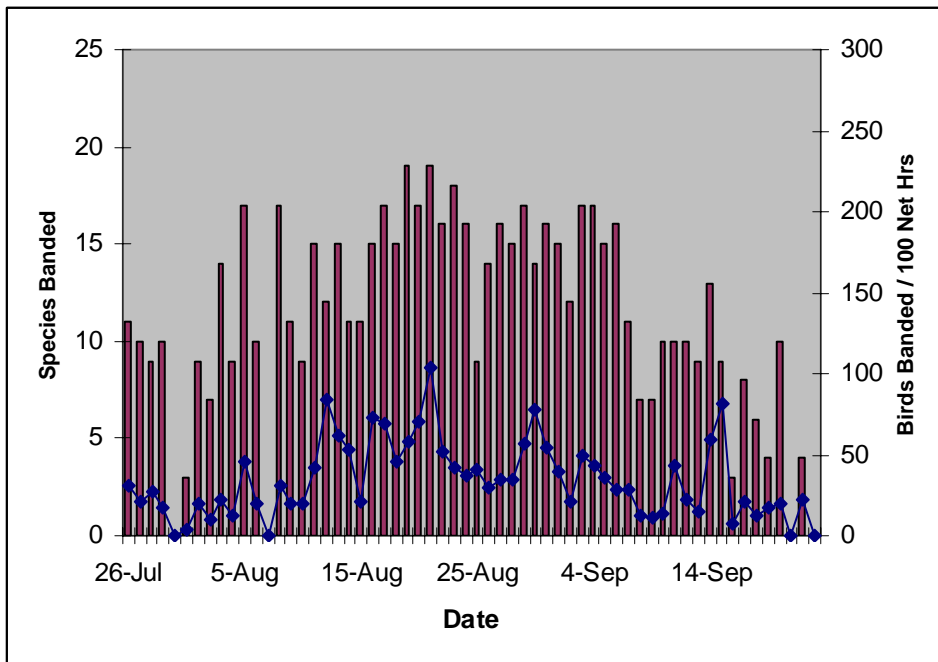


Figure 5. Summary of species banded and birds / 100 net hours during the fall of 2007.

Table 3. Observations of birds during the spring and fall seasons of 2007 (for more detailed data refer to Appendix 2 and 3).

SPECIES	SPRING		FALL		SPECIES	SPRING		FALL		SPECIES	SPRING		FALL	
	# DAYS RECORDED	SUM OF Ets	# DAYS RECORDED	SUM OF Ets		# DAYS RECORDED	SUM OF Ets	# DAYS RECORDED	SUM OF Ets		# DAYS RECORDED	SUM OF Ets	# DAYS RECORDED	SUM OF Ets
Common Loon	13	14	25	26	Long-billed Dowitcher	5	249	1	1	Swainson's Thrush	25	113	37	261
Horned Grebe	1	1			Common Snipe	29	51	23	34	Hermit Thrush	1	1	4	5
Greater White-fronted Goose	7	297	7	654	Unidentified Shorebird	3	26			American Robin	41	149	33	60
Canada Goose	39	339	9	53	Bonaparte's Gull	1	1			Varied Thrush	18	19	12	13
Trumpeter Swan	9	18	15	30	Herring Gull	11	16	5	5	American Pipit	18	49	16	42
Tundra Swan	9	2733			Mew Gull	11	17	1	1	Bohemian Waxwing	14	46	2	2
American Wigeon	22	103	7	65	Great Horned Owl	1	1			Cedar Waxwing			43	111
Mallard	32	138	52	282	Northern Hawk Owl	1	2	1	1	Tennessee Warbler	12	44	23	38
Blue-winged Teal	1	2	1	10	Boreal Owl	1	1	1	3	Orange-crowned Warbler	29	381	36	201
Northern Shoveler	4	7	2	10	Northern Saw-whet Owl			2	2	Yellow Warbler	16	357	40	274
Northern Pintail	2	5	2	26	Common Nighthawk			4	7	Magnolia Warbler	6	10	27	52
Green-winged Teal	6	10	10	38	Belted Kingfisher	27	41	50	57	Cape May Warbler	11	13	3	3
Ring-necked Duck	21	62	1	1	Yellow-bellied Sapsucker	33	97	35	51	Bay-breasted Warbler	2	2		
Lesser Scaup	1	2			Hairy Woodpecker	3	3	9	9	Myrtle Warbler	36	243	42	528
Unidentified Scaup	1	7			Three-toed Woodpecker	11	11	16	17	Townsend's Warbler	5	5	1	1
Bufflehead	15	35	6	11	Black-backed Woodpecker			1	1	Blackpoll Warbler	14	77	20	45
Common Goldeneye	30	80	1	1	Northern Flicker	27	35	26	30	Black-and-white Warbler	2	2		
Barrow's Goldeneye	2	3	1	2	Pileated Woodpecker	5	6	29	30	American Redstart	11	33	49	95
Common Merganser	1	3			Olive-sided Flycatcher	8	8	1	1	Northern Waterthrush	27	326	50	572
Osprey	3	3	2	2	Western Wood Pewee	9	9			Common Yellowthroat	26	157	50	62
Bald Eagle	3	4	5	6	Yellow-bellied Flycatcher	1	1	2	2	Wilson's Warbler	22	473	38	213
Northern Harrier	12	14	21	28	Alder Flycatcher	12	53	60	370	Western Tanager	12	19	12	14
Sharp-shinned Hawk	6	10	14	19	Least Flycatcher	4	5	14	26	American Tree Sparrow	34	724	35	224
Northern Goshawk	1	1	4	4	Dusky Flycatcher			1	1	Chipping Sparrow	16	26	3	3
Swainson's Hawk			1	1	Hammond's Flycatcher	15	27			Savannah Sparrow	33	147	14	26
Red-tailed Hawk	1	1	4	7	Say's Phoebe	3	3			Fox Sparrow	40	163	16	26
Rough-legged Hawk	1	1			Northern Shrike	1	1			Lincoln's Sparrow	40	246	45	141
American Kestrel	15	16	8	8	Blue-headed Vireo			3	3	Swamp Sparrow	8	11	27	46
Merlin			3	4	Warbling Vireo	18	44	35	88	White-throated Sparrow	23	68	20	23
Ruffed Grouse		63	20	30	Red-eyed Vireo	3	3			White-crowned Sparrow	33	396	11	16
Spruce Grouse	1	1	27	43	Gray Jay	24	46	55	110	Golden-crowned Sparrow	20	43	1	1
Sora	1	1	2	2	Black-billed Magpie			1	1	Slate-colored Junco	42	666	31	216
Sandhill Crane	1	7	1	650	Common Raven	43	130	50	80	Oregon Junco	1	1		
American Golden Plover			1	1	American Crow	9	12	1	1	Lapland Longspur	22	308	16	39
Semipalmated Plover	8	15			Horned Lark	1	1			Unidentified Junco	4	4		
Killdeer	4	4	2	2	Tree Swallow	27	123	7	7	Snow Bunting	1	2		
Greater Yellowlegs	8	8			Violet-green Swallow	3	4			Rose-breasted Grosbeak	1	1		
Lesser Yellowlegs	13	31	6	13	Bank Swallow	10	23			Red-winged Blackbird	32	84	5	8
Unidentified Yellowlegs	17	36			Barn Swallow	4	4	1	2	Rusty Blackbird	25	104	39	323
Solitary Sandpiper	22	55	22	27	Cliff Swallow	8	21	24	41	Brown-headed Cowbird	22	51		
Spotted Sandpiper	15	17	1	2	Black-capped Chickadee	21	27	59	144	Purple Finch	34	77	2	2
Wandering Tattler	1	1			Boreal Chickadee	19	27	42	96	Red Crossbill	2	2		
Whimbrel	1	1			Red-breasted Nuthatch	3	3	12	12	White-winged Crossbill	1	1	114	483
Semipalmated Sandpiper	1	2	1	2	Ruby-crowned Kinglet	33	188	48	322	Common Redpoll	14	330		
Least Sandpiper	1	1	7	8	Golden-crowned Kinglet			4	5	Pine Siskin	2	3	10	50
Pectoral Sandpiper	7	191	1	1	Townsend's Solitaire	1	1			# OF INDIVIDUALS		4344		2069
Short-billed Dowitcher	1	1			Gray-cheeked Thrush	10	14	8	12	# OF SPECIES		44		35

3.1 Band Returns

During the previous seven years since the station began operation, there have been no foreign¹ band recoveries. However; there have been a number of band returns² during the 2007 season which are summarized in Table 4.

Table 4. Banded birds recovered during the spring and fall of 2007.

Species	2001	2002	2003	2004	2005	2006	TOTAL
Alder Flycatcher	1			2	2	6	11
American Redstart					1	5	6
American Robin				1	1	5	7
Black-and-white Warbler						1	1
Black-capped Chickadee				2	1		3
Boreal Chickadee					2	1	3
Common Yellowthroat					3	10	13
Fox Sparrow						1	1
Gray Jay						1	1
Linsoln's Sparrow			1		3	4	8
Magnolia Warbler					1		1
Yellow-rumped "Myrtle" Warbler					1		1
Northern Waterthrush				2	2	8	12
Purple Finch				1			1
Dark-eyed "Slate-colored" Junco						4	4
Swamp Sparrow						1	1
Swainson's Thrush		1	2	2	2	3	10
Warbling Vireo				1	3	1	4
"Gambel's" White-crowned Sparrow					1		1
White-throated Sparrow			1			1	2
Yellow-bellied Sapsucker					2		2
Yellow Warbler					2		2
TOTAL INDIVIDUALS	1	1	4	11	27	52	52

3.2 Notable Captures

As is the case in all years, the vast majority of birds banded at Albert Creek in 2007 are species which are common and widespread north and west of the southeast Yukon. For example, of the 22,943 birds banded at Albert Creek since 2001, 72% of all birds banded are of the top 10 species (Wilson's Warbler, Orange-crowned Warbler, Yellow-rumped "Myrtle Warbler, Dark-eyed "Slate-colored" Junco, Yellow Warbler, American-tree Sparrow, Ruby-crowned Kinglet, Alder Flycatcher, Common Yellowthroat, Northern Waterthrush). These 10 species are primarily common species; however the wetland habitat at the study site results in a high number of "wetland specialists" being captured.

Aside from the more common species, Albert Creek monitors a number of species which are at the margins of their documented breeding range. Many of these bird species are found only in the extreme southeastern portion of the Yukon and have been captured / observed in varying numbers at Albert Creek since the station began operation in 2001. The list below summarizes the exceptional species banded / observed at Albert Creek in 2007.

¹ This term is given to a bird which was banded at a site other than Albert Creek.

² This term is given to a bird which was banded at Albert Creek and returned to the site in the year(s) following being initially banded.

Black-and-white Warbler

- 1 banded (SY-M) on 21 May and 1 recaptured on 19 May (originally banded on 21 May 2006).
- A total of 4 individuals have been banded to date at Albert Creek (3 in spring, 1 in fall).



Figure 6. SY-M Black-and-white Warbler banded on 21 May (left), HY-U Blue-headed Vireo banded on 4 Aug (right).

Blue-headed Vireo

- 1 banded (HY-U) on 4 Aug
- 15 individuals (primarily HY birds) banded since 2003, all during the fall season

Cape May Warbler

- 2 banded during the spring, (ASY-M on 29 May, SY-M on 31 May) and 3 banded during the fall (HY-U on 27 Jul, AHY-M on 3 Sep, HY-U on 6 Sep)
- 2 individuals were also banded during the fall of 2005



Figure 7. ASY-M Cape May Warbler banded on 29 May (left), AHY-M Cape May Warbler banded on 3 Sep (right).

Cedar Waxwing

- 8 banded (6 AHY, 2 HY) from 1 Aug to 26 Aug.
- This species was also captured in the fall of 2004.



Figure 8. AHY-M Cedar Waxwing banded on 19 Aug (left), HY-U Dusky Flycatcher banded on 3 Sep (right).

Dusky Flycatcher

- 1 banded (HY-U) on 3 Sep.
- Has previously been recorded during the spring season (2005).

Magnolia Warbler

- 5 banded during the spring (2 ASY-M, 2 SY-M, 1 SY-F) and 38 banded during the fall (37 HY-U, 1 AHY-U); 1 also recaptured (originally banded as AHY-U in fall of 2005).
- This species has been captured annually during both spring and fall.



Figure 9. AHY-M Magnolia Warbler banded during the spring (left), HY-U Magnolia Warbler banded on 3 Sep (right).

Swamp Sparrow

- 5 banded (2 ASY-U, 3 SY-U) during spring and 21 banded (all HY-U) during the fall.
- This species is captured annually, usually in higher numbers during the fall.



Figure 10. ASY-U Swamp Sparrow banded on 5 May (left), HY-U Townsend's Warbler banded on 20 Aug (right).

Townsend's Warbler

- 1 banded (HY-U) on 20 Aug
- This species is typically captured in very low numbers (less than 3) and typically during the fall.

Western Tanager

- 1 banded (ASY-F) during the spring (26 May) and 2 banded (2 HY-U) during the fall (4 Aug, 11 Aug).
- This species is typically captured in low numbers and observed frequently (ET of 1+) daily during the late spring and early fall.



Figure 11. HY-U Western Tanager banded on 4 Aug (left), AHY-U White-throated Sparrow banded during spring (right).

White-throated Sparrow

- 14 banded (4 ASY-U, 10 SY-U) during spring and 10 banded (2 AHY-U, 8 HY-U) during fall.
- This species is captured / observed daily but in low numbers annually during the spring and fall.



Figure 12. HY-U White-throated Sparrow banded on 18 Aug (left), AHY-U Yellow-bellied Flycatcher banded 4 Jun (right).

Yellow-bellied Flycatcher

- 1 banded (ASY-U) during spring (4 Jun) and 2 banded (1 AHY-U, 1 HY-U) during fall (29 Jul, 31 Aug).
- This species is observed infrequently, typically during late spring and early fall.

Exceptional species observed but not banded

- Swainson's Hawk (1 on 16 Sep)
- Wandering Tattler (1 on 16 May)
- Northern Saw-whet Owl (1 on 2 Sep, 3 Sep)
- Pileated Woodpecker
 - Spring – up to 2 individuals observed from 18 May to 4 Jun)
 - Fall – up to 2 individuals observed from 29 Jul to 23 Sep)
- Red-eyed Vireo (1 on 3 days from 26 May to 4 Jun)
- Bay-breasted Warbler (1 on 2 Jun, 4 Jun)
- Rose-breasted Grosbeak (1 on 23 May)

3.3 Additional Studies

In an attempt to maximize the data collection component of the birds captured, a number of “add-on” studies were completed in 2007. In addition to the sections below, the data obtained at Albert Creek has been useful in investigating the migration timing of species captured frequently (see migration timing figures in Appendix 4).

3.3.1 Rusty Blackbirds

As part of an ongoing project in co-operation with Pam Sinclair (CWS-Whitehorse) and the Teslin Lake Bird Banding Station, all Rusty Blackbirds captured were fitted with color bands (light green for 2007) in conjunction with the regular numbered leg band. Additionally, a feather was collected from each Rusty Blackbird captured. Feather samples were to be analyzed for stable isotopes in an effort to make linkages between breeding and wintering grounds used by this species. The rationale for color banding

individuals is to hopefully increase resightings of banded individuals which will provide banding location information without the bird being captured.

During the spring of 2007, a total of 14 Rusty Blackbirds (4 AHY-F, 1 AHY-M, 2 ASY-F, 5 ASY-M, 1 SY-F, 1 SY-M); all of which were fitted with light green color bands. During the fall season, a total of 31 individuals (9 AHY-F, 10 AHY-M, 7 HY-F, 4 HY-M, 1 U-F) were captured and color banded.



Figure 13. AHY-M (left) and AHY-F (right) Rusty Blackbirds captured and color banded during the spring of 2007.

3.3.2 Owl Banding

In an attempt to test the feasibility of owl banding at the site, a total of 17.5 net hours (3nights) were sampled using both Boreal Owl and Northern Sawwhet Owl audio lures. Both audio lures were set up at different ends of the study site. The Boreal Owl lure was set near mist net lane 21 and the Northern Sawwhet Owl lure was set adjacent to mist net lane 18 (see Figure 1). A total of two Boreal Owls (1 HY-U, 1 SY-U) were captured (both on September 2nd).



Figure 14. SY-U Boreal Owl banded on September 2nd (left), a lock on band applied to a Boreal Owl (right).

3.3.3 Tick Collection

In collaboration with John Scott (private researcher from Ontario), all birds captured were checked for the presence of bird ticks with the intention of collecting them to identify the distribution of these parasites. However, no ticks were collected during the 2007 season.

3.3.4 Molt Scoring

During the fall season, molt scores were obtained for all birds exhibiting feather molt. Such information is most useful for species which are frequently recaptured, thus allowing investigation of how certain species (or even individuals in some case) progress through their molt during the post breeding season.

Figures 15 - 17 display the change in molt scores during the fall season for species with a large enough sample size of molt score data. Note that a molt score of 0 would indicate a bird not yet molting while a score of 85 would indicate that the individual had fully completed molt.

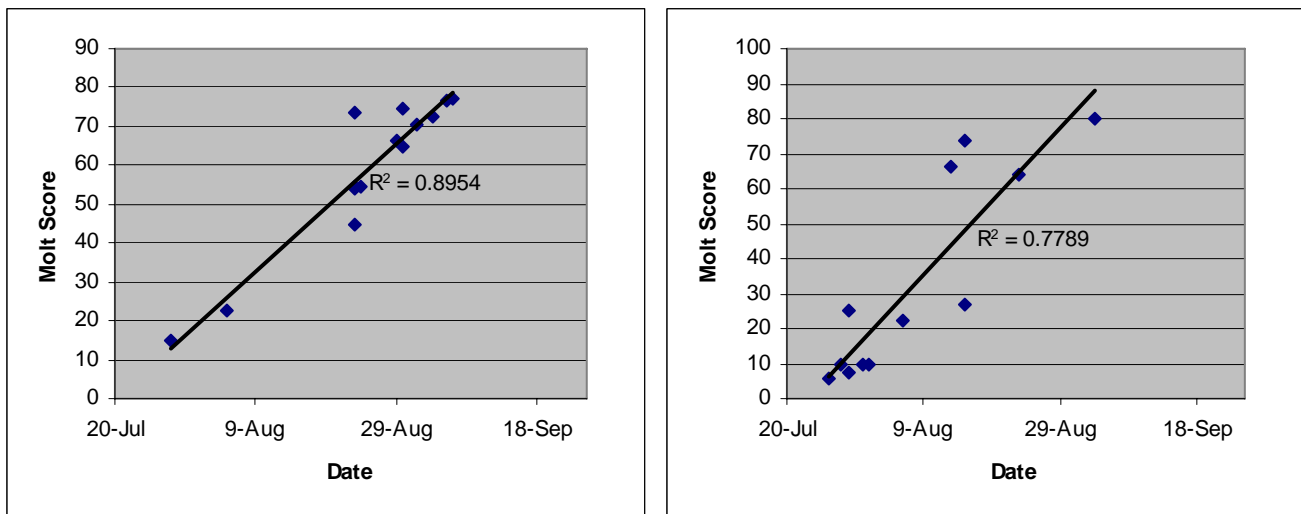


Figure 15. Molt scores over time for American Redstart (left) and Common Yellowthroat (right).

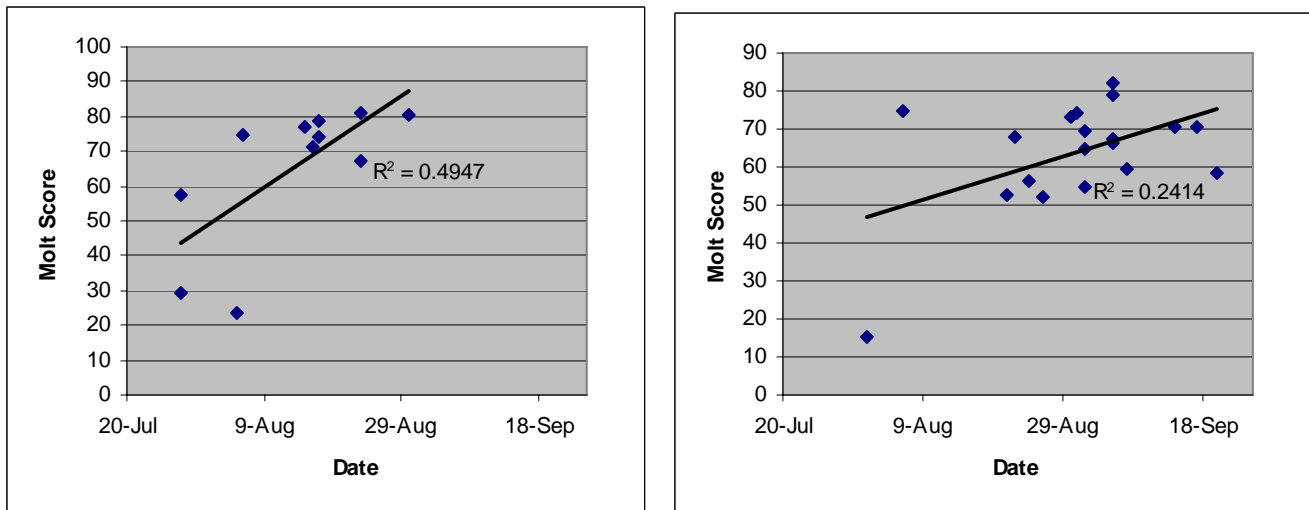


Figure 16. Molt scores over time for Northern Waterthrush (left) and Yellow-rumped "Myrtle" Warbler (right).

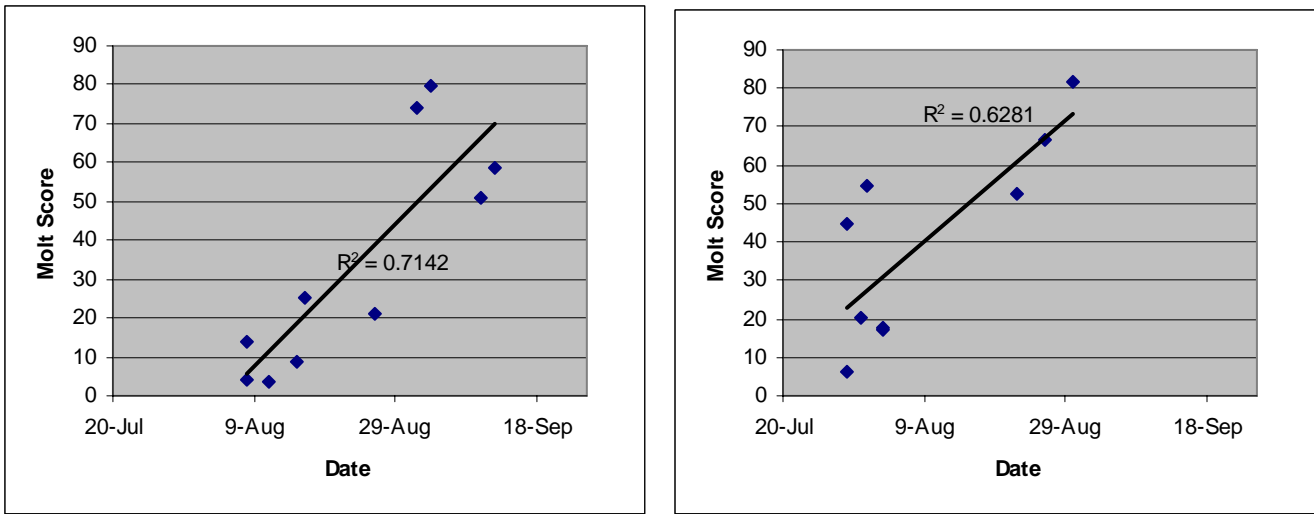


Figure 17. Molt scores over time for Lincoln's Sparrow (left) and Yellow Warbler (right).

Figure 18 below contains molt scores over time for 6 individuals recaptured 2 or more times over a substantial time interval at Albert Creek.

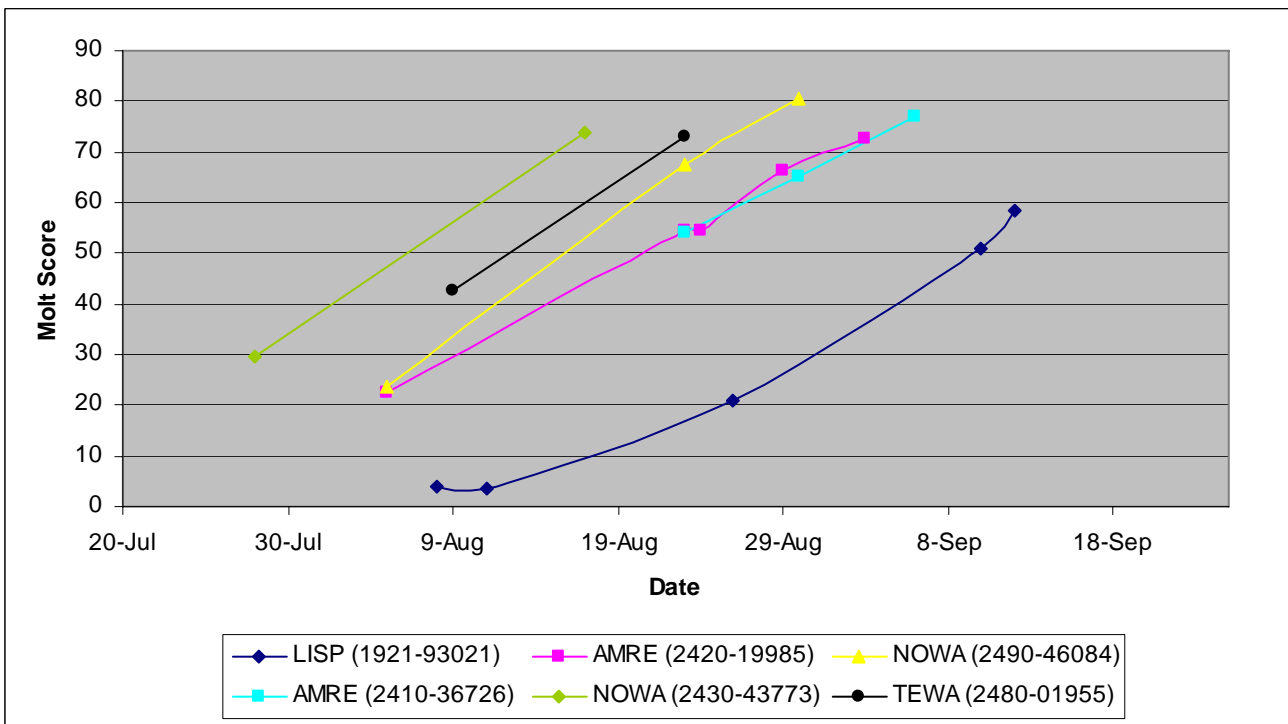


Figure 18. Molt scores over time for 6 selected individuals throughout the fall season of 2007.

3.3.5 Feather Collection

As part of a Canada wide project (CMMN, Canadian Migration Monitoring Network) feather samples were collected from a number of bird species to be analyzed for stable isotopes. The goal of this project is to determine the “catchment areas” of migration monitoring stations, thus determine the origin of the birds captured at individual stations. A total of **XX** samples from **XX** species were collected during the 2007 season.

3.3.6 Duck Banding

In an attempt to test the study site for the purpose of duck banding (in partnership with Ducks Unlimited Canada and Canadian Wildlife Service), a floating duck trap was constructed, baited with barley and deployed for a total of 30 days from August 20th to September 20th. Comparatively very few ducks were observed during the entire fall season and unfortunately no ducks were captured.



Figure 19. The duck trap used to test the site for capturing ducks.

3.4 Visitors and Volunteers

Table 5 shows the number of hours spent at the banding station by visitors, volunteers and paid workers. Visitors were defined as those people which visited the station (often for a short time) and did not take part in activities at the station. Volunteers were those people which took part in the operation of the station (often extensively) without being financially compensated. Paid hours were spent by individuals being paid to be at the station. This category includes the Master Bander (Ted Murphy-Kelly, Assistant Banders (Jukka Jantunen) as well as representatives from Yukon Environment and Ducks Unlimited Canada.

Table 5 Hours spent at the banding station visitors, volunteers and paid workers¹.

	Visitor Hours	Volunteer Hours	Paid Hours
Spring	68	230	412
Fall	70	450	661
TOTAL	158	680	1,073

¹ Paid hours include only those hours spent at the banding station and do not include the very extensive amount of time spent doing office duties such as data entry, analysis and reporting.



Figure 20. Assistant Bander Jukka Jantunen (left), long time volunteer and new subpermitee Julie Bauer (right).



Figure 21. Assistant Bander and Master Bander of Teslin Lake Bird Banding Station, Ben Schonewille (left), Master Bander Ted Murphy-Kelly (right).

4.0 Photos

The following photos illustrate the top 15 species banded during the 2007 season (in order).



Wilson's Warbler (male)



Yellow Warbler (male)



American-tree Sparrow



Slate-colored Junco (male)



Orange-crowned Warbler (male)



Northern Waterthrush



Yellow-rumped "Myrtle" Warbler (male)



Common Yellowthroat (HY male)



Alder Flycatcher

*Ruby-crowned Kinglet (male)**White-crowned Sparrow**Lincoln's Sparrow**Swainson's Thrush**Blackpoll Warbler (male)**Savannah Sparrow*

5.0 Discussion

The results from this season's operation have continued to add to numerous aspects of bird biology in the Yukon, including: species distribution, migration timing and local productivity.

5.1 Band Returns

The large number of band returns at Albert Creek during the 2007 season is indicative of the high number of local breeding birds at the study site. This isn't the best case scenario for migration monitoring due to the potential bias of results due to local productivity (especially early during the fall season). Despite this, the high number of band returns is useful in beginning to determine the longevity of certain species such as Alder Flycatcher # 2250-20427 which was banded during the spring of 2001 as AHY-U. This bird can now be aged as "after seventh year" which is comparable to the published longevity record for the species which is 7 years, 2 months. This data shows that some species (such as Alder Flycatcher) can be very site specific and have a high level of site fidelity in terms of areas used for breeding.

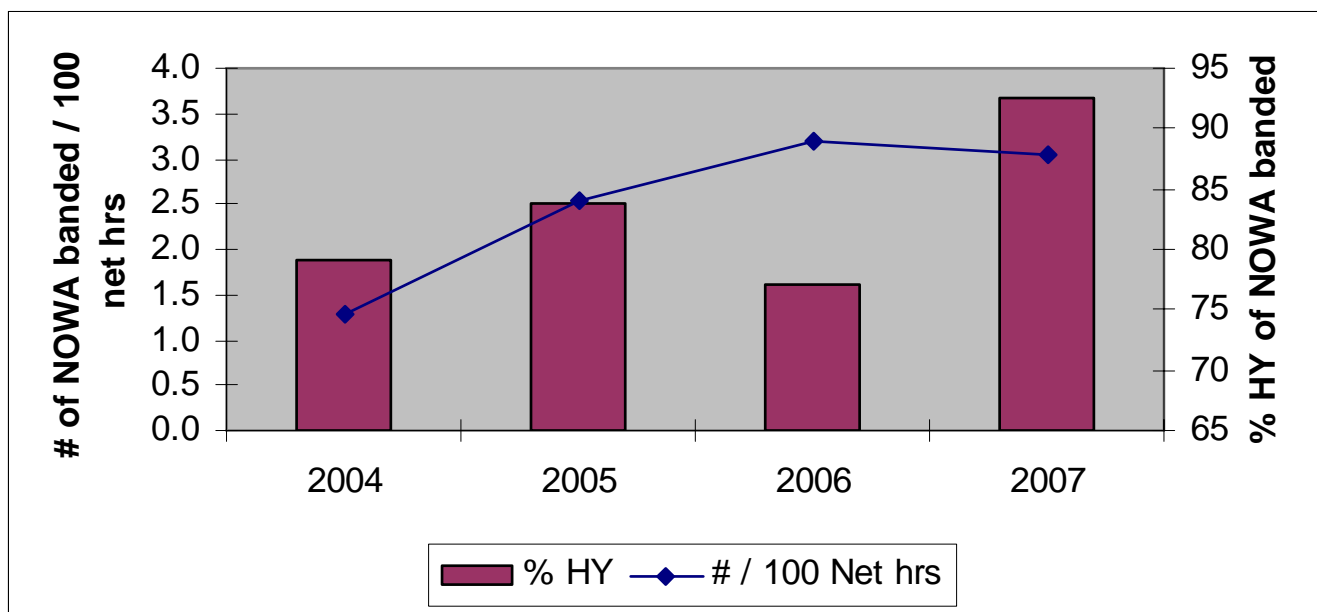
5.2 Notable Captures

The station has continued to monitor not only common species, but also those which are rare or at the margin of their documented breeding range. When the station began operation in 2001 and 2002, some species such as Blue-headed Vireo, Western Tanager and Cape May Warbler were very rare or not present at all. The last few years of operation these species have been recorded annually during the late

spring, early fall. Hatch year birds (often in very juvenile plumage) have also been captured indicating that these species may be breeding in close proximity to the study area. There are also a number of species such as White-throated Sparrow, Magnolia Warbler and Swamp Sparrow which are very common at the study site; however, they have a very restricted range in the Yukon.

The capture of 8 Cedar Waxwings during the fall season is somewhat interesting as this species has only recorded during one other season, the fall of 2004, when 8 individuals were also banded. During both years, a combination of hatch year and after hatch year birds have been captured and it is highly likely that this species has bred at the site during 2004 and 2007.

This relatively high numbers of specific species during certain years often asks many questions. For example, the record high numbers of Northern Waterthrush captured during the 2007 fall season raise speculation whether the 2007 breeding season was exceptionally productive for this species. Although higher numbers of this species were banded during 2007, the percentage of hatch year (HY) individuals is very similar to that found during 2006 (see figure below; note that similar figures for other frequently encountered species can be found in Appendix 6). It may be possible that the high water levels at the study site this year may have created exceptional stopover habitat for migrating Northern Waterthrush and thus a much higher number of individuals were banded.



5.3 Additional Studies

The 2007 season marked the start of two new add on studies at Albert Creek which were added to increase the data collected at the station and test the possibility of monitoring bird species other than songbirds.

The trial owl banding conducted during the fall season can be considered a success despite the low number of owls captured. The owl banding effort was low; however, it was proven that owls can be captured at Albert Creek using the tested methodology. During the owl banding events, it was common to hear the calls of Boreal Owls near the audio lure and on the morning of September 3rd (after owl banding the evening before), a singing Northern Saw-whet Owl was heard. The results of the owl

banding testing show that with a substantial amount of effort that it may be possible to monitor Boreal Owls and possibly even Northern Saw-whet Owls.

The results from the trial duck banding conducted during the fall were very poor as no ducks were captured. However, duck banding will be attempted again in 2008 with hopes of having better success. The 2007 season saw very high water levels throughout the fall season which appeared to reduce the number of congregating ducks in the vicinity of the station and therefore reduced the likelihood of capturing ducks.

The continuation of both the molt scoring and Rusty Blackbird color banding projects can be considered a success and will be continued in future years of operation. Albert Creek lies in a unique geographic location to monitor the Rusty Blackbird population of the Yukon and Alaska as this population breeds strictly within the boreal forest with relatively little monitoring taking place. Additionally, very few banding stations in more southern locales capture and monitor the numbers of Rusty Blackbirds seen at Albert Creek. It is also hoped that the feathers collected for stable isotope analysis will assist in making linkages between breeding and wintering areas used by this species.

5.4 Visitors and Volunteers

Once again, the station has been proven to be highly valuable in terms of not only collecting data, but also for allowing members of the public to visit and volunteer. This year saw record numbers of volunteers participating at the station, which is essential for increasing the productivity of the station.

6.0 Conclusion and Recommendations

The spring and fall banding seasons of 2007 marked another successful year for the Albert Creek banding station. Geographically, the southeast Yukon is a very bird rich region and Albert Creek illustrates this. The site is ideal for capturing birds in good numbers due to the wide variety of mixed successional vegetation surrounded by mature stands. The site will have to have some vegetation management carried out throughout the years in order to maintain an ideal canopy height.

The site continues to band a wide variety of species. Some species such as Wilson's Warbler, Yellow-rumped (Myrtle) Warbler and Orange-crowned Warbler are banded in large numbers providing a large sample size for extensive study of these species, perhaps even subspecies work. Many species of birds are at the north or north western extent of their range at Albert Creek. This makes the station unique in the territory where many species can be studied and monitored which are only found in the southeast. The station also continues to add species to the known list of birds occurring in the Watson Lake area.

Some of the stations protocols are different from those of more southerly stations in Canada. This is due to the unique variables which have to be considered when banding north of sixty. All the net lanes have been in the same location for five years now with the exception of three additional lanes which were added in the spring of 2007 to act as a replacement for flooded net lanes. It is important that these same net lanes are used every year without change. The addition of a nocturnal owl monitoring and duck banding programs initiated during 2007 will be continued during 2008 to increase the value of the data collected at the station.

In order for the station to operate efficiently at Albert Creek a fully trained team of banders must be employed or qualified volunteers must be recruited. During the busiest days of migration we recommend that the station have at least four individuals who are all competent extractors and observers. Two of the

four staff should be qualified banders. If this is achieved the station will likely reach it's full potential and more meaningful analyses of data can be achieved. In addition to migration monitoring and banding this project has incorporated other work such as feather collection for stable isotope analyses, bird tick collection, molt scoring and color banding of species of concern. Further specialized studies that we can "piggy back" on the daily operation of the station will add to the relevance of the work conducted at Albert Creek. A building serving as a banding lab and bunkhouse would make the work at the station easier and increase our daily observation coverage. A long-term financial commitment by government and or non-government agencies would insure the future of migration monitoring and banding at Albert Creek. Finally, we look forward to continuing to work with the local community of Watson Lake, student programs and first nations. We are always open to the public and encourage families, tourists and school groups to take advantage of this unique place of learning.

7.0 Acknowledgements

The authors would like to thank all of the volunteers who visited this year and helped out with day to day operations at the station. Your actions do not go unnoticed and without you, this station wouldn't have been as productive or such a fun place to work at. Also, the long list of funders to this project deserve a big thank you for continuing to support this project and allowing us to begin to strive towards maximizing the monitoring taking place. To the staff of Environment Yukon, particularly Cameron Eckert, thank you for providing logistical help and sharing a wealth of bird knowledge. Also thank you to the staff of the Canadian Wildlife Service particularly Pam Sinclair, Scott Heron, Jim Hawkings and Debbie Van de Wetering thank you for your general assistance in making the station a success. To Jukka Jantunen, thank you for your assistance at the station, particularly in the training of new banders. The photographs included in this report were provided by Ben Schonewille, Ted Murphy-Kelly, Julie Bauer and Jukka Jantunen. In closing, the authors would like to thank CBC Radio, 96.1 The Rush and Yukon: North of Ordinary (Air North's inflight magazine) for assisting to advertising the station to the public.

APPENDIX 1 –ALBERT CREEK ALL TIME BANDING TOTALS

SPECIES	SPRING							FALL							ALL TIME TOTAL
	2001	2002	2003	2004	2005	2006	2007	2001	2002	2003	2004	2005	2006	2007	
Sharp Shinned hawk			3		1	2	1		1	1	3	2	6	4	24
American Kestrel					1										1
Solitary Sandpiper			1		3	12	9							2	27
Spotted Sandpiper							1							1	2
Wilson's Snipe			1		2	3	1						1	1	9
Boreal Owl														2	2
Belted Kingfisher						1	1							2	4
Yellow-bellied Sapsucker	1	2	7	15	9	17	16	1	1	8	21	14	18	16	146
Downy Woodpecker													1		1
Hairy Woodpecker			1	1	1										3
Three-toed Woodpecker							1			2	1				4
Black-backed Woodpecker											1				1
Northern (Yellow-shafted) Flicker		1		2	1		1				1	2	1	1	10
Pileated Woodpecker					1							2			3
Olive-sided Flycatcher				2		5	1								8
Western Wood-pewee			1			4									5
Yellow-bellied Flycatcher		1		2	1		1		4		1	2		2	14
Alder Flycatcher	5	19	16	19	23	80	28	5	27	80	217	174	183	253	1129
Least Flycatcher	1	5	3		2	3	4	3	9	8	19	16	12	14	99
Dusky Flycatcher												1		1	2
Hammond's Flycatcher				1	12	14	9			2	2	14	8		62
Say's Phoebe						1									1
Northern Shrike									1				4		5
Blue-headed Vireo										2	6	4	2	1	15
Warbling Vireo	2	8	6	11	10	7	7	3	19	17	28	34	22	26	200
Philadelphia Vireo											1				1
Red-eyed Vireo				1											1
Gray Jay	1	4	4	1	1		1				1	2	2	1	18
Tree Swallow							1								1
Black-capped Chickadee		4		5	2			4	5	3	12	13	16	10	74
Boreal Chickadee		5	6	1	1	3		8	7	7	6	8	8	13	73
Red-breasted Nuthatch			1					3			1			1	6
Golden-crowned Kinglet												3		3	6
Ruby-crowned Kinglet	17	20	24	51	18	246	75		29	125	47	200	412	184	1448
Gray-cheeked Thrush		9	1	18	2	22	13		4	1	10	8	17	8	113

SPECIES	SPRING							FALL							ALL TIME TOTAL
	2001	2002	2003	2004	2005	2006	2007	2001	2002	2003	2004	2005	2006	2007	
Swainson's Thrush	2	25	21	53	19	46	55	1	7	65	104	133	93	137	761
Hermit Thrush		2	2	3	4	6	1	1	3	3	7	2	6	3	43
American Robin	3	6	10	13	19	31	18			3	6	1	2	2	114
Varied Thrush			1		2	3			2	3	3	2	7	3	26
American Pipit		1				5	1				2				9
Bohemian Waxwing			2		6	9									17
Cedar Waxwing											8			8	16
Tennessee Warbler	1	12	17	48	51	60	21	4	9	14	12	30	15	22	316
Orange-crowned Warbler	57		137	286	105	214	251	12	30	52	199	122	151	152	1768
Yellow Warbler	6	84	65	61	33	313	261	7	22	50	159	149	125	214	1549
Magnolia Warbler	1	2	1	4	4	1	5	1	22	36	26	19	32	38	192
Cape May Warbler							2					2		3	7
Yellow-rumped Myrtle Warbler	73	9	143	268	91	364	113	35	80	86	138	185	105	262	1952
Unidentified Yellow-rumped Warbler						3									3
Townsend's Warbler				1				1		3		3	1	1	10
Bay-breasted Warbler				1							1		1		3
Blackpoll Warbler	3	8	22	22	17	62	57	8	8	13	44	30	32	41	367
Black-and-white Warbler			1			1	1					1			4
American Redstart		9	7	18	9	15	10	1	19	27	35	54	48	50	302
Ovenbird			1										1		2
Northern Waterthrush	11	51	47	69	50	91	145	3	22	33	95	157	97	248	1119
MacGillvary's Warbler				1											1
Common Yellowthroat	3	38	35	17	19	62	85	6	40	72		7	228	217	829
Wilson's Warbler	16	189	384	502	552	398	369	10	28	83	203	106	218	167	3225
Western Tanager		1		2	1	1	1			1	2	3	1	2	15
American-tree Sparrow	6	9	24	172	175	196	345	1	19	26	66	150	223	116	1528
Chipping Sparrow		7	10	4	12	8	8		1	1	9	2	1	3	66
Savannah Sparrow	4	7	27	38	31	42	70		3	6	19	7	13	18	285
Fox Sparrow	4	1	11	28	143	28	60		4	14	15	25	53	9	395
Song Sparrow												1			1
Lincoln's Sparrow	16	30	39	42	51	23	120	14	29	42	91	108	124	74	803
Swamp Sparrow			4	2	1	4	5	4	6	9	7	33	40	21	136
White-throated Sparrow	2	19	20	9	14	18	14	4	6	33	30	27	22	9	227
White-crowned Sparrow	6	7	6	184	269	14	217	1	3	9	11	13	22	10	772
Golden-crowned Sparrow			2	6	4	2	14				1			1	30

APPENDIX 2 – SPRING ESTIMATED TOTAL SUMMARY

SPECIES	# DAYS RECORDED	FIRST DATE RECORDED	LAST DATE RECORDED	HIGH COUNT		SUM OF Ets
				#	DATE	
Common Loon	13	14-May	6-Jun	2	31-May	14
Horned Grebe	1	11-May	NA	1	all days	1
Greater White-fronted Goose	7	23-Apr	18-May	160	23-Apr	297
Canada Goose	39	23-Apr	6-Jun	42	29-Apr	339
Trumpeter Swan	9	11-May	29-May	2	all days	18
Tundra Swan	9	23-Apr	8-May	1237	28-Apr	2733
American Wigeon	22	26-Apr	5-Jun	22	9-May	103
Mallard	32	26-Apr	5-Jun	26	3-May	138
Blue-winged Teal	1	19-May	NA	2	19-May	2
Northern Shoveler	4	13-May	30-May	2	all days	7
Northern Pintail	2	26-Apr	16-May	4	26-Apr	5
Green-winged Teal	6	11-May	5-Jun	3	3-Jun	10
Ring-necked Duck	21	11-May	6-Jun	8	16-May	62
Lesser Scaup	1	16-May	NA	2	all days	2
Unidentified Scaup	1	13-May	NA	7	all days	7
Bufflehead	15	8-May	4-Jun	4	9 May, 3,4 Ju	35
Common Goldeneye	30	23-Apr	5-Jun	12	23-Apr	80
Barrow's Goldeneye	2	23-Apr	9-May	2	all days	3
Common Merganser	1	8-May	NA	3	all days	3
Osprey	3	19-May	27-May	1	all days	3
Bald Eagle	3	27-Apr	8-May	2	27-Apr	4
Northern Harrier	12	24-Apr	29-May	2	2, 4 May	14
Sharp-shinned Hawk	6	25-Apr	14-May	2	5, 26,27,28 Apr	10
Northern Goshawk	1	17-May	NA	1	all days	1
Red-tailed Hawk	1	19-May	NA	1	all days	1
Rough-legged Hawk	1	9-May	NA	1	all days	1
American Kestrel	15	7-May	26-May	2	9-May	16
Ruffed Grouse	30	1-May	4-Jun	4	17-May	63
Spruce Grouse	1	30-May	NA	1	all days	1
Sora	1	3-May	NA	1	all days	1
Sandhill Crane	1	18-May	NA	7	all days	7
Semipalmated Plover	8	3-May	20-May	6	17-May	15
Killdeer	4	13-May	29-May	1	all days	4
Greater Yellowlegs	8	11-May	27-May	1	all days	8
Lesser Yellowlegs	13	11-May	23-May	12	12-May	31
Unidentified Yellowlegs	17	19-Apr	6-Jun	6	8-May	36
Solitary Sandpiper	22	11-May	5-Jun	9	18-May	55
Spotted Sandpiper	15	12-May	5-Jun	2	24 may, 5Jun	17
Wandering Tattler	1	16-May	NA	1	all days	1
Whimbrel	1	13-May	NA	1	all days	1
Semipalmated Sandpiper	1	9-May	NA	2	all days	2
Least Sandpiper	1	18-May	NA	1	all days	1
Pectoral Sandpiper	7	11-May	20-May	61	11-May	191
Short-beilled Dowitcher	1	15-May	NA	1	all days	1
Long-billed Dowitcher	5	14-May	19-May	125	14-May	249
Common Snipe	29	29-Apr	5-Jun	7	9-May	51
Unidentified Shorebird	3			20		26
Bonaparte's Gull	1	12-May	NA	1	all days	1
Herring Gull	11	27-Apr	5-Jun	2	13 may, 5 Jun	16
Mew Gull	11	11-May	24-May	2	12 - 17 May	17
Great Horned Owl	1	10-May	NA	1	all days	1
Northern Hawk Owl	1	24-Apr	NA	2	all days	2
Boreal Owl	1	19-May	NA	1	all days	1
Belted Kingfisher	27	3-May	5-Jun	2	7 May - 5 Jun	41
Yellow-bellied Sapsucker	33	2-May	6-Jun	5	31-May	97
Hairy Woodpecker	3	2-May	15-May	1	all days	3
Three-toed Woodpecker	11	30-Apr	24-May	1	all days	11

SPECIES	# DAYS RECORDED	FIRST DATE RECORDED	LAST DATE RECORDED	HIGH COUNT		SUM OF Ets
				#	DATE	
Northern Flicker	27	3-May	5-Jun	2	3 may - 26 Ma	35
Pileated Woodpecker	5	18-May	4-Jun	2	1-Jun	6
woodpecker sp.	1	25-Apr		1	all days	1
Olive-sided Flycatcher	8	16-May	2-Jun	1	all days	8
Western Wood Pewee	9	15-May	29-May	1	all days	9
Yellow-bellied Flycatcher	1	4-Jun	NA	1	all days	1
Alder Flycatcher	12	23-May	6-Jun	10	6-Jun	53
Least Flycatcher	4	22-May	3-Jun	2	23-May	5
Hammond's Flycatcher	15	14-May	4-Jun	7	17-May	27
Say's Phoebe	3	12-May	19-May	1	all days	3
Northern Shrike	1	29-Apr	NA	1	all days	1
Warbling Vireo	18	19-May	6-Jun	5	5, 6 Jun	44
Red-eyed Vireo	3	26-May	4-Jun	1	all days	3
Gray Jay	24	1-May	5-Jun	4	3-Jun	46
Common Raven	43	22-Apr	6-Jun	7	28-Apr	130
American Crow	9	11-May	2-Jun	2	0 may, 1,2 Ju	12
Horned Lark	1	14-May	NA	1	all days	1
Tree Swallow	27	3-May	6-Jun	12	23-May	123
Violet-green Swallow	3	11-May	24-May	2	22-May	4
Bank Swallow	10	15-May	29-May	5	23-May	23
Barn Swallow	4	15-May	28-May	1	all days	4
Cliff Swallow	8	20-May	5-Jun	10	28-May	21
Black-capped Chickadee	21	22-Apr	1-Jun	2	2 Apr - 31 Ma	27
Boreal Chickadee	19	23-Apr	5-Jun	2	23 Apr - 3 Jun	27
Red-breasted Nuthatch	3	23-Apr	26-May	1	all days	3
Ruby-crowned Kinglet	33	22-Apr	5-Jun	31	25-Apr	188
Townsend's Solitaire	1	16-May	NA	1	all days	1
Gray-cheeked Thrush	10	11-May	30-May	3	20-May	14
Swainson's Thrush	25	11-May	6-Jun	16	19-May	113
Hermit Thrush	1	12-May	NA	1	all days	1
American Robin	41	23-Apr	6-Jun	7	7-May	149
Varied Thrush	18	27-Apr	5-Jun	2	18-May	19
American Pipit	18	28-Apr	22-May	6	27-Apr	49
Bohemian Waxwing	14	23-Apr	2-Jun	8	24-May	46
Tennessee Warbler	12	24-May	5-Jun	7	5-Jun	44
Orange-crowned Warbler	29	28-Apr	1-Jun	43	16-May	381
Yellow Warbler	16	18-May	5-Jun	74	31-May	357
Magnolia Warbler	6	29-May	5-Jun	3	1-Jun	10
Cape May Warbler	11	28-May	4-Jun	2	29, 31 May	13
Bay-breasted Warbler	2	2-Jun	4-Jun	1	all days	2
Myrtle Warbler	36	23-Apr	5-Jun	21	20-May	243
Townsend's Warbler	5	17-May	26-May	1	all days	5
Blackpoll Warbler	14	16-May	3-Jun	24	31-May	77
Black-and-white Warbler	2	19-May	21-May	1	all days	2
American Redstart	11	27-May	6-Jun	7	3-Jun	33
Northern Waterthrush	27	5-May	6-Jun	30	19-May	326
Common Yellowthroat	26	11-May	6-Jun	18	17-May	157
Wilson's Warbler	22	11-May	6-Jun	63	29-May	473
Western Tanager	12	24-May	6-Jun	2	0 May, 1,2,3,4	19
American Tree Sparrow	34	22-Apr	30-May	119	23-Apr	724
Chipping Sparrow	16	16-May	4-Jun	4	22-May	26
Savannah Sparrow	33	23-Apr	2-Jun	16	11-May	147
Fox Sparrow	40	26-Apr	6-Jun	24	2-May	163
Lincoln's Sparrow	40	23-Apr	6-Jun	28	11-May	246
Swamp Sparrow	8	5-May	2-Jun	2	22 may, 2 Jun	11
White-throated Sparrow	23	15-May	6-Jun	6	5-Jun	68
White-crowned Sparrow	33	23-Apr	1-Jun	48	2-May	396

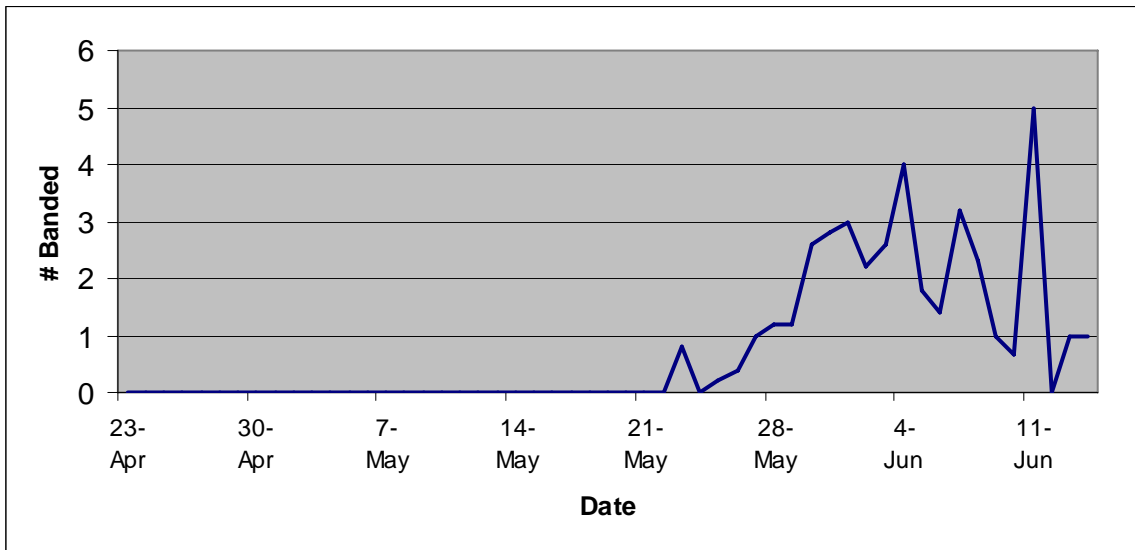
SPECIES	# DAYS RECORDED	FIRST DATE RECORDED	LAST DATE RECORDED	HIGH COUNT		SUM OF Ets
				#	DATE	
Golden-crowned Sparrow	20	24-Apr	31-May	6	19-May	43
Slate-colored Junco	42	22-Apr	5-Jun	196	28-Apr	666
Oregon Junco	1	15-May	NA	1	all days	1
Lapland Longspur	22	23-Apr	18-May	75	9-May	308
Unidentified Junco	4	14-May	22-May	1	all days	4
Snow Bunting	1	23-Apr	NA	2	NA	2
Rose-breasted Grosbeak	1	23-May	NA	1	all days	1
Red-winged Blackbird	32	3-May	6-Jun	6	24-May	84
Rusty Blackbird	25	23-Apr	26-May	21	3-May	104
Brown-headed Cowbird	22	15-May	6-Jun	7	31 may, 1 jun	51
Purple Finch	34	28-Apr	4-Jun	6	30-May	77
Red Crossbill	2	17-May	18-May	1	all days	2
White-winged Crossbill	1	3-Jun	NA	1	all days	1
Common Redpoll	14	27-Apr	3-Jun	200	7-May	330
Pine Siskin	2	15-May	17-May	2	16-May	3

APPENDIX 3 – FALL ESTIMATED TOTAL SUMMARY

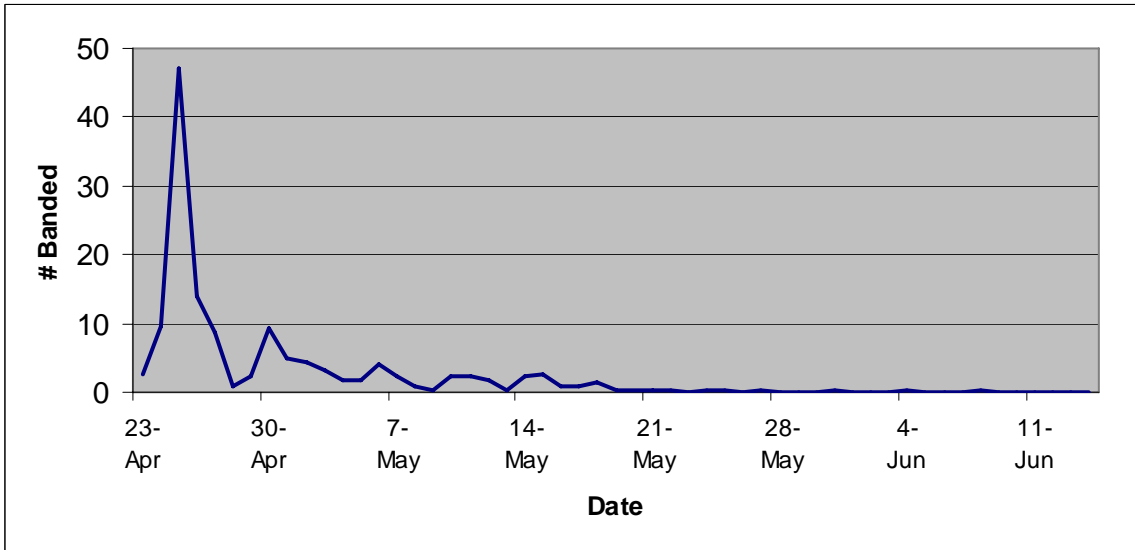
SPECIES	# DAYS RECORDED	FIRST DATE RECORDED	LAST DATE RECORDED	HIGH COUNT		SUM OF Ets
				#	DATE	
Common Loon	25	27-Jul	8-Sep	1	NA	26
Greater White-fronted Goose	7	23-Aug	5-Sep	240	26-Aug	654
Canada Goose	9	21-Aug	2-Sep	18	26-Aug	53
Trumpeter Swan	15	1-Aug	20-Sep	2	NA	30
American Wigeon	7	9-Aug	2-Sep	34	1-Sep	65
Mallard	52	26-Jul	22-Sep	20	28-Aug	282
Blue-winged Teal	1	8-Aug		10	NA	10
Northern Shoveler	2	9-Aug	1-Sep	8	9-Aug	10
Northern Pintail	2	9-Aug	1-Sep	25	1-Sep	26
Green-winged Teal	10	8-Aug	6-Sep	8	10-Aug	38
Ring-necked Duck	1	10-Aug		1	NA	1
Bufflehead	6	8-Aug	24-Aug	3	8-Aug	11
Common Goldeneye	1	2-Sep		1	NA	1
Barrow's Goldeneye	1	10-Aug		2	NA	2
Unidentified Duck	3			110	NA	140
Osprey	2	5-Sep	17-Sep	1	NA	2
Bald Eagle	5	6-Aug	9-Sep	2	4-Sep	6
Northern Harrier	21	10-Aug	23-Sep	3	17-Sep	28
Sharp-shinned Hawk	14	10-Aug	20-Sep	3	2-Sep	19
Northern Goshawk	4	8-Aug	31-Aug	1	NA	4
Swainson's Hawk	1	16-Sep		1	NA	1
Red-tailed Hawk	4	2-Sep	16-Sep	3	14-Sep	7
American kestrel	8	1-Aug	6-Sep	1	NA	8
Merlin	3	3-Aug	15-Sep	2	18-Aug	4
Ruffed Grouse	20	28-Jul	17-Sep	3	14-Sep	30
Spruce Grouse	27	26-Jul	19-Sep	7	27-Jul	43
Sora	2	13-Aug	9-Sep	1	NA	2
Sandhill Crane	1	22-Sep		650	NA	650
American Golden Plover	1	10-Aug		1	NA	1
Killdeer	2	8-Aug	28-Aug	1	NA	2
Lesser Yellowlegs	6	28-Jul	12-Aug	4	10-Aug	13
Solitary Sandpiper	22	26-Jul	28-Aug	3	19-Aug	27
Spotted Sandpiper	1	19-Aug		2	NA	2
Semipalmated Sandpiper	1	8-Aug		2	NA	2
Pectoral Sandpiper	1	30-Aug		1	NA	1
Least Sandpiper	7	3-Aug	2-Sep	2	3-Aug	8
Long-billed Dowitcher	1	3-Sep		1	NA	1
Wilson's Snipe	23	26-Jul	18-Sep	5	18-Sep	34
Herring Gull	5	27-Jul	3-Aug	2	27-Jul	5
Mew Gull	1	28-Jul		1	NA	1
Northern Hawk Owl	1	3-Sep		1	NA	1
Boreal Owl	1	2-Sep		3	NA	3
Northern Saw-whet Owl	2	2-Sep	3-Sep	1	NA	2
Common Nighthawk	4	18-Aug	14-Sep	4	31-Aug	7
Belted Kingfisher	50	26-Jul	15-Sep	3	26-Jul	57
Yellow-bellied Sapsucker	35	26-Jul	14-Sep	5	4-Aug	51
Hairy Woodpecker	9	13-Aug	6-Sep	1	NA	9
Three-toed Woodpecker	16	22-Aug	17-Sep	2	14-Sep	17
Black-backed Woodpecker	1	23-Sep		1	NA	1
Northern Flicker	26	1-Aug	16-Sep	2	28-Aug	30
Pileated Woodpecker	29	29-Jul	23-Sep	2	9-Sep	30
Olive-sided Flycatcher	1	21-Aug		1	NA	1
Yellow-bellied Flycatcher	2	29-Jul	31-Aug	1	NA	2
Alder Flycatcher	60	26-Jul	11-Sep	23	17-Aug	370
Least Flycatcher	14	27-Jul	24-Aug	5	1-Aug	26
Dusky Flycatcher	1	3-Sep		1	NA	1

SPECIES	# DAYS RECORDED	FIRST DATE RECORDED	LAST DATE RECORDED	HIGH COUNT		SUM OF Ets
				#	DATE	
Blue-headed Vireo	3	4-Aug	20-Aug	1	NA	3
Warbling Vireo	35	26-Jul	3-Sep	9	5-Aug	88
Gray Jay	55	27-Jul	19-Sep	5	18-Sep	110
Black-billed Magpie	1	27-Jul		1	NA	1
Common Raven	50	26-Jul	23-Sep	8	16-Sep	80
American Crow	1	26-Jul		1	NA	1
Tree Swallow	7	6-Aug	20-Aug	2	26-Jul	7
Barn Swallow	1	18-Aug		2	NA	2
Cliff Swallow	24	26-Jul	4-Aug	12	26 jul / 12 Aug	41
Black-capped Chickadee	59	26-Jul	23-Sep	6	15-Sep	144
Boreal Chickadee	42	27-Jul	15-Sep	5	8-Aug	96
Red-breasted Nuthatch	12	3-Aug	31-Aug	1	NA	12
Ruby-crowned Kinglet	48	28-Jul	23-Sep	22	11-Sep	322
Golden-crowned Kinglet	4	27-Jul	18-Aug	2	5-Aug	5
Gray-cheeked Thrush	8	28-Aug	5-Sep	3	29-Aug	12
Swainson's Thrush	37	27-Jul	10-Sep	20	30-Aug	261
Hermit Thrush	4	5-Aug	17-Sep	2	27-Aug	5
American Robin	33	27-Jul	19-Sep	8	27-Aug	60
Varied Thrush	12	16-Aug	19-Sep	2	22-Aug	13
American Pipit	16	23-Aug	22-Sep	8	1-Sep	42
Bohemian Waxwing	2	6-Aug	1-Sep	1	NA	2
Cedar Waxwing	43	26-Jul	9-Sep	9	21-Aug	111
Tennessee Warbler	23	26-Jul	9-Sep	5	12-Aug	38
Orange-crowned Warbler	36	5-Aug	20-Sep	31	30-Aug	201
Yellow Warbler	40	26-Jul	7-Sep	41	16-Aug	274
Magnolia Warbler	27	26-Jul	29-Aug	6	11-Aug	52
Cape May Warbler	3	27-Jul	6-Sep	1	NA	3
Yellow-rumped "Myrtle" Warbler	42	1-Aug	22-Sep	52	30-Aug	528
Townsend's Warbler	1	20-Aug		1	NA	1
Blackpoll Warbler	20	6-Aug	3-Sep	6	17-Aug	45
American Redstart	49	26-Jul	6-Sep	9	5-Aug	95
Northern Waterthrush	80	26-Jul	18-Sep	46	17-Aug	572
Common Yellowthroat	80	26-Jul	22-Sep	34	22-Aug	629
Wilson's Warbler	38	3-Aug	22-Sep	15	19-Aug	213
Western Tanager	12	26-Jul	20-Aug	2	20-Aug	14
American-tree Sparrow	35	14-Aug	23-Sep	29	14-Sep	224
Chipping Sparrow	3	2-Aug	17-Aug	1	NA	3
Savannah Sparrow	14	20-Aug	18-Sep	4	31-Aug	26
Fox Sparrow	16	26-Aug	14-Sep	3	3-Sep	26
Lincoln's Sparrow	45	26-Jul	20-Sep	12	29-Aug	141
Swamp Sparrow	27	28-Jul	16-Sep	3	ys (1 Aug -14	46
White-throated Sparrow	20	1-Aug	20-Sep	2	4-Sep	23
White-crowned Sparrow	11	19-Aug	20-Sep	3	19-Aug	16
Golden-crowned Sparrow	1	7-Sep		1	NA	1
Slate-colored Junco	31	4-Aug	23-Sep	30	14-Sep	216
Lapland Longspur	16	29-Aug	22-Sep	6	5-Sep	39
Red-winged Blackbird	5	3-Aug	11-Aug	2	3, 4, 11 Aug	8
Rusty Blackbird	39	27-Jul	23-Sep	36	1-Sep	323
Purple Finch	2	26-Jul	30-Aug	1	NA	2
White-winged Crossbill	114	26-Jul	23-Sep	34	14-Sep	483
Pine Siskin	19	31-Jul	2-Sep	12	6-Aug	50

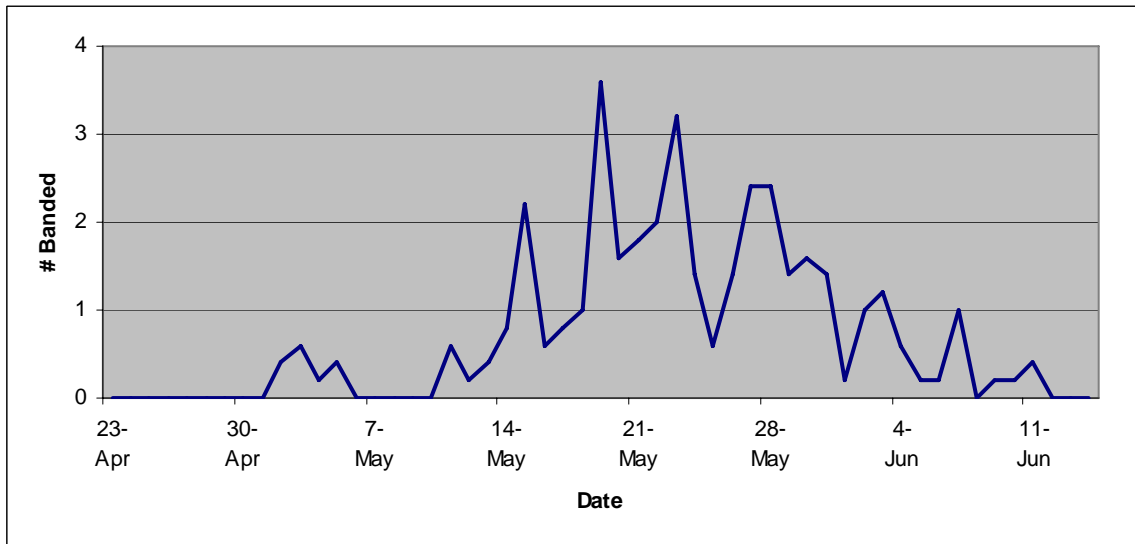
APPENDIX 4 – SPRING MIGRATION TIMING FIGURES



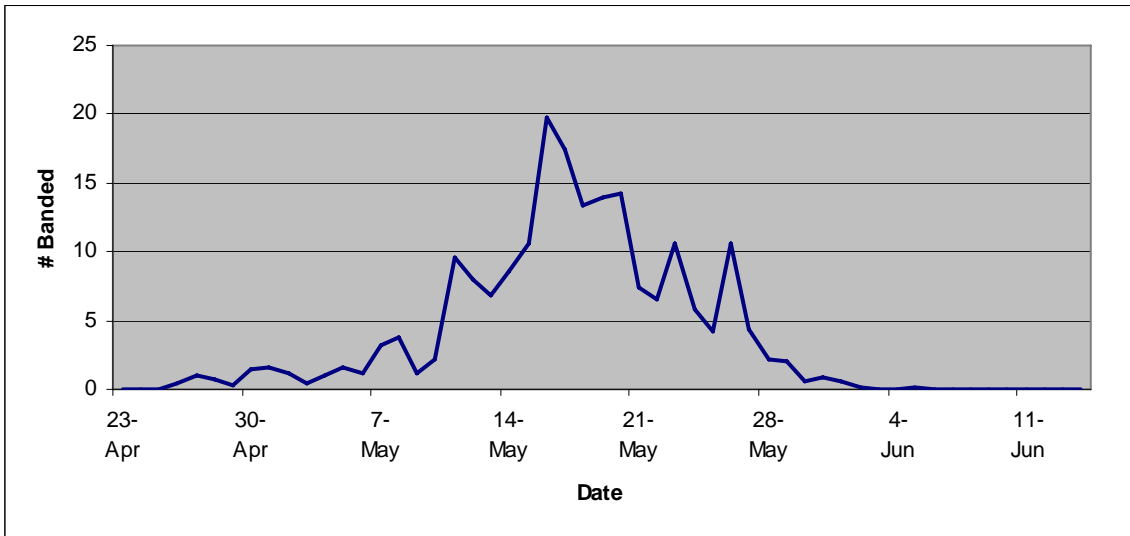
Average spring migration timing (2003 – 2007) for Alder Flycatcher



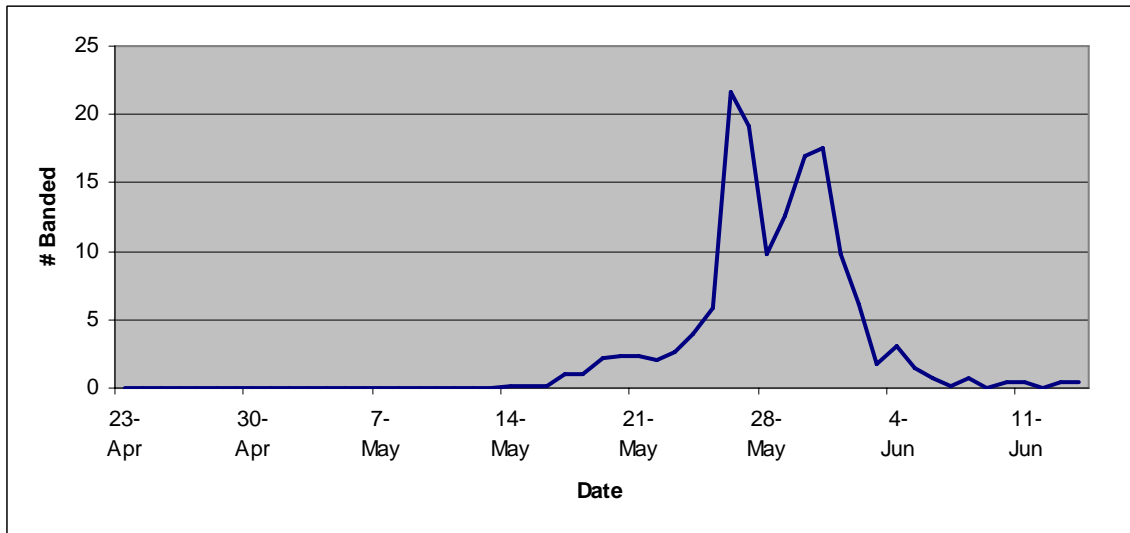
Average spring migration timing (2003 – 2007) for Ruby-crowned Kinglet



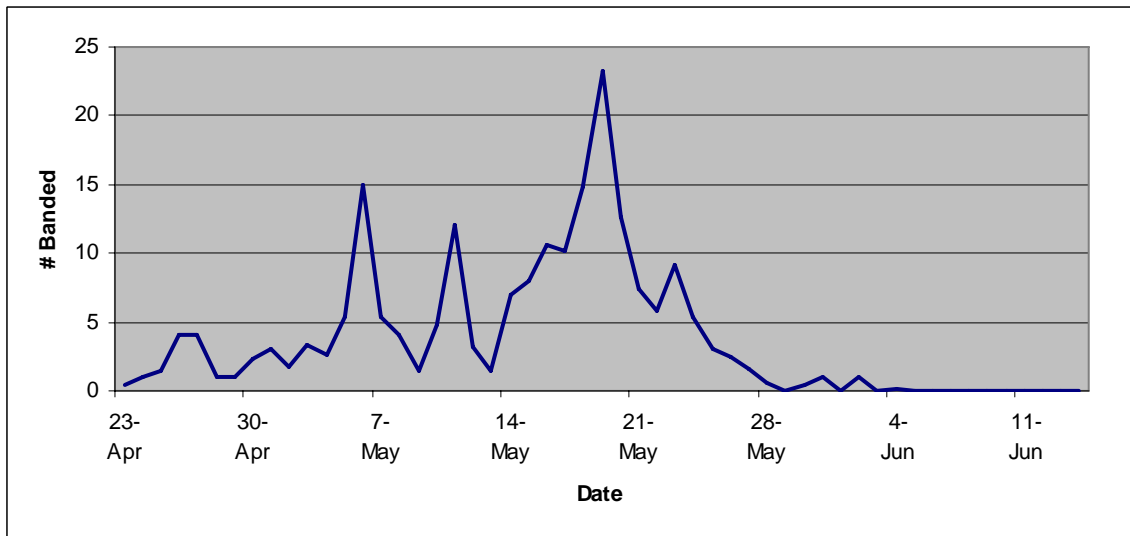
Average spring migration timing (2003 – 2007) for Swainson's Thrush



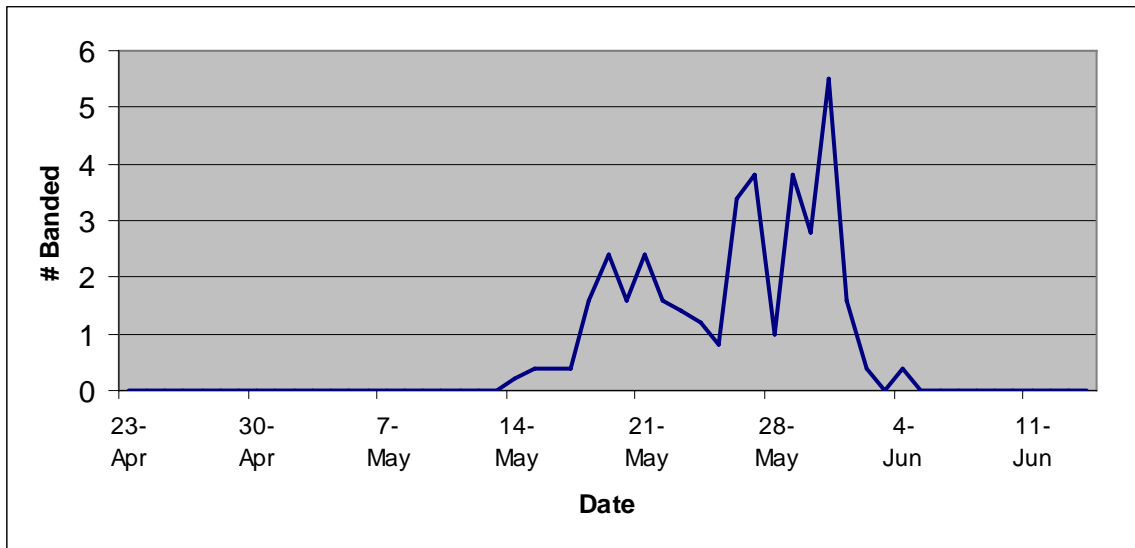
Average spring migration timing (2003 – 2007) for Orange-crowned Warbler



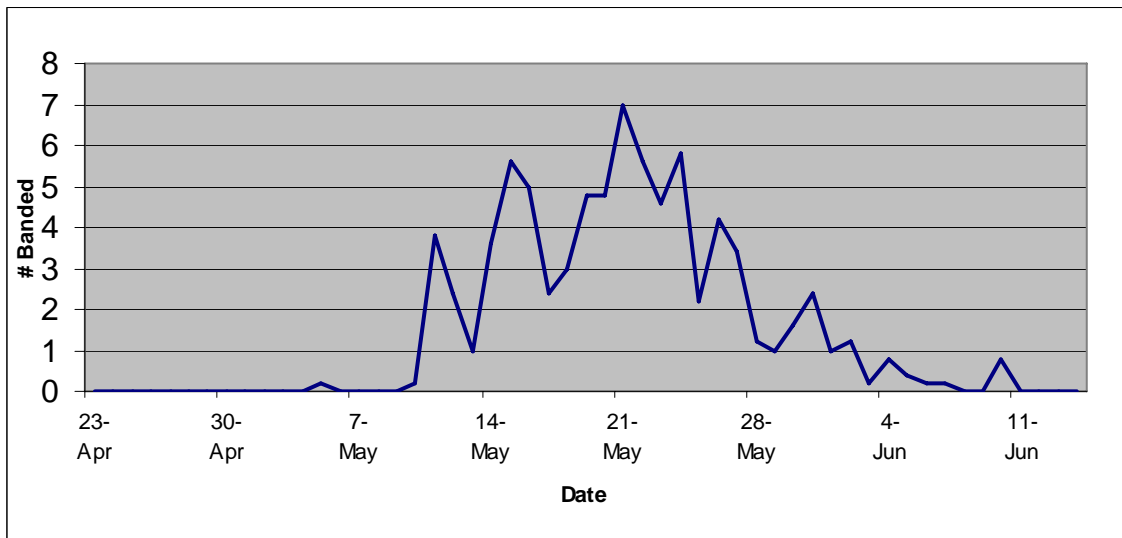
Average spring migration timing (2003 – 2007) for Yellow Warbler



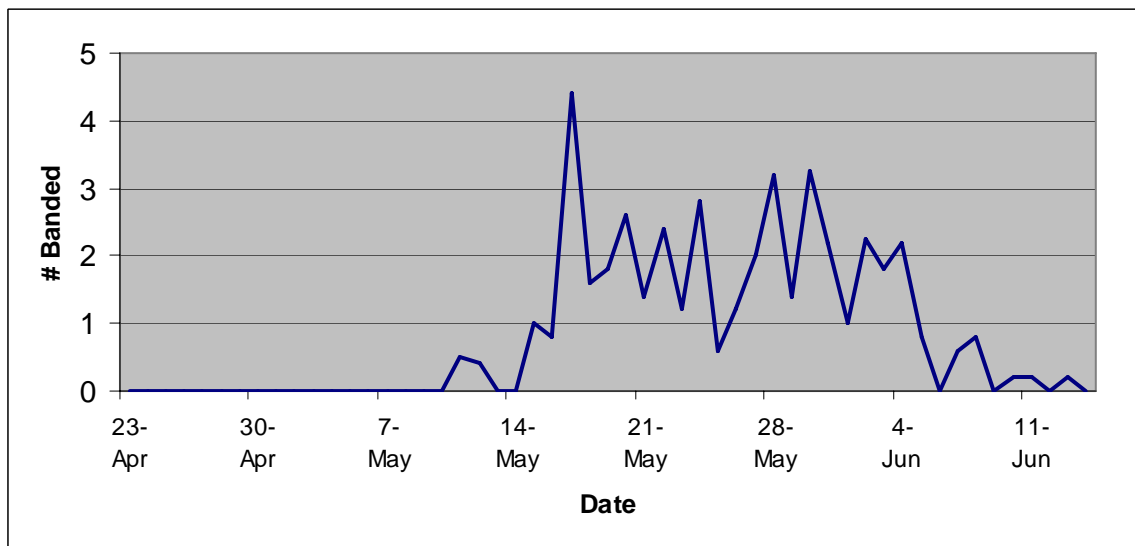
Average spring migration timing (2003 – 2007) for Yellow-rumped (Myrtle) Warbler



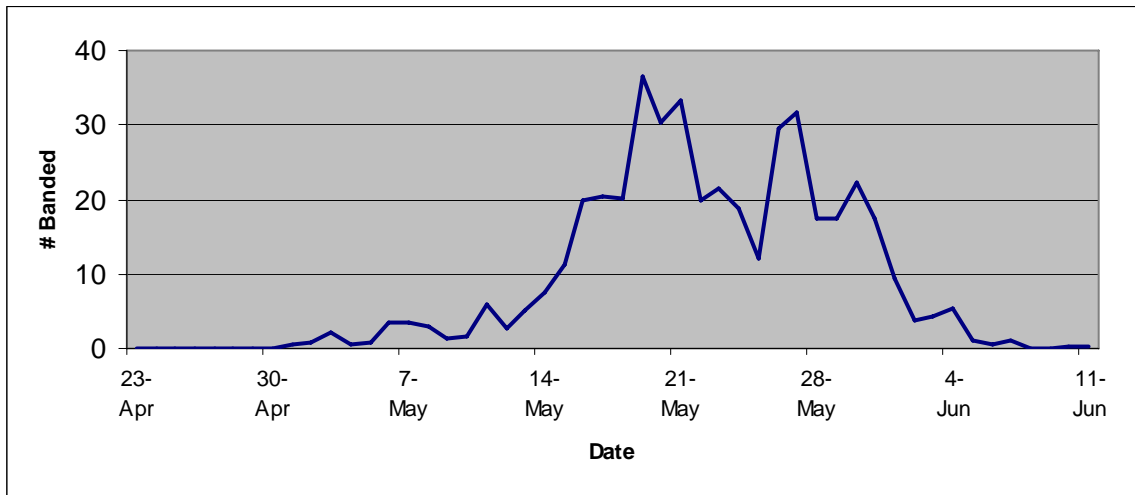
Average spring migration timing (2003 – 2007) for Blackpoll Warbler



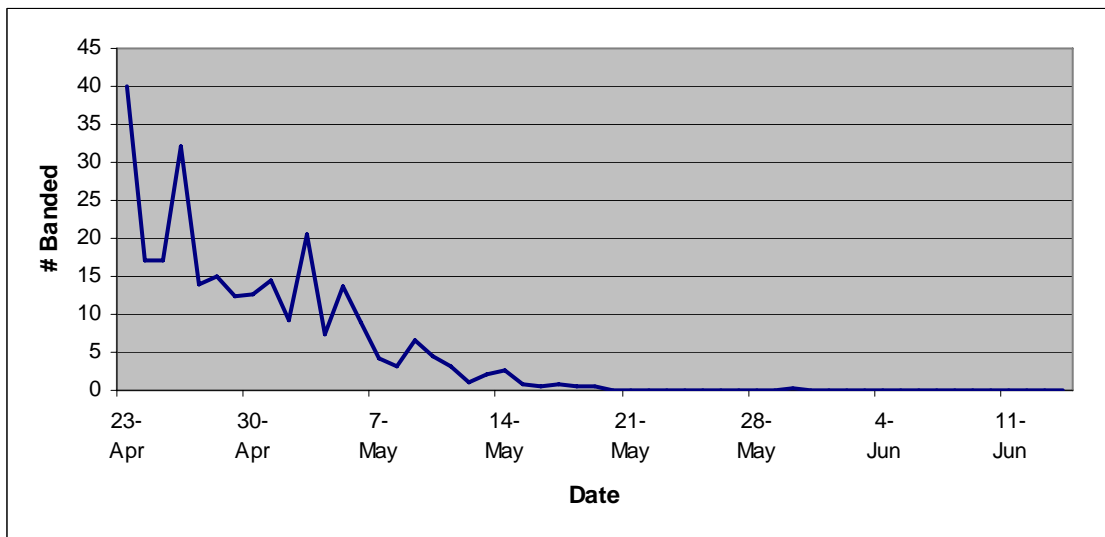
Average spring migration timing (2003 – 2007) for Northern Waterthrush



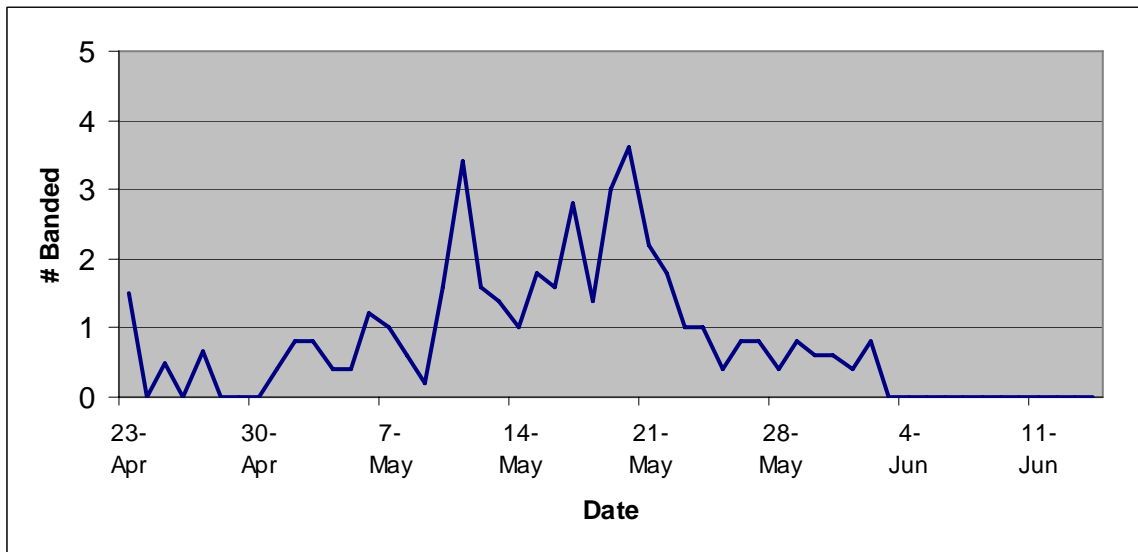
Average spring migration timing (2003 – 2007) for Common Yellowthroat



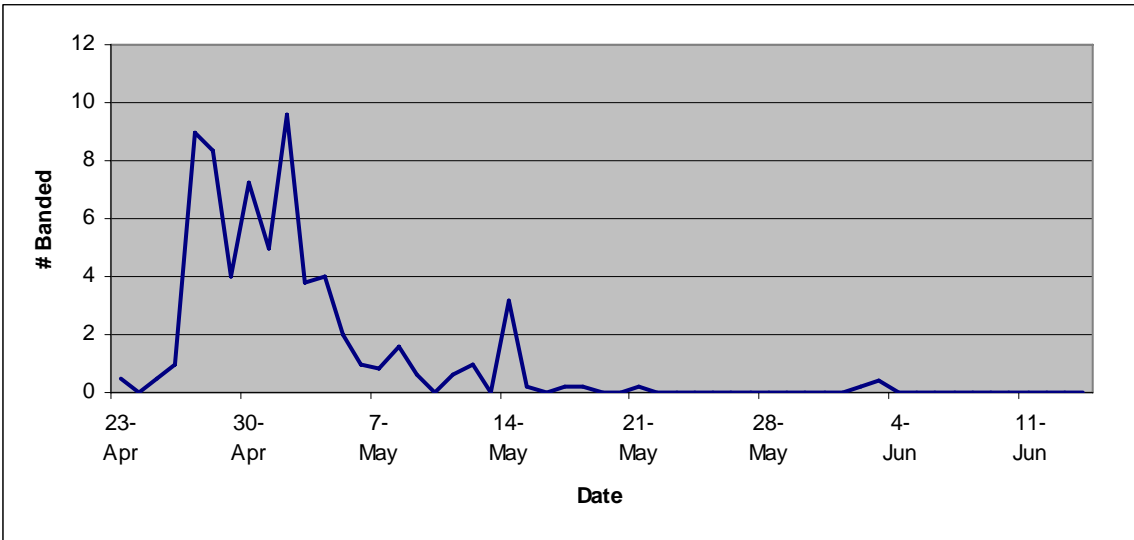
Average spring migration timing (2003 – 2007) for Wilson's Warbler



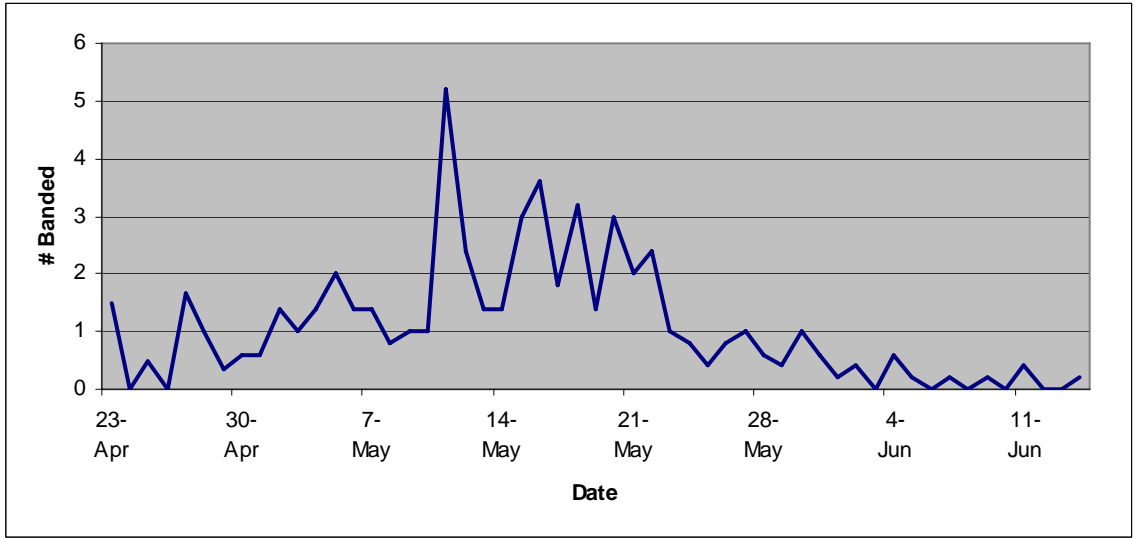
Average spring migration timing (2003 – 2007) for American-tree Sparrow



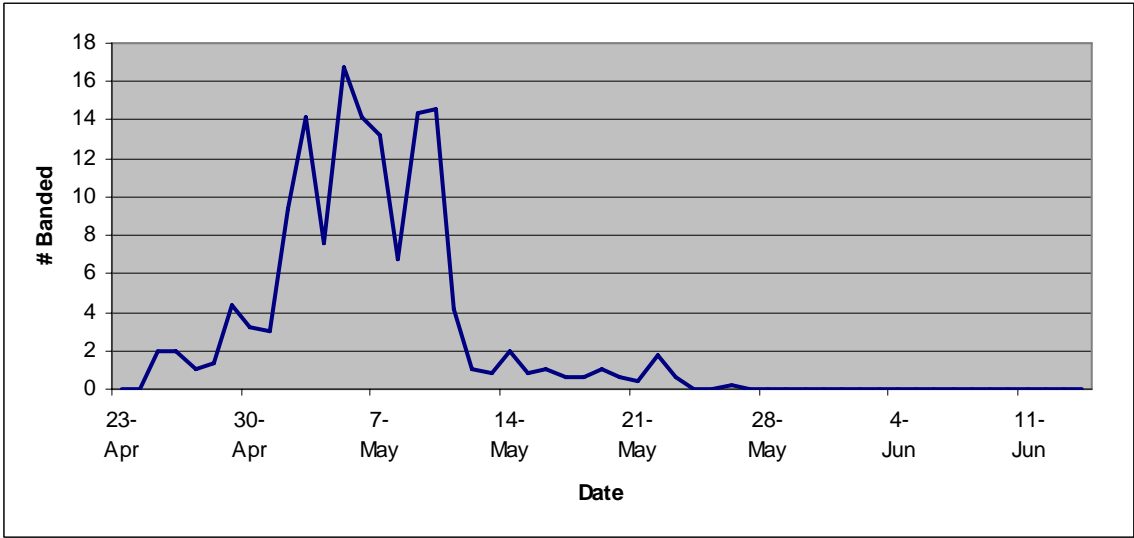
Average spring migration timing (2003 – 2007) for Savannah Sparrow



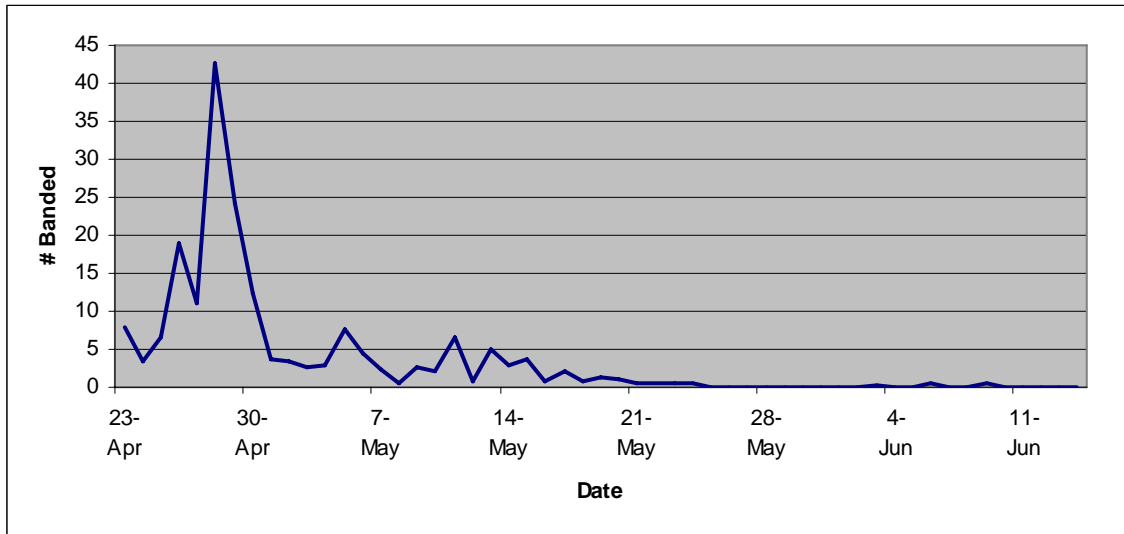
Average spring migration timing (2003 – 2007) for Fox Sparrow



Average spring migration timing (2003 – 2007) for Lincoln's Sparrow

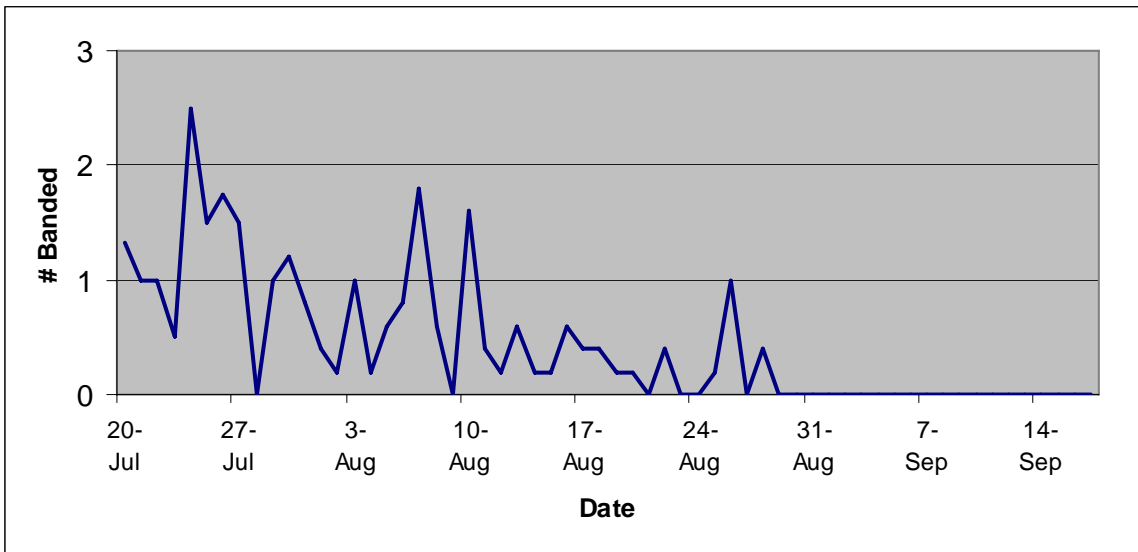


Average spring migration timing (2003 – 2007) for White-crowned Sparrow

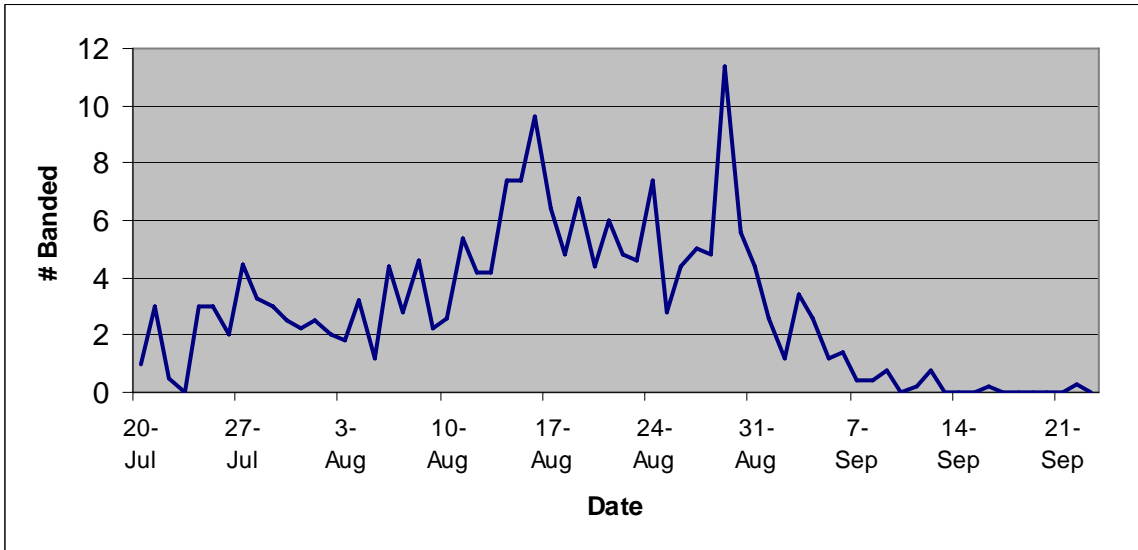


Average spring migration timing (2003 – 2007) for Dark-eyed Junco

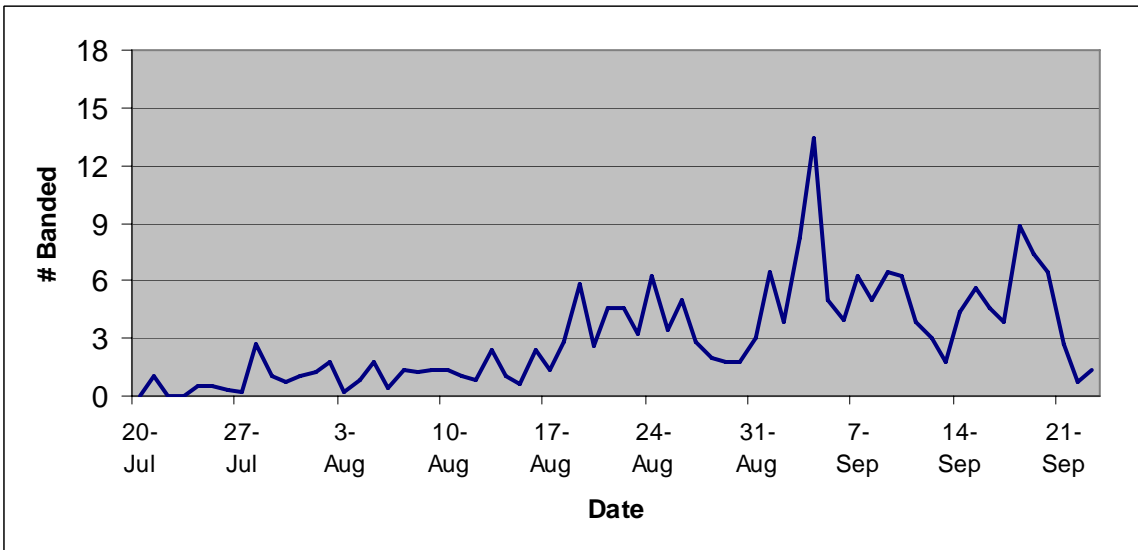
APPENDIX 5 – FALL MIGRATION TIMING FIGURES



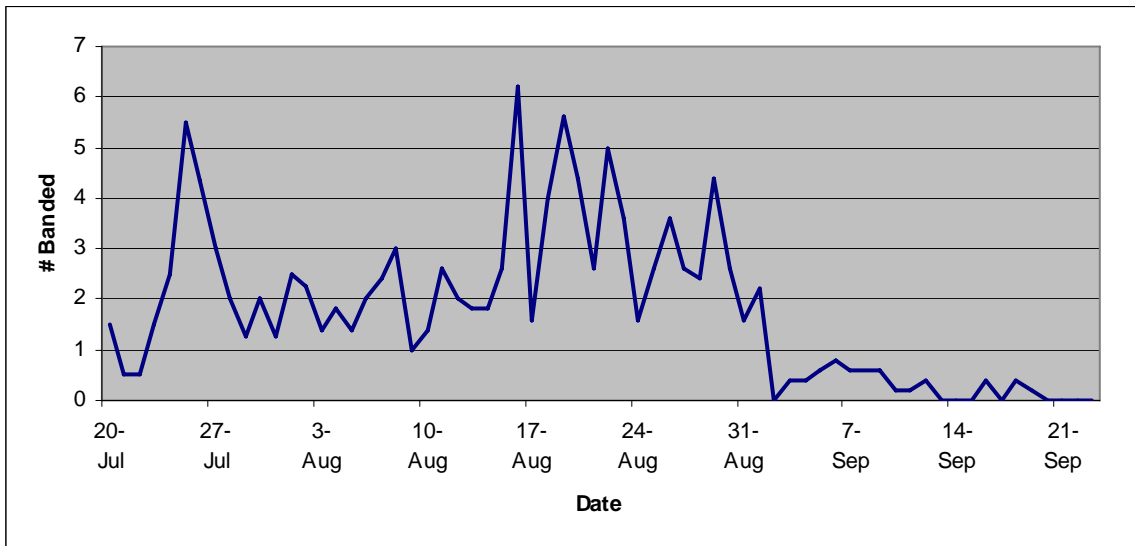
Average fall migration timing (2003 – 2007) for Warbling Vireo



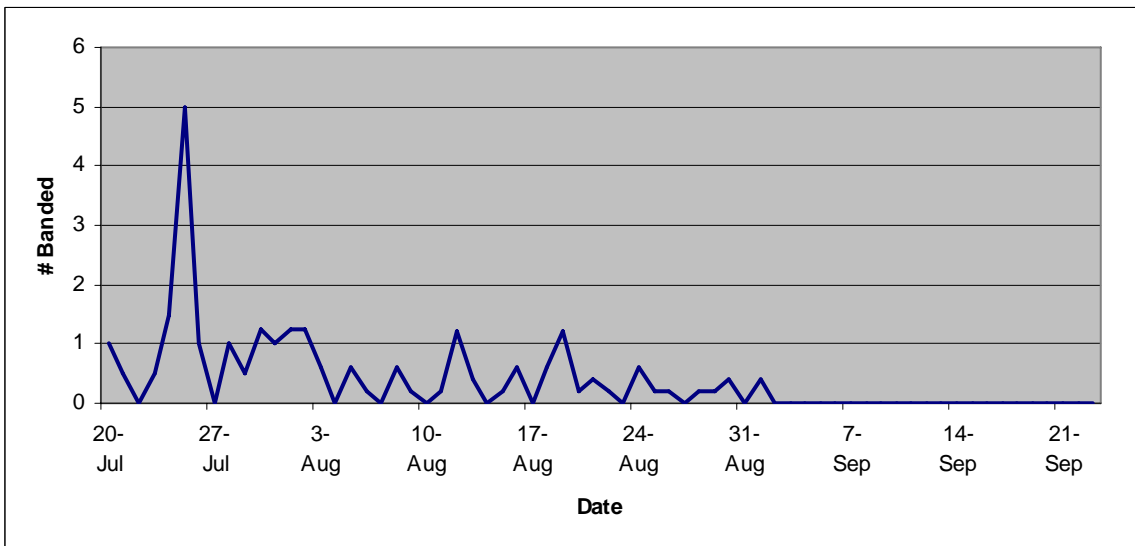
Average fall migration timing (2003 – 2007) for Alder Flycatcher



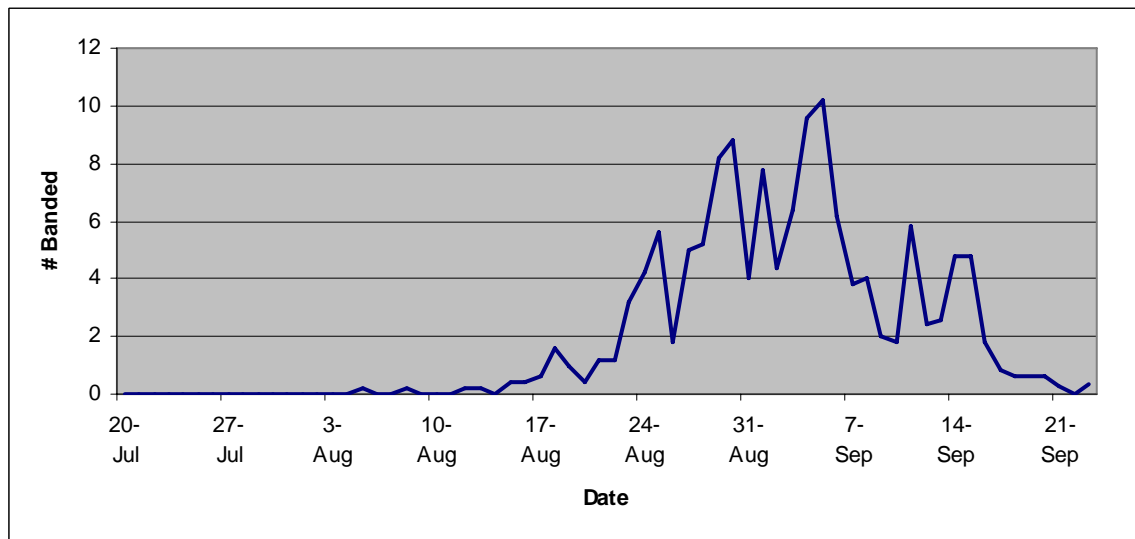
Average fall migration timing (2003 – 2007) for Ruby-crowned Kinglet



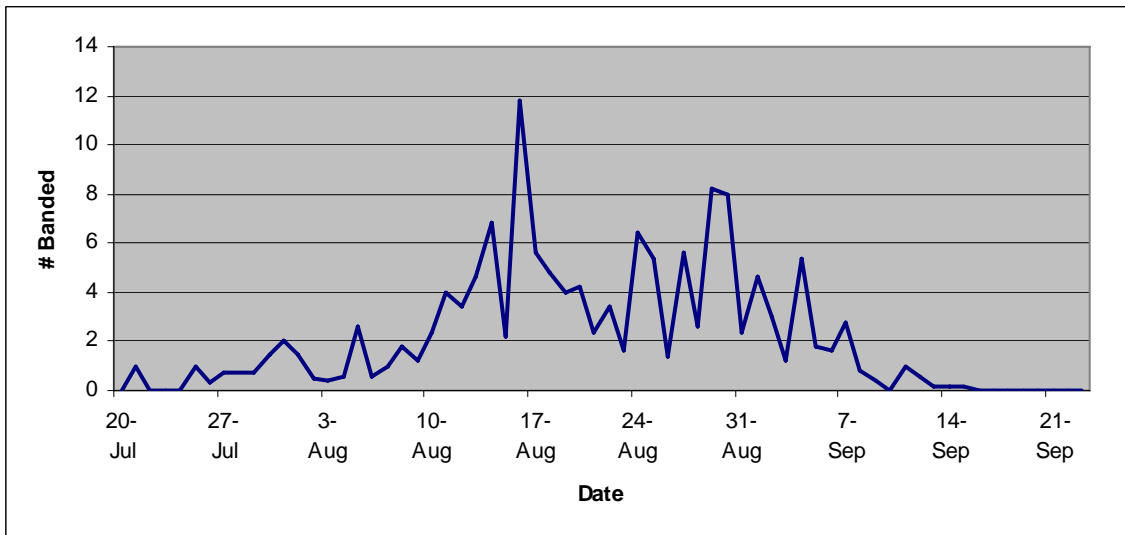
Average fall migration timing (2003 – 2007) for Swainson's Thrush



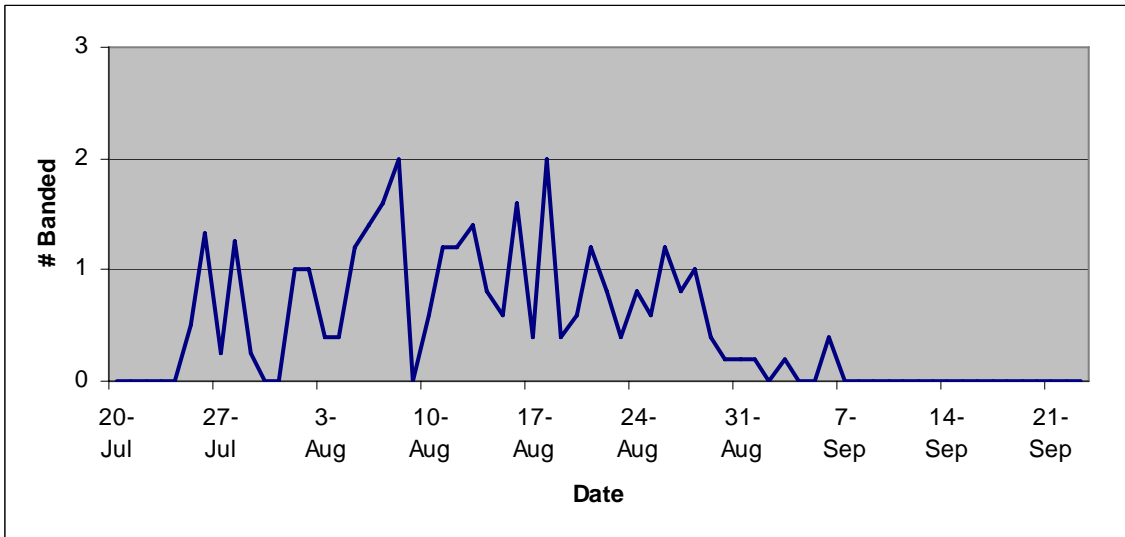
Average fall migration timing (2003 – 2007) for Tennessee Warbler



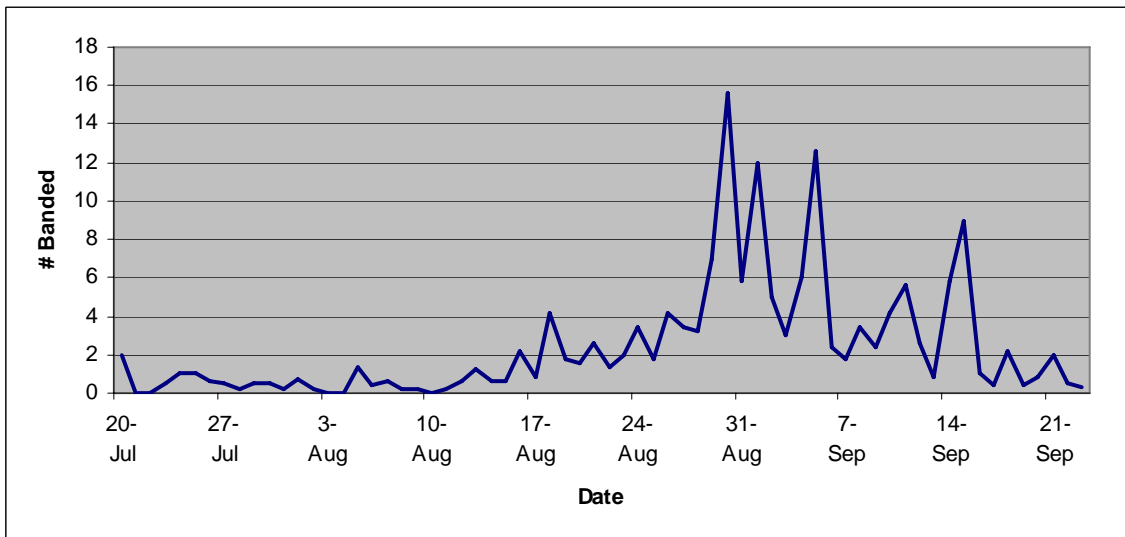
Average fall migration timing (2003 – 2007) for Orange-crowned Warbler



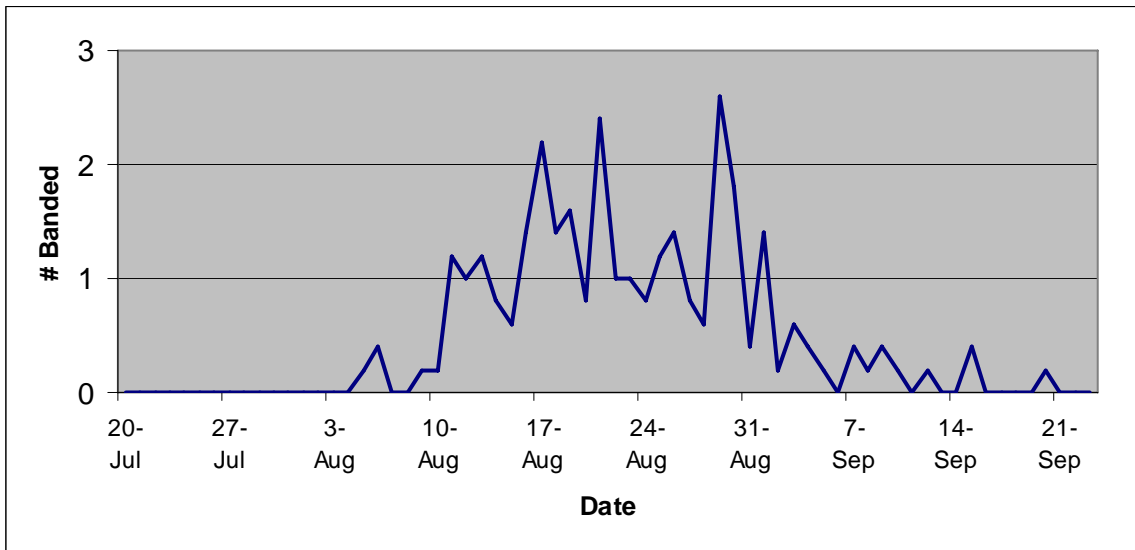
Average fall migration timing (2003 – 2007) for Yellow Warbler



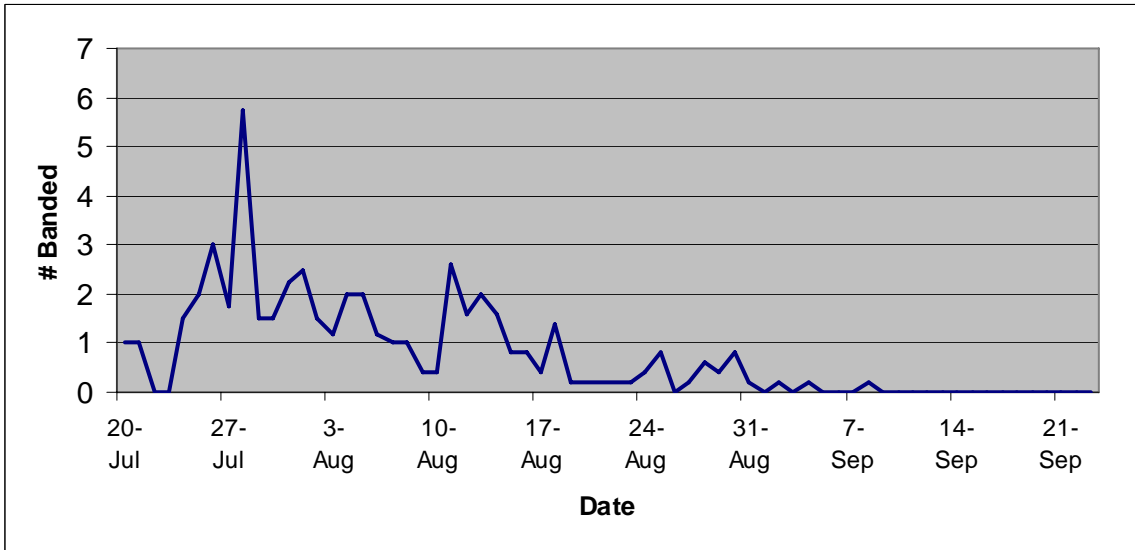
Average fall migration timing (2003 – 2007) for Magnolia Warbler



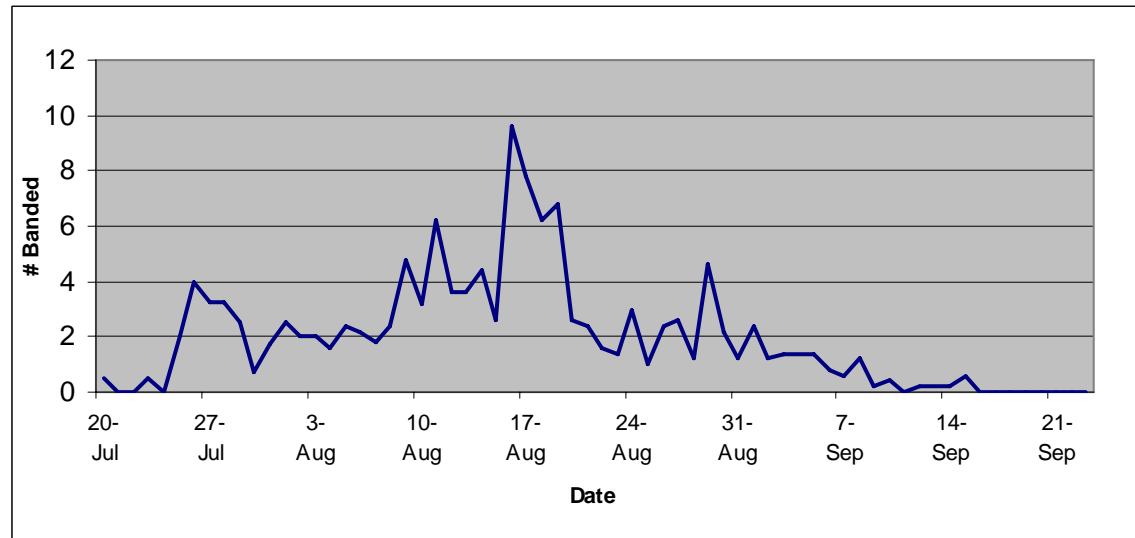
Average fall migration timing (2003 – 2007) for Yellow-rumped "Myrtle" Warbler



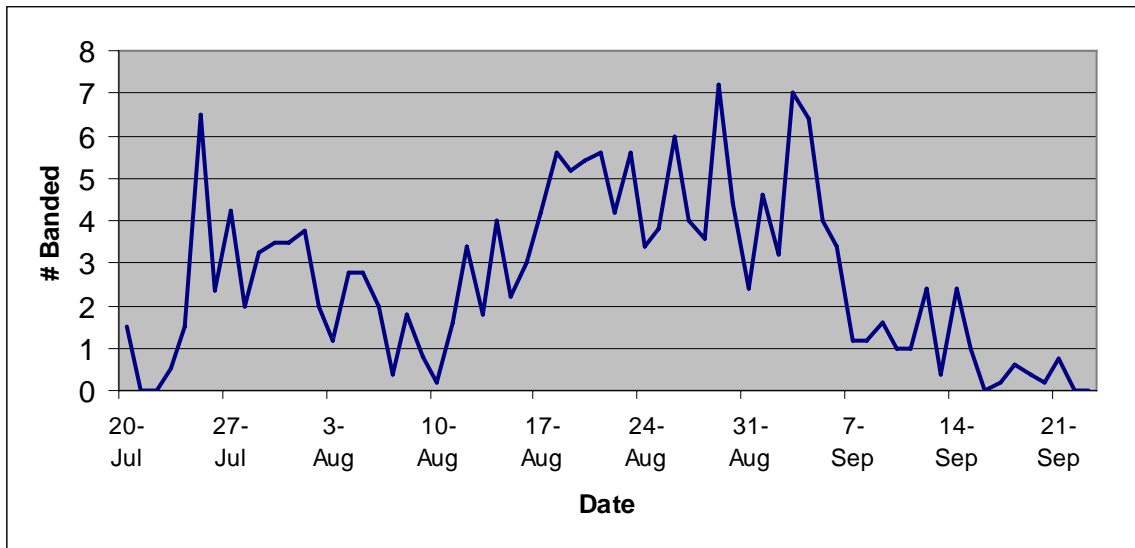
Average fall migration timing (2003 – 2007) for Blackpoll Warbler



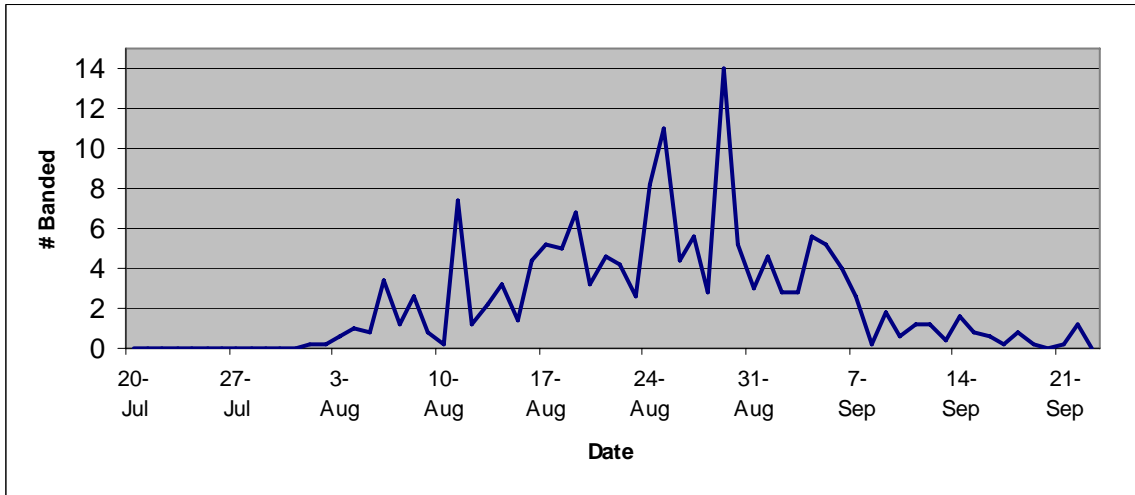
Average fall migration timing (2003 – 2007) for American Redstart



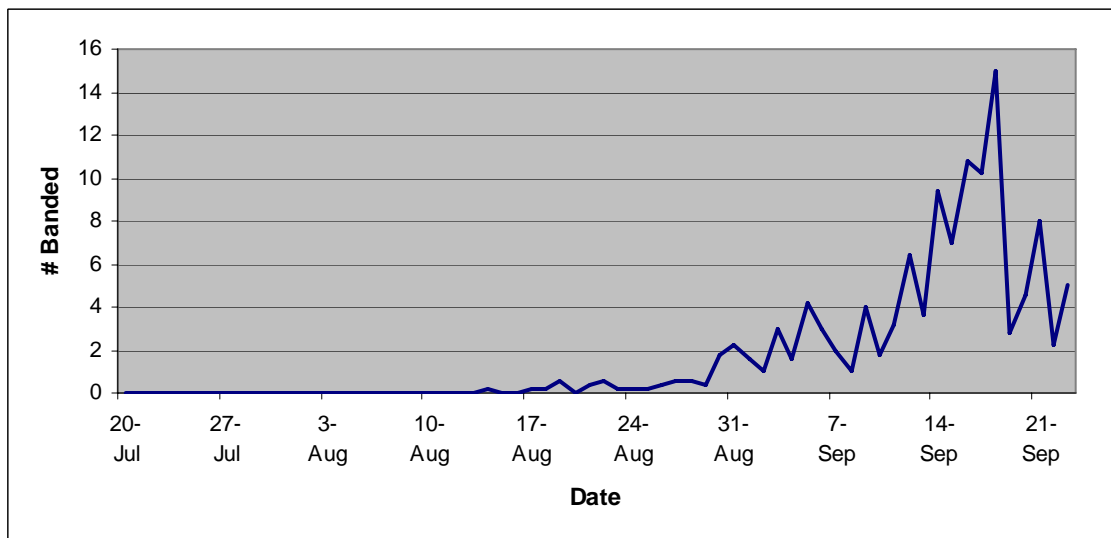
Average fall migration timing (2003 – 2007) for Northern Waterthrush



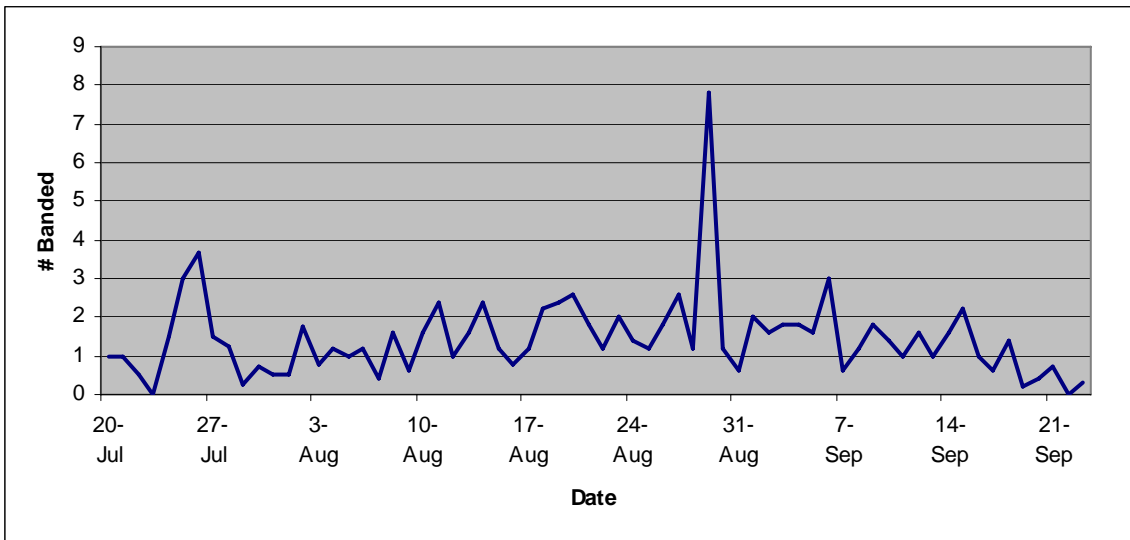
Average fall migration timing (2003 – 2007) for Common Yellowthroat



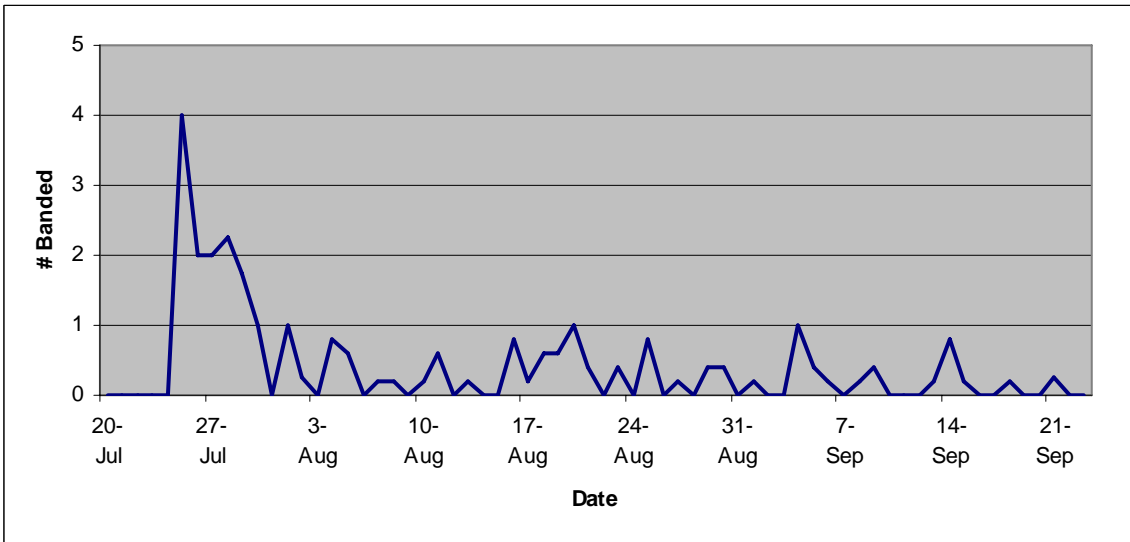
Average fall migration timing (2003 – 2007) for Wilson's Warbler



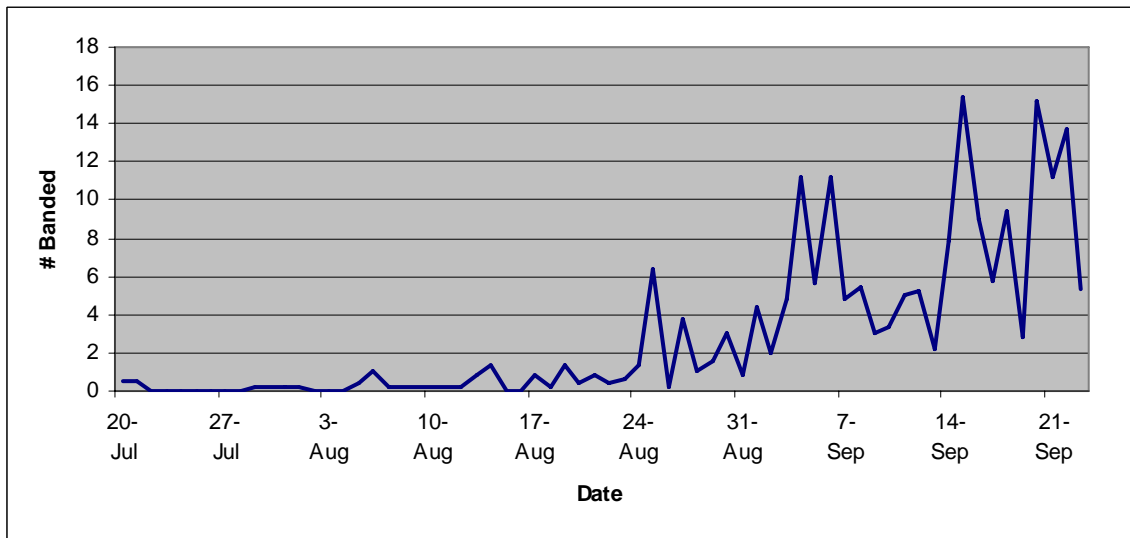
Average fall migration timing (2003 – 2007) for American-tree Sparrow



Average fall migration timing (2003 – 2007) for Lincoln's Sparrow

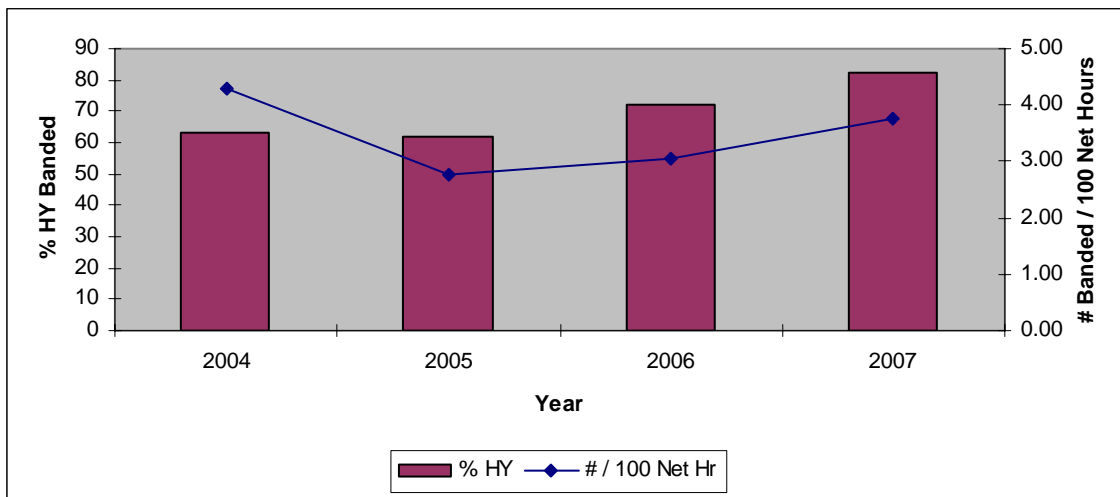


Average fall migration timing (2003 – 2007) for Swamp Sparrow

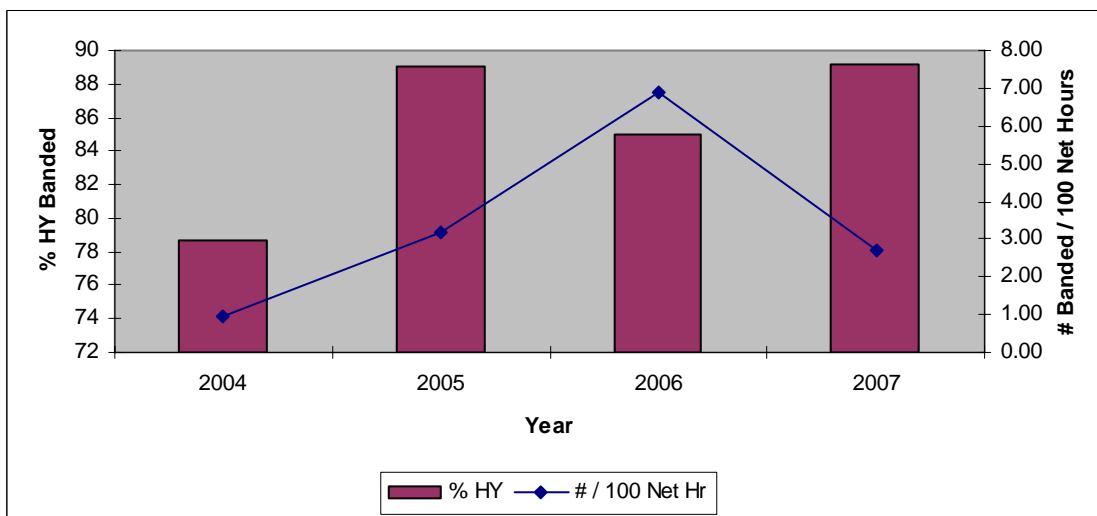


Average fall migration timing (2003 – 2007) for Dark-eyed "Slate-colored" Junco

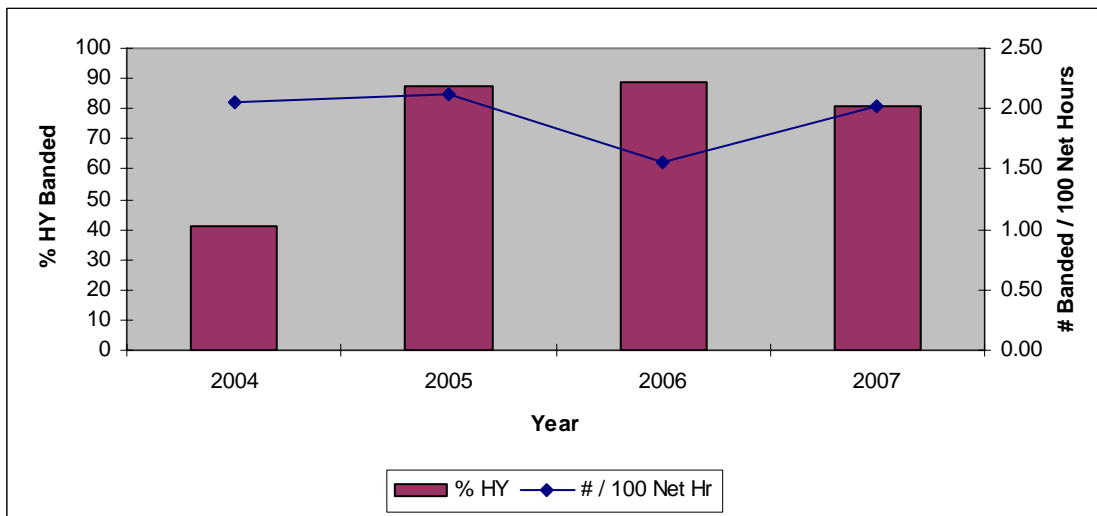
APPENDIX 6 – AGE BREAKDOWN & CATCH RATE FIGURES



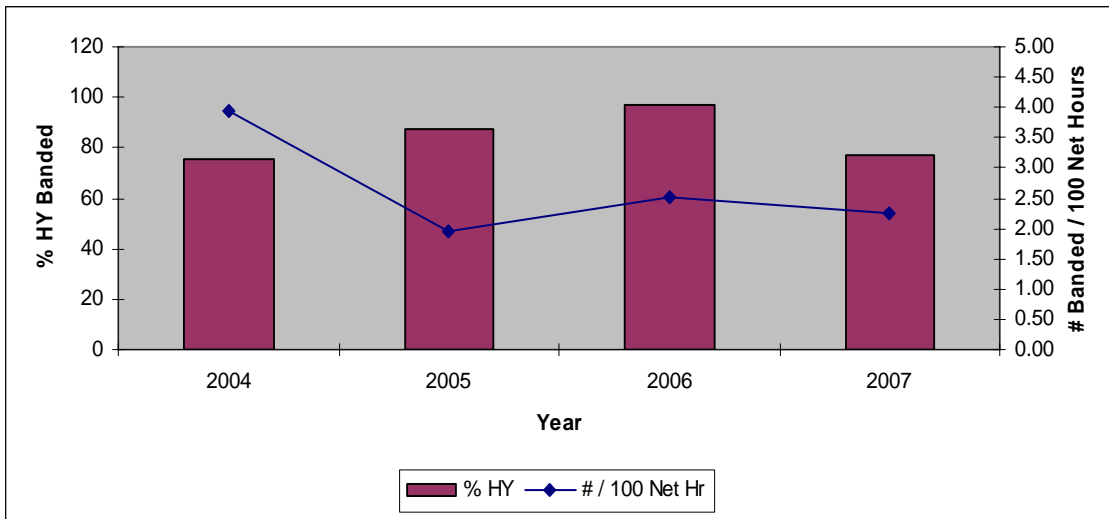
Age Breakdown and Relative Capture Rate (Fall) for Alder Flycatcher



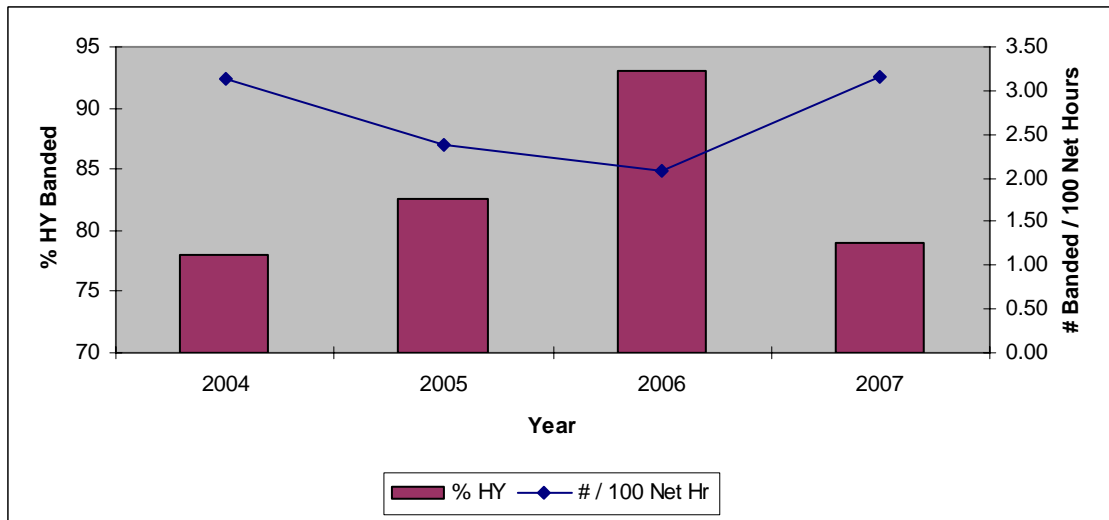
Age Breakdown and Relative Capture Rate (Fall) for Ruby-crowned Kinglet



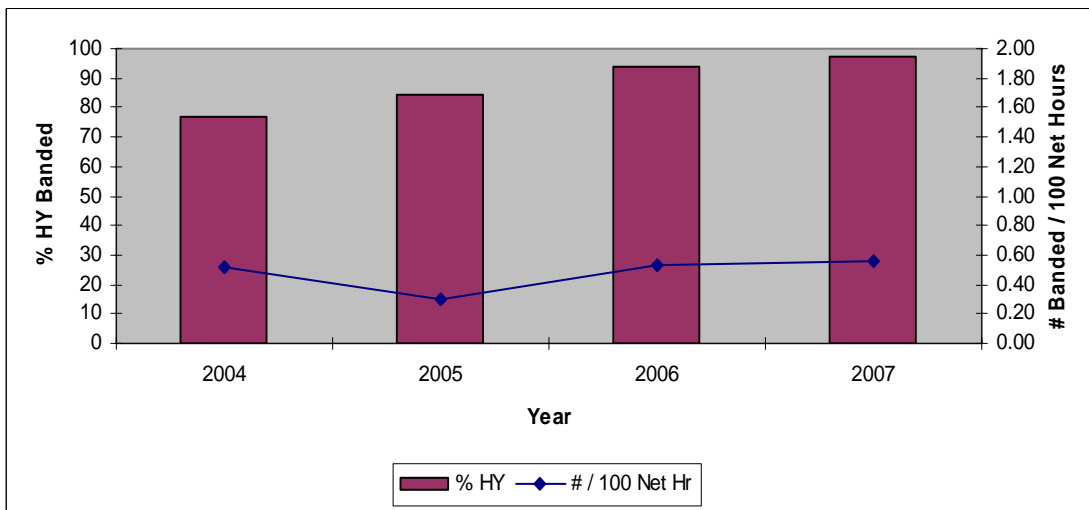
Age Breakdown and Relative Capture Rate (Fall) for Swainson's Thrush



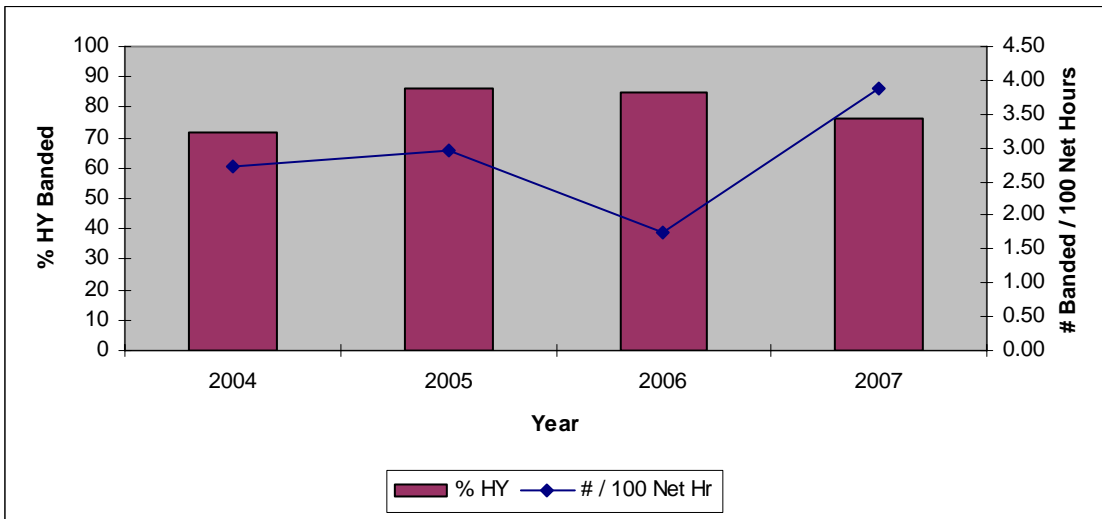
Age Breakdown and Relative Capture Rate (Fall) for Orange-crowned Warbler



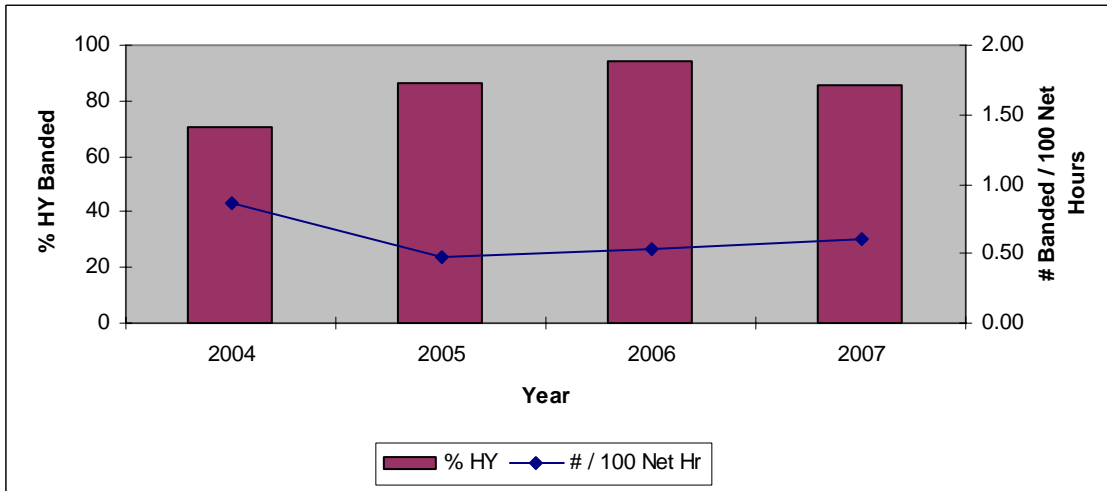
Age Breakdown and Relative Capture Rate (Fall) for Yellow Warbler



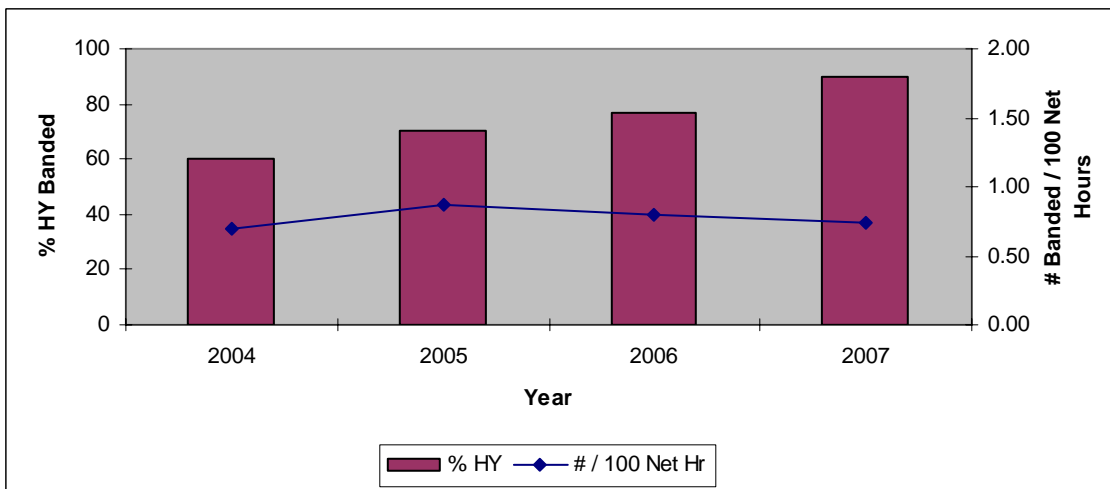
Age Breakdown and Relative Capture Rate (Fall) for Magnolia Warbler



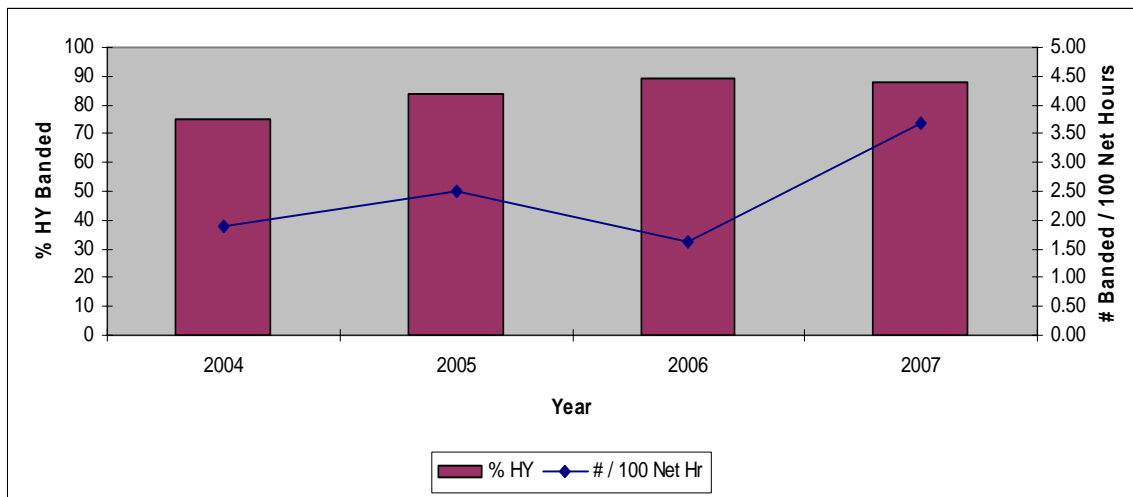
Age Breakdown and Relative Capture Rate (Fall) for Yellow-rumped (Myrtle) Warbler



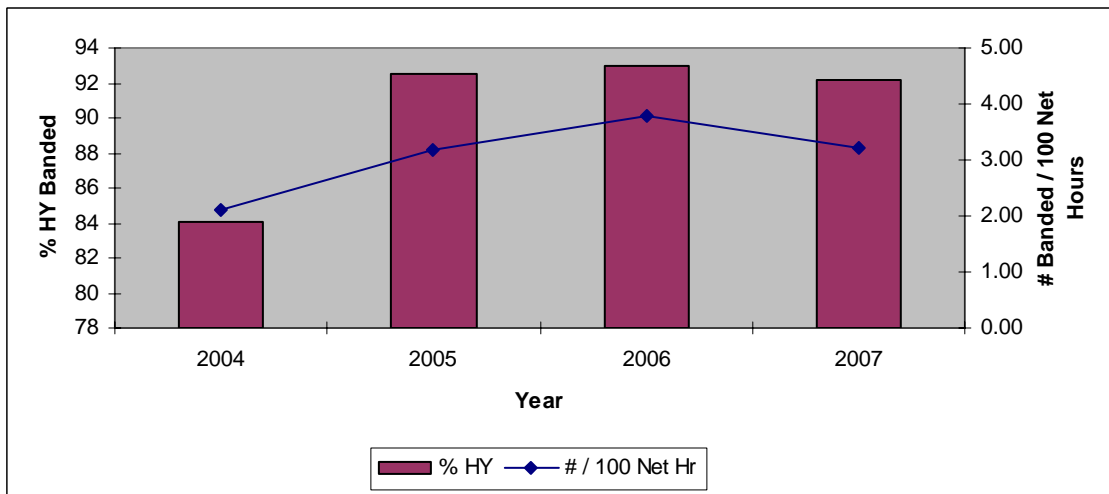
Age Breakdown and Relative Capture Rate (Fall) for Blackpoll Warbler



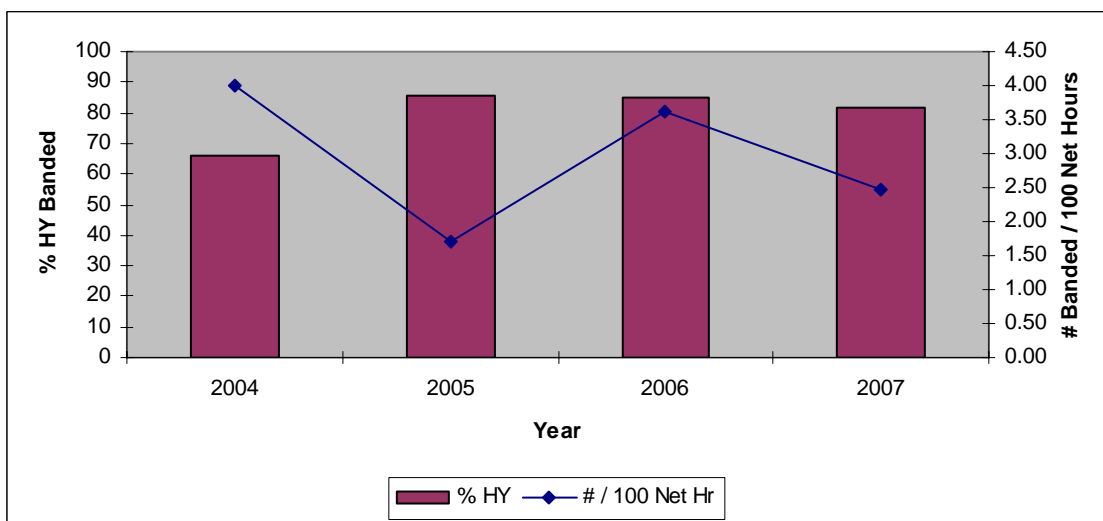
Age Breakdown and Relative Capture Rate (Fall) for American Redstart



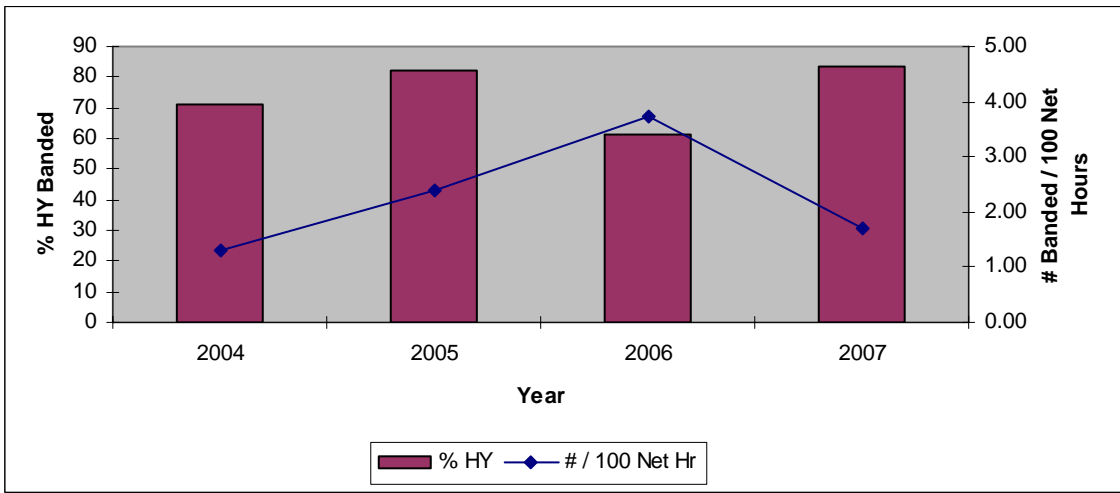
Age Breakdown and Relative Capture Rate (Fall) for Northern Waterthrush



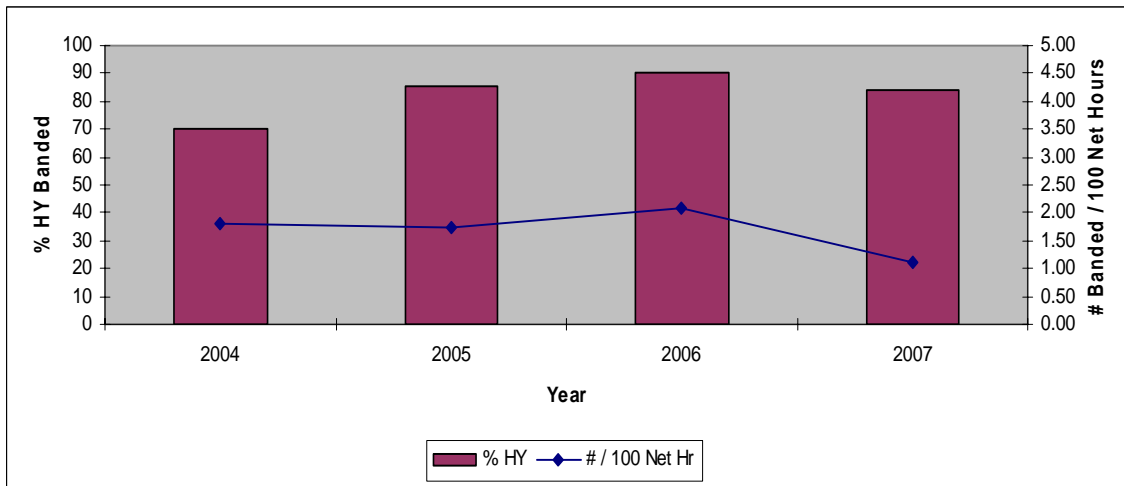
Age Breakdown and Relative Capture Rate (Fall) for Common Yellowthroat



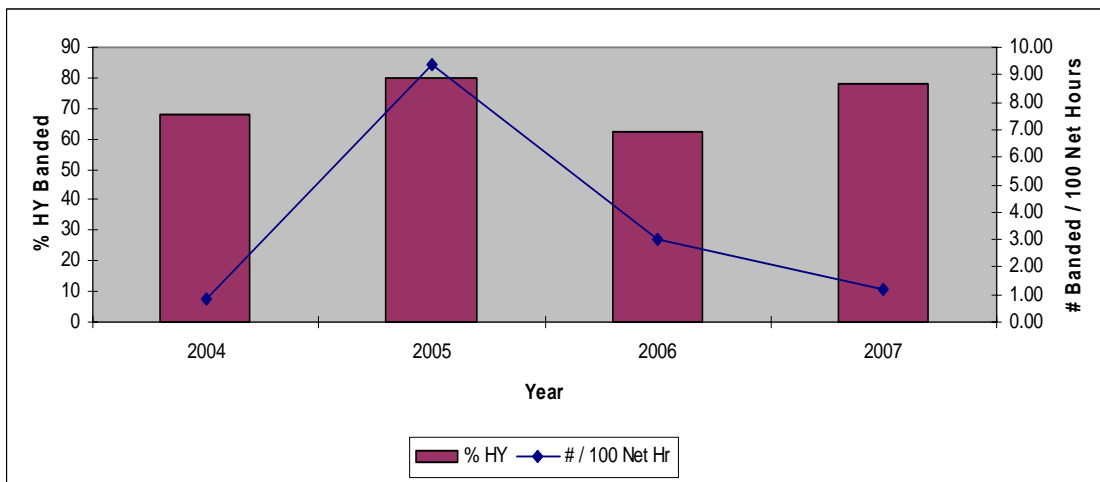
Age Breakdown and Relative Capture Rate (Fall) for Wilson's Warbler



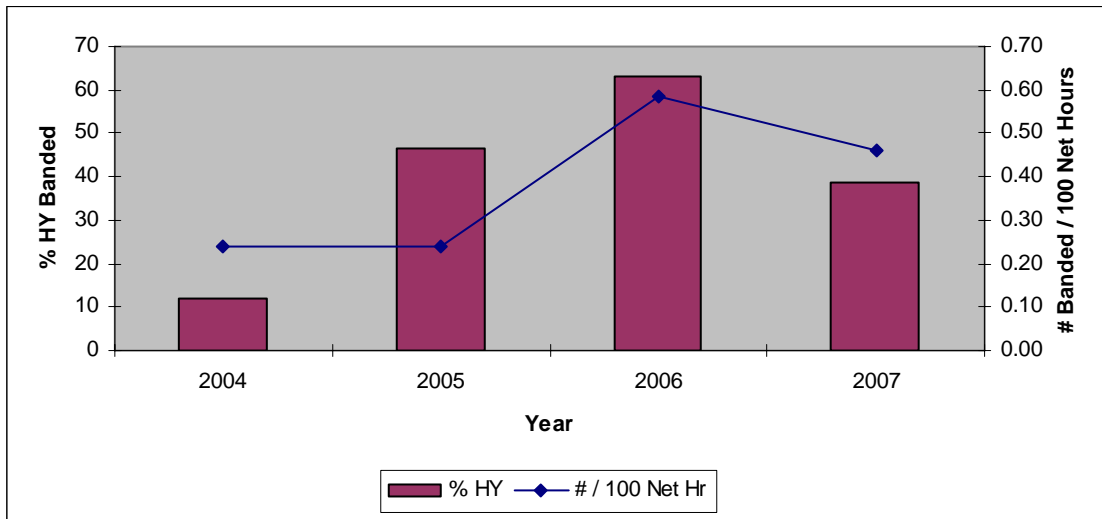
Age Breakdown and Relative Capture Rate (Fall) for American-tree Sparrow



Age Breakdown and Relative Capture Rate (Fall) for Lincoln's Sparrow



Age Breakdown and Relative Capture Rate (Fall) for Dark-eyed (Slate-colored) Junco



Age Breakdown and Relative Capture Rate (Fall) for Rusty Blackbird